



UNITED
NATIONS



**Framework Convention
on Climate Change**

Distr.
GENERAL

FCCC/IDR.4/DEU
26 September 2008

ENGLISH ONLY

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

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 Germany 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. Germany has been a Party to the Convention since 1996 and its Kyoto Protocol since 1998. Under the Kyoto Protocol, Germany committed itself to reducing its greenhouse gas (GHG) emissions by 21 per cent in relation to the base year 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 Germany, coordinated by the UNFCCC secretariat, in accordance with decision 7/CP.11. The review took place from 12 to 17 May 2008 in Bonn, Germany, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Mr. Marko Aunedi (Croatia), Mr. Daniel Bouille (Argentina), Mr. Mustafa Coskun (Turkey), Mr. Javier Gonzales Iwanciw (Bolivia), Mr. Bernd Gugele (European Community), Ms. Ashley King (United States of America) and Mr. Daniel Martino (Uruguay). Mr. Gugele and Mr. Martino were the lead reviewers. The review was coordinated by Mr. Harald Diaz-Bone (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 Germany's report demonstrating progress (RDP) in achieving its commitments under the Kyoto Protocol, and the supplementary information provided by Germany 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 Germany, which provided comments that were considered and incorporated, as appropriate, in this final version of the report.

B. Summary

5. The ERT noted that Germany'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). As required by decision 22/CP.8, the RDP provides detailed information on the progress made by Germany in achieving its commitments under the Kyoto Protocol. Most of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol¹ is provided in either the NC4 or the RDP. The ERT acknowledged a high degree of coherent and consistent reporting.

1. Completeness

6. The ERT noted that the NC4 covers most sections required by the UNFCCC reporting guidelines (the missing elements are the executive summary and the common reporting format (CRF) summary trend tables). The ERT also noted that Germany's RDP contains most of the parts stipulated by decisions 22/CP.7 and 25/CP.8. Furthermore, the ERT noted that Germany has provided most of the supplementary information required under Article 7, paragraph 2 (see chapter III B below).

2. Timeliness

7. The NC4 was submitted on 23 March 2006 and the RDP on 21 April 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.

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

3. Transparency

8. The ERT acknowledged that Germany's NC4 is comprehensive and provides clear information on all aspects of implementation. It is structured broadly following the outline contained in the annex to the UNFCCC reporting guidelines. In the course of the review, the ERT formulated a number of recommendations that could help Germany to increase the transparency of its reporting. The key recommendations are to provide information on projections covering all sectors and all gases, to quantify the estimated effects of policies and measures (PaMs) across all sectors (including waste, agriculture and land use, land-use change and forestry (LULUCF)) and all gases, and to provide clearer links between the effects of PaMs and the projections. The review team 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, Germany has provided a description of its national circumstances, how these national circumstances affect GHG emissions and removals in Germany, and how national circumstances and changes in national circumstances affect GHG emissions and removals over time. The ERT noted that the main drivers of emission trends in Germany include demographic developments, overall economic activity, changes in primary energy use, electricity production and energy prices, developments in transport demand and annual variation in precipitation and temperature. The ERT noted that information on average heating degree days and information on the structure of German industry would give further insights into the country's GHG emission trends. Table 1 illustrates the national circumstances of the country by providing some indicators relevant to GHG emissions and removals.

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

	1990 ^a	1995	2000	2006	Change 1990–2000 (%)	Change 2000–2006 (%)	Change 1990 –2006 (%)
Population (million)	79.36	81.66	82.19	82.46	3.6	0.3	3.9
GDP (2000 USD billion using PPP)	1730.06	1928.79	2130.32	2191.89	23.1	2.9	26.7
TPES (Mtoe)	355.63	341.82	343.17	345.26	-3.5	0.6	-2.9
GDP per capita (2000 USD thousand using PPP)	21.80	23.62	25.92	26.31	18.9	1.5	20.7
TPES per capita (toe)	4.49	4.19	4.18	4.18	-6.9	0.0	-6.9
GHG emissions without LULUCF (Tg CO ₂ eq)	1227.69	1095.01	1019.49	1004.79	-17.0	-1.4	-18.2
GHG emissions with LULUCF (Tg CO ₂ eq)	1199.45	1063.85	985.56	968.39	-17.8	-1.7	-19.3
CO ₂ emissions per capita (Mg)	13.01	11.28	10.75	10.67	-17.4	-0.7	-17.9
CO ₂ emissions per GDP unit (kg per 2000 USD using PPP)	0.60	0.48	0.41	0.40	-30.5	-3.2	-32.7
GHG emissions per capita (Mg CO ₂ eq)	15.47	13.41	12.40	12.19	-19.8	-1.8	-21.2
GHG emissions per GDP unit (kg CO ₂ eq per 2000 USD using PPP)	0.71	0.57	0.48	0.46	-32.6	-4.2	-35.4

