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Report of the centralized in-depth review of the fourth national communication of Austria

According to decision 4/CP.8, Parties included in Annex I to the Convention are requested to submit to the secretariat, in accordance with Article 12, paragraphs 1 and 2, of the Convention, a fourth national communication by 1 January 2006. This report presents the results of the in-depth review of the fourth national communication of Austria conducted by an expert review team in accordance with relevant provisions of the Convention and Article 8 of the Kyoto Protocol.

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I. Introduction and summary

A. Introduction

1. Austria has been a Party to the Convention since 1994 and to its Kyoto Protocol since 2002. Within the burden-sharing agreement of the European Union (EU) for meeting commitments under the Kyoto Protocol, the Party committed itself to reducing its greenhouse gas (GHG) emissions by 13 per cent in relation to the 1990 level during the first commitment period from 2008 to 2012.

2. This report covers the centralized in-depth review (IDR) of the fourth national communication (NC4) of Austria, coordinated by the UNFCCC secretariat, in accordance with decision 7/CP.11. The review took place from 11 to 16 May 2009 in Bonn, Germany, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Ms. Amrita Narayan Achanta (India); Mr. Matjaz Cesen (Slovenia); Mr. Gebru J. Endalew (Ethiopia); Mr. Eric De Brabanter (Luxembourg); Ms. Svetlana Dolgikh (Kazakhstan); Ms. Agnieszka Janowska (European Community); Ms. Diana Harutyunyan (Armenia); Ms. Asta Mikalauskiene (Lithuania); Ms. Valia Peeva (Energy Charter) and Mr. Janis Rekis (Latvia). Ms. Achanta and Ms. Peeva were the lead reviewers. The review was coordinated by Ms. Ruta Bubniene (UNFCCC secretariat).

3. During the IDR, the expert review team (ERT) examined each part of the NC4. The ERT also evaluated the information contained in Austria's report demonstrating progress (RDP) in achieving its commitments under the Kyoto Protocol, and the supplementary information provided by Austria under Article 7, paragraph 2, of the Kyoto Protocol.

4. In accordance with the guidelines for review under Article 8 of the Kyoto Protocol (decision 22/CMP.1), a draft version of this report was communicated to the Government of Austria, which provided comments that were considered and incorporated, as appropriate, in this final version of the report.

B. Summary

5. The ERT noted that Austria's NC4 broadly complies with 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" (hereinafter referred to as the UNFCCC reporting guidelines). The information required by these guidelines has been presented in a well-structured and concise manner. As required by decisions 22/CP.7 and 25/CP.8, the RDP provides clear and detailed information on the progress made by Austria in achieving its commitments under the Kyoto Protocol. Supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol[1] is provided in both the NC4 and the RDP. The ERT commended Austria for its high degree of coherent and consistent reporting, which included the incorporation of an executive summary in the NC4 and the provision of relevant additional background information in the appendices (A–E) attached to the NC4.

1. Completeness

6. Austria's NC4 covers all sections required by the UNFCCC reporting guidelines and the additional reporting requirements as stipulated in relevant decisions and conclusions; with the exception of projections relating to aircraft involved in international air travel; and an estimate of the total effect of Austria's policies and measures (PaMs), in accordance with the 'with measures' definition, compared with a situation without such PaMs, presented in terms of GHG emissions avoided or sequestered, by gas on a carbon dioxide (CO_2) equivalent basis, in 1995 and 2000. Austria has clarified in the NC4 that it was a lack of data that led to the exclusion of projections relating to aircraft involved in international air

[1] Decision 15/CMP.1, annex, chapter II.

travel. The ERT noted that Austria's RDP contains all of the parts stipulated by decisions 22/CP.7 and 25/CP.8. Furthermore, the ERT noted that Austria has provided the supplementary information required under Article 7, paragraph 2, except for information relating to the minimization of adverse effects of climate change.

2. Timeliness

7. The NC4 and the RDP were submitted on 18 October 2006. Decision 4/CP.8 requested Parties to submit their NC4 by 1 January 2006; decision 22/CP.7 set the same date for Parties to submit their RDP.

3. Transparency

8. The ERT acknowledged that Austria's NC4 was well structured and concise. It is structured following the outline contained in the annex to the UNFCCC reporting guidelines. The NC4 provides reasonably clear information on all required aspects of implementation, with the exception of those aspects mentioned in paragraph 6 above. In the course of the review, the ERT formulated a number of recommendations that could help Austria to further increase the transparency of its reporting, such as a recommendation to include those currently missing aspects mentioned in paragraph 6 above in its reporting. The ERT noted that the information contained in the NC4 is generally consistent with that contained in the RDP.

II. Technical assessment of the reviewed elements

A. National circumstances relevant to greenhouse gas emissions and removals

9. In its NC4, Austria has provided a description of its national circumstances. The ERT was of the opinion that while, in general, Austria's national circumstances were very well described, and the Party did provide some examples of how its national circumstances and changes in them affected GHG emissions and removals over time, such as the impact of climate change on tourism and the consequences of the steady increase in road freight transport crossing Austria, this analysis could be elaborated further. The ERT noted that, according to Austria, the main drivers of emission trends in the country include: for CO_2, overall economic activity in the listed sectors, increasing flows of road transportation and the associated fuel consumption, and demographic developments; for methane (CH_4), lower emissions from solid waste disposal sites; and for nitrous oxide (N_2O), lower emissions from agricultural soils. With regard to road transportation, the increase in fuel consumption is mainly the result of the increase in road freight traffic in transit, combined with the lower fuel prices in Austria in comparison with most of its neighbouring countries. Table 1 illustrates the national circumstances of the country by providing some indicators relevant to GHG emissions and removals.

10. In its NC4, Austria has provided a summary of information on GHG emission trends for the period 1990–2003. This information is consistent with its 2005 GHG inventory submission and the most recent 2009 national GHG inventory submission covering the years from 1990 to 2007.[2] When comparing NC4 and the 2009 GHG inventory submission the ERT noted that relatively similar emission trends between 1990 and 2003 are reported in both sources: an increase in total GHG emissions, excluding land use, land-use change and forestry (LULUCF), of 17.8 per cent is reported in the NC4, with an increase of 16.6 per cent reported in the 2009 inventory. With regard to emission levels, the level of total GHG emissions, excluding LULUCF, is somewhat higher in the latest inventory than is reported in the NC4 (+0.6 per cent in 1990 and +1.7 per cent in 2003), while the level of total GHG emissions, including LULUCF, is lower (–5.6 per cent in 1990 and –3.9 per cent in 2003). This is due to recalculations, mainly for CH_4 emissions in the waste sector, fugitive emissions from oil and natural gas, N_2O in agriculture, and hydrofluorocarbons (HFCs) in the industrial processes sector. Summary tables,

[2] The NC4 reports on the 2005 GHG inventory submission (2005, version 3, submitted on 2 June 2005). It is compared for consistency with the 2009 GHG inventory submission (2009, version 1.2, of 15 April 2009).

including trend tables for emissions in CO_2 eq (given in the common reporting format), are provided in appendices B3–B7 to the NC4.

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

	1990	1995	2000	2007	Change 1990–2000 (%)	Change 2000–2007 (%)	Change 1990–2007 (%)
Population (million)	7.68	7.95	8.01	8.32	4.3	3.8	8.3
GDP (2000 USD billion using PPP)	181.43	201.95	233.41	268.00	28.7	14,8	47.7
TPES (Mtoe)	25.05	27.13	29.04	33.24	15.9	14.5	32.7
GDP per capita (2000 USD thousand using PPP)	23.63	25.41	29.13	32.23	23.3	10.6	36.4
TPES per capita (toe)	3.26	3.41	3.62	4.00	11.0	10.5	22.7
GHG emissions without LULUCF (Tg CO_2 eq)	79.04	80.51	81.08	87.96	2.6	8.5	11.3
GHG emissions with LULUCF (Tg CO_2 eq)	65.86	64.50	64.10	70.84	–2.7	10.5	7.6
CO_2 emissions per capita (Mg)	8.09	8.05	8.23	8.92	1.7	8.4	10.3
CO_2 emissions per GDP unit (kg per 2000 USD using PPP)	0.34	0.32	0.28	0.28	–17.4	–2.0	–19.1
GHG emissions per capita (Mg CO_2 eq)	10.29	10.13	10.12	10.58	1.0	4.5	2.8
GHG emissions per GDP unit (kg CO_2 eq per 2000 USD using PPP)	0.44	0.40	0.35	0.33	–20.3	–5.5	–24.7

Data sources: (1) GHG emissions data: Austria's 2009 greenhouse gas inventory submission; (2) Population data: Statistik Austria, total population (annual average); GDP and TPES data: International Energy Agency.
Abbreviations: GDP = gross domestic product, GHG = greenhouse gas, LULUCF = land use, land-use change and forestry, PPP = purchasing power parity, TPES = total primary energy supply.
Note: The ratios per capita and per GDP unit are calculated relative to GHG emissions without LULUCF; the ratios are calculated using the exact (not rounded) values and may therefore differ from a ratio calculated with the rounded numbers provided in the table.

