



**UNITED
NATIONS**



**Framework Convention
on Climate Change**

Distr.
GENERAL

FCCC/CP/2004/INF.2
19 October 2004

ENGLISH ONLY

CONFERENCE OF THE PARTIES

Tenth session

Buenos Aires, 6–17 December 2004

Item 4 (b) (i) of the provisional agenda

Review of implementation of commitments and of other provisions of the Convention

National communications

National communications from Parties included in Annex I to the Convention

**Summary of information available from in-depth reviews of national
communications from Parties included in Annex I to the Convention**

Note by the secretariat

Summary

In accordance with Article 12 of the United Nations Framework Convention on Climate Change and decision 11/CP.4, Annex I Parties submitted to the secretariat their third (or first or second for some Parties) national communications in 2001–2003. Decision 33/CP.7 requested the secretariat to apply the procedures for the review of national communications, including in-depth reviews (IDRs), to these national communications.

By its decision 1/CP.9, the Conference of the Parties (COP) requested the secretariat to prepare a report summarizing information available from IDRs of national communications from Annex I Parties for consideration by the COP at its tenth session. The present note responds to this request.

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I. Introduction

A. Mandate

1. In accordance with Article 12 of the United Nations Framework Convention on Climate Change (hereafter referred to as the Convention) each Party should communicate to the Conference of the Parties (COP), through the Convention secretariat, information related to the implementation of the Convention. Decision 11/CP.4¹ requested Parties included in Annex I to the Convention (Annex I Parties) to submit to the secretariat a third national communication (NC3) (first or second for some Parties) by 30 November 2001. Decision 33/CP.7² requested the secretariat to apply the procedures for the review of national communications, including in-depth reviews (IDRs), as defined in decisions 2/CP.1³ and 6/CP.3,⁴ to the national communications submitted by Annex I Parties in accordance with decision 11/CP.4. The same decision requested the secretariat to prepare a compilation and synthesis report of these communications.

2. The compilation and synthesis report on Annex I national communications⁵ was presented to the eighteenth session of the Subsidiary Body for Implementation (SBI) in Bonn, Germany, in June 2003. The COP also considered this report at its ninth session in Milan, Italy, in December 2003. In its decision 1/CP.9⁶ the COP noted the work of the secretariat in synthesizing and presenting information from national communications and national greenhouse gas (GHG) inventories, and requested the secretariat to prepare a report summarizing information available from IDRs of national communications from Annex I Parties for consideration by the COP at its tenth session. The present note responds to this request.

B. Scope and structure of the note

3. The note summarizes information from IDRs in two chapters: "Summary information on IDRs conducted" (chapter II) and "Summary information from individual IDRs" (chapter III). Chapter II presents general findings for the major areas covered in the IDR reports, such as national circumstances, GHG inventories, policies and measures, GHG projections, and others. Chapter III presents information from individual IDRs, including the conclusions formulated by the expert review teams.

4. Chapter II compiles information from all IDRs conducted by 1 October 2004. The chapter also incorporates relevant additional information, such as 2004 submissions of GHG inventories and the most recent GHG projections. Chapter III covers 29 Annex I Parties (of the 41 Annex I Parties) for which IDR reports had been published or submitted for publication before 1 October 2004.

II. Summary information on IDRs conducted

A. Overview of the reviews conducted

5. At the time of the publication of this report, the UNFCCC had received 37 national communications of Annex I Parties submitted in accordance with decision 11/CP.4 and prepared according to the UNFCCC reporting guidelines of 1999.⁷ In accordance with decision 33/CP.7, the secretariat organized in-depth reviews of these communications as defined in decisions 2/CP.1 and

¹ See FCCC/CP/1998/16/Add.1.

² See FCCC/CP/2001/13/Add.4.

³ FCCC/CP/1995/7/Add.1.

⁴ FCCC/CP/1997/7/Add.1.

⁵ FCCC/SBI/2003/7 and Add.1–4.

⁶ See FCCC/CP/2003/6/Add.1.

⁷ Here and further on in this document, the UNFCCC reporting guidelines refer 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 (document FCCC/CP/1999/7, pages 80–100).

6/CP.3. By 1 October 2004, 33 IDRs had been completed and 29 IDRs had been published or submitted for publication (table 1).

Table 1. Status of submission of national communications from Annex I Parties and the preparation of IDR reports as at 1 October 2004

Party	Communication received	IDR visit	IDR report
1. Australia	16 Aug. 2002	17–21 May 2004	in preparation
2. Austria	29 Nov. 2001	30 Sept. – 4 Oct. 2004	published (FCCC/IDR.3/AUT)
3. Belarus (NC1)	29 July 2003	17–21 Nov. 2003	published (FCCC/IDR.1/BLR)
4. Belgium	29 Apr. 2002	25–29 Nov. 2002	published (FCCC/IDR.3/BEL)
5. Bulgaria	31 July 2002	23–27 June 2003	published (FCCC/IDR.3/BGR and FCCC/IDR.3/BGR/Corr.1)
6. Canada	19 Feb. 2002	17–21 June 2002	published (FCCC/IDR.3/CAN)
7. Croatia (NC1)	7 Feb. 2002	4–8 Mar. 2002	published (FCCC/IDR.1/HRV)
8. Czech Republic	28 Dec. 2001	15–19 July 2002	published (FCCC/IDR.3/CZE)
9. Denmark	2 June 2003	6–10 Oct. 2003	published (FCCC/IDR.3/DNK)
10. Estonia	30 Nov. 2001	18–22 Nov. 2002	published (FCCC/IDR.3/EST)
11. European Community	21 Dec. 2001	29 Mar. 2003 – 2 Apr. 2004	in preparation
12. Finland	20 Nov. 2001	30 Sept. – 4 Oct. 2002	published (FCCC/IDR.3/FIN)
13. France	30 Nov. 2001	13–17 May 2002	published (FCCC/IDR.3/FRA)
14. Germany	18 Oct. 2002	21–25 July 2003	published (FCCC/IDR.3/DEU)
15. Greece	14 Feb. 2003	planned for 8–12 Nov. 2004	–
16. Hungary	2 July 2002	25–29 Aug. 2003	published (FCCC/IDR.3/HUN)
17. Iceland	23 Apr. 2003	1–5 Sept. 2003	submitted for publication (FCCC/IDR.3/ISL)
18. Ireland	3 Dec. 2003	planned for 1–5 Nov. 2004	–
19. Italy	20 Jan. 2003	23–27 June 2003	submitted for publication (FCCC/IDR.3/ITA)
20. Japan	31 May 2002	2–6 Dec. 2002	published (FCCC/IDR.3/JPN)
21. Latvia	30 Nov. 2001	8–12 July 2002	published (FCCC/IDR.3/LVA)
22. Liechtenstein	10 Apr. 2002	no IDR visit envisaged	–
23. Lithuania (NC2)	21 Jan. 2001	17–21 May 2004	in preparation
24. Luxembourg (NC2)		communication not received	–
25. Monaco	2 Nov. 2001	no IDR visit envisaged	–
26. Netherlands	23 Nov. 2001	9–13 Dec. 2002	published (FCCC/IDR.3/NLD)
27. New Zealand	30 Nov. 2001	24–28 June 2002	published (FCCC/IDR.3/NZL)
28. Norway	8 May 2002	7–11 Oct. 2002	published (FCCC/IDR.3/NOR)
29. Poland	30 Nov. 2001	24–28 Feb. 2003	published (FCCC/IDR.3/POL)
30. Portugal	23 June 2003	10–14 May 2004	in preparation
31. Romania		communication not received	–
32. Russian Federation	20 Nov. 2002	30 June – 4 July 2003	published (FCCC/IDR.3/RUS)
33. Slovakia	24 Oct. 2001	9–13 Sept. 2002	published (FCCC/IDR.3/SVK)
34. Slovenia (NC1)	28 Aug. 2002	9–13 Dec. 2002	published (FCCC/IDR.1/SVN)
35. Spain	1 Apr. 2002	24–28 Feb. 2003	published (FCCC/IDR.3/ESP)
36. Sweden	30 Nov. 2001	2–6 Dec. 2002	published (FCCC/IDR.3/SWE)
37. Switzerland	7 Nov. 2001	18–22 Mar. 2002	published (FCCC/IDR.3/CHE)
38. Turkey (NC1)		first national communication due by 24 Nov. 2004	–
39. Ukraine (NC2)		communication not received	–
40. United Kingdom	30 Oct. 2001	14–18 Oct. 2002	published (FCCC/IDR.3/GBR)
41. United States	28 May 2002	24–28 Feb. 2003	published (FCCC/IDR.3/USA)

Note: Unless otherwise indicated (as NC1 for the first national communication and NC2 for the second one), information refers to the third national communication (NC3).

B. National circumstances

6. The UNFCCC guidelines require that national communications of Annex I Parties contain “a description of their national circumstances, how national circumstances affect GHG emissions and removals, and how national circumstances and changes in national circumstances affect GHG emissions and removals over time”. Additionally, “Parties should provide information about how their national circumstances are relevant to factors affecting GHG emissions and removals, including disaggregated indicators, to explain the relationship between national circumstances and emissions or removals”.

7. All communications presented information on national circumstances, often structured by the headings suggested by the UNFCCC guidelines: government structure, population profile, geographic profile, climate profile, economic profile; they also included sectoral profiles for energy, transportation, industry, waste, building stock and urban structure, agriculture, and forestry. Most IDRs considered the reporting on national circumstances to be sufficient although some reviews noted the absence or incompleteness of some economic or energy data, which made it difficult for the review teams to link the GHG trend to the national circumstances of the country. To understand this link better, many review teams used most recent values of key macroeconomic indicators taken either from the national communication or from international data sources, such as economic and energy databases of the International Energy Agency⁸ or relevant databases of the World Bank.⁹ The indicators, showing the development of economic output, primary energy supply and final energy demand, were particularly helpful for the understanding of the behaviour of GHG emissions.

8. Tables 2–4 present data on the national circumstances of Annex I Parties with a number of macroeconomic and GHG parameters, calculated for all Annex I Parties taken together, and for two subgroups within Annex I: Parties with economies in transition (EIT Parties¹⁰) and the other Annex I Parties (non-EIT Parties¹¹). In-depth review teams often considered such parameters and their changes over the 1990s during the discussions of key drivers for changes in national GHG emissions. Similar data for individual Annex I Parties can be found in chapter III.

9. More detailed indicators were included in some communications and appeared useful in the discussions of sectoral GHG trends during IDRs. Reviewing changes in such parameters as the average size of a dwelling (discussed at the IDR of the NC3 of Belgium) or transportation volumes in passenger-km and tonne-km (discussed at the IDR of the NC3 of France) helped to clarify changes in the GHG emissions of the corresponding sectors.

10. Of particular interest to the review teams were the institutional arrangements of national climate policy making because of their rapid development, often with considerable changes between the time when the national communication was prepared and the time of the IDR visit. The distribution of responsibilities for climate-change-related issues among the different levels of government was quite diverse in Annex I Parties. Sharing responsibilities between central and local government was identified as a challenging task because it required a high degree of cooperation at all levels. This was especially relevant for countries that had recently devolved power from a central government. Another challenge of similar character, noted by some IDRs, was the coordination of climate-related policies implemented by various governmental bodies.

⁸ See <<http://data.iaea.org/ieastore/default.asp>>.

⁹ See <<http://www.worldbank.org/data/countrydata/countrydata.html>>.

¹⁰ The EIT Parties are Belarus, Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Russian Federation, Slovakia, Slovenia, and the Ukraine (14 Parties).

¹¹ The non-EIT Parties are Australia, Austria, Belgium, Canada, Denmark, the European Community, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Liechtenstein, Luxembourg, Monaco, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States (27 Parties).

Table 2. Macroeconomic and GHG data for Annex I Parties taken together

	1990	2000	2001	2002	Change 1990–2002 (%)	Growth rate 1990–2002 (%/year)	Change 2001–2002 (%)
Population (millions)	1 120.3	1 168.0	1 170.6	1 173.9	4.8	0.4	0.3
GDP (billions USD 1995 PPP)	19 979	24 275	24 594	25 040	25.3	1.9	1.8
GDP per capita (thousands USD 1995 PPP)	17.8	20.8	21.0	21.3	19.7	1.5	1.4
CO ₂ emissions without LUCF (Tg)	14 690	14 071	13 981	14 079	-4.2	-0.4	0.7
CO ₂ / capita (Mg)	13.1	12.0	11.9	12.0	-8.4	-0.7	0.8
CO ₂ / GDP (kg per USD 1995 PPP)	0.74	0.58	0.57	0.56	-24.3	-2.2	-1.8
GHG emissions without LUCF (Tg CO ₂ eq)	18 376	17 250	17 134	17 212	-6.3	-0.5	0.5
GHG / capita (Mg CO ₂ eq)	16.4	14.8	14.6	14.7	-10.4	-0.9	0.7
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	0.92	0.71	0.70	0.69	-25.0	-2.4	-1.4

Sources: Population and GDP data are from the International Energy Agency (IEA), see <<http://data.iaea.org/ieastore/default.asp>>; GHG and CO₂ data are from Parties' submissions of GHG inventories to the UNFCCC secretariat, see also table 5.

Note 1: The data do not include the European Community (EC) (to avoid double-counting of national emissions of its Member States) and Turkey (GHG data are not available yet).

Note 2: For the abbreviations used (LUCF, GDP, PPP, Tg, Mg, kg, CO₂ eq, GHG) see chapter IV.

Table 3. Macroeconomic and GHG data for EIT Parties taken together

	1990	2000	2001	2002	Change 1990–2002 (%)	Growth rate 1990–2002 (%/year)	Change 2001–2002 (%)
Population (millions)	321.2	313.9	312.3	310.5	-3.3	-0.3	-0.6
GDP (billions USD 1995 PPP)	2 707	2 123	2 218	2 301	-15.0	-1.3	3.7
GDP per capita (thousands USD 1995 PPP)	8.4	6.8	7.1	7.4	-11.9	-1.1	4.2
CO ₂ emissions without LUCF (Tg)	4 376	2 606	2 607	2 612	-40.3	-4.2	0.2
CO ₂ / capita (Mg)	13.6	8.3	8.3	8.4	-38.2	-3.9	1.2
CO ₂ / GDP (kg per USD 1995 PPP)	1.62	1.23	1.18	1.14	-29.6	-2.9	-3.4
GHG emissions without LUCF (Tg CO ₂ eq)	5 617	3 362	3 386	3 382	-39.8	-4.1	-0.1
GHG / capita (Mg CO ₂ eq)	17.5	10.7	10.8	10.9	-37.7	-3.9	0.9
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	2.08	1.58	1.53	1.47	-29.3	-2.8	-3.9

Sources: Population and GDP data are from the International Energy Agency (IEA), see <<http://data.iaea.org/ieastore/default.asp>>;

GHG and CO₂ data are from Parties' submissions of GHG inventories to the UNFCCC secretariat, see also table 5.

Note: for the abbreviations used (LUCF, GDP, PPP, Tg, Mg, kg, CO₂ eq, GHG) see chapter IV.

Table 4. Macroeconomic and GHG data for non-EIT Parties taken together

	1990	2000	2001	2002	Change 1990–2002 (%)	Growth rate 1990–2002 (%/year)	Change 2001–2002 (%)
Population (millions)	799.1	854.1	858.3	863.4	8.0	0.6	0.6
GDP (billions USD 1995 PPP)	17 272	22 152	22 376	22 739	31.7	2.3	1.6
GDP per capita (thousands USD 1995 PPP)	21.6	25.9	26.1	26.3	21.8	1.7	0.8
CO ₂ emissions without LUCF (Tg)	10 314	11 466	11 374	11 468	11.2	0.9	0.8
CO ₂ / capita (Mg)	12.9	13.4	13.3	13.3	3.1	0.2	0.0
CO ₂ / GDP (kg per USD 1995 PPP)	0.60	0.52	0.51	0.50	-16.7	-1.4	-2.0
GHG emissions without LUCF (Tg CO ₂ eq)	12 759	13 888	13 748	13 831	8.4	0.7	0.6
GHG / capita (Mg CO ₂ eq)	16.0	16.3	16.0	16.0	0.0	0.0	0.0
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	0.74	0.63	0.61	0.61	-17.6	-1.6	0.0

Sources: Population and GDP data are from the International Energy Agency (IEA), see <<http://data.iaea.org/ieastore/default.asp>>;

GHG and CO₂ data are from Parties' submissions of GHG inventories to the UNFCCC secretariat, see also table 5.

Note 1: The data do not include the European Community (EC) (to avoid double-counting of national emissions of its Member States) and Turkey (GHG data are not available yet).

Note 2: For the abbreviations used (LUCF, GDP, PPP, Tg, Mg, kg, CO₂ eq, GHG) see chapter IV.

11. In the context of the development of national climate strategies, some Annex I Parties reorganized the overall coordination of their national climate policy. Most often, this task was under the responsibility of the Ministry of Environment, but some Parties, for example Australia, France and New Zealand, created a dedicated climate change office in order to streamline climate-related activities and better integrate climate change policies with other relevant policies, such as economic, energy and transport policies.

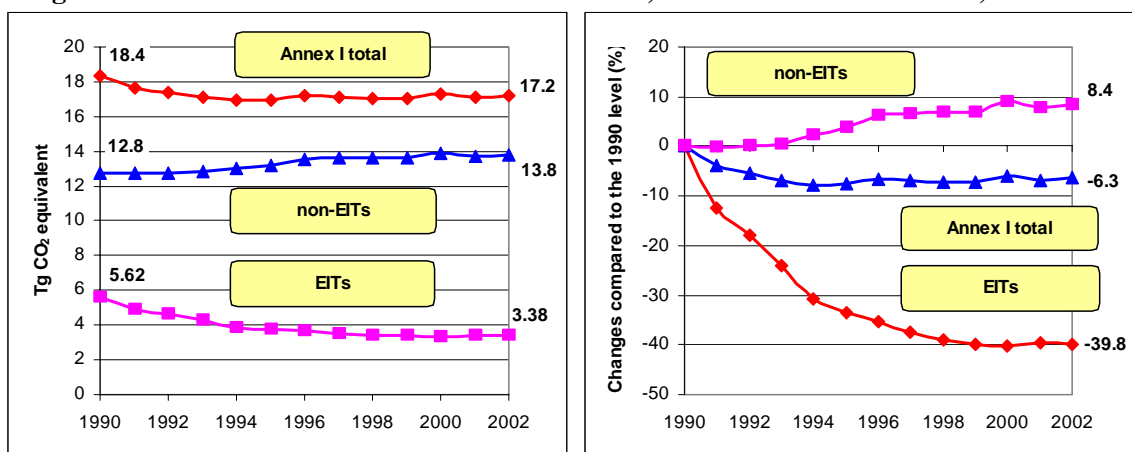
C. Emission trends

1. Summary information

12. The UNFCCC guidelines require that a national communication contain “summary information from the national GHG inventory ... for the period from 1990 (or other base year) to the last but one year prior to the year of submission of the national communication”. Almost every communication presented such information, including data drawn from annual submissions of GHG inventories in accordance with decisions 9/CP.2¹² and 3/CP.5.¹³

13. Figure 1 and table 5 present latest data on GHG trends in Annex I Parties for the period from 1990 to 2002. Table 5 contains total national GHG emissions without carbon dioxide (CO₂) removals through land-use change and forestry (LUCF) and is based on inventory submissions provided by Parties in the 2004. Figure 1 presents the 1990–2002 trend for Annex I Parties taken together, and for two subgroups within Annex I: EIT Parties and non-EIT Parties.

Figure 1. Trends in GHG emissions for Annex I, EIT and non-EIT Parties, 1990–2002



Note: The sums do not include the EC (to avoid double-counting of national emissions of its Member States) and Turkey (GHG data are not available yet).

14. More detailed data from national GHG inventories are provided in documents FCCC/CP/2004/5 and FCCC/WEB/2004/3. GHG data can also be found on the secretariat web site at <<http://unfccc.int/program/mis/ghg/index.html>> (national GHG data) and <<http://ghg.unfccc.int>> (secretariat’s online GHG database).

¹² See FCCC/CP/1996/15/Add.1.

¹³ See FCCC/CP/1999/6/Add.1.

Table 5. Trends in GHG emissions of Annex I Parties, 1990–2002

Party	Total GHG emissions without LUCF (Tg CO ₂ equivalent)				Change in GHG emissions (%)	
	1990 ^a	2000	2001	2002	From 1990 to 2002	From 2001 to 2002
Australia	430.5	512.9	520.1	526.0	22.2	1.1
Austria	77.7	80.6	84.4	84.6	8.8	0.3
Belarus	126.6	68.6	76.2	70.4	-44.4	-7.7
Belgium	146.1	149.9	149.5	150.3	2.9	0.5
Bulgaria	141.8	63.6	64.9	62.4	-56.0	-3.8
Canada	608.7	725.0	716.2	731.2	20.1	2.1
Croatia	31.6	26.1	26.9	28.0	-11.5	4.0
Czech Republic	192.0	147.7	148.1	144.2	-24.9	-2.6
Denmark	68.7	67.8	69.3	68.5	-0.4	-1.2
Estonia	43.5	19.7	19.4	19.5	-55.2	0.3
European Community	4 231.4	4 090.9	4 144.2	4 123.6	-2.5	-0.5
Finland	76.8	75.0	80.6	82.0	6.8	1.7
France	564.2	557.6	561.2	553.4	-1.9	-1.4
Germany	1 246.8	1 014.1	1 025.6	1 014.6	-18.6	-1.1
Greece	107.1	133.8	134.6	135.0	26.0	0.3
Hungary	113.1	78.0	79.3	78.0	-31.0	-1.6
Iceland	3.32	3.35	3.21	3.18	-4.2	-1.0
Ireland	53.4	68.3	70.0	68.9	28.9	-1.6
Italy	509.1	544.0	554.3	553.8	8.8	-0.1
Japan	1 187.3	1 336.7	1 302.3	1 330.8	12.1	2.2
Latvia	28.9	10.2	10.9	10.8	-62.8	-1.0
Liechtenstein	0.2183	0.2185 ^c	0.2185 ^c	0.2185 ^c	0.1	0.0
Lithuania	50.1	20.0 ^c	19.3	17.2	-65.7	-10.7
Luxembourg	13.4	9.5	6.1	10.8	-19.5	78.2
Monaco	0.073	0.094	0.097	0.096	31.7	-0.4
Netherlands	211.4	213.4	216.1	213.8	1.1	-1.1
New Zealand	61.6	70.4	73.7	75.0	21.6	1.8
Norway	52.1	55.4	56.7	55.3	6.1	-2.4
Poland	564.4	386.2	382.8	382.8 ^c	-32.2	0.0
Portugal	58.4	78.3	78.6	82.0	40.5	4.2
Romania	262.8	127.4	131.4	136.6	-48.0	3.9
Russian Federation	3 050.0	1 876.0 ^c	1 876.0 ^c	1 876.0 ^c	-38.5	0.0
Slovakia	72.4	49.0	52.3	51.9	-28.4	-0.8
Slovenia	20.6	19.2	20.3	20.4	-1.1	0.6
Spain	284.6	385.2	383.5	399.7	40.5	4.2
Sweden	72.1	67.5	68.3	69.6	-3.5	2.0
Switzerland	53.1	52.3	53.4	52.3	-1.7	-2.1
Ukraine	919.2	470.3 ^c	478.0	483.5	-47.4	1.1
United Kingdom	742.6	647.7	656.2	634.9	-14.5	-3.3
United States	6 129.1	7 038.3	6 883.9	6 934.6	13.1	0.7
Annex I total^b	18 376	17 250	17 134	17 212	-6.3	0.5
EIT total	5 617	3 362	3 386	3 382	-39.8	-0.1
Non-EIT total^b	12 759	13 888	13 748	13 831	8.4	0.6

^a The base year level, defined in accordance with decision 9/CP.2, is used here instead of the 1990 level for several Parties with economies in transition: Bulgaria (1988); Hungary (1985–87); Poland (1988); Romania (1989); Slovenia (1986).

^b The sums do not include the EC (to avoid double-counting of national emissions of its Member States) and Turkey (GHG data are not available yet).

^c Because of the incomplete data series for this Party, interpolation or extrapolation of the latest available data was used to obtain this number.

Note: The data in the table do not correspond fully to the information provided by Parties in their national communications because of recent recalculations of GHG inventories by some Parties.

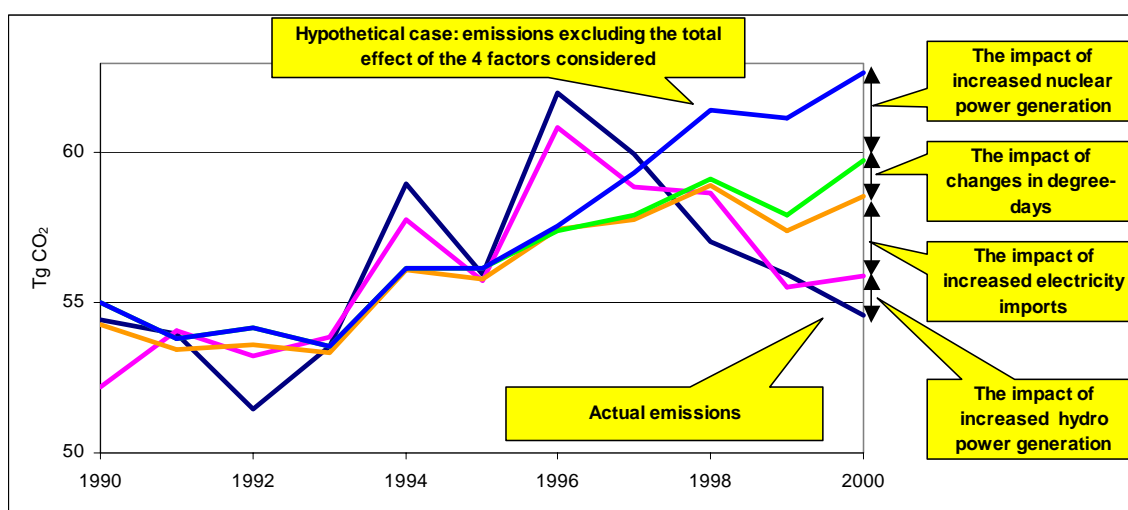
2. Issues noted in the process of IDRs

15. Generally, IDRs noted a good quality of reporting GHG data in national communications. Tables with GHG emissions, for national totals and in a breakdown by gas and sector, are available in practically all communications, either within the main text or as appendices. Many IDRs acknowledged the usefulness of providing inventory information in the form of summary tables with emission trends based on the common reporting format (CRF) tables, which contributes to transparency and

comparability in reporting. However, some reviews identified minor deviations from the guidelines, such as inconsistency between the inventory data presented in the communication and the inventory data in the latest submissions of GHG inventories to the UNFCCC secretariat. Usually, such inconsistencies appeared because of recent inventory recalculations. The review of a few communications revealed such problems as incompleteness or inconsistency of the data series. The absence of GHG data for some years (for example, in Belarus) or use of inconsistent methodologies within the series (for example, in the Czech Republic and Poland) made it difficult for the review teams to understand the complete GHG trend.

16. Some IDR reports noted the need to respond better to the requirement of the guidelines to “provide a description of the factors underlying emission trends”. Although the trends were usually presented well, not all Parties provided a comprehensive explanation of why the emissions changed in the way they did; when an explanation was available, it was mostly qualitative and not quantitative. However, some reviews showed that a number of Parties did conduct quantitative analyses of trends in GHG emissions in order to identify the contribution of various factors to changes in GHG emissions. Figures 2 and 3 show examples of quantitative analysis of GHG trends taken from the IDR reports for Finland and Germany.

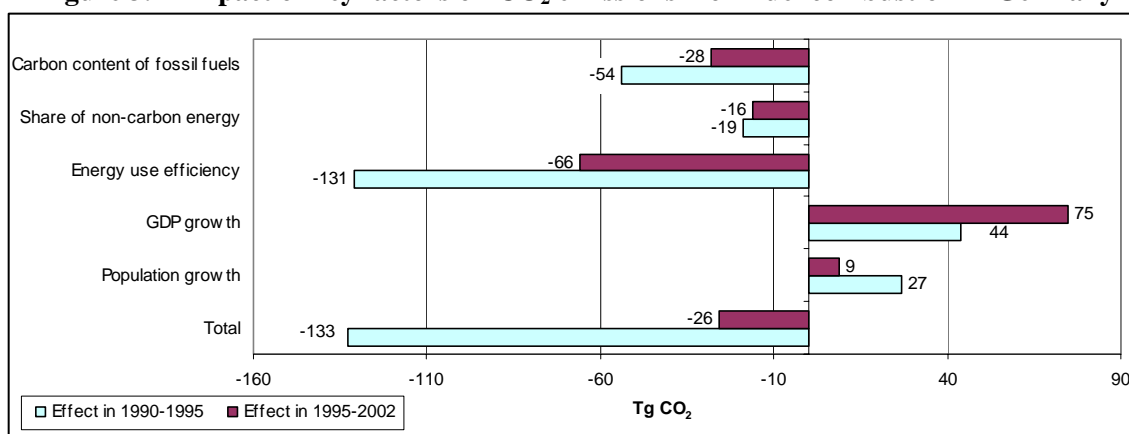
Figure 2. Impact of key factors on CO₂ emissions from fuel combustion in Finland



Source: FCCC/IDR.3/FIN.

Note: The curves in the graph are cumulative – each curve adds the effect of one factor to the effects of the previous factors reflected in the lower curves. That is why the top curve shows the cumulative effect of all four factors. The separate effects can be seen by comparing the differences between the curves.

17. IDRs often discussed the availability and completeness of reporting on key emission sources, as well as those changes in methodologies and emission factors between the NC2 and the NC3 that could have implications for GHG trends. Such discussions were reflected in most IDR reports, such as those for Austria, Belgium, Bulgaria, Canada, Denmark, Finland, Germany, Japan, Latvia, Netherlands, Russian Federation, Spain, Sweden, the United States of America. Uncertainty estimates for GHG emissions and progress in the evaluation of uncertainty were also considered important by many review teams (discussed at IDRs for Belarus, Croatia, Denmark, Finland, Netherlands, Norway, Russian Federation, Slovakia, the United Kingdom of Great Britain and Northern Ireland, and others). Discussions of such issues proved useful, in particular in the context of linking GHG trends with policies and measures for GHG mitigation and with GHG projections.

Figure 3. Impact of key factors on CO₂ emissions from fuel combustion in Germany

Source: FCCC/IDR.3/DEU.

Note: The contribution of factors to changes in GHG emissions was estimated using a decomposition method; see FCCC/IDR.3/DEU.

D. Policies and measures

1. Reporting issues

18. IDR reports highlighted improved reporting on policies and measures compared to the previous national communications, in particular with respect to estimates of the effects from individual policies and measures. For example, the IDR reports for Finland, Canada, the Netherlands and the United Kingdom acknowledged rigorous assessment of such effects, development of performance indicators to assess the impact of particular measures, and enhanced attention to monitoring and evaluation. In particular, the IDR report of the NC3 of the United Kingdom acknowledged the comprehensive, build-in, formal review of the national Climate Change Programme that centers on the evaluation of key impacts, effects, cost and benefits to government and the other stakeholders. Some reviews noted remaining gaps in reporting and the need for a more systematic monitoring and evaluation of the performance of policies and measures, and of the national climate change strategies. The limited evaluation of the performance and effects of measures, which was noted by some IDRs, was explained, in part, by lack of resources and difficulties in quantifying the effects of policies and measures, especially those that are behavioural in nature.

19. The IDR of the NC3 of the Netherlands noted the transparent reporting on cost estimates for policies and measures in this communication. In some countries, concerns over large uncertainties associated with such estimates seemed to have constrained the ability to report them even when such information was available. Some IDR reports noted that the UNFCCC reporting guidelines lacked specificity on the cost concepts to be applied and methods to be used for their estimates. When reported, cost estimates were mainly associated with the governments' expenditures.

20. Some review teams found it difficult to understand the effectiveness of policies and measures when very many of them were reported. In such cases, the need to highlight and prioritize those policies that had been particularly effective in reducing emissions and to identify those that were potentially replicable or innovative was emphasized. The need to report on policies and measures by sector and to report on policies and measures that may have a negative effect on emissions or that have been discontinued was also often noted by the reviews.

2. Cross-cutting policies and measures

21. IDR reports reflected a rapid evolution of the *national climate change strategies* over the last few years. Many new national climate change strategies and plans were launched, and the existing

strategies were further strengthened. These include the 2002 Austrian Climate Strategy, 2002 National Climate Plan of Belgium, 2002 Climate Change Plan for Canada, the Swiss CO₂ Law, the 2003 Strategy for climate protection of the Czech Republic, the 2003 Climate Strategy of Denmark, the 2003 Climate Change Mitigation Programme of Estonia, the 2000 French National Programme to Combat Climate Change, the 2000 Climate Change Programme of the United Kingdom, the 2002 Climate Change Policy Programme of Japan, the 2000 Dutch National Climate Change Policy Implementation Plan, the 2002 Preferred Policy Package of New Zealand and the 2003 Climate Change Strategy of Poland.

22. Most such strategies targeted the gap between the projected level of emissions for the first commitment period under the Kyoto Protocol (2008–2012) and the Kyoto Protocol target. Issues relating to the distribution of the emission reduction effort between domestic action and the acquisition of emission reductions through the flexibility mechanisms under the Kyoto Protocol seemed to acquire prominence. For some countries, the contribution of the Kyoto mechanisms was expected to be substantial (for example, in Denmark and the Netherlands), while in the others it was expected to be limited (for example in Spain and Japan). The Austrian strategy, for example, identifies a gap of 17,000 Gg and details a policy package to deliver domestic emission savings of 13,850 Gg with the rest of the reductions coming from the use of the flexibility mechanisms. The issues of distribution of emission reductions among different sectors, installations and, when relevant, provinces was also found to be gaining increasing attention.

23. **Increased involvement of the stakeholders and different levels of governments** has been an integral part of the evolution of climate change strategies, for example in Austria, Canada and the United Kingdom. The IDR reports noted increased financial support for the new strategies and initiatives, such as in Canada where CAD 2 billion over 5 years was allocated for climate change initiatives. The reports also noted cases when effective allocation of new funding was needed for effective implementation of these strategies (for example in Switzerland and Hungary).

24. A few IDR reports noted that the implementation of policies specifically targeting climate change remained at an early stage. This was noted for several countries with economies in transition (EIT), and also for Spain. Most of the IDRs on EIT countries note the impetus given to their climate change, environmental and energy policies by the European Union (EU) accession process.

25. Climate change strategies of Annex I Parties often employed a **multi-phased approach**, which can be illustrated by the case of Canada where the strategy starts with the most cost-effective (“no-regret”) measures and then moves to a more comprehensive set of measures, including voluntary agreements (or covenants), specific targets for large emitters linked to domestic emission trading schemes, and financial tools to support concrete technical, economic and behavioural measures; if necessary, planning for further measures followed. Similar approaches were used by Denmark, France, Japan, the Netherlands, New Zealand and Switzerland.

26. **Environmental and economic efficiency** remained the main criteria for the design and implementation of the evolving climate change strategies. IDR reports contain information on these and other criteria and ancillary benefits that are factored in to climate change policy choices, including consideration of employment, trade, investment, energy market liberalization and energy efficiency improvement.

27. In terms of environmental effectiveness of policies and measures, IDR reports acknowledged that existing policies helped to slow down emission growth or to stabilize and reduce emissions. However, some reports also acknowledged underperformance of particular policies and measures, or noted that earlier emission reduction targets were not being met.

28. IDR reports also highlighted the search for **new and innovative measures**, and for the **most effective policy portfolios**. While few countries continued their reliance on instruments and approaches adopted at the end of the 1990s, others attached an increasing importance to the emerging new and

innovative measures. These include emissions trading (ET) and “green certificate” trading, which were seen as tools to move to low-emission technologies and emission sources. In particular, ET recently emerged as a central instrument to ensure a concerted effort by the countries – members of the European Union (EU) – to decrease emissions in the near term and to achieve the Kyoto Protocol target. Preceding this effort, the United Kingdom launched the world’s first economy-wide emissions trading scheme (ETS) for the period 2002–2006 for companies willing to take on binding emission reduction obligations. Denmark launched a tradable CO₂ scheme that covered emissions from electricity production for the period 2001–2005. Among the non-EU countries, Norway took a decision to introduce as of 2005 a domestic ETS that would possibly be linked to the EU ETS and Slovakia was the first EIT country to pass legislation on a domestic ETS. One of the major issues that appeared in this context was the question of how the new policies and policy instruments fit into the existing climate change policy framework and instruments. Another issue was how to select a policy mix that is optimal, transparent and complementary.

29. **On technology**, the main thrust of policies in the near term remained on accelerating the diffusion of advanced technologies to utilize renewable energy and to enhance energy efficiency. Japan’s IDR report detailed long-term issues relating to promoting new and innovative technology solutions (ultra-efficient photovoltaic power, technologies for hydrogen production and use, technologies to improve energy use efficiency, e.g. using ultra-steel and super-heat-resistant materials and using supercritical fluids). Similarly, the IDR report for the United States detailed long-term issues relating to technological development, in particular hydrogen technology and carbon capture and storage, and the leading role of the United States in the international effort in this context.

3. Some policy trends by sector

Energy

30. **Energy market liberalization**: Promoting reform in the energy sector to improve its economic performance, establishing a competitive market and attracting new investment have been the main drivers for energy sector liberalization. Many IDRs noted that the liberalization had an impact on GHG emissions. Securing environmental objectives, such as a targeted share of renewable energy, has been in some cases part of energy market liberalization and the related legislation (for example, in the Netherlands and Denmark). Some IDRs acknowledged that a fall in electricity prices resulting from energy market liberalization could lead to increased GHG emissions, for example by acting as an incentive to use more electricity.

31. **Energy and CO₂ tax**: IDRs confirmed that fiscal instruments remain among the main pillars of the energy and climate strategies in many countries. Recent developments in the use of such instruments, documented in IDR reports, have been diverse: a gradual increase in energy and carbon taxes in Finland and the Netherlands; phase-in of new taxes, such as the Climate Change Levy in the United Kingdom in 2001; maintenance of the existing level of the carbon and energy tax, for example in Denmark since 2001; abolishment of the tax for some emission sources, for example the carbon tax for coke in Norway; possible introduction of a carbon tax in 2004 in Switzerland, New Zealand and Hungary; and planning for a carbon tax but facing difficulties with its public acceptance in France. Complementarity of the carbon tax and the domestic ETS featured prominently in the IDR report of Norway.

32. **Energy efficiency**: IDR reports documented the further strengthening of energy efficiency legislation, which in some cases also contained special provisions on renewable energy sources, and setting up of energy efficiency targets. Most Annex I Parties further strengthened the building codes and insulation standards for new and existing buildings, provided support for energy audits and increased attention to existing buildings where energy efficiency is more difficult to address. Subsidies, energy audits, minimum performance standards and appliance labelling continued to support market transformation towards more efficient use of energy.

33. IDR reports detailed further development in the voluntary agreements with large energy consumers and power plants that aimed at efficiency improvement and promoted changes in technology processes and/or products that meet certain standards and requirements. Such agreements remained a central instrument to mitigate emissions from industry and they often included such specific provisions as efficiency “benchmarking”, the requirement to be among the top energy-efficient companies in the world, certain efficiency improvement targets, and the requirement to implement energy conservation and management plans with measures that have a pay-back period below a certain threshold.

34. In some cases, industries covered by voluntary agreements to improve efficiency obtain a considerable discount from the energy and carbon taxes, which is the case, for example, in the United Kingdom and Denmark. Several IDR reports noted the possibility of a switch from voluntary agreements to an ETS and some problems arising from the need to place industries previously covered by voluntary agreements under the regime of the ETS of the EU.

35. Other measures to promote energy efficiency, according to IDR reports, encompassed fiscal incentives, tax relief for investments and investment grants for energy-efficiency, innovative energy efficiency financing that accelerate the take-up of new energy-efficient, cost-effective and low-carbon technologies, and help to hedge the risk associated with investment in such technologies, such as support through the new Carbon Trust in the United Kingdom and the Danish Energy Saving Trust, and the 2002 project of the Global Environment Facility (GEF) on energy efficiency financing in five countries in Central and Eastern Europe.

36. IDR reports emphasized, when relevant, the continued support for combined heat and power (CHP) generation, including CHP using renewable energy sources, in a form of investment and operating support and guaranteed premium buy-back rates (for example in Austria, Denmark, Finland, France, Hungary, the Netherlands and Poland). However, in some cases, estimates suggested some saturation of the CHP market with possible discontinuation of the support (which was noted in Austria and Denmark), and the need to search for innovative ways to support and extend the existing CHP network.

37. IDR reports highlighted several success stories about promoting energy efficiency and reducing emissions. Ambitious, target-driven policy for energy conservation, including through renovation of buildings, helped to offset the effect of the growing energy demand and led to stabilization of emissions from the residential and commercial sector in Finland. The Voluntary Action Plan of the Japanese Federation of Economic Organizations (Keidanren) covering the bulk of emissions from industry, the Japan “Top Runner” programme to promote appliance and equipment efficiency, and the Netherlands energy benchmarking covenants and long-term agreements were among the measures delivering significant emission reductions.

38. **Renewable energy sources:** Policy to promote renewables continued to be target driven. IDR reports noted recent changes in national targets, such as Austria’s target for 2009 for electricity from small-scale hydropower of 9 per cent and from other non-traditional sources of 4 per cent; the Czech Republic’s target for 2005 for the share of electricity from renewable energy to account for 3 per cent without and 5 per cent with large hydro plants; targets set in conjunction with the “green certificate” market in Belgium – in the Flemish Region for the electricity from renewables to reach 6 per cent in 2010 and in the Walloon region 8 per cent; Finland’s target for 2010 for renewable energy to account for 27 per cent of primary energy consumption and 31 per cent of electricity production; Hungary’s ambitious target to double the share of renewables in the energy supply by 2010 and Poland’s target of renewables accounting for 7.5 per cent of the energy supply in 2020. It was noted that Spain exceeded its target for year 2000 for the share of renewables in the energy supply and set a new target to double this share between 2000 and 2010. Conversely, the Netherlands did not meet its target for 2000 and introduced the necessary adjustments in its policies to meet its 2010 target. The IDR report for the United States noted that the United States aimed to achieve a target cost level for energy produced from renewables.

39. Many IDR reports described progress in the implementation of traditional instruments for the promotion of renewable energy, such as guaranteed buy-back and premium tariffs, priority access to the grid, subsidies, income tax rebates, a reduced value-added tax, and support for the replacement of existing heating systems with renewables and district heating.

40. The reports also described some innovative instruments to promote renewable energy, such as the “green certificate” market in Belgium and the Netherlands, Renewables Obligation in the United Kingdom, Mandatory Renewable Energy Targets in Australia linked to “green certificate” trading, municipal energy efficiency planning in Bulgaria, and a planned “green electricity” market in Denmark. For some Parties, IDR reports discussed administrative barriers to such innovative instruments, lack of incentives for small generators, and increase in renewables-based electricity from foreign suppliers instead of domestic ones.

41. Success stories in promoting renewables, emphasized in the IDR reports, include a 30 per cent increase in electricity demand in Finland being met primarily from non-fossil-fuel sources, in particular biomass, and the impressive progress in promoting renewables in Australia, France, Germany and Spain.

42. **Other non-fossil-fuel energy sources:** IDRs noted that Finland adopted a “decision-in-principle” for the construction of a new nuclear power plant, and that the United Kingdom signalled its interest to keep the nuclear energy option open in case other measures prove inefficient in the longer term.

Transport

43. Mitigating GHG emissions from transport was noted as a challenge in virtually all IDR reports. Still, some Parties, such as Belgium, Finland and Switzerland, outlined ambitious targets for these emissions, aiming to stabilize or reduce them. A policy effort combined with technical and economic development in transport resulted in a remarkable stabilization of emissions from this sector in Finland in the 1990s.

44. Most IDR reports detailed the implementation of several **core measures** in transport, such as promotion of vehicles with lower fuel consumption, primarily through voluntary agreements with car manufacturers (such as the EC agreements with three associations of car manufacturers,¹⁴ and agreements of a similar type in Canada and Switzerland); fiscal instruments, such as road tolls, congestion pricing schemes, vehicle taxes, fuel consumption levies and energy and carbon taxes; technical standards for vehicles; and promotion of environmentally friendly and alternative fuels, such as biodiesel and bioethanol.

45. Many reports also described the advancement of some **additional measures**, such as the improvement of spatial planning; promotion of non-motorized transport, such as cycling and walking; promotion of public transport, such as bus, tram, metro and rail; promotion of modal shift from road to rail; promotion of inter-modal transport facilities; intelligent transport systems; support for improvement of public freight transport; measures to increase public awareness; traffic management, introduction of speed limits; training in eco-driving; and combined transport and integrated transport systems.

46. IDRs noted that transport demand management remained a difficult and rarely implemented policy. Still, Australia reported on a complex transport policy module targeting a range of objectives including reduction in the demand for travel. In a few cases, IDRs noted an emphasis on long-term issues, such as hydrogen use in fuel cells for transportation (noted for Canada, Japan and the United

¹⁴ These are the so-called ACEA, JAMA, KAMA agreements concluded by the EC with the European, Japanese and Korean car manufacturers. For example, the ACEA agreement aims to decrease CO₂ emissions from an average new car from 185 g/km in 1995 to 140 g/km in 2008. It is expected to deliver large emission reductions; for example, for France the expected effect is 10 Tg CO₂ saved per year by 2010.

States). Notwithstanding implemented measures, an overall modal shift to non-motorized transport and to public transport seemed to remain a challenging problem.

Industry

47. Mitigation of fluorinated gases (HFCs, PFCs, SF₆) from industrial processes is a relatively new issue in the climate change agenda. It reflects the increased concern over emissions from substances used to replace substances controlled by the Montreal Protocol. Planned or implemented regulations and taxes for emissions of N₂O and fluorinated gases were highlighted in practically all IDR reports. For example, a high tax on N₂O in France helped to deliver reductions amounting to 17 Tg CO₂ equivalent and stabilize the total GHG emissions in 2000 at the 1990 level. Several countries introduced a tax on fluorinated gases (for example, Denmark and Norway), and the EC is planning to introduce such a tax shortly.

48. The EC Integrated Pollution Prevention and Control (IPPC) Directive was highlighted as a key measure for this sector in IDR reports for most of the EC Member and accession countries. Its impact on the GHG emissions is indirect, as it requires industry to use the best available technology and to meet energy efficiency requirements. It affects the emissions of methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) from large stationary emission sources and stimulates energy efficiency improvements in energy-intensive industries.

49. Several IDR reports noted that measures to address non-CO₂ emissions, primarily from industrial processes, had been cost-effective and delivered a much higher share of emission savings compared to the share of emission savings from industrial processes in the overall emissions; examples are the Netherlands programme for non-CO₂ gases and several programmes in the United States.

Agriculture

50. The measures in agriculture highlighted in IDR reports are ecological farming and cultivation of oilseed crops; encouragement of environmentally friendly agricultural practices, including those that are parts of regional rural development plans and those that are implemented in line with the EC Common Agricultural Policy; improved soil, nutrient and livestock management; measures and action programmes to prevent contamination by nitrates; organic farming; and code of good agricultural practices. For some Parties (such as Belarus, Finland, Hungary, Latvia and Poland), IDRs noted the impact of market-driven decline in the number of farms and cattle on GHG emissions from agriculture.

51. Linked to LUCF-related measures is the support for research to better account for carbon stock changes (noted in Australia, Canada and New Zealand) and voluntary retirement of land from productive use with a potential to revert to forests (noted in New Zealand). Another example of a cross-cutting measure with a focus on agriculture is the agricultural environmental stewardship initiative to assess impacts on water, soil, air quality, biodiversity and GHG emission reduction through education, awareness and land-use planning (noted in Canada).

Waste management

52. Waste management strategies with specific targets for waste minimization, separation, recycling and environmentally friendly waste disposal (waste composting and landfill gas collecting to be used for energy when economically feasible) were highlighted in most IDR reports. Such strategies often included limits or bans on the discharge of biodegradable waste to landfills. An almost universal measure with a noticeable impact on emissions was the strengthening of regulations for landfills: closure of uncontrolled landfills and a requirement that all new landfills have collection systems for landfill gas and use it for energy production.

53. Other measures encompass strengthening of the existing or phasing in of new legislation, waste disposal fees and taxes, monitoring and control of waste, and international cooperation programmes.

Land-use change and forestry

54. IDR reports noted the implementation of the policies and measures in the LUCF sector in the context of promoting sustainable forest management and balancing ecological, economic and social functions of forests. Reports highlighted the need to maintain biological diversity, productivity, regeneration capacity and vitality of forests, to protect river basins and to strengthen the linkages between the adaptation and mitigation roles of forests. The major instruments in this sector remain research, public awareness, regulations, such as forest codes, environmental certification of forests and forest practices, and subsidies for the afforestation of abandoned cropland (up to EUR 1,000 per hectare under the EC Common Agricultural Policy).

55. Innovative measures were reported, among them the design of carbon accounting tools, such as a carbon stock-change accounting system in Canada and similar carbon accounting systems in Australia, Austria and New Zealand. Financial support to preserve existing forests and promote reforestation, and a payment discount scheme under the energy tax to accelerate afforestation were also among the measures.

56. Some IDR reports cautioned on the need to find a balance between using biomass as a renewable resource, and maintaining and enhancing forest sink capacity (noted by the IDR for Switzerland, for example). The IDR for Estonia cautioned on the negative impact of privatization of forests vis-à-vis maintaining and enhancing forest sinks.

E. Greenhouse gas projections

1. Summary information

57. According to the UNFCCC guidelines, "... Parties shall report a 'with measures' projection... and may report 'without measures' and 'with additional measures' projections...". Most national communications complied with this requirement. Table 6 and figure 4 present the "with measures" GHG projections reported by Parties in their national communications; in some cases these projections were revised during or after the IDRs (such cases are noted in table 6).

58. Table 6 does not contain GHG projections for the following six Annex I Parties: Lithuania (the projections available in the national communication could not be interpreted consistently with the projections of other Annex I Parties), Luxembourg, Romania, Ukraine (the national communications due by decision 11/CP.4 had not been submitted), Monaco (the national communication does not contain GHG projections), and Turkey (the first national communication is due by 24 November 2004).

Table 6. Summary of “with measures” GHG projections, 1990–2010

Party	Actual GHG emissions without LUCF (Tg CO ₂ equivalent)		Projected GHG emissions without LUCF (Tg CO ₂ equivalent)			Projected changes in GHG emissions without LUCF (%)		
	1990 ^a	2000	1990 ^a	2000	2010	1990– 2000	1990– 2010	2000– 2010
Australia	430.5	512.9	418.0	491.6	540.7	17.6	29.4	10.0
Austria	77.7	80.6	76.9	80.1	86.1	4.2	11.8	7.4
Belarus	126.6	68.6	133.2	71.3	77.9	-46.5	-41.5	9.2
Belgium	146.1	149.9	144.5	157.9	171.2	9.3	18.5	8.4
Bulgaria*	141.8	63.6	144.4	63.6	98.4	-56.0	-31.9	54.7
Canada**	608.7	725.0	607.6	726.3	809.0	19.5	33.1	11.4
Croatia**	31.6	26.1	30.8	26.1	34.9	-15.4	13.0	33.5
Czech Republic	192.0	147.7	192.0	141.8	128.3	-26.1	-33.2	-9.6
Denmark	68.7	67.8	69.2	68.2	80.4	-1.5	16.2	18.0
Estonia	43.5	19.7	43.5	19.7	18.9	-54.6	-56.6	-4.5
European Community*	4 231.4	4 090.9	4 191.7	4 066.7	4 183.0	-3.0	-0.2	2.9
Finland	76.8	75.0	77.2	77.9	89.9	0.9	16.4	15.4
France	564.2	557.6	535.0	535.2	577.3	0.0	7.9	7.9
Germany*	1 246.8	1 014.1	1 206.6	983.3	979.0	-18.5	-18.9	-0.4
Greece	107.1	133.8	102.4	129.7	145.2	26.6	41.8	12.0
Hungary*	113.1	78.0	101.6	77.2	98.4	-24.0	-3.2	27.5
Iceland	3.32	3.35	2.84	2.87	2.80	1.0	-1.5	-2.4
Ireland	53.4	68.3	53.2	68.3	70.4	28.2	32.3	3.2
Italy	509.1	544.0	520.6	546.9	540.1	5.1	3.7	-1.2
Japan	1 187.3	1 336.7	1 175.6	1 314.3	1 317.4	11.8	12.1	0.2
Latvia	28.9	10.2	29.2	10.7	12.8	-63.4	-56.1	20.0
Liechtenstein	0.2183	0.2185	0.218	0.217	0.219	-0.5	0.2	0.8
Netherlands*	211.4	213.4	210.0	222.0	225.0	5.7	7.1	1.4
New Zealand	61.6	70.4	72.5	77.8	88.1	7.4	21.6	13.2
Norway	52.1	55.4	52.0	56.9	63.2	9.3	21.5	11.2
Poland** ***	564.4	386.2	476.6	332.7	362.0	-30.2	-24.1	8.8
Portugal*	58.4	78.3	58.4	78.3	84.7	34.2	45.1	8.1
Russian Federation***	3 050.0	1 876.0	2 372.3	1 510.0	2 100.4	-36.3	-11.5	39.1
Slovakia	72.4	49.0	72.2	49.2	53.2	-31.9	-26.3	8.2
Slovenia	20.6	19.2	20.6	20.7	22.1	0.7	7.5	6.8
Spain***	284.6	385.2	208.9	285.3	307.4	36.5	47.1	7.8
Sweden	72.1	67.5	70.4	70.5	70.9	0.1	0.7	0.6
Switzerland	53.1	52.3	55.2	53.4	52.7	-3.2	-4.5	-1.3
United Kingdom	742.6	647.7	744.1	646.1	630.7	-13.2	-15.2	-2.4
United States	6 129.1	7 038.3	6 129.1	7 001.2	8 115.0	14.2	32.4	15.9
Annex I total ^b	17 120.0	16 623.6	16 207.0	15 997.1	18 054.5	-1.3	11.4	12.9
EITs total ^c	4 375.0	2 745.5	3 616.5	2 323.1	3 007.2	-35.8	-16.8	29.5
Non-EITs total ^d	12 745.0	13 878.1	12 590.5	13 674.1	15 047.3	8.6	19.5	10.0

^a The base year level, defined in accordance with decision 9/CP.2, is used here instead of the 1990 level for several Parties

with economies in transition: Bulgaria (1988); Hungary (1985–87); Poland (1988); Romania (1989); Slovenia (1986).