Data sources: (1) GHG emissions data are from Germany's 2008 inventory submission; (2) population, GDP and TPES data are from the 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.

10. Germany has provided a summary of information on GHG emission trends for the period 1990–2004. This information corresponds to the 2006 national GHG inventory submission. Summary tables, including trend tables for emissions in carbon dioxide equivalent (CO₂ eq) (given in the CRF tables), are not provided in the NC4.

11. Total GHG emissions excluding emissions and removals from LULUCF decreased by 18.2 per cent between 1990 and 2006, and total GHG emissions including net removals from LULUCF

decreased by 19.3 per cent (see table 2). This was mainly attributed to CO₂ emissions, which decreased by 14.7 per cent over this period. Emissions of methane (CH₄) and nitrous oxide (N₂O) decreased by 53.8 per cent and 25.3 per cent respectively. A major part of these decreases occurred between 1990 and 2000 (trends for 1990–2000: CO₂ –14 per cent, CH₄ –35 per cent, N₂O –30 per cent, total GHG –17 per cent). Emissions of fluorinated gases accounted for about 1.0 per cent of total GHG emissions in 1990 and 1.6 per cent in 2006. Table 2 provides an overview of GHG emissions by sector from 1990 to 2006 (see also discussion of sectoral trends in chapter II B below).

Table 2. Greenhouse gas emissions by sector in Germany, 1990–2006

	GHG emissions (Tg CO ₂ eq)					Change (%)		Shares ^a by sector (%)	
	1990	1995	2000	2005	2006	1990–2006	2005–2006	1990	2006
1. Energy	987.69	871.15	828.12	819.36	818.90	–17.1	–0.1	80.5	81.5
A1. Energy industries	419.69	360.81	351.31	366.08	370.17	–11.8	1.1	34.2	36.8
A2. Manufacturing industries and construction	156.32	113.40	99.20	104.61	102.42	–34.5	–2.1	12.7	10.2
A3. Transport	164.42	178.74	184.3	165.54	162.01	–1.5	–2.1	13.4	16.1
A4.–5. Other	220.02	195.83	173.54	170.40	172.53	–21.6	1.3	17.9	17.2
B. Fugitive emissions	27.25	22.37	19.76	12.73	11.77	–56.8	–7.6	2.2	1.2
2. Industrial processes	119.80	121.28	100.93	107.14	108.18	–9.7	1.0	9.8	10.8
3. Solvent and other product use	2.09	1.67	1.26	1.17	1.17	–43.8	0.0	0.2	0.1
4. Agriculture	77.68	66.59	67.12	63.54	63.54	–18.2	0.0	6.3	6.3
5. LULUCF	–28.24	–31.16	–33.93	–36.08	–36.40	28.9	0.9	–2.3	–3.6
6. Waste	40.42	34.33	22.07	13.78	12.99	–67.9	–5.7	3.3	1.3
7. Other	NO	NO	NO	NO	NO				
GHG total with LULUCF	1 199.45	1 063.85	985.56	968.92	968.39	–19.3	–0.1	97.7	96.4
GHG total without LULUCF	1 227.69	1 095.01	1 019.49	1 005.00	1 004.79	–18.2	0.0	100.0	100.0

Abbreviations: GHG = greenhouse gas, LULUCF = land use, land-use change and forestry, NO = not occurring.

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 which was offset by GHG removals through LULUCF.

12. The main reasons for the declining GHG emissions in Germany are efficiency improvements and/or restructuring in energy industries and industrial manufacturing sectors carried out after German reunification in 1990, efficiency improvements and insulation in the housing sector, in particular in buildings in Eastern Germany, the decline of military activity following reunification, and emission reduction measures in adipic acid production and in landfills.