11. Analysis of the 2009 inventory submission shows that total GHG emissions excluding emissions and removals from LULUCF increased by 11.3 per cent between the base year and 2007, whereas total GHG emissions including net emissions or removals from LULUCF increased by only 7.6 per cent (see table 2). This was mainly attributed to CO_2 emissions, which increased by 19.5 per cent over this period (excluding LULUCF), with fuel combustion in energy sector as the main driver for this growth (CO_2 emissions from fuel combustion increased by 18.6 per cent between 1990 and 2007). Emissions of both CH_4 and N_2O decreased over that same period: by 24.3 per cent for CH_4, owing to important reductions in both the agriculture (–14.9 per cent) and the waste (–48.1 per cent) sectors; and by 12.9 per cent for N_2O (excluding LULUCF), owing to an 11.5 per cent reduction in emissions in the agriculture sector and a 70.5 per cent reduction in emissions in the industrial processes sector.

12. CO_2 emissions increased between 1994 and 1996 and again, more strikingly, between 2000 and 2003. After 2003, CO_2 emissions remained steady and, in 2007, even started to decrease. CH_4 emissions decreased over the 1990–2007 period and N_2O emissions decreased sharply between 2003 and 2004, cut down by a third in the industrial processes sector. Emissions of fluorinated gases accounted for around 2.0 per cent of total GHG emissions (excluding LULUCF) in 1990 and 1.7 per cent in 2007. Table 2 provides an overview of GHG emissions by sector from 1990 to 2007 (see also the discussion of sectoral trends in chapter II B).

13. The findings of the ERT, with regard to emission trends by gas and by sector on the basis of the latest inventory, confirm Austria's assessment of its emission trends in the NC4. The ERT encourages Austria to better explain the link between its national circumstances and emission trends, notably by providing information on how recent socio-economic and demographic trends affected GHG emissions, where relevant. It also recommends that Austria provide more in-depth analysis of how changes in its national circumstances impacted GHG emissions. Hence, the ERT calls for Austria to provide a more detailed analysis of its emission trends and the main drivers behind them in its next national communication.

Table 2. Greenhouse gas emissions by sector in Austria, 1990–2007

	GHG emissions (Tg CO_2 eq)					Change (%)		Shares[a] by sector (%)	
	1990	1995	2000	2005	2007	1990–2007	2006–2007	1990	2007
1. Energy	55.59	57.93	59.58	71.91	66.15	19.0	–8.0	70.3	75.2
A1. Energy industries	13.84	12.97	12.41	16.17	14.01	1.2	–13.3	17.5	15.9
A2. Manufacturing industries and construction	12.77	13.59	13.89	15.83	15.82	23.9	0.0	16.2	18.0
A3. Transport	14.02	15.99	19.12	25.34	24.22	72.7	–4.4	17.7	27.5
A4.–A5. Other	14.47	14.77	13.43	13.69	11.14	–23.0	–18.6	18.3	12.7
B. Fugitive emissions	0.49	0.60	0.73	0.88	0.94	93.6	7.6	0.6	1.1
2. Industrial processes	10.11	9.73	10.03	10.31	11.28	11.5	9.4	12.8	12.8
3. Solvent and other product use	0.51	0.42	0.43	0.39	0.41	–20.1	3.9	0.6	0.5
4. Agriculture	9.17	9.24	8.39	7.85	7.95	–13.3	1.3	11.6	9.0
5. LULUCF	–13.18	–16.01	–16.97	–17.15	–17.12	29.9	–0.2	–16.7	–19.5
6. Waste	3.65	3.18	2.65	2.38	2.18	–40.4	–8.5	4.6	2.5
7. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA
GHG total with LULUCF	65.86	64.50	64.10	75.68	70.84	7.6	–6.4	83.3	80.5
GHG total without LULUCF	79.04	80.51	81.08	92.83	87.96	11.3	–5.3	100.0	100.0

Abbreviations: GHG = greenhouse gas, LULUCF = land use, land-use change and forestry.
Note: The changes in emissions and the shares by sector are calculated using the exact (not rounded) values and may therefore differ from values calculated with the rounded numbers provided in the table.
[a] The shares of sectors are calculated relative to GHG emissions without LULUCF; for the LULUCF sector, the negative values indicate the share of GHG emissions that was offset by GHG removals through LULUCF.

B. Policies and measures

14. As required by the UNFCCC reporting guidelines, Austria has provided in its NC4 quite comprehensive and well-organized information on its package of PaMs implemented, adopted and planned in order to fulfil its commitments under the Convention and its Kyoto Protocol. During the review, the Party also provided information on updated PaMs. Each sector has its own textual description of the principal PaMs. Supplementary information is provided at the end of the chapter in the form of a table and includes a summary of the sectoral PaMs; however, an estimate of the mitigation impact in 2010 has not been provided for most of the implemented policies. The ERT noted that the aggregated impact of PaMs on sectors was included in the RDP. A table has been provided in the NC4 with estimates of the mitigation impacts of the PaMs in 2010. For the planned PaMs, the estimate of their mitigation impact is provided in an aggregate form by sector, except for information on the waste sector and fluorinated gases. Austria has also provided information on how it believes the PaMs contained within its National Climate Strategy I are modifying longer-term trends in anthropogenic GHG emissions and removals, consistent with the objective of the Convention.

15. The ERT noted that domestic measures will not be enough to enable Austria to meet its commitments for reducing GHG emissions under the Kyoto Protocol. Austria has reported on its plans to use flexible mechanisms to fill the gap by means of joint implementation (JI)/clean development mechanism (CDM) credits. The effect of planned PaMs contained in the draft National Climate Strategy II (adopted in 2007, also referred to as Climate Strategy 2010) has been included in the RDP, and has been estimated for 2010 at a reduction of 14.4 Tg CO_2 eq for all GHGs, whereby 2.2 Tg is allocated to energy supply, 3.6 Tg to space heating, 4.8 Tg to transport, 0.5 Tg to industry, 0.5 Tg to agriculture and other sectors, and the rest to the EU emissions trading scheme (EU ETS).

16. The ERT noted that the fact that the responsibility for climate change mitigation is highly fragmented among the different administrative levels is still making it difficult to coherently monitor and evaluate the effects of the PaMs. However, the ERT also noted the results of the evaluation of measures

included in the first assessment report for implementation of the Climate Strategy I, identifying that the aggregate effect of PaMs implemented between 2000 and 2003 was estimated at a reduction of 7.9 Tg CO_2 eq in total for 2010, which corresponds to 10 per cent of the GHG emissions in the base year. Decomposition analysis showed that factors that decrease emissions brought about a reduction in emissions in the order of 10 Tg CO_2 eq from 1990 to 2003.

17. Austria has provided information on PaMs adopted to implement commitments under Article 4, paragraph 2(a) and (b), of the Convention, organized by sector, subdivided by GHG, as required by the UNFCCC reporting guidelines. Summary tables on planned PaMs, by sector, include aggregated estimates of their impacts on GHG removals. The ERT suggests that Austria could, in the future, estimate the impact of implemented and adopted PaMs by sector and subdivided by gas. Table 3 provides a summary of the reported information on the PaMs of Austria.