^b Covers 34 of 41 Annex I Parties (excluding the European Community, Lithuania, Luxembourg, Monaco, Romania, Turkey, Ukraine)

^c Covers 11 of 14 EIT Parties (excluding Lithuania, Romania, Ukraine)

^d Covers 23 of 27 non-EIT Parties (excluding the European Community, Luxembourg, Monaco, Turkey)

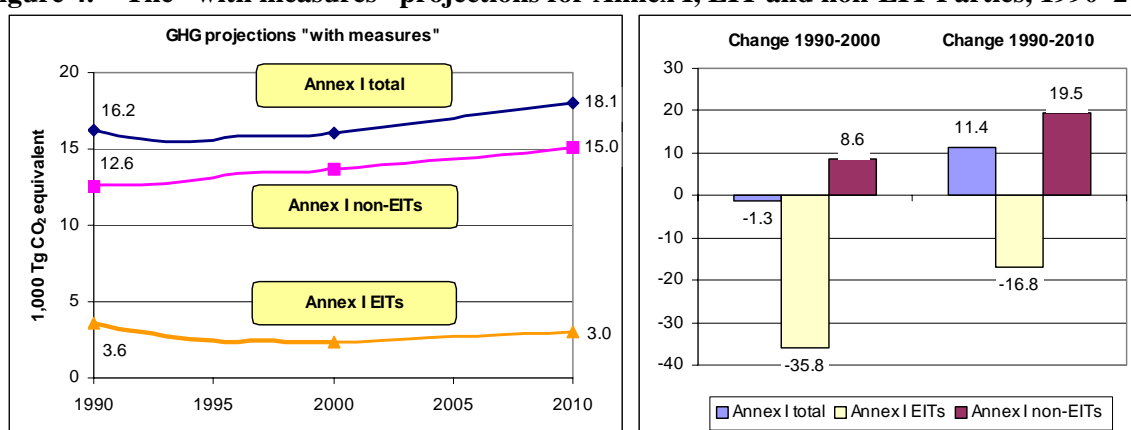
* GHG projections were revised during the IDR based on new information provided by the Party.

** GHG projections were revised by the Party after the IDR.

*** GHG projections are not consistent with the complete GHG inventory because they do not cover all sectors or all gases.

Note: The actual (GHG inventory) data for 1990 and 2000 sometimes differ from the 1990 and 2000 data used in projections mostly for the following reasons: (1) recent inventory recalculations and (2) incomplete coverage of gases or sectors in the projections. Therefore, the sums for actual GHG emissions are not fully consistent with the sums for projected GHG emissions.

59. Figure 4 presents the “with measures” projections for Annex I Parties taken together, and separately for EIT Parties and non-EIT Parties. Due to differences in assumptions and projections methodologies used by Parties, the individual GHG projections are not always comparable. Therefore, the sums of national emissions in table 6 and figure 4 are only rough estimates.

Figure 4. The “with measures” projections for Annex I, EIT and non-EIT Parties, 1990–2010

Note: The GHG totals, presented in this figure, cover 34 of 41 Annex I Parties (excluding the European Community, Lithuania, Luxembourg, Monaco, Romania, Turkey, Ukraine).

60. Table 7 and figure 5 provide similar information for the scenario “with additional measures” for those Parties which prepared that scenario.

Table 7. Summary of “with additional measures” projections, 1990–2010

Party	Actual GHG emissions without LUCF (Tg CO ₂ equivalent)		Projected GHG emissions without LUCF (Tg CO ₂ equivalent)			Projected changes in GHG emissions without LUCF (%)		
	1990 ^a	2000	1990 ^a	2000	2010	1990–2000	1990–2010	2000–2010
Austria	77.7	80.6	76.9	79.1	71.6	2.8	-6.9	-9.5
Belgium	146.1	149.9	144.5	157.9	153.6	9.3	6.3	-2.7
Canada**	608.7	725.0	607.6	726.3	744.0	19.5	22.5	2.4
Croatia**	31.6	26.1	30.8	26.1	31.4	-15.4	1.7	20.2
Czech Republic	192.0	147.7	192.0	141.8	121.9	-26.1	-36.5	-14.1
Estonia	43.5	19.7	43.5	19.7	17.4	-54.6	-59.9	-11.7
European Community*	4 231.4	4 090.9	4 191.7	4 066.7	3 901.3	-3.0	-6.9	-4.1
Finland	76.8	75.0	77.2	77.5	75.8	0.3	-1.9	-2.1
France	564.2	557.6	535.0	529.9	519.0	-1.0	-3.0	-2.1
Greece	107.1	133.8	102.4	129.7	132.9	26.6	29.8	2.5
Hungary*	113.1	78.0	101.6	77.2	95.8	-24.0	-5.7	24.1
Ireland	53.4	68.3	53.2	68.3	55.0	28.2	3.3	-19.4
Italy	509.1	544.0	520.6	546.9	496.3	5.1	-4.7	-9.3
Japan	1 187.3	1 336.7	1 175.6	1 305.6	1 221.4	11.1	3.9	-6.4
New Zealand	61.6	70.4	72.5	77.5	84.1	7.0	16.1	8.5
Norway	52.1	55.4	52.0	56.4	57.9	8.4	11.3	2.7
Portugal*	58.4	78.3	58.4	78.3	77.8	34.2	33.3	-0.7
Slovakia	72.4	49.0	72.2	49.2	48.1	-31.9	-33.3	-2.1
Slovenia	20.6	19.2	20.6	20.7	19.9	0.7	-3.4	-4.1
Spain***	284.6	385.2	208.9	272.9	265.4	30.6	27.0	-2.7
Switzerland	53.1	52.3	55.2	53.4	50.1	-3.2	-9.2	-6.2
United Kingdom	742.6	647.7	744.1	646.1	564.9	-13.2	-24.1	-12.6

^a The base year level, defined in accordance with decision 9/CP.2, is used here instead of the 1990 level for two Parties with economies in transition: Hungary (1985–87) and Slovenia (1986).

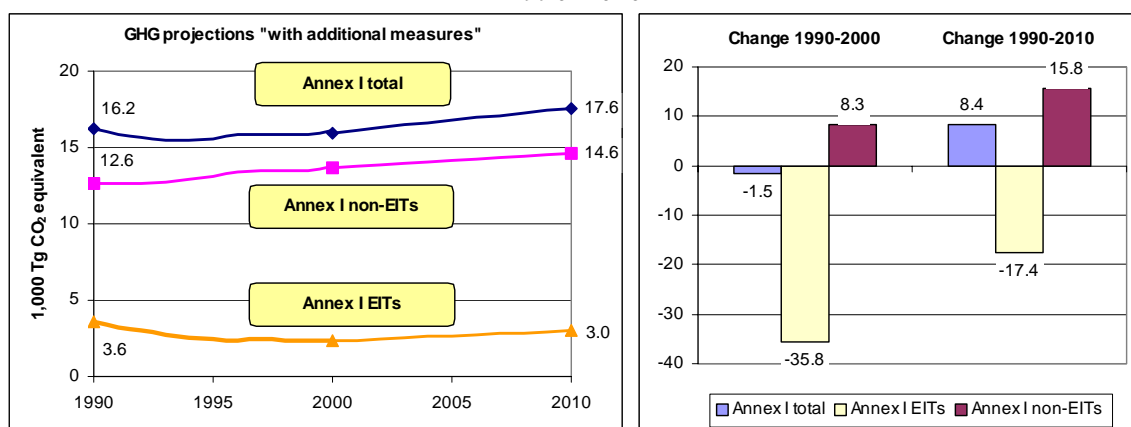
* GHG projections were revised during the IDR based on new information provided by the Party.

** GHG projections were revised by the Party after the IDR.

*** GHG projections are not consistent with the complete GHG inventory because they do not cover all sectors or all gases.

Note: The actual (GHG inventory) data for 1990 and 2000 sometimes differ from the 1990 and 2000 data used in projections mostly for the following reasons: (1) recent inventory recalculations; (2) incomplete coverage of gases or sectors in the projections.

Figure 5. The “with additional measures” projections for Annex I, EIT and non-EIT Parties, 1990–2010



Note 1: It is assumed that for those Parties that did not provide a scenario “with additional measures” such a scenario would be equivalent to the “with measures” scenario.

Note 2: The GHG totals, presented in this figure, cover 34 of 41 Annex I Parties (excluding the European Community, Lithuania, Luxembourg, Monaco, Romania, Turkey, Ukraine).

61. The UNFCCC secretariat presented GHG projections earlier in the compilation and synthesis (C&S) report of national communications of Annex I Parties¹⁵ in June 2003 and at a UNFCCC side event during the ninth session of the Conference of the Parties (COP 9) in Milan, Italy, in December 2003. Table 8 compares these earlier estimates with the numbers provided in this report.

Table 8. Comparison of the latest “with measures” projections with earlier estimates

	Projected changes in GHG emissions from 1990 to 2010 (%)		
	C&S report (FCCC/SBI/2003/7)	COP 9 (2003) presentation at UNFCCC side event	This report (FCCC/CP/2004/INF.2)
Annex I total	10.2	9.9	11.4
Annex I EITs	-14.2	-15.2	-16.8
Annex I non-EITs	16.9	17.0	19.5

62. Table 8 reveals differences between the consecutive sets of projections, but these differences are well substantiated. The COP 9 estimate differs from the C&S estimate mainly because the number of Parties covered is different: the C&S estimate was based on 30 national projections whereas the later COP 9 estimate contains 34 projections. The present estimate covers 35 Parties but the shown change from the COP 9 estimate is mainly due to the revisions of several national projections during IDRs (for Bulgaria, Germany, Hungary, the Netherlands, Poland, Portugal and the European Community) or shortly after them (for Canada¹⁶ and Croatia¹⁷).

63. The present estimate still does not cover all Annex I Parties: for various reasons, GHG projections for Lithuania, Luxembourg, Monaco, Romania, Turkey and the Ukraine were not available. The eventual addition of these Parties may further change the estimates given in this report.

¹⁵ See FCCC/SBI/2003/7.

¹⁶ The after-IDR revision for Canada is based on the paper “A Guide to the Assumptions and Methodology Underlying the AMG Results (draft)” presented by the Analysis and Modelling Group (AMG) at the National Stakeholder Workshops on Climate Change on 7–24 June 2002 (see <www.informetrica.com/AMGAssumptionsPRIMER.pdf>).

¹⁷ The after-IDR revision for Croatia is based on the paper “Republic of Croatia Projections of Greenhouse Gas Emissions. Report prepared at the order of the Ministry of Environmental Protection and Physical Planning by EKONERG – Energy Research and Environmental Protection Institute”, Zagreb (2003) (see <www.mzopu.hr/doc/CRO_GHG_Projections.pdf>).

2. Issues noted in the process of IDRs

64. The preparation of GHG projections is a complex exercise requiring much expertise and effort. Accordingly, IDR teams usually paid considerable attention to the projections chapter of the national communications. The teams examined to what extent the presented information corresponded to the requirements of the UNFCCC guidelines, the assumptions behind the projections, the methodologies used and the interpretation of results. Many reviews also examined, consistent with the guidelines, the changes in GHG projections from the NC2 to the NC3, which provided an opportunity for useful discussions on key drivers for changes in GHG emissions and on the uncertainty in GHG projections.

65. The problems that the review teams encountered during the IDRs can be divided into *reporting problems* and *methodological problems*. The typical *reporting problems* are inconsistent definition of projection scenarios (such as the absence of the mandatory “with measures” scenario, which was observed by the IDRs in, for example, Belarus and Poland); lack of transparency in the presentation of information on projections (such as the absence of a breakdown of the projected GHG total by sectors and/or by gases, which was observed, for example, by the IDR for Croatia); incomplete coverage of sectors or gases in the projections (observed, for example, by the IDRs in Hungary, the Russian Federation, Poland and Spain); inconsistency between the historical data used and the latest available GHG inventory data (noted, for example, for CH₄ and N₂O emissions by the IDR in New Zealand); and unavailability of information on modelling approaches and key assumptions (such as the absence of a description of the projection model used, which was noted by the IDRs for Germany and Switzerland).

66. *Methodological problems* often appeared in the modelling of the effects of existing, adopted and planned policies and measures on future GHG emissions (noted, for example, in Canada, Belgium, Finland and Spain); in the preparation of GHG projections for transport (noted, for example, in Bulgaria, Latvia and New Zealand); in the projection of GHG emissions and removals from land use and LUCF (for example, observed during the IDRs of Canada and Hungary); in assessment of the uncertainty in projected GHG emissions (uncertainty estimates for GHG projections were available in only a few Parties, for example in the Netherlands and the United Kingdom); and some other areas.

67. The Subsidiary Body for Scientific and Technological Advice (SBSTA), at its nineteenth session, discussed the preparation of GHG projections by Annex I Parties and requested the secretariat “to organize a workshop in the second half of 2004 on emissions projections of Parties included in Annex I to the Convention (Annex I Parties), as a contribution to the preparation of their fourth national communications. The workshop would cover methods, assumptions, indicators, key parameters of models and sensitivity analysis, and dissemination of methodologies”. This workshop was scheduled to take place in Bonn, Germany, on 6–8 September 2004. The results of the workshop are to be reported at the twenty-first session of the SBSTA in December 2004.

F. Vulnerability and adaptation to climate change

68. The UNFCCC guidelines require that a national communication include information on the expected impacts of climate change and an outline of the action taken to implement Article 4.1(b) and (e) of the Convention with regard to adaptation. The guidelines also encourage Parties to use the *IPCC Technical Guidelines for Assessing Climate Change Impacts and Adaptation*, issued by the Intergovernmental Panel on Climate Change (IPCC), and the *Handbook on Methods for Climate Change Impact Assessment and Adaptation Strategies*, issued by the United Nations Environment Programme (UNEP).

69. IDR reports confirmed that national communications of most Annex I Parties presented comprehensive accounts of their work on vulnerability and adaptation to climate change. The degree and scale of vulnerability were estimated using analyses of climate changes in the past, applications of global circulation models, assumptions or projections for future GHG concentrations (such as doubling of CO₂

concentration in the atmosphere during the 21st century), and vulnerability assessments at the national level for specific economic sectors or areas of vulnerability. Based on these, countries identified expected impacts of climate change, using both specialized models and expert judgment.

70. During IDRs, additional data were often provided on how actual impact assessments were conducted, the time horizons covered and the various outputs obtained from the models. In discussions, the review teams often noted that the uncertainties of the different scenarios that resulted from regional applications of global climatic models had not been considered (see, for example, the IDR reports for Bulgaria and Poland).

71. IDR reports showed that the assessments of vulnerability and adaptation to climate change covered most areas of vulnerability and economic sectors (such as agriculture, biodiversity, coastal zones, fisheries, forestry, health, the insurance industry, tourism, transport, water resources, and others). Usually, such studies tried to identify both positive and negative impacts of climate change; often, the associated degree of uncertainty was discussed as well. IDRs noted that Annex I Parties paid particular attention to those areas of vulnerability that were most relevant to them (such as mountain ecosystems and winter tourism for Austria and Switzerland, permafrost regions for Canada and the Russian Federation, the coastal zone for the Netherlands and Poland, sea level rise and extreme weather events for Japan and drought for Hungary). The tools for integrated impact assessment, where they were available, greatly assisted Parties in assessing sector-specific impacts of climate change (for example, in New Zealand and the United Kingdom). The IDR report for Germany noted that attention to the issue of vulnerability and adaptation increased, from both decision makers and the general public, after the extreme weather events (storms and floods) experienced by the country recently.

72. Due to resource constraints or lack of time, some Parties estimated climate change impacts only for a few sectors. Limited coverage of social and economic aspects of vulnerability and adaptation was also noted. In such cases (for example, in Bulgaria, Poland and Slovenia), the review teams encouraged Parties to broaden the scope of impact assessment to cover other relevant sectors.

73. Many IDRs noted that national studies of vulnerability and adaptation to climate change were conducted within dedicated research programmes. Examples are the Canada Country Studies, the National Climate Programme in the Czech Republic, the FIGARE programme in Finland, the project Impacts and Responses Concerning Global Climate Change in Hungary, the National Research Programme on Global Air Pollution and Climate Change in the Netherlands, the RegClim programme in Norway, the UK Climate Impacts Programme in the United Kingdom, the National Assessment of the Potential Consequences of Climate Variability and Change in the United States. Some of these studies were launched recently and the IDRs could not discuss their results yet, but the expected scope and depth of the studies appeared to be promising.

74. Although the national communications of most Annex I Parties do contain a list of potential adaptation measures, IDRs revealed that a strategic approach for adaptation had yet to be elaborated in several Parties. In some cases adaptation options for areas that were reported to be highly sensitive to climate change had not yet been investigated. According to the IDRs conducted, most Annex I Parties do not yet have a comprehensive national programme for adaptation to climate change. At the same time, certain adaptation measures are usually taken even if a national adaptation programme does not exist, often within existing frameworks for protection against natural disasters. This was noted by IDRs in Belgium, France, Japan, the Netherlands, Switzerland, the United States and some other countries.

75. Several IDRs (for example, the IDRs for Japan and the United Kingdom) noted that work on vulnerability and adaptation to climate change facilitated collaboration and partnerships among government bodies, local authorities, the research community and the public at large. During some IDRs (such as those for Canada and Slovenia), national, regional and local authorities often provided insights into their initiatives for developing measures against climate change impacts, such sea level rise, forest

fires and flooding. Further work often appeared to be still needed to better define the roles of key stakeholders, such as central government ministries, local authorities and other institutions, within the framework for adaptation planning and implementation.

G. Financial resources and technology transfer

76. The national communications of Parties included in Annex II to the Convention (Annex II Parties) contain much information on the provision of financial resources and technology transfer under the Convention. When examining this information in the course of IDRs, the expert review teams usually assessed conformity of the information presented by Parties with the UNFCCC guidelines and the availability of new information made available since the time the national communication had been prepared.

77. Most Annex II communications conformed to the relevant part of the guidelines. The few typical deviations were the absence or incompleteness of some tables, absence of a definition used for the “new and additional” funding, and insufficient level of detail in the description of the allocation of funding for mitigation and adaptation (and for the components of mitigation and adaptation defined in table 5 of the guidelines).

78. Practically all Annex II Parties provided information about their contributions to the GEF, but the review of this information was complicated by the fact that the reviews took place at different times. Therefore, some Parties were able to indicate the exact amount of their contributions to the third GEF replenishment whereas others were not, given that the relevant GEF negotiations had not been completed by the time the communication was prepared. Table 9, based on the latest annual report of the GEF, shows a complete overview of the commitments of Annex II Parties for the pilot phase, first, second and third GEF replenishments.

79. IDRs tried to address the problem of the insufficient level of detail in the description of the allocation of funding for mitigation and adaptation; in some cases, additional information obtained during the reviews helped to increase the level of detail. But many Parties still considered it very difficult to identify the exact destination of funding for mitigation and adaptation, as well as for components of mitigation and adaptation. The main reasons for this difficulty are the cross-cutting character of many projects (often covering both mitigation and adaptation, or several components within either mitigation or adaptation) and the present format of reporting on development assistance projects that often does not require Parties to indicate the relevance of funding to mitigation/adaptation and their components. The latter issue should be eventually resolved with the introduction of the “Rio markers” by the Development Assistance Committee (DAC) of the Organization for Economic Co-operation and Development (OECD).

80. When inquiring into the availability of new information since the time the communication had been prepared, the reviews often found that a sizable amount of such information appeared for two areas: development assistance programmes with a focus on climate change (either new programmes appeared or existing programmes had expanded) and the arrangements for the use of the international flexibility mechanisms under the Kyoto Protocol. Especially the latter area seemed to be changing relatively fast and some IDRs, such as those for Belarus, the Czech Republic, Denmark, Estonia, Germany, Latvia and Slovakia, were able to add information on the approaches to the use of the mechanisms to the information provided in the national communications.

Table 9. Pledges of Annex II Parties to contribute to the GEF as at 30 June 2003 (in million USD as agreed by the GEF)

Party	Pilot phase ^a	First replenishment (GEF-1)	Second replenishment (GEF-2)	Third replenishment (GEF-3)
Australia	23.34	29.20	32.20	34.99
Austria	35.58	20.00	20.17	22.44
Belgium	13.68	32.00	34.20	41.80
Canada	8.66	86.60	101.60	102.58
Denmark	22.22	35.10	28.70	35.44
Finland	27.95	21.60	22.10	26.55
France	150.53	143.30	144.80	163.35
Germany	150.45	240.00	220.00	293.67
Greece	–	5.00	5.50	5.71
Iceland	–	–	–	–
Ireland	–	2.40	5.50	5.71
Italy	89.09	114.70	90.50	105.22
Japan	63.50	414.60	412.60	422.72
Luxembourg	–	5.60	5.50	5.07
Netherlands	51.61	71.40	72.80	82.11
New Zealand	–	5.60	5.50	5.07
Norway	31.25	31.20	31.30	25.31
Portugal	6.15	5.60	5.50	5.07
Spain	13.68	19.57	16.51	19.17
Sweden	33.56	58.30	57.80	72.24
Switzerland	55.71	44.80	43.90	58.25
United Kingdom	74.84	134.60	138.90	190.07
United States	150.00	430.00	430.00	500.00
Annex II total:	1 001.80	1 951.17	1 925.58	2 222.54

Source: Global Environment Facility. 2004. Annual Report 2003. (See <www.gefweb.org/2003_Annual_Report.pdf>).

^a Including co-/parallel financing.

H. Research and systematic observation

81. The UNFCCC guidelines require that Annex I Parties communicate information on their domestic and international actions relating to research and systematic observation, and provide summary information on global climate observing system (GCOS) activities. The national communications should also reflect action taken to support related capacity-building in developing countries. Additionally, Parties should provide information about the general national policy on, and funding of, research and systematic observation; information on research highlights, innovations and significant efforts made in some specific research fields; as well as summary information on the current status of national plans, programmes and support for ground- and space-based climate observing systems.

82. IDRs confirmed that practically all communications presented information on research activities in accordance with the requirements of the guidelines, sometimes structured exactly as suggested by the guidelines (climate process and climate system studies; modelling and prediction; research on the impacts of climate change; socio-economic analysis; and research and development on mitigation and adaptation technologies). Some reviews, for example the IDRs for Finland and the United States, provided additional information on recent climate-related research, including studies on climate modelling and prediction, and studies on climate change impacts and adaptation.

83. Some IDRs, such as those for Belgium, France, Finland and the United Kingdom, noted recent developments in research on mitigation and adaptation technologies. However, as some national communications considered such research within the chapter on policies and measures, the corresponding IDRs also dealt with this issue in the policies and measures part of the IDR report (as was the case with the reports for Canada and the United States).

84. IDRs also examined the presented information on systematic observation, which was often structured along the lines suggested by the guidelines (atmospheric; ocean; and terrestrial climate observing systems; and support for developing countries). IDR reports noted the status of such issues as data management, data quality, data exchange in different areas of observation, and opportunities for a free and open exchange of data. The extent and level of detail in the reported information on systematic observation reflected the availability of national reports on GCOS in several Annex I Parties.

85. Some IDR reports, such as the ones for Finland, the United Kingdom and the United States, noted explicitly the action taken to support capacity-building in developing countries for related research areas. This complemented the relevant information provided in the national communications.

I. Education, training and public awareness

86. The UNFCCC guidelines require Parties to report information on their actions relating to education, training and public awareness relevant to climate change, including public information and education materials, resource or information centres, training programmes and participation in international activities. In examining such information in national communications, the review teams found that most Annex I countries put in place comprehensive, diverse and sometimes innovative measures to promote education, training and public awareness relating to climate change.

87. The target audience for education initiatives ranged from primary and secondary level school children, to consumers and the private and public sectors. Several Parties revised primary and secondary school curricula to incorporate issues relating to weather and climate. Others prepared long-term, climate-related goals for schools, colleges and other higher education establishments, and for government offices. Some IDR reports noted that training programmes for teachers had increased considerably between the NC2s and NC3s, but the continuity of such training and the evaluation of such programmes in the medium term were important to ensure that pupils were provided with appropriate, up-to-date information on climate change issues. Some IDRs also noted that it was not clear to what extent changes in curricula were matched by investment to ensure that training and other support were provided to teachers and students.

88. IDRs provided an opportunity for the review teams to witness how governments and regional authorities place emphasis on public awareness campaigns as a means of changing consumer behaviour to address the concerns of climate change. The review teams were often impressed by the creativity of information efforts (in the form of fact sheets, surveys, public meetings and training kits) undertaken to educate the public or as a means to facilitate consultations on climate policy documents. Dissemination of information through the Internet appeared to be gaining in importance. At the same time, some IDRs noted that some public awareness activities dealt primarily with energy saving while the link between energy saving and climate change was not addressed clearly.

89. Many IDR reports commended Parties on their capacity-building efforts at all levels and the collaborative efforts among a large number of national institutions involved in carrying out projects, surveys, and television and radio coverage of events to inform and sensitize the public on climate change. The review teams often stressed the need for governments to strengthen their efforts in working with key stakeholders from industry and other economic sectors, and from non-governmental organizations (NGOs) so that all stakeholders were informed, kept up-dated and consulted on national climate policy as needed.

III. Summary information from individual IDRs

90. This chapter presents summary information from individual IDRs by Party. For every Party, selected country data, some summary information drawn from the IDR, and IDR conclusions are

provided. The country data and summary information are presented in the form of graphs and tables illustrating national circumstances, GHG trends, GHG projections, policies and measures for GHG mitigation, climate change vulnerability and adaptation, and financial resources and technology transfer.

91. For the issues relating to climate research and observation, and for the issues of education, training and public awareness, the IDRs produced relatively little additional information compared to the information available in the national communications and in the latest compilation and synthesis report¹⁸ on Annex I communications. Therefore, these two sets of issues are addressed only in the previous chapter where general IDR findings were presented.

92. This chapter covers 29 Annex I Parties (of the 41 Annex I Parties) for which IDR reports had been published, or submitted for publication before 1 October 2004: Austria, Belarus, Belgium, Bulgaria, Canada, Croatia, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Italy, Japan, Latvia, the Netherlands, New Zealand, Norway, Poland, the Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, the United Kingdom and the United States. For the remaining 12 Annex I Parties, the status of national communications and IDRs is as follows (see also table 1):

- Australia, European Community, Lithuania, Portugal: IDR visits have been completed, the IDR report is in preparation.
- Greece, Ireland: IDR visits are planned for the second half of 2004.
- Liechtenstein, Monaco: no IDR visits are planned.
- Luxembourg, Romania, the Ukraine: national communications, due per decision 11/CP.4, have not been submitted.
- Turkey: the Convention entered into force for Turkey on 24 May 2004; according to Article 12.5 of the Convention, Turkey's national communication should be presented within 6 months of that date, i.e. by 24 November 2004.

93. IDR reports are the main source of information for this chapter, but national GHG inventories submitted to the secretariat in 2003 and some additional data sources were also used. In particular, economic and energy variables, used to characterize national circumstances of a Party, were mostly taken from energy statistics of the International Energy Agency (IEA).¹⁹ For policies and measures, the UNFCCC database containing information on policies and measures from national communications of Annex I Parties²⁰ was used in addition to the IDR reports; information on some recent policies and measures was also checked against the information available in the "Dealing with Climate Change" policies and measures database²¹ of the IEA. To verify and support the presentation of information on financial resources and technology transfer, statistics of the Development Assistance Committee of the OECD,²² and annual reports and some other documents of the GEF²³ were used.

94. For brevity, tables and graphs in this chapter use a number of abbreviations, such as AIJ (activities implemented jointly), GDP (gross domestic product), ODA (official development assistance), PPP (purchasing power parities), TPES (total primary energy supply) and others. A full list of abbreviations is provided in chapter IV. Unless indicated otherwise, GHG emissions are the sum of CO₂, CH₄, N₂O, HFCs, PFCs and sulphur hexafluoride (SF₆) without accounting for CO₂ emissions and removals by LUCF. The graphs with a sectoral breakdown of GHG emissions are based on detailed

¹⁸ FCCC/SBI/2003/7 and Add. 1–4.

¹⁹ See <<http://data.iea.org/ieastore/default.asp>>.

²⁰ See FCCC/WEB/2003/1.

²¹ See <<http://www.iea.org/envissu/pamsdb/index.html>>.

²² See <<http://www.oecd.org>>.

²³ See <<http://www.gefweb.org>>.

inventory data from the 2003 inventory submissions.²⁴ In these graphs, the relevant categories of the CRF were used as follows:

- ‘Energy industries’ corresponds to the CRF category ‘1.A.1. Energy Industries’;
- ‘Energy use in industries’ corresponds to the CRF category ‘1.A.2. Manufacturing Industries and Construction’;
- ‘Energy use in other sectors’ corresponds to the sum of CRF categories ‘1.A.4. Other Sectors’ and ‘1.A.5. Other’;
- ‘Transport’ corresponds to the CRF category ‘1.A.3. Transport’;
- ‘Fugitive emissions’ corresponds to the CRF category ‘1.B. Fugitive Emissions from Fuels’;
- ‘Industrial processes’ corresponds to the CRF category ‘2. Industrial Processes’;
- ‘Agriculture’ corresponds to the CRF category ‘4. Agriculture’;
- ‘LUCF’ corresponds to the CRF category ‘5. Land-Use Change and Forestry’;
- ‘Waste’ corresponds to the CRF category ‘6. Waste’.

95. Consistent with the approach used in chapter II, GHG projections for individual Parties do not include GHG emissions and removals by LUCF. The estimates for the Kyoto Protocol emission reductions target, provided on the figures with national GHG projections for those Parties that ratified or intend to ratify the Kyoto Protocol, were calculated also without taking into account GHG emissions and removals by LUCF.

²⁴ GHG data from the 2003 inventory submissions are used in this chapter instead of the more recent 2004 data because the 2003 data are, for most Parties, more consistent with the GHG projections presented in the IDR reports, and also because some economy and energy data for 2002 were not available at the time of the preparation of this report. The latest, 2004 GHG emissions data can be found in chapter II.

A. Austria

1. Selected country data and summary information drawn from the IDR

Table 10. Macroeconomic and GHG data for Austria

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	7.73	8.11	8.13	5.2	0.5	0.2
GDP (billions USD 1995 PPP)	156	198	199	27.6	2.2	0.5
TPES (Mtoe)	25.0	28.8	30.7	22.8	1.9	6.6
GDP per capita (thousands USD 1995 PPP)	20.2	24.4	24.5	21.3	1.8	0.4
TPES per capita (kgoe)	3.2	3.5	3.8	18.8	1.4	8.6
CO ₂ emissions without LUCF (Tg)	60.1	64.9	69.1	15.0	1.3	6.5
GHG emissions without LUCF (Tg CO ₂ eq)	78.1	82.0	85.9	10.0	0.9	4.8
GHG emissions/removals by LUCF (Tg)	-9.21	-7.63	-7.63	-17.2	-1.7	0.0
CO ₂ / capita (Mg)	7.8	8.0	8.5	9.0	0.8	6.3
CO ₂ / GDP (kg per USD 1995 PPP)	0.39	0.33	0.35	-10.3	-0.9	6.1
GHG / capita (Mg CO ₂ eq)	10.1	10.1	10.6	5.0	0.4	5.0
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	0.50	0.41	0.43	-14.0	-1.3	4.9

Figure 6. Trends in GHG emissions for Austria

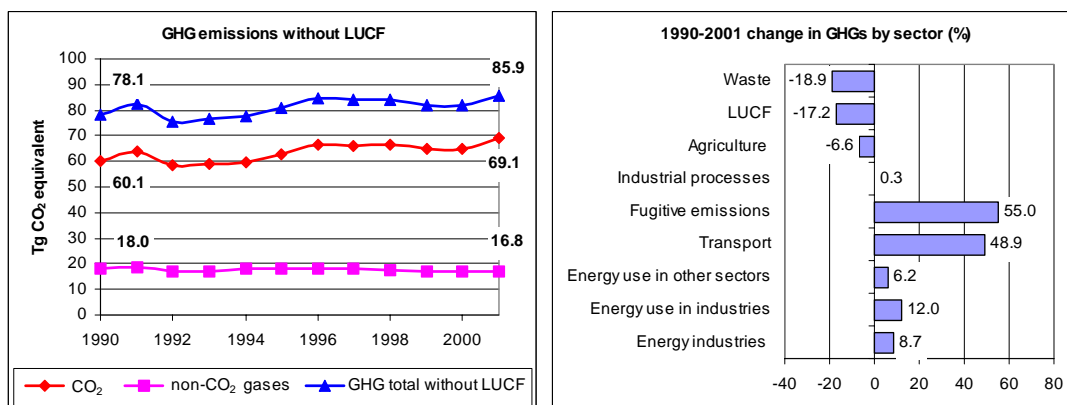
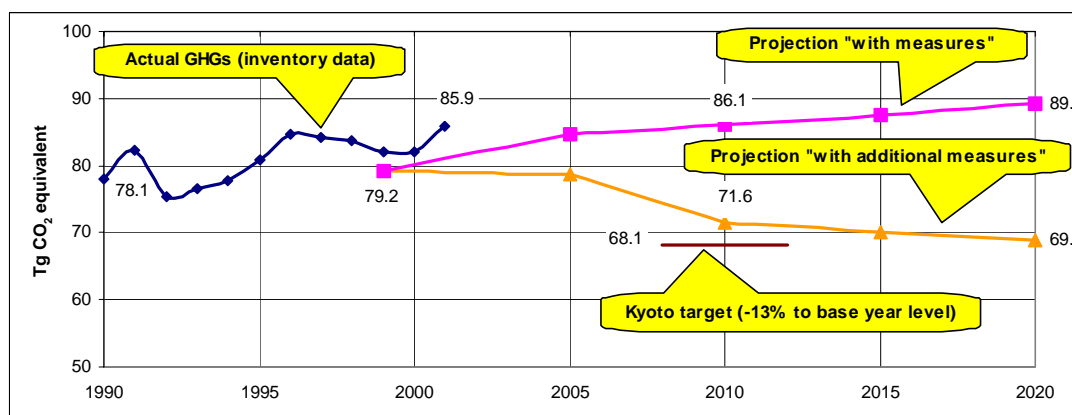


Figure 7. GHG projections for Austria



Note: The difference between inventory data and projections for 1999 is due to inventory recalculations in 2002–2003.

Table 11. Summary information on climate-related policies and measures for Austria

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	Austrian Climate Strategy (2002)
Energy/electricity/emissions taxation	Tax on electricity consumption; taxes on fuels for heat production; ecological tax reform under discussion
Emissions trading	EU scheme planned for 2005
Energy sector	
Energy sector liberalization	Electricity Act (1999); Electricity Industry and Organisation Act (2000), Gas Act (2000)
Combined heat and power generation	Energy tax rebates for efficient CHPs; feed-in tariffs
Renewable energy sources	Green Electricity Act (2002); Federal Environment Fund; targets for renewables; feed-in tariffs; housing support schemes; support for renewables in buildings; replacement of old heating systems
Energy efficiency improvements	Agreements on energy saving; Energy Efficiency Programme; improvement of building regulations; support of building renovation; third party financing
Transport	
Vehicle and fuel taxes	Road toll (vignette); car registration tax; mileage-based toll for lorries
Negotiated/voluntary agreements	EC agreements: European Automobile Manufacturers Association (ACEA) (1999), KAMA (2000), JAMA (2000)
Integrated transport planning	General Transport Plan (2002); promotion of combined transport
Other	Improvement of transport logistics; investments in rail and urban transport; Mobility and Transport Technology Programme – MOVE
Industry	
Pollution prevention and control	IPPC Directive of the EC; partial phase-out of HFCs and SF ₆
Agreements/partnerships	Agreements between the Government and energy industries under discussion
Agriculture	
	Common Agricultural Policy of the EC; Programme for Environmentally Compatible Agriculture
Waste management	
	Landfill Directive of the EC; Waste Management Act (1990); Landfill Regulation (1996)
Forestry	
	Targets are used to maintain biodiversity, productivity, regeneration capacity and vitality of forests

Table 12. Summary information on climate change vulnerability and adaptation for Austria

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	Change in the balance of agricultural ecosystems is expected
Forests	Adaptation: Protection of forests in the mountains
Human health	Expansion of vector-borne diseases is possible; impact of higher temperature and hyper thermal stress may be important for very young and very old population groups
Infrastructure and economy	The sectors vulnerable are mountain agriculture, hydropower generation, timber production, tourism, insurance. Winter tourism is sensitive to the amount of snowfall and the duration of skiing season Adaptation: Protection against natural disasters
Mountain ecosystems	Warming can lead to upslope shift of vegetation belts
Water resources	Change in the seasonal run-off patterns may affect the availability of water for hydro generation; power production by “run-of-river” plants is particularly vulnerable

Table 13. Summary information on financial resources and technology transfer for Austria

ODA	520 USD million in 2002 (0.26% of gross national income)
Climate-related aid in bilateral ODA	0.4% (OECD/DAC estimate for 1998–2000)
Contributions to GEF (USD million)	Pilot phase: 35.6; GEF-1: 20.0; GEF-2: 20.2
Pledge for 3 rd GEF replenishment	About EUR 24.4 million (0.94% of GEF-3 total)
Jl and CDM under Kyoto Protocol	Jl/clean development mechanism (CDM) programme (part of Environmental Promotion Act since 2003)
Other (bilateral/multilateral)	OECD's Climate Technology Initiative; workshop on financing sustainable transport infrastructure and technology (Vienna, 2001); bilateral climate-related projects for developing countries in small and micro hydropower generation, education and training in the energy sector, solar energy and energy efficiency in rural areas, protection of rainforests

2. Conclusions from the IDR of Austria's third national communication²⁵

96. When reviewing the information reported in the third Austrian national communication, the review team did not identify any major gaps and concluded that the document broadly met the provisions of the UNFCCC guidelines. The review team was of the opinion that the NC3, in combination with the national climate strategy and the GHG inventory submissions, provided a comprehensive overview of Austrian activities relating to climate change. The review team formed the impression that Austria is working towards the design and implementation of an integrated climate change strategy. This strategy is based on broad participation by the general public, since major mitigation efforts are to be obtained in two end-user sectors, transport and space heating, and is characterized by a high level of public awareness on the implications of climate change. The strategy is also based on the active support of other ministries (e.g. the Ministry of Transport and the Ministry for Economic Affairs and Labour). An active integration of climate policy into their policy fields seems to be necessary. Finding sufficient funds to support this strategy, strengthening the institutional framework and launching an effective monitoring system will be crucial for its successful implementation.

97. The assessment of past GHG emissions trends allowed the review team to conclude that Austria contributed to achieving the aim of the Convention, as its total GHG emissions in 2000 exceeded the 1990 level by only 3.1 per cent without considering CO₂ from LUCF, and by 5.8 per cent if CO₂ from LUCF is considered. Possible reasons for emissions being higher in 2000 than in 1990 include the steep increase in transport activity, population growth of 5 per cent between 1990 and 1999 and the strong growth of industrial output in the second half of the 1990s. The review team noted that the policies and measures (PaMs) implemented in the last decade in transport and energy use in industry were not sufficient to contain the growth of emissions in these two subsectors. On the other hand, the implementation of the EC Landfill Regulation and of some elements of the EC Common Agricultural Policy was considered to be successful, given their impact on reducing CH₄ emissions from waste and agriculture, partly offsetting the growth of CO₂ and N₂O emissions.

98. In contrast to the situation described in the NC2, Austria is now expecting a significant increase of its GHG emissions (by 12 per cent in its 1990 GHG emissions) by 2010 under trend conditions (the "with measures" scenario). This redirection of projected emissions levels is largely attributed to revised assumptions of both lower energy prices and higher gross domestic product (GDP) growth rates in the NC3 projections than in the NC2. Nevertheless, according to the model-based projections for the "with additional measures" scenario, it is still possible to achieve a considerable reverse of the emissions growth trend if all planned policies and measures are implemented. The projections for the full implementation of the Austrian Climate Strategy "With Additional Measures Strategy", which are based on expert judgments, show a similar reduction trend of 7 per cent of the 1990 GHG emissions by 2010.

²⁵ See FCCC/IDR.3/AUT (2003).

Both sets of projections show a remaining mitigation gap of 3–3.5 Tg CO₂ equivalent in 2010 towards the national Kyoto target of a 13 per cent reduction, based on 1990 emissions levels.

99. The review team identified three major risks that may affect the planned contribution of domestic action in fulfilling Austria's national Kyoto target. These are: higher-than-expected baseline emissions, lower-than-expected total effects of domestic PaMs, and incomplete implementation of domestic PaMs. Factors that increase the probability of the first risk include low assumptions of GDP growth and transport emissions growth in the "with measures" scenario. The second risk is fuelled by the high level of uncertainty which is linked to expert judgements as the method chosen for the assessment of the total effect of PaMs. Factors that may increase the risk of incomplete implementation of domestic PaMs include the uncertainty of sufficient funding, the high number of actors involved and the highly fragmented responsibility for the implementation of the policy.

100. In this context, strengthening of the implementation of PaMs in the transport sector seems indispensable. Moreover, as the projections might not account for a possible additional demand for transport services induced by the planned extensions of road and railway infrastructure, the review team deemed it necessary to suggest assessing the total effect of the National Transport Plan on the transport related GHG emissions. Successful implementation of several key PaMs in other sectors (e.g. support schemes for energy efficiency in building construction; preferential market access for electricity from renewable energy sources; biomass for heating) is also important if future emission trends are to be successfully reversed. Cross-cutting PaMs, such as an ecological tax reform and an EU emissions trading scheme, are still unknown factors in the projection of future Austrian GHG emissions.

101. The review team was informed that a monitoring system for GHG mitigation measures is to be implemented shortly. Also, a new high-level Kyoto Coordination Committee is to be established. The review team noted that such a committee might give a positive further impetus to the implementation of mitigation policies and measures, especially in the transport and energy sectors. The review team commended Austria for its impressive research on the vulnerability of the Alps, and suggests further strengthening of the work on adaptation measures.

B. Belarus

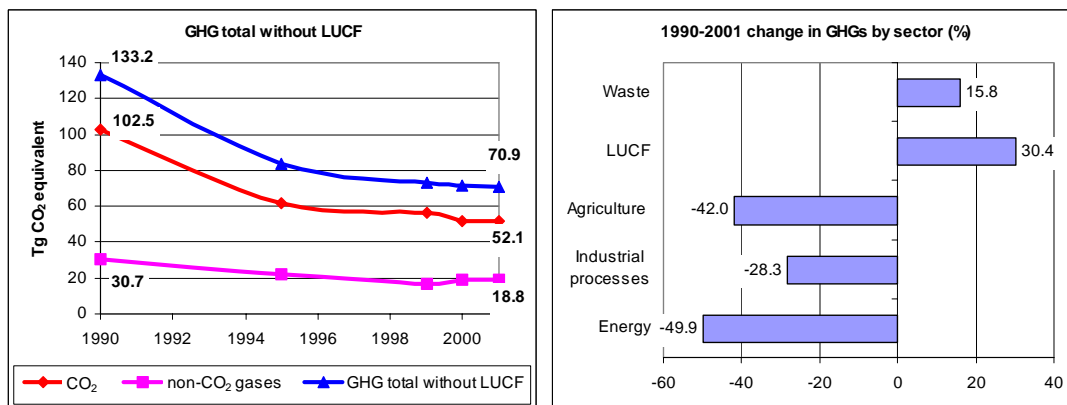
1. Selected country data and summary information drawn from the IDR

Table 14. Macroeconomic and GHG data for Belarus

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	10.2	10.0	10.0	-2.0	-0.2	0.0
GDP (billions USD 1995 PPP)	75.9	67.3	70.1	-7.6	-0.7	4.2
TPES (Mtoe)	no data	24.3	24.4	no data	no data	0.4
GDP per capita (thousands USD 1995 PPP)	7.4	6.7	7.0	-5.4	-0.5	4.5
TPES per capita (kgoe)	no data	2.4	2.4	no data	no data	0.0
CO ₂ emissions without LUCF (Tg)	102.5	52.0	52.1	-49.2	-6.0	0.2
GHG emissions without LUCF (Tg CO ₂ eq)	133.2	71.3	70.9	-46.8	-5.6	-0.6
GHG emissions/removals by LUCF (Tg)	-12.6	-18.5	-16.4	30.2	2.4	-11.4
CO ₂ / capita (Mg)	10.1	5.2	5.2	-48.5	-5.8	0.0
CO ₂ / GDP (kg per USD 1995 PPP)	1.35	0.77	0.74	-45.2	-5.3	-3.9
GHG / capita (Mg CO ₂ eq)	13.1	7.1	7.1	-45.8	-5.4	0.0
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	1.75	1.06	1.01	-42.3	-4.9	-4.7

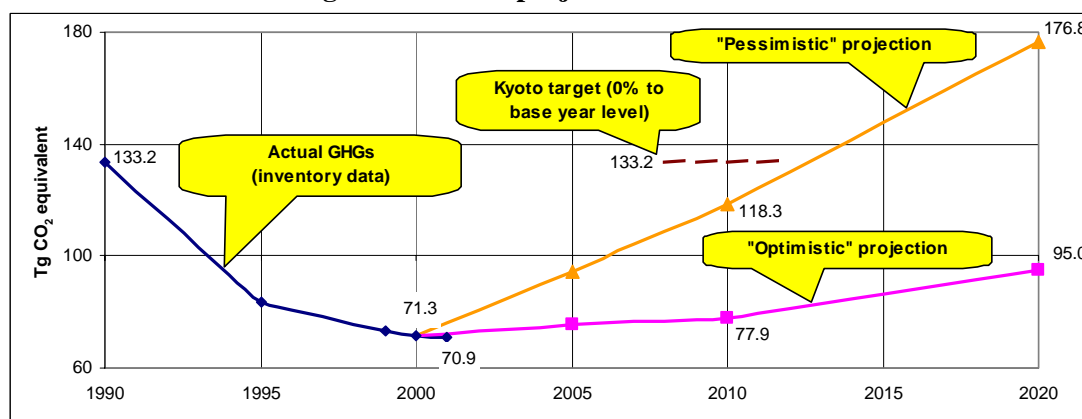
Note: GHG emissions are the sum of CO₂, CH₄, and N₂O; HFCs, PFCs and SF₆ emissions are either negligible or non-existent.

Figure 8. Trends in GHG emissions for Belarus



Note: GHG emissions are the sum of CO₂, CH₄, and N₂O; detailed data are available only for 1990, 1995, 1999–2001.

Figure 9. GHG projections for Belarus



Note 1: The projected GHGs are the sum of CO₂, CH₄ and N₂O.

Note 2: The “optimistic” and “pessimistic” scenarios are not fully consistent with the UNFCCC guidelines; neither is consistent with the “with measures” scenario as set down in the guidelines.

Note 3: The shown Kyoto Protocol target reflects the proposal made by Belarus; it has not yet been discussed by UNFCCC bodies.

Table 15. Summary information on climate-related policies and measures for Belarus

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	Draft National Climate Programme (1999)
Other	National strategy of sustainable socio-economic development of the Republic of Belarus for the period up to 2020 (under consideration); Law on Environmental Protection (2002); National action plan on rational use of natural resources and environmental protection for 2001–2005 (2001); Law on Atmospheric Air Protection (1997); National strategy of sustainable development of the Republic of Belarus (1997)
Energy sector	
Energy efficiency improvements	Decree 1820 “Additional measures for economic and efficient use of fuel and energy resources” (2002); National programme of energy conservation for 2001–2005 (2001); Programme on rational use of natural resources and environmental protection for 2003–2005 of the ‘Belenergo’ Concern; Law on Energy Conservation (1998); National programme of energy conservation for 1996–2000
Other	Main directions of energy policy for 2001–2005 and for the period until 2015 (2000)
Transport	Concept of the development of the transportation complex of the Republic of Belarus; State programme of the development of the transportation complex of the Republic of Belarus; Concept of social and economic development of the transportation complex of the Republic of Belarus until 2015; Concept of reducing the negative impact of transport on the environment
Industry	Programme of development of the industrial sector of the Republic of Belarus for 1998–2015; Programme of environmental protection for 2002–2005 of the Ministry of Industry; Programme of environmental protection of the ‘Belneftehim’ concern
Agriculture	Programme for increased efficiency of agribusiness for 2000–2005
Waste management	National programme of municipal waste management (ongoing), Law on Waste (2000); Decree 176 “On the norms of payment for the deposition of industrial and municipal waste” (1995); Instruction for granting licenses for the deposition of waste into the environment (1995)
Forestry	Strategic plan of development of forestry in Belarus (1997); measures to reduce CO ₂ emissions from artificially dried peatbogs (environmental rehabilitation, transition to environmentally and economically efficient utilization of degraded peat soils, prevention of fires)

Table 16. Summary information on climate change vulnerability and adaptation for Belarus

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	A positive impact of higher CO ₂ concentrations and temperatures but a negative impact of decreased precipitation (in some regions) and increased frequency of light frosts (in autumn and spring), thaws, droughts and floods Adaptation: changes in the selection of agricultural crops, increase in the use of fertilizers
Coastal, marine and river ecosystems	The frequency and severity of floods may increase Adaptation: enhanced protection of areas vulnerable to floods
Forests	An increased CO ₂ concentration may have a positive impact, notwithstanding the higher probability of droughts, decreased water availability, higher probability of fires and the expansion of pests
Human health	Possible adverse impacts of increased temperature (in particular in summer), increased variability of atmospheric pressure, increased air humidity, and an increase in vector-carried diseases
Infrastructure and economy	Climate change can have an impact on agriculture and on fuel use for heating
Water resources	Water levels and water availability generally are likely to decrease whereas the frequency and severity of floods may increase Adaptation: promotion of efficient use of water and enhanced protection of areas vulnerable to floods

Table 17. Summary information on financial resources and technology transfer for Belarus

ET and JI under Kyoto Protocol	Opportunities and procedures for using ET and JI are under consideration within the discussion about the ratification of the Kyoto Protocol; the absence of an established reduction target for Belarus complicates the discussions. A pilot JI project with Germany is under consideration
Other (bilateral/multilateral)	World Bank loan and a grant from Japan for the project "Modernization of infrastructure in the social sector of the Republic of Belarus", a United Nations Development Programme (UNDP)-GEF project "Use of biomass in the heat supply system of the Republic of Belarus", UNDP-GEF project "Removal of obstacles to improvements in energy use efficiency in the public sector of the Republic of Belarus"

2. Conclusions from the IDR of Belarus's first national communication²⁶

102. The review team concluded that the NC1 of Belarus was a comprehensive, well-prepared document that marked a considerable achievement in reporting under the UNFCCC. The NC1 reflects a high level of relevant expertise in Belarus, and a notable organizational and technical effort. The NC1 complied with most of the UNFCCC reporting guidelines.

103. From 1990 to 2001, GHG emissions in Belarus (without LUCF) decreased by about 47 per cent (from 133.2 to 70.9 Tg CO₂ equivalent), mostly as a result of GHG reductions in the energy sector. The largest decrease, by almost 40 per cent, was from 1990 to 1995, which reflects economic decline during these years. Since 1995, GDP has been growing but the emissions have continued to decrease, which may indicate their decoupling from economic growth. Considerable GHG decreases in Belarus contributed to the attainment of the UNFCCC objective of GHG stabilization at the 1990 level by the year 2000.

104. In general, four factors contributed to the reduction in GHG emissions: economic decline from 1990 to 1995, change in GDP structure from 1995 to 2001, increased use of natural gas from 1990 to 2001, and improvements in energy use efficiency from 1990 to 2001. Quantification of the individual contributions of these factors to emission reductions and completion of the GHG inventory (including GHG data for energy sub-sectors) are among the areas where further studies could be useful.

105. The NC1 described a great number of policies and measures in all sectors of the economy. These policies and measures, in particular comprehensive programmes for energy saving, helped to decrease GDP energy intensity in Belarus from 1.67 kg CO₂ equivalent per USD in 1990 to 1.01 kg CO₂ equivalent per USD in 2001. However, the review team noted that the NC1 did not contain quantitative estimates for GHG reductions from individual policies and measures, for either past or future measures.

106. The development of a national climate programme and a clear definition of responsibility for the coordination of climate-related measures could help increase the coherence of climate-related policies implemented by individual ministries and committees within their areas of responsibility.

107. The NC1 contains two projection scenarios: the "pessimistic" scenario assumes a constant GDP energy intensity, whereas the "optimistic" scenario assumes a decreasing GDP energy intensity. The NC1 does not include the "with measures" scenario that is mandatory under the UNFCCC guidelines.

108. Under the "pessimistic" scenario, GHG emissions in Belarus (without LUCF) in 2010 would be about 11 per cent below the 1990 level (118.3 Tg CO₂ equivalent); under the "optimistic" scenario, the decrease is about 41 per cent (77.9 Tg CO₂ equivalent). Future GHG reductions are to be achieved predominantly in the energy sector; the review team noted that GHG projections for this sector could be enhanced by the use of energy models.

²⁶ See FCCC/IDR.1/BLR (2004).

109. According to comprehensive studies by national experts, there is credible evidence that the climate in Belarus is becoming warmer, and the character of change indicates anthropogenic influence. Agriculture, forestry and water resources are most vulnerable to climate change in Belarus.

110. Belarus did not participate in the third session of the Conference of the Parties in Kyoto, Japan, in 1997. As a consequence, Belarus does not have an established emissions reduction target under the Kyoto Protocol, although under the UNFCCC Belarus is an Annex I Party. During the nineteenth session of the SBI in Milan, Italy, in December 2003, Belarus brought this issue to the attention of the Parties. Nevertheless, Belarus is considering ratification of the Kyoto Protocol and opportunities for using ET and joint implementation (JI) under the Kyoto Protocol.