13. The ERT recommends that Germany provide the CRF summary trend tables in its next national communication. In addition, the Party is encouraged to provide more detailed information on the structure of its manufacturing industries and on average national heating degree days.

B. Policies and measures

14. As required by the UNFCCC reporting guidelines, Germany has provided in its NC4 comprehensive information on its package of PaMs implemented and adopted in order to fulfil its commitments under the Convention and its Kyoto Protocol. Each sector has its own textual description of the principal PaMs, supplemented by summary tables on PaMs by sector. Germany has also provided information on how it believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals consistent with the objective of the Convention. However, the ERT noted that the link between the PaMs and the projections is not clear. The ERT also noted that Germany did not provide information on types of instruments and implementing entities (see para. 22 of the UNFCCC

reporting guidelines) and did not report on PaMs no longer in place. The ERT recommends that Germany include this information in its next national communication. In addition, the ERT noted that much of the information provided in chapter IV (on PaMs) of the NC4 is repeated in chapter V (on projections) and that avoiding duplication of information in these two chapters would improve the readability of the document. Table 3 provides a summary of the reported information on the PaMs of Germany.

Table 3. Summary of information on policies and measures

Major policies and measures	Examples/comments
Framework policies and cross-sectoral measures	
Integrated climate strategy	National Climate Protection Programme (2000 and 2005)
Energy/electricity/emissions taxation	Ecological tax reform – making energy more expensive by increasing taxes on heating, automotive fuels and electricity
Emissions trading	Participation in the European Union (EU) emissions trading scheme; supporting the European Commission in its investigation of the possibility of including air transport in emissions trading; simplifying the procedures of the flexible mechanisms; participation in joint implementation and the clean development mechanism
Support for research and development	Research on mitigation of greenhouse gas (GHG) emissions and protection against climate change impacts; funds for research and development in technologies to improve energy efficiency, for renewable energies and for GHG mitigation activities, including information and education measures
Policies and measures by sector	
Energy	
Combined heat and power generation (CHP)	Introduction of the CHP Act to support efforts to reduce emissions by at least 20 million tonnes per annum by 2010 from the base year (1998) level through measures such as giving limited-term protection to and modernizing CHP plants and expanding electricity generation in small CHP plants
Renewable energy sources	The Market Incentives Programme on Renewable Energies; the Wood Charter – a programme to support increase in wood consumption in the next 10 years by 20%
Energy efficiency improvements	Continuation of energy-saving initiatives in buildings, energy consumption and transport through regulatory measures, financial assistance and influencing consumer habits; modernization of power stations by providing fiscal incentives to build efficient and climate-friendly power stations; voluntary agreements with industry on the prevention of global warming
Energy sector liberalization	Deregulation of the electricity market
Transport	
Integrated transport planning	Federal Transport Routes Plan (2003); Federal Building Code (2004); National Cycle Traffic Plan 2002 to 2012 (2002); intention to develop a “Goods Traffic Master Plan”
Agreements/partnerships	German Automobile Association; the Motor Vehicle Importers' Association
Vehicle and fuel taxes	Introduction of the toll system for heavy goods vehicles; reduction in distance-based tax allowance for commuters between home and work (from EUR 0.36 to EUR 0.30 per km); owner-occupied home allowance and commuter tax allowance for distances of less than 20 km between home and work abolished
Biofuels	Rise in production of biodiesel (250,000 t to 1.7 million tonnes in 2005); EU biofuel directives
Industry	
Pollution prevention and control	EU directive to limit and reduce emissions of fluorinated gases covered by the Kyoto Protocol
Agriculture	
	Common Agricultural Policy; federal programme for organic farming; compliance with the principles of good professional practice for soil conservation and banning the ploughing of grassland in certain locations; agro-environmental measures; agricultural investment assistance
Waste management	
	Reduction in the use of untreated biodegradable waste as landfill (reduced 20 million tonnes CO ₂ eq during the period 1990–2003); Waste Deposition Ordinance (2001) and Waste Wood Ordinance (2003)