Table 3. Summary of information on policies and measures

Major policies and measures	Examples/comments
Framework policies and cross-sectoral measures	
Integrated climate programme	Climate Strategy 2010 (2002, amended 2007).
Energy/electricity/emission taxation	Tax on electricity consumption; taxes on fuels for heat production; ecological tax reform under discussion.
Joint implementation (JI)/clean development mechanism (CDM) Programme	JI and CDM projects, and purchase of emission reduction credits – at least 45 million units during the 2008–2012 period (9 million units annually).
Emissions trading	European Union scheme implemented for the first commitment period 2005–2007 [and the second 2008–2012].
Policies and measures by sector	
Energy	
Energy sector liberalization	Electricity Act (1999); Electricity Industry and Organisation Act (2000); Gas Act (2000).
Combined heat and power (CHP) generation	Public support for district CHP heating.
Renewable energy sources	Green Electricity Act (2002, amended 2006); Federal Environment Fund; targets for renewables; feed-in tariffs; housing support schemes; support for use of renewables in buildings; replacement of old heating systems.
Energy efficiency improvements	Agreements on energy saving; Energy Efficiency Programme; Technical Construction Regulations; rural funding schemes for energy from biomass; improvement of building regulations; support for renovation of buildings; third-party financing; energy performance certificates.
Transport	
Vehicle and fuel taxes	Road toll (vignette); car registration tax; labelling of passenger cars; mileage-based toll for lorries.
Agreements/partnerships	European Commission (EC) agreements with European Automobile Manufacturers' Association (1999), Korean Automobile Manufacturers' Association (2000) and Japanese Automobile Manufacturers' Association (2000).
Public and non-road transport	Investment in rail and urban transport; promotion of combined transport.
Integrated transport planning	General Transport Plan (2002); improvement of transport logistics; Mobility and Transport Technology Programme.
Biofuels	Minimum share of transport fuels from renewable energy sources.
Awareness raising	Eco-driving Austria; the European car-free day; promotion of walking and cycling.
Industrial processes	
Pollution prevention and control	2006 EC Regulation No 842/2006 on certain fluorinated greenhouse gases; partial phase-out of hydrofluorocarbons and sulphur hexafluoride.
Agreements/partnerships	Public procurement and support measures.
Agriculture	
Programmes	Environmentally Compatible Agriculture; agri-environmental programme.
Forestry	
Austrian forest management policy	Targets used to maintain the biodiversity, productivity, regeneration capacity and vitality of forests as well as to improve their adaptation to climate change.
Waste management	
Regulations	Waste Management Act (1990, amended 2002); Landfill Regulation (1996) implementing Landfill Directive 99/31/EC; Landfill Charge Act (1989); Environmental Subsidy Act (for waste incineration with energy recovery).
Programmes	Programmes and initiatives aimed at waste minimization.

1. Policy framework and cross-sectoral measures

18. The ERT noted that decisions related to Austria's PaMs can be taken at different levels, with legislative measures being taken at the level of both the Federation and the Länder ('federal provinces') and administrative measures taken at both of these levels, as well as at the level of the districts and municipalities. The Federal Constitution Act contains detailed provisions on the distribution of jurisdictions between the Federation and the Länder, including with regard to climate change.

19. The Federal Ministry for Agriculture and Forestry, Environment and Water Management has a coordinating function with respect to the overall climate change policy in Austria. However, jurisdiction for measures to reduce GHG emissions and to fulfil the other obligations under the Convention is distributed among several federal ministries and other territorial authorities (Länder and municipalities). In order to support the coordination of these measures, different committees have been established. The Interministerial Committee to Coordinate Measures to Protect Global Climate was founded in 1991 and was established at the Federal Ministry for Agriculture and Forestry, Environment and Water Management and consists of representatives of the federal ministries concerned with climate change, representatives of the Austrian system of social partnership, and a common representative of the Länder. It advises the Minister for Agriculture and Forestry, Environment and Water Management on matters concerning climate change activities at the federal level, such as on matters related to the Convention and on the editing of the national communications.

20. The ERT noted that Austria refers to its Climate Strategy 2010, adopted in 2007, as the defining document for shaping its climate policy. As an EU member State, Austria has provided information on the transposition of EU common and coordinated PaMs (CCPMs), such as the EU ETS, including information on an emission reduction of 1.65 Mt CO_2 owing to the cap on CO_2 emissions from the installations covered by the scheme for the first commitment period 2005–2007. The transposition of the European Commission directives relating to the energy labelling of household appliances has also been referred to in the NC4 and, in the course of the review, the ERT learned that the directive on the energy performance of buildings has also been transposed.

21. The cross-sectoral policy framework mentioned in the NC4 includes the Austrian JI/CDM Programme and energy-related taxes. The ERT observed that the JI/CDM Programme foresees the use of flexible mechanisms, and that a number of projects have already been contracted, corresponding to emission reductions in the order of 7.5 Mt CO_2 eq during the second commitment period 2008–2012. A purchase budget of EUR 36 million annually from 2006 to 2012 is guaranteed by law (EUR 1 million was allocated in 2003, EUR 12 million in 2004 and EUR 24 million in 2005). The total budget available for the purchase of emission reduction credits will, therefore, amount to EUR 289 million over this period. According to the additional information provided to the ERT during the review, the total budget for 2003 to 2012 has been increased to EUR 359 million, with a purchase target of at least 45 million reduction units over the 2008–2012 period (9 million units annually). The ERT noted that Austria has included information on its planned use of JI and the CDM, in the section on cross-cutting measures of its NC4, as recommended in the IDR of its third national communication.

2. Policies and measures in the energy sector

22. Between the base year and 2007, GHG emissions from energy industries increased by 1.2 per cent (170.72 Gg). However, data in the NC4 show that, in 2003, emissions from energy industries were 18 per cent higher than in 1990, owing to less electricity being produced from hydropower on account of the different weather conditions. The trend in GHG emissions from fuel combustion in the transport sector increased between 1990 and 2007 (+73 per cent or 10,200.92 Gg) and decreased energy use in other sectors (–23 per cent or –3,326.35 Gg). The rise in emissions from the transport sector (up until 2003, as detailed in the NC4) was, to a large extent, due to road fuel sold in Austria but consumed

abroad ('fuel tourism'). The increase in the domestic demand for transport alone would have led to an increase in emissions by around one third, which was partly compensated by a decrease in fuel consumption per km.

23. ***Energy demand.*** The PaMs reported by Austria in its NC4 include those implemented, adopted and planned. They include minimum thermal standards for buildings, housing support schemes (support for the thermal insulation of dwellings, energy-efficient construction and the use of renewable energy), third-party financing for public buildings and the improvement of technical building standards and energy codes for buildings. The PaMs are Austria's own initiatives as well as the result of the implementation of CCPMs, such as directive 2002/91/EC on the energy performance of buildings. The ERT notes the importance of Austria's strategy to reduce GHG emissions from space heating, including, as the main pillars: the thermal improvement of existing stocks; enhanced technical standards for new buildings; the increased use of renewable energy sources (RES) and district heating; increased boiler efficiency; the increased use of heat pumps; and switching to low-carbon fuels. The attention of the ERT was drawn to the fact that almost all PaMs in the energy demand subsector are under the responsibility of the regional authorities, which may lead to different approaches being used in their implementation. The planned PaMs will result in emission reductions in the order of 3.6 Mt CO_2 eq in 2010.

24. ***Energy supply.*** The PaMs in the energy supply subsector include: promotion of electricity from RES (where a feed-in tariff scheme was established with a target of 78.1 per cent of electricity being produced from RES by 2010); public support for RES projects and district heating, establishing a few funding sources; and an energy efficiency programme. The PaMs in this subsector result mostly from the implementation of directive 2001/77/EC on the promotion of electricity produced from RES and directive 2004/8/EC on the promotion of cogeneration. The ERT noted that Austria is focusing on the increased use of RES, with the Green Electricity Act 2002 (amended in 2006) being the main instrument used to achieve this. The planned PaMs will result in emission reductions in the order of 2.2 Mt CO_2 eq annually (without taking into account the effects of the EU ETS). The ERT suggests that, in the future, Austria provide information on the mitigation impacts of all implemented, adopted and planned PaMs.

25. ***Transport.*** The PAMs reported by Austria in its NC4 for the transport sector include: standards for CO_2 emissions from passenger cars; fuel taxation; promotion of biofuels; support for combined transport; promotion of public transport systems and public services (environmentally sound mobility); raising public awareness; promotion of energy-efficient and alternative motor concepts; promotion of walking and cycling; and the internalization of the externalities of road transport (mileage-based road tolls). Some of the PaMs in this subsector result from the implementation of legislation at the European level, such as directive 2003/30/EC on the promotion of the use of biofuels and directive 1999/94/EC relating to the labelling of new passenger cars with regard to their fuel consumption. Others, such as the promotion of public transport and support for combined transport, are Austria's own initiatives.

26. Given the significant growth of the transport sector, the PaMs targeting the stabilization and reversal of the current emission trends are critical and they use a diverse array of policy instruments at different administrative levels. The effect of the planned PaMs is estimated at a reduction in emissions of 4.8 Mt CO_2 eq in 2010. According to additional information provided to the ERT during the review, a new climate and energy fund was established through the adoption of Austria's Climate Strategy II. This fund has a budget of EUR 500 million for 2007–2010 and its activities are targeted at supporting innovative energy solutions and the transport system.