C. Belgium

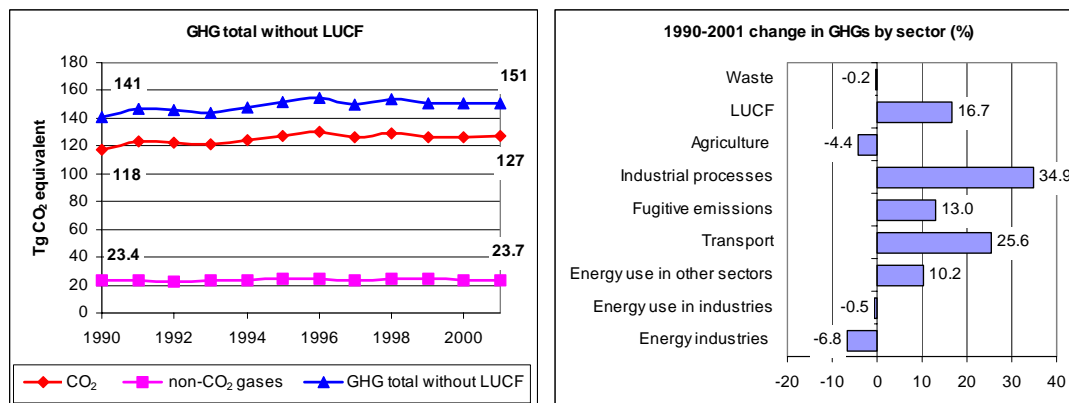
1. Selected country data and summary information drawn from the IDR

Table 18. Macroeconomic and GHG data for Belgium

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	10.0	10.2	10.3	3.0	0.3	1.0
GDP (billions USD 1995 PPP)	205	254	256	24.9	2.0	0.8
TPES (Mtoe)	48.7	59.3	59.0	21.1	1.8	-0.5
GDP per capita (thousands USD 1995 PPP)	20.6	24.8	24.9	20.9	1.7	0.4
TPES per capita (kgoe)	4.9	5.8	5.7	16.3	1.5	-1.7
CO ₂ emissions without LUCF (Tg)	118	126	127	7.6	0.7	0.8
GHG emissions without LUCF (Tg CO ₂ eq)	141	150	151	7.1	0.6	0.7
GHG emissions/removals by LUCF (Tg)	-1.26	-1.47	-1.47	16.7	1.4	0.0
CO ₂ / capita (Mg)	11.8	12.3	12.3	4.2	0.4	0.0
CO ₂ / GDP (kg per USD 1995 PPP)	0.57	0.50	0.50	-12.3	-1.3	0.0
GHG / capita (Mg CO ₂ eq)	14.2	14.7	14.6	2.8	0.3	-0.7
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	0.69	0.59	0.59	-14.5	-1.4	0.0

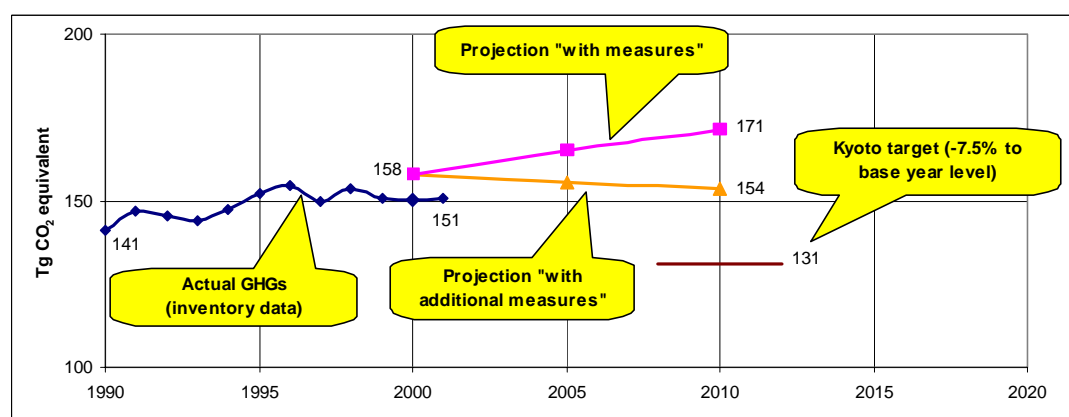
Note: GHG emissions are the sum of CO₂, CH₄, N₂O, HFCs and SF₆; PFC emissions are estimated as negligible in Belgium.

Figure 10. Trends in GHG emissions for Belgium



Note: GHG emissions are the sum of CO₂, CH₄, N₂O, HFCs and SF₆.

Figure 11. GHG projections for Belgium



Note 1: The projected GHGs are the sum of CO₂, CH₄, N₂O, HFCs and SF₆.

Note 2: The projections are “medium-term” projections to 2010 from the NC3; the NC3 also contains “long-term” projections to 2020, but they cover energy-related emissions only.

Note 3: The difference between the inventory and the projections in 2000 is due to recent inventory recalculations.

Table 19. Summary information on climate-related policies and measures for Belgium

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	National Climate Plan (2002); Climate Policy Plan (Flanders, 2003); Plan for Climate Change (Wallonia, 2001); draft Air Plan (Brussels, 2001); National Programme for Reducing CO ₂ emissions (1994)
Emissions trading	EU scheme planned for 2005
Other	Creation and operation of the Kyoto Fund (2003); Federal Plan for Sustainable Development 2000–2004 (2000); support to energy-related R&D and emission reduction studies
Energy sector	
Energy sector liberalization	Federal law on electricity market (1999)
Combined heat and power generation	Right of access to the grid for CHPs (federal, Franders, Wallonia in 2000); fiscal incentives for investments in CHPs
Renewable energy sources	Right of access to the grid for electricity generators using renewables and the systems of “green” certificates (federal, Franders, Wallonia in 2000–2001); fiscal incentives for investments in renewables; rules for wind farm installations (2000)
Energy efficiency improvements	Fiscal incentives for investments in energy efficiency; federal and regional funding for energy efficiency improvements, energy efficiency standards and labelling , and energy auditing
Transport	
Vehicle and fuel taxes	Differentiated taxation to give advantage to most efficient cars (2002); fiscal deductions for the costs of commuting with public transport
Negotiated/voluntary agreements	EC agreements: ACEA (1999), KAMA (2000), JAMA (2000)
Integrated transport planning	The Flemish Mobility Plan (2003); Climate Policy Plan (Flanders, 2003); Plan for Climate Change (Wallonia, 2001); IRIS-2 plan (Brussels, in preparation)
Other	Plan to invest EUR 17 billion in railroads (2001); development of the regional railway network around Brussels; support of public transport and the use of bicycles
Industry	
Pollution prevention and control	IPPC Directive of the EC; regulations on the use of fluorinated gases (Flanders)
Agreements/partnerships	Voluntary agreements with large energy consumers (existing and planned)
Agriculture	
	Common Agricultural Policy of the EC; Rural Development Programme (Flanders); Rural Development Plan (Wallonia); regional measures to support agri-environmental practices and organic farming
Waste management	
	Landfill Directive of the EC; regional regulations and procedures for waste management; waste charges; ban on landfilling organic waste (2000 in Flanders, planned for 2005 in Wallonia); introduction and development of landfill gas recovery
Forestry	
	Federal and regional measures for the preservation and development of forests

Table 20. Summary information on climate change vulnerability and adaptation for Belgium

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	Positive effect of higher CO ₂ concentrations and temperatures; adverse effects of deteriorating soil quality, increased migration and distribution of pests
Biodiversity and natural ecosystems	Climate-inflicted changes in the composition of species may have an impact on biodiversity
Coastal, marine and river ecosystems	Sea level rise, increase in the frequency of storms Adaptation: coastal defense against sea level rise and flooding
Human health	Heat waves in summer; increased impact of air pollution
Infrastructure and economy	Several economic sectors (energy, industry, tourism, transport, insurance) may be affected but the existence of sizable effects and the need for special adaptation measures are uncertain
Water resources	Decrease in the replenishment of water reservoirs, deterioration of water quality Adaptation: water management, efficient use of water

Table 21. Summary information on financial resources and technology transfer for Belgium

ODA	USD 1.07 billion in 2002 (0.43% of gross national income)
Climate-related aid in bilateral ODA	0.8% (OECD/DAC estimate for 1998–2000)
Contributions to GEF (USD million)	Pilot phase: 14.1; GEF-1: 32.0; GEF-2: 34.2
Pledge for 3 rd GEF replenishment	About EUR 42 million (1.74% of GEF-3 total)
AIJ	One AIJ project with Croatia (CO ₂ recovery in a brewery in Zagreb)
JI and CDM under Kyoto Protocol	Interest to JI and CDM has been indicated at the federal and regional levels; study of a possible CDM project in Senegal (by the Walloon region)
Other (bilateral/multilateral)	Support to the Special programme for Africa through the International Fund for Agricultural Development; federal and regional projects in developing countries

2. Conclusions from the IDR of Belgium's third national communication²⁷

111. The Belgian NC3 is, in general, in compliance with the UNFCCC reporting guidelines. The NC3 is better prepared than the NC2. The most notable improvements are: an extended and more consistent GHG inventory; a new set of GHG mitigation measures reflecting the recent advances in the Belgian climate policy; a thorough revision of the projections; new assessments for vulnerability and adaptation; and a well-prepared summary on the promotion of public awareness of climate change.

112. The review team identified some areas for further improvement: identification of key drivers for emissions growth; evaluation of GHG reductions from individual mitigation measures; use of regional disaggregation within the national GHG projections; change of the reporting on funding and technology transfer to bring it into full compliance with the UNFCCC guidelines; and some others.

113. The total GHG emissions in Belgium (without LUCF) increased by 6.9 per cent from 1990 to 2000. The increase was high in transport (24.0 per cent) and industrial processes (44.2 per cent).

114. Notwithstanding the failure to meet the target of a 5 per cent reduction in the national CO₂ emissions by 2000 (defined in 1994 in the first Belgian programme to reduce CO₂ emissions), there has been considerable development of the climate policy by the regional and the federal authorities in recent years, which was reflected in a new National Climate Plan that integrates the relevant regional plans and initiatives. At the same time, regional and federal climate policies have not yet been designed in a manner consistent with the Belgian national target under the Kyoto Protocol. The federal and regional authorities are working on a "burden-sharing agreement" and aim to have it in place by the end of 2005. The agreement should reflect a consensus relating to the distribution of the national GHG reduction target under the Kyoto Protocol among the Belgian regions and/or the economic sectors. The

²⁷ See FCCC/IDR.3/BEL (2003).

review team commended the Belgian authorities for their efforts and noted the importance of a timely conclusion of the agreement as well as the importance of policy monitoring and evaluation.

115. The NC3 projections show that with the policies currently in place, Belgium's GHG emissions in 2010 would exceed the 1990 level by about 16 per cent. Within the EC burden-sharing agreement for the Kyoto Protocol, Belgium is to reduce its GHG emissions in the period 2008–2012 by 7.5 per cent compared to 1990. According to modelling, the timely introduction of additional measures, including a comprehensive CO₂ tax increasing from EUR 4.7/t CO₂ in 2002 to about EUR 20/t CO₂ by 2010, could bring the Belgian GHG emissions considerably closer to the Kyoto Protocol target.

116. Belgian experts used macroeconomic modelling to analyse the impacts of CO₂ taxation on the national economy. This analysis showed that under a certain tax recycling scheme, the economy might benefit from the introduction of a CO₂ tax, because the recycling of tax revenues could decrease the high labour taxation in Belgium and thus give a positive stimulus to the economy.

117. Belgian authorities indicated that Belgium might need to use the international flexibility mechanisms in addition to domestic action to meet its Kyoto Protocol target. Federal and regional authorities have started a discussion of the organizational arrangements for using the mechanisms.

118. The climate change impacts of most relevance to Belgium are those on freshwater resources, agriculture and horticulture, forestry and coastal areas. Belgium does not have a national programme for adaptation to climate change; the impacts are considered too uncertain and the capacity of Belgium to adapt to climate change is perceived as relatively high.

119. Currently, the Official Development Assistance (ODA) of Belgium amounts to about 0.4 per cent of GDP. The Government is committed to increasing ODA to 0.7 per cent by 2010. The ODA statistics did not allow the share of climate-related aid in the total ODA to be identified in the NC3. Therefore, the reporting in the NC3 is in only partial compliance with the UNFCCC guidelines.

D. Bulgaria

1. Selected country data and summary information drawn from the IDR

Table 22. Macroeconomic and GHG data for Bulgaria

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	8.7	8.2	8.0	-8.0	-0.8	-2.4
GDP (billions USD 1995 PPP)	58.9	49.4	51.4	-12.7	-1.2	4.0
TPES (Mtoe)	28.8	18.8	19.5	-32.3	-3.5	3.7
GDP per capita (thousands USD 1995 PPP)	6.8	6.1	6.4	-5.9	-0.5	4.9
TPES per capita (kgoe)	3.3	2.3	2.4	-27.3	-2.8	4.3
CO ₂ emissions without LUCF (Tg)	103.0	46.8	49.1	-52.3	-6.5	4.9
GHG emissions without LUCF (Tg CO ₂ eq)	144.4	64.5	65.8	-54.4	-6.9	2.0
GHG emissions/removals by LUCF (Tg)	-4.66	-8.98	-9.47	103.2	6.7	5.5
CO ₂ / capita (Mg)	11.8	5.7	6.1	-48.3	-5.8	7.0
CO ₂ / GDP (kg per USD 1995 PPP)	1.75	0.95	0.95	-45.7	-5.4	0.0
GHG / capita (Mg CO ₂ eq)	16.6	7.9	8.2	-50.6	-6.2	3.8
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	2.45	1.30	1.28	-47.8	-5.7	-1.5

Note: For CO₂ and GHG emissions, base year data (1988) are used here instead of 1990 data, which leads to some inconsistency in GHG emissions per capita and per GDP unit.

Figure 12. Trends in GHG emissions for Bulgaria

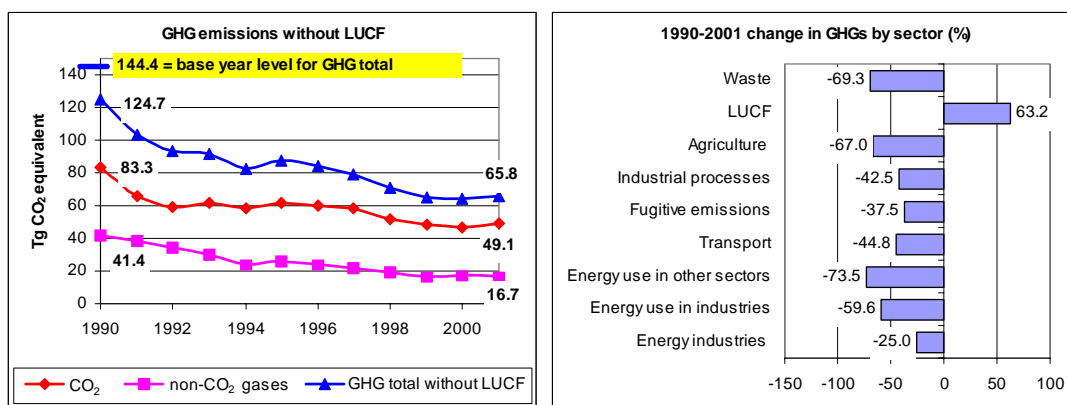
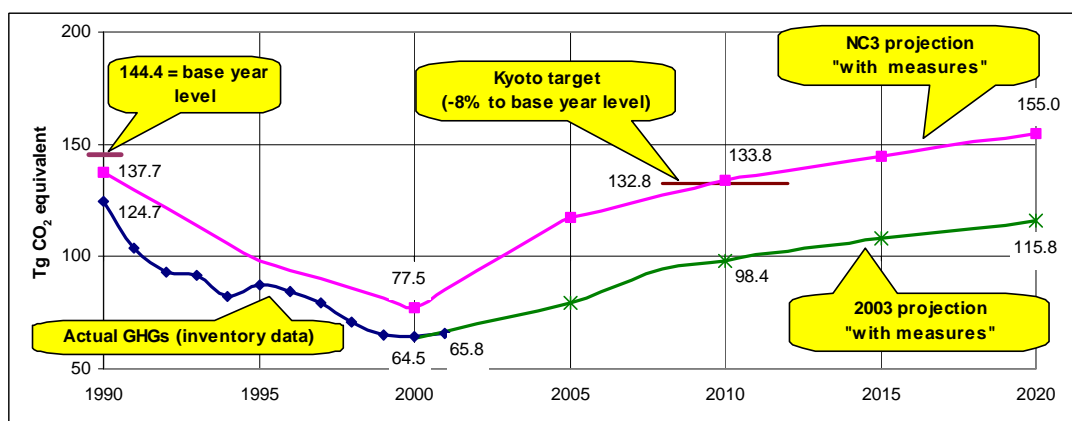


Figure 13. GHG projections for Bulgaria



Note 1: The projected GHGs are the sum of CO₂, CH₄ and N₂O.

Note 2: The difference between the inventory and the NC3 projections for 1990–2000 is due to inventory recalculations in 2003; this change, leading to lower emission levels, was reflected in the 2003 projections.

Table 23. Summary information on climate-related policies and measures for Bulgaria

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	National Climate Change Action Plan (2000)
Emissions trading	Preparation for the requirements of the EU emissions trading scheme
Energy sector	
Energy sector liberalization	Law on Energy and Energy Efficiency (1999); Energy Strategy (2002); Energy Law (draft 2002); Energy Efficiency Law (draft 2002)
Combined heat and power generation	Energy Strategy (2002); Energy Law (includes incentives for CHP development); Energy Efficiency Agency (EEA) programme to promote CHP development
Renewable energy sources	Energy Strategy (2002); Energy Law (includes incentives for the development of renewables); EEA's programme for the utilization of renewables
Support of fuel switch to natural gas	Energy Strategy (2002)
Energy efficiency improvements	Energy Efficiency Law; reduction of losses in heat and electricity networks; introduction of individual heat accounting; activities of the EEA; EEA's Energy Savings Programme and a 3-year Action Plan; National and Municipal Environmental Protection Funds; projects of the Municipal Energy Efficiency Network
Other	Rehabilitation and upgrading of operating thermal, CHP and nuclear power plants; shutdown of units 1-2 at Kozloduy NPP (2002); planned shutdown of units 3-4 at Kozloduy NPP; possible construction of a new NPP
Transport	Programme for Transport Infrastructure Development
Industry	Energy Efficiency Programme for Industry; effect of privatization; Energy Efficiency Centre
Agriculture	National Agriculture and Rural Development Plan for 2000–2006 (1999)
Waste management	Construction of wastewater treatment plants and landfills (also with EU support); National Waste Management Plan; Waste Management Law (in preparation)
Forestry	Forestry Act (1997); Forestry Restitution Act (1997); Forest Strategy (in preparation)

Table 24. Summary information on climate change vulnerability and adaptation for Bulgaria

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	Negative impact of decreasing growing season and decreasing precipitation; positive impact of increasing CO ₂ concentrations; increase in soil erosion Adaptation: changes in planting dates; changes in the selection of cultivated species
Biodiversity and natural ecosystems	Possible impact because of temperature-induced changes in the distribution of favourable conditions for flora and fauna
Forests	Increased biomass productivity because of increased CO ₂ concentrations; shifts in the number and type of species Adaptation: change in the selection of species for afforestation
Water resources	Increase in winter precipitation, decrease in summer precipitation; corresponding impact on river flows; increase in evaporation losses; possible decrease in underground water levels

Table 25. Summary information on financial resources and technology transfer for Bulgaria

AIJ	Project with the Netherlands to improve district heating in Pleven
ET under Kyoto Protocol	Interest indicated; estimates show possible existence of emission quotas
JI under Kyoto Protocol	Interest indicated; memorandums of understanding on JI signed with Austria, the Netherlands and Switzerland; JI capacity-building project with UNDP
Other (bilateral/multilateral)	Participation in projects under EC's PHARE programme

2. Conclusions from the IDR of Bulgaria's third national communication²⁸

120. When reviewing the information reported in the NC3 of Bulgaria, the review team concluded that the document complies well with the provisions of the UNFCCC guidelines. The team was of the opinion that, in combination with the annual GHG inventory submission and some updated information on the Bulgarian GHG projections, the NC3 provided a comprehensive overview of the current status of climate policy in Bulgaria.

121. Given the challenges of both the economic transition process and the EU accession process, climate policy does not rank very high on the political agenda of Bulgaria. Correspondingly, the review team noted a low budget and limited administrative capacity in this field. Nevertheless, Bulgaria joined the Kyoto Protocol, is firmly committed to its goals and expresses its intention to make use of its flexibility mechanisms.

122. It is expected that Bulgaria will meet its emissions target under the Kyoto Protocol, mainly as a result of economic restructuring and associated reductions in energy consumption and improvements in energy efficiency. Between 1988 and 2000, the overall GHG emissions declined by 55 per cent, excluding LUCF and 60 per cent including LUCF. The greatest emission reductions were achieved in energy use in industry (-76 per cent) and in the residential/commercial sector (-75 per cent).

123. GHG emissions are projected to increase slightly between 2000 and 2010, resulting in a GHG emission reduction of about 10–30 Mt CO₂ equivalent below the Kyoto target. Nonetheless, the review team gained the impression that major domestic GHG reduction potentials have not yet been fully exploited. Attracting investment will be crucial for progress in implementing further mitigation policies and programmes. The uncertain future of units 3 and 4 of Kozloduy NPP and the implementation of extensive Pan-European transport development plans pose significant uncertainties for these projections.

124. The review team noted that whilst the Ministry of Environment and Waters is responsible for the coordination of the national climate change policy, other important ministries actively integrate climate policy into their policy fields. This is particularly true for the Ministry of Energy and Energy Resources, which has the main responsibility for energy policy. In 2000, an Interministerial Committee for the National Action Plan on Climate Change was established. The team concurred with the views expressed by several host-country representatives on the need for further strengthening of the existing institutional arrangements.

125. The review team acknowledged the submission of the GHG inventory in CRF format and a national inventory report (NIR) in 2003. It noted with appreciation that the NC3 chapter on inventory describes some methodological aspects of the Bulgarian GHG inventory, details on the inventory reporting under the UNFCCC, some of the factors underlying the emission trends, and the history of recalculations. It encouraged Bulgaria to harmonize the methodology for the different years, to recalculate the historic emission trends where necessary and to address the existing gaps.

126. The team noted that the national energy strategy was revised in 2002 and that the National Action Plan on Climate Change will be revised in the course of 2003–2004. Both documents will

²⁸ See FCCC/IDR.3/BGR (2003).

emphasize the need for consideration of climate change objectives in the shaping of future energy policy. Significant GHG emission reductions and other environmental benefits could also be achieved in waste management, if the list of planned and ongoing activities receives sufficient support. Also, the forestry sector offers a substantial potential for CO₂ removals, if maintenance and enhancement of forest sink capacity is included in forestry management objectives.

127. Bulgaria's success stories include a remarkable decoupling of GDP growth from GHG emission trends; a successful launch of municipal energy efficiency planning through cooperation between the Ministry of Energy and Energy Resources, the Energy Efficiency Agency and the Municipal Energy Efficiency Network EcoEnergy; initial steps to increasing the use of renewable energy sources (biomass use for heating); successful installation of several national funds for environmental protection; the identification of several mitigation options and JI projects; and JI capacity-building.

128. The review team commended Bulgaria on its ongoing work in the field of public awareness and outreach. It also felt that the long tradition of climate science by research institutions is commendable, and new funding efforts are needed to maintain these activities at this level. In addition, research on vulnerability and adaptation should be intensified and extended to impact assessments in the field of human health, water resources and tourism.

E. Canada

1. Selected country data and summary information drawn from the IDR

Table 26. Macroeconomic and GHG data for Canada

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	27.7	30.8	31.1	12.3	1.1	1.0
GDP (billions USD 1995 PPP)	620	821	833	34.4	2.7	1.5
TPES (Mtoe)	209	251	248	18.7	1.6	-1.2
GDP per capita (thousands USD 1995 PPP)	22.4	26.7	26.8	19.6	1.6	0.4
TPES per capita (kgoe)	7.5	8.2	8.0	6.7	0.5	-2.4
CO ₂ emissions without LUCF (Tg)	472	577	566	19.9	1.7	-1.9
GHG emissions without LUCF (Tg CO ₂ eq)	608	730	720	18.4	1.6	-1.4
GHG emissions/removals by LUCF (Tg)	-104.7	-52.7	-34.3	-67.2	-9.7	-34.9
CO ₂ / capita (Mg)	17.0	18.7	18.2	7.1	0.6	-2.7
CO ₂ / GDP (kg per USD 1995 PPP)	0.76	0.70	0.68	-10.5	-1.0	-2.9
GHG / capita (Mg CO ₂ eq)	21.9	23.7	23.2	5.9	0.5	-2.1
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	0.98	0.89	0.86	-12.2	-1.1	-3.4

Figure 14. Trends in GHG emissions for Canada

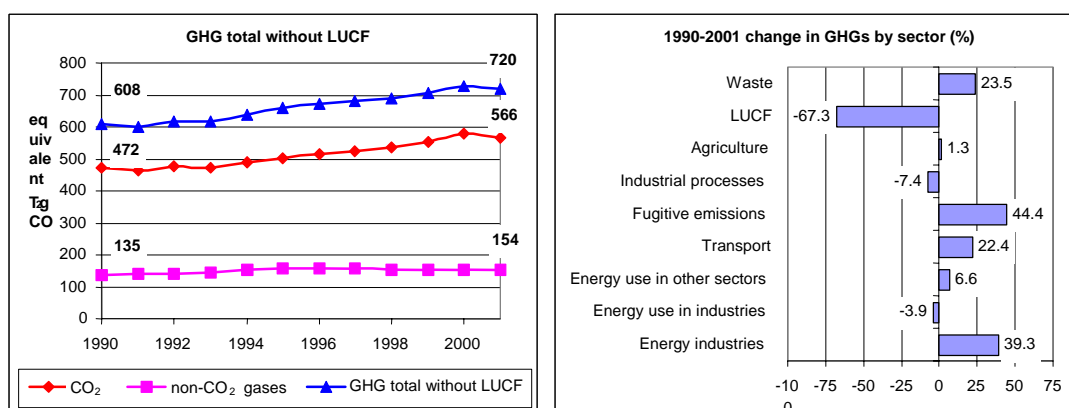
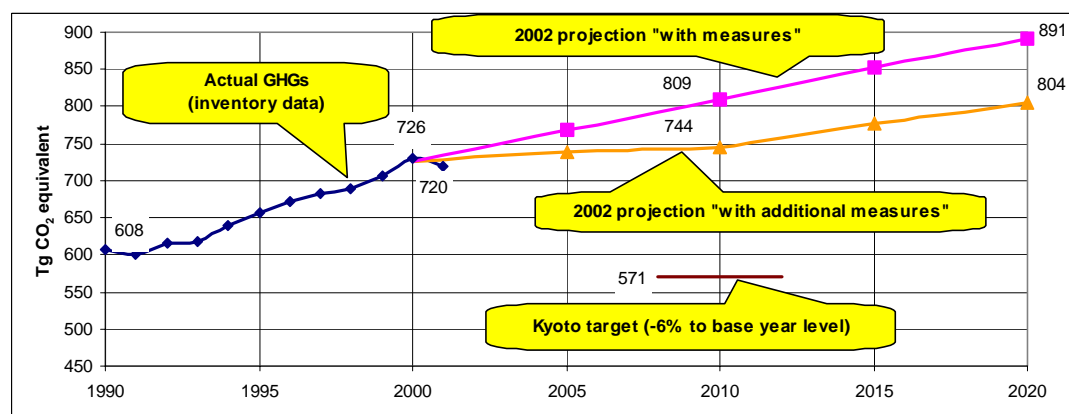


Figure 15. GHG projections for Canada



Note 1: The 2002 projections reflect a recent revision of the NC3 projections.

Note 2: The projection “with additional measures” was obtained from the 2002 projection “with measures” by deducting GHG reductions from Action Plan 2000 (see table 27).

Table 27. Summary information on climate-related policies and measures for Canada

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programmes	National Action Program on Climate Change (1995); National Implementation Strategy on Climate Change (2000); First National Business Plan (2000); Action Plan 2000 (2000); Climate Change Plan for Canada (2002)
Emissions trading	Under discussion nationally and regionally
Other	Climate Change Action Fund (1998); Technology Early Action Measures (1998); Climate Change Technology and Innovation Program (2001); Sustainable Development Technology Fund (2001); Baseline Protection Initiative (2001); multiple federal, regional and municipal research, public awareness and education programmes
Energy sector	
Renewable energy sources and cogeneration	Market Incentive Program (2002); Wind Power Production Incentive (2002); Ontario Electricity Pricing, Conservation and Supply Act (2002); R&D for a fuel cells CHP
Energy efficiency improvements	Energy Efficiency Act (1993); EnerGuide for Houses (1998); Accelerated Standards Action Program (2001); multiple initiatives and programmes for buildings retrofits
Other	Sector Agreement Initiative (2001); reductions in gas flaring (Alberta); research on CO ₂ capture and storage (Saskatchewan)
Transport	
Vehicle and fuel taxes	Federal and regional tax exemptions for alternative fuels and vehicles
Agreements/partnerships	Fuel efficiency initiatives; Company Average Fuel Consumption Standards Program
Integrated transport planning	Intelligent Transport System; British Columbia Sky Train and TransLink
Other	R&D for alternative-fuel vehicles, including fuel-cell vehicles; EnerGuide for Vehicles; Ontario Expansion of Drive Clean Program (2002)
Industry	
Energy efficiency improvements	Industry Program for Energy Conservation; Industrial Buildings Incentive Program; Industrial Energy Efficiency Initiative; cross-cutting measures for industry (2001)
Negotiated/voluntary agreements	Voluntary Challenge Registry Program (1994); Quebec voluntary agreement with aluminium industry (2002)
Agriculture	
	The Agricultural Environmental Stewardship Initiative (2000); GHG Mitigation Program under Action Plan 2000; National GHG Accounting and Verification System
Waste management	
	Green Municipal Enabling Fund; Green Municipal Investment Fund; regional and municipal regulations for waste management; landfill gas recovery and use
Forestry	
	Feasibility Assessment of Afforestation for Carbon Sequestration; Forest Carbon Measurement and Monitoring System; regional agreements and initiatives

Table 28. Summary information on climate change vulnerability and adaptation for Canada

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	Increase in the frost-free season; changes in yields; seasonal moisture deficits; northern expansion of agricultural potential Adaptation: diversification of crops and livestock, changes in farming practices
Coastal, marine and river ecosystems	Sea level rise; increased flooding frequency; coastal retreat in some areas Adaptation: protection measures against flooding, land-use regulations
Fisheries	Changes in fish populations Adaptation: more robust management regimes
Forests	Changes in productivity, more frequent fires, expansion of insects; changes in species; forest expansion into treeless areas Adaptation: forest management
Human health	Increase in heat-related deaths, injuries, diseases; expansion of vector-borne diseases Adaptation: changes in the public health system; behavioural changes.
Infrastructure and economy	Impacts on infrastructure, water supply, transportation, recreation and tourism; indigenous communities Adaptation: changes in land-use planning; increased flexibility in the recreation and tourism industry
Water resources	Declines in low-season water flows (southern Canada); declines in groundwater levels and quality Adaptation: water use management, water conservation

Table 29. Summary information on financial resources and technology transfer for Canada

ODA	USD 2.0 billion in 2002 (0.28% of gross national income)
Climate-related aid in bilateral ODA	1.7% (OECD/DAC estimate for 1998–2000)
Climate-related support programmes	Canada Climate Change Development Fund (2000)
Contributions to GEF (USD million)	Pilot phase: 19.86; GEF-1: 86.6; GEF-2: 101.6
Pledge for 3 rd GEF replenishment	About CAD 159 million (4.28% of GEF-3 total)
AIJ	Projects with Zimbabwe (2000) and Jordan (2001)
JI and CDM under Kyoto Protocol	CDM/JI Office established in 1998; under the Action Plan 2000, 20 Tg CO ₂ equivalent are expected to come from CDM/JI projects
Other (bilateral/multilateral)	Technology Early Action Measures; Canadian International Technology Initiative; Trade Team Canada Environment; CANMET Energy Technology Branch

2. Conclusions from the IDR of Canada's third national communication²⁹

129. The NC3 generally followed the guidelines in reporting on what Canada is doing to meet its commitments under the Convention. It is a well-prepared document that presents a comprehensive overview of climate-change-related developments since the NC2. However, reporting on policies and measures was highly aggregated and this made it difficult for the review team to get a concise picture of the significant energy policies and measures that may have been effective in reducing the growth of GHG emissions between 1990 and 2000. Despite reporting of omissions, during the IDR it was apparent from the presentations that over the past two years there has been new work undertaken on developing performance indicators to assess the impact of particular measures. Further efforts are currently being pursued to put in place an effective monitoring and reporting framework and the review team is optimistic that, once the monitoring system is fully operational, there will be more detailed reporting on the effects of individual policies and measures on emissions reduction.

130. Canada's GHG emissions continued to increase after publication of the NC2, and in 2000 they were 19.6 per cent higher than in 1990. The NC2 had estimated that by 2000 emissions would increase to 8.2 per cent over 1990 levels. CO₂ emissions accounted for most of the growth, with CO₂ and CH₄ emissions increasing by 21 and 25 per cent, respectively, since 1990. N₂O emissions stabilized between

²⁹ See FCCC/IDR.3/CAN (2003).

1990 and 2000. Most of the growth in emissions came from fossil fuel consumption in electricity generation, increased energy consumed in transport and an unprecedented growth in fossil fuel production, largely for export. Of some significance, however, is the fact that GDP increased by 33 per cent during the decade, significantly outpacing the 19.6 per cent increase in emissions, the 11 per cent growth in population, and the 17 per cent growth in energy consumed. The review team was unable to ascertain whether the reduction in energy intensity by 10 per cent between 1990 and 2000 was due to more efficient energy use or to a change in the structure of GDP.

131. Since the publication of the NC2 in 1997, federal and provincial governments have strengthened the National Action Program on Climate Change (NAPCC) with the National Implementation Strategy on climate change, its Action Plan 2000 on climate change (AP 2000) and the First National Business Plan to meet its 6 per cent reduction from 1990 GHG levels under the Kyoto Protocol. AP 2000 identifies measures targeting sectors that account for 90 per cent of Canada's GHG emissions. The team believes that this plan, if coupled with the effective monitoring system, could achieve its stated objectives. However, according to the projections, reducing emissions by 6 per cent from 1990 GHG levels during 2008–2012 means reducing emissions by 2010 by 134,000 Gg CO₂ equivalent beyond the reductions expected through the NAPCC and AP 2000 programmes in order to reach the Kyoto target of 571,000 Gg CO₂ equivalent.³⁰ Even though the rate of growth of CO₂ emissions in Canada seems to have been slowed (with help from the NAPCC and AP 2000 policies and measures), significant additional policy action will be required to reduce these emissions in order to close the gap. Given the continuing high rate of growth of emissions from the transport sector, there is a need for stronger measures in this sector. It is also important to ascertain the role of sinks in closing the gap and the Government of Canada is well advanced in developing rigorous analysis highlighting the importance and potential of agriculture and forestry sinks.

132. The team was impressed with the institutional support and coordination provided for climate change issues since the NC2. The Climate Change Secretariat, which is placed under the authority of the Deputy Ministers of Natural Resources and Environment, will assist in the streamlining and focusing of institutional mandates and initiatives to ensure optimal use of the CAD 500 million allocated to initiatives under AP 2000.

133. The NC3 asserts that the impacts of climate change are already apparent in some regions of the country, notably permafrost thawing in the western Arctic, drought in some parts of the prairies, storm surges with flooding and an increase in frequency of forest fires. The team believes that the development of the National Framework on Adaptation will contribute enormously to assisting communities in assessing their vulnerability to climate change and in developing the best adaptation options at the local level. At the same time, Canada continues its commendable and ground-breaking work on improving research networks, enhancing and coordinating systematic observations, better understanding biological sources and sinks and developing statistical and analytical tools to understand the changes in climate.

134. As a result of existing programmes, there is an enhanced awareness and understanding of climate change issues by the general public. This approach is expected to be strengthened with the establishment of a national network of regional climate change centres or hubs in 10 provinces and territories over the next 18 months, especially as changing the public's behaviour with regard to energy use forms an essential step towards meeting the GHG reduction targets.

135. ODA increased between 1990 and 2000. In the last few years, foreign aid averaged 0.3 per cent of gross national product. Financial contributions to multilateral institutions and programmes, including the GEF, as well as bilateral assistance, also increased over the decade.

³⁰ Taking into consideration the June 2002 in-depth review's emissions projection of 809,000 Gg CO₂ equivalent in 2010 instead of the NAPCC inclusive NC3 projection of 770,000 Gg CO₂ equivalent in 2010, the 134,000 Gg CO₂ equivalent grows to 173,000 Gg CO₂ equivalent when AP 2000 measures are taken into consideration and to 238,000 Gg CO₂ equivalent when AP 2000 measures are not taken into consideration.

Table 31. Summary information on climate-related policies and measures for Croatia

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	National Climate Change Mitigation Programme (under discussion in 2002)
Other	National Energy Action Plan (NEAP) (1997); Draft Energy Sector Development Strategy of Croatia (2002); Mandatory Environmental Impact Analysis for industrial facilities (1986, revised in 1999)
Energy sector	
Energy sector liberalization	Energy Law (2001), Energy Activities Regulation Law (2001), Electricity Market Law (2001), Gas Market Law (2001), Oil and Oil Derivatives Law (2001); restructuring and privatization of the national electricity and oil companies
Combined heat and power generation	COGEN and KUENC programmes of NEAP (1997)
Renewable energy sources	BIOEN, SUNEN, ENWIND, GEOEN and MANE programmes of NEAP (1997); pilot projects with the Netherlands on biomass use in industry and on production of biofuels (2002); promotion of independent producers of electricity from wind energy and small hydro plants
Support of fuel switch to natural gas	PLINCRO programme of NEAP (1997); extension of gas network in northern Croatia; gas exploration in southern Croatia; commissioning of a combined-cycle gas-fired power plant (2001–2002)
Energy efficiency improvements	Building code for new buildings (1992, revised in 1995); KUENZ and MIEE programmes of NEAP (1997); UNDP/GEF project to remove barriers to energy efficiency in the service sector (2002); introduction of energy servicing companies (2002)
Other	Upgrade of the Krsko nuclear power plant (2001)
Transport	TRANSCRO programme of NEAP (1997); introduction of parking fees in large cities
Industry	Measures to reduce CO ₂ emissions from cement production (under consideration); installation of catalytic reduction systems to reduce N ₂ O emissions from nitric acid production (under consideration)
Agriculture	Production of biogas under the BIOEN programme; voluntary agreements on organic farming (planned)
Waste management	Waste management strategy (1992), Law on Waste (1995), first waste incineration project under preparation (2002)
Forestry	A reforestation project under World Bank loan initiated (2002); reforestation of agricultural land of low productivity (under consideration); planting of pioneer wood species (under consideration)

Table 32. Summary information on climate change vulnerability and adaptation for Croatia

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	Adverse impacts of possible water deficiency (particularly for spring crops), spring frosts, high summer temperatures, but a possible positive impact of longer growing seasons and increased CO ₂ concentration Adaptation: sustainable land management, application of modern techniques of cultivation, livestock management
Biodiversity and natural ecosystems	Mountain and Mediterranean regions are most sensitive
Coastal, marine and river ecosystems	Coastal and island areas are vulnerable to sea level rise Adaptation: coastal zone management
Fisheries	Impacts are under study
Forests	Possible adverse impact of increased temperature and decreased precipitation
Human health	Increased heat waves in summer but decreased cold spells in winter; expansion of vector-borne diseases
Infrastructure and economy	Possible adverse impacts on infrastructure, in particular by sea level rise in the coastal zones
Water resources	Potential adverse impacts are expected but estimates have high uncertainty because of the complexity of the Croatian hydrological system Adaptation: analysis of climate change impacts; water resource management

Table 33. Summary information on financial resources and technology transfer for Croatia

AIJ	One AIJ project on energy efficiency implemented with Belgium (CO ₂ recovery in a brewery in Zagreb)
JI under Kyoto Protocol	Letter of Understanding on JI signed with the Netherlands
Other (bilateral/multilateral)	UNDP/GEF support for the preparation of the NC1; pilot projects with the Netherlands on biomass use in industry and on the production of biofuels (2002); UNDP/GEF project to remove barriers to energy efficiency in the service sector (2002); EBRD loan for a project of environmental reconstruction; reforestation project under World Bank loan (2002); participation in IEA/OECD and IAEA programmes

2. Conclusions from the IDR of Croatia's first national communication³¹

136. After reviewing the information provided in the NC1 and the wealth of additional information provided during the visit, the team concluded that Croatia had met its reporting commitments under Article 12 of the UNFCCC and broadly complied with the 1996 UNFCCC guidelines. Moreover, the NC1 addressed all climate-change-related aspects and adequately reflected the level of analysis, design and implementation of climate policies. It also covered in its inventory, policies and measures and projection sections all relevant GHGs and major emission sources and sinks. In some parts of the NC1, the presentation of information followed the 1999 UNFCCC guidelines, e.g. the information on policies and measures by sector, but not by gas.

137. The team did not identify major information gaps or deviations from the reporting guidelines. The additional information provided during the visit was broadly consistent with the analysis and the data presented in the NC1. Nonetheless, the team noted that, to ensure transparency and consistency in reporting, more attention should be given in preparing the next national communication to the presentation of the current and future emission trends, following strictly the formats required by the guidelines. Also, the team noted the requirement to prepare and submit a GHG inventory annually, including for the years after 1995. It acknowledged the importance of estimating and reporting on the achieved and expected effects of policies and measures, which could help to strengthen the implementation of the existing measures and, if necessary, to identify and implement new ones.

³¹ See FCCC/IDR.1/HRV (2002).

138. In estimating its historical GHG emission levels, Croatia broadly followed the 1996 IPCC Guidelines. The major exception was the estimation of emissions for 1990, Croatia's base year for implementation of the Convention, and 1991. The difference was in the estimation of CO₂ emissions from fuel combustion for 1990 and 1991, for which Croatia used the 1996 IPCC Guidelines and adjusted the result using a per capita approach. The need for emission adjustment, according to Croatian officials, stemmed from the IPCC methodology being inappropriate to provide adequate estimates for the emissions of the country in 1990 and 1991, given its national circumstances.³² It also stemmed from the high uncertainty associated with the energy data before 1992, the year of Croatia's independence. In estimating its future GHG emission levels, Croatia used a set of internationally recognized models and internally consistent assumptions, which made it possible to obtain robust estimates of how the future emission trends could evolve, and the overall effects of policies and measures.

139. The analysis of the historical emission trends and projections of emissions suggested that, after the initial drop in emissions between 1990 and 1995 driven by the war and a deterioration in economic conditions, the emissions were expected to rise again. Still, according to the preliminary inventory estimates, in 2000 the national GHG emissions were likely to be slightly below the 1990 unadjusted values and around 20 per cent below the adjusted value of base year emissions. Therefore, Croatia is likely to meet the stabilization aim of the UNFCCC.

140. In the period beyond 2000, however, it appeared very difficult to moderate the emission growth. According to the baseline scenario, which already included some level of implementation of policies and measures, the level of unadjusted base-year emissions will be reached before 2003 and the level of adjusted base-year emissions before 2010. According to the mitigation scenario, a theoretical potential existed to stabilize the emission level below the unadjusted base-year emissions. This, however, was indeed a theoretical potential, as it could be achieved only by a rigorous implementation of policies and measures with the necessary financial support, which would put a heavy burden on the restructuring Croatian economy.

141. Regarding policies and measures, the team acknowledged that, with some exceptions, these were at the planning stage. Major exceptions were the energy programmes included in the National Energy Action Plan, dealing mostly with strategic research and development, and the legislation on energy market liberalization adopted in 2001. Also, the original objectives of virtually all policies were not guided by considerations of climate change: for example, they aimed at enhancing economic effectiveness through energy market liberalization and addressing environmental impacts from waste management.

142. Given that the bulk of emissions in Croatia came from energy, it was well understood that climate change mitigation in this sector was of particular significance for the response strategy. The team noted that the legislation on energy market liberalization and privatization was taking shape. Moreover, the work on secondary legislation was also under way, to ensure among other things that the environmental objectives are met in the process of energy market liberalization, including provisions for renewable energy, CHP generation and energy efficiency.

143. So far, however, the only progress made in moving towards less carbon-intensive fuels has taken the form of a very slight increase in the share of natural gas, and prospects of a further increase in the near future, together with maintaining the share of renewables in meeting energy demand growth. Notwithstanding some ongoing pilot actions and the relevant aspects of the legislation on energy market liberalization, the policy to promote energy efficiency and CHP and to increase further the share of

³² The review team recalled that the Subsidiary Body for Scientific and Technological Advice concluded at its fourth session that Annex I Parties should report inventory information in mass units without adjustments according to paragraph 12 of the annex to decision 9/CP.2. In the context of this conclusion, adjustments referred to adjustments for weather variations and electricity trade, but not to any adjustments under Article 4, paragraph 6, of the Convention.

renewables was still at an early stage of implementation. The team stressed the urgent need to strengthen the institutional framework, introduce efficiency standards, and provide financial support and financial incentives for energy efficiency and renewables in order to attain the objectives set. In particular, standards for household appliances, such as washing and cooling devices, were noted as a very promising action which could be introduced quickly at low cost. The team also stressed the need to devote more attention to the transport sector, which as of 1992 was the fastest growing sector in terms of emissions. Finally, more attention to the mitigation options outside the energy sector could strengthen further the evolving mitigation strategy.

G. Czech Republic

1. Selected country data and summary information drawn from the IDR

Table 34. Macroeconomic and GHG data for the Czech Republic

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	10.4	10.3	10.3	-1.0	-0.1	0.0
GDP (billions USD 1995 PPP)	134	136	140	4.5	0.4	2.9
TPES (Mtoe)	47.4	40.4	41.4	-12.7	-1.2	2.5
GDP per capita (thousands USD 1995 PPP)	12.9	13.2	13.7	6.2	0.5	3.8
TPES per capita (kgoe)	4.6	3.9	4.0	-13.0	-1.1	2.6
CO ₂ emissions without LUCF (Tg)	164.0	127.9	128.0	-22.0	-2.2	0.1
GHG emissions without LUCF (Tg CO ₂ eq)	192.0	147.7	148.1	-22.9	-2.3	0.3
GHG emissions/removals by LUCF (Tg)	-2.1	-4.0	-4.4	109.5	6.7	10.0
CO ₂ / capita (Mg)	15.8	12.5	12.5	-20.9	-2.1	0.0
CO ₂ / GDP (kg per USD 1995 PPP)	1.22	0.94	0.91	-25.4	-2.6	-3.2
GHG / capita (Mg CO ₂ eq)	18.5	14.4	14.4	-22.2	-2.2	0.0
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	1.43	1.09	1.06	-25.9	-2.7	-2.8

Figure 18. Trends in GHG emissions for the Czech Republic

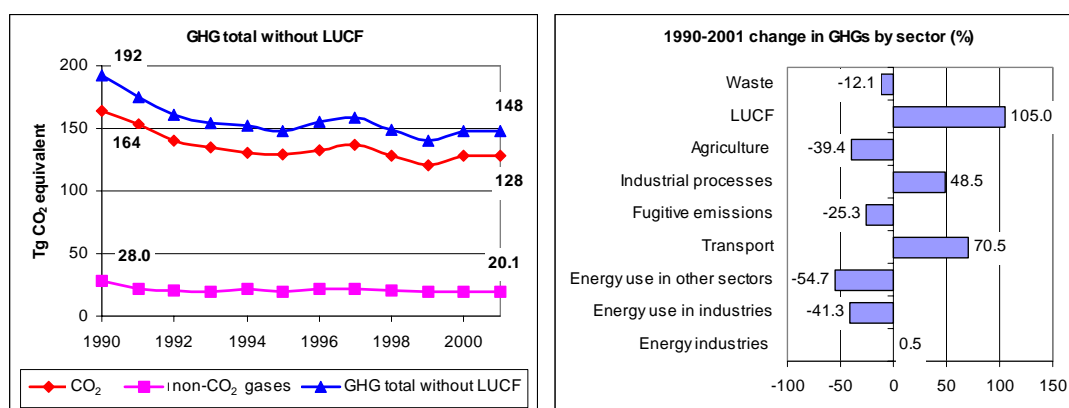
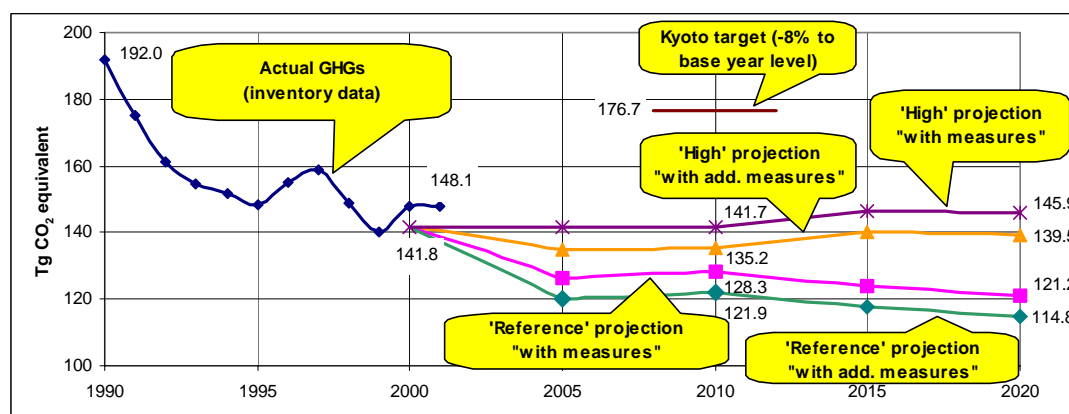


Figure 19. GHG projections for the Czech Republic



Note: The 'reference' and 'high' projections differ in assumptions; the assumed GDP growth is higher for the 'high' projection.

Table 35. Summary information on climate-related policies and measures for the Czech Republic

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	Strategy of Protection of the Climate System of the Earth in the Czech Republic (1999); National Program for Mitigation of Climate Change (in preparation)
Energy/electricity/emissions taxation	"Draft plan of gradual ecologization of the tax system" prepared in 2000
Emissions trading	Participation in the EU scheme (2005) is possible after EU accession in 2004
Other	Prototype Carbon Fund Purchase Agreement between the Czech Republic and the World Bank (2002)
Energy sector	
Combined heat and power generation	Energy Policy (2000); Energy Act (2001)
Renewable energy sources	Energy Policy (2000); Energy Act (2001); National Program for the Promotion of Efficient Use of Energy and Wider Use of Renewable and Secondary Energy Sources (2001); State Program to Support Energy Saving and Use of Renewable Energy Sources (2000)
Support of fuel switch to natural gas	Some projects of the State Environmental Fund
Energy efficiency improvements	Energy Policy (2000); Act on Energy Management (2001); National Program for the Promotion of Efficient Use of Energy and Wider Use of Renewable and Waste Energy Sources (2001); State Program to Support Energy Saving and Use of Renewable Energy Sources (2000); State Program to Support Reconstruction and Recovery of Concrete Panel Buildings (2000); GEF project "Efficient Lighting Initiative" (2000); GEF project "Commercializing Energy Efficiency Finance" (2002)
Other	Operation of the Czech Energy Agency and the State Environmental Fund to support efficient use of energy, use of renewable and secondary energy sources and cogeneration
Transport	Set of measures under the Transport Policy of the Czech Republic (1998); support to the use of biodiesel and bioethanol
Industry	
Energy efficiency improvements	Energy efficiency improvements implemented by industries
Pollution prevention and control	Preparation for the introduction of the IPPC Directive of the EC
Agriculture	Support to the production of biofuels
Waste management	Act on Waste (2002); Act on Waste Management (2002); collection and use of biogas at landfill sites
Forestry	Support to afforestation of uncultivated agricultural land

Table 36. Summary information on climate change vulnerability and adaptation for the Czech Republic

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	Possible positive effect of increased CO ₂ concentrations but also a possible negative effect of decreased precipitation in the growing season and soil erosion Adaptation: changes in the composition of crops and cultivation methods; protection of soils and cultivated species against weeds, diseases and pests
Coastal, marine and river ecosystems	Increased variability of precipitation may result in increased water run-off leading to more frequent floods
Forests	Shift in favourable growth conditions for some tree species Adaptation: forest management, changes in the composition of species
Water resources	Decrease in precipitation and increase in temperature can lead to decreased water availability Adaptation: water management, efficient use of water

Table 37. Summary information on financial resources and technology transfer for the Czech Republic

Contributions to GEF (USD million)	GEF-1: 5.6; GEF-2: 5.5
Pledge for 3 rd GEF replenishment	About CZK 194 million (0.24% of GEF-3 total)
AIJ	Several AIJ projects have been implemented, funded by France, the Netherlands, the United States and Germany
JI under Kyoto Protocol	Methodological guidelines prepared (2002); memorandums of understanding on JI signed with Austria, memorandums of understanding with the Netherlands and Germany under consideration (2003)
Other (bilateral/multilateral)	Participation in a number of GEF-financed projects

2. Conclusions from the IDR of the Czech Republic's third national communication³³

144. In general, the NC3 follows the UNFCCC guidelines and it has improved in comparison with the NC2. The most notable improvements are: full coverage of GHG gases in the inventories and the projections, update of emission factors in the GHG inventory, estimates for effects of separate policies and measures, a more comprehensive set of projections (six instead of two in NC2), and new information on climate-related research.

145. The review team identified the following areas for further improvement: recalculation of the GHG inventory to make the emission data from 1990 to 2000 fully consistent, trend analysis for GHG emissions, evaluation of costs and GHG reductions for some policies and measures, sectoral analysis of projected GHG emissions, preparation of the projection "with additional measures", and some others. The team also felt that coordination of climate-related work among the various organizations involved could be improved, in particular with respect to communication among the ministries and the assignment of more transparent institutional responsibilities for specific climate-change issues.

146. GHG emissions in the Czech Republic decreased in the 1990s: the total GHG emissions (without LUCF) in 1999 were 26 per cent lower than in 1990. The emissions declined particularly strongly in industry (41 per cent) and the energy sector (29 per cent). The emission reductions were driven by structural changes in the GDP (with an increased share of services) and in energy supply (with an increased share of gas), improvements in energy use efficiency and some increase in the use of renewable energy.

147. In the State Environmental Policy, approved by the Government in January 2001, the Czech Republic pledged to reduce its GHG emissions by 20 per cent by 2005 in comparison with the

³³ See FCCC/IDR.3/CZE (2003).