15. During the review, Germany provided updated information on PaMs and projections in the *Report for Assessment of the Projected Progress of the Federal Republic of Germany 2007 Pursuant to Implementation of the Kyoto Protocol – Report Pursuant to Article 3 (2)* (hereinafter referred to as the Progress Report). This information differs substantially from the information provided in the NC4. The review team was informed that the NC4 was based on the study “Politikszenerarien III” (Policy Scenarios III, see para. 37 below), whereas the data included in the Progress Report were derived from the newer study “Politikszenerarien IV” (Policy Scenarios IV, see para. 38 below). For the latter study, a new modelling approach was chosen, using different models for different sectors and then combining the results with the IKARUS-MARKAL model. Germany indicated that the results in the Progress Report

are more sophisticated and not necessarily comparable with the figures given in the NC4; however, the reasons for the considerable differences between these two reports are not explained. Therefore the ERT encourages Germany to provide such an explanation in its next national communication.

1. Policy framework and cross-sectoral measures

16. The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) is responsible for coordinating climate change-related policies at national government level. For this purpose an inter-ministerial working group on CO₂ reduction was set up under the lead of the BMU. The task of this working group is to draw up guidelines for climate protection (i.e. mitigation of GHG emissions) policy activities, to identify the existing need for action, to assess the potential for reducing GHGs and to submit to the Federal Government comprehensive packages of measures for reducing GHG emissions in Germany. Activities at federal level are harmonized with the federal states through joint national/regional committees, and with the local or municipality level via the central associations of local authorities.

17. Germany adopted its Climate Protection Programme in 2000, which includes 64 measures for the following sectors: households, transport, industry, the energy industry, renewable energy, waste management and agriculture. In 2005, Germany revised the programme, focusing on the households and transport sectors because the industry and electricity production sectors are covered to a large extent by the European Union (EU) emissions trading scheme (ETS). Core elements of the National Climate Protection Programme include the promotion of renewable energies, energy savings, energy efficiency and ecological tax reforms.

18. As an EU member State, Germany has implemented a number of common and coordinated PaMs. These include EU directives 2003/87/EC on emissions trading, 2004/101/EC on the Kyoto Protocol project mechanisms, 2001/77/EC on the promotion of electricity produced from renewable energy sources, 2003/30/EC on the promotion of biofuels; and 2002/91/EC on the energy performance of buildings, and EU regulations 842/2006 on certain fluorinated GHGs and 1782/2003 on common rules for direct support schemes under the Common Agricultural Policy. In some of these areas Germany already had national legislation in place before the European legislation came into force.

19. In addition, Germany participates in the EU ETS. In the first allocation period (2005–2007), certificates of 499 million tonnes of CO₂ per year were allocated to the emissions trading sector (which accounts for about 50 per cent of total German GHG emissions). This allocation included a reserve for new installations of 3 million tonnes of CO₂ per year. The second national allocation plan, for 2008–2012, provides for 453.1 million emissions allowances, including a reserve of 23 million tonnes of CO₂ per year. In the first period, this allocation was carried out primarily on the basis of the relevant installations' historical emissions (known as grandfathering). In the second period, allocations for the energy sector are defined primarily on the basis of benchmarks. In addition, Germany intends to sell some of its emissions allowances.

2. Policies and measures in the energy sector

20. Between 1990 and 2006, GHG emissions from energy industries decreased by 11.8 per cent (49,787 Gg), mainly driven by efficiency improvements in power production in the 1990s. However, since 1999, GHG emissions from energy industries have been rising. About 50 per cent of electricity is produced from hard coal and domestic lignite. The share of renewable electricity production has more than doubled since the late 1990s, mainly owing to favourable feed-in tariffs, and stood at more than 10 per cent of total gross electricity production in 2006. The trend in GHG emissions from fuel combustion also showed a notable decrease in the manufacturing industries sector (34.5 per cent or 53,896 Gg), mainly due to efficiency improvements and the restructuring of the industry after German reunification, leading to a strong decline in solid fuel use in industry. GHG emissions from manufacturing industries were at their lowest of the period in 2002 and have been rising ever since.

21. A decrease in GHG emissions from energy use in other sectors (21.6 per cent or 47,488 Gg) has contributed significantly to the overall decline in GHG emissions in Germany. In the households sector, a marked decrease in emissions has been recorded, driven by efficiency improvements and better insulation in buildings in Eastern Germany. There has also been a decrease in GHG emissions from the military sector, owing to the steep decline in military activity following German reunification. Emissions in this sector decreased most dramatically between 1990 and 2000; since 2000, emissions have decreased by 0.6 per cent.