27. The assessment of Climate Strategy I and the results of the decomposition analysis carried out by Austria revealed that the expected effect of the measures under Climate Strategy I implemented from 2000 to 2003 was an emission reduction in 2010 of 2.4 Tg CO_2 eq in the energy industries, 1.2 Tg CO_2 eq in district heating and 1.4 Tg CO_2 eq in the transport sector. Owing to various factors, such as reduced fuel intensity in public power and heat plants, increased use of biomass in district heating plants and the reduced carbon intensity of fossil fuels, the emission reduction from 1990 to 2003 in energy industries

was estimated in the NC4 at the level of 4 Tg CO_2 eq. In district heating, from 1990 to 2003, owing to such factors as the improved carbon intensity of fossil fuels, improved boiler efficiency, the increased share of district heating and a lower energy demand per m^2 living space, an emission reduction of 2 Tg CO_2 eq was reported in the NC4, which compensated for the growth in emissions owing to the rising number and average size of dwellings. Improved fuel efficiency (decrease in fuel consumption per km) resulted in an emission reduction of 1 Tg CO_2 eq from 1990 to 2003 in the transport sector as reported in the NC4.

28. The ERT commends Austria for its reporting of a number of PaMs implemented in the energy sector, and encourages the Party to continue to report on the successful and coherent implementation of its PaMs irrespective of the implementing agencies.

3. Policies and measures in other sectors

29. Between 1990 and 2007, GHG emissions from non-energy sectors (industrial processes, solvent and other product use, agriculture, and waste) decreased overall by around 7.0 per cent (from 23,442 to 21,811 Gg). Over that period, GHG emissions decreased in the solvent and other product use (by 20.1 per cent), agriculture (by 13.3 per cent) and waste (by 40.4 per cent) sectors and increased in the industrial processes sector (by 11.5 per cent). For the latter, the increase was mainly driven by a 47.6 per cent increase in CO_2 emissions from metal production, which could not be compensated for by reductions in CO_2 and N_2O emissions from the chemical industry. In the agriculture sector, two different trends were observed: while N_2O emissions increased from both manure management (by 3.0 per cent) and agricultural soils (by 10.5 per cent), CH_4 emissions dropped from both enteric fermentation (by 14.6 per cent) and manure management (by 16.5 per cent). Since the level of CH_4 emissions from agricultural activities is slightly higher overall than the corresponding level of N_2O emissions, total agriculture-related emissions reduced over the period 1990–2007. The decrease in GHG emissions from the waste sector between 1990 and 2007 can be explained by the reduction in CH_4 emissions from waste landfills, waste incineration and wastewater handling.

30. ***Industrial processes.*** In 2007, almost 80 per cent of the emissions from industrial processes were generated in the iron and steel industry (48.6 per cent of the total GHG emissions stemming from industrial processes) and by cement production (31.1 per cent). Emissions from chemical industries (especially ammonia and nitric acid production) accounted for 7.3 per cent of the total emissions in this sector, while the production and consumption of halocarbons and sulphur hexafluoride (SF_6) accounted for 12.9 per cent of the sectoral emissions.

31. It has been stressed in the NC4 that PaMs in the manufacturing industry aim to support the continuous efforts of the industry to decouple emissions. Nevertheless, the implemented and planned PaMs reported in the NC4 focus mainly on energy, such as the promotion of energy efficiency and the use of RES. The only non-energy related measures reported in the NC4 relate to fluorinated gases (F-gases). With regard to implemented measures, Austria has described the regulation on bans and restrictions of F-gases, which was complemented by support measures and public procurement targeted at using replacements for F-gases. It is expected that this measure will reduce GHG emissions by 1.2 Mt CO_2 eq. As regards adopted measures, Austria has identified in its NC4 EC Regulation No 842/2006 on certain fluorinated GHGs.

32. ***Agriculture.*** In 2007, over 40 per cent of the GHG emissions generated in the agriculture sector related to enteric fermentation, with cattle as the main culprit (accounting for 93.3 per cent of the total CH_4 emissions from enteric fermentation). Emissions from manure management accounted for 22.2 per cent of the sectoral GHG emissions, almost equally divided between CH_4 (25 per cent cattle and 25 per cent swine) and N_2O (50 per cent for animal waste management systems). N_2O emissions from agricultural soils accounted for around 37 per cent of the total sectoral emissions (the main sources being synthetic fertilizers, manure applied to soils, and nitrogen leaching and run-off).

33. As regards implemented PaMs in the agriculture sector, Austria has described in its NC4 the compensation system put in place under the Programme for Environmentally Compatible Agriculture, which is cofinanced by the EU and encourages farmers to switch to ecological farming. As regards planned PaMs, Austria has indicated actions related to its national agri-environmental programme, which can make a direct or indirect contribution to the mitigation of GHG emissions (e.g. by using synthetic fertilizers in manure management), with an emission reduction of 0.1 to 0.5 Mt CO_2 eq/year. However, it is not clear from the NC4 whether these actions are indeed planned or have already been implemented. During the review, in response to a request made by the ERT, Austria clarified this issue and expressed its intention to evaluate it in-depth in its next national communication.

34. ***Forestry.*** Forests, which cover 47 per cent of the national territory, are seen as a key economic and ecological stock in Austria; therefore, they are managed in an economically sustainable manner. This means that forest management seeks to maintain the biodiversity, productivity, regeneration capacity and vitality of the forests as well as to improve their adaptation to climate change. In the NC4, Austria has announced the development of an Austrian Forest Programme as an implemented measure, since it is actually a continuation of the existing forest management policy.

35. ***Waste.*** In 2007, CH_4 emissions from managed waste disposal on land accounted for more than 80 per cent of the total emissions from the waste sector. The major GHG emitted from wastewater handling was N_2O (accounting for 4.3 per cent of the sectoral GHG emissions). Emissions from composting activities have been increasing and accounted for 5 per cent of the total waste-related GHG emissions in 2007.

36. Austria's main measure in this sector is the Waste Management Act (adopted in 1990 and amended in 2002), which aims to achieve better waste management, namely the minimization and control of the volume of waste disposed at landfills; the incineration of waste with energy recovery; the reduction of the impact of waste on the environment; and waste prevention. The adoption of this Act was followed by the implementation of the Landfill Regulation. Other PaMs include: the implementation of financial charges for landfill operations; the development of prevention and recovery concepts through programmes; and the definition of technical standards to encourage and secure investment in wastewater treatment. The estimated impact of implemented PaMs in the waste sector is an emission reduction of up to 1.1 Mt CO_2 eq/year.

37. The ERT welcomed the comprehensive and well-organized list of PaMs in the non-energy sectors. However, the ERT noted that the explanations of some of the measures are somewhat incomplete. As an example, although Austria has identified the measure (M12) aimed at introducing a subsidy for energy-efficient waste incineration plants (plants with an energy efficiency rate of at least 65 per cent), the Party has not specified when this measure would be implemented and over what time period. Another shortcoming is the absence of exact references for legal acts and texts presented in the NC4.

38. The ERT also noted that the list of GHGs affected by each of the PaMs is sometimes inconsistent and very often limited to CO2, although other GHGs might also be mitigated. It further noted that the information given in the form of a table at the end of the chapter does not correspond to the expected GHG reductions as a result of implemented or adopted measures as presented in the textual description of the PaMs (waste sector and F-gases). During the review Austria explained that the apparent inconsistency that had been raised was due to the fact that the summary table lists GHG mitigation effects from planned PaMs only while effects of the waste management and F-gases given in the textual description refer to the implemented PaMs. The ERT encourages Austria to provide more references in the section on PaMs. Austria may also wish to discuss the effects of the PaMs implemented as well as any obstacles to their implementation and acceptance.

C. Projections and the total effect of policies and measures

1. Projections

39. The GHG emission projections provided by Austria in the NC4 include a 'with measures' and a 'with additional measures' scenario until 2020, and are presented relative to actual inventory data for 1990, 1995, 2000 and 2003. Projections are presented on a sectoral basis, using the same sectoral categories used in the PaMs section, and on a gas-by-gas basis for the following GHGs: CO_2, CH_4, N_2O, perfluorocarbons (PFCs), HFCs and SF_6 (treating PFCs and HFCs collectively in each case). In addition, projections are provided in an aggregated format for each sector as well as for a national total, using global warming potential values. Actual data for the base year are provided. However, the ERT noted that Austria did not provide the following reporting elements required by the UNFCCC reporting guidelines: the total effect in 1995 and 2000 of PaMs by gas in accordance with the 'with measures' scenario, compared with a situation without such PaMs, and emission projections related to fuel sold to ships and aircrafts engaged in international transport reported separately and not included in the total.

40. Table 4 and the figure below provide a summary of GHG emission projections for Austria. Apart from the projections according to the 'with measures' and 'with additional measures' scenarios, Austria also reported projections according to Climate Strategy II, which was still a draft version at the time of submission of the NC4, but was subsequently adopted in March 2007.