1990 level. According to NC3 projections, this national target, formulated in the framework of the UNFCCC, could be met. Under the Kyoto Protocol, the Czech Republic made a commitment to decrease GHG emissions by eight per cent in comparison with the 1990 level in the first commitment period from 2008 to 2012. The draft of the new National Program to Mitigate Changes in the Climate of the Earth was recently released for discussion; the programme is likely to be approved by the Government in 2003. This programme is expected to contain revised targets for GHG emission reductions.

148. According to NC3 projections, the Czech Republic is very likely to comply with the Kyoto Protocol; in all projections GHG emissions in the period from 2000 to 2020 are well below the Kyoto target. This is a change from the NC2 where the baseline scenario led to GHG emissions higher than the Kyoto target in 2010.

149. GHG emissions from transport are projected to remain stable or to decline slightly in the period from 2000 to 2020. These model results appeared optimistic to the review team.

150. The Czech Republic has done intensive work on JI preparation, such as the establishment of the national center for JI, and preparation and release of guidelines. Preparation of ET is less advanced.

151. Since 1997, the Czech Republic has been making contributions to international financial institutions. Two recent GEF projects are likely to be the last ones with the Czech Republic in the role of aid recipient.

152. Climate-related research in the Czech Republic focuses on climate change impacts on water management, water supply, agriculture and forestry.

H. Denmark

1. Selected country data and summary information drawn from the IDR

Table 38. Macroeconomic and GHG data for Denmark

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	5.14	5.34	5.36	4.3	0.4	0.4
GDP (billions USD 1995 PPP)	109	137	138	26.6	2.2	0.7
TPES (Mtoe)	17.6	19.4	19.8	12.5	1.1	2.1
GDP per capita (thousands USD 1995 PPP)	21.2	25.6	25.8	21.7	1.8	0.8
TPES per capita (kgoe)	3.4	3.6	3.7	8.8	0.7	2.8
CO ₂ emissions without LUCF (Tg)	52.7	52.8	54.4	3.2	0.3	3.0
GHG emissions without LUCF (Tg CO ₂ eq)	69.2	68.2	69.4	0.3	0.0	1.8
GHG emissions/removals by LUCF (Tg)	-3.12	-3.52	-3.53	13.1	1.1	0.3
CO ₂ / capita (Mg)	10.2	9.9	10.1	-1.0	-0.1	2.0
CO ₂ / GDP (kg per USD 1995 PPP)	0.48	0.39	0.39	-18.8	-1.9	0.0
GHG / capita (Mg CO ₂ eq)	13.5	12.8	13.0	-3.7	-0.4	1.6
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	0.64	0.50	0.50	-21.9	-2.1	0.0

Figure 20. Trends in GHG emissions for Denmark

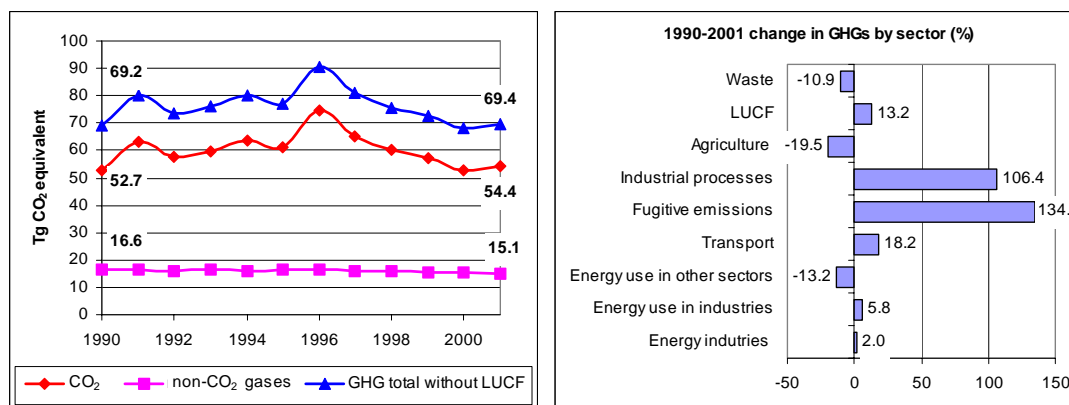
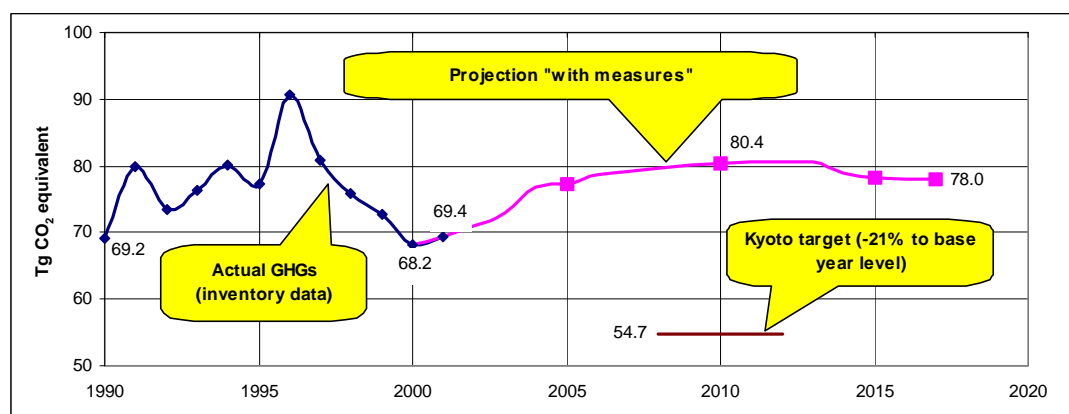


Figure 21. GHG projections for Denmark



Note: The shown projection and the estimate for the Kyoto Protocol target do not take into account the adjustments for electricity import in 1990 that are mentioned in the NC3 of Denmark.

Table 39. Summary information on climate-related policies and measures for Denmark

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	The 2003 Climate Strategy (2003); the Government's Action Plan for Environment and Development (1988)
Energy/electricity/emissions taxation	Energy and carbon taxes since 1991; green tax package (1995)
Emissions trading	Domestic system of tradable CO ₂ allowances (2000); EU scheme planned for 2005
Other	National strategy for sustainable development – "A shared future – balanced development" (2002); Energy 21 Plan (1996); National sub-strategy for Danish environmental and energy research (1996); Energy 2000 Plan (1990)
Energy sector	
Energy sector liberalization	Electricity Supply Act (amendment of 1996)
Combined heat and power generation	Production subsidies and tax incentives, power purchase obligations, guaranteed buy-back rates
Renewable energy sources	Production subsidies and tax incentives, priority access to grid, state orders to build offshore wind farms, biomass agreement, support of R&D
Support of fuel switch to natural gas	Through increased gas availability and the carbon tax
Energy efficiency improvements	Act on Promotion of Savings in Energy Consumption (2000); energy labelling of buildings and appliances; guidelines and circulars on energy management
Other	Set up and operation of the Electricity Saving Trust (1997); Greenland Energy Plan 2010 (1995); Greenland's Act on Energy Supply (1997)
Transport	
Vehicle and fuel taxes	Lower purchase tax on energy-efficient cars (2000)
Negotiated/voluntary agreements	EC agreements: ACEA (1999), KAMA (2000), JAMA (2000)
Integrated transport planning	Action Plan for reducing CO ₂ emissions in the Danish transport sector (2001); Action Plan for reduction of the transport sector's CO ₂ emissions (1996); Transport 2005 (1994); Transport Action Plan (1990); information and awareness measures
Other	CO ₂ labelling for new cars (2000)
Industry	
Energy efficiency improvements	Energy saving targets for industry; green tax package (1995)
Pollution prevention and control	IPPC Directive of the EC; tax on the use of HFCs, PFCs and SF ₆ (2001); strengthened regulations on fluorinated gases (2002)
Agreements/partnerships	Voluntary agreements on energy efficiency within the green tax reform (since 1996) Action Plan for the reduction of industrial GHG emissions (2000)
Agriculture	
	Change in cattle feed and use of biogas from animal manure (2003); Action Plans for the Aquatic Environment I (1987) and II (1998); Action Plan for Sustainable Agriculture (1991); Ammonia Action Plan (2001); Common Agricultural Policy of the EC
Waste management	
	Waste Strategy 2005–2008 (2003); Landfill Directive of the EC; the Waste 21 Plan for 1998–2004 (1999); Statutory Order on Waste (1996); Action Plan for waste and recycling 1993–1997; tax on waste disposal and incineration (1987)
Forestry	
	Danish national forest programme (2002); Strategy for sustainable forest development (1994)

Table 40. Summary information on climate change vulnerability and adaptation for Denmark

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	Agricultural production is expected to increase with rising temperature and higher CO ₂ concentration but the risk of pests and plant diseases may also increase
Biodiversity and natural ecosystems	Some species may be affected by the northward shift accompanying climate warming. Some fragile ecosystems in Greenland and the Faroe Islands are particularly vulnerable
Coastal, marine and river ecosystems	Small increase in storms is expected; some parts of the coastline are vulnerable to sea level rise Adaptation: coastal protection including dyke maintenance
Fisheries	Higher temperatures and lower salinity of the waters are expected to affect the fish populations, positively or negatively
Forests	Projected climate change would promote growth for most tree species, with the exception of Norway Spruce Adaptation: use of other trees than Norway Spruce in new plantings
Human health	Direct impacts of climate change on human health are not expected but there may be some indirect impacts like larger amount of pollen because of the earlier start of the pollen season, expansion of vector-borne diseases, and increased risk of photochemical air pollution
Infrastructure and economy	Warmer climate would decrease the demand for heating and the corresponding energy use
Water resources	Hotter and drier summers may lead to an increase in water demand; water availability may be affected by changes in precipitation patterns and in land use; water quality in a few places may be affected by increased salt intrusion

Table 41. Summary information on financial resources and technology transfer for Denmark

ODA	USD 1.64 billion in 2002 (0.96% of gross national income)
Climate-related aid in bilateral ODA	1.1% (OECD/DAC estimate for 1998–2000)
Contributions to GEF (USD million)	Pilot phase: 22.22; GEF-1: 35.1; GEF-2: 28.7
Pledge for 3 rd GEF replenishment	USD 35.44 (1.48% of GEF-3 total)
ET, JI and CDM under Kyoto Protocol	ET, JI and CDM are expected to contribute to the achievement of the national emission reduction target under the Kyoto Protocol. DKK 1 billion (about USD 160 million) has been allocated for JI/CDM projects in 2004–2008.
Other (bilateral/multilateral)	Funding through the Environment, Peace and Stability Facility (MIFRESTA); assistance to small island developing States; assistance to countries with economies in transition

2. Conclusions from the IDR of Denmark's third national communication³⁴

153. The review team did not identify any major gaps in the NC3 and concluded that Denmark conformed with the UNFCCC reporting guidelines. Compared to the previous national communications, the NC3 contained more detailed information on Greenland and the Faroe Islands. The recent changes in Denmark's climate strategy, giving more prominence to economic efficiency while meeting climate change objectives, have been transparently reflected in the NC3. However, there was some lack of information on the progress to date of the policies implemented before 2003, and on monitoring and evaluation of policy performance. Also, the NC3 did not contain information on policies and measures that have been discontinued or have a potential negative effect on emissions. Information on GHG inventories, projections and other issues required by the UNFCCC guidelines was presented in a comprehensive way. Some suggestions for improving reporting on projections are contained in the relevant section of this report.

154. Over the past decade, Denmark has been at the forefront of climate change mitigation efforts and has made an ambitious effort to arrest emission growth. Achieving stabilization of GHG emissions in 2000 at their 1990 levels, one of the aims of the UNFCCC, was a clear result of this effort. This

³⁴ See FCCC/IDR.3/DNK (2004).

achievement was underpinned by successful integration of climate change considerations in sectoral policies, notably energy policies. It was also underpinned by considerable efficiency improvements all along the energy supply chain and changes within the fuel supply mix away from coal towards natural gas and renewables, being driven to a large extent by high energy prices in the early 1980s and dependency on energy imports. These improvements were particularly visible in energy end-use sectors, but also in energy supply, e.g. in combined heat and power production (CHP). A diverse portfolio of policies and measures with an emphasis on economic instruments has been implemented that covers all emissions and sources. Denmark was among the first countries to introduce new and innovative policies such as carbon and energy taxes, taxes and bans on fluorinated gases, as well as tradable CO₂ allowances.

155. Ambitious targets for energy efficiency, and rigorous monitoring and evaluation of the support schemes and programmes to ensure that targets are met, were essential for the continuing decoupling of energy demand from economic growth initiated in the 1980s. Support for CHP has also been an essential element of the Danish strategy to reduce emissions. Similarly, support for promoting renewable energy, wind in particular, with a large increase of the share of renewables from 3.2 per cent in 1990 to 20 per cent in 2002, has been another integral element of this strategy. Altogether this has led to decarbonization of the economy, while Denmark continued to enjoy one of the highest economic growth rates among the EC countries.

156. Since 2001, the strategic energy and climate change policy approach has changed radically, from strong government intervention towards a more market-based approach driven by cost-efficiency principles. This was reflected in the 2003 Climate Strategy, which introduced a stringent cost-efficiency criterion in selecting domestic policies. This change of approach is likely to increasingly shift from achieving emission reductions through domestic policies to purchasing and acquiring emission reduction credits abroad, through the EU's emissions trading scheme, JI and CDM. Within the domestic policy context this approach is likely to increasingly shift from government-led decision-making on all GHG reducing measures to decentralized decision-making in companies covered by the EU ETS. In addition to the EU ETS, domestic policy will aim at cost-effective emission reductions of both CO₂ and non-CO₂ gases.

157. This policy change and the move to a more market-based regime has brought some uncertainty in regard to the future development of technologies which benefited from strong governmental support before 2001, such as CHP and renewable energy, notwithstanding the fact that support for research and development for some of them, e.g. wind power and biomass, has been maintained. On the other hand, the impact from the Danish electricity exports in the Nordic electricity market on emission levels might become less uncertain with the provisions of the EU ETS covering the electricity sector between 2008 and 2012, including electricity exports. Altogether, monitoring of emission levels appears critical, especially on the part of sources not covered by the ETS, with a view to taking corrective actions if necessary.

158. The review team noted that the 2003 Climate Strategy focuses only on the first commitment period of the Kyoto Protocol. The review team encouraged Denmark to elaborate further details of its climate strategy in the broader context of the significant long-term emission reductions that may appear necessary for effective climate mitigation.

159. The review team acknowledged with appreciation the contribution of Denmark to international cooperation on climate change by providing developing countries with extensive technical and financial support as well as support for capacity-building to address all relevant areas of climate change. It also acknowledged the contribution of Danish scientists to advancing the scientific understanding of climate change through research and systematic observations, and endeavouring to disseminate the results from this research. The review team noted that public awareness of climate change and its effects is high in Denmark, which ensures a solid foundation and support for climate change policies.

I. Estonia

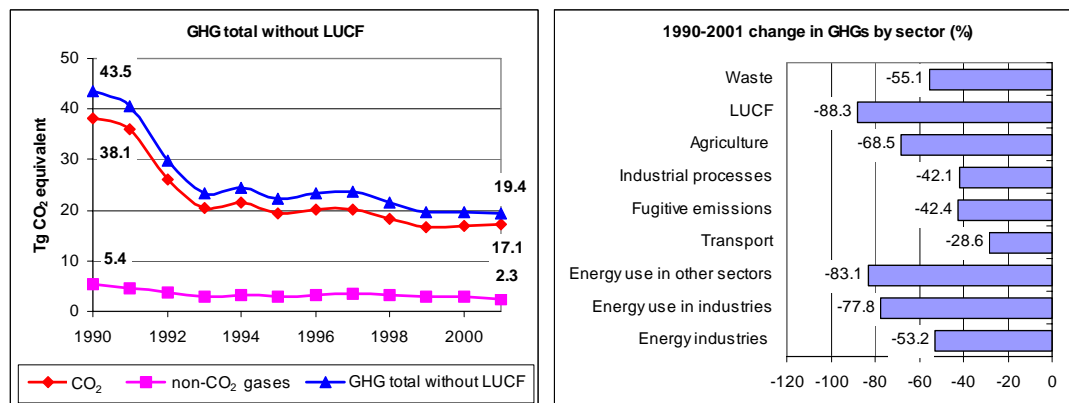
1. Selected country data and summary information drawn from the IDR

Table 42. Macroeconomic and GHG data for Estonia

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	1.57	1.37	1.36	-13.4	-1.3	-0.7
GDP (billions USD 1995 PPP)	13.4	11.5	12.1	-9.7	-0.9	5.2
TPES (Mtoe)	no data	4.52	4.70	no data	no data	4.0
GDP per capita (thousands USD 1995 PPP)	8.5	8.4	8.9	4.7	0.4	6.0
TPES per capita (kgoe)	no data	3.3	3.4	no data	no data	3.0
CO ₂ emissions without LUCF (Tg)	38.1	16.8	17.1	-55.1	-7.0	1.8
GHG emissions without LUCF (Tg CO ₂ eq)	43.5	19.7	19.4	-55.4	-7.1	-1.5
GHG emissions/removals by LUCF (Tg)	-6.32	-8.37	-0.74	-88.3	-17.7	-91.2
CO ₂ / capita (Mg)	24.3	12.3	12.5	-48.6	-5.8	1.6
CO ₂ / GDP (kg per USD 1995 PPP)	2.85	1.46	1.41	-50.5	-6.2	-3.4
GHG / capita (Mg CO ₂ eq)	27.7	14.4	14.2	-48.7	-5.9	-1.4
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	3.25	1.71	1.60	-50.8	-6.2	-6.4

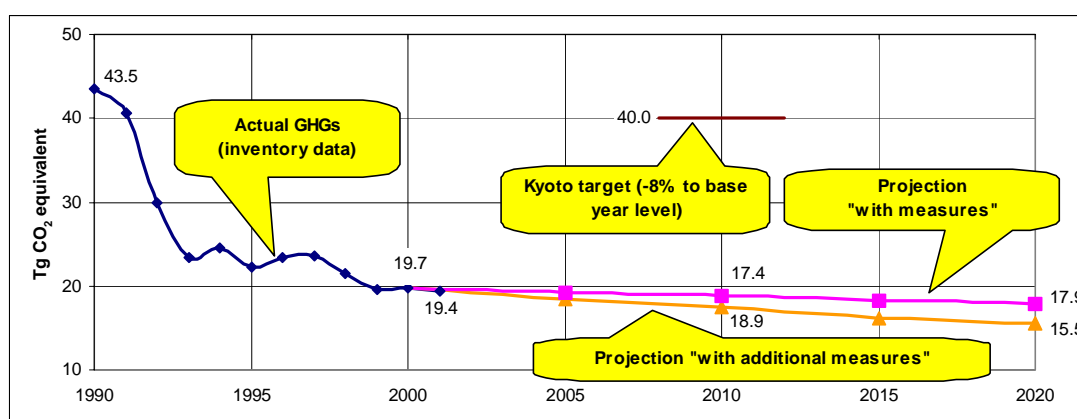
Note: GHG emissions are the sum of CO₂, CH₄ and N₂O. Emissions of HFCs, PFCs and SF₆ are not estimated.

Figure 22. Trends in GHG emissions for Estonia



Note: GHG emissions are the sum of CO₂, CH₄ and N₂O.

Figure 23. GHG projections for Estonia



Note: The projected GHGs are the sum of CO₂, CH₄ and N₂O.

Table 43. Summary information on climate-related policies and measures for Estonia

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	National Climate Change Mitigation Programme (under discussion)
Energy/electricity/emissions taxation	Pollution charge for CO ₂ under Pollution Charge Act (1999)
Other	National Environmental Action Plan (revised in 2001); Estonian Sustainable Development Strategy (in preparation); National Programme for the Adoption of the Acquis Communautaires (1998); National Environmental Strategy (1997)
Energy sector	
Energy sector liberalization	Measures under discussion
Combined heat and power generation	Renovation of district heating systems; CHP study supported by Denmark
Renewable energy sources	Long-Term National Development Plan for the Fuel and Energy Sector (1998); Energy Act (amended in 1998 to include provisions for access to grid for renewables)
Support of fuel switch to natural gas	Voluntary measures by power utilities
Energy efficiency improvements	National Energy Conservation Programme (2000); Action Plan for Energy Conservation Target Programme (2001); revision of the Building Code
Other	Renovation of the Narva power plant; National Programme for the Reduction of Pollutant Emissions from Large Combustion Plants for 1999–2003 (2000); Energy Act (amended in 1998)
Transport	
Vehicle and fuel taxes	Fuel Excise Tax Act (1997); Heavy Vehicles Excise Tax Act (2003)
Integrated transport planning	Development Plan of the Transport Sector for 1999–2006 (1999); subsidies to support public transport
Industry	
Pollution prevention and control	IPPC Directive of the EC
Agreements/partnerships	Voluntary agreements between the Government and some enterprises
Agriculture	
	EU's Special Accession Programme for Agriculture and Rural Development; draft Rural Development Plan; preparation for the Nitrate Directive of the EC; Organic Agriculture Act (1997)
Waste management	
	Implementation of the Landfill Directive of the EC; Waste Act (adopted in 1998, currently under revision); Waste Management Plan (under consideration); Packaging Act (1996); Packaging Excise Duty Act (1998)
Forestry	
	Estonian Forestry Policy (1997); Forest Act (1998)

Table 44. Summary information on climate change vulnerability and adaptation for Estonia

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	Decrease in agricultural productivity is projected (estimated for barley); effect on potato crops is uncertain
Coastal, marine and river ecosystems	Changes in the seasonal timing and magnitude of water run-off are projected; the changes vary depending on the location; the coastal zone is vulnerable to sea level rise
Forests	Increased forest productivity is projected in spite of some negative factors
Infrastructure and economy	Economic losses in the coastal zone from sea level rise were estimated as USD 868.4 million
Water resources	The projected changes in water run-off should not lead to water supply problems

Table 45. Summary information on financial resources and technology transfer for Estonia

AIJ	About 20 energy efficiency and renewable energy AIJ projects with Sweden
JI under Kyoto Protocol	Interest in JI projects; preparation in process using AIJ experience
Other (bilateral/multilateral)	Use of bilateral (from Denmark, Finland and Sweden in particular) and multilateral (from the EC, World Bank, Nordic Investment Bank) funding for environmental and energy projects

2. Conclusions from the IDR of Estonia's third national communication³⁵

160. The NC3 of Estonia reported all major issues required by the UNFCCC guidelines for the national communications. The information provided in the NC3 is comprehensive in general, in spite of certain omissions. It covers all major sectors and emissions of the three major GHGs, although the inventory of fluorinated gases is still lacking. Key climate change policies and measures are reflected sufficiently and concisely, with more information than in the NC2. Unlike the NC2, the NC3 includes projections for CH₄ and N₂O in addition to CO₂. The presentation of CO₂ removals is not sufficiently separated from emissions, particularly in the projections, which has affected the analysis to some extent. The review team identified some discrepancies in the inventory, as compared with the NC2. The team noted inconsistency between estimation of effects of policies and measures and estimation of effects resulting from the projections, as discussed in detail in the IDR report, and this requires clarification.

161. The review team analysed the information contained in the NC3, the 2002 inventory submission, which contains data for 1990–2000, and information provided during the visit. The analysis suggests that Estonia's GHG emissions in 2000 (without fluorinated gases) were 54.6 per cent below the 1990 level.

162. The main reasons given for the substantial decrease in GHG emissions were the decline of the economy in the 1990s and its further restructuring in the transition to a market economy, and, to a lesser extent and more recently, the country's accession to the EC. Policies and measures driven by concern about climate change have played a limited role so far. The new developments in the policy portfolio were mostly driven by harmonization with EC legislation. Nevertheless, compared with the NC2, concrete policies and measures have been adopted, implemented and are being further defined in Estonia's forthcoming climate change mitigation programme.

163. Estonia's target under the Kyoto Protocol is to limit the emission of GHGs to 8 per cent below its 1990 level in 2008–2012. With the policies and measures currently implemented, the emission of three major GHGs (without LUCF) is projected, under the current projections undertaken in the NC3, to reach 18,860 Gg CO₂ equivalent by 2010, 56.6 per cent below the 1990 level (43,494 Gg) and well below Estonia's Kyoto target. With additional measures identified in the NC3, the GHG emissions were projected to be slightly lower, down to 17,420 Gg, 57.1 per cent below the 1990 level. LUCF constituted a significant net sink in 1990–2000 and the sink capacity is projected to continue to increase in future.

164. The review team was of the opinion that the projection of CO₂ emission in the NC3 was methodologically less rigorous than that in the NC2. The resulting projections for overall GHG emissions should therefore be taken with caution. Despite limited resources, a better projection might have been achieved by an alternative approach and more detailed assumptions, as discussed in the IDR report. The current state of affairs may have arisen because Estonia enjoys a substantial margin in meeting its commitments under the Convention and in future under the Kyoto Protocol. However, it is to the country's benefit to maintain and enhance this margin, by various efforts, to take advantage of the Kyoto mechanisms and to prepare for more stringent requirements in the next commitment period.

³⁵ See FCCC/IDR.3/EST (2003).

J. Finland

1. Selected country data and summary information drawn from the IDR

Table 46. Macroeconomic and GHG data for Finland

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	4.99	5.18	5.19	4.0	0.4	0.2
GDP (billions USD 1995 PPP)	100	124	125	25.0	2.1	0.8
TPES (Mtoe)	29.2	33.0	33.8	15.8	1.4	2.4
GDP per capita (thousands USD 1995 PPP)	20.0	23.9	24.0	20.0	1.7	0.4
TPES per capita (kgoe)	5.9	6.4	6.5	10.2	1.0	1.6
CO ₂ emissions without LUCF (Tg)	62.5	62.3	67.7	8.3	0.7	8.7
GHG emissions without LUCF (Tg CO ₂ eq)	77.2	75.4	80.9	4.8	0.4	7.3
GHG emissions/removals by LUCF (Tg)	-23.8	-12.0	-16.9	-29.0	-3.1	40.8
CO ₂ / capita (Mg)	12.5	12.0	13.0	4.0	0.4	8.3
CO ₂ / GDP (kg per USD 1995 PPP)	0.63	0.50	0.54	-14.3	-1.3	8.0
GHG / capita (Mg CO ₂ eq)	15.5	14.6	15.6	0.6	0.1	6.8
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	0.78	0.61	0.65	-16.7	-1.6	6.6

Figure 24. Trends in GHG emissions for Finland

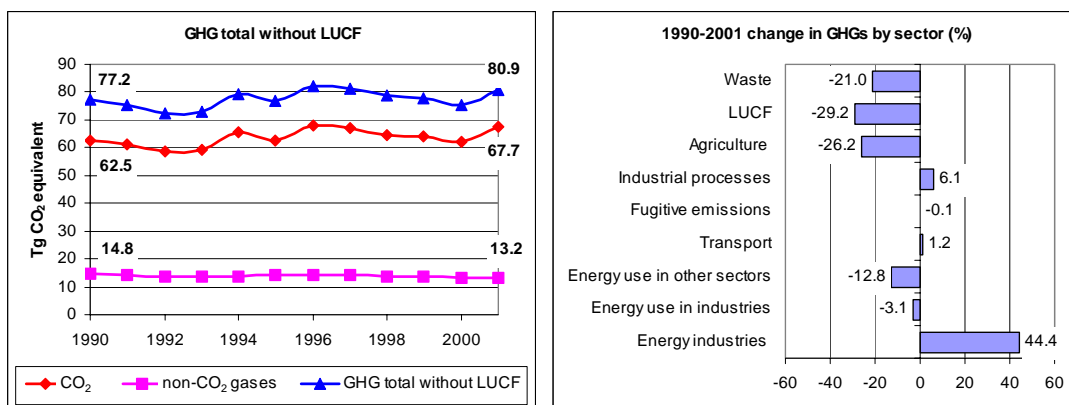


Figure 25. GHG projections for Finland

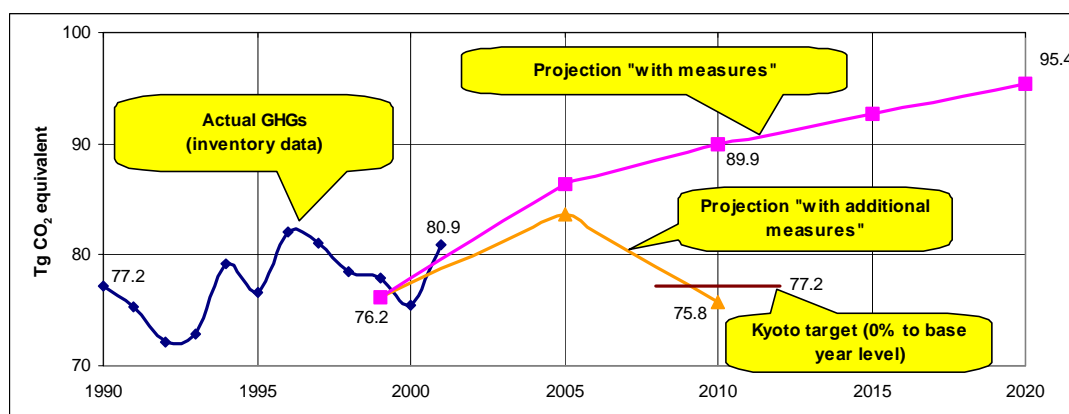


Table 47. Summary information on climate-related policies and measures for Finland

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	National Climate Strategy (2001)
Energy/electricity/emissions taxation	CO ₂ tax for transport and heating fuels (since 1990, with several amendments implemented); energy tax; "differentiated" electricity tax
Emissions trading	EU scheme planned for 2005
Other	Environmental Protection Act (2000); Land Use and Building Act (2000); support of energy-related R&D through MOTIVA and TEKES
Energy sector	
Energy sector liberalization	Electricity Market Act (1995, amended in 1998–1999)
Combined heat and power generation	Support of CHPs using biomass
Renewable energy sources	Action Plan for renewable energy (1999), including targets for the share of renewables in primary energy and electricity; support of the use of biomass, peat, wind, solar and hydro energy
Support of fuel switch to natural gas	National Climate Strategy includes the option of increased gas use
Energy efficiency improvements	Draft Act on Energy Conservation (2003); Energy Conservation Programme (1995, revised in 2000)
Other	Voluntary agreements with energy consumers; "Decision-in-principle" for fifth nuclear unit (2002); Energy Strategy (1997)
Transport	
Vehicle and fuel taxes	Vehicle taxation (differentiation depending on energy efficiency is planned)
Agreements/partnerships	EC agreements: ACEA (1999), KAMA (2000), JAMA (2000)
Integrated transport planning	Urban and regional transport planning; land-use planning; promotion of public and non-motorized transport; support to logistical optimization of freight transport
Other	Environmental management programme for transport (1994); Environmental Guidelines for the Transport Sector (1999), including the objective to stabilize the emissions from transport at the 1990 level by 2010
Industry	
Energy efficiency improvements	Various measures implemented by industries
Pollution prevention and control	Environmental Protection Act (2000); IPPC Directive of the EC
Agreements/partnerships	Voluntary agreements with industrial energy consumers
Other	Measures to limit HFC, PFC and SF ₆ emissions under consideration
Agriculture	
	Common Agricultural Policy of the EC; the agri-environmental programme
Waste management	
	Waste Law (1994); implementation of the Landfill Directive of the EC; waste taxation; increasing landfill gas recovery
Forestry	
	National Forest Programme (1998); Forest Certification System (1999); National Forestry Plan

Table 48. Summary information on climate change vulnerability and adaptation for Finland

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	A generally positive impact of warming is expected due to higher CO ₂ content, increased temperature, longer growing season, and the expansion of the northern limit for cultivation Adaptation: change in cultivated crops
Biodiversity and natural ecosystems	Peatbogs may be affected by warming but the effects are complex
Coastal, marine and river ecosystems	Sea level rise is fully offset by natural uplifting of coastal land; warming may lead to migration and changes of fish species; duration of ice cover in rivers and lakes will become shorter
Forests	A generally positive impact of climate change is expected due to higher CO ₂ content, increased temperature, and longer growing season
Infrastructure and economy	The shortening of the ice season is favourable for navigation on sea and rivers; positive impact of enhanced forest growth on the timber industry is probable
Water resources	Water availability may slightly increase but the increased variability of precipitation may require enhancement of flood protection

Table 49. Summary information on financial resources and technology transfer for Finland

ODA	USD 462 million in 2002 (0.35% of gross national income)
Climate-related aid in bilateral ODA	11.3% (OECD/DAC estimate for 1998–2000)
Contributions to GEF (USD million)	Pilot phase: 27.95; GEF-1: 21.6; GEF-2: 22.1
Pledge for 3 rd GEF replenishment	About EUR 30.0 million (1.11% of GEF-3 total)
Jl and CDM under Kyoto Protocol	Investment of EUR 9.3 million (1999–2001) in the Prototype Carbon Fund of the World Bank; pilot CDM/Jl programme (1999–2001) with about 30 projects identified in El Salvador, Estonia, Latvia, Lithuania, Nicaragua, Poland, Russia, Thailand and Viet Nam; participation in the joint (Denmark, Finland, Iceland, Norway and Sweden) Testing Ground Facility for Jl (2002)
Other (bilateral/multilateral)	Support to environmental projects in EITs in the region, in particular for Estonia, Latvia, Lithuania, Poland and Russia

2. Conclusions from the IDR of Finland's third national communication³⁶

165. The NC3 conforms to the UNFCCC guidelines and is very well prepared. The most notable improvements in comparison with the NC2 are a revised set of policies and measures within a comprehensive national GHG mitigation programme, sound and well-documented GHG projections, evaluation of the costs of GHG mitigation with macroeconomic models, and a more extensive chapter on education, training and public awareness.

166. The review team identified some areas for further improvement: evaluation of sectoral uncertainties of GHG emissions, use of trend analysis for the GHG inventory, analysis of GHG sinks in the context of the Kyoto Protocol, evaluation of the efficiency of implemented measures, comparison with earlier projections, and some others.

167. Finland succeeded in stabilizing its total GHG emissions in the 1990s: total GHG emissions (without LUCF) in 2000 were 4.0 per cent lower than they were in 1990. This remarkable achievement is in line with the UNFCCC aim to return GHG emissions to their 1990 levels by the end of the 1990s (Article 4.2a and 4.2b). Climate-related policies contributed to this achievement, together with some economic and technological factors.

168. Finland also succeeded in stabilizing the CO₂ emissions from transport: in 2000 they were 0.4 per cent lower than they were in 1990. An active policy of the Ministry of Transport and Communications contributed to this achievement. Economic recession from 1991 to 1993, technological progress in the car industry, and increasing use of diesel-fuelled passenger cars, were also important.

³⁶ FCCC/IDR.3/FIN (2003).

169. In the period 1999–2001, the National Climate Strategy (NCS) of Finland was prepared. The NCS concluded that the current policies would not allow Finland to meet its Kyoto target (stabilization of GHG emissions at the 1990 level in the first commitment period of 2008–2012). Therefore, additional policy measures were identified to provide the required GHG reduction of 13–14 Tg CO₂ equivalent per year by 2010. About 50 per cent of these reductions should be achieved in electricity supply (through an increase in gas-fired generation or construction of a new nuclear unit). Efficient use of energy and development of renewable energy sources are to provide, in almost equal proportion, the remaining reductions. Finland is in the process of setting up a monitoring mechanism for the NCS.

170. In 2002, the Government and the parliament supported construction of a new, fifth nuclear unit in Finland. The analysis of GHG mitigation options in the NCS played a role in this decision. It is expected that the unit will start operation in 2009.

171. The NCS is based on domestic mitigation measures. In 1999, Finland started a pilot programme to gain experience with the Kyoto flexibility mechanisms, JI and CDM in particular. Some 30 projects have been identified. For ET, a consolidated EC decision is awaited.

172. Finland is finishing comprehensive research programmes to study climate change implications for the country (the FIGARE programme) and to identify technological solutions to mitigate GHG emissions (the CLIMTECH programme). The final results were expected in 2003.

173. Finland developed about 85 national sustainability indicators structured into 20 thematic groups. Three climate-related indicators were defined and are monitored: total GHG emissions, Finland's average temperature and the ice break-up date of the river Tornio.

174. Finland provides considerable financial resources to developing countries, including climate-related funding, although the Finnish ODA decreased in the 1990s from 0.5–0.8 per cent of GNP to about 0.3 per cent as a result of the severe economic recession from 1991 to 1993. In 2002, Finland contributed, with an increased amount, to the third replenishment of the GEF.

175. According to an August 2002 opinion poll in Finland, climate change is among the most important issues affecting human life. Respondents placed climate change after increased drug use, economic recession and terrorism, but before natural disasters and immigration.

K. France

1. Selected country data and summary information drawn from the IDR

Table 50. Macroeconomic and GHG data for France

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	58.2	60.6	60.9	4.6	0.4	0.5
GDP (billions USD 1995 PPP)	1138	1369	1395	22.6	1.9	1.9
TPES (Mtoe)	227.1	257.4	265.6	17.0	1.4	3.2
GDP per capita (thousands USD 1995 PPP)	19.6	22.6	22.9	16.8	1.4	1.3
TPES per capita (kgoe)	3.9	4.2	4.4	12.8	1.0	4.8
CO ₂ emissions without LUCF (Tg)	395.3	407.2	411.4	4.1	0.4	1.0
GHG emissions without LUCF (Tg CO ₂ eq)	568.2	565.3	568.2	0.0	0.0	0.5
GHG emissions/removals by LUCF (Tg)	-48.3	-55.7	-59.0	22.2	1.8	5.9
CO ₂ / capita (Mg)	6.8	6.7	6.8	0.0	-0.1	1.5
CO ₂ / GDP (kg per USD 1995 PPP)	0.35	0.30	0.29	-17.1	-1.5	-3.3
GHG / capita (Mg CO ₂ eq)	9.8	9.3	9.3	-5.1	-0.4	0.0
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	0.50	0.41	0.41	-18.0	-1.8	0.0

Figure 26. Trends in GHG emissions for France

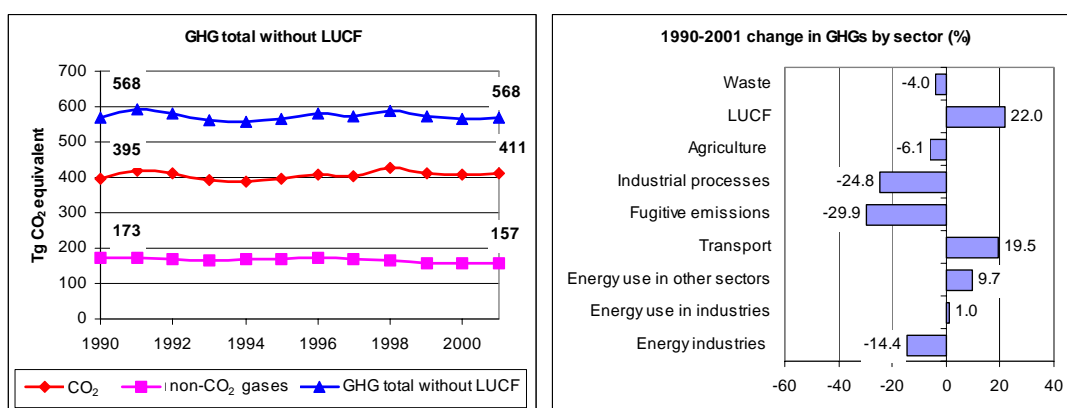
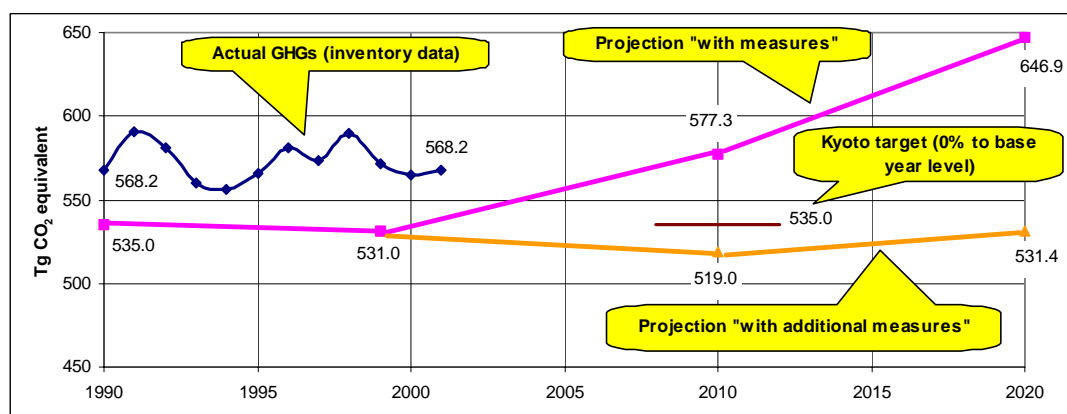


Figure 27. GHG projections for France



Note 1: The difference between inventory data and projections for 1990 and 1999 is due to (a) the absence of the French overseas territories in the projections; (b) inventory recalculations in 2002 and 2003.

Note 2: The value for the Kyoto Protocol target is an estimate consistent with the projections; it excludes GHG emissions from the French overseas territories.

Table 51. Summary information on climate-related policies and measures for France

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	National Programme to Combat Climate Change – NPCCC (2000)
Energy/electricity/emissions taxation	Carbon tax considered in NPCCC; the consideration is currently suspended
Emissions trading	Experimental national trading (2003); EU scheme planned for 2005
Energy sector	
Energy sector liberalization	Electricity Act (2000); Natural Gas Bill
Combined heat and power generation	Promotional fiscal measures since 1997 (tax rebates, favorable depreciation schemes); purchasing obligation under Electricity Act (2000)
Renewable energy sources	Promotional fiscal measures (tax rebates, favorable depreciation schemes, feed-in tariffs); purchasing obligation under Electricity Act (2000); programmes for wind and wood energy, support of renewables in overseas territories
Energy efficiency improvements	Activities of ADEME (a national agency to promote energy efficiency); energy labels and information campaigns; fiscal incentives for building modernization; measures to reduce electricity peak loads
Other	Operation of nuclear power plants; replacement of older plants with combined cycle gas turbines (CCGTs)
Transport	
Vehicle and fuel taxes	Inland Duty on Oil Products; tax rebates for low-emission vehicles
Agreements/partnerships	EC agreements: ACEA (1999), KAMA (2000), JAMA (2000)
Integrated transport planning	Urban transport plans; development of rail and inter-modal transport
Industry	
Pollution prevention and control	IPPC Directive of the EC; General Tax on Polluting Activities; N ₂ O regulations
Agreements/partnerships	Agreement on six GHG gases (2002); agreements on CO ₂ and PFC (1996–2000)
Agriculture	Common Agricultural Policy of the EC; a tax on fertilizers is considered under NPCCC; research is conducted
Waste management	Landfill Directive of the EC; Law on Waste (1992); Decree on Waste (1997)
Forestry	National Plan for French Forests (includes measures to restore forests after the storms of 1999)

Table 52. Summary information on climate change vulnerability and adaptation for France

Vulnerability area	Examples / comments / adaptation measures reported
Coastal, marine and river ecosystems	Coastal area in the south and overseas territories are vulnerable to sea level rise Adaptation: protection against natural disasters
Forests	Forests suffered from extreme storms in 1999. Restoration is in process
Infrastructure and economy	Economic impacts may include losses in the tourist industry (winter tourism in particular) and losses in the insurance industry
Mountain ecosystems	Decreased snowfall; upward shift of the snowline
Water resources	Adaptation: Law on Water (2000)

Table 53. Summary information on financial resources and technology transfer for France

ODA	USD 5.49 billion in 2002 (0.38% of gross national income)
Climate-related aid in bilateral ODA	1.1% (OECD/DAC estimate for 1998–2000)
Climate-related support programmes	French Global Environment Fund (Fond Français pour l'environnement mondial)
Contributions to GEF (USD million)	Pilot phase: 150.5; GEF-1: 143.3; GEF-2: 144.8
Pledge for 3 rd GEF replenishment	About EUR 164 million (6.81% of GEF-3 total)
AIJ	Projects in Jordan, Czech Republic, Hungary, Mauritania and Zimbabwe
Jl and CDM under Kyoto Protocol	The 2002 agreement between the Government and the industry on six GHG gases includes possible use of flexible mechanisms under the Kyoto Protocol
Other (bilateral/multilateral)	Centre de coopération internationale en recherche agronomique pour le développement; l'institut de recherché pour le développement; réseau ECODEV; centres Agrhyet and Acmad

2. Conclusions from the IDR of France's third national communication³⁷

176. The NC3 is a considerable improvement in comparison with the NC2. It follows the UNFCCC guidelines and is, in general, well prepared. The most notable improvements are: full coverage of GHG gases in the inventories and the projections, comprehensive representation of policies and measures, three projected emission scenarios (instead of two in the NC2), and a new chapter on education, training and public awareness.

177. The review team identified some areas for further improvement: methodology of the modelling of energy supply, evaluation and reporting of the costs of GHG mitigation measures, coverage of issues relating to the French overseas territories (the so-called DOM–TOMs), and some others. The French experts indicated that additional UNFCCC guidance on the presentation of GHG inventories and on the evaluation and reporting of mitigation costs might be useful.

178. The French GHG emissions were stable during the 1990s; total GHG emissions in 2000 were 1.7 per cent lower than in 1990. Thus, according to information in the NC3 and the 2001 inventory submission, by the year 2000 France had succeeded in returning its GHG emissions to their 1990 level as stipulated in Article 4.2a and 4.2b of the UNFCCC. The objective was met due to sizeable decreases in CH₄ and N₂O emissions that outweighed some increase in CO₂ and HFC emissions. The emission decreases were most pronounced in industry (reductions in N₂O emissions in the chemical industry in particular); road transport is the key contributor to emission increases. Increased electricity generation by nuclear units helped contain the growth of CO₂ emissions.

179. Organizational support of the climate change policy in France was considerably strengthened when the Inter-ministerial Task Force on Climate Change (MIES) was placed under the authority of the Prime Minister in 1998. MIES played a notable role in the achievement of GHG stabilization in the 1990s.

180. In 2000, the French Government approved a comprehensive national programme to combat climate change: Programme national de lutte contre le changement climatique (PNLCC). It identified measures to stabilize, through domestic action, GHG emissions between 2008 and 2012 at the 1990 level, in accordance with the French commitment under the Kyoto Protocol and the EC burden-sharing agreement. The review team appreciated the comprehensiveness of the PNLCC and emphasized the importance of close follow-up of its implementation.

181. A qualitative change in the direction of GHG mitigation is envisaged in the PNLCC. Whereas practically all reductions of GHG emissions in the 1990s were achieved with CH₄ and N₂O, new mitigation measures deal increasingly with CO₂ emissions, including those from road transport.

³⁷ FCCC/IDR.3/FRA (2003).

182. NC3 projections show that the existing GHG mitigation measures might not be sufficient to meet the Kyoto Protocol target. Supplementary measures identified in the PNLCC, including economic instruments and structural measures, may be required. The review team noted a delay in the implementation of some measures, in particular those of a fiscal nature (the energy and carbon taxes).

183. The overseas parts of France (DOM-TOMs) account for a small portion of GHG emissions (about 2 per cent), but their emissions are growing faster than in the French mainland. Moreover, these territories are particularly vulnerable to the impacts of climate change. Climate-related problems of DOM-TOMs could be analysed in more detail in the future.

184. The storms of 1999 highlighted France's vulnerability to natural disasters. Most vulnerable are DOM-TOMs, the coastal area in the south, the northern part of France, and the mountains. France does not have a programme for adaptation to climate change but has procedures to deal with natural disasters.

185. ODA by France decreased between 1995 and 2000: the NC2 reported the amount of foreign aid as 0.55 per cent of GDP (for 1995) and the NC3 reports 0.32 per cent (for 2000), which is higher than the OECD average of 0.22 per cent. France's long-term objective is 0.7 per cent of GDP.

186. Public awareness of climate change increased in France in the 1990s, in particular after the adoption of the Kyoto Protocol in 1997. An opinion poll in 1998 confirmed that climate change is acknowledged as a problem of national priority.

L. Germany

1. Selected country data and summary information drawn from the IDR

Table 54. Macroeconomic and GHG data for Germany

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	79.4	82.2	82.3	3.7	0.3	0.1
GDP (billions USD 1995 PPP)	1580	1911	1922	21.6	1.8	0.6
TPES (Mtoe)	356.2	343.4	351.1	-1.4	-0.1	2.2
GDP per capita (thousands USD 1995 PPP)	19.9	23.3	23.3	17.1	1.5	0.0
TPES per capita (kgoe)	4.5	4.2	4.3	-4.4	-0.5	2.4
CO ₂ emissions without LUCF (Tg)	1 014.4	858.0	870.8	-14.2	-1.4	1.5
GHG emissions without LUCF (Tg CO ₂ eq)	1 213.5	983.3	995.3	-18.0	-1.8	1.2
GHG emissions/removals by LUCF (Tg)	-33.7	-23.7	-23.7	-29.7	-3.1	0.0
CO ₂ / capita (Mg)	12.8	10.4	10.6	-17.2	-1.7	1.9
CO ₂ / GDP (kg per USD 1995 PPP)	0.64	0.45	0.45	-29.7	-3.1	0.0
GHG / capita (Mg CO ₂ eq)	15.3	12.0	12.1	-20.9	-2.1	0.8
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	0.77	0.51	0.52	-32.5	-3.5	2.0

Figure 28. Trends in GHG emissions for Germany

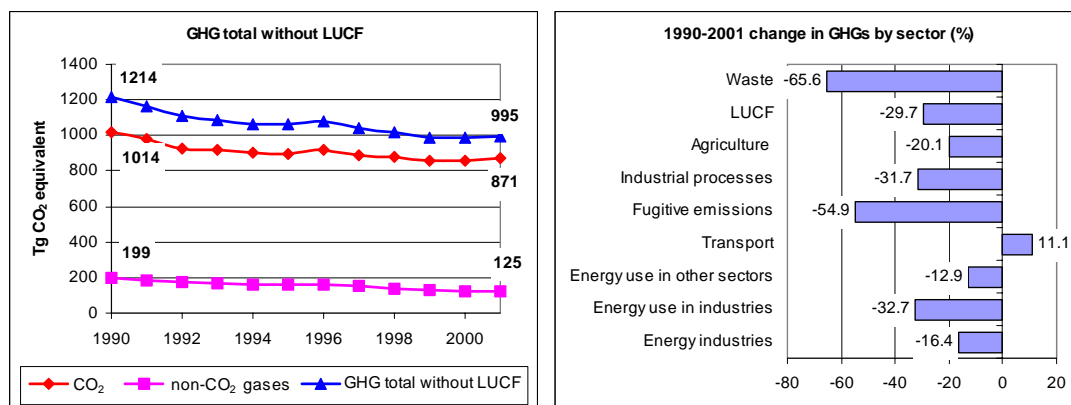
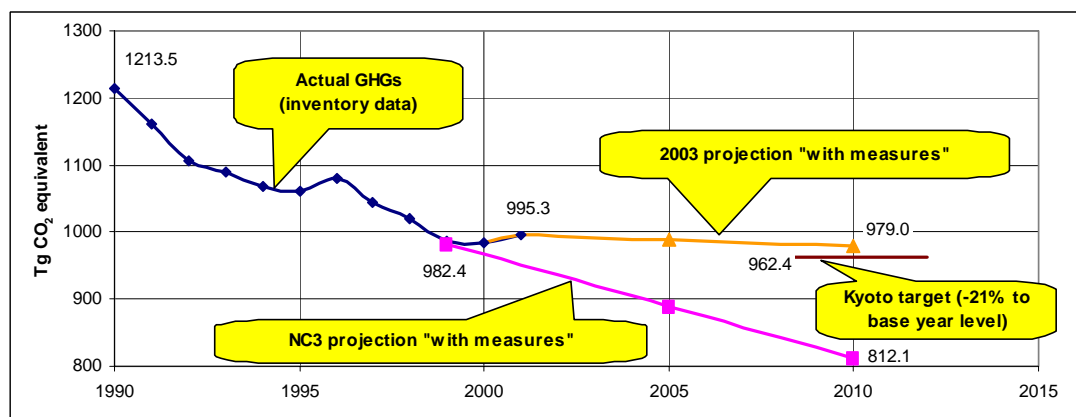


Figure 29. GHG projections for Germany



Note: The 2003 projection, which is more up-to-date than the NC3 projections, is as given in the IDR report; but these data are from an ongoing study and they may change upon the completion of this study.