22. Germany is also one of the few Parties to record a decrease in GHG emissions from transport (3.5 per cent or 2,407 Gg) between 1990 and 2006; within this period, emissions increased up to 1998 but decreased markedly after that. The ERT noted that the decrease was mainly driven by rising fuel prices, which are partly due to the ecological tax reform carried out between 1999 and 2003 (see table 3), road pricing for freight trucks and a shift towards international aviation. Higher fuel prices encouraged people to buy more fuel-efficient cars, including a growing number of diesel cars. However, the higher fuel prices in comparison with many neighbouring countries also led to refuelling outside Germany (so-called tank tourism) and hence a drop in fuel sales in Germany.

23. Germany has implemented a large number of PaMs to mitigate GHG emissions. The promotion of renewable energies is one of the core elements of the National Climate Protection Programme. This includes the promotion of renewable energies in the power production sector (through the Renewable Energy Act and Biomass Ordinance), which is expected to reduce, by 2010, GHG emissions by 28 million tonnes according to the NC4 or 35 million tonnes according to the Progress Report referred to in paragraph 15 above; the reduction potential is calculated against a scenario without this measure. The promotion of the use of renewable energies in the households and services sector is expected to reduce emissions by 7 million tonnes (NC4) or 1 million tonnes (Progress Report) by 2010. The use of biofuels in automotive fuels is expected to reduce emissions by 3 million tonnes (NC4) or 7 million tonnes (Progress Report).

24. A second cornerstone of the National Climate Protection Programme is the promotion of energy saving. The most important measures are the Energy Saving Ordinance and the programmes of Kreditanstalt für Wiederaufbau, which aim to promote investments in energy savings and CO₂ reductions. These measures are expected to reduce emissions by about 16 million tonnes (NC4) or 3 million tonnes (Progress Report), mainly in the households and services and industry sectors. The measures have been revised several times in recent years in order to reflect technological improvements. However, as is also stated in the NC4, there is further potential for energy savings, in particular in existing buildings.

25. Germany implemented an ecological tax reform between 1999 and 2003, which gradually increased the taxes on heating fuels, road fuels and electricity. In turn, contributions to social security were reduced. Although there were a number of exemptions, in particular for industry, the ecological tax reform is expected to reduce emissions by about 12 million tonnes in the transport, industry and households and services sectors (according to the NC4).

26. Further policies and measures have been developed to address the decline in competition and production among combined heat and power (CHP) plants that followed the liberalization of the electricity market in 1996. Legislation has been introduced and the Federal Government of Germany made agreements with industry in order to support CHP plants. In addition, voluntary agreements were concluded with industry in order to promote energy efficiency. Altogether these measures are estimated to provide emission reductions of 7 million tonnes (NC4) or 27 million tonnes (Progress Report) by 2010. An evaluation report (RWI, 2008) provided to the ERT during the review concludes that most industries are on track with regard to meeting their commitments, but the link between the emission reductions included in the NC4 and those in the Progress Report was not clear. In addition, the evaluation report refers to the years 2003–2004; more recent information does not seem to be available. Therefore, the

ERT recommends that Germany evaluate the effectiveness of these measures on a regular basis and explain the link between these commitments and the GHG projections in its next national communication.

27. In the automobile industry, Germany notes in its Progress Report that emission reductions of 6.3 million tonnes can be expected by 2010 if the voluntary commitment of car manufacturers to reduce average CO₂ emissions from newly sold passenger cars to 140 g/km by 2008/2009 is met. However, the European Commission recently indicated that these commitments are unlikely to be realized, given the fact that in 2006 the average CO₂ emissions of a new car were at about 160 g/km, and proposed a target for the industry of 130 g/km by 2012. Therefore, the ERT recommends that Germany revise its assumptions and adapt the estimated emission reductions accordingly.

28. One of the main drivers of GHG emissions in Germany is increasing electricity consumption. The NC4 acknowledges this problem but does not include detailed PaMs for addressing it. The Progress Report does include such measures, however. The ERT recommends that the Party include a description of these measures in its next national communication.