41. The ERT noted that Austria used a set of detailed models for the preparation of the projections for the energy sector, as the energy sector is the main source of GHG emissions in Austria. For the energy sector, excluding transport, the macro-econometric energy and environment model PROMETEUS was used. The advantages of this model are the full integration of energy-related and economy-related parameters and the fact that all parameters are based on econometric estimates with time series for Austria, which enables the description and quantification of the dynamic adjustment path as a reaction to shocks in the model simulations. For the transport sector, a set of three models was used: AUTRAF, a simple model based on multiple linear regression, for predicting transport demand in Austria; GLOBEMI, a model for calculating road emissions; and GEORG, a model for making energy and off-road emission projections. For activity data in the agriculture sector, the Positive Agricultural Sector Model Austria was used and, for solid waste, two separate projections for residual and non-residual waste were made, the methodology for which is unclear from the NC4. For other sectors, survey data and expert judgements were used.

42. Key assumptions for the 'with measures' scenario included: continued growth in the population, a certain number of households and the growth of Austria's gross domestic product (GDP). The ERT noted the use of an annual GDP growth rate of around 2 per cent for 2005–2020, while in 2007 the GDP growth rate was actually 3.1 per cent.[3] The projections in the NC4 also assumed that production in the manufacturing industries would grow by 3 per cent annually in 2005–2020, that the number of cattle would decrease slightly and that the amount of landfilled waste would stay more or less constant. In 2005, much less waste was deposed of in landfills than in 2000. According to additional information provided by Austria during the review in response to a request made by the ERT, the amount of waste deposited in landfills decreased because the disposal of untreated biodegradable waste has been prohibited since 2004.

43. The results of the GHG emission projections (see the figure below) imply that Austria will not reach its emission reduction target under the Kyoto Protocol with its implemented and adopted measures. The 'with measures' emission projection for 2010 is 13.8 per cent above the Kyoto target. This is why Austria has prepared planned measures that are included in the 'with additional measures' projection. According to this projection, emissions will be 2.4 per cent above the Kyoto target in 2010. The annual

[3] Data source: EUROSTAT, EU economic data pocketbook, 4-2008, annual GDP: volume growth.

gap between the projections and the Kyoto target estimated by Austria in its NC4 for the whole period is 8–9 Mt CO_2 eq. According to additional information supplied during review, this estimation is based on Climate Strategy II. This gap will be bridged using the project-based flexible mechanisms of the Kyoto Protocol. The projections presented in the NC4 represent emissions without LULUCF.

Table 4. Summary of greenhouse gas emission projections for Austria

	Greenhouse gas emissions (Tg CO_2 eq per year)	Changes in relation to base year level (%)
Inventory data 1990[a]	79.04	0.01
Inventory data 2007[a]	87.96	11.3
Kyoto Protocol base year[b]	79.05	0.0
Kyoto Protocol target[b]	68.77	–13.0
'With measures' projections for 2010[c]	89.93	13.8
'With additional measures' projections for 2010[c]	80.97	2.4

[a] *Data source*: Austria's 2009 greenhouse gas (GHG) inventory submission; the emissions are without land use, land-use change and forestry (LULUCF).
[b] Based on the initial review report contained in document FCCC/IRR/2007/AUT.
[c] *Data sources*: (1) Austria's fourth national communication; the projections are for GHG emissions without LULUCF.

44. In its NC4, Austria has also provided 'with measures' and 'with additional measures' projections according to its National Climate Strategy II, but only for 2010. These projections are slightly different to those referred to in paragraph 43 above, with the 'with measures' projection 2 per cent higher and the 'with additional measures' projection 5 per cent lower. The lower level of emissions projected in the 'with additional measures' scenario in Climate Strategy II is mainly the effect of the EU ETS. According to additional information received during the review in response to a request made by the ERT, there was a cap on GHG emissions in the Climate Strategy II for sources included under the EU ETS at 32.8 Mt CO_2 eq.

45. The ERT noted that the most important planned measures for reducing emissions between 2005 and 2010 would be those implemented in the transport and energy supply sectors. The ERT also noted that an explanation of the assumptions used in the implementation of planned, adopted and implemented measures in some sectors is missing from the NC4.

46. In the IDR of its NC3, Austria was encouraged to explain more thoroughly the slowdown in the growth of its emissions from transport. The ERT noted that this was not done in the NC4 and, therefore, strongly encourages Austria to improve this in its NC5. According to additional information submitted during the review, this slowdown was the consequence of bringing fuel prices in line with those in the neighbouring countries, although such a measure has not yet been realized. Austria noted that, compared with the actual level of emissions, such a slowdown was too optimistic an assumption.

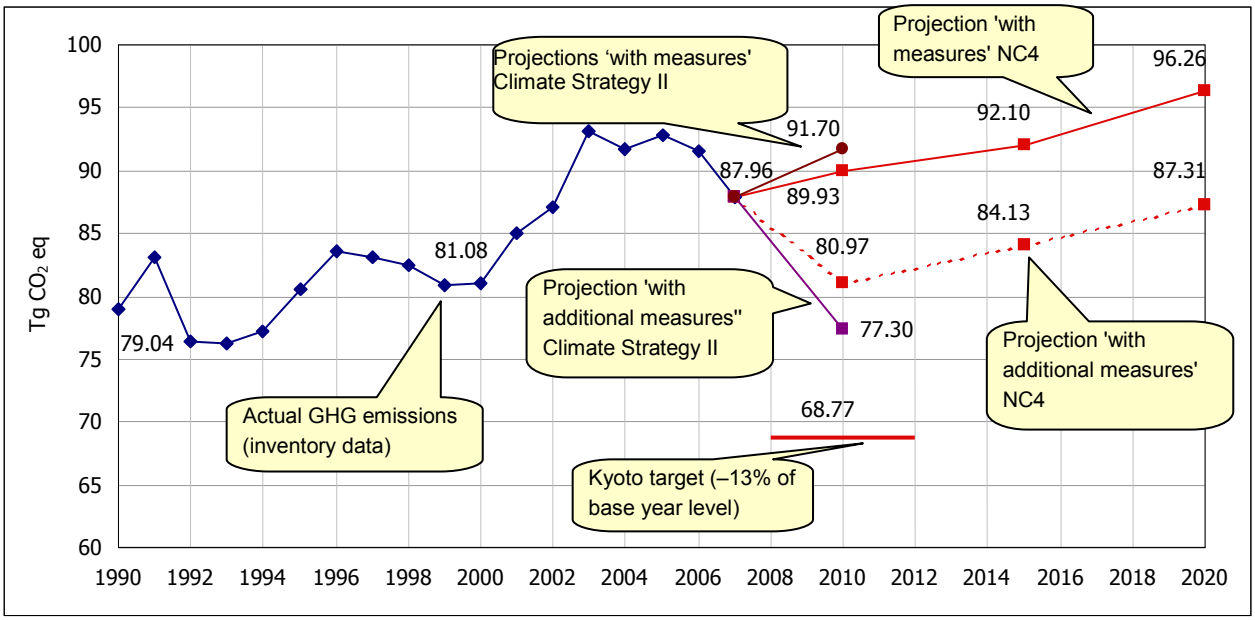
47. The ERT noted that a sensitivity analysis of the fuel price projections has been included in the NC4; however, the ERT suggested that this sensitivity analysis should be conducted for more parameters, including GDP, as was proposed in the IDR of the NC3. The ERT also noted the large differences between the actual GHG emissions from industrial processes reported in the 2009 GHG inventory and those estimated in the first year of the projections in the NC4. During the review, in response to a request made by the ERT, Austria submitted information which explained that the actual emissions are lower than those projected as a result of the implementation of an emission reduction measure in the chemical industry and the prohibition and restriction of HFCs, PFCs and SF_6 by Austrian legislation.

2. Total effect of policies and measures

48. In the NC4, Austria has presented the estimated and expected total effect of implemented and adopted PaMs, presented in terms of GHG emissions avoided or sequestered, by gas (on a CO_2 eq basis) for 2010. The ERT noted that Austria did not, however, provide the aggregate effects for the years 1995,

2000 and 2005, and 2015 and 2020, as requested by the UNFCCC reporting guidelines. The effect presented was calculated as the sum of the potential mitigation impacts of the individual measures of the National Climate Strategy I. The 'with measures' projection comprises measures implemented and adopted up to 25 January 2005. The NC4 also contains information on the aggregate effect of planned measures per gas, while the RDP contains aggregate information by sector for 2010.

Greenhouse gas emission projections



Abbreviations: GHG = greenhouse gas, NC4 = fourth national communication.
Data sources: (1) Data for the years 1990–2007: Austria's 2009 GHG inventory submission; the emissions are without land use, land-use change and forestry (LULUCF). (2) Data for the years 2010–2020: Austria's NC4 and its Climate Strategy II; the emissions are without LULUCF.