Table 55. Summary information on climate-related policies and measures for Germany

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	National Climate Protection Programme (2000)
Energy/electricity/emissions taxation	Ecological tax reform (1999–2003)
Emissions trading	EU scheme planned for 2005
Other	National Strategy for Sustainable Development (2002); regional programmes and measures for GHG reductions
Energy sector	
Energy sector liberalization	Energy Industry Act (amendments in 1998–2000); the Competition Law
Combined heat and power generation	Act on Cogeneration (2002); agreement between the Federal Government and German industry (2001) to support cogeneration
Renewable energy sources	Renewable Energy Act (2000); Biomass Ordinance (2001); various federal and regional programmes to support renewables
Support of fuel switch to natural gas	Construction of new combined-cycle gas-fired power plants
Energy efficiency improvements	Ordinance on Energy Saving (2002); building modernization programme of Kreditanstalt für Wiederaufbau; energy/emissions labelling of household devices; promotion of the “finance and operate” concept (planned)
Other	Creation of the German Energy Agency (DENA); Fourth Programme on Energy Research and Energy Technologies (1996–2005); reduction of subsidies for domestic coal production; measures to reduce CH ₄ losses from pipelines
Transport	
Vehicle and fuel taxes	Ecological tax reform (1999–2003); tax rebates for low-emission vehicles; distance-dependent highway toll for trucks (planned for 2004); introduction of an emission-based landing fee for aircraft (under consideration)
Negotiated/voluntary agreements	EC agreements: ACEA (1999), KAMA (2000), JAMA (2000)
Integrated transport planning	Federal and regional support and development for public transport; railway reform to expand the networks and facilitate combined road–rail transport
Other	Energy/emissions vehicle labelling ; cooperation with Brazil on ethanol-powered cars
Industry	
Energy efficiency improvements	Ordinance on Energy Saving (2002); various measures implemented by industries
Pollution prevention and control	IPPC Directive of the EC; use of catalytic decomposition to reduce N ₂ O emissions
Agreements/partnerships	Voluntary agreements of the Federal Government and German industry: on the reduction of specific CO ₂ and GHG emissions (2000) and on CO ₂ reduction (1996); voluntary agreement with the aluminium industry on PFC reduction (1996)
Agriculture	
	Ordinance on Fertilizers (1996); Common Agricultural Policy of the EC; promotion of organic farming
Waste management	
	Ordinance on Environmentally Compatible Waste Storage (2001); Ordinance on Landfills (2002); Landfill Directive of the EC; Technical Instructions on Waste from Human Settlements (1993); Technical Instructions on Waste Management (1991)
Forestry	
	Federal and regional support for “Joint task for the improvement of agricultural structures and coastal protection”; forest restoration after the 1999 storms

Table 56. Summary information on climate change vulnerability and adaptation for Germany

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	Adverse impacts from higher temperatures and reduced water availability are possible in eastern regions
Biodiversity and natural ecosystems	Warming would lead to northward and upward migration of flora and fauna; some species may not be able to move or adapt
Coastal, marine and river ecosystems	Increased water run-off in winter could lead to more frequent floods; coastal regions could be vulnerable to sea level rise and increased frequency of storms Adaptation: flood defense measures, coastal protection
Forests	There is considerable uncertainty about the impacts of climate warming
Human health	Expansion of vector-borne diseases; more frequent heatwaves in summer
Infrastructure and economy	Transport infrastructure, the insurance industry and tourism may be affected

Table 57. Summary information on financial resources and technology transfer for Germany

ODA	US\$ 5.32 billion in 2002 (0.27% of gross national income)
Climate-related aid in bilateral ODA	17.0% (OECD/DAC estimate for 1998–2000)
Climate-related support programmes	German Climate Protection Programme for Developing Countries (since 1993)
Contributions to GEF (USD million)	Pilot phase: 150.45; GEF-1: 240; GEF-2: 220
Pledge for 3 rd GEF replenishment	About EUR 297.92 million (11.0% of GEF-3 total)
AIJ	Six AIJ projects in the Czech Republic, Jordan, Latvia, Russia, Zimbabwe
Jl and CDM under Kyoto Protocol	Interest in Jl and CDM has been indicated; preparations (such as development of guidelines and conclusion of memorandums of understanding) are in process
Other (bilateral/multilateral)	Participation in the international Vulnerability and Adaptation Resource Group; German Appropriate Technology Exchange Programme

2. Conclusions from the IDR of Germany's third national communication³⁸

187. The German NC3 complied with most of the UNFCCC reporting guidelines but the review team noted considerable deviations from the guidelines in the chapter on projections and, to a lesser extent, in the chapter on policies and measures. The NC3 did not contain the required chapter on activities in education, training, and public awareness.

188. From 1990 to 2001, the total GHG emissions in Germany (without LUCF) decreased by 18 per cent. This is one of the largest reductions among Annex II Parties to the UNFCCC. The fact that GDP increased by about 20 per cent in the same period indicates a remarkable success in decoupling GHG emissions from economic growth. The UNFCCC objective of GHG stabilization at the 1990 level by the year 2000 was well attained in Germany. Moreover, the large emission reductions in Germany contributed considerably to the attainment of the stabilization objective by Annex I Parties in total.

189. The review team was impressed by the following strong points of the German climate protection policy: a firm political commitment to GHG mitigation with emphasis on domestic measures; achievement of tangible results from determined policy efforts; use of quantitative targets for emission reductions; and the existence of a monitoring process. At the same time, the review team felt that sustaining the successes of the 1990s would be a considerable challenge. More recently, the emission reductions have slowed down noticeably while the deadlines come closer: 2005 for the national CO₂ reduction target and 2008–2012 for the first commitment period of the Kyoto Protocol. The planned nuclear phase-out may lead to increases in GHG emissions, as estimated in the NC3.

190. The available GHG projections confirm that the targets are challenging. Preliminary results from new, 2003 projections show emission levels higher than those presented in the NC3. Nevertheless, the

³⁸ See FCCC/IDR.3/DEU (2004).

new projections indicate that Germany is still on track for the GHG reduction target under the Kyoto Protocol, although without a large margin suggested by the NC3 projections. But German experts acknowledged that Germany would need to do more to meet its domestic target, a 25 per cent reduction of CO₂ emissions by 2005. CO₂ emissions in 2001 were only 14.2 per cent lower than in 1990.

191. The German authorities are aware of the recent emission trends and of the need to strengthen their climate protection policy. At present, work is in progress to analyse the implementation of the current Climate Protection Programme of October 2000, because some measures (for example, cogeneration) do not seem to have produced the expected effect. The ongoing preparation for the implementation of the EC directive on ET may also lead to a revision of the programme.

192. Most vulnerable to climate change impacts are agriculture, forests, natural ecosystems, water resources, infrastructures, human health and coastal regions. After the recent storms, floods and heatwaves, more attention is being given to adaptation studies, both federally and in the regions.

193. The ODA of Germany decreased from 0.41 per cent of GDP in 1990 to 0.27 per cent in 2000. The share of climate-related assistance in the total ODA was about 14.3 per cent in 1998–2000. Germany strongly supports the GEF and has increased contributions to it since 1991. From 1993 to 2002, about 30 projects in more than 20 developing countries were funded under the Climate Protection Programme for Developing Countries (CaPP). In the future, the CaPP will focus on the reduction and avoidance of GHG emissions, preparation for the CDM, and adaptation to climate change.

194. Germany supports climate and technology research within the general framework of promoting sustainable development. German scientists actively participate in the work of the Global Climate Observing System and the Intergovernmental Panel on Climate Change, and in international climate research programmes.

M. Hungary

1. Selected country data and summary information drawn from the IDR

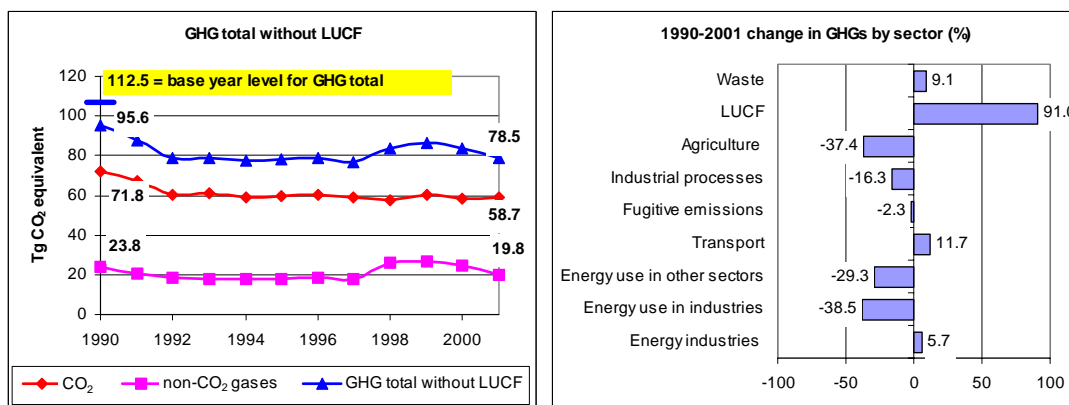
Table 58. Macroeconomic and GHG data for Hungary

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	10.4	10.2	10.2	-1.9	-0.2	0.0
GDP (billions USD 1995 PPP)	105	113	117	11.4	1.0	3.5
TPES (Mtoe)	28.5	24.9	25.3	-11.2	-1.1	1.6
GDP per capita (thousands USD 1995 PPP)	10.1	11.1	11.5	13.9	1.2	3.6
TPES per capita (kgoe)	2.7	2.4	2.5	-7.4	-0.9	4.2
CO ₂ emissions without LUCF (Tg)	84.1	58.6	58.7	-30.2	-3.2	0.2
GHG emissions without LUCF (Tg CO ₂ eq)	112.5	83.3	78.5	-30.2	-3.2	-5.8
GHG emissions/removals by LUCF (Tg)	-2.36	-4.37	-4.51	91.1	6.1	3.2
CO ₂ / capita (Mg)	8.1	5.7	5.8	-28.4	-3.1	1.8
CO ₂ / GDP (kg per USD 1995 PPP)	0.80	0.52	0.50	-37.5	-4.2	-3.8
GHG / capita (Mg CO ₂ eq)	10.9	8.2	7.7	-29.4	-3.1	-6.1
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	1.08	0.74	0.67	-38.0	-4.2	-9.5

Note 1: For CO₂ and GHG emissions, base year data (average for 1985–1987) are used instead of 1990 data, which leads to some inconsistency in GHG emissions per capita and per GDP unit.

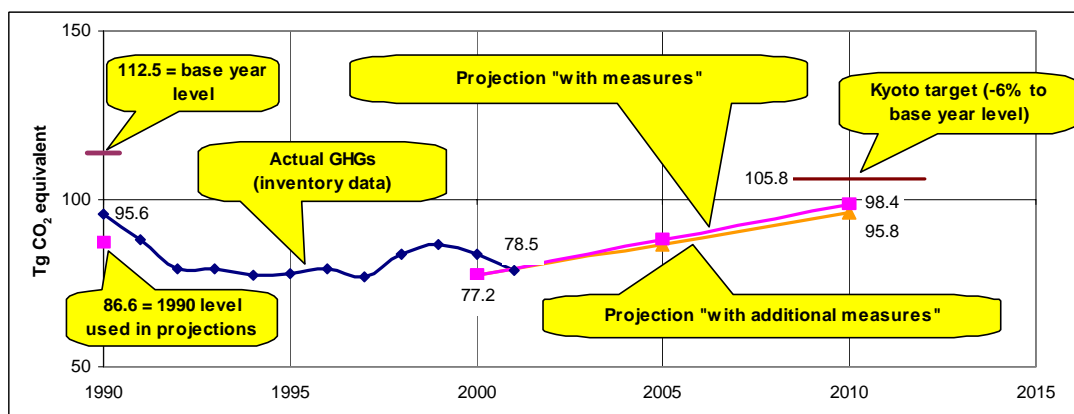
Note 2: For some years, GHG emissions do not include HFCs, PFCs and SF₆.

Figure 30. Trends in GHG emissions for Hungary



Note: For some years, GHG emissions do not include HFCs, PFCs and SF₆.

Figure 31. GHG projections for Hungary



Note: The projected GHGs are the sum of CO₂, CH₄ and N₂O; the inventory data for 1990 and 2000 differ from the data used in projections because of incomplete coverage of sectors in projections and recent inventory recalculations.

Table 59. Summary information on climate-related policies and measures for Hungary

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	Climate Change Action Programme (2003)
Energy/electricity/emissions taxation	Energy tax under consideration
Emissions trading	EU scheme planned for 2005
Other	National Development Plan (2003); 2nd National Environmental Programme (2003); National Programme on the Adoption of the EC <i>Acquis Communautaire</i> ; establishment and operation of the Environmental Protection Fund
Energy sector	
Energy sector liberalization	Electricity Act (2003)
Combined heat and power generation	Obligation to purchase electricity from cogeneration
Renewable energy sources	EC directive on electricity and energy production from renewables; obligation to purchase electricity from renewables
Energy efficiency improvements	Decrees on energy efficiency of household appliances (2002); EC Directive on Energy Performance of Buildings (2002); UNDP/GEF Public Sector Energy Efficiency Programme (2001); National Energy Saving and Energy Efficiency Action Programme (2000)
Other	Establishment and operation of the Energy Center (1999); the PHARE Revolving Fund; the German Coal Aid Fund; a number of other funding sources are used (mostly for projects relating to energy efficiency)
Transport	Sustainable Development Transportation Programme (draft 2003); energy efficiency and CO ₂ labelling of new cars (2002)
Industry	IPPC Directive of the EC
Agriculture	National Agri-environmental Programme for 2000–2006
Waste management	Landfill Directive of the EC; National Waste Management Plan 2003-2008 (2002); Waste Management Act (2000); Act on Environmental Protection Product Charges (1995)
Forestry	National measures to promote afforestation; EU-funded afforestation of abandoned cropland (planned)

Table 60. Summary information on climate change vulnerability and adaptation for Hungary

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	Changes in the vegetation period; displacement of the border between grasslands and forests, and between vegetation and arable zones; impact of increased drought occurrences
Drought	Increased frequency and severity of droughts is considered a major adverse impact of climate change

Table 61. Summary information on financial resources and technology transfer for Hungary

AIJ	Three AIJ projects with the Netherlands and one AIJ project with France
ET under Kyoto Protocol	Preparation of the national registry is in process
Jl under Kyoto Protocol	Interest in JI indicated; preparations in process

2. Conclusions from the IDR of Hungary's third national communication³⁹

195. The information provided in Hungary's NC3 covers the inventory of GHG emissions, policies and measures, projections and other issues required by the UNFCCC guidelines. The inventory includes GHG emissions by sources and removal by sinks in the base period (1985–1987) and 1990–1999, with the recent years being based on the up-to-date IPCC requirements (1996 guidelines). In the NC3, the inventories of HFCs, CFCs and SF₆ are provided only for 1998–1999. However, the 2003 inventory submission in the CRF contains inventory data until 2001. Much research is being undertaken in Hungary to improve the GHG inventory.

³⁹ See FCCC/IDR.3/HUN (2004).

196. Based on the most up-to-date data and information provided during the visit to Budapest, the review team concluded that Hungary's GHG emissions in 2000 were 77,215 Gg CO₂ equivalent, 24 per cent below the base period level (101,633 Gg). In 2001, the GHG emissions were slightly higher, although still about 24 per cent below the base period level. However, considering the inconsistency of the inventory as discussed in chapter II of the IDR report, such a result needs to be viewed with caution.

197. Like most EIT countries, Hungary experienced an economic decline due to political disturbances around 1990, a subsequent transition to a market economy, and structural change. These are the main reasons for the trend of GHG emissions observed in Hungary, despite the inconsistency in the inventory. A few policies directly dealing with climate change have been put in place, although their implementation has hardly been monitored. The process of accession to the EC, together with other economic and social concerns, has driven the bulk of the policies relevant to climate change.

198. The NC3 included projections for CO₂ emissions from the energy sector and removals from LUCF, and CH₄ emissions from agriculture. No projections were provided for N₂O or fluorinated gases, or for GHG emissions from industrial processes and wastes. The current projections were presented in terms of net GHG emissions, i.e. including CO₂ removal by LUCF, not in terms of GHG emissions excluding LUCF. The overall results of projections and those by sectors are not always clear or consistent. This was largely clarified and corrected during the review.

199. Hungary's target under the Kyoto Protocol is to limit its GHG emissions to 6 per cent below its base period level during the first commitment period (2008–2012). With the policies and measures currently implemented and adopted, the emissions of GHGs (without LUCF), based on the extrapolation approach of the NC3 and clarified during the review, would reach 98,425 Gg CO₂ equivalent by 2010, 3.2 per cent below the base period level. With additional measures, the figure will be 95,795 Gg CO₂ equivalent, 5.7 per cent below the base period level. The analysis in this report reveals that even this result is more optimistic than other stricter approaches would suggest.

200. Hungary indicated that it might have to employ Kyoto mechanisms, particularly JI and ET, although the latter will actually become compulsory after Hungary joins the EC. The review team was aware that the current projections were incomplete, so some reduction potentials may have been omitted. In addition, the base period inventory level is currently being recalculated. Nevertheless, the margin is likely to be much smaller than previously thought. This may have a considerable impact on Hungary's ability to meet its target under the Kyoto Protocol and to utilize the Kyoto mechanisms in future.

201. Hungarian officials and experts described the following efforts as a follow-up to the NC3: (i) there will be further improvements in the estimation of the GHG inventory and the effects of climate change policies, particularly on energy efficiency, in measures related to the Kyoto mechanisms, and in energy sector modelling and database formulation; (ii) institutional arrangements for climate change research will be improved to ensure more effective and responsive field research and better assessment and operation of mitigation strategies; (iii) Hungary's socio-economic vulnerability will be examined in more detail, together with potential actions; (iv) the outcomes of domestic and international research on issues relating to climate change will be integrated into education, and education will play a greater role in raising public awareness.

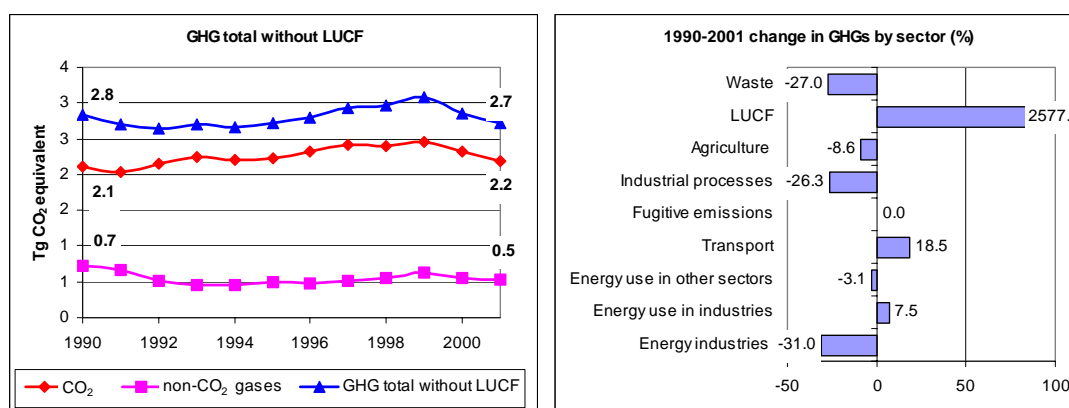
N. Iceland

1. Selected country data and summary information drawn from the IDR

Table 62. Macroeconomic and GHG data for Iceland

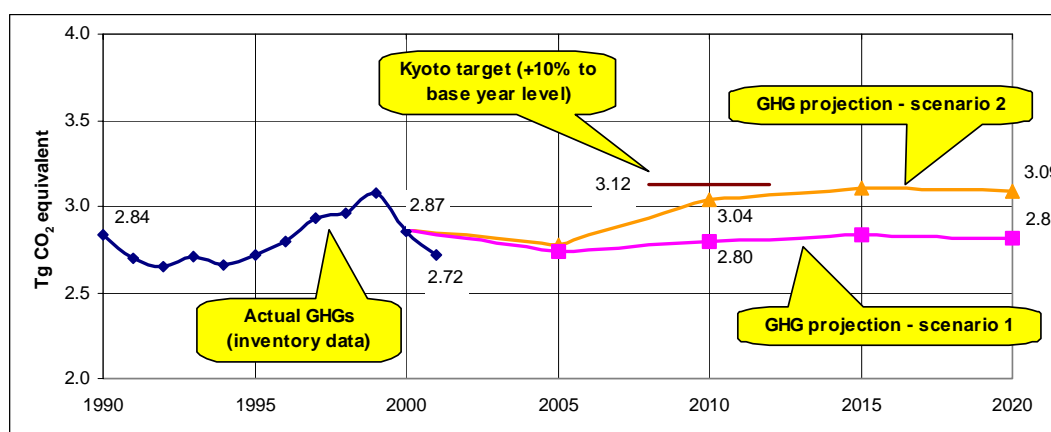
	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	0.255	0.281	0.285	11.8	1.0	1.4
GDP (billions USD 1995 PPP)	5.78	7.48	7.71	33.4	2.6	3.1
TPES (Mtoe)	2.17	3.24	3.36	54.8	4.1	3.7
GDP per capita (thousands USD 1995 PPP)	22.7	26.6	27.0	18.9	1.6	1.5
TPES per capita (kgoe)	8.5	11.5	11.8	38.8	3.0	2.6
CO ₂ emissions without LUCF (Tg)	2.11	2.32	2.19	3.8	0.4	-5.6
GHG emissions without LUCF (Tg CO ₂ eq)	2.84	2.86	2.72	-4.2	-0.4	-4.9
GHG emissions/removals by LUCF (Tg)	-0.01	-0.13	-0.14	1300	34.8	7.7
CO ₂ / capita (Mg)	8.3	8.2	7.7	-7.2	-0.7	-6.1
CO ₂ / GDP (kg per USD 1995 PPP)	0.36	0.31	0.28	-22.2	-2.2	-9.7
GHG / capita (Mg CO ₂ eq)	11.1	10.2	9.5	-14.4	-1.4	-6.9
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	0.49	0.38	0.35	-28.6	-3.0	-7.9

Figure 32. Trends in GHG emissions for Iceland



Note: The GHG emissions shown do not include emissions from two single projects as defined in decision 14/CP.7.

Figure 33. GHG projections for Iceland



Note: Scenario 2 differs from scenario 1 by the inclusion of three additional energy-intensive industrial projects; both projections are "with measures" projections.

Table 63. Summary information on climate-related policies and measures for Iceland

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	Revised implementation strategy for UNFCCC (2002)
Energy sector	
Energy sector liberalization	Act on deregulation of the electricity market (2003)
Renewable energy sources	Strategy for sustainable development "Welfare for the future" (2002)
Transport	
Vehicle and fuel taxes	Planned change of taxation to favor diesel fuel; planned change in import fees
Integrated transport planning	National plan for the development of transport (2002); measures to improve public transportation and transport logistics
Other	Support for research, development and use of hydrogen-fuelled and methane-fuelled vehicles, including the international ECTOS project (2001–2005)
Fisheries^a	
Energy efficiency improvements	Energy efficiency information campaigns, including seminars and workshops on fuel use for fishers; encouragement of the use of best available technologies; use of electricity by ships on shore; measures for switching to electricity at fishmeal factories
Pollution prevention and control	Restrictions on the use of HFC cooling systems
Industry	
	Voluntary agreement between aluminium industry and the Government on PFC ^b emissions per tonne of aluminium produced
Waste management	
	Strategy for sustainable development "Welfare for the future"; collection and utilization of methane from the Reykjavik landfill (1997)
Forestry	
	Four-year programme of revegetation and tree planting (1997–2000); strategic plan for soil conservation and revegetation (2002); five-year plan of action for the forestry sector

^a Because of their high economic importance, fisheries are considered as a separate sector in Iceland.

^b Only PFC emissions are covered because CO₂ emissions of the two large aluminium smelters are excluded by decision 14/CP.7.

Table 64. Summary information on climate change vulnerability and adaptation for Iceland

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	The emerging barley cultivation may be affected (positively by increased temperature or negatively by decreased temperature)
River, coastal and marine ecosystems	Sea level rise is possible Adaptation: changes in the design of dams, bridges, harbours to take into account increases in river water flows and sea level rise
Fisheries	Fish growth and distribution may be affected by temperature changes (a positive effect if the ocean temperature increases and a negative effect if it decreases). Fish stock is vulnerable to disruptions in oceanic circulation
Human health	No significant impact is expected; some positive impact of increased temperature on human comfort is possible

Table 65. Summary information on financial resources and technology transfer for Iceland

ODA	USD 13.062 million in 2002
Other (bilateral/multilateral)	Geothermal training programme of the United Nations University; contributions to the Nordic Environment Finance Corporation and the Nordic Development Fund

2. Conclusions from the IDR of Iceland's third national communication⁴⁰

202. The review team noted that the NC3 contained limited information on the activities of Iceland in dealing with climate change. Discussions with government officials during the in-depth review visit helped to fill numerous gaps and added to the transparency of the information provided. The review team also noted that Iceland's NC3 generally followed the requirements of the UNFCCC guidelines for the preparation of national communications by Annex I Parties and welcomed the intention of the officials to further improve the presentation of information in the fourth national communication.

203. The review team welcomed the submission of the GHG inventory in the CRF format as of 2000 and encouraged national experts to further improve the system for GHG reporting. In particular, the team noted that excluding carbon dioxide emissions covered by COP decision 14/CP.7 from reported trends as of 2000 made interpretation of the trends less transparent.

204. Iceland is among the few Annex I countries that due to its renewable energy based electricity faces particular difficulties in identifying and implementing cost effective mitigation policies and measures. Given these special national circumstances, Iceland takes over a leadership role in shifting towards hydrogen as a fuel for the transport sector, which is the main CO₂ emitter in Iceland.

205. Projections based on policies and measures already in place and planned seem to indicate that Iceland is on track to fulfil its commitments under the Kyoto Protocol. However, the level of uncertainty cannot be assessed. The review team shared the view of the government officials that a consultative, transparent and responsive mechanism to regularly monitor the impacts of adopted policies and measures and the progress towards meeting the emission targets would be essential.

206. More needs to be done to improve financial development assistance reporting by sectors indicated in the UNFCCC guidelines (FCCC/CP/1999/7) during preparation of the next national communication.

207. Climate processes, climate system studies as well as impacts of climate change constitute most of climate-related research in Iceland. It is uncertain, however, what impact climate change will have on Iceland, particularly changes in oceanic currents. It may have both positive and negative effects on the society, national economy and ecosystems.

⁴⁰ See FCCC/IDR.3/ISL (2004). At the time of the preparation of this report, FCCC/IDR.3/ISL was submitted for publication but not yet published. Therefore, the text of conclusions in the published FCCC/IDR.3/ISL may differ slightly from the text given here because of possible editorial changes during proofreading.

O. Italy

1. Selected country data and summary information drawn from the IDR

Table 66. Macroeconomic and GHG data for Italy

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	56.7	57.8	57.9	2.1	0.2	0.2
GDP (billions USD 1995 PPP)	1 082	1 265	1 287	18.9	1.6	1.7
TPES (Mtoe)	152.6	171.7	172.0	12.7	1.1	0.2
GDP per capita (thousands USD 1995 PPP)	19.1	21.9	22.2	16.2	1.4	1.4
TPES per capita (kgoe)	2.7	3.0	3.0	11.1	0.9	0.0
CO ₂ emissions without LUCF (Tg)	428	461	461	7.7	0.7	0.0
GHG emissions without LUCF (Tg CO ₂ eq)	509	544	545	7.1	0.6	0.2
GHG emissions/removals by LUCF (Tg)	-23.5	-15.6	-18.7	-20.4	-2.1	19.9
CO ₂ / capita (Mg)	7.5	8.0	8.0	6.7	0.5	0.0
CO ₂ / GDP (kg per USD 1995 PPP)	0.40	0.36	0.36	-10.0	-0.9	0.0
GHG / capita (Mg CO ₂ eq)	9.0	9.4	9.4	4.4	0.4	0.0
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	0.47	0.43	0.42	-10.6	-0.9	-2.3

Figure 34. Trends in GHG emissions for Italy

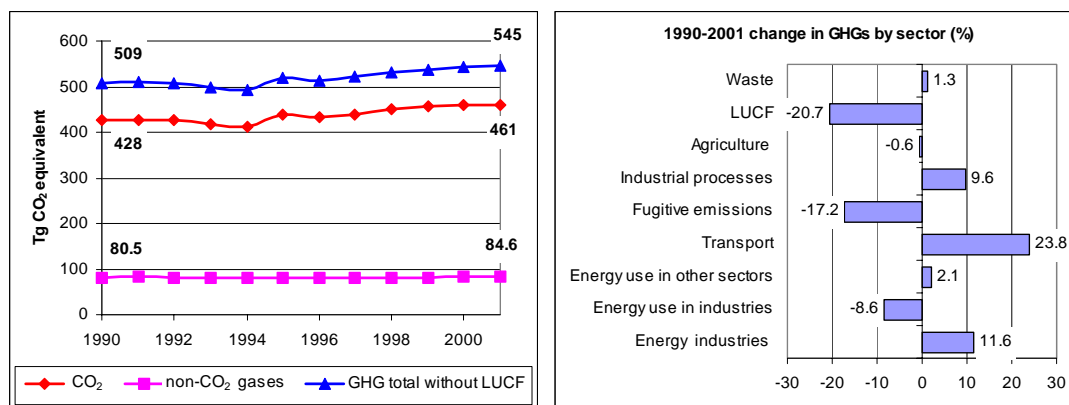
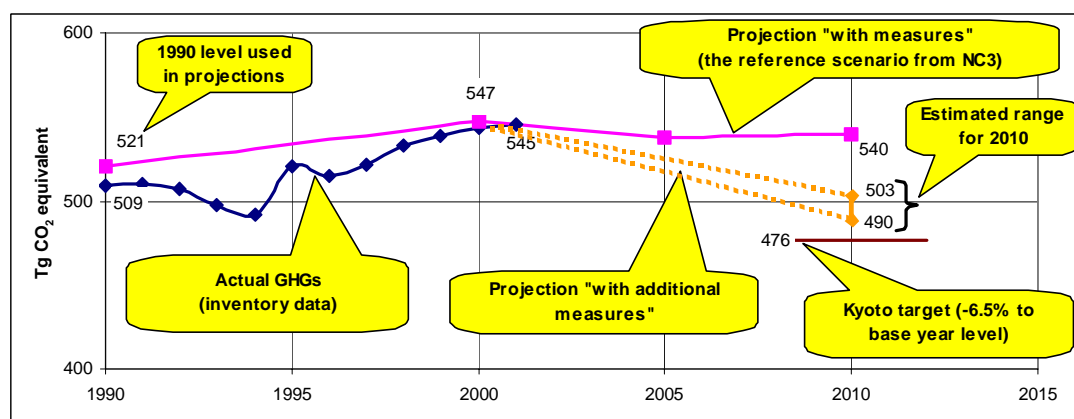


Figure 35. GHG projections for Italy



Note: The difference between inventory data and projections for 1990 and 2000 is due to recent inventory recalculations.

Table 67. Summary information on climate-related policies and measures for Italy

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	Revised guidelines for national policies and measures regarding the reduction of greenhouse gas emissions (2002); voluntary "Climate Act" (1999)
Energy/electricity/emissions taxation	Carbon tax (1998)
Emissions trading	EU scheme planned for 2005
Other	Decentralization of environmental decision-making (2001); regional GHG reductions
Energy sector	
Energy sector liberalization	Transposition of EC directives on electricity (1999) and gas markets (2000)
Combined heat and power generation	Resolution on the recognition of cogeneration (2002)
Renewable energy sources	Expansion of renewable capacity by 2800 MW (by 2002 bill on the reorganization of the energy sector); the 10,000 photovoltaic roofs programme (2001); decree on renewable quota of 2% and "green" certificates (1999, 2002)
Support of fuel switch to natural gas	Expansion of gas-fired capacity by 3200 MW (within the 2002 bill on the reorganization of the energy sector); decree on conversion of oil-fired power plants into combined-cycle units (1999); various other decrees and instructions; support to the expansion of the use of gas in residential and tertiary sectors
Energy efficiency improvements	Decrees on efficiency improvements by gas and power utilities (1999–2001); measures to increase energy use efficiency in buildings
Other	Expansion of power import by 2300 MW (2002); voluntary agreement with the state-owned main electricity company (ENEL) (2000); maintenance of progressive electricity tariffs; support of electricity production from waste and biogas; establishment of a fund to reduce GHG emissions and promote energy use efficiency and sustainable energy sources
Transport	
Vehicle and fuel taxes	Tax reductions/exemptions for biodiesel and low-carbon fuels (2000–2001); incentives for purchase (or conversion) of vehicles on alternative fuels
Negotiated/voluntary agreements	EC agreements: ACEA (1999), KAMA (2000), JAMA (2000); voluntary agreement with the FIAT company (1998); additional agreement with FIAT on gas-fuelled cars (1998)
Integrated transport planning	National transport plan (2001); support to low-carbon vehicles in public transport; measures to improve public transport and transport infrastructure; PROBIO programme for biofuels; Urban Mobility Plans (planned)
Industry	
Energy efficiency improvements	Measures to increase the efficiency of electric motors; law on compulsory appointment of an energy manager (1991)
Pollution prevention and control	IPPC Directive of the EC; reduction of N ₂ O emissions from adipic and nitric acid production (under consideration); measures to reduce emissions of fluorinated gases (under consideration)
Agreements/partnerships	Voluntary agreements with Montedison (1998), Assoverto, and ENEL (2000)
Other	Increased use of cogeneration; increased use of methane; waste combustion
Agriculture	
	Common Agricultural Policy of the EC; EC Directive on good agricultural practice; measures to reduce CH ₄ emissions from manure management and N ₂ O emissions from agricultural soils (under consideration)
Waste management	
	Landfill Directive of the EC; decree on landfilling biodegradable waste (2003); measures to stabilize the organic fraction of waste and increase energy recovery from waste (under consideration)
Forestry	
	Various measures, implemented and planned, for afforestation and reforestation

Table 68. Summary information on climate change vulnerability and adaptation for Italy

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	Some agricultural production may be adversely affected by climate change and some may benefit from the longer growing periods Adaptation: changes in agricultural management
Biodiversity and natural ecosystems	For each °C increase in annual average temperature, ecosystems are expected to move northward 100 km and upward in altitude 150 m; some systems may not adapt to such movement
Coastal, marine and river ecosystems	Sea level is expected to remain stable but parts of the coastline are vulnerable to flooding due to coastal tectonic and isostatic movements; coastline is also vulnerable to extreme weather events Adaptation: coastline protection, the MOSE Plan for Venice
Forests	Two counteracting trends are expected: negative impact of decreased water supply and positive impact of the longer growing season and nitrogenous depositions; increased frequency of fires would have an adverse impact
Human health	Adverse effects of temperature increase in summer are expected
Infrastructure and economy	Tourism, hydropower generation, insurance may be affected by warming and increased frequency of extreme weather events
Mountain ecosystems	The alpine areas are vulnerable to changes in the hydrogeological cycle
Water resources	Warming and decrease in precipitation can lead to water supply problems
Other	Climate change can contribute to the deterioration of soil quality and desertification Adaptation: National Action Plan to combat desertification

Table 69. Summary information on financial resources and technology transfer for Italy

ODA	USD 2.33 billion in 2002 (0.20% of gross national income)
Contributions to GEF (USD million)	Pilot phase: 89.08; GEF-1: 114.7; GEF-2: 60.12 (66.4% of the pledge)
Pledge for 3 rd GEF replenishment	About EUR 118.9 million (4.39% of GEF-3 total)
AIJ	Two energy efficiency projects in Jordan and Morocco
ET, JI and CDM under Kyoto Protocol	The framework for the use of ET, JI and CDM is under discussion
Other (bilateral/multilateral)	Environmental projects in North Africa (Egypt, Tunisia and Lebanon), Latin America (Argentina, Brazil, Chile and Peru); Trilateral Commission for the Protection of the Upper Adriatic and Coastal Areas with Croatia and Slovenia

2. Conclusions from the IDR of Italy's third national communication⁴¹

208. Italy's NC3 represents a considerable improvement over its NC2. It follows the UNFCCC reporting guidelines and is, in general, a well-prepared and comprehensive document. The most notable improvements are a detailed discussion of inventory trends and the application of a new modelling methodology (CEPRIG – Calculation of Emissions and Policies for the Reduction of Italian GHGs) which has a number of innovative features: it integrates all major elements relating to GHGs at both the macroeconomic and sectoral level within one modelling framework and it provides a prompt response on the implications for GHGs of changes in policy options to meet GHG targets. The NC3 has also expanded its presentation of vulnerability and adaptation issues in Italy and is more consistent with the guidelines for financial resources and technology transfer.

209. Some areas for further improvement were identified. The review team noted that any specific inventory improvement programme is hindered by a lack of resources. It was also noted during the review week that Italy fell short of fully implementing the IPCC good practice guidance, which should have been fully implemented by Annex I Parties by the end of 2003. However, subsequent to the review, a full set of CRF tables (1990–2002) was provided to the secretariat. An evaluation of costs for GHG mitigation measures would have been useful in determining the extent to which flexibility mechanisms

⁴¹ See FCCC/IDR.3/ITA (2004). At the time of the preparation of this report, FCCC/IDR.3/ITA was submitted for publication but not yet published. Therefore, the text of conclusions in the published FCCC/IDR.3/ITA may differ slightly from the text given here because of possible editorial changes during proofreading.

under the Kyoto Protocol may be used in the future, as this will be determined by the cost of domestic policies and measures.

210. Between 1990 and 2000 overall emissions (excluding LUCF) increased by 6.9 per cent, from 509 to 544 Mt CO₂ equivalent. Within the EC burden-sharing agreement for the Kyoto Protocol, Italy is required to reduce its GHG emissions in the period 2008–2012 by 6.5 per cent compared to its 1990 emissions. It must reduce GHG emissions by 93 Mt to meet its Kyoto target of 487 Mt CO₂ equivalent. Although the growth in emissions from year to year decreased between 1990 and 2000, the review team believes that the implementation of policies and measures will have to be intensified to meet this target. Measures under the “trend” scenario are expected to yield reductions of 77 Mt CO₂ equivalent, while the measures presented under the “reference” scenario are expected to yield 52 Mt CO₂ equivalent. It is still unclear how the resulting gap of 41 Mt CO₂ equivalent will be filled. Some of this 41 Mt will come from sinks (10 Mt CO₂ equivalent) and from CDM/JI initiatives (12 Mt CO₂ equivalent).

211. Since the NC2, Italy has strengthened its overall framework for climate change policy. In 2002 the Interministerial Committee for Economic Planning (CIPE) approved the National Action Plan for 2003–2010 for the reduction of GHG emissions, as well as the Revised Guidelines for National Policies and Measures Regarding the Reduction of Greenhouse Gas Emissions, outlining the Government’s strategy to reduce emissions by 2012. In addition, both the budget and the staffing of the Ministry for the Environment and Territory (MATT) have increased to meet the needs of the new plan. New directorates have also been established in MATT to address, among other things, sustainable development and flood protection. An inter-ministerial working group was set up in 2002 to implement Italy’s commitments under the Kyoto Protocol. The Interministerial Technical Committee for GHG Emissions (CTE) was created in 2002 to monitor progress in implementation of domestic policies and measures and decide on additional measures to reach the Kyoto target on the basis of a cost-effectiveness analysis.

212. The sectors identified as most vulnerable to climate change are agriculture, forestry, water supply, tourism, human health and the service industries, in particular the insurance sector. Although a national programme for adaptation to climate change is not yet in place, there are a variety of laws on vulnerability and adaptation.

213. Currently, Italy’s ODA amounts to about 0.13 per cent of its gross national product (GNP). The Government has committed itself to meeting the EC goal of 0.33 per cent of GNP by 2006 and indicated its intention to further increase its ODA to 1.0 per cent of GNP at a later date. A recent innovation by the Government was to allocate part of the taxes collected from foreign direct investments by Italian companies to capacity-building efforts in developing countries.

214. Italy continues to be a strong leader in climate science and impact research in the Mediterranean region. A National Research Plan on Climate was prepared in 2002 by MATT, with funding of EUR 38 million. Another new initiative was the establishment in January 2003 of the Euro-Mediterranean Centre for Research on Climate Change with funding of EUR 7 million, to support the strategic programme Sustainable Development and Climate Change.

215. Education and public awareness have increased in Italy with the establishment of a three-year information programme on climate change, which includes dissemination of information by central ministries, local authorities, the private sector and NGOs. As part of the programme, the National Environmental Information and Monitoring System (SINAnet) was set up in 2002.

P. Japan

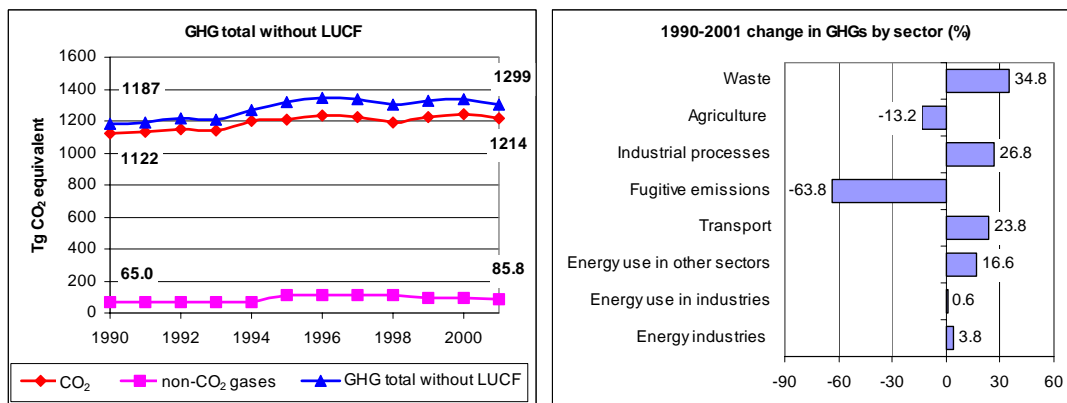
1. Selected country data and summary information drawn from the IDR

Table 70. Macroeconomic and GHG data for Japan

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	123.5	126.9	127.2	3.0	0.3	0.2
GDP (billions USD 1995 PPP)	2 732	3 144	3 126	14.4	1.2	-0.6
TPES (Mtoe)	436.5	524.2	520.7	19.3	1.6	-0.7
GDP per capita (thousands USD 1995 PPP)	22.1	24.8	24.6	11.3	1.0	-0.8
TPES per capita (kgoe)	3.5	4.1	4.1	17.1	1.3	0.0
CO ₂ emissions without LUCF (Tg)	1 122	1 239	1 214	8.2	0.7	-2.0
GHG emissions without LUCF (Tg CO ₂ eq)	1 187	1 333	1 299	9.4	0.8	-2.6
GHG emissions/removals by LUCF (Tg)	-83.8	no data	no data	no data	no data	no data
CO ₂ / capita (Mg)	9.1	9.8	9.5	4.4	0.4	-3.1
CO ₂ / GDP (kg per USD 1995 PPP)	0.41	0.39	0.39	-4.9	-0.5	0.0
GHG / capita (Mg CO ₂ eq)	9.6	10.5	10.2	6.3	0.6	-2.9
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	0.43	0.42	0.42	-2.3	-0.4	0.0

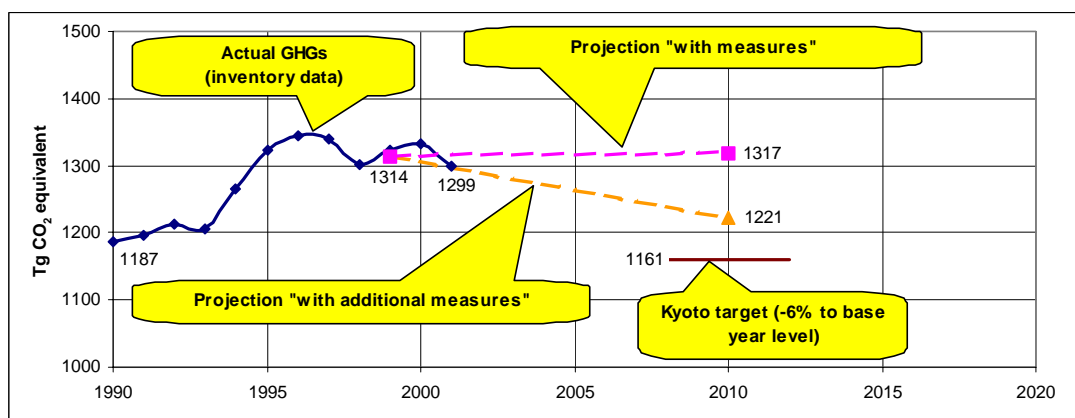
Note: For 1990, the emissions of HFCs, PFCs and SF₆ are not estimated.

Figure 36. Trends in GHG emissions for Japan



Note: Estimates for HFCs, PFCs and SF₆ emissions are included in the GHG total only for 1995–2001.

Figure 37. GHG projections for Japan



Note: The projections were prepared for 2010 only.

Table 71. Summary information on climate-related policies and measures for Japan

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	New Guideline for Measures to Prevent Global Warming (2002); Law on the Promotion of Measures to Cope with Global Warming (1999); Guideline for Measures to Prevent Global Warming (1998); Action Programme to Arrest Global Warming (1990)
Energy/electricity/emissions taxation	Revision of energy tax to reflect carbon content of fuels under consideration
Emissions trading	National experimental emissions trading scheme is planned for 2003
Other	Support to R&D of energy-efficient and environment-friendly technologies
Energy sector	
Renewable energy sources	Law on the Promotion of the Use of New Energy by Electric Power Suppliers (planned for 2003); New Energy Obligation Bill (2002); Field Test of Wind Power (2000); support to R&D for renewables; subsidies and fiscal incentives
Support of fuel switch to natural gas	Support (through subsidies and fiscal incentives) for the conversion of coal-fired boilers and old power plants, and for the development of gas infrastructure
Energy efficiency improvements	"Top Runner" Programme (1998); Law on Rational Use of Energy (1979, revised in 1998); standards and regulations for buildings; voluntary agreement on energy labelling of household electric appliances
Other	Promotion of nuclear power with emphasis on safety; support to international R&D for "Generation IV" nuclear power plants
Transport	
Vehicle and fuel taxes	"Green" taxation scheme for vehicles (2001); introduction of toll in Tokyo (planned)
Agreements/partnerships	"Top Runner" approach for vehicles (1998)
Integrated transport planning	Promotion of the use of public transport; support to the development of railways and other non-road means of transport
Other	Action Plan on Promoting Low-Pollution Vehicles (2001); modernization of railway infrastructure to allow for freight transport (2000); promotion of improvements in traffic logistics; financial support for R&D for low-emission vehicles
Industry	
Energy efficiency improvements	The Keidanren Voluntary Action Plan (1997)
Pollution prevention and control	Guidelines for Measures to Limit Emissions of HFCs, PFCs and SF ₆ by Industry (1998); voluntary introduction of a N ₂ O decomposition system in nitric acid production; regulatory measures for recovery and destruction of fluocarbons
Agriculture	
	Promotion of improvements in agricultural practices leading to decreases in CO ₂ , CH ₄ and N ₂ O emissions
Waste management	
	Reduction of waste generation through waste sorting and recycling; reduction of the volumes of landfilled waste; improvement of combustion at waste incineration facilities; improvements of sewage systems
Forestry	
	Basic Plan on Forest and Forestry (2001); Basic Law on Forest and Forestry; promotion of the use of timber products

Table 72. Summary information on climate change vulnerability and adaptation for Japan

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	Rice production may be affected: positively in high latitudes, negatively in low latitudes Adaptation: changes in cultivation periods, methods and crop types
Biodiversity and natural ecosystems	Warming is equivalent to a shift of natural conditions by about 500 km southward; this means that ecosystems should migrate, adapt or disappear. As Japan's geography is extremely complex, migration may be difficult for many species. Coral reefs may be affected by changes in water temperature and sea level rise
Coastal, marine and river ecosystems	The long coastline and the related population and infrastructures are vulnerable to sea level rise and increasing frequency of storms and floods Adaptation: coastal line protection against sea level rise and natural disasters
Fisheries	Changes in the composition and size of fish populations; decrease in zooplankton as a result of increased water temperature
Forests	Possible positive effect of higher temperatures and longer warm periods but also possible adverse effects from decreased water availability and the expansion of diseases and pests
Human health	Increased heat stress; expansion of vector-borne diseases
Infrastructure and economy	Economic and social infrastructures in the coastal zone are particularly vulnerable to sea level rise and increasing frequency of storms and floods. Climate change may also affect consumption patterns, energy demand and power generation
Mountain ecosystems	Reduced snowfall may have an impact of ecosystems
Water resources	Impact on water availability is possible but studies are needed for this problem

Table 73. Summary information on financial resources and technology transfer for Japan

ODA	USD 9.28 billion in 2002 (0.23% of gross national income)
Climate-related aid in bilateral ODA	15.7% (OECD/DAC estimate for 1998–2000)
Climate-related support programmes	The "Kyoto" initiative (1997)
Contributions to GEF (USD million)	Pilot phase: 63.5; GEF-1: 414.6; GEF-2: 412.6
Pledge for 3 rd GEF replenishment	About USD 439.23 million (48,754.22 million Yen) (17.63% of GEF-3 total)
AIJ	Five AIJ projects with China, Viet Nam and Thailand; more projects in process
Jl and CDM under Kyoto Protocol	23 feasibility studies for Jl and CDM projects have been conducted from 1999 to 2001
Other (bilateral/multilateral)	Organization of annual "Asia–Pacific Seminars on Climate Change" since 1991; participation in the Climate Change Technology Initiative (1995)

2. Conclusions from the IDR of Japan's third national communication⁴²

216. Japan's NC3 is well prepared and conforms to the UNFCCC guidelines for the most part. In comparison with the NC2 there have been notable improvements, such as more comprehensive reporting of inventory data and trends, inclusion of fluorinated gases and a more extensive chapter on impacts and adaptation. The review team identified some areas for further improvement, such as presenting data for sinks between 1996 and 2000 and providing details of the methodology used for projections, especially the methodology and assumptions regarding future GHG emission trends from transport.

217. In 2000, total aggregated GHG emissions excluding LUCF increased by 12.4 per cent compared to 1990 levels, which does not include HFCs, PFCs and SF₆. Although there was some decoupling of CO₂ emissions and economic growth during the decade, Japan was unable to achieve the UNFCCC stabilization target in 2000. This increase was mainly due to emissions of CO₂, which rose by 10.5 per cent between 1990 and 2000. However, aggressive policies in agriculture and industry resulted in a decrease of CH₄ emissions by 17.6 per cent compared to 1990, a decrease in N₂O emissions by

⁴² See FCCC/IDR.3/JPN (2003).

5.1 per cent compared to 1990 and a decrease in HFC emissions by 8.4 per cent over 1995 levels. Japan has also been successful in reducing SF₆ emissions from industry (by about 66 per cent to the 1995 level).

218. Recognizing that efforts need to be strengthened in order to meet its Kyoto target of a 6 per cent reduction in GHG emission levels between 2008 and 2012 compared to 1990, the Japanese Government revised its main national GHG mitigation programme (The New Climate Change Policy Programme) in 2002 to include more stringent regulations in the area of fuel switching, waste, efficient use of energy and development of renewable energy sources. Climate policies in Japan are well coordinated and regularly reviewed. The national Government has also established a well-organized institutional framework under which all central and regional governments concerned, as well as NGOs, participate in preparing the new guidelines, which will undergo assessment and review in 2004 and 2007.

219. According to information received during the review, to meet its Kyoto target Japan must reduce emissions in 2008–2012 by 166 Mt CO₂ equivalent, the difference between the reductions gained from implemented and adopted policies under the “with measures” scenario and the Kyoto level. Of the planned CO₂ emissions reduction of 144 Mt CO₂ equivalent, 51 per cent is planned to be achieved by energy policies and measures, 33 per cent by enhanced sinks, and 16 per cent by innovative technology research and development and public efforts. The remaining gap of 1.6 per cent (20 Mt CO₂ equivalent) will be filled using flexibility mechanisms.

220. The NC3 cited possibly negative climate change impacts on agriculture, in particular on rice and wheat productivity, and for coastal areas as a consequence of rising sea levels and extreme weather events such as frequent storms. In forestry and fisheries, impacts are possibly mixed, varying from positive effects of a longer growing period on certain trees to negative effects of higher temperatures on sardine populations.

221. Japan undertakes high-quality climate observations through a network of more than 150 meteorological stations. In 2003, a major compendium of research information in the area of vulnerability, impact assessment and adaptation entitled *Impact of Climate Change in Japan*, already available in Japanese, will be published in English.

222. Japan provides considerable financial resources to developing countries, including climate-related funding, although from the latter half of the 1990s to the beginning of the 2000s the volume of ODA decreased generally as a result of the severe economic recession. In 2002, however, Japan contributed an increased amount to the third replenishment of the GEF, and made ODA loans amounting to more than USD 2,302 million in 1999.

223. Education and public awareness continue to play an important role in changing the behaviour of the public to ensure reductions in per capita GHG emission levels. To this end, targeted education related to climate change continues to be a priority for the Government as well as for the NGOs. The budget for education and public awareness concerning climate change increased nearly 10-fold between 1990 and 2000 from JPY 340 million in 1990 to around JPY 3 billion in 2000. A large part of the budget was targeted at programmes and facilities for preparing high-quality software, and training of staff for the efficient delivery of climate information and education. These programmes have been well coordinated and funded, but there has been no assessment of their effectiveness.

Q. Latvia

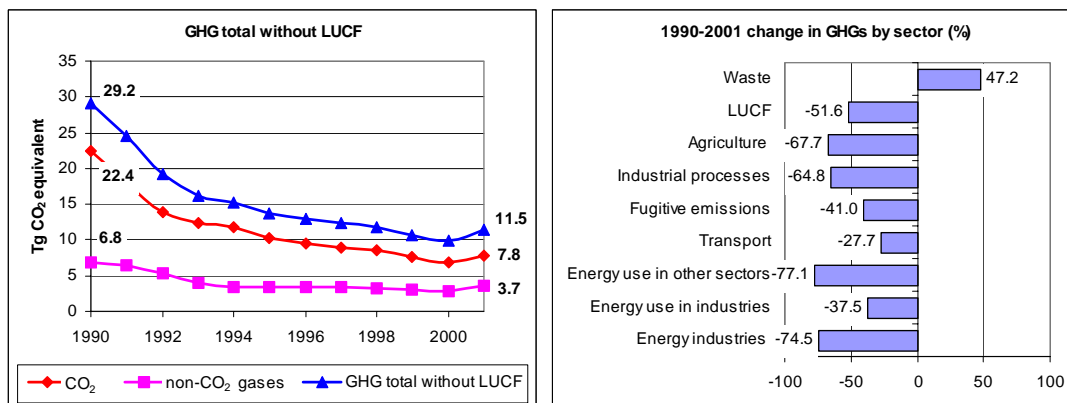
1. Selected country data and summary information drawn from the IDR

Table 74. Macroeconomic and GHG data for Latvia

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	2.67	2.37	2.36	-11.6	-1.1	-0.4
GDP (billions USD 1995 PPP)	25.0	15.6	16.8	-32.8	-3.6	7.7
TPES (Mtoe)	no data	3.61	4.30	no data	no data	19.1
GDP per capita (thousands USD 1995 PPP)	9.4	6.6	7.1	-24.5	-2.5	7.6
TPES per capita (kgoe)	no data	1.5	1.8	no data	no data	20.0
CO ₂ emissions without LUCF (Tg)	22.4	6.9	7.8	-65.2	-9.1	13.0
GHG emissions without LUCF (Tg CO ₂ eq)	29.2	9.9	11.5	-60.6	-8.1	16.2
GHG emissions/removals by LUCF (Tg)	-18.9	-8.1	-9.1	-51.9	-6.4	12.3
CO ₂ / capita (Mg)	8.4	2.9	3.3	-60.7	-8.1	13.8
CO ₂ / GDP (kg per USD 1995 PPP)	0.90	0.44	0.46	-48.9	-5.8	4.5
GHG / capita (Mg CO ₂ eq)	10.9	4.2	4.9	-55.0	-7.1	16.7
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	1.17	0.63	0.69	-41.0	-4.7	9.5

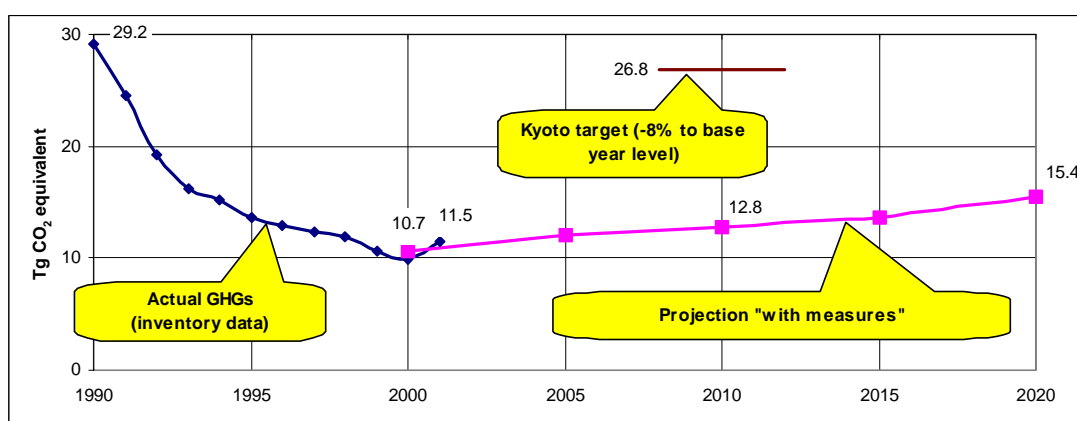
Note: GHG emissions are the sum of CO₂, CH₄ and N₂O; the emissions of HFCs, PFCs and SF₆ are either non-existent or negligible.