3. Policies and measures in other sectors

29. Between 1990 and 2006, emissions from non-energy sectors in Germany decreased by 22 per cent, from 240 Tg CO₂ to 186 Tg CO₂. They currently constitute about 18 per cent of total GHG emissions (excluding LULUCF). Significant reductions have occurred in all non-energy sectors – industrial processes (10 per cent), agriculture (18 per cent) and waste (66 per cent) – while net removals from LULUCF grew by 27 per cent.

30. **Industrial processes.** Emissions decreased significantly during the 1990s, mainly as a result of reduced N₂O emissions from adipic acid production. In 2006, emissions from industrial processes were composed of CO₂ (74 per cent), N₂O (11 per cent) and fluorinated gases (15 per cent). The level of CO₂ emissions from industrial processes remained relatively stable between 1990 and 2006, as small reductions from mineral production offset growth in the chemicals sector. However, recent growth in N₂O and hydrofluorocarbon emissions caused total industrial process emissions to increase by 7 per cent between 2000 and 2006 (from 101 Tg CO₂ in 2000 to 108 Tg CO₂ in 2006).

31. Overall, the transparency of reporting in this section of the NC4 could be improved significantly. For example, the updated estimated effects provided by Germany during the IDR include a reduction in the rate of steel production which would reduce process-related CO₂ emissions by 13 million tonnes by 2010. This did not appear in the NC4, although its implementation status was listed as ongoing. No information was provided as to how this reduction would be realized, despite its accounting for about one third of all the reductions from PaMs in that sector. Germany did not respond to inquiries made by the ERT about this or other measures. In addition, while a sectoral total was provided in the NC4 and in the updated information, it was not possible to determine which individual PaMs were included, as the sum of emission reductions from the individual PaMs was higher than the sectoral total. Therefore, the ERT was unable to reconcile the influence of individual PaMs on emission trends or fully understand the German approach to reducing emissions in the sector. The ERT recommends that Germany improve the transparency of reporting on PaMs addressing emissions from industrial processes in its next national communication.

32. **Agriculture.** Between 1990 and 2006, GHG emissions from agriculture decreased by about 18 per cent (from 78 Tg CO₂ to 64 Tg CO₂); they contributed a small component of total GHG emissions (about 6 per cent). From 2005 to 2006, there was no change either in the level or in the composition of agricultural emissions. In Germany, half of total CH₄ emissions are caused by enteric fermentation by livestock, and more than 60 per cent of N₂O emissions are emitted from soils. Growing interest in biofuel production in Germany, reflected in the passing of the 2007 Biofuel Quota Act, which mandates fuel sales percentages for biofuels, may have an impact on production and emission levels in the sector.

Current policies which are expected to reduce GHG emissions include increasing the use of biogas derived from manure as an energy resource, and continuing to expand organic farming.

33. **Forestry.** Forests cover about 30 per cent of German territory. Although no forest policies have been implemented in Germany specifically for climate reasons, forest management practices have nonetheless resulted in net afforestation rates. The growth in the forested area sequestered an additional 76 Tg CO₂ per year between 1990 and 2003, increasing the area's capacity as a carbon sink by more than 25 per cent over that period. In 2006, LULUCF activities removed 36.4 Tg CO₂, equivalent to about 3 per cent of total national GHG emissions without LULUCF.

34. **Waste.** CH₄ emissions fell by more than two thirds between 1990 and 2006 (from 1.5 Tg to 0.5 Tg), as a result of actions taken to reduce the amount of untreated biodegradable municipal waste deposited in landfills. Since 1 June 2005, all municipal waste that is not recycled or recovered must be incinerated or treated by mechanical biological methods before entering a landfill. As a result, CH₄ emissions from landfills will be solely the result of waste deposited prior to this date. In order to achieve this, approximately 20 mechanical biological treatment facilities and six incinerators were constructed between 2001 and 2005. Germany is moving towards complete elimination of landfills by 2020. The ERT noted that the NC4 does not include the required table outlining PaMs and their estimated mitigation impact in the waste sector in either chapter 4 or chapter 5. The ERT recommends that Germany include this table in its next national communication.