49. In its NC4, Austria has presented two estimates of the effect of its planned measures. The first estimate is based on the National Climate Strategy I and considers the sum of the mitigation impacts of the individual measures, while the second estimate is based on the difference between the 'with measures' and 'with additional measures' projections. The ERT noted that the estimated effect based on the National Climate Strategy I is higher by more than 4 Tg CO_2 eq. Information has also been presented in the RDP on factors and activities that affected emission trends in the period 1990–2003. However, information on such factors and activities is missing for the years 2005, 2010, 2015 and 2020. Table 5 provides an overview of the total effect of PaMs as reported by Austria.

50. The ERT noted that Austria, following the recommendation made in the IDR of its NC3, has improved its calculation of the aggregate effects of its PaMs by shifting from using expert judgements to a bottom-up calculation. The ERT also noted that Austria has taken an important step in its climate change policy by making its first assessment of the implementation of the National Climate Strategy I, the results of which have been presented in the RDP. The ERT suggests that Austria would benefit from the inclusion of a 'without measures' scenario in its next national communication.

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

Sector	Effect of implemented and adopted measures (Tg CO_2 eq)	Relative value (% of base year emissions)	Effect of planned measures (Tg CO_2 eq)	Relative value (% of base year emissions)
Energy (without CO_2 from transport)	5.2	9	NA	NA
Transport – CO_2	1.4	2	NA	NA
Industrial processes	0.7[a]	1	NA	NA
Agriculture	0.3	1	NA	NA
Land-use change and forestry	NA	NA	NA	NA
Waste management	0.4	1	NA	NA
Total	8.0	13	9.0	15

Data source: Austria's report demonstrating progress (2006).
Abbreviation: NA = not available.
Note: The total effect of implemented and adopted policies and measures is defined as the sum of the potential mitigation impacts of the individual measures; the total effect of planned policies and measures is defined as the difference between the 'with measures' and 'with additional measures' scenarios.
[a] This value represents the effect on fluorinated gases only; the effect on the other gases is included in the value for the energy sector.

D. Vulnerability assessment, climate change impacts and adaptation measures

51. The ERT noted that Austria has broadly complied with the guidelines for reporting on vulnerability, climate change impacts and adaptation measures. In its NC4, Austria has provided the required information on the expected impacts of climate change in the country and on adaptation options. During the review, additional information was provided regarding the development of a national adaptation strategy, which was initiated in 2007. Some studies targeted specifically at an overall national strategy have been finalized and three stakeholder workshops have been organized. Table 6 summarizes the information on vulnerability and adaptation to climate change presented in the NC4.

52. The ERT noted that Austria is expected to be very vulnerable to climate change in view of the fact that ecosystems in the mountainous regions are highly sensitive. The Party has presented in its NC4 detailed expected impacts of climate change on physical (hydrology, mountain cryosphere, extreme events, geomorphological processes and avalanches), ecological (eco-physiological processes, vegetation migration, ecosystem responses and forest growth, and alpine protection forests) and socio-economic (mountain agriculture, hydropower, commercial timber activities, tourism, property loss and insurance, and human health) systems. In addition, detailed vulnerability assessments for hydrology and hydropower, cryosphere and winter tourism, ecosystem responses, agriculture, extreme events and geomorphological processes have been presented. Austria has also addressed in its NC4 adaptation measures which have been implemented so far and those planned for implementation in the future.

53. In the previous IDR, it was observed that the NC3 focused mainly on mountainous regions. Following recommendations made in that IDR, Austria has, in its NC4, incorporated both assessments of, and adaptation options for, different topographic features. For instance, the lowlands, where the vast majority of the Austrian people live, have been addressed through the FLOODRISK research programme, hazard zone mapping for the flooding of human settlements and the assessment of extreme events. The adaptation measures for the reforestation of mountainous areas with a high risk of snow avalanches were addressed in the national forest programme.

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

Vulnerable area	Examples/comments/adaptation measures reported
Cryosphere and winter tourism	***Vulnerability***: The climate change induced increase in temperature is expected to result in a decrease in snow cover, which will affect the winter tourism. ***Adaptation***: Artificial snow making facilities have been put in place and the covering with white blankets carried out, and these measures are to be duplicated in different places.
Agriculture and food security	***Vulnerability***: A shift in the availability of water for the soil is expected to affect crop production. In addition, extremely hot and dry years are expected to damage grassland production. ***Adaptation***: Irrigation in areas of intensive cultivation and water stress; insurance initiated for grassland production, where irrigation is not possible or expensive.
Extreme events and geomorphological processes	***Vulnerability***: Episodes of heavy precipitation have a significant impact on the natural and socio-economic environments. ***Adaptation***: Avalanche, erosion and torrent control measures using natural hazard management; flood protection via integrated flood risk management; hazard zone mapping; and research on the causes of extreme events using documentation and evaluation.
Biodiversity and natural ecosystems	***Vulnerability***: Global warming can result in the upward shift of vegetation belts, which will in turn cause disastrous extinctions.
Infrastructure and economy	***Vulnerability***: Potential climate change is expected to affect mountain agriculture, hydropower generation, timber production, winter tourism, and insurance. ***Adaptation***: Protection against natural disasters, use planning to silvicultural and technical precaution measures based on documenting the damage and investigating its causes.
Forests	***Vulnerability***: Potential climate change may directly affect forest ecosystems. ***Adaptation***: Protection and rehabilitation of forests in the mountains.
Human health	***Vulnerability***: High temperatures and thermal stress cause extended cardiovascular and respiratory complaints. Temperature increases are expected to cause seasonal malaria. The climate change induced reduction of food and water supplies may aggravate health problems.
Water resources	***Vulnerability***: Changes in the seasonal run-off patterns as a result of Increased temperatures and evaporation are expected to affect the availability of water for hydropower generation. In addition, a moderate reduction in the average precipitation and an enhanced evapotranspiration owing to higher temperatures are expected to affect the availability and quality of drinking water.

E. Financial resources and transfer of technology

1. Financial resources

54. In its NC4, Austria has provided comprehensive information on measures it has taken to give effect to its commitments under Article 4, paragraphs 3, 4 and 5, of the Convention. The ERT noted that Austria has provided an estimate of the 'new and additional' financial resources that it has provided pursuant to Article 4, paragraph 3. In its NC4, Austria has defined 'new and additional' as comprising contributions to the pilot phase of the Global Environment Facility (GEF) Trust Fund/Core fund, to the first replenishment of the GEF (GEF 1) and to a bilateral GEF consultant trust fund. During the review, the ERT sought clarification on the nature of the GEF consultant trust fund and the amount contributed to it, but this information was still to be received from the Ministry of Finance.

55. The ERT noted that the NC4 included a summary of financial resources for 2001–2004, as mentioned in the UNFCCC reporting guidelines. The ERT was informed during the review that the Austrian share under the Bonn Political Declaration of USD 6.52 million, contributed in 2005 and 2006, qualified as 'new and additional' financial resources as this was in addition to the contribution in 2001-2004. The ERT also sought information from the Party as to whether this contribution overlaps with any other contribution. Austria has also provided in its NC4 information on the bilateral assistance provided to assist developing country Parties that are particularly vulnerable to the adverse effects of climate change. The ERT noted that the NC4 contains information on direct bilateral aid for adaptation-related support to eight countries, with the priority region being West Africa. Table 7 summarizes information on financial resources.

Table 7. Summary of information on financial resources

Official development assistance (ODA)	USD 681 million (2004)
Climate-related aid in bilateral ODA[a]	USD 13.21 million (2000–2004)
Contributions to GEF (EUR million)	EUR 25 million (2001–2004)
Pledge for third GEF replenishment	Out of a commitment of EUR 24.38 million, Austria had paid EUR 18.29 million
Bonn Political Declaration	USD 6.52 million (2005)
Activities implemented jointly	USD 6.52 million (2006)

Abbreviations: CDM = clean development mechanism, GEF = Global Environment Facility.
[a] Refers to adaptation assistance provided to developing countries that are particularly vulnerable to climate change, including Burkina Faso, Cape Verde, Ethiopia, Kenya, Mozambique, Nepal, Palestine and Senegal.

56. Furthermore, Austria has provided information on other financial resources contributed towards the implementation of the Convention, provided through bilateral and multilateral channels. With regard to the contributions made to multilateral institutions and programmes, Austria clarified that, while the listed contributions constitute the Party's participation in capital increases and replenishment efforts, most of the contributions cannot be attributed specifically to the implementation of the Convention. Austria also referred in the NC4 to the multilateral contribution to the United Nations Industrial Development Organization's Cleaner Production Centres, which aim to build national capacities to promote cleaner production technologies, such as enhanced energy efficiency and the use of renewable energy.