Figure 38. Trends in GHG emissions for Latvia



Note: GHG emissions are the sum of CO₂, CH₄, and N₂O; the emissions of HFCs, PFCs and SF₆ are non-existent or negligible.

Figure 39. GHG projections for Latvia



Note: The projected GHGs are the sum of CO₂, CH₄, N₂O, HFCs and SF₆; PFC emissions are considered non-existent.

Table 75. Summary information on climate-related policies and measures for Latvia

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	Climate Change Mitigation Policy Plan (1998, revision in process)
Other	Strategy for Integration into the EU (2001); Environmental Protection Policy Plan (1995); Law on Environmental Protection (1991, amended in 2001); Law on Natural Resources Tax (1995, amended in 2000); the Energy Law (1998, amended in 2001); National Development Plan; activities funded under EU's Instrument for Structural Policies for Pre-accession; creation and operation of Environment Protection Fund and Environmental Investment Fund
Energy sector	
Combined heat and power generation	Conversion of small and medium-size boilers to CHPs; rehabilitation of district heating systems
Renewable energy sources	PHARE-2000 (part of EC's PHARE programme); construction and reconstruction of small hydro plants; promotion of the use of fuelwood and wood wastes; construction of wind power plants; UNDP-GEF project "Regional Baltic Wind Energy Programme" (1999)
Energy efficiency improvements	State Energy Efficiency Strategy including the Efficient Lighting Programme (2002); rehabilitation of heat insulation and reduction of heat losses in buildings; projects under the Local Governments' Crediting Fund
Other	Energy Development Plan; reduction of fugitive emissions from gas pipelines and storage facilities; use of biodiesel in small CHPs (planned)
Transport	
Vehicle and fuel taxes	Law on Excise Tax on Oil Products (1997)
Integrated transport planning	National Transport Development Programme (1995); measures to improve public transportation; construction of bicycle routes in Riga
Other	Strengthening of control of technical standards for vehicles (2000); use of biodiesel (planned)
Industry	
Energy efficiency improvements	Projects to increase energy use efficiency in bakeries and dairies
Pollution prevention and control	Introduction of "Environment Management System and Clean Manufacturing Practice"; participation in regional programme "Environmental management in Eastern Europe"
Agriculture	
	Law on Agriculture (1995); Rural Development Programme (1998); State Programme for Agricultural Subsidies (2001); voluntary implementation of good agricultural practices; activities funded under EU's Special Action for Pre-accession for Agriculture and Rural Development
Waste management	
	National Plan for Waste Management (2001); Law on Waste Management (2000); State Strategy for Household Waste Management for 1998–2010 (1998); National Household Waste Management Programme "500" (1998); introduction of waste sorting and recycling; support of the production and use of biogas
Forestry	
	Latvian Forest Policy (1998); Forest Law (2000); State Forest Service (2000); afforestation of abandoned agricultural land; forest projects funded under EC's PHARE programme

Table 76. Summary information on climate change vulnerability and adaptation for Latvia

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	Vulnerable to climate change; more studies are needed on the problem
Biodiversity and natural ecosystems	Climate change contributes to the pressure on natural ecosystems by deteriorating air quality and prompting changes in land use Adaptation: implementation of the National Programme on Biological Diversity; establishment of protected areas
Coastal, marine and river ecosystems	The Baltic Sea coastal area is vulnerable to sea level rise; sea level rise may also lead to a higher risk of flooding in the lower parts of rivers Lielupe, Daugava and Gauja Adaptation: construction of protection belts along the coast (Law on Protective Belts); planting to reinforce dune sands
Forests	Vulnerable to climate change; more studies are needed on the problem

Table 77. Summary information on financial resources and technology transfer for Latvia

AIJ	27 AIJ projects implemented with Germany, the Netherlands, Sweden
ET under Kyoto Protocol	Interest indicated; GHG projections indicate the existence of quotas to sell
Jl under Kyoto Protocol	Interest indicated; several JI projects under the Prototype Carbon Fund of the World Bank have been accepted
Other (bilateral/multilateral)	Participation in GEF-funded projects; EU/EC programmes; bilateral projects with organizations/companies in the Netherlands, Denmark, Sweden

2. Conclusions from the IDR of Latvia's third national communication⁴³

224. National GHG emissions in 2000 were well below 1990 levels. Under the Kyoto Protocol, Latvia is to decrease GHG emissions by 8 per cent between 2008 and 2012 relative to 1990 levels. It is clear that Latvia will have no difficulty in meeting its commitments under the Protocol. Since the 1990s, as a result of deep restructuring of the economy and the introduction of market forces, as well as the introduction of effective policies and measures, Latvia has achieved a reduction in total GHG emissions, which fell from 31 Tg CO₂ equivalent in 1990 to 11 Tg in 2000, excluding LUCF – a 65 per cent reduction. For this reason, Latvia has not established quantitative reduction targets under the UNFCCC, but under the Kyoto Protocol the country committed itself to reduce its total GHG emissions by 8 per cent below 1990 levels in the period 2008–2012. In 2000, GHG emissions were estimated at 17.6 Tg CO₂ equivalent below the Kyoto Protocol level. It will not be difficult for Latvia to maintain this level of emissions for the period 2008–2012. Projections presented in the NC3 show that by 2012 total GHG emission would be between 13–15 Tg CO₂ equivalent (representing a 52–58 per cent reduction compared to 1990).

225. However, the review team is of the opinion that, given the serious problems associated with data collection and verification (see chapter II of the IDR report), these need to be addressed to ascertain the actual levels of GHG emissions in Latvia between 1990 and 2000. In addition, economic growth is estimated to proceed faster than projected in the NC3. The Latvian economy, and the transport sector in particular, is developing more rapidly than was assumed under the baseline scenario and this may result in an increase in GHG emissions from waste and transport that are higher than those assumed in the current projections in the NC3. Priority should therefore be given to data verification procedures to allow the monitoring of such developments.

226. The review team noted substantial improvements in the preparation of the NC3 compared to the NC2, in terms of compliance with the UNFCCC reporting guidelines. This has been attributed to the work done by the Ministry of Environmental Protection and Regional Development in collaboration with other agencies. However, the review team believes that there is a need for even closer collaboration

⁴³ See FCCC/IDR.3/LVA (2003).

among agencies in preparing the national communication and, most importantly, in the compilation and dissemination of data, to ensure consistency in methodologies and in data used for policy-making regarding climate change. This will add value to energy balances and emission inventory statistics and also provide indicators for better understanding of inventory trends.

227. As explained in chapter III of the IDR report, a comprehensive inter-ministerial umbrella programme for climate policy (targets, conditions, etc.) is not yet in place to provide a clear steering mechanism for future policy direction. A Strategy for Sustainable Development is almost now in place and a climate policy will be one of the principal building blocks of this strategy. The review team is hopeful that this strategy document, together with the establishment of a high-level inter-ministerial working group on climate policy, will provide a sound institutional basis for the formulation of scenarios for climate policy assessment.

228. Transport emissions are growing in Latvia. Measures to control the growth of GHG emissions from transport need to be strengthened, especially in demand-side management, urban development with control of urban sprawl, and reduction of emissions from vehicles in road transport.

229. Latvia is not a large country, but it has developed many international links focusing on climate measures. Latvia cooperates with many international institutions as well as with individual countries: the World Bank, the GEF, the European Bank for Reconstruction and Development, EC programmes, the Netherlands, Sweden, Germany, Finland and Denmark.

230. Commendable initiatives have been taken since the NC2 in education, training and public awareness of environmental issues in general. The most noteworthy was the development of the Strategy on Environmental Communication and Education and Action Plan for 1998–2000, and to include these issues in primary, secondary and tertiary levels of education.

R. Netherlands

1. Selected country data and summary information drawn from the IDR

Table 78. Macroeconomic and GHG data for the Netherlands

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	14.9	15.9	16.0	7.4	0.6	0.6
GDP (billions USD 1995 PPP)	296	394	399	34.8	2.8	1.3
TPES (Mtoe)	66.5	75.5	77.2	16.1	1.4	2.3
GDP per capita (thousands USD 1995 PPP)	19.8	24.8	24.9	25.8	2.1	0.4
TPES per capita (kgoe)	4.4	4.7	4.8	9.1	0.7	2.1
CO ₂ emissions without LUCF (Tg)	159.3	173.8	179.9	12.9	1.1	3.5
GHG emissions without LUCF (Tg CO ₂ eq)	210.0	216.8	219.7	4.6	0.4	1.3
GHG emissions/removals by LUCF (Tg)	-1.42	-1.41	-1.41	-0.7	-0.1	0.0
CO ₂ / capita (Mg)	10.7	10.9	11.2	4.7	0.5	2.8
CO ₂ / GDP (kg per USD 1995 PPP)	0.54	0.44	0.45	-16.7	-1.6	2.3
GHG / capita (Mg CO ₂ eq)	14.0	13.6	13.7	-2.1	-0.2	0.7
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	0.71	0.55	0.55	-22.5	-2.3	0.0

Figure 40. Trends in GHG emissions for the Netherlands

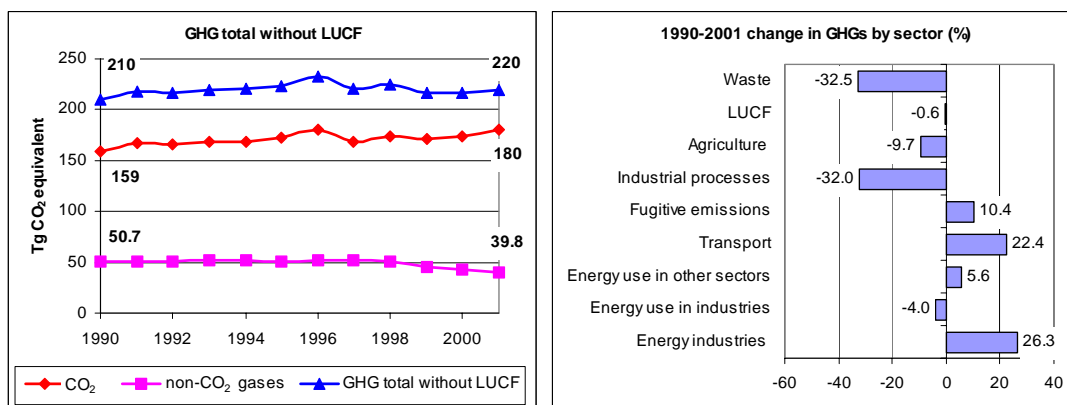
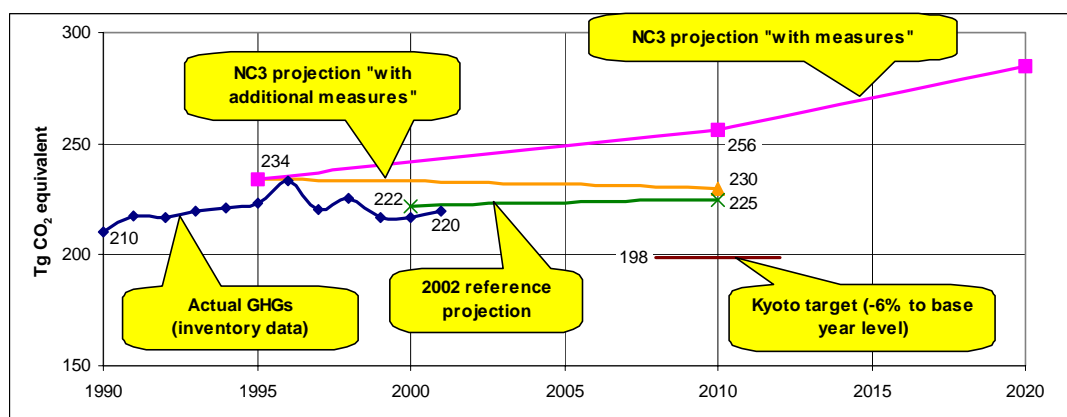


Figure 41. GHG projections for the Netherlands



Note: The 2002 reference projection is a “with measures” projection; it is more up-to-date than the NC3 projections.

Table 79. Summary information on climate-related policies and measures for the Netherlands

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	National Climate Policy Implementation Plan: Part 1 – domestic measures (1999); Part 2 – measures abroad (2000)
Energy/electricity/emissions taxation	Energy tax based on the energy content of fuels and their carbon content
Emissions trading	EU scheme planned for 2005
Other	Covenant on climate policy between the national Government and the local authorities (provinces and municipalities)
Energy sector	
Energy sector liberalization	Electricity market liberalization since 1999 (to complete in 2004); gas market liberalization in process since 2000
Combined heat and power generation	Fiscal incentives for the development of gas-fired CHPs
Renewable energy sources	Subsidies, fiscal incentives, “green certificates”, “green label” trading system; agreements on wind farm construction; voluntary agreements with housing corporations; support to R&D for renewables
Support of fuel switch to natural gas	Fiscal incentives for the development of gas-fired CHPs
Energy efficiency improvements	Voluntary agreement (“Coal Covenant”) with coal plant operators (2002); Efficiency Benchmarking Covenants (EBC) for power plants; the Energy Premium Programme (2000); Energy Performance Advice (1999); the informational ENTER project
Other	Life extension for the Borselee nuclear power plant from 2004 to 2013
Transport	
Vehicle and fuel taxes	Cancellation of tax deductions for commuting by private car (2001)
Agreements/partnerships	EC agreements: ACEA (1999), KAMA (2000), JAMA (2000); voluntary agreements with airlines and the Schiphol Airport (1999)
Other	Energy labelling for new cars (2001); “A New Way to Drive” programme (2000)
Industry	
Energy efficiency improvements	Efficiency benchmarking covenants for industries
Pollution prevention and control	Reduction Programme on non-CO ₂ gases; IPPC Directive of the EC
Agreements/partnerships	Long-term agreements with industries
Agriculture	
Glami Covenant; Common Agricultural Policy of the EC	
Waste management	
Reduction Programme on non-CO ₂ gases; Landfill Directive of the EC	
Forestry	
Afforestation projects of the National Green Fund; Forestry Law	

Table 80. Summary information on climate change vulnerability and adaptation for the Netherlands

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	Possible impact of climate change and the need for adaptation
Biodiversity and natural ecosystems	Possible impact of climate change and the need for adaptation
Coastal, marine and river ecosystems	The coastal zone and the river areas, in particular deltas, are vulnerable to sea level rise and increased frequency/severity of storms and floods Adaptation: measures within the Coastal Defense Policy
Forests	Possible impact of climate change and the need for adaptation
Infrastructure and economy	Infrastructures in the coastal zone and river deltas are vulnerable to sea level rise and increased frequency/severity of storms and floods
Water resources	Deterioration of groundwater quality in the coastal zone due to sea level rise

Table 81. Summary information on financial resources and technology transfer for the Netherlands

ODA	USD 3.34 billion in 2002 (0.81% of gross national income)
Climate-related aid in bilateral ODA	2.3% (OECD/DAC estimate for 1998–2000)
Climate-related support programmes	Netherlands' Climate Programme (covering capacity-building, mitigation, adaptation) including Climate Change Studies Assistance Programme (1996)
Contributions to GEF (USD million)	Pilot phase: 51.61; GEF-1: 71.4; GEF-2: 72.8
Pledge for 3 rd GEF replenishment	About USD 89.38 million (3.3% of GEF-3 total); supplemental USD 3.38 million
AIJ	25 AIJ projects in 14 countries implemented
Jl and CDM under Kyoto Protocol	Use of Jl and CDM is planned
Other (bilateral/multilateral)	Long-term cooperation programmes with 22 developing countries; cooperation with 15 developing countries; cooperation with countries in economic transition in Central and Eastern Europe; Miliev programme to support private sector initiatives; participation in the development and application of the FINESSE concept for "green" energy supply

2. Conclusions from the IDR of the Netherlands's third national communication⁴⁴

231. On the basis of the information from the NC3 and from the supplementary information and reports provided during the visit, the review team concluded that the NC3 provides a comprehensive and consistent overview of the national climate policy of the Netherlands. Key climate change policies and measures, GHG inventory, projections and other issues addressed in the NC3 are presented in a succinct and objective way. The review team also concluded that the presentation of the information, in general, conforms to the UNFCCC guidelines, and did not identify information gaps.

232. The review team commended the attempts of the Dutch inventory team to improve the quality of the inventory by using more complex methodologies, improving the quality of activity data and emission factors and reducing the uncertainties in estimates. Also, it noted that the Netherlands is well ahead in the preparation of its national system under the Kyoto Protocol. The review team encouraged the Dutch inventory team to recalculate emissions in a systematic manner when changes in methodologies are made or new sources added, to ensure consistent time series. On policies and measures, in the textual description of policies the review team encouraged the Netherlands to report by sector, subdivided by gas, as was done in the summary table following the UNFCCC requirement, in particular for the non-CO₂ gases. The same comment is valid for projections, with specific suggestions noted in the relevant section of the report.

233. On the aim of the UNFCCC to return individually or jointly the emissions in 2000 to their 1990 level, the review team noted that in 2000 the total emissions without emissions and removals from LUCF were still 3 per cent higher than the emissions in 1990. Underlying reasons for these results were the relatively high economic growth, and the fact that climate policy in the 1990s was centred largely on voluntary measures aimed at relative targets. Also, targets for renewable energy and efficiency improvement in horticulture were not met. Still, the Netherlands has introduced some measures, such as the long-term negotiated agreements (LTAs), which have led to a noticeable reduction in emissions. Their success is to a large extent explained by the important role of the industrial associations in the country. The steadily rising energy tax and the success in promoting of CHP by 2002 have also brought sizeable emission reductions.

234. Under the Kyoto Protocol, the Netherlands has committed itself to a target of 8 per cent reduction in emissions in the first commitment period (2008–2012) compared to the 1990 emission level, whereas under the EC burden-sharing agreement the commitment is for 6 per cent reduction. To achieve this target, the Netherlands has put in place a comprehensive National Climate Policy Implementation Plan (NCPIP) which combines flexibility in choice of means and tools for emission reduction with the

⁴⁴ See FCCC/IDR.3/NLD (2003).

possibility of strengthening the programme over time if necessary. Given the structure of the primary energy supply and the presence of highly energy-intensive industry, it is well understood that the domestic part of the NCPIP continues to centre on energy efficiency, fuel switching, renewable energy and non-CO₂ gases, like earlier climate programmes. The covenant for climate policy recently concluded with provinces and municipalities will foster the implementation of the NCPIP at the local level.

235. The team commended the efforts of the Dutch Government to monitor and evaluate policy performance and to take corrective steps when necessary. The 2002 Climate Policy Evaluation suggested that in order to achieve the targets set, it was already necessary to launch one of the policies from the reserve package, reduction of N₂O from nitric acid production. With these measures in place, it seems possible to reach the targets set.

236. However, this change in the NCPIP balance between measures targeting CO₂ and non-CO₂ gases will make it even more difficult to achieve far-reaching reductions in emissions of CO₂, which is the most important gas for the Netherlands. Also, there seems to be considerable uncertainty as to the relative weight of the actual emission reductions that will be achieved within the package, in particular from the energy sector and renewable energy. This uncertainty is estimated within the range of the total effect of the NCPIP and largely stems from the effect of energy market liberalization and the evolution of the EC climate policy, in particular the ETS. The latter well illustrates the problems that a country faces when trying to find the best policy mix between approaches that best fit the national circumstances, e.g. LTAs and efficiency benchmarking covenants (EBCs), and new international approaches such as ET. There are also some uncertainties relating to the proportions of NCPIP reductions expected to come from the Kyoto mechanisms and to transport emissions, which are likely to continue to grow rapidly unless the more rigorous policies noted in this report are implemented. Also, if GDP continues to grow in line with the growth rate in the last decade, which is higher than the assumed growth in the new reference scenario, this could lead to higher baseline emissions and to the need for new measures to be introduced to attain the Kyoto target.

237. The review team noted with appreciation the effort to raise public awareness of climate change and to ensure wider support for achieving domestic and international policy goals. It is clear that the general public holds strong views on the need to address climate change, which has made environment and climate change an integral part of mainstream policies in the Netherlands.

S. New Zealand

1. Selected country data and summary information drawn from the IDR

Table 82. Macroeconomic and GHG data for New Zealand

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	3.36	3.83	3.85	14.6	1.2	0.5
GDP (billions USD 1995 PPP)	54.2	71.5	73.9	36.3	2.8	3.4
TPES (Mtoe)	14.0	18.0	18.3	30.7	2.5	1.7
GDP per capita (thousands USD 1995 PPP)	16.1	18.7	19.2	19.3	1.6	2.7
TPES per capita (kgoe)	4.2	4.7	4.8	14.3	1.2	2.1
CO ₂ emissions without LUCF (Tg)	25.3	30.7	32.4	28.1	2.3	5.5
GHG emissions without LUCF (Tg CO ₂ eq)	61.8	70.3	72.4	17.2	1.5	3.0
GHG emissions/removals by LUCF (Tg)	-21.7	-23.6	-23.8	9.7	0.8	0.8
CO ₂ / capita (Mg)	7.5	8.0	8.4	12.0	1.0	5.0
CO ₂ / GDP (kg per USD 1995 PPP)	0.47	0.43	0.44	-6.4	-0.5	2.3
GHG / capita (Mg CO ₂ eq)	18.4	18.4	18.8	2.2	0.2	2.2
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	1.14	0.98	0.98	-14.0	-1.4	0.0

Figure 42. Trends in GHG emissions for New Zealand

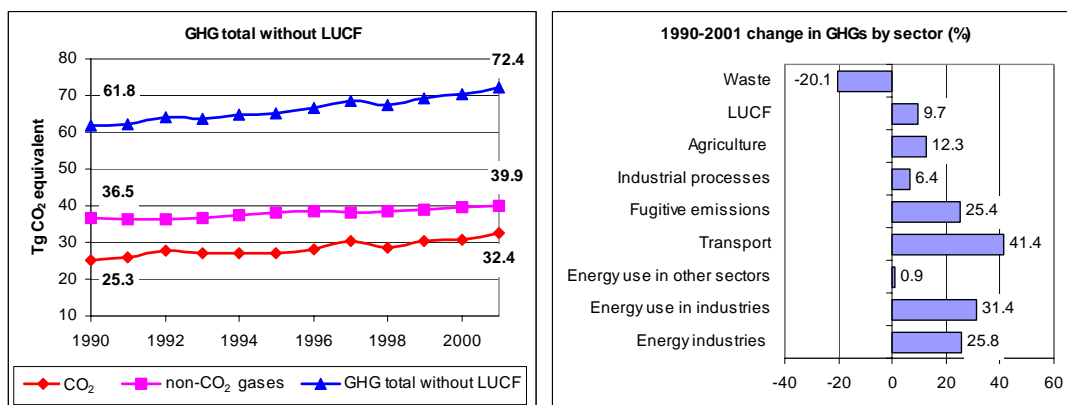
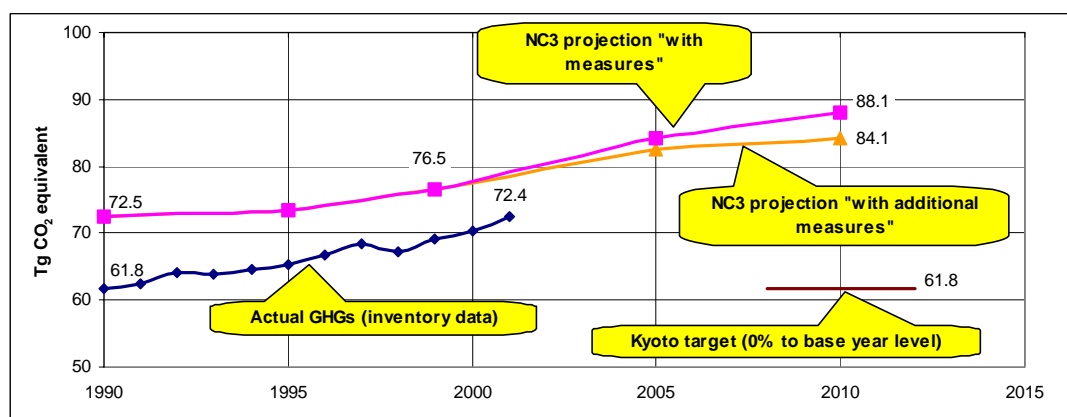


Figure 43. GHG projections for New Zealand



Note 1: The projected GHGs are the sum of CO₂, CH₄ and N₂O.

Note 2: The difference between inventory data and projections for 1990–1999 is mostly due to inventory recalculations (for CH₄ and N₂O in particular) in 2002–2003.

Note 3: The NC3 scenario “1% and 1.5% energy efficiency increase” is taken as the scenario “with additional measures”.

Table 83. Summary information on climate-related policies and measures for New Zealand

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	Preferred Policy Package on Climate Change (PPPCC) (2002)
Energy/electricity/emissions taxation	Emissions charges (from 2007) under PPPCC
Emissions trading	Domestic system under consideration
Energy sector	
Energy sector liberalization	Commerce Act (1986); amendments to Commerce Act
Energy efficiency improvements	Energy Efficiency and Conservation Act (2000); National Energy Efficiency and Conservation Strategy (2001); changes in the Building Code (2000); energy performance standards and labelling; Energy Efficiency Leadership Programme (planned)
Transport	Land Transport Act (1998); New Zealand Transport Strategy (2002)
Industry	Resource Management Act (1991); Negotiated Agreements under PPPCC
Agriculture	Research; exemptions against research to reduce CH ₄ and N ₂ O under PPPCC
Waste management	Waste Minimization and Management Strategy (2002)
Forestry	East Coast Forestry Project; tax deductions for investments; protection of indigenous forests

Table 84. Summary information on climate change vulnerability and adaptation for New Zealand

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	Both positive and negative impacts are expected Adaptation: research; guidance document for climate change impacts in agriculture (2001)
Biodiversity and natural ecosystems	Some native ecosystems may be at risk
Coastal, marine and river ecosystems	Sea-level rise may be alleviated by post-glacial rebound Adaptation: Actions of local authorities under Resource Management Act (1991); Coastal Policy Statement (1994)
Drought	Risk of droughts may increase in eastern areas
Human health	Introduction of vector-borne diseases Adaptation: Biosecurity Strategy (under development)
Infrastructure and economy	Increased frequency of extreme weather events may have an impact on agriculture and urban infrastructures Adaptation: Protection against climate hazards by local authorities under Resource Management Act (1991)
Mountain ecosystems	Faster shrink of glaciers; upward shift of snowlines

Table 85. Summary information on financial resources and technology transfer for New Zealand

ODA	122 USD million in 2002 (0.22% of gross national income)
Climate-related aid in bilateral ODA	0.4% (OECD/DAC estimate for 1998–2000)
Climate-related support programmes	Support to the Pacific Island Climate Change Assistance Programme
Contributions to GEF (USD million)	GEF-1: 5.6; GEF-2: 5.5
Pledge for the 3 rd GEF replenishment	About NZD 12.1 (0.21% of GEF-3 total)
JI and CDM under Kyoto Protocol	Climate Change Projects under PPPCC (2002)
Other (bilateral/multilateral)	Pacific Initiative for the Environment

2. Conclusions from the IDR of New Zealand's third national communication⁴⁵

238. The team did not identify any major gaps in the reporting of information in the NC3, and concluded that New Zealand broadly met the UNFCCC guidelines. It acknowledged the improvements made compared to reporting in the NC2, particularly as concerns information on GHG inventories and policies and measures. Some specific reporting issues identified by the review team are mentioned in the relevant sections of the report.

⁴⁵ See FCCC/IDR.3/NZL (2003).

239. The team noted that the presentation of information in the NC3 would benefit from closer adherence to the UNFCCC guidelines, especially in projections and policies and measures. More analysis could also be provided on the factors underlying the historical and future emission trends. Such analysis would be useful both in the national circumstances chapter, where more explicit links could be made between national and sector profiles, and in the chapter on the GHG inventory to explain the past emission trends. Finally, such analysis is essential in the context of the policies and measures chapter, where the monitoring and evaluation of the effect of policies and measures could be given more attention.

240. Analysis of historical emission levels led the team to conclude that New Zealand contributed to achieving the aim of the Convention and slowed its emission growth, such that its total GHG emissions in 2000, excluding LUCF, exceeded 1990 levels by only 5 per cent, and by 3 per cent if LUCF emissions and removals are taken into account. This analysis suggested that while some of the policies and measures, such as the Resource Management Act, energy sector reform, energy efficiency activities, afforestation activities and waste management may have helped slow the emission growth, the effect of these policies was outweighed by the growth in emissions from transport and energy use in industry, together with fugitive methane emissions. Other possible reasons for emissions being higher in 2000 than in 1990 may include insufficient funding of the 1994 policy package, deferment of the consideration and introduction of the carbon charge envisaged in the package, and a reliance on voluntary approaches, which did not fully achieve the outcome expected.

241. In its NC3, New Zealand underlined its commitment to ratify the Kyoto Protocol. The team acknowledged with appreciation the scale of activities, ambitious timetable and targeted approach the Government has adopted in preparing for ratification. The team also acknowledged the role of the Preferred Policy Package on Climate Change (PPPCC) as a major step forward in the development of an integrated climate strategy, in which both mitigation and adaptation are taken into account. Such an integrated strategy could help to identify the most efficient climate change policy portfolio for New Zealand. Although early elections in July 2002 delayed the ratification process to some extent, the team concluded that the consideration of legislation is sufficiently well under way to allow ratification by the end of 2002. After the visit, the team was informed that the PPPCC was adopted by the Government with slight modifications in September 2002.

242. Analysis of the future emission trends presented in the NC3 suggests that with the measures presented in the NC3, but without the PPPCC, it will be very difficult for New Zealand to reach its target under the Kyoto Protocol. This emphasizes the significance of the PPPCC, which could help to bridge the difference between the projected emissions according to the "with measures" scenario and the target under the Kyoto Protocol. It also emphasizes the prominent role of the National Energy Efficiency and Conservation Strategy in bringing about emission reductions through the promotion of energy efficiency and the use of renewables as part of the PPPCC. However, the team formed the impression that there are some issues which might influence the outcome of the implementation of the PPPCC and attainment of the target under the Kyoto Protocol. Also, issues related to efficiency improvements and increasing the share of renewables are addressed only in the context of the National Energy Efficiency and Conservation Strategy, and not in the context of the major reform of the energy sector aimed at liberalizing the energy market. The joint efforts of the Energy Efficiency and Conservation Authority and energy authorities could help to utilize the potential of non-traditional renewable sources, such as solar and wind energy, which could make a greater contribution to the existing high share of renewables in the energy mix. It may also help to better integrate climate change in the mainstream energy policies.

243. The review team commended New Zealand for its endeavour to fill key information gaps and uncertainties arising from estimates of carbon in the LUCF sector, which has implications for policy choices. The team acknowledged the recent development of the carbon monitoring system for indigenous forests and scrubland, including an international review in 1999 and plot measurements initiated in 2002, and noted the importance of this ongoing monitoring for domestic purposes and international reporting.

T. Norway

1. Selected country data and summary information drawn from the IDR

Table 86. Macroeconomic and GHG data for Norway

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	4.24	4.49	4.51	6.4	0.6	0.4
GDP (billions USD 1995 PPP)	85	122	124	45.9	3.4	1.6
TPES (Mtoe)	21.5	25.8	26.6	23.7	2.0	3.1
GDP per capita (thousands USD 1995 PPP)	20.1	27.1	27.4	36.3	2.8	1.1
TPES per capita (kgoe)	5.1	5.7	5.9	15.7	1.4	3.5
CO ₂ emissions without LUCF (Tg)	34.9	41.1	41.6	19.2	1.6	1.2
GHG emissions without LUCF (Tg CO ₂ eq)	52.0	55.7	56.2	8.1	0.7	0.9
GHG emissions/removals by LUCF (Tg)	-9.8	-18.7	-19.0	93.9	6.2	1.6
CO ₂ / capita (Mg)	8.2	9.2	9.2	12.2	1.0	0.0
CO ₂ / GDP (kg per USD 1995 PPP)	0.41	0.34	0.34	-17.1	-1.8	0.0
GHG / capita (Mg CO ₂ eq)	12.3	12.4	12.5	1.6	0.1	0.8
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	0.61	0.46	0.45	-26.2	-2.6	-2.2

Figure 44. Trends in GHG emissions for Norway

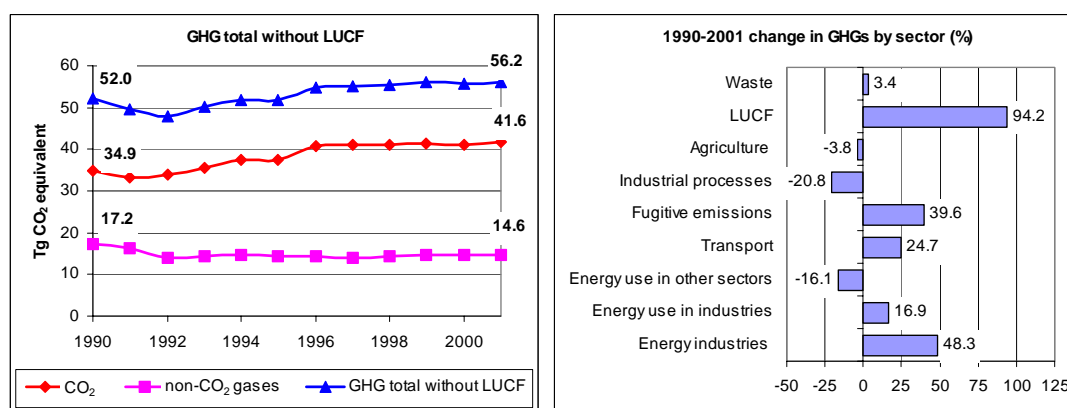
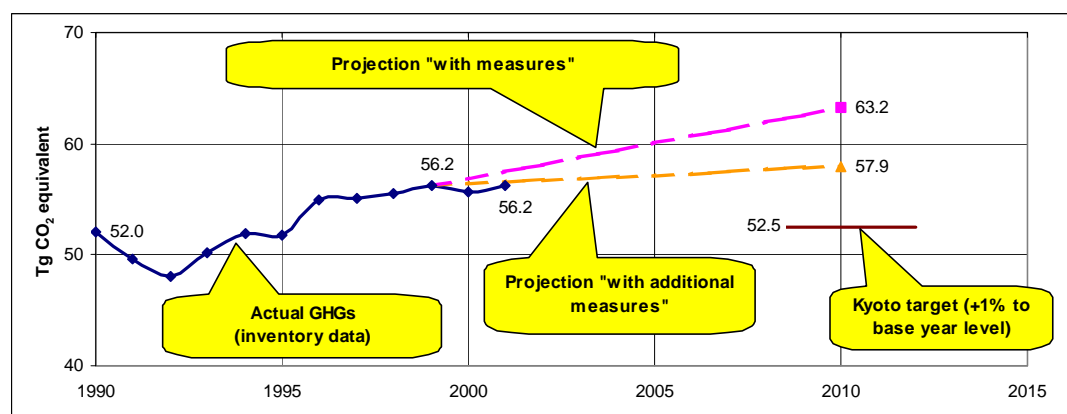


Figure 45. GHG projections for Norway



Note: The emissions were projected for 2010 only.

Table 87. Summary information on climate-related policies and measures for Norway

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	White Paper on National Climate Policy (2001); Supplementary Report to the White Paper with a proposal to start the ETS in 2005–2007
Energy/electricity/emissions taxation	CO ₂ tax (since 1991); tax on electricity consumption
Emissions trading	Domestic scheme, compatible with the EU scheme, planned to start in 2005
Other	White Paper on Energy Policy (1999)
Energy sector	
Renewable energy sources	Targets for renewable energy and energy saving (2000); operation of ENOVA; state concessions for the construction of three new large wind-powered plants (2000)
Support of fuel switch to natural gas	White Paper on Domestic Use of Natural Gas (2002); vote on emission standards for new gas-fired plants (2000)
Energy efficiency improvements	Targets for renewable energy and energy saving (2000); operation of ENOVA; standards and labelling for household devices; financial incentives for new homes with non-electric heating (2002)
Other	The ENOVA Energy Fund (2002); Petroleum Act (1995); Pollution Control Act; CO ₂ separation and reinjection at the Sleipner West gas field; the “Energy, Environment, Building and Construction” R&D programme (2002); grant to an international carbon sequestration project (2001)
Transport	CO ₂ tax (since 1991); tax exemptions for gas and alternative fuels, CO ₂ labelling for new cars (2001)
Industry	
Energy efficiency improvements	Operation of ENOVA; efficiency improvements implemented by industries
Pollution prevention and control	Pollution Control Act; IPPC Directive of the EC
Agreements/partnerships	Agreement with the aluminium industry (1997); voluntary emissions reductions by the magnesium industry (since 1990); agreement on SF ₆ emissions (2002); process improvements in nitric acid production
Other	Tax on imported HFCs and PFCs (2003)
Agriculture	Research on application of fertilizers
Waste management	Licensing under the Pollution Control Act; Tax on Waste Disposal (1999); Landfill Directive of the EC; agreement with industry to minimize waste; measures to increase waste recycling
Forestry	National forest policy; measures to promote the use of wood products

Table 88. Summary information on climate change vulnerability and adaptation for Norway

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	Positive impact of increased CO ₂ concentration, temperature increase and the extension of the growing season; adverse impacts include increased surface run-off and erosion due to increased precipitation
Biodiversity and natural ecosystems	Shift of climatic zone may force changes in the composition of species of flora and fauna; some, most-vulnerable species may disappear while others may extend their habitats; impact on bogs and marshes may be considerable
Coastal, marine and river ecosystems	Vulnerability to increases in frequency and severity of storms and floods Adaptation: river/coastal flood defense; infrastructure planning and development
Fisheries	Changes in the distribution and stock size of fish species are possible
Forests	Increase in forest productivity and forest area are expected because of higher CO ₂ concentrations and higher temperatures, some increase in forest damage from winds, pests and diseases is also possible
Infrastructure and economy	Increased storm frequency/severity may lead to damage of fish farms. Transport infrastructure is vulnerable to increase in flooding, landslides and storms. Higher precipitation and water run-off might necessitate dam strengthening Adaptation: infrastructure planning and development; protection against natural disasters
Water resources	Increased precipitation may increase water availability

Table 89. Summary information on financial resources and technology transfer for Norway

ODA	USD 1.7 billion in 2002 (0.89% of gross national income)
Climate-related aid in bilateral ODA	6.6% (OECD/DAC estimate for 1998–2000)
Contributions to GEF (USD million)	Pilot phase: 31.25; GEF-1: 31.20; GEF-2: 31.30
Pledge for 3 rd GEF replenishment	About NOK 228 million (1.06% of GEF-3 total)
AIJ	Investment of about USD 17.5 million on AIJ projects in Burkina Faso, Costa Rica, China, India, Mexico, Poland and Slovakia
Jl under Kyoto Protocol	Agreements on Jl projects with Slovakia, Poland and Romania; negotiations on Jl agreements with Lithuania, Latvia, Estonia and Russia; participation in the Jl Testing Ground Facility of Nordic countries for the Baltic Sea region (2002)
CDM under Kyoto Protocol	Agreements on CDM projects with Mexico, Burkina Faso, Costa Rica and China; negotiations on Jl/CDM agreements with India
Other (bilateral/multilateral)	Support to the UNEP–GEF National Communications Support Programme; pledge to invest USD 10 million in the Prototype Carbon Fund; funding to the Nordic Environment Finance Corporation; support to regional and bilateral development/environmental projects, and GHG-related projects of IEA

2. Conclusions from the IDR of Norway's third national communication⁴⁶

244. The review of the information detailed in the NC3 of Norway and in supplementary information provided to the review team during the visit, together with the outcome of discussions during the visit, allowed the review team to conclude that the NC3 provides a comprehensive and consistent overview of the national climate policy and covers all major sectors and gases. Key climate change policies and measures, the GHG inventory, projections and other issues addressed in the NC3 are presented in a concise and objective manner. The review team also concluded that the presentation of the information broadly conforms with the UNFCCC guidelines and did not identify any major gaps.

245. The presentation of information in the NC3 could benefit from more analysis of the underlying drivers behind the historical and future emission trends. Such analysis could usefully be presented in the national circumstances chapter, where more explicit links could be made between the national profile, profiles by sector and underlying drivers behind emission trends. The existing analysis in the chapter on

⁴⁶ See FCCC/IDR.3/NOR (2003).

the GHG inventory could be further strengthened to provide more explanation of the past emission trend. The presentation of information could also benefit from more rigorous and systematic assessment of the effects of policies and measures, despite the inherent methodological difficulties associated with such assessment. Such an assessment, together with a more systematic monitoring of the effects of policies and measures, could help to identify any underperformance of the existing measures and to strengthen them or introduce new ones, if necessary. The review team encouraged Norway to enhance transparency in reporting its projections and to improve its reporting in accordance with the comments in this report.

246. Analysis of the past emission trends contained in the NC3, together with data from the most recent inventory of Norway containing data on the 1990–2000 emission trend, provide evidence that Norway exceeded 1990 overall emission levels in 2000 by 6.3 per cent, without CO₂ removals from LUCF. If removals from LUCF were to be subtracted from the total emissions, the net total emissions in 2000 would be around 14 per cent below the 1990 level. As to its future commitments under the Kyoto Protocol, the Norwegian Government has decided not to make use of LULUCF activities under Article 3.4. Possible reasons for emissions being higher in 2000 than in 1990 include relatively high and stable economic growth throughout the decade resulting mainly from a significant growth of the oil and gas sector, rapid growth in transport and the contribution of policies and measures being insufficient to moderate emission growth. In particular, in 1991 Norway was among the first countries to introduce a CO₂ tax as a central instrument in its climate policy, with high levels of taxation compared to other countries with a similar tax. However, the effect of the tax is modified by the way it is implemented, e.g. the tax applies to only around 65 per cent of CO₂ emissions and around 50 per cent of all GHG emissions, and the highest rates apply to sectors with low elasticity for fuel price change. Still, the effect of the tax is considerable. Estimates suggest that for 1999 and 2000 the CO₂ tax reduced total national GHG emissions by around 6 per cent.

247. Under the Kyoto Protocol, Norway is committed to limiting emission growth in the first commitment period (2008–2012) to 1 per cent over the 1990 level. With the policies and measures currently implemented, total emissions are projected to rise to 63,200 Gg CO₂ equivalent, which represents around 20 per cent increase over the target level of 52,500 Gg CO₂ equivalent. The “with additional measures” scenario, including new measures, most of which are presented in the 2001 and 2002 White Papers, suggests that the emissions growth could be slowed and emissions could reach 57,900 Gg CO₂ equivalent. This represents around half of the difference between the target level of emissions and the reference scenario and corresponds to the pledge made by the Government to obtain a significant part of the needed emission reductions in Norway and not to use sink credits under Article 3.4. The rest of this difference could be covered by the Kyoto flexible mechanism tools. Norway has already gained valuable experience with some of these tools, e.g. JI, and is actively participating in activities leading to the operationalization of the CDM.

248. In the context of new measures, a gradual shift from the existing climate regime with the CO₂ tax as the central instrument, to a new regime in the pre-Kyoto period with the CO₂ tax in place together with ET on sources not covered by a tax, constitutes the main policy thrust in preparing for the first commitment period under the Kyoto Protocol. Voluntary agreements with industry and domestic JI are expected to complement the effect of ET and the CO₂ tax in a carefully designed set of domestic policies and measures. The importance of starting with mandatory ET for certain sources at an early stage was underpinned by the need to gain experience with this innovative policy instrument and to have sufficient time to address problematic issues.

249. At the sectoral level, Norway provides a good illustration of the complicated situation for countries where low-cost measures are not available, but reductions still have to be made. This highlights the transport sector, where emissions are growing in almost all countries. Norway too seems to have a need for innovative measures in this sector. At an institutional level, the new government agency, Enova, set up in 2002 to promote energy saving, non-traditional renewables and environmentally

friendly natural gas solutions, could make a significant contribution to achieving the goals of Norwegian climate policy.

250. The review team formed the impression that there is a broad-based consensus among people and politicians in Norway on the significant threat that climate change poses to humanity and to ecosystems, and the need to combat it. This consensus underpins Norway's commitment to contribute significantly to attaining climate change goals and the targets set for the country under the Kyoto Protocol. It also underpins Norway's determination to be among the leading countries in the fight against climate change in the international context and to provide significant support to developing countries in addressing climate change.

U. Poland

1. Selected country data and summary information drawn from the IDR

Table 90. Macroeconomic and GHG data for Poland

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	38.1	38.6	38.6	1.3	0.1	0.0
GDP (billions USD 1995 PPP)	243	348	352	44.9	3.4	1.1
TPES (Mtoe)	99.8	90.0	90.6	-9.2	-0.9	0.7
GDP per capita (thousands USD 1995 PPP)	6.4	9.0	9.1	42.2	3.3	1.1
TPES per capita (kgoe)	2.6	2.3	2.3	-11.5	-1.0	0.0
CO ₂ emissions without LUCF (Tg)	477	330	315	-34.0	-3.7	-4.5
GHG emissions without LUCF (Tg CO ₂ eq)	564	402	386	-31.6	-3.4	-4.0
GHG emissions/removals by LUCF (Tg)	-34.7	-43.5	-43.1	24.2	2.0	-0.9
CO ₂ / capita (Mg)	12.5	8.5	8.1	-35.2	-3.8	-4.7
CO ₂ / GDP (kg per USD 1995 PPP)	1.96	0.95	0.90	-54.1	-6.9	-5.3
GHG / capita (Mg CO ₂ eq)	14.8	10.4	10.0	-32.4	-3.5	-3.8
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	2.32	1.15	1.10	-52.6	-6.6	-4.3

Note: For CO₂ and GHG emissions, base year data (1988) are used instead of 1990 data, which leads to some inconsistency in GHG emissions per capita and per GDP unit.

Figure 46. Trends in GHG emissions for Poland

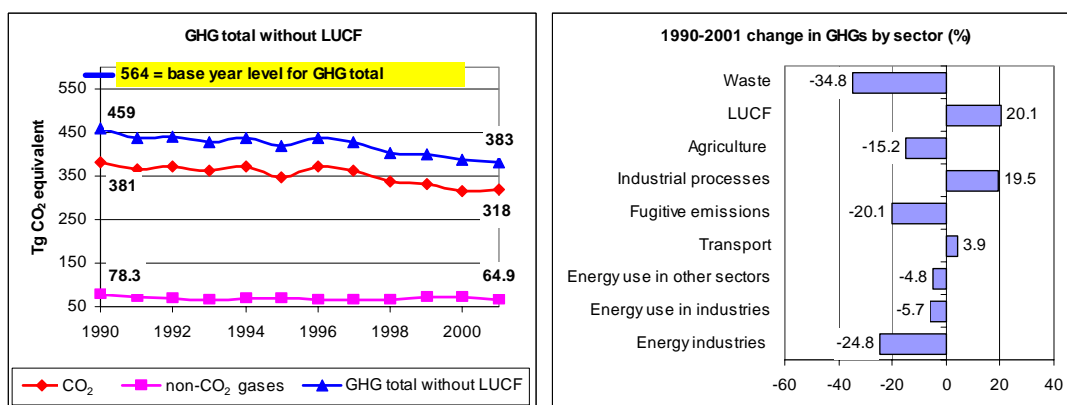
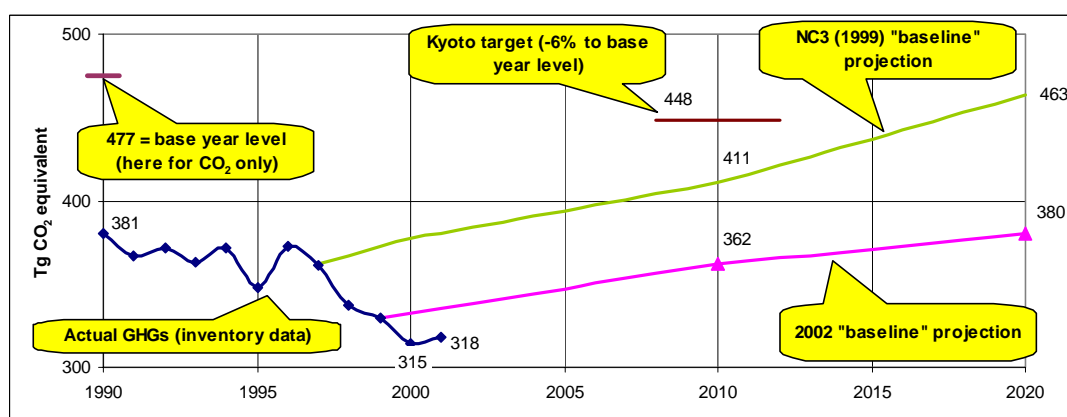


Figure 47. GHG projections for Poland



Note 1: The projections and the estimated Kyoto Protocol target are for energy-related CO₂ emissions only.

Note 2: The latest, 2002 projections also contain a “passive” scenario but the difference between that scenario and the 2002 “baseline” scenario is negligible.

Table 91. Summary information on climate-related policies and measures for Poland

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	Draft strategy for GHG emissions reduction until 2020 (under consideration); draft climate change strategy (under consideration)
Emissions trading	Intention to participate in the EU emissions trading scheme
Other	National programme for integration with the EU; National Environmental Policy for 2003–2006 with Perspectives for 2007–2010 (2002); Second National Environmental Policy (2001); Poland 2025: long-term strategy for sustainable development (2000); Assumptions for Poland's energy policy until 2020 (2000); Framework plan for implementation of the energy policy assumptions
Energy sector	
Energy sector liberalization	Assumptions for Poland's energy policy until 2020 (2000); Energy Law (1997); Reform Programme for the Coal-mining Industry in Poland 1998-2002 (1999)
Combined heat and power generation	Obligation to purchase electricity from CHPs
Renewable energy sources	Strategy for development of renewable energy sources (2001); obligation to purchase heat and electricity generated from renewable and unconventional energy sources
Support of fuel switch to natural gas	Assumptions for Poland's energy policy until 2020 (2000)
Energy efficiency improvements	Guidelines of the national policy for rationalization of energy consumption in the municipal and household sector (1998); report "Possible improvements of energy efficiency of the residential building/heating systems in Poland" (under SAVE II programme of the EC)
Other	Thermo-Modernization Act (revised in 2001); Thermo-Modernization Programme and Fund; projects funded by National Fund for Environmental Protection Water Management and ECOFUND
Transport	
National Transport Policy for 2001–2015; Second National Environmental Policy (2001); draft climate change strategy (under consideration)	
Industry	
Energy efficiency improvements	Master plan study for energy conservation in the Republic of Poland (1999)
Pollution prevention and control	Programme to reduce SO ₂ emissions from power plants (1996)
Other	Programme for the restructuring of the iron and steel industry (1998, revised in 2003); Assumptions of long-term industrial policy until 2010 (1997); measures in the refrigeration industry to substitute cooling gases subject to the Montreal Protocol, to improve operational efficiency of industrial systems, and to introduce waste energy recovery
Agriculture	
Development programme for ecological farming (1997)	
Waste management	
Waste Act (2001)	
Forestry	
State forestry policy; National Programme of Increasing Forest Cover	

Table 92. Summary information on climate change vulnerability and adaptation for Poland

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	Potential benefits from an extended growth period; adverse impacts from plant pests, increased frequency of extreme events and water shortages Adaptation: selection of appropriate crop varieties, change in the methods of land use and crop structure, progression of production zones, upgrade of water collection and storage systems, introduction of water-efficient technologies
Coastal, marine and river ecosystems	The coastal zone along the Baltic Sea is vulnerable to sea level rise Adaptation: elaboration of long-term coastline protection and preservation measures, integrated management of the riparian zone together with other Baltic countries
Forests	Climate change may accentuate the vulnerability of forests to a number of hazards
Infrastructure and economy	Infrastructure in the coastal zone is vulnerable to sea level rise
Water resources	Reduced water availability due to reduction of water outflows, increased pollution, decreased soil moisture, decreased water retention within the river basin and increased evapotranspiration Adaptation: new efforts for water conservation; effective enforcement of water management measures; construction of new reservoirs, management of water transfers between seasons

Table 93. Summary information on financial resources and technology transfer for Poland

ODA	ODA provided since 1998 (in the range of USD 28.9–43.8 million)
AIJ	Implemented AIJ projects with Canada, the Netherlands and Norway
JI under Kyoto Protocol	Interest in JI projects
Other	"Debt-for-environment" agreement between Poland and Norway (2000)

2. Conclusions from the IDR of Poland's third national communication⁴⁷

251. When reviewing the information reported in the NC3 of Poland, the review team concluded that the document broadly complies with the provisions of the UNFCCC guidelines. The team was of the opinion that the NC3, in combination with the annual GHG inventory submission and some updated information on the Polish GHG projections, provided a comprehensive overview of the current status of climate policy in Poland. Some potential for increasing transparency of reporting was identified, especially in the chapters on inventory, policies and measures and projections.