35. The ERT noted that the NC4 includes neither a discussion of the industry sector in chapter 2 nor a discussion of GHG emission trends by sector in chapter 3. Therefore it was difficult for the ERT to link the relative influence of the individual PaMs to the individual GHG emission trends. In general, transparency in the presentation of the estimated mitigation effects of PaMs could be improved. The ERT encourages Germany to improve the quality of the discussion of sectoral trends and improve the transparency of mitigation effects reporting in its next national communication. The ERT commends Germany for its successful efforts to reduce emissions in the waste sector.

C. Projections and the total effect of policies and measures

1. Projections

36. The GHG emission projections provided by Germany in its NC4 include a 'with measures', a 'with additional measures' and a 'without measures' scenario until 2020, and are presented at five-year intervals (for 2010, 2015 and 2020) relative to actual inventory data for 1990–2005. The effect of individual implemented and adopted PaMs was presented by sector (energy, industry, transport, trade/commerce/services, private households, agriculture, and waste management/recycling/materials efficiency) and on a gas-by-gas basis for all relevant GHGs. The summary CO₂ projections were provided by sector, and the national total was provided in an aggregated format on a gas-by-gas basis, using the appropriate global warming potential (GWP) values. However, the ERT noted that Germany did not provide the projections in an aggregated format for each sector, using GWP values (para. 35 of the UNFCCC reporting guidelines). The emission projections related to fuel sold to ships and aircraft engaged in international transport (para. 36 of the UNFCCC reporting guidelines) were not provided either. Table 4 provides a summary of GHG emission projections for Germany, as reported in the NC4.

37. The 'with measures' scenario is based on the 2005 study "Climate protection in Germany up to 2030 – Policy Scenarios III".² The total quantification of the impacts of PaMs is based on expert estimates for the individual sectors, although not all effects from individual measures were quantified in the NC4. The 'without measures' scenario was constructed by removing from the 'with measures' scenario the estimated effect of measures taken or approved between 1998 and 2002. In the presentation of the scenario results, the year 2010 is used to represent the period 2008–2012 and the years 2015 and

² It is stated in Germany's NC4 that the study was not endorsed by the German Federal Government.

2020 are extrapolated from these values. The input assumptions used in producing the emission projection scenarios are reported in detail, and the sensitivity analysis to input assumptions is also provided.

38. The ‘with additional measures’ scenario relies on the ‘reduction scenario II’, and differs from the ‘with measures’ scenario since it was generated using an energy system optimization model (IKARUS-MARKAL) with a prescribed emission reduction target against the ‘model base’ scenario (different from the ‘with measures’ scenario). This means that the comparison between the ‘with measures’ and ‘with additional measures’ scenario in the NC4 is of limited value. In the context of the centralized review, Germany provided the ERT with a more recent set of projections. This set of projections was based on the 2007 study “Climate Protection in Germany up to 2030 – Policy Scenarios IV”, in which the ‘with measures’ and ‘with additional measures’ scenarios were obtained using a consistent methodology. Following a more consistent approach and recent data set, the 2007 projections are included in table 4, as well as in the figure below.

Table 4. Summary of greenhouse gas projections for Germany

	Greenhouse gas emissions (Tg CO ₂ eq per year)	Changes in relation to base year level (%)
Inventory data 1990 ^a	1 228	NA
Inventory data 2006 ^a	1 005	-18.4
Kyoto Protocol base year ^a	1 231	NA
Kyoto Protocol target	973	-21.0
‘With measures’ projections for 2010/2015/2020 ^b	1 003/1 006/1 013	-18.5/-18.3/-17.7
‘With additional measures’ projections for 2010/2015/2020 ^b	901/826/757	-26.8/-32.9/-38.5
2007 ‘with measures’ projections for 2010/2015/2020 ^c	940/874/863	-23.7/-29.0/-29.9
2007 ‘with additional measures’ projections for 2010/2015/2020 ^c	923/812/743	-25.0/-34.1/-39.7

^a Data source: Germany’s 2008 greenhouse gas (GHG) inventory submission; the emissions are without land use, land-use change and forestry (LULUCF). The base year for CO₂, CH₄ and N₂O is 1990, and the base year for HFCs, PFCs and SF₆ is 1995