57. Austria has referred in its NC4 to the timetable for EU member States to achieve official development assistance (ODA) of 0.7 per cent of gross national income (GNI) by 2015, with an intermediate collective target of 0.56 per cent by 2010. While the ERT noted the 2004 ODA figure of USD 681 million, it suggested that Austria may in the future wish to include current ODA as a percentage of GNI. The ERT also sought confirmation of the amount that Austria had contributed to GEF 1, as a GEF document revealed an amount of USD 16.82 million as opposed to the USD 20 million reported. The ERT understood that a few countries, including Austria, had deferred their contributions to GEF 3 and, as of June 2005, Austria had paid USD 18.29 million of a total commitment of USD 24.38 million. Austria may like to quantify its regional contribution in its next national communication.

2. Transfer of technology

58. In its NC4, Austria has provided details of measures relating to the promotion, facilitation and financing of the transfer of, or access to, environmentally sound technologies (ESTs). The ERT noted that details were provided of some projects funded by ODA, by non-governmental organizations (NGOs) and by industry, which enabled the transfer of ESTs and know-how to developing countries; the private sector received less coverage owing to the difficulty of collecting information on this sector. Austria has provided a representative sample of its projects, indicating the success stories, although it expressed the view that in most cases it was difficult to separate the costs related to technology from the total cost of the project and to estimate the impact on GHG emissions.

59. In addition, Austria has reported on steps taken by the government to promote, facilitate and finance transfer of technology, and to support development and enhancement of endogenous capacities and technologies of developing countries, through initiatives such as the Climate Technology Initiative (CTI) and other select projects. The mission of the Austrian CTI involves: collaboration with developing countries and economies in transition, in areas such as capacity-building; the provision of technical assistance for technology needs assessments and technology implementation activities; and the organization of seminars, symposia and training courses.

60. In its NC4, Austria has referred to the support being given to the other countries as for example Bhutan for capacity-building and for the preparation of documents supporting CDM projects for a hydropower plant, as well as to grants being given under the JI/CDM Programme to Parties not included

in Annex I to the Convention in the project development phase. Austria has referred in its NC4 to its membership of the International Energy Agency (IEA), which has the exchange of research and technology transfer as key objectives, as well as bilateral assistance projects which facilitate technology transfer. Specifically mentioned in the NC4 is the IEA office of non-member developing countries in Asia and Africa, with which cooperative and collaborative projects are implemented.

61. Reference has also been made in the NC4 to several JI agreements, wherein international partners collaborate on different issues, such as solar heating and cooling, advanced fuel cells, wind turbine systems, bioenergy, photovoltaics and CTIs. The ERT noted Austria's participation in the EU's Sixth Framework Programme for Research and Technological Development, which unites the European Research Area Networks for Bioenergy, Hydroenergy, Erabuild and Photovoltaics, and includes new member States from Central and Eastern Europe.

62. In the future, Austria may attempt to provide a clear distinction between activities undertaken by the public sector and those undertaken by the private sector, and may indicate, where feasible, how private sector activities were encouraged and how these activities help the Party to meet its commitments under Article 4, paragraphs 3, 4 and 5, of the Convention.

F. Research and systematic observation

63. The ERT noted that Austria has provided information on its actions relating to research and systematic observation and has addressed both domestic and international activities, including the World Climate Programme, the Global Climate Observing System (GCOS), and the Intergovernmental Panel on Climate Change. Furthermore, in accordance with the UNFCCC reporting guidelines, Austria has provided a summary of information on GCOS activities.

64. During the review, Austria was asked about its actions to support capacity-building activities in developing countries to enable their participation in research and development, and also to establish and maintain observing systems and related data and monitoring systems. Austria informed the ERT of the EU's Sixth Framework Programme (which Austria supported financially), which was aimed at strengthening scientific and technological capacity in developing countries. The ERT also learnt that, in addition, the Austrian Development Cooperation offers stipends for students from developing countries and finances an international postgraduate training programme to increase research and development capacities in limnology in East Africa.

65. In the NC4, Austria has included its research and systematic observation activities at the national and international levels. The ERT noted that Austria has not only a large number of institutions addressing climate change, but also a dense network of observing stations for meteorological and hydrological parameters. Austria's prioritization of climate system and impact research in the Alps was noteworthy. Austria has mentioned in the NC4 that the Federal Government directly finances the basic infrastructure of universities and extra university research institutions, with public funds directed at basic research as well as applied research and technology development. With respect to environmental research, commissioned research for the leading ministries within several key areas, and for other public authorities, plays an important role.

G. Education, training and public awareness

66. In the NC4, Austria has provided extensive information on its actions relating to education, training and public awareness, as required by the UNFCCC reporting guidelines. The ERT noted that the coverage in the NC4 of these actions extended to Austria's general policy towards education, training and public awareness, training programmes, the involvement of NGOs and the Party's participation in international activities, among other things. The absence of reporting on the extent of public participation in both the preparation and the domestic review of national communications was noted by the ERT. The

ERT also noted the absence of reporting on education, training and public awareness in accordance with decision 7/CP.10 and the related follow-up decision 11/CP.8 relating to the New Delhi work programme.

67. In the NC4, it has been stated that environmental education has been a principle of instruction, governed by the Constitutional Decree "Environmental Education in Schools" (republished in 1994). The Austrian National Strategy for Sustainable Development (2002) focuses on two educational objectives: sustainable lifestyles and solutions through education and research. The ERT noted the various Federal initiatives, such as the Forum for Environmental Education, the Education Support Fund for Health Education and Education for Sustainable Development, the National Environmental Performance Award for schools and educational institutions, Environmental Education in Teacher Education network, the ÖKOLOG programme (Ecologization of Schools: Education for Sustainable Development), the Hochschule für Agrar- und Umweltpädagogik Wien (University level training for educational professions in agricultural and ecological affairs), and the College of agriculture, "Ursprung" focusing on environmental technologies.

68. The ERT also noted the existence of regional programmes supporting environmental education, such as the regional initiative in Tyrol "Schule mit Zukunft", which focuses on building school teams for management, and the documentation of environmental projects; and the local Agenda 21 Schools Initiative in Styria organized by the NGO UBZ on behalf of the provincial government. Also referred to in the NC4 is education in the field of climate protection offered to teachers as part of their further training programmes. The "Mitwelt und Solarpreis" awarded in Vorarlberg for outstanding school nature projects has also been mentioned in the NC4.

69. The work done in the field of environmental protection by NGOs such as Climate Alliance Austria, World Wide Fund for Nature, Naturschutzbund and Umweltberatung has also been reported in the NC4. Among their activities are a quiz on climate, an energy bonus for schools encouraging energy-saving measures in schools, and the Greenfeet Campaign involving primary schools and kindergartens. Austria also participates in an international government-based decentralized network, called Environment and School Initiatives, which focuses on innovation and research in environmental education. Information has also been presented in the NC4 on training and advice relating to energy saving, climate change, reducing emissions, and carbon trading, among other subjects.

70. With respect to public awareness, Austria has placed great emphasis on improving public awareness within the country. The ERT learned that a project on how to comprehensibly communicate information on climate change was conducted in 2004 and 2005. The ERT noted that the general public are quite well informed on the subject, even to the extent of having some knowledge of IPCC scenarios. Encouragingly, the ERT gathered that 97 per cent of people questioned in a survey feel obliged to contribute to reducing GHGs. Interestingly, it is suggested in the NC4 that, although the general public in Austria may be adequately informed on the subject of climate change, there is a gap between the perception of the problem and the expected personal consequences. This suggests that the Austrian people could be motivated to adopt more climate-friendly behaviour if they were offered more concrete recommendations for actions and were provided with certain incentives.

71. In its next national communication, Austria may wish to report on the extent of public participation in the preparation and domestic review of its national communications. It may also include updates on the supplementary reporting required in accordance with the New Delhi work programme.

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

A. Information contained in the report demonstrating progress

72. Austria's RDP includes four chapters, which contain all the information required by decisions 22/CP.7 and 25/CP.8. The ERT noted that Austria's RDP contains: a description of domestic measures, including legal and institutional steps to prepare to implement commitments under the Kyoto Protocol to mitigate GHG emissions; a description of programmes for domestic compliance and enforcement; trends in GHG emissions for between 1990 and 2003 and GHG projections up to 2020; an evaluation of how domestic measures, in light of these trends and projections, will contribute to Austria's meeting its commitments under Article 3; and a description of the activities, actions and programmes undertaken by Austria in fulfilment of its commitments under Articles 10 and 11. The ERT found the information contained in the RDP to be consistent with that provided in the NC4.