252. Given the challenges of the economic transformation process and the EU accession process, climate policy does not rank very high on Poland's political agenda at the beginning of the 21st century. Correspondingly, the review team noted a low budget and limited administrative capacity in this field. Still, Poland expresses its intention to make use of the flexibility mechanisms of the Kyoto Protocol, has implemented several activities implemented jointly (AIJ)/JI projects and intends to join the EU emissions trading market, starting in 2005. A precondition is the successful implementation of the new UNFCCC reporting requirements that were decided at the eighth session of the Conference of the Parties in New Delhi, India.

253. Poland is expected to meet its emissions target under the Kyoto Protocol, mainly as a result of economic restructuring, reduced coal usage, improvements in energy efficiency and ambitious afforestation programmes. Between 1988 and 2000, total GHG emissions declined by 32 per cent (excluding LUCF) and 35 per cent (including LUCF), largely reflecting the restructuring of Poland's economy and energy sector. GHG emissions are projected to increase slightly between 2000 and 2010, resulting in a GHG emission reduction of about 25–30 per cent, compared to the 1988 level. The review team was informed that for the period 2000–2020 a further GHG emission reduction potential of up to 40 per cent (compared to a business-as-usual scenario) is economically feasible.

⁴⁷ See FCCC/IDR.3/POL (2003).

254. The review team noted that while the Ministry of Environment is responsible for the national climate change policy, other important ministries (e.g. Ministry of Infrastructure) are yet to actively integrate climate policy into their policy fields. The Energy Department within the Ministry of Economy, Labour and Social Policy has the main responsibility for energy policy. Overall coordination of the national climate change policy is still to be established. The setting up of a new steering committee is currently under discussion. The review team concurred with the views expressed by several host-country representatives on the need to strengthen the existing institutional arrangements. Also, the national inventory system needs a solid legal backing to ensure steady financial support.

255. The review team acknowledged the submission of the NIR for the year 2001 and the GHG inventory in the CRF and encouraged Poland to continue to improve the system, to harmonize the methodology for the different years, to recalculate the emission trend lines where necessary and to address the existing minor gaps.

256. Poland's success stories include a remarkable decoupling of GDP growth from GHG emissions, an increasing use of renewable energy sources (biomass for heating), improved building insulation through its ThermoModernization programme, a long tradition of sustainable forestry, several NGOs very active in the field of climate change, and the setting up of several national funds for environmental protection.

257. The team noted with interest that a draft *Climate change strategy* was prepared, and due for adoption in 2003. Its overall goal is to integrate climate policy into all sectoral policies. Furthermore, a draft *Strategy for GHG emissions reduction till 2020* is under inter-ministerial negotiation. Both documents are expected to facilitate the inter-ministerial coordination of the elements of national climate policy and help to access further GHG mitigation potentials.

258. The team commended Poland on its ongoing work in the field of public awareness and outreach. The team felt that while the long tradition of climate science by research institutions is commendable, new funding efforts for these activities are needed to maintain the activities at this level. In addition, the research on vulnerability and adaptation should be intensified in view of the severe rainfalls that led to devastating floods of the river Odra.

V. Russian Federation

1. Selected country data and summary information drawn from the IDR

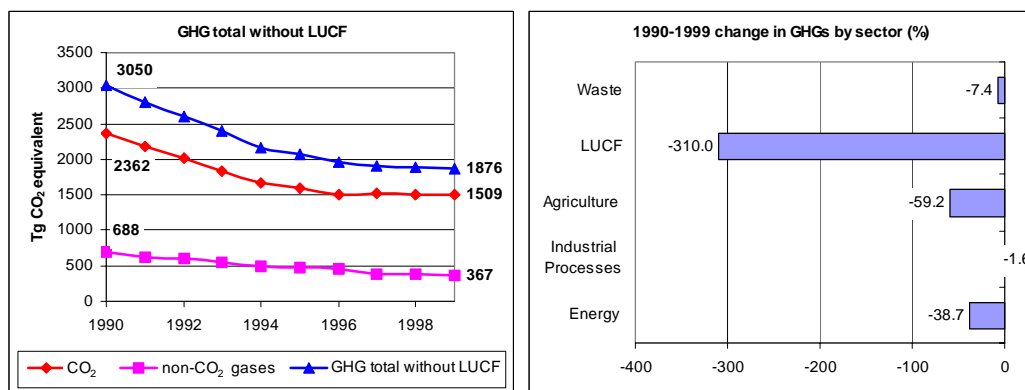
Table 94. Macroeconomic and GHG data for the Russian Federation

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	148.3	145.6	144.8	-2.4	-0.2	-0.5
GDP (billions USD 1995 PPP)	1 343	888	933	-30.5	-3.3	5.1
TPES (Mtoe)	868 ^a	614	621	-28.5	-3.0	1.1
GDP per capita (thousands USD 1995 PPP)	9.1	6.1	6.4	-29.7	-3.0	4.9
TPES per capita (kgoe)	5.9	4.2	4.3	-27.1	-2.8	2.4
CO ₂ emissions without LUCF (Tg)	2 362	no data	1 509 ^b	-36.1	-4.0	no data
GHG emissions without LUCF (Tg CO ₂ eq)	3 050	no data	1 876	-38.5	-4.3	no data
GHG emissions/removals by LUCF (Tg)	158	no data	-332	-310	-	no data
CO ₂ / capita (Mg)	15.9	no data	10.4	-34.6	-3.8	no data
CO ₂ / GDP (kg per USD 1995 PPP)	1.76	no data	1.62	-8.0	-0.8	no data
GHG / capita (Mg CO ₂ eq)	20.6	no data	13.0	-36.9	-4.1	no data
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	2.27	no data	2.01	-11.5	-1.1	no data

^a The number for 1990 is not from the IEA energy statistics but from the IDR report (FCCC/IDR.3/RUS).

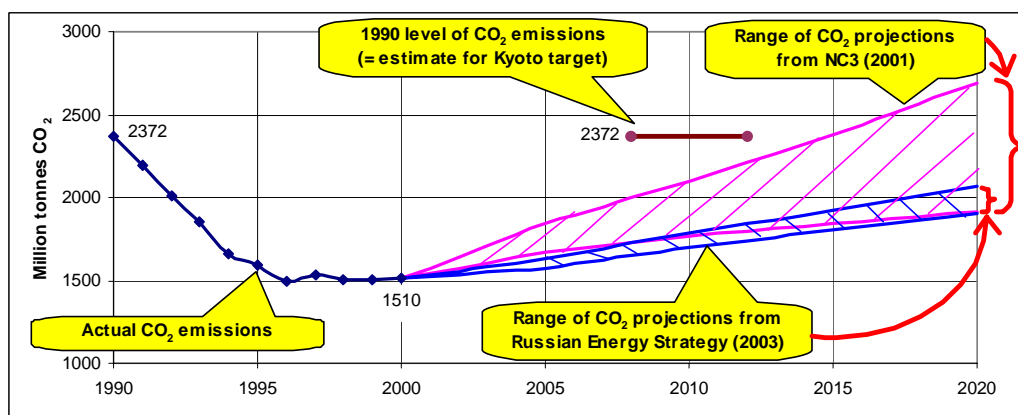
^b As there are no 2001 GHG data available for Russia, the 2001 numbers in italic are a copy of 1999 data provided in order to indicate changes from 1990 to 1999. Therefore, some ratios are not fully consistent because 2001 and 1999 data are combined.

Figure 48. Trends in GHG emissions for the Russian Federation



Note: For some years, the GHG total includes only CO₂, CH₄ and N₂O.

Figure 49. GHG projections for the Russian Federation



Note 1: The projections are for CO₂ only; all projections are of the “with measures” type.

Note 2: The ranges correspond to the lowest and highest emission levels from the several scenarios calculated.

Table 95. Summary information on climate-related policies and measures for the Russian Federation

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	Federal Target Programme Prevention of Dangerous Climate Change and Negative Impacts (1996)
Other	Energy Strategy of the Russian Federation (2003); Federal Target Programme Energy-efficient Economy for 2002–2005 with an Outlook to 2010 (2001); Federal Target Programme Energy Saving in Russia for 1998–2005 (1997)
Energy sector	
Energy efficiency improvements	Federal Target Programme Energy-efficient Economy for 2002–2005 with an Outlook to 2010 (2001); Federal Target Programme Energy Saving in Russia for 1998–2005 (1997); Energy Saving Programme in the Electricity Sector; various measures to reduce heat consumption in buildings; regional and local energy efficiency laws and programmes; establishment of “energy passports” and certificates for buildings
Renewable energy sources	Federal Law on Renewable Energy Sources (planned); Programme “Energy Supply of the Far North, as well as People of the North, Siberia and the Far East with Renewable Energy and Energy from Local Sources” (1997)
Other	Programme on Safety and Development of Nuclear Power; Gazprom projects to decrease leakage from gas pipelines
Transport	Federal Target Programme Energy-efficient Economy for 2002–2005 with an Outlook to 2010 (2001); Concept of Development of the Auto Industry to 2010 (2002)
Industry	Measures for increasing energy use efficiency undertaken in various industries
Agriculture	Several programmes to increase agricultural productivity while reducing environmental impacts
Waste management	Federal Law on Waste (1998); Federal Programme on Environment and Natural Resources (2002); setup of the registry of state landfills
Forestry	Revised Forest Code (to be adopted in 2003); Federal Target Programme Russian Forest; programme for forest protection against fires

Table 96. Summary information on climate change vulnerability and adaptation for the Russian Federation

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	A generally positive impact of warming and increased CO ₂ concentrations on agricultural productivity is expected; regional variations of negative and positive effects are possible Adaptation: shift of the cultivation boundary northward; changes in cultivated species; changes in planting dates; measures to increase water availability
Coastal, marine and river ecosystems	Increased water flows and rising sea level can lead to increased vulnerability of coasts to storms, floods and other natural disasters Adaptation: protection of coastal areas against natural disasters
Drought	Possible increase in the probability of droughts in some regions
Forests	Changes in the composition of tree species; increased probability of fires Adaptation: improved forest management; fire prevention; protection from pests and insects
Human health	Studies are required to identify climate change impacts
Water resources	Increase in annual water flows is expected Adaptation: water resource management, efficient use of water, protection against flooding
Other	Effect of warming on permafrost regions requires particular attention

Table 97. Summary information on financial resources and technology transfer for the Russian Federation

AIJ JI under Kyoto Protocol	About 10 AIJ projects with the United States, the Netherlands, Germany Interest in JI indicated; a joint project between Ruhrgas and Gazprom to decrease leakage from gas pipelines (1997) has been referred to as a JI project
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2. Conclusions from the IDR of the Russian Federation's third national communication⁴⁸

259. The review team's overall assessment of the information contained in the NC3 suggests that this information reflects in an objective manner the steps taken to implement the UNFCCC guidelines and to prepare for implementation of the Kyoto Protocol, once it enters into force. Also, in very general terms the reporting of this information conforms to the UNFCCC guidelines.

260. Notwithstanding the limited financial resources available for inventory work, GHG inventories clearly represent an area where progress was made. The review team commended the Institute of Global Change and Ecology (IGCE), in particular, for its endeavours to improve the methodology and enhance transparency in reporting in terms of LUCF. More financial support for inventory preparation may help to complete the work on the national system for inventory preparation, to ensure improved data quality and completeness of the inventory, and to foster cooperation between the IGCE and the ministries and organizations involved in inventory preparation, e.g. the Ministry of Natural Resources and authorities at the regional level. This may also help to address the problems relating to inventories noted in this report, including completeness in coverage of emission sources and removals; using more detailed assessments of emissions in the energy sector following a sectoral approach; and recalculation and consistency of emission time series. The review team encouraged the Russian Federation to submit inventories on an annual basis, following the agreed UNFCCC reporting requirements (i.e. NIR and CRF).

261. The review team encouraged the Russian Federation to adhere more strictly to the UNFCCC guidelines in reporting on policies and measures and projections. On policies and measures, this includes presenting information by sector, subdivided by gas, summarizing the key policies and measures in the table recommended by these guidelines with a clear indication of policy objectives, level of implementation, type of instrument, implementing entities and, where possible, estimates of effects. On projections, it includes reporting on the methodology used, reporting by sector on a gas-by-gas basis, and in an aggregated format for each sector and for national totals using the global warming potential (GWP). It also includes assessment of the effects of policies and measures on the future emission trends, where possible. This further includes reporting projections for international bunker fuels and emissions and removals from LUCF. The review team noted that the 2003 Energy Strategy contains a great deal of detail on projections, which could be used to follow the UNFCCC guidelines closely. Also, using the methodology for projections from the 2003 Energy Strategy for the future emission trends could help to overcome the limitations of the approach used for projections in the NC3.

262. The 1990s saw a large decrease in emissions in the Russian Federation (38 per cent between 1990 and 1999); in fact, one of the largest among countries with economies in transition. This decrease in emissions was underpinned by the decline of economic activities and the closure of many industrial enterprises, and also by natural gas becoming the most important element in the energy supply, and especially becoming the fuel of choice for electricity generation. The decrease in emissions suggests that the Russian Federation is likely to make an important contribution to meeting the aim of the UNFCCC. According to the NC3, the decrease in emissions created a basis for a low-cost strategy to implement the UNFCCC and the Kyoto Protocol, once the latter enters into force. Analysis of future emission trends suggests that although emissions are expected to rise in practically all NC3 and 2003 Energy Strategy scenarios following the revival of the economy, they are likely to remain below the Kyoto Protocol target for the first commitment period by between 11 and 28 per cent for these scenarios. They are also likely to remain below this target even in 2020, except for the most pessimistic of the three NC3 scenarios.

⁴⁸ See FCCC/IDR.3/RUS (2004).

263. Given the importance of the energy sector in the economy and its high energy intensity, it is essential for the Russian Federation to achieve energy efficiency goals in order to maintain, let alone increase, rapid economic growth while seizing export opportunities, realizing its environmental goals and limiting GHG emissions. Most emissions originate from the energy sector, so it is well understood that energy and energy efficiency would continue to be a core element of climate change policy. Therefore, success in climate change policy will also depend on the success of overall reforms in the energy sector, including energy price reforms, electricity sector restructuring and possibly gas sector restructuring. This overall reform would help to sustain current economic growth and enable the energy sector to keep pace with domestic energy demand growth, while seizing export opportunities. The outlook for strong economic growth, doubling of GDP over the next decade is especially important in terms of guarding against negative impacts on the environment, and in particular in terms of growing emissions of GHGs. In this context, results achieved in the electric power sector are important and indicative of what could be achieved further in this and other sectors.

264. An important development in climate change policy was the preparation of the 2003 Climate Action Plan, which consolidates elements of climate policy into a single framework. This raises the importance of climate change in the national policy agenda and represents an encouraging step for climate policy development and implementation, given the importance of coordination of policies across all relevant ministries and economic sectors. This was expressed by the Prime Minister of the Russian Federation in the State Duma in May 2000 and highlighted in the NC3: "The limitation of emissions growth and enhancement of removals should be implemented through coordinated technical, economic, and institutional arrangements and activities in all key sectors of the economy with priority consideration given to the government-set energy saving requirements, indispensable to ensure economic growth."

265. At the sectoral level, it is a positive development that key companies such as RAO UES and AO Gazprom have already begun establishing inventories of GHG emissions from their facilities, in preparation for possible JI projects. This type of monitoring of emissions will be increasingly essential in order to assess priorities and to measure and evaluate the effectiveness of projects and programmes in specific sectors, as well as at the regional level. If the Russian Federation ratifies the Kyoto Protocol, an efficient domestic mechanism for monitoring and reporting of emissions will be essential to enable ET and JI projects.

W. Slovakia

1. Selected country data and summary information drawn from the IDR

Table 98. Macroeconomic and GHG data for Slovakia

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	5.30	5.40	5.38	1.5	0.1	-0.4
GDP (billions USD 1995 PPP)	50.5	57.6	59.5	17.8	1.5	3.3
TPES (Mtoe)	21.4	17.5	18.7	-12.6	-1.2	6.9
GDP per capita (thousands USD 1995 PPP)	9.5	10.7	11.1	16.8	1.4	3.7
TPES per capita (kgoe)	4.0	3.2	3.5	-12.5	-1.4	9.4
CO ₂ emissions without LUCF (Tg)	59.1	40.1	42.1	-28.8	-3.0	5.0
GHG emissions without LUCF (Tg CO ₂ eq)	72.2	47.9	50.1	-30.6	-3.3	4.6
GHG emissions/removals by LUCF (Tg)	-2.41	-2.43	-5.25	118	7.3	116
CO ₂ / capita (Mg)	11.2	7.4	7.8	-30.4	-3.2	5.4
CO ₂ / GDP (kg per USD 1995 PPP)	1.17	0.70	0.71	-39.3	-4.5	1.4
GHG / capita (Mg CO ₂ eq)	13.6	8.9	9.3	-31.6	-3.4	4.5
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	1.43	0.83	0.84	-41.3	-4.7	1.2

Figure 50. Trends in GHG emissions for Slovakia

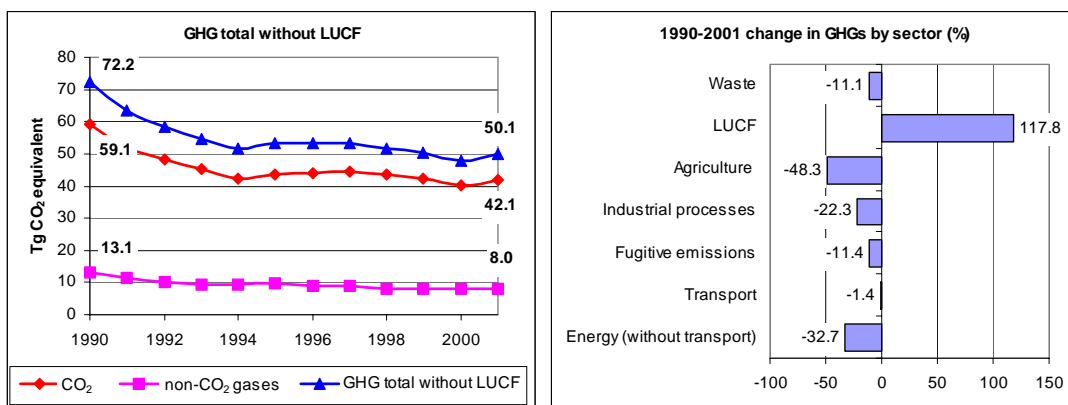


Figure 51. GHG projections for Slovakia

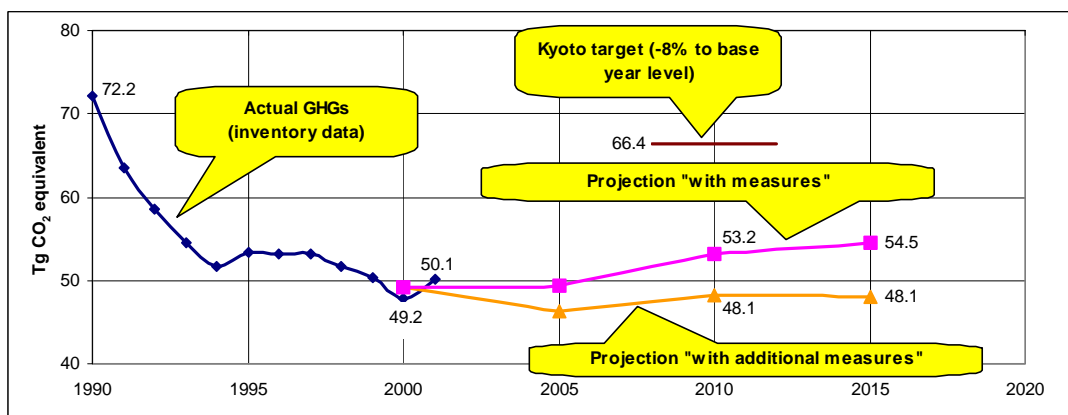


Table 99. Summary information on climate-related policies and measures for Slovakia

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	Strategy of the Slovak Republic for the Implementation of the Kyoto Protocol Commitments (2001); Action Plan of Fulfillment of the Kyoto Protocol Commitments (to be adopted)
Energy/electricity/emissions taxation Emissions trading	Draft Act on Establishing an Emission Trading System for CO ₂ ; plans for participation in the EU scheme starting in 2005
Other	Clean Air Act (2002); Act No.309/1991 on Protection of Air against Pollutants (1991, latest amendment 2000); Act No.401/1998 on Charges for Air Pollution (1998); Strategy, Principles and Priorities of Governmental Environmental Policy (1993); National Environmental Action Programme (1999); Energy Policy (2000); research projects and programmes relating to climate change
Energy sector	
Energy sector liberalization	Act on Energy (1998); Schedule for Adjustments of Regulated Prices, Including Energy (planned for 2002); preparation for the liberalization of power and gas industries
Combined heat and power generation Renewable energy sources	Act on Energy (1998); income tax allowances Programme Supporting Energy Savings and Utilization of Alternative Energy Sources (2000); Act on Energy (1998); income tax allowances
Support of fuel switch to natural gas Energy efficiency improvements	Energy Policy (2000) Act on Energy Labelling of Household Appliances (2002); Programme Supporting Energy Savings and Utilization of Alternative Energy Sources (2000); Programme Supporting Economic Activities Resulting in Savings of Energy and Imported Raw Materials (1992-1999); subsidies for a programme of building renovation; strengthening of standards for building insulation
Other	Decision to terminate the construction of two nuclear units at Mochovce (2000); Act. No.127/1994 on Environmental Impact Assessment (1994); measures to decrease CH ₄ leaks from gas pipelines
Transport	
Vehicle and fuel taxes Integrated transport planning	Act on Fuel Consumption Tax (1993); Act on Road Tax (1994) Support Programme for the Rationalization of Fuel and Energy Consumption in Transport (2000); Programme of Replacement of the Bus Fleet (1998)
Other	Research programme to stabilize and reduce CO ₂ emissions in transport (1994)
Industry	
Energy efficiency improvements Pollution prevention and control	Technical innovations implemented by industries IPPC Directive of the EC; Act on IPPC Directive (No.245/2003)
Agriculture	
	Measures arising from the Common Agricultural Policy of the EC; Act. 136/2000 on Fertilizers (2000); Code of Good Agricultural Practice (1996); Act No.307/1992 on Agricultural Soil Protection (1992)
Waste management	
	Act No.238/1991 on Waste (1991, amended in 1993, 2000–2001); Act No.327/1996 on waste charges (1996); Waste Management Programme of the Slovak Republic for 2000–2005 (1996, revised in 2003); collection of CH ₄ from landfills
Forestry	
	Measures to protect carbon stock in soil; substitution of conifers by broadleaved species

Table 100. Summary information on climate change vulnerability and adaptation for Slovakia

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	Potential benefits from extended growth period; adverse impacts from the intensification of plant pests, more frequent extreme weather events and water deficits Adaptation: changes in cultivation techniques and the composition of crops; construction and improvement of irrigation systems
Forests	Adverse impact of changes in precipitation and evapotranspiration, in particular on coniferous species Adaptation: afforestation of unused land, protection of forest stands, substitution of conifers by broadleaved species
Water resources	Possible deterioration of water supply due to reduction of water outflow, increased pollution, decreased soil moisture and decreased water retention Adaptation: water resource management, efficient use of water

Table 101. Summary information on financial resources and technology transfer for Slovakia

Contributions to GEF (USD million):	GEF-1: 5.6
AIJ	Several AIJ projects with the Netherlands, Norway, Switzerland
ET under Kyoto Protocol	Interest indicated; first sale of CO ₂ quotas took place in 2002
JI under Kyoto Protocol	Interest in JI projects, preparation for JI in progress
Other (bilateral/multilateral)	Country Study for Slovakia within the US Country Studies Program (1997); international study on Slovak Strategy for GHG reduction (funded by World Bank, Switzerland and Slovakia)

2. Conclusions from the IDR of Slovakia's third national communication⁴⁹

266. When reviewing the information reported in the NC3 of Slovakia, the review team concluded that the document broadly complied with the provisions of the UNFCCC guidelines. The team was of the opinion that, in combination with the annual GHG inventory submission and some updated information on GHG projections, the NC3 provided a comprehensive overview of the current status of climate policy in Slovakia. Some potential for increasing the transparency of reporting was identified, especially in the chapters on inventory and policies and measures.

267. Given the challenges of the economic transformation process and the EU accession process, climate policy does not rank very high on Slovakia's political agenda at the beginning of the 21st century. Correspondingly, the review team noted a low budget and limited administrative capacity in this field. Nevertheless, Slovakia has joined the Kyoto Protocol, is firmly committed to its goals and expresses its intention to make use of its flexibility mechanisms. Slovakia has implemented several AIJ/JI projects and intends to join the EU emissions trading market, starting in 2005. A precondition for this is the successful implementation of the new UNFCCC reporting requirements that were decided at the eighth session of the Conference of the Parties in New Delhi, India.

268. Slovakia contributed to achieving the aim of the Convention, as its overall GHG emissions declined by 34 per cent (excluding LUCF) and 35 per cent (including LUCF) in the period from 1990 to 2000, mainly as a result of economic restructuring, reduced energy demand, improvements in energy efficiency and agricultural reforms. Furthermore, Slovakia is expected to meet its emissions target under the Kyoto Protocol, as GHG emissions are projected to increase only slightly between 2000 and 2010, resulting in an overall GHG emission reduction of about 25 per cent, compared to the 1990 level. If all planned policies and measures are implemented, emissions are projected to drop by 35 per cent of the 1990 level ("with additional measures" scenario).

269. The review team noted that while the Ministry of Environment is responsible for the national climate change policy, other important ministries (e.g. the Ministry of Transport, Posts and

⁴⁹ See FCCC/IDR.3/SVK (2003).

Telecommunications) are yet to actively integrate climate policy into their policy fields. The Energy Department within the Ministry of Economy has the main responsibility for energy policy. Overall coordination of the national climate change policy is still to be established. The setting up of a new advisory committee is currently under discussion. The review team concurred with the views expressed by several host-country representatives on the need to strengthen the existing institutional arrangements.

270. The review team acknowledged the submission of the GHG inventory in the common reporting format and encouraged Slovakia to continue to improve the national emission inventory system, to harmonize the methodology for the different years, to recalculate the emission trend lines where necessary and to address the existing gaps.

271. Slovakia's success stories related to climate change include a remarkable decoupling of GDP growth from GHG emissions and successful transformations in the energy and agriculture sectors. Strict environmental policies led to significant improvements in air quality and waste management. A long tradition of sustainable forestry helped to preserve and protect the large Slovak forests. Ancillary benefits from these different policies also helped to mitigate the national GHG emissions after 1994, when the Slovak economy partly regained its strength. The CO₂ ETS, as the core element of Slovakia's Kyoto Strategy, is expected to ensure that mitigation efforts by private companies will be rewarded efficiently and with minimal transaction costs in the near future.

272. The team felt that while the long tradition of climate science by research institutions was commendable, new funding efforts were needed to maintain activities at this level. Activities in the field of global climate observing should be reported. In addition, the research on vulnerability and adaptation should be intensified, in view of the possible link between climate change and an increased frequency of extreme events, like the severe rainfalls that led to devastating floods of the river Danube in 2002.

X. Slovenia

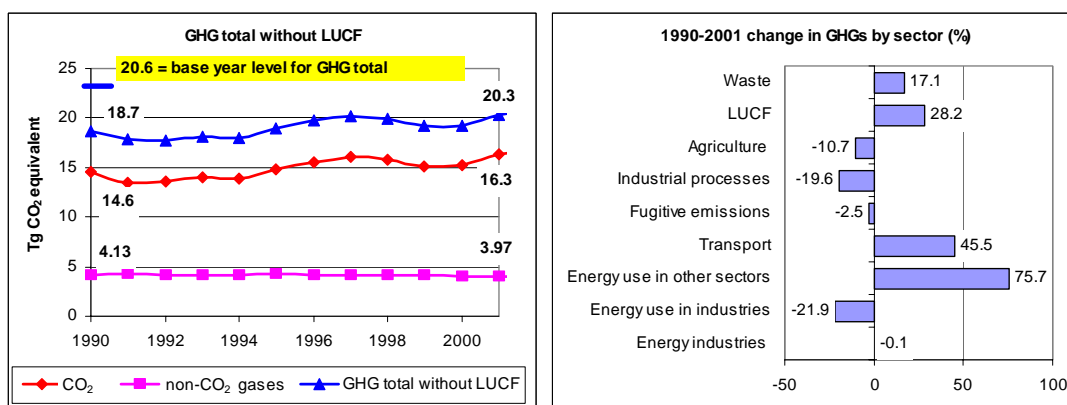
1. Selected country data and summary information drawn from the IDR

Table 102. Macroeconomic and GHG data for Slovenia

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	2.00	1.99	1.99	-0.5	0.0	0.0
GDP (billions USD 1995 PPP)	25.1	30.1	31.0	23.5	2.0	3.0
TPES (Mtoe)	no data	6.54	6.84	no data	no data	4.6
GDP per capita (thousands USD 1995 PPP)	12.5	15.1	15.6	24.8	2.0	3.3
TPES per capita (kgoe)	no data	3.3	3.4	no data	no data	3.0
CO ₂ emissions without LUCF (Tg)	16.0	15.2	16.3	1.9	0.2	7.2
GHG emissions without LUCF (Tg CO ₂ eq)	20.6	19.2	20.3	-1.5	-0.2	5.7
GHG emissions/removals by LUCF (Tg)	-2.95	-5.56	-5.56	88.5	5.9	0.0
CO ₂ / capita (Mg)	8.0	7.6	8.2	2.5	0.2	7.9
CO ₂ / GDP (kg per USD 1995 PPP)	0.64	0.50	0.53	-17.2	-1.8	6.0
GHG / capita (Mg CO ₂ eq)	10.3	9.7	10.2	-1.0	-0.1	5.2
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	0.82	0.64	0.65	-20.7	-2.1	1.6

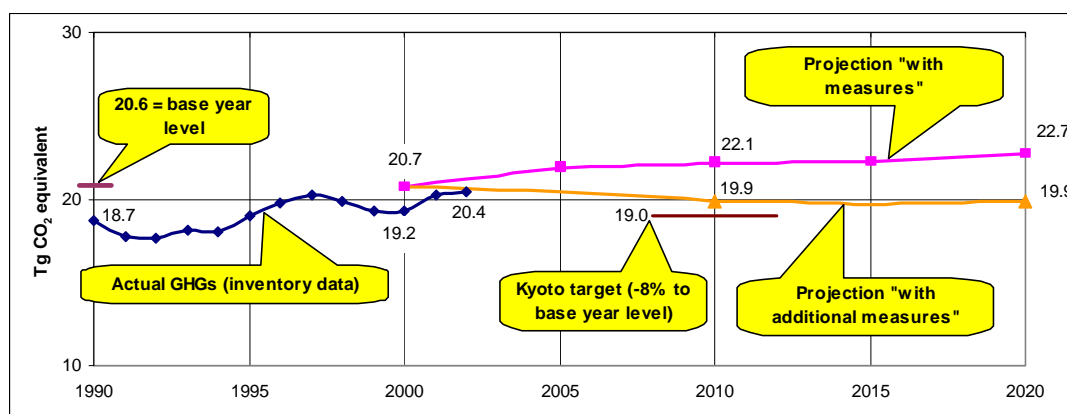
Note: For CO₂ and GHG emissions, base year data (1986) are used instead of 1990 data, which leads to some inconsistency in GHG emissions per capita and per GDP unit.

Figure 52. Trends in GHG emissions for Slovenia



Note: This figure uses data from the 2004 inventory of Slovenia which is more complete than the 2003 inventory.

Figure 53. GHG projections for Slovenia



Note: The difference between the inventory and the projections for 2000 is due to recent inventory recalculations.

Table 103. Summary information on climate-related policies and measures for Slovenia

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	National Programme of Reduction of GHG Emissions (draft 2003); Strategy and Short-term Action Plan for the Reduction of GHG Emissions (2000)
Energy/electricity/emissions taxation	CO ₂ tax since 1996; new CO ₂ Act (in preparation)
Emissions trading	EU scheme planned for 2005
Other	<i>Aquis Communautaire</i> for EU accession; Environmental Development Fund (1995); voluntary commitments of municipalities to reduce GHG emissions
Energy sector	
Energy sector liberalization	Energy Act (1999)
Combined heat and power generation	National Energy Programme (in preparation); Energy Act (1999)
Renewable energy sources	Programme for Energy Use of Wood Biomass; EC directive on electricity and energy production from renewables; Energy Act (1999)
Support of fuel switch to natural gas	National Energy Programme (in preparation)
Energy efficiency improvements	Investment Fund for Efficient Use of Energy; energy efficiency standards for new buildings; measures to increase energy use efficiency in households
Other	National Energy Programme (in preparation); closure of the Trbovlje-Hrastnik brown coal mine (planned for 2007)
Transport	
Vehicle and fuel taxes	CO ₂ tax on fuels (1996); excise tax on new vehicles (planned)
Integrated transport planning	Measures to increase the share of rail in freight transport (planned); guidelines for the development of settlements and towns (planned)
Other	Technical inspection of vehicles
Industry	
Energy efficiency improvements	Technological improvements in aluminium industry
Pollution prevention and control	IPPC Directive of the EC
Agreements/partnerships	Voluntary agreements with industries (planned)
Other	Environmental Management Audit Scheme
Agriculture	
	Slovene Agri-Environmental Programme 2001–2006 (2001); Decree on the Input of Plant Nutrients and Protective Agents into Soil (2001 revision); Good Agricultural Practices in Fertilizer Application (2000); Common Agricultural Policy of the EC; EC Nitrate Directive
Waste management	
	Waste disposal fee (2001); EC Landfill Directive
Forestry	
	National Forest Development Programme; Forest Law (1993)

Table 104. Summary information on climate change vulnerability and adaptation for Slovenia

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	Combination of positive (increased CO ₂ concentrations, longer growing periods) and negative (possible water shortage, more frequent extreme weather events) impacts, with the negative ones being possibly more pronounced Adaptation: adjustment of cultivation methods, times and crop selection
Biodiversity and natural ecosystems	Climate change would lead to a shift of vegetation zones, which could strongly affect biological diversity, in particular in mountain zones and water ecosystems Adaptation: extension of protected areas
Coastal, marine and river ecosystems	Sea level rise may adversely affect the small but important coastline; increased water run-off may lead to more frequent torrential floods Adaptation: infrastructure planning; upgrade of early-warning systems
Forests	Climate change may exacerbate the existing anthropogenic pressure on forests; spruce and fir are particularly vulnerable Adaptation: improved forest management; modification of forest composition
Human health	Direct (increased frequency of heatwaves and extreme weather events) and indirect (more pronounced impact of air pollution; expansion of vector-borne diseases) adverse impacts are expected Adaptation: changes in special planning to reduce the intensity of urban heat islands; changes in architectural design
Infrastructure and economy	Patterns of energy supply and use, and the tourism industry (winter tourism in particular) could be affected
Mountain ecosystems	A number of adverse impacts of climate change are expected; natural ecosystems, human activities, forests, water supply and snow cover may be affected
Water resources	Conditions for water supply are likely to deteriorate

Table 105. Summary information on financial resources and technology transfer for Slovenia

ET under Kyoto Protocol:	Possible use of ET as a buyer
Other (bilateral/multilateral):	GEF support for the preparation of NC1; projects under EC PHARE programme

2. Conclusions from the IDR of Slovenia's first national communication⁵⁰

273. The information provided in the NC1 of Slovenia is in general comprehensive. It covers all major sectors and all GHG emissions required by UNFCCC guidelines on national communications and IPCC Guidelines on inventory. Some inconsistencies in the inventory identified by the review team were discussed in detail in the relevant chapter. Key climate change policies and measures are reflected sufficiently and concisely. The estimation of effects of policies and measures was missing in the NC1 but a preliminary estimation was provided during the visit, which was reflected in this report. The NC1 included projections for CO₂, CH₄, N₂O and fluorinated gases, and major sectors. However, there was no projection on CO₂ removal by LUCF, though LUCF constitutes a significant and increased net sink in the period 1986–1996. Inconsistencies in the inventory and mistakes in the NC1 projections were identified.

274. The review team analysed the information contained in the NC1 and information provided during the visit. The analysis suggests that Slovenia's GHG emissions in 1996 were 0.7 per cent below its 1986 (base year) level. No data were available for the years after 1996 by the time the IDR report was finished. Therefore, it is impossible to judge whether Slovenia has met its commitment for reduction of GHGs under the UNFCCC.

275. Slovenia is unique in that the economic decline due to political disturbances occurred in the late 1980s, earlier than in most EIT countries. Consequently, its transition to a market economy took place

⁵⁰ See FCCC/IDR.1/SVN (2003).

earlier, resulting in an earlier revival of economic growth. This is the main reason for the GHG emission trends observed in Slovenia. Few policies are in place directly dealing with climate change mitigation, although many are under investigation and in planning. The bulk of the policies are driven mainly by the accession process to the EU. Nevertheless, Slovenia is among the first countries to have implemented a CO₂ tax, and the only one in southern Europe and the EIT countries. This demonstrates impressively that Slovenia has the will, capability and practical experience to devise and execute sophisticated policy instruments to abate GHG emissions.

276. Slovenia's target under the Kyoto Protocol is to limit GHG emissions to 8 per cent below their 1986 level during the first commitment period (2008–2012). With the policies and measures currently implemented, the GHG emissions (without LUCF) were projected to be 10 per cent higher by 2010 than the 1986 level (20,181 Gg CO₂ equivalent). With additional measures, this figure would be 1 per cent below the 1986 level. Slovenia is facing a challenge not encountered by other EIT countries in meeting their commitments under the Convention and the Kyoto Protocol in future. Slovenia indicated that it might have to employ Kyoto mechanisms, particularly ET, in which it will take part as a buyer, unlike most EIT countries. In spite of such challenges, an earlier economic revival and a higher GDP per capita than in other EIT countries, modern industry equipped with almost-up-to-date technology, and a highly educated population constitute tremendous strengths and opportunities for Slovenia in its endeavour to curb GHG emissions.

Y. Spain

1. Selected country data and summary information drawn from the IDR

Table 106. Macroeconomic and GHG data for Spain

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	38.9	39.9	40.3	3.6	0.3	1.0
GDP (billions USD 1995 PPP)	554	720	739	33.4	2.7	2.6
TPES (Mtoe)	91.2	124.3	127.4	39.7	3.1	2.5
GDP per capita (thousands USD 1995 PPP)	14.2	18.0	18.4	29.6	2.3	2.2
TPES per capita (kgoe)	2.3	3.1	3.2	39.1	2.8	3.2
CO ₂ emissions without LUCF (Tg)	227.4	308.2	307.2	35.1	2.8	-0.3
GHG emissions without LUCF (Tg CO ₂ eq)	287.6	387.1	382.8	33.1	2.6	-1.1
GHG emissions/removals by LUCF (Tg)	-29.3	-29.3	-29.3	0.0	0.0	0.0
CO ₂ / capita (Mg)	5.9	7.7	7.6	28.8	2.4	-1.3
CO ₂ / GDP (kg per USD 1995 PPP)	0.41	0.43	0.42	2.4	0.1	-2.3
GHG / capita (Mg CO ₂ eq)	7.4	9.7	9.5	28.4	2.3	-2.1
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	0.52	0.54	0.52	0.0	0.0	-3.7

Figure 54. Trends in GHG emissions for Spain

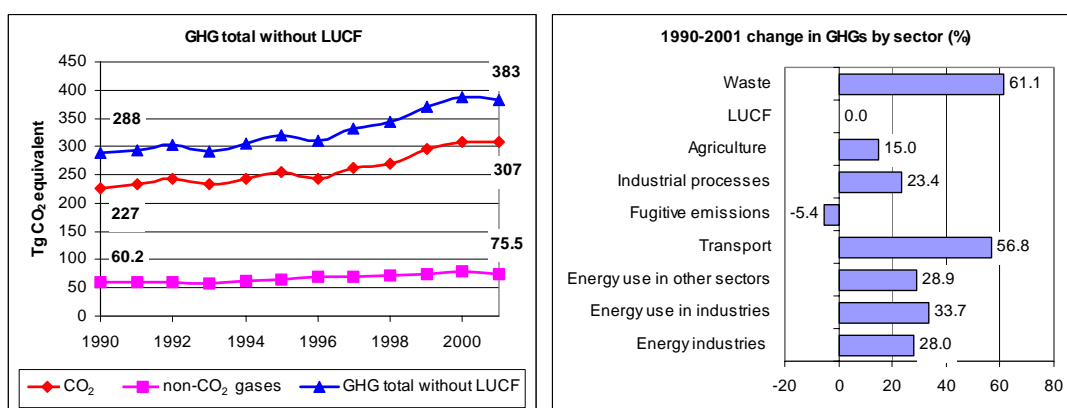
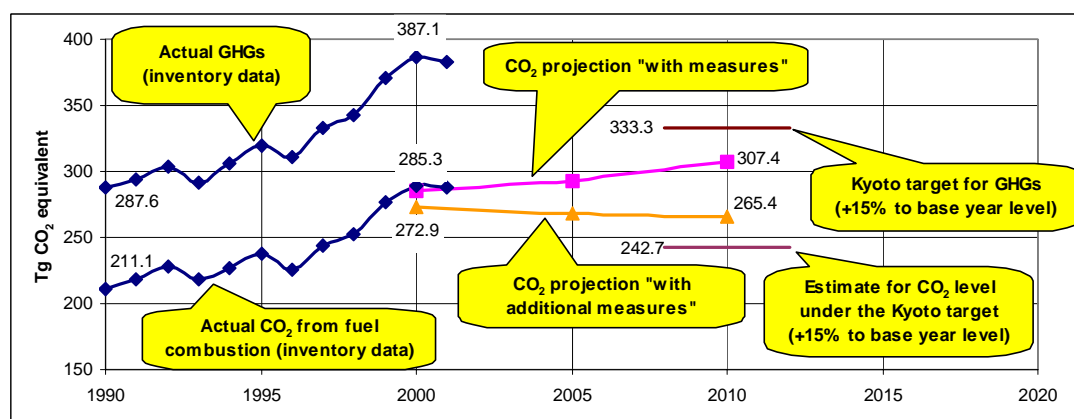


Figure 55. GHG projections for Spain



Note: Only CO₂ emissions from fuel combustion are projected.

Table 107. Summary information on climate-related policies and measures for Spain

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	Spanish Climate Change Strategy (in preparation); National Climate Programme (1995)
Emissions trading	EU scheme planned for 2005
Other	VI National Energy Programme (2003); National Energy R&D Plan (2000); regional programmes for renewables, energy use efficiency and emission reductions
Energy sector	
Energy sector liberalization	Hydrocarbon Act (1998); Electric Power Act (1997)
Combined heat and power generation	Feed-in tariffs for cogeneration and renewables (1998, revised in 2000, 2002)
Renewable energy sources	Tax incentives for investments in renewables (2003); Plan for the Promotion of Renewable Energy (2000); feed-in tariffs for cogeneration and renewables (1998, revised in 2000, 2002)
Support of fuel switch to natural gas	Planning and Development of the Electric and Gas Transport Networks 2002–2011 (2002)
Energy efficiency improvements	Spanish Energy Efficiency Plan 2004–2012 (2003); Law on Construction Requirements (2000); regulations for building heating systems; energy certification of new buildings
Transport	
Vehicle and fuel taxes	Modification of the structure of fuel taxes (under consideration)
Agreements/partnerships	EC agreements: ACEA (1999), KAMA (2000), JAMA (2000)
Integrated transport planning	Transport Infrastructure Plan 2000–2007; extension and upgrade of high-speed train networks; promotion of short-distance maritime transport
Other	Measures to support modernization of vehicle and aircraft fleets
Industry	
Pollution prevention and control	IPPC Directive of the EC; projects under the PROFIT Initiative of the EC
Agreements/partnerships	Voluntary agreements on energy efficiency with 10 industrial associations
Agriculture	
Environmental policies in agriculture	Common Agricultural Policy of the EC; Rural Development Plan; increase of land use for biomass production; improvement of livestock forage
Support of ecological farming	Regional measures to encourage environmentally friendly agricultural practices
Fertilizer and manure management	Action Programme in Areas Vulnerable to Nitrate Contamination
Waste management	
National Municipal Solid Waste Plan 2000–2006 (2000); Landfill and Solid Waste Directives of the EC; regional programmes and actions	
Forestry	
Spanish Forest Plan (2002); Rural Development Plan	

Table 108. Summary information on climate change vulnerability and adaptation for Spain

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	Temperature-driven shift in the distribution of crops; changes in plagues and diseases; crop losses due to more frequent extreme weather events Adaptation: selection of crop varieties resistant to extreme weather events; promotion of biological agriculture techniques
Coastal, marine and river ecosystems	Sea level rise can lead to salt water infiltration and flooding of low areas Adaptation: construction of coast defense structures, environmental recovery of coastal areas; National Strategy for Integral Management of Coastal Areas
Forests	Temperature-driven shift in the distribution of forest species; increased frequency of fires; changes in plagues and diseases; losses due to more frequent extreme weather events Adaptation: afforestation and reforestation of degraded land; development of a specific Mediterranean forestry; forest management
Infrastructure and economy	Sea level rise, damaging sea coast beaches, may have severe consequences for tourism Adaptation: construction of coast defense structures, regeneration of beaches
Water resources	Adverse impact on water availability is possible, in particular in the southeast of Spain, the Guadiana river basin, the Ebro valley and the Canary Islands; increase in the inter-annual water variability may affect hydropower plants. Adaptation: construction of water conduits; water saving and management

Table 109. Summary information on financial resources and technology transfer for Spain

ODA	USD 1.72 billion in 2002 (0.26% of gross national income)
Climate-related aid in bilateral ODA	1.3% (OECD/DAC estimate for 1998–2000)
Contributions to GEF (USD million)	Pilot phase: 13.68; GEF-1: 19.57; GEF-2: 16.51
Pledge for 3 rd GEF replenishment	USD 19.17 million (0.80% of GEF-3 total)
Jl and CDM under Kyoto Protocol	CDM and Jl working groups created in 2002
Other (bilateral/multilateral)	Support to countries in the Mediterranean area; the ARAUCARIA programme for Latin America

2. Conclusions from the IDR of Spain's third national communication⁵¹

277. Spain's NC3 is, in general, in compliance with the UNFCCC reporting guidelines. The NC3 is better prepared than the NC2. The most notable improvements include a more detailed and more consistent GHG inventory; recent advances in terms of new initiatives, such as the Plan for the Promotion of Renewable Energy, the transposition of many relevant EC directives into action at the national level and the application of the IPPC Directive; more comprehensive data on financial resources and transfer of technology; new scientific research and assessments for vulnerability and adaptation; and a well documented summary on the promotion of public awareness for climate change.

278. Ongoing revisions and improved harmonization between the EU's Core Inventory of Air Emissions (CORINAIR) and IPCC categories have allowed inventory experts in Spain to address inaccuracies and reporting problems which were identified during the IDR of the NC2. However, the review team identified some areas for further improvement, including an evaluation of GHG reductions from individual mitigation measures; introducing a more robust projections methodology that forecasts the future levels of all six GHGs for all sectors and which is consistent with the GHG inventory; reporting on the status of implementation of policies and measures by the Spanish Autonomous Communities (CCAA) and their climate change initiatives.

279. Between 1990 and 2000, the total GHG emissions in Spain (without LUCF) increased by 34.6 per cent. The increase in emissions is marked after 1995 and after 1998 and is associated with an

⁵¹ See FCCC/IDR.3/ESP(2004).

upswing in economic growth. The relative increase in the decade was highest in waste (55 per cent), followed by transport (49 per cent) and industrial processes (36 per cent). The increase in CO₂ emissions from energy (only fuel combustion, not including fugitive emissions) between 1990 and 2000 amounted to 38 per cent (from 205,011 Gg CO₂ in 1990 to 282,949 Gg CO₂ in 2000). At the time of the NC2, national officials had set a target of a 16 per cent increase in CO₂ emissions from energy by 2000.

280. Without further strengthening of current domestic policies, Spain may find it difficult to achieve its national emissions target under the Kyoto Protocol. Within the EC burden-sharing agreement for the Kyoto Protocol, Spain is required to limit the growth of GHG emissions in the period 2008–2012 by 15 per cent compared to its base year emissions. The institutional framework for dealing with climate and energy matters in Spain is complex. The decentralization of responsibilities to CCAAs for implementing policies and measures also complicates the monitoring of GHG reduction objectives. For this reason, coordination among the different institutions is essential for the formulation of effective policy and timely implementation of the Spanish Climate Change Strategy, which has yet to be adopted. In this regard, the review team believes that the newly created Spanish Climate Change Office is an important institutional development that can play a pivotal role in ensuring coordination among all stakeholders in meeting climate change objectives and in monitoring their performance in meeting the objectives of the strategy.

281. The review team noted the importance of a timely and positive conclusion of the Spanish Climate Change Strategy and the need for agreement between the central government and the CCAAs in this regard. The strategy proposes the identification of priority actions in all sectors and is likely to result in monitoring the effects of the policies and measures implemented. Notwithstanding the absence of the strategy, Spain has successfully implemented many important EC-wide policies and measures. However, more effort is needed to ensure that after almost 10 years of deliberation Spain can produce and implement a national framework on climate. As soon as the strategy is adopted, monitoring of progress made in implementing policies and measures in meeting their GHG reduction objectives, at the level of central and regional government, would also have to be addressed.

282. Spanish officials indicated that while one of the challenges facing the Government is the distribution of the 15 per cent emissions among sectors, Spain might need to use the international flexibility mechanisms in addition to domestic action to meet the national Kyoto Protocol target. At the time of the review, the central government and CCAAs were still discussing details for implementing a pilot phase for the CDM and preparing its National Allocation Plan as part of the requirements of participating in the EU ETS in 2005.

283. Coastal areas, forests and soils were cited as the areas most vulnerable to climate change impacts. Although a national programme for adaptation to climate change is not yet in place, Spain is investing EUR 1.6 million in several projects related to the assessment of climate change impacts and the results are expected to be available by the end of 2004. These results will help in preparing a future national plan for adaptation.

284. Currently, Spain's ODA amounts to about 0.24 per cent of GDP. The Government is committed to increasing it to 0.3 per cent by 2006. Activities targeting public awareness have been strengthened considerably since the NC2, and climate change is now given the same importance as other pressing environmental problems. However, more effort is still needed to ensure full coordination between all the CCAAs and the central government to achieve the GHG limitation commitment.

Z. Sweden

1. Selected country data and summary information drawn from the IDR

Table 110. Macroeconomic and GHG data for Sweden

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	8.56	8.87	8.90	4.0	0.4	0.3
GDP (billions USD 1995 PPP)	176	214	216	22.7	1.8	0.9
TPES (Mtoe)	46.7	47.5	51.1	9.4	0.8	7.6
GDP per capita (thousands USD 1995 PPP)	20.6	24.1	24.2	17.5	1.5	0.4
TPES per capita (kgoe)	5.5	5.4	5.7	3.6	0.5	5.6
CO ₂ emissions without LUCF (Tg)	56.5	53.8	55.3	-2.1	-0.2	2.8
GHG emissions without LUCF (Tg CO ₂ eq)	72.8	68.9	70.5	-3.2	-0.3	2.3
GHG emissions/removals by LUCF (Tg)	-20.3	-27.3	-33.1	63.1	4.5	21.2
CO ₂ / capita (Mg)	6.6	6.1	6.2	-6.1	-0.5	1.6
CO ₂ / GDP (kg per USD 1995 PPP)	0.32	0.25	0.26	-18.8	-2.0	4.0
GHG / capita (Mg CO ₂ eq)	8.5	7.8	7.9	-7.1	-0.6	1.3
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	0.41	0.32	0.33	-19.5	-2.1	3.1

Figure 56. Trends in GHG emissions for Sweden

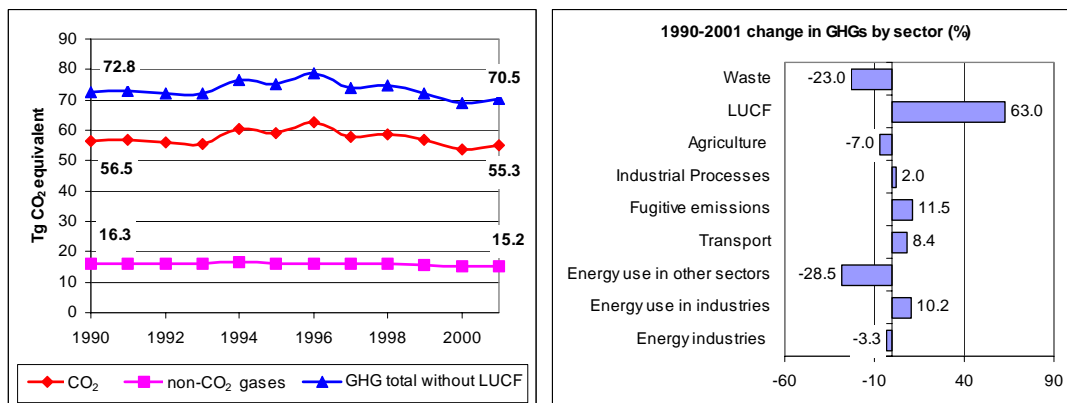
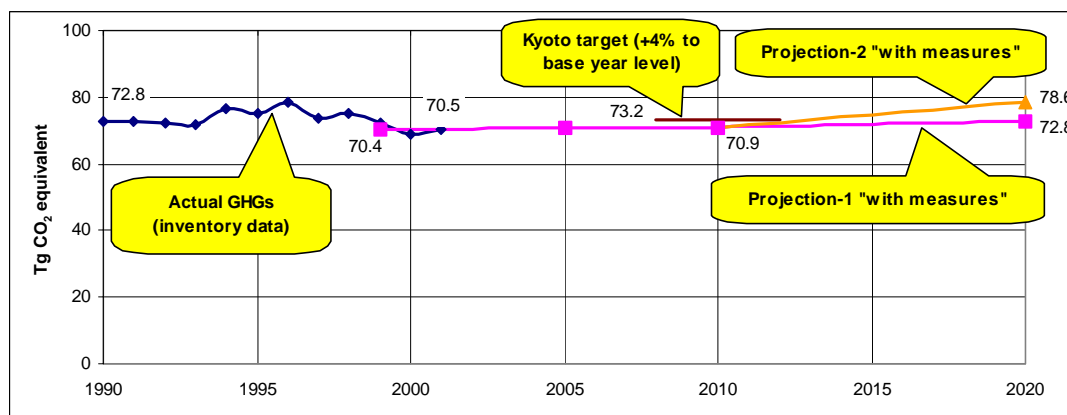


Figure 57. GHG projections for Sweden



Note: The two “with measures” projections in the NC3 differ by the following assumptions: projection 1 assumes the possibility of reinvestment in nuclear power whereas projection 2 assumes a 40-year lifespan for nuclear plants; the projections differ only after 2010.

Table 111. Summary information on climate-related policies and measures for Sweden

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	The Climate Bill (2002); Riksdag decisions on climate policy (1993, 1995, 1999)
Energy/electricity/emissions taxation	Energy taxes since the 1950s; CO ₂ taxes since 1991
Emissions trading	EU scheme planned for 2005
Other	Swedish Environmental Objectives Bill (2001); Environmental Code (1999); regional and municipal climate-related initiatives
Energy sector	
Energy sector liberalization	Electricity market opening and participation in the open Nordic electricity market (since 1996)
Combined heat and power generation	Subsidies, grants for conversion to district heating; procurement and investment programmes
Renewable energy sources	Green certificate scheme (2003); investment grants, operational subsidies, tax relief schemes
Energy efficiency improvements	1999 Ordinance; 1997 Energy Policy Decision; Planning, Building and Housing Act; investment grants; building regulations; energy labelling of household devices; public awareness campaigns, energy audits, local energy and environmental plans
Other	The Energy Bill (2001); Bill on Sustainable Energy Supply (1997); procurement of new energy technologies; moratorium on nuclear power expansion (1980) and shutdown of one nuclear unit at the Barsebäck plant (1999); establishment and operation of the National Energy Administration (1998)
Transport	
Vehicle and fuel taxes	"Pilot project tax relief" on biomass motor fuels
Agreements/partnerships	"Green car" agreement with the Swedish car industry (for 2000–2006); EC agreements: ACEA (1999), KAMA (2000), JAMA (2000)
Integrated transport planning	Transportation Bill (2002); Infrastructure Bill (2001); investments in railway infrastructure
Other	Procurement of ethanol–petrol cars (since 1999)
Industry	
Pollution prevention and control	IPPC Directive of the EC; the Refrigerants Order
Agreements/partnerships	Voluntary agreements with energy-intensive industries, combined with energy audits
Agriculture	
	Common Agricultural Policy of the EC; start-up grants for energy forests; support for grazing land and an open agricultural landscape
Waste management	
	Public Cleansing Ordinance (1998); Landfill Ordinance (2001); waste charges and landfill tax; collection of landfill gas; ban on the landfilling of combustible waste
Forestry	
	Forestry Act (1993); Silvicultural Act (1992); environmentally related certification of forests; restrictions on the use of nitrogenous fertilizers on forest soils (1991)

Table 112. Summary information on climate change vulnerability and adaptation for Sweden

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	At higher temperatures, higher CO ₂ levels and higher precipitation, most crop yields would increase (differently for different crops), despite the simultaneous increase in the attacks by pests and diseases. It may be possible to cultivate some crops further in the north; in the south, new crops may appear
Biodiversity and natural ecosystems	Southern species may penetrate further north and some northern species may be threatened. The functioning and biodiversity of wetlands is vulnerable to climate change
Coastal, marine and river ecosystems	Biodiversity in lakes, watercourses and the Baltic Sea is particularly vulnerable. Species tolerant to warmer conditions are expected to benefit. More violent and frequent storms, and greater short-term variations in temperature and precipitation are likely to occur. Sea level rise may affect the coast in the south
Fisheries	Warmer sea temperature would be beneficial for some species (such as perch, pike and zander) and unfavourable for others (such as cod, whitefish, salmon and trout)
Forests	Overall, wood production by forests is estimated to increase by 10–20 per cent, despite a number of negative effects, such as increased pests and diseases. The effect of the increased probability of storms on windthrows needs to be studied
Human health	Climate change can have direct health effects through heatwaves, storms, floods, weather-related landslip, and indirect effects through the impact on ecosystems (e.g. through the expansion of harmful insects and vector-borne diseases). However, Sweden is believed to have adequate socio-economic and technical resources to take remedial action
Infrastructure and economy	Some infrastructure in transport, the energy sector and industry may be affected by climate change
Mountain ecosystems	Ecosystems in the mountainous regions are highly sensitive to climate change
Water resources	Warmer, wetter climate would increase water supply in the north; in the south, the impact is expected to be mixed (more supply in some cases and possible shortages in other cases); the risk of dam breaches may increase Adaptation: increase in safety margins in dam design

Table 113. Summary information on financial resources and technology transfer for Sweden

ODA	USD 1.991 billion in 2002 (0.83% of gross national income)
Climate-related aid in bilateral ODA	2.1% (OECD/DAC estimate for 1998–2000)
Climate-related support programmes	Swedish Climate Investment Programme – SICLIP (2000)
Contributions to GEF (USD million)	Pilot phase: 33.56; GEF-1: 58.3; GEF-2: 57.8
Pledge for 3 rd GEF replenishment	USD 72.24 million (3.01% of GEF-3 total)
AIJ	AIJ programme with a focus on Estonia, Latvia, Lithuania, Poland and Russia in 1993–2000 (about 50 AIJ projects reported)
JI and CDM under Kyoto Protocol	Enquiry Commission on the flexible mechanisms of the Kyoto Protocol since 1998
Other (bilateral/multilateral)	Support to development projects in about 120 countries, including least developed countries; participation in the JI Testing Ground Facility for the Baltic Sea Region

2. Conclusions from the IDR of Sweden's third national communication⁵²

285. When reviewing the information reported in the third national communication of Sweden, the review team concluded that the document complied with the provisions of the UNFCCC guidelines. The team was of the opinion that, in combination with the annual GHG inventory submission and some

⁵² See FCCC/IDR.3/SWE (2004).

additional documents, the NC3 provided a comprehensive overview of climate policy in Sweden. Some potential for increasing transparency of reporting was identified, especially in the assessment of costs and mitigation effects of policies and measures.

286. The review team noted that while the Ministry of Environment is responsible for the national climate change policy, other important ministries (e.g. Ministry of Industry, Employment and Communications) and agencies (e.g. the Swedish Energy Agency) are also actively integrating climate policy into their policy fields. Overall coordination of national climate change policy is established at the ministerial level. Climate policy benefits from a relatively high public awareness and a correspondingly high priority on Sweden's political agenda. Accordingly, the review team noted sufficient financial and administrative capacity in this field.

287. The review team acknowledged the submission of the GHG inventory using the CRF tables and encouraged Sweden to continue to improve the national system for the estimation of anthropogenic emissions by sources and removals by sinks, to harmonize the methodology for the different years, to recalculate the emission trends where necessary and to address the existing minor gaps.

288. Between 1990 and 2000, the overall GHG emissions declined by 5 per cent (excluding LUCF) and 21 per cent (including LUCF). Sweden is expected to meet its emissions target under the EC burden-sharing agreement (i.e. 104 per cent of the 1990 GHG levels) during the first commitment period. Emissions of GHGs are projected to remain at their 2000 levels until 2010. For the period 2010–2020, GHG emissions are projected to increase by 4–14 per cent, depending on the further development of nuclear phase-out plans.

289. In 2002, within the context of the Climate Bill, Sweden set itself a stricter national GHG mitigation target to achieve 96 per cent instead of 104 per cent of the 1990 GHG levels during the first commitment period, and defined further policies and measures to contribute towards reaching this target. The elements of the Climate Bill are subject to evaluation, revision and extension at regular intervals, starting in 2004 and 2008.

290. The review team acknowledged that, relying on its long experience in the implementation of economic and fiscal instruments, Sweden managed to gain control over its overall GHG emission trends, in spite of considerable economic growth. The Swedish energy and CO₂ tax, supplemented by a sophisticated portfolio of incentives, support schemes, programmes, tools and standards, were identified as the main reason for the notable reductions in GHG emissions achieved in many sectors.

291. Sweden's success stories include a remarkable decoupling of GDP growth from GHG emissions, an increasing use of renewable energy sources (biomass use for heating and cogeneration), energy efficiency improvements in industry, thermal building insulation, waste management, a long tradition of sustainable forestry and high activity in the field of international cooperation. Still, a number of areas with considerable potential for GHG reduction were identified, for example in the use of renewable energy sources, in the energy end-use of manufacturing industries and in the building sector. Exploring these could enable Sweden to continue its GHG reduction trend.

292. The review team noted that the increasing trend of emissions from transportation remained a challenge for the Swedish climate policy. A national objective to stabilize transport emissions at their 1990 level by 2010 is unlikely to be met unless considerable further efforts are taken. The review team noted that the Swedish Government is considering other measures to curb CO₂ emissions from the transport sector, and will introduce them if appropriate.

293. Sweden was commended on its ongoing work in the field of research and systematic observation, as well as public awareness and outreach. The review team felt that research on adaptation to a changing climate should be intensified.

AA. Switzerland

1. Selected country data and summary information drawn from the IDR

Table 114. Macroeconomic and GHG data for Switzerland

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	6.71	7.18	7.23	7.7	0.7	0.7
GDP (billions USD 1995 PPP)	181	198	199	9.9	0.9	0.5
TPES (Mtoe)	25.1	26.5	28.0	11.6	1.0	5.7
GDP per capita (thousands USD 1995 PPP)	27.0	27.5	27.6	2.2	0.2	0.4
TPES per capita (kgoe)	3.7	3.7	3.9	5.4	0.3	5.4
CO ₂ emissions without LUCF (Tg)	44.3	43.8	44.8	1.1	0.1	2.3
GHG emissions without LUCF (Tg CO ₂ eq)	53.1	52.4	53.5	0.8	0.1	2.1
GHG emissions/removals by LUCF (Tg)	-3.19	-1.82	-1.53	-52.0	-6.5	-15.9
CO ₂ / capita (Mg)	6.6	6.1	6.2	-6.1	-0.6	1.6
CO ₂ / GDP (kg per USD 1995 PPP)	0.24	0.22	0.22	-8.3	-0.8	0.0
GHG / capita (Mg CO ₂ eq)	7.9	7.3	7.4	-6.3	-0.6	1.4
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	0.29	0.27	0.27	-6.9	-0.8	0.0

Figure 58. Trends in GHG emissions for Switzerland

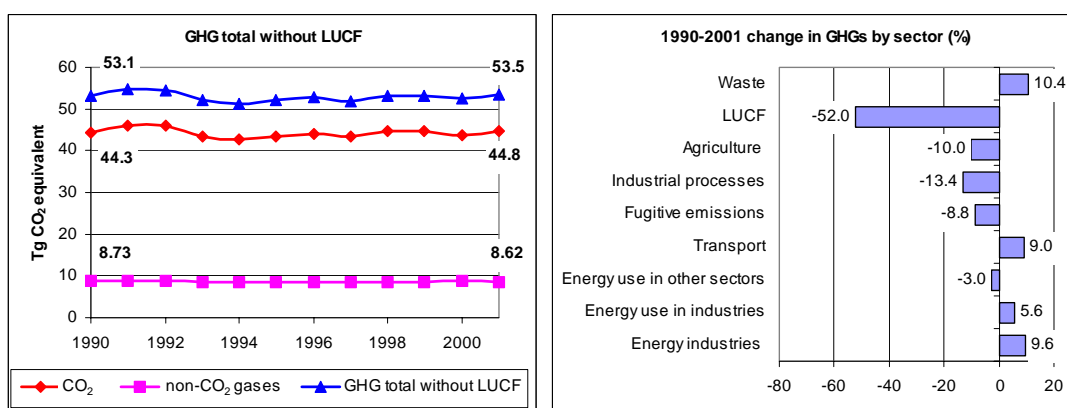
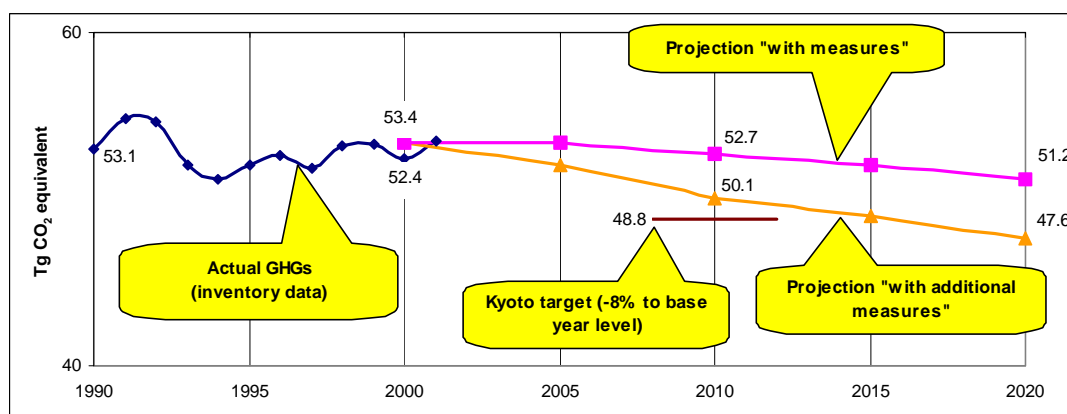


Figure 59. GHG projections for Switzerland



Note 1: The projected GHGs are the sum of CO₂, CH₄, N₂O, HFCs and SF₆; PFC projections are not available.

Note 2: The difference between the inventory and the projections in 2000 is due to recent inventory recalculations.

Table 115. Summary information on climate-related policies and measures for Switzerland

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	Federal Law on the Reduction of CO ₂ emissions (2000)
Energy/electricity/emissions taxation	CO ₂ tax may be considered after 2004 (depending on the level of CO ₂ emissions)
Emissions trading	Domestic ETS under discussion
Other	Strategy for sustainable development in Switzerland (1997); Federal Law on the Protection of the Environment (1985, revised in 1995)
Energy sector	
	The SwissEnergy Programme (2001); Law on Electricity Market (2000); the Energy Law (1998); the 'Energy2000' programme (1991–2000); energy labels for household devices and vehicles; cantonal and communal energy laws; Nuclear Energy Law (2003)
Transport	
Vehicle and fuel taxes	Distance-related heavy vehicles fee (2001)
Agreements/partnerships	Voluntary agreement on increasing fuel efficiency of vehicles between the Federal Council and the Association of Car Importers
Integrated transport planning	The RAIL–2000, NRLA and other projects to improve rail infrastructure; Traffic Transfer Act (1999); various federal and local initiatives (EcoDrive, Alpeninitiative, car sharing and other)
Other	The Aeronautic Infrastructure Plan (2000)
Industry	
Pollution prevention and control	Ordinance on Air Pollution Control (1985, revised in 1992, 1999); National Clean Air Strategy (1986, revised in 1996); Ordinance on Environmentally Hazardous Substances (1985, revised in 1995); tax on non-methane volatile organic compounds (NMVOCs) (1999)
Agreements/partnerships	Voluntary agreements on energy use efficiency and CO ₂ emissions under the CO ₂ Law, the SwissEnergy Programme and the 'Energy2000' programme
Other	Creation of the private Energy Agency of Trade and Industry
Agriculture	
	Federal Law on Agriculture (1992, extensively revised in 1998); Federal Law on Water Protection (1992)
Waste management	
	Waste Disposal Tax (2001); prohibition of landfilling of combustible waste; waste incineration at special plants; Technical Ordinance on Waste Disposal (1991, revised in 1993, 1996, 1998, 2000)
Forestry	
	Prohibition of deforestation and obligation to reforest damaged forest areas; Federal Law on the Protection of Nature and Cultural Heritage (1996); Federal Forest Law (1993)

Table 116. Summary information on climate change vulnerability and adaptation for Switzerland

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	Warming can lead to increases in crop and grass productivity; simultaneously, a shift from mountain agriculture to low-lying areas may become necessary
Coastal, marine and river ecosystems	River valleys are particularly vulnerable to increased frequency and severity of floods Adaptation: protection against natural disasters
Forests	Change of tree composition, such as the intrusion of broadleaved species into the conifer forests in the alpine and subalpine belts; adverse impacts of increased frequency and severity of natural disasters (such as storms) are also relevant Adaptation: measures for forest conservation and management
Infrastructure and economy	Tourism (winter tourism in particular) and the insurance industry may be affected by climate change impacts
Mountain ecosystems	Ecosystems in the Alpine region, especially those at their ecological limit, may be vulnerable to warming
Other	High alpine villages are particularly vulnerable to climate change impacts

Table 117. Summary information on financial resources and technology transfer for Switzerland

ODA	USD 939 million in 2002 (0.32% of gross national income)
Climate-related aid in bilateral ODA	0.7% (OECD/DAC estimate for 1998–2000)
Climate-related support programmes	Swiss AIJ Pilot Programme (1997)
Contributions to GEF (USD million)	Pilot phase: 55.7; GEF-1: 44.8; GEF-2: 43.9
Pledge for 3 rd GEF replenishment	USD 58.25 million (2.43% of GEF-3 total)
AIJ	AIJ projects in Romania and Slovakia; project identification in other countries
Jl and CDM under Kyoto Protocol	National Secretariat for the implementation of the flexible mechanisms of the Kyoto Protocol (SwissFlex) has been established
Other (bilateral/multilateral)	Global Environmental Programme (1992); the Cleaner Production Programme; EcoFund to enhance debt relief for developing countries; bilateral cooperation with countries of Eastern and Central Europe, and with the countries of the former Soviet Union; support of capacity-building projects of the World Bank and other multilateral institutions

2. Conclusions from the IDR of Switzerland's third national communication⁵³

294. Switzerland has made great progress in its overall approach to climate change, and has provided for a good policy base for the future, which is by and large consistent with the country's GHG reduction commitments under the UNFCCC. Climate change and GHG mitigation are being given priority at all levels of government (federal, cantonal and municipal). The objective of stabilizing 2000 CO₂ emissions at the 1990 level was expected to be met, based on GHG emissions presented in the Swiss inventory data submitted for 2000. There are major issues that are being addressed further, in part to fulfil the need to achieve energy and environmental policy objectives. These include the Energy 2000 programme, which formed the basis for stabilizing CO₂ emissions in 2000. The most recent measures are included under the SwissEnergy programme, which commenced in 2001, the CO₂ Law, which entered into force in May 2000, and the heavy vehicle fee, in place since January 2000. These actions will have a major impact on energy policy and are expected to reduce GHG emissions further.

295. In general, the NC3 complies with the UNFCCC reporting guidelines and is well prepared. Although there are some omissions and inconsistencies, most of them were clarified during the review, and additional data were provided. Unlike the NC2, the NC3 was not discussed with important stakeholders, such as NGOs or cantons. A decision was taken to consider the NC3 as a federal document intended primarily for submission to the UNFCCC, in fulfilment of the country's reporting obligations. Accordingly, the document exists only in English. The review team felt that this approach may have decreased the usefulness of the document as a planning tool in the country.

296. Switzerland recently established a new national target of reducing CO₂ emissions by 10 per cent by 2010. This is consistent with its emissions reduction target under the Kyoto Protocol of 8 per cent for all gases. Ratification of the Kyoto Protocol is to be considered by the parliament in late 2002 and is deemed likely. However, if Switzerland does not ratify the Protocol, the CO₂ Law and some other domestic measures are expected to encounter difficulties in implementation. During the review, the team learned that there is interest in all flexibility mechanisms under the Protocol, which may be under consideration as part of a contingency plan on the part of stakeholders, in the event that domestic actions are not on track to reduce emissions as targeted.

297. The stabilization of GHG emissions in the 1990s was achieved in conditions of low economic growth. With a recovery of GDP growth, GHG emissions will most likely increase and, as a result, policy makers may need to strengthen the present GHG mitigation strategy.

298. The new CO₂ Law aims to reduce CO₂ emissions by 10 per cent by 2010 compared to the 1990 level. In its initial phase, the law relies heavily on voluntary action. However, the potential of such action is unclear, especially for the transport sector, which accounted for 34 per cent of CO₂ emissions in 1999. The review team also questioned the efficiency of the projected CO₂ tax. The CO₂ Law stipulates that if voluntary measures prove unsatisfactory by 2004, the federal Government is authorized to

⁵³ See FCCC/IDR.3/CHE(2002).

introduce a CO₂ tax. The law also stipulates that the size of the tax and steps taken for its introduction will be defined in a political process, which adds some uncertainty to its future. Moreover, the time until 2004 seems to be too short to determine whether the voluntary measures would work. Thus, close monitoring of progress made in reducing GHG emissions between 2002 and 2004 is vital.

299. Under its “with measures implemented” scenario, Switzerland may not be able to meet the CO₂ reduction target of 10 per cent of the 1990 level. Based on the projected data, by 2010 there will be a reduction in these emissions of only 2.4 per cent, and by 2020 only 5.3 per cent. Given the large share of CO₂ in total GHG emissions, one can assume that the Kyoto target of 8 per cent for GHGs in 2008–2012 would not be met under this scenario. On the other hand, under the “with measures planned” scenario, the target, as required by the CO₂ Law, is met, and there will be further reductions between 2010 and 2020 of up to 14 per cent. The review team noted that the projections of GHG emissions presented in the NC3 seem to correspond only partially to the relevant policies and measures. As a result, the link between the planned measures and the modelled scenarios, which mainly focus on energy demand, appears weak in some aspects. Although the impact of a possible nuclear phase-out on the level of CO₂ emissions was not analysed in the NC3, it is still a very important consideration for the evolution of GHG emissions in the future and should be included in scenario development.

300. Particular attention needs to be given to the development of GHG emissions in 2000–2010 in both the electricity generation and the transport sectors. For electricity generation, measures may be required to retain the carbon-free nature of generation because of the effects of electricity-market liberalization, possible expansion of gas-fired combined-heat-and-power units, and the currently debated early closure of nuclear units. For transportation, the degree of success in managing the increasing mobility of the population and growing freight transport is still a challenge that should be monitored more effectively in order to evaluate the effectiveness of sectoral policies and measures aimed at reducing GHG emissions from this sector.

301. The macroeconomic costs of emissions reduction were not evaluated. As a result, the marginal costs of GHG reduction by economic sectors are still unknown. Therefore, it is difficult to compare the efficiency of domestic actions among sectors with that of international flexibility mechanisms.

302. In spite of the above-mentioned constraints, the new legal framework (the CO₂ Law and the Energy Law) has improved the overall conditions for possible success of the new long-term GHG mitigation programme. The review team feels that the GHG reduction target can be met if this framework is combined with the effective allocation of funding for the regulatory measures outlined in the NC3.

303. Switzerland provides considerable and well-targeted financial assistance to developing countries, and in particular, least developed countries, and its coverage of countries with economies in transition expanded between 1990 and 2000.

BB. United Kingdom of Great Britain and Northern Ireland

1. Selected country data and summary information drawn from the IDR

Table 118. Macroeconomic and GHG data for the United Kingdom

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	57.3	58.7	58.8	2.6	0.2	0.2
GDP (billions USD 1995 PPP)	1008	1269	1293	28.3	2.3	1.9
TPES (Mtoe)	212.2	231.2	235.2	10.8	0.9	1.7
GDP per capita (thousands USD 1995 PPP)	17.6	21.6	22.0	25.0	2.1	1.9
TPES per capita (kgoe)	3.7	3.9	4.0	8.1	0.7	2.6
CO ₂ emissions without LUCF (Tg)	585.0	544.4	557.6	-4.7	-0.4	2.4
GHG emissions without LUCF (Tg CO ₂ eq)	744.1	649.2	657.2	-11.7	-1.1	1.2
GHG emissions/removals by LUCF (Tg)	8.79	3.38	3.22	-63.4	-8.7	-4.7
CO ₂ / capita (Mg)	10.21	9.28	9.49	-6.9	-0.7	2.2
CO ₂ / GDP (kg per USD 1995 PPP)	0.58	0.43	0.43	-25.9	-2.7	0.0
GHG / capita (Mg CO ₂ eq)	13.0	11.1	11.2	-13.8	-1.4	0.9
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	0.74	0.51	0.51	-31.1	-3.3	0.0

Figure 60. Trends in GHG emissions for the United Kingdom

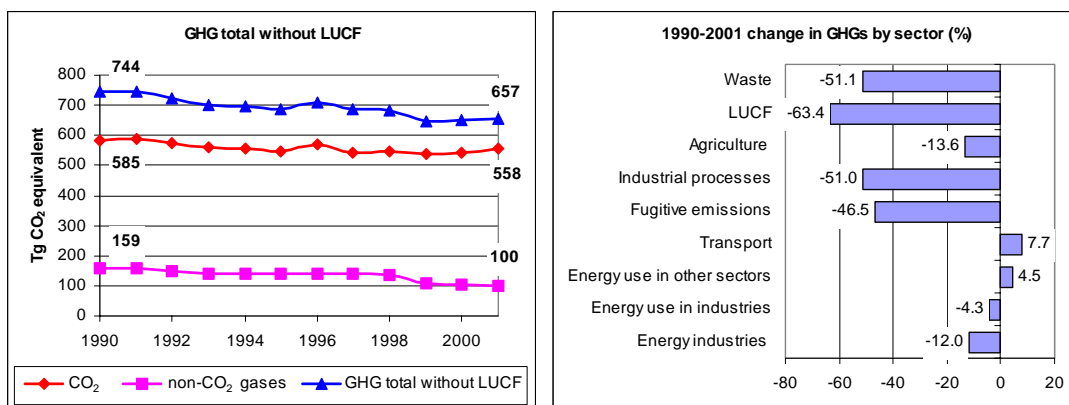


Figure 61. GHG projections for the United Kingdom

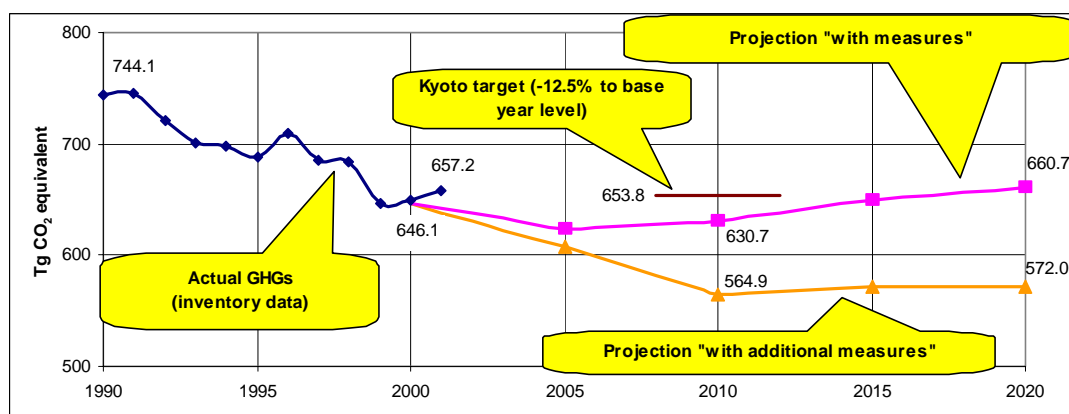


Table 119. Summary information on climate-related policies and measures for the United Kingdom

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programme	UK Climate Change Programme (2000)
Energy/electricity/emissions taxation	Climate Change Levy (2001)
Emissions trading	Domestic scheme in operation (2002); EU scheme planned for 2005
Other	The Carbon Trust (2001)
Energy sector	
Energy sector liberalization	Utilities Act (2000), New Electricity Trading Arrangements – NETA (2001)
Combined heat and power generation	CHP development target for 2010; CHP Quality Assurance Programme; CHP strategy to 2010
Renewable energy sources	Renewables Obligation (2002), renewables support programmes
Energy efficiency improvements	Energy efficiency commitment, amendment of building regulations; appliance standards and labelling; Community Energy Programme
Transport	
Vehicle and fuel taxes	Vehicle Excise Duty; company car taxation
Agreements/partnerships	EC agreements: ACEA (1999), KAMA (2000), JAMA (2000)
Integrated transport planning	A 10-year plan for transport development; regional plans
Industry	
Pollution prevention and control	IPPC Directive of the EC
Agreements/partnerships	Climate Change Agreements
Agriculture	
	Common Agricultural Policy of the EC; prescriptions for Environmentally Sensitive Areas (ESA); establishment of Nitrate Sensitive Areas and Nitrate Vulnerable Zones
Waste management	
	Landfill Directive of the EC; Waste Strategy of England and Wales (2000)
Forestry	
	UK Forestry Standard; regional forestry strategies

Table 120. Summary information on climate change vulnerability and adaptation for the United Kingdom

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	Agriculture can be affected by climate change, but there are opportunities to minimize negative impacts through changes in agricultural practices Adaptation: changes in the variety of cultivated crops
Biodiversity and natural ecosystems	Habitats and species are expected to move northwards and to higher altitudes; adaptation to climate-induced changes in land use may be also required Adaptation: protection and management of Sites of Special Scientific Interest; support to agri-environmental schemes
Coastal, marine and river ecosystems	Flooding is likely to increase as a result of rising sea levels, more intense rainfall and possibly increased storminess Adaptation: flood defence measures, land-use planning
Forests	Some benefit from increased CO ₂ concentration, but a negative effect of wind, fire, pests and diseases
Human health	Possible increase in heat-related deaths
Infrastructure and economy	Economic impacts may include business disruptions, agricultural losses, costs associated with higher water demand and impact on the insurance industry Adaptation: building regulations; protection against natural disasters
Mountain ecosystems	Some species in the high mountains in the north and west may be affected
Water resources	Increased and more intense rainfall, and changes in the seasonal distribution of rainfall are likely Adaptation: water resource management, efficient use of water

Table 121. Summary information on financial resources and technology transfer for the United Kingdom

ODA	USD 4.92 billion in 2002 (0.31% of gross national income)
Climate-related aid in bilateral ODA	3.4% (OECD/DAC estimate for 1998–2000)
Climate-related support programmes	United Kingdom development assistance programme, United Kingdom technology partnership
Contributions to GEF (USD million)	Pilot phase: 74.8; GEF-1: 134.6; GEF-2: 138.9
Pledge for 3 rd GEF replenishment	About GBP 118 million (7.93% of GEF-3 total)
JI and CDM under Kyoto Protocol	Climate Change Projects Office established in 2001
Other (bilateral/multilateral)	IEA's GHG Technology Information Exchange–GREENTIE; OECD's Climate Technology Initiative

2. Conclusions from the IDR of the United Kingdom's third national communication⁵⁴

304. The NC3 of the United Kingdom of Great Britain and Northern Ireland is comprehensive and consistent, covering all major sectors and GHG emissions for the six gases. Key climate change policies and measures are reflected sufficiently and concisely. Presentation of the information follows, for the most part, the UNFCCC reporting guidelines. Since the NC2, the United Kingdom has made commendable progress in achieving a number of the objectives stated in the NC2.

305. The most notable achievement was the sizeable reduction in GHG emissions of 12.8 per cent between 1990 and 2000. In this regard, the United Kingdom has succeeded remarkably in returning its GHG emissions to their 1990 level. This objective was achieved and exceeded mainly as a result of the policies and measures that were put in place to liberalize the electricity market and also a shift in economic structure from heavy industries to light manufacturing and services, as well as an aggressive effort in reducing non-CO₂ GHGs in industry. In meeting this objective the United Kingdom has been able to decouple its economic growth from energy intensity and emissions intensity. Notable decreases were obtained for the three main GHGs, namely N₂O (35 per cent), CH₄ (33 per cent) and CO₂ (8 per cent).

306. Notable progress was also achieved with respect to climate change impacts and adaptation. There was no discussion of these in the NC1. The NC2 reported on the establishment of the United Kingdom Climate Change Impacts Review Group and some early steps towards adaptation. The NC3 outlines key developments that have advanced both integrated research and policy analysis on impacts and adaptation.

307. In 2000, the Government approved the comprehensive United Kingdom Climate Change Programme. This programme identifies a series of strengthened measures to reduce, through domestic action, GHG emissions in accordance with the United Kingdom's commitments under the Kyoto Protocol and the EC burden-sharing agreement (a 12.5 per cent reduction in 2008–2012 compared to 1990). The programme signifies a more focused approach to GHG mitigation and an increase in the use of economic and fiscal instruments for pursuing environmental objectives. Important policies in meeting the reduction target include the Domestic Emissions Trading System, the Climate Change Levy and the Renewables Obligation.

308. The NC3 projections indicate that the United Kingdom is likely to meet its Kyoto target. However, to ensure that GHG reductions are sustained, the Government needs to vigorously pursue the measures outlined in the "with additional measures" scenario. Ensuring compatibility between the Climate Change Programme and the Energy White Paper is of particular importance for meeting the Kyoto target. The low-carbon economy strategy currently being discussed in the United Kingdom would make the trends in GHG emission projections sustainable and consistent with broader national objectives. Should the Climate Change Programme be implemented to its fullest potential, GHG

⁵⁴ See FCCC/IDR.3/GBR (2003).

mitigation under the programme may go significantly beyond the Kyoto Protocol target in the direction of its domestic goal to reduce CO₂ by 20 per cent.

309. The review team noted the high level of harmonization between industry, governmental and non-governmental organizations in the commitment to tackle climate change, and also the increasing harmonization of approaches to implementing measures. This level of confidence has been accomplished because the policy-making and review processes have become more transparent with more public consultation. The systematic use of quantified targets and indicators to monitor progress in the Climate Change Programme will help in ensuring commitment by all stakeholders in meeting the United Kingdom's GHG reduction objectives.

310. The review team highly recommends regular monitoring of the success of individual policies and measures in order to adjust the projections accordingly. The transport sector is a major contributor to GHG emission reduction in the "with additional measures" projections. It is recommended that the projections data be revised using the modelling tool being developed by the Department for Transport, to include assumptions presented in the 10 Year Plan regarding competition of various transport modes: railway, air and road transport.

311. According to the DAC of the OECD there was a 40 per cent increase in United Kingdom development assistance between 1999 and 2000, making it the fourth largest donor to developing countries. The international development budget is set to continue to increase between 2000 and 2003 to about 0.33 per cent of GNP, compared to the OECD average of 0.22 per cent.

312. The United Kingdom has put in place a diverse and innovative spectrum of measures to promote capacity-building on climate change at all levels.

CC. United States of America

1. Selected country data and summary information drawn from the IDR

Table 122. Macroeconomic and GHG data for the United States of America

	1990	2000	2001	Change 1990–2001 (%)	Growth rate 1990–2001 (%/year)	Change 2000–2001 (%)
Population (millions)	250.0	275.4	285.9	14.4	1.2	3.8
GDP (billions USD 1995 PPP)	6 521	8 955	8 978	37.7	2.9	0.3
TPES (Mtoe)	1 928	2 304	2 281	18.3	1.5	-1.0
GDP per capita (thousands USD 1995 PPP)	26.1	32.5	31.4	20.3	1.7	-3.4
TPES per capita (kgoe)	7.7	8.4	8.0	3.9	0.3	-4.8
CO ₂ emissions without LUCF (Tg)	5 002	5 859	5 732	14.6	1.2	-2.2
GHG emissions without LUCF (Tg CO ₂ eq)	6 129	7 038	6 884	12.3	1.1	-2.2
GHG emissions/removals by LUCF (Tg)	-958	-690	-690	-28.0	-2.9	0.0
CO ₂ / capita (Mg)	20.0	21.3	20.0	0.0	0.0	-6.1
CO ₂ / GDP (kg per USD 1995 PPP)	0.77	0.65	0.64	-16.9	-1.7	-1.5
GHG / capita (Mg CO ₂ eq)	24.5	25.6	24.1	-1.6	-0.2	-5.9
GHG / GDP (kg CO ₂ eq per USD 1995 PPP)	0.94	0.79	0.77	-18.1	-1.8	-2.5

Figure 62. Trends in GHG emissions for the United States of America

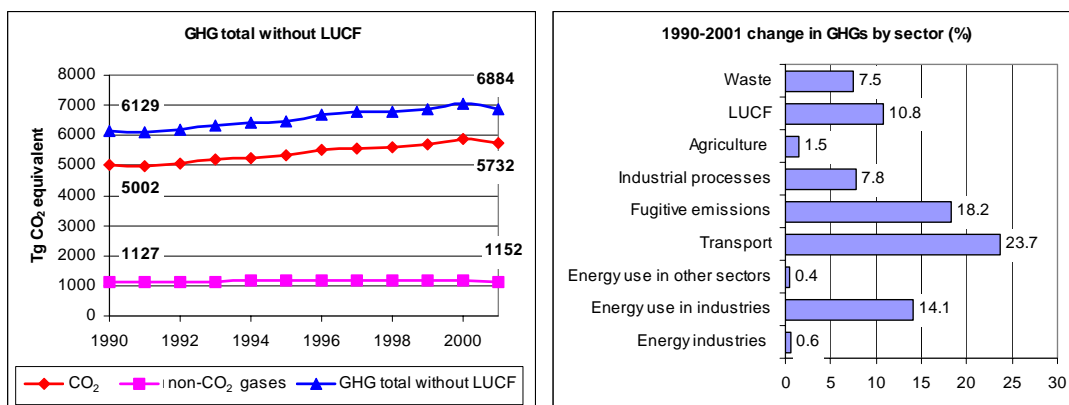


Figure 63. GHG projections for the United States of America

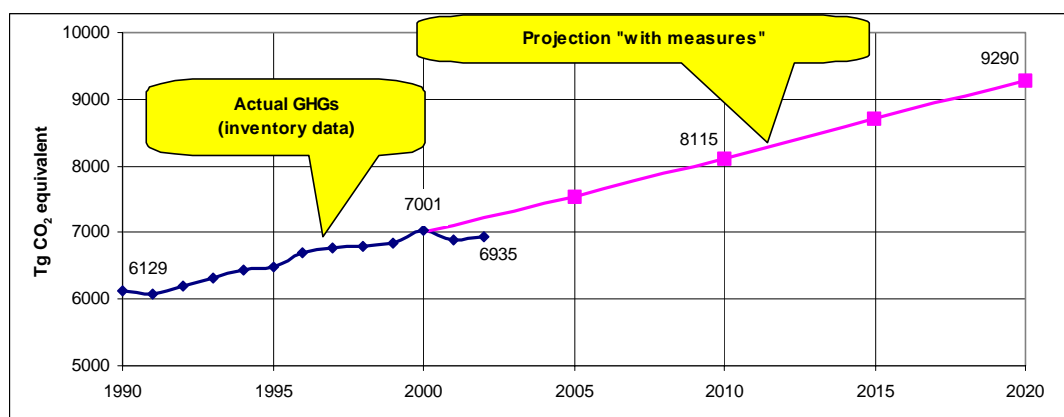


Table 123. Summary information on climate-related policies and measures for the United States of America

Major policies and measures	Examples / comments
Framework policies and cross-sectoral measures	
Integrated climate programmes	US Climate Change Strategy (2001); Global Climate Change Initiative (2002) with the goal to reduce the GHG/GDP ratio by 18% by 2012
Support of research and development	Hydrogen Fuel Initiative (2003); Carbon Sequestration Program (1997); Integrated Sequestration and Hydrogen Research Initiative (2003); Climate Change Technology Program (2003); the Hydrogen Program; Distributed Energy Resources Program
Initiatives and programmes at the level of individual States	State GHG reduction goals, State GHG inventories, regulatory frameworks for CO ₂ emissions from electric utilities, cap-and-trade systems, GHG registries, renewable portfolio standards, vehicle fuel economy standards, energy demand management
Other	National Energy Policy (2001); Energy Bill (2003); voluntary GHG reporting under Energy Policy Act (1992, strengthened in 2003)
Energy sector	
Renewable energy sources and CHP generation	Green Power Partnership, tax credits for investments in renewables; Hydropower Program; CHP Partnership, tax credits for investments in CHPs
Energy efficiency improvements	Energy Star Program (1992); Building America and Rebuild America Programs; buildings codes; buildings partnerships; R&D programmes for building components; residential appliance standards; various federal, state and local programmes
Other	Climate Challenge Program; FutureGen Initiative; programmes to reduce fugitive CH ₄ emissions, programmes to maintain and develop nuclear power (from fission and fusion)
Transport	
	FreedomCAR research partnership; new (2003) fuel efficiency standard for light trucks; research in vehicle technologies and alternative fuels; tax credits for new hybrid and fuel cell vehicles; Commuter Options Programs; programmes to improve air quality; programmes to improve logistics and management of freight transport
Industry	
Energy efficiency improvements	Energy Star Program (1992), Industries of the Future Program; Best Practices Program
Pollution prevention and control	High GWP Environmental Stewardship; Significant New Alternatives Program; HFC-23 Partnership; Partnership with Aluminum Producers; Financial Assistance – NICE
Agreements/partnerships	Climate VISION Initiative (2003); Climate Leaders Partnership
Other	Industrial Assessment Centers; Enabling Technologies Program
Agriculture	
	Farm Security and Rural Development Act (2002) and its programmes; AgSTAR and Ruminant Livestock Efficiency Programs; nutrient management tools; conservation and conservation reserve programmes; support to bio-based products and bioenergy
Waste management	
	Climate and Waste Program; new Landfill Rule (1996), Landfill Methane Outreach Program, tax credits for investments in landfill CH ₄ collection and use
Forestry	
	Forest Stewardship Program (1991–1999); Forest Land Enhancement Program (2002); Sustainable Forestry Initiative Program; National Fire Plan

Table 124. Summary information on climate change vulnerability and adaptation for the United States of America

Vulnerability area	Examples / comments / adaptation measures reported
Agriculture and food security	Increase in agricultural productivity due to increased CO ₂ concentration despite a number of adverse effects Adaptation: changes in planting dates and varieties of species
Biodiversity and natural ecosystems	Changes in land cover (the natural vegetation cover of the United States) are projected in response to changes in surface temperature, precipitation and CO ₂ concentration; most species would grow faster due to increased CO ₂ concentration
Coastal, marine and river ecosystems	The long coastline is vulnerable to sea level rise, temperature increase and changes in precipitation; adverse impacts on estuaries, wetlands, coral reefs, and fisheries are possible Adaptation: integration of climate change into coastal management
Fisheries	Changes in fish stocks are likely if ocean temperature changes
Forests	Forest growth is likely to increase due to increased CO ₂ concentration despite some adverse impacts Adaptation: planting of species adapted to the changed climate
Human health	Impacts, such as temperature-related illnesses/deaths or health effects from air pollution and water-, food- and vector-borne diseases are possible Adaptation: maintenance and enhancement of public health systems, research in climate–health relationships
Infrastructure and economy	Infrastructure in coastal and permafrost zones is particularly vulnerable
Mountain ecosystems	Reduction of winter snowpack and related decrease in water run-off.
Water resources	Adverse effects possible but the overall impact of climate change is uncertain because of the many factors involved Adaptation: management of water resources

Table 125. Summary information on financial resources and technology transfer for the United States of America

ODA	USD 13.29 billion in 2002 (0.13% of gross national income)
Climate-related aid in bilateral ODA	2.3% (OECD/DAC estimate for 1998–2000)
Climate-related support programmes	US Country Studies Program in 1993–2000 (56 countries); the 1998 Climate Change Initiative in 1998–2002 (about 40 countries).
Contributions to GEF (USD million)	Pilot phase: 150; GEF-1: 430; GEF-2: 258 (as of 30 June 2003)
Pledge for 3 rd GEF replenishment	USD 500 million (20.86% of GEF-3 total)
AIJ	United States initiative on JI in 1994–2000 (52 projects in 26 countries)
Other (bilateral/multilateral)	Technology Cooperation Agreement Pilot Project (1997–2001); Climate Technology Initiative; United States–Asia Environmental Partnership; Eurasian–American Partnerships for Environmentally Sustainable Economies (EcoLinks); Energy Partnership Program; forest conservation partnerships

2. Conclusions from the IDR of the United States of America's third national communication⁵⁵

313. The NC3⁵⁶ was prepared while the new federal Administration was in the initial stages of developing its climate policy. The review team recognized it as being a snapshot of that period in time and concluded that, in this context, it provides a comprehensive and consistent overview of the national climate policy. Key climate change policies and measures, GHG inventories, projections and other issues addressed in the NC3 are presented there in a concise and objective way. The review team concluded that the presentation of the information broadly conforms with the UNFCCC guidelines, and did not identify major information gaps. During the visit to Washington, D.C., the review team was also provided with comprehensive and supplementary information on the most recent climate change policy initiatives, such as Climate VISION. This is reflected in the current report, which augmented the information from the NC3.

314. The review team acknowledged with appreciation the improved reporting on inventories and in particular the inclusion of some small sources of emissions, reducing the uncertainties in estimates, consistency in the emissions time series and consistency between the inventory data and information reported in other sections of the NC3, such as projections. It also acknowledged the transparency in the inventory reporting in terms of well-documented assumptions, explanations, reasons for recalculations, sources that are still missing, methodologies and emission factors. It further acknowledged that preparations for a national system of emission inventories is well under way in the United States. On policies and measures and projections, the review team noted that in the interest of enhanced transparency it would be useful to adhere to reporting guidelines even on those parts that are not compulsory. Specific suggestions for improvement are provided in the relevant section of the report.

315. In accordance with the aim of Article 4.2(b) of the UNFCCC, to return individually or jointly the emissions of GHGs in 2000 to their 1990 level, which was also considered as a domestic target by the United States, the review team noted that in 2000 the total emissions (excluding emissions and removals from LUCF) were 14 per cent higher than the emissions in 1990. This was higher than projected in the NC1 and NC2. The growth was most pronounced in emissions of CO₂ and fluorinated gases, which grew by 17 and 30 per cent, respectively; emissions of the other gases grew much more slowly or even declined, mainly as a result of targeted policy initiatives. Underlying reasons for these results were the high economic growth in the 1990s, insufficient funding for the initial 1993 Climate Change Action Plan, new policies and measures developed as a follow-up to this plan having small impact on total emissions, and climate policy in the 1990s being centred largely on voluntary measures. As well, the 1993 Climate Change Action Plan and the follow-up policy initiatives emphasize the mitigation of non-CO₂ emissions, rather than CO₂ emissions, which account for the major part of GHG emissions. The United States has been successful in launching policies that have delivered notable reductions of non-CO₂ emissions. The success of these policies contributed also to slowing down the overall growth of emissions of fluorinated gases underpinned by the growth of use of HFCs as substitute for ozone depleting substances.

316. The new Administration chose not to proceed with the ratification of the Kyoto Protocol. However, it reaffirmed its commitments to the UNFCCC with the understanding that climate change poses a real threat and announced its new Climate Change Strategy in February 2002. This strategy laid down the foundation for the United States's current climate policy, aimed at contributing to the long-term stabilization of GHG concentration through flexible approaches that allow for adjustments in response to new scientific findings and do not inhibit continued economic growth. Broadly, the scope and content of

⁵⁵ See FCCC/IDR.3/USA (2004).

⁵⁶ The NC3 of the United States is entitled as "U.S. Climate Action Report – 2002", abbreviated as CAR3 (the third climate action report). The NC3 and the IDR report use the CAR3 abbreviation and similar abbreviations, CAR1 and CAR2, for the first and second communications respectively. To avoid misunderstanding, this report uses for the United States the same abbreviations as for the other Parties: NC3, NC2 and NC1 for the third, second and first communications.

the Climate Change Strategy reflect the thinking of the Administration that new technology could halt climate change, and continues to place emphasis on voluntary approaches in the short term.

317. The national goal to improve the emission intensity by 18 per cent during 2002–2012 was set as part of the Climate Change Strategy. This goal is set in terms of intensity improvement, not absolute emission limitation, because it is believed that this is less likely to constrain economic growth. The goal may be revised and related policies strengthened after the review scheduled for 2012 takes place; no interim review is envisaged. This goal is recognized as a step towards meeting the UNFCCC objective of stabilizing GHG concentrations at a non-dangerous level, possibly by reducing the level of national emissions in absolute terms in the future through intensity improvement that outpaces economic growth. The review team noted different views on the possibility of attaining the national goal with current measures in place, and that further measures might be necessary to do this. It also noted that an interim review before 2012 could help to ensure that the target is met. It further noted the potential impact of the National Energy Policy on emission levels and on the possibility of attaining the national goal.

318. The overall stance of the United States on climate policy instruments, as outlined in the NC3, continued to emphasize voluntary measures for short-term emission limitations, as in the Climate Change Action Plan and the previous NCs. To this end, the Voluntary Reporting Program, under Section 1605(b) of the Energy Policy Act, is being strengthened. Two new comprehensive voluntary initiatives were launched, Climate VISION and Climate Leaders. These are supported by many existing voluntary programmes, such as Energy Star. Most of these voluntary programmes aim at fostering emission mitigation, for example through promoting energy-efficient and cost-effective equipment. The overall budget for these programmes and for tax incentives to spur the use of clean, renewable and energy-efficient technologies totalled USD 4 billion for 2003 and marked an increase of USD 700 million. Although the use of market-based mechanisms, for instance a transferable credit system or a cap-and-trade system, is not excluded, the Administration does not set concrete incentives at the federal level to utilize such mechanisms. Several prominent initiatives have been launched at the state level to set much more stringent emission reduction objectives, and to achieve these objectives through approaches that go far beyond the voluntary approach taken at the federal level. These initiatives are indicative of the intensified engagement by the states in addressing climate change.

319. Another characteristic feature of the overall stance is its emphasis on long-term technological development and accumulation of scientific knowledge. In spite of the lack of concrete estimates for emission reductions to be delivered by new technologies, this stance underpins the approach of the Administration in shaping climate policy responses. The team noted the Administration's long-term vision of a hydrogen economy (with electricity as the secondary energy carrier) with low GHG emissions and carbon capture and storage, and the leading role of the United States in the international effort in this context. The team also noted that the overall approach focuses largely on developing new supply-side technologies, but also includes efforts to promote efficient technologies on the demand-side. Concern for energy security is an important driving force behind this approach. The overall budget of USD 4 billion for 2003 for long-term technology research and development, together with climate change science, is indicative of the priority attached to these matters.

320. The integrated vulnerability assessment, involving both stakeholders and scientists, represents a valuable source of information for decision-making on climate change. Programmes for assessing the potential impacts of climate change implemented at the state level could contribute to the development of regional models and could facilitate policy responses. Climate change impacts were found to be most likely in three key sectors – agriculture, water resources and human health – with possible impacts that were both beneficial and adverse. Because of the capacity of the United States to face possible impacts of climate variability and change, the reduction of vulnerability is based mainly on reactive adaptation strategies.

321. The United States is providing support to developing countries to address climate change and several of its initiatives stand out. It is actively involved in international cooperation on climate change research and contributed around half of world expenditures in this field. It has one of the most impressive national GCOS systems for climate monitoring. Activities in the area of education, training and public awareness undertaken by federal and state agencies, in many cases in partnership with both environmental and business NGOs, were broadly aimed at building the foundation for action to reduce risks from climate change. These activities, together with a variety of tools developed for information dissemination, could be effective in promoting behaviour that is more environmentally and climate change friendly, and in raising awareness of the need for further action.

IV. Acronyms and abbreviations

ACEA	– European Automobile Manufacturers Association
AIJ	– activities implemented jointly
AO Gazprom	– joint stock company Gazprom
AP 2000	– Action Plan 2000 on climate change (Canada)
C&S	– compilation and synthesis
CCAA	– Spanish autonomous communities
CCGTs	– combined cycle gas turbines
CDM	– clean development mechanism
CH ₄	– methane
CEPRIG	– Calculation of Emissions and Policies for the Reduction of Italian GHGs
CHP	– combined heat and power
CIPE	– Italian Committee for Economic Planning
CO ₂	– carbon dioxide
CO ₂ eq	– carbon dioxide equivalent
CORINAIR	– Core Inventory of Air Emissions (EU)
CRF	– common reporting format
CTE	– Interministerial Technical Committee for GHG Emissions (Italy)
DAC	– Development Assistance Committee
DOM-TOMs	– départements–territoires outre mer (French overseas territories)
EBCs	– efficiency benchmarking covenants
EBRD	– European Bank for Reconstruction and Development
EC	– European Community
ENEL	– Ente Nazionale per l'Energia Elettrica (Italian National Electricity Board)
ENOVA	– a public agency established in 2002 to promote energy savings, new renewable energy and environmentally friendly natural gas solutions (Norway)
EIT	– economy in transition
ET	– emissions trading
ETS	– emissions trading scheme
EU	– European Union
FIAT	– Fabbrica Italiana Automobili Torino
GDP	– gross domestic product
GEF	– Global Environment Facility
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 accounting for CO ₂ emissions and removals by LUCF
GWP	– global warming potential

HFCs	– hydrofluorocarbons
IAEA	– International Atomic Energy Agency
IDR	– in-depth review
IEA	– International Energy Agency
IGCE	– Institute of Global Change and Ecology
IPCC	– Intergovernmental Panel on Climate Change
IPPC	– integrated pollution prevention and control
JAMA	– Japan Automobile Manufacturers Association
JI	– joint implementation
KAMA	– Korea Automobile Manufacturers Association
kg	– kilogram (1 kg = 1 thousand grams)
kgoe	– kilograms of oil equivalent
LTA	– long-term negotiated agreements
LUCF	– land-use change and forestry
MATT	– Italian Ministry for the Environment and Territory
Mg	– Megagram (1 Mg = 1 million grams = 1 metric tonne)
MIES	– Mission Interministérielle de l'Effet de Serre (French Inter-ministerial Task Force on Climate Change)
Mtoe	– millions of tonnes of oil equivalent
N ₂ O	– nitrous oxide
NAPCC	– National Action Program on Climate Change (Canada)
NC1	– first national communication
NC2	– second national communication
NC3	– third national communication
NCPIP	– National Climate Policy Implementation Plan (Netherlands)
NIR	– national inventory report
NMVOCs	– non-methane volatile organic compounds
NPP	– nuclear power plant
ODA	– official development assistance
OECD	– Organisation for Economic Cooperation and Development
PaMs	– policies and measures
PFCs	– perfluorocarbons
PPPCC	– Preferred Policy Package on Climate Change (New Zealand)
PPP	– purchasing power parities
R&D	– research and development
RAO UES	– Unified Energy Systems of Russia
SBI	– Subsidiary Body for Implementation
SBSTA	– Subsidiary Body for Scientific and Technological Advice

- SF₆ – sulphur hexafluoride
- Tg – teragram (1 Tg = 1 million metric tonnes)
- TPES – total primary energy supply
- UNDP – United Nations Development Programme