73. Under the EU burden-sharing agreement, Austria is obliged to reduce its GHG emissions by 13 per cent in relation to the 1990 level in the period 2008–2012. In order to fulfil its commitment under the Kyoto Protocol, Austria has developed a comprehensive national strategy – the Climate Strategy – that was adopted by the Federal Government in 2002. In its RDP, Austria has indicated that this strategy has been evaluated with regard to its effects and that it will be amended accordingly. In March 2007, Climate Strategy II was adopted.

74. Austria's total GHG emissions in 2007, excluding LULUCF, were 11.3 per cent higher than its 1990 emissions, which were the ones used in determining Austria's assigned amount in accordance with Article 3, paragraphs 7 and 8, of the Kyoto Protocol. Based on the projections presented in the RDP, Austria is not expected to meet its Kyoto target with its existing PaMs and the additional PaMs envisaged. Hence, Austria will use the flexible mechanisms of the Kyoto Protocol to acquire credits for the equivalent of 8–9 Mt CO_2 eq per year for the period 2008–2012. The ERT recommends that Austria present supplementarity regarding the use of flexible mechanisms according to projection scenarios in a more comprehensive and easy-to-interpret manner in its next national communication.

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

75. Austria has provided most of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol in its NC4 and RDP. This information reflects the steps taken by Austria to implement the relevant provisions of the Kyoto Protocol. The supplementary information is placed in different sections of the NC4 and the RDP. Table 8 provides references to the NC4 and RDP chapters in which supplementary information is provided.

76. Austria has not reported the following elements of the supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol: a description of national legislative arrangements and administrative procedures relating to the implementation of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol. With regard to the national registry and the national inventory system, Austria has indicated in its NC4 that detailed information is provided in Austria's report in accordance with decision 13/CMP.1. Austria provided some general information on the efforts being made to implement PaMs in such a way as to minimize adverse effects, including the effects of climate change, effects on international trade, and social, environmental and economic impacts on other Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention.

77. The ERT acknowledges Austria's reporting of most of the supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol. However, the ERT also finds that it was not always straightforward to identify this information, especially in the NC4. Therefore, the ERT recommends that

Austria present this supplementary information more clearly in its next national communication and also discuss it in more detail. More precisely, the ERT suggests that Austria describe more thoroughly its use of the flexible mechanisms as a supplement to its domestic action in order to achieve its Kyoto target, and that Austria highlight the links between its sustainable development strategy and its Climate Strategy II. Cooperation at regional (national or international) level might also warrant more attention in Austria's next national communication, as might the issue of international aviation.

Table 8. Overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

Supplementary information	Reference
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	NC4, chapter 4, pp. 83–84 (measure M36) & chapter 5, p. 93 RDP, chapter 3, p. 26
Policies and measures in accordance with Article 2	NC4, chapter 4, pp. 41–89 RDP, chapter 1, pp. 3–11
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	NC4, chapter 4, pp. 41–89[a] RDP, chapter 4, pp. 28–29 & 31–32[b]
Information under Article 10	NC4, chapter 7, pp. 146–150 RDP, chapter 4, pp. 29–31
Financial resources	NC4, chapter 7, pp. 135–145 RDP, chapter 3, p. 26 & chapter 4, pp. 31–32

Abbreviations: NC4 = fourth national communication, RDP = report demonstrating progress.
[a] With regard to regional programmes, Austria has also indicated various actions in the field of transport, in cooperation with other Alpine countries.
[b] Section 4.7 on the assistance to developing countries.

IV. Conclusions

78. The analysis of Austria's latest GHG inventory submission shows that total GHG emissions excluding emissions and removals from LULUCF increased by 11.3 per cent between the base year and 2007, whereas total GHG emissions including net emissions or removals from LULUCF increased by only 7.6 per cent. This was mainly attributed to CO_2 emissions, which increased by 19.5 per cent over this period (excluding LULUCF), with fuel combustion in the energy sector as the main driver for this growth. CH_4 emissions decreased by 24.3 per cent (owing to the decrease in emissions from the agriculture and waste sectors), while N_2O emissions decreased by 12.9 per cent (owing to decreases in emissions from the agriculture and industrial processes sectors).

79. In the NC4 and the RDP, Austria presents GHG projections for the period from 2005 to 2020. Two scenarios are included: (a) 'with measures' (including the effect of currently implemented and adopted PaMs); and (b) 'with additional measures'. According to the projections of GHG emissions under the 'with measures' and 'with additional measures' scenarios, by 2010 emissions will have increased by 13.8 and 2.4 per cent, respectively, in relation to the base year. Thus, the projections in the NC4 indicate that Austria will not meet its Kyoto target (which is a 13 per cent reduction in emissions in relation to the base year), even under the 'with additional measures' scenario. The gap between the actual emissions and the target would be 8–9 Mt CO_2 eq. The ERT noted that Austria will be able to reach its Kyoto target with the use of additional measures and JI and the CDM. According to additional information provided in response to a request made by the ERT during the review, Austria's purchase target for JI/CDM credits is at least 9 Mt CO_2 eq annually, for which Austria has already allocated funds of EUR 359 million. Based on this information, the ERT concludes that Austria has the allocated measures necessary to reach its Kyoto target.

80. In the course of the IDR, the ERT formulated a number of recommendations relating to the completeness and transparency of Austria's reporting under the Convention and its Kyoto Protocol. The key recommendations[4] are that Austria:

- Provide a more thorough analysis of how changes in its national circumstances affected GHG emissions and removals over time;
- Provide the mitigation impact differentiated by sector and by gas for all implemented, adopted and planned PaMs;
- Provide more reference information with respect to the PaMs and improve consistency between the textual descriptions and summaries of the PaMs;
- Discuss the effects of the PaMs implemented;
- Report in more detail the PaMs in the transport sector;
- Make clear the distinction between activities undertaken by the public sector and those undertaken by the private sector and indicate, where feasible, how it has encouraged private sector activities and how these activities help it to meet its commitments under Article 4, paragraphs 3, 4 and 5, of the Convention;
- Present the supplementary information required under Article 7, paragraph 2, the Kyoto Protocol more clearly and discuss it in greater detail.

81. The ERT also suggests that Austria include a 'without measures' scenario in its next national communication and carry out a more in-depth sensitivity analysis of its projections.

[4] The recommendations are given in full in the relevant sections of this report.

Annex

Documents and information used during the review

A. Reference documents

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications". FCCC/CP/1999/7. Available at <http://unfccc.int/resource/docs/cop5/07.pdf>.

"Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol". Decision 15/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf#page=54>.

"Guidelines for review under Article 8 of the Kyoto Protocol". Decision 22/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=51>.

FCCC/IDR.3/AUT. Report on the in-depth review of the third national communication of Austria. Available at <http://unfccc.int/resource/docs/idr/aut03.pdf>.

FCCC/SBI/2006/INF.2. Synthesis of reports demonstrating progress in accordance with Article 3, paragraph 2, of the Kyoto Protocol. Available at <http://unfccc.int/resource/docs/2006/sbi/eng/inf02.pdf>.

FCCC/SBI/2007/INF.6. Compilation and synthesis of fourth national communications. Available at <http://unfccc.int/resource/docs/2007/sbi/eng/inf06.pdf>.

FCCC/SBI/2007/INF.7. Compilation and synthesis of supplementary information incorporated in fourth national communications submitted in accordance with Article 7, paragraph 2, of the Kyoto Protocol. Available at <http://unfccc.int/resource/docs/2007/sbi/eng/inf07.pdf>.

FCCC/ARR/2008/AUT. Report of the individual review of the greenhouse gas inventories of Austria submitted in 2007 and 2008. Available at <http://unfccc.int/resource/docs/2009/arr/aut.pdf>.

FCCC/IRR/2007/AUT. Report of the review of the initial report of Austria. Available at <http://unfccc.int/resource/docs/2007/irr/aut.pdf>.

Fourth national communication of Austria. Available at <http://unfccc.int/resource/docs/natc/autnc4.pdf>.

Report demonstrating progress of Austria. Available at <http://unfccc.int/resource/docs/dpr/aut1.pdf>.

2009 greenhouse gas inventory submission of Austria. Available at <http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/4771.php >.

B. Additional information provided by the Party

Responses to questions during the review were received from Mr. Martin Kriech and Mr. Christopher Lamport (Federal Ministry of Agriculture, Forestry, Environment and Water Management), including additional material on updated policies and measures, greenhouse gas projections, the national registry and recent developments in Austria's climate policy.

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