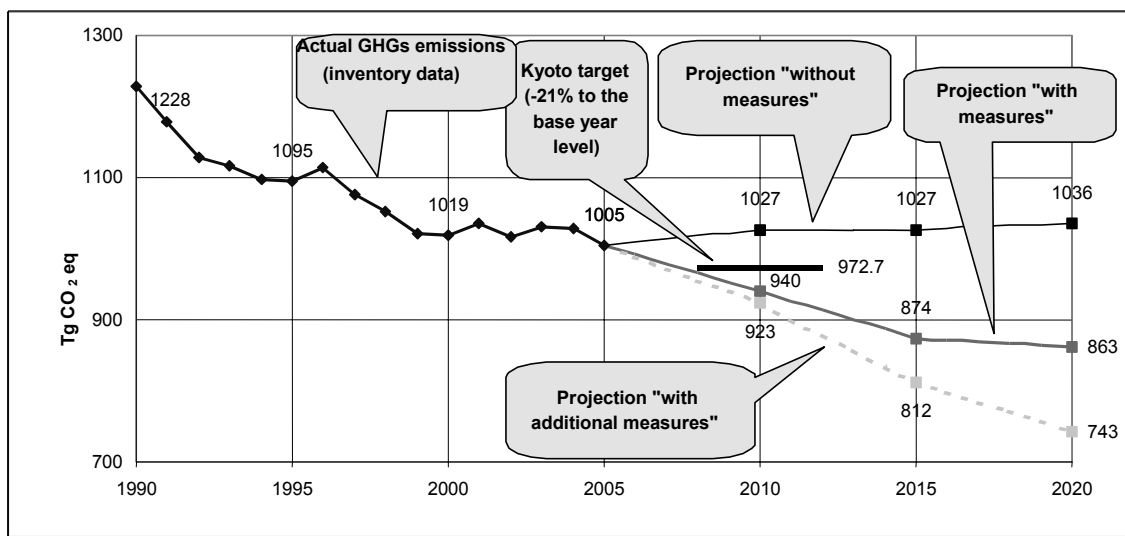
^b Data source: Germany’s fourth national communication; the projections are for GHG emissions without LULUCF.

^c Data source: BMU. 2007. *Report for Assessment of the Projected Progress of the Federal Republic of Germany 2007 Pursuant to Implementation of the Kyoto Protocol – Report Pursuant to Article 3 (2)*.

39. According to NC4 projections, total national GHG emissions in 2010 would still be above Germany’s Kyoto Protocol target by about 3 per cent under the ‘with measures’ scenario, while under the ‘with additional measures’ scenario total emissions would be 7.4 below this target. The considerable difference of more than 10 per cent of total GHG emissions between the two scenarios is significantly reduced in the 2007 projection scenarios as a result of the shorter forecasting horizon and different calculation methodology used. The effects of PaMs have also been revised in the 2007 projections.

40. According to the 2007 projections, Germany expects to meet its Kyoto Protocol target in the period 2008–2012 using the PaMs implemented and adopted domestically, even without implementing the planned (additional) measures or engaging in activities under Article 3, paragraph 4, of the Kyoto Protocol. The projected emission levels in 2010 are 3.4 per cent below the Kyoto Protocol target for the ‘with measures’ scenario and 5.1 per cent below the Kyoto Protocol target for the ‘with additional measures’ scenario.

Greenhouse gas emission projections for Germany



Data sources: Germany's inventory submission for 2008 and BMU. 2007. *Report for Assessment of the Projected Progress of the Federal Republic of Germany 2007 Pursuant to Implementation of the Kyoto Protocol – Report Pursuant to Article 3 (2)*.

Note: The emissions are without land use, land-use change and forestry.

41. The ERT recommended that the Party follow the UNFCCC reporting guidelines more closely and provide information on projections covering all sectors and all gases, preferably in both tabular and graphic format. The ERT also recommends that Germany prepare GHG projections relating to fuel sold for use by ships and aircraft engaged in international transport, and include them in its next national communication.

2. Total effect of policies and measures

42. In its NC4, Germany presented the estimated effect of individual implemented and adopted PaMs in 2010. The total effect was not reported separately; the ERT calculated this from the difference between the 'with measures' and 'without measures' scenarios. Furthermore, the effect of planned PaMs was reported implicitly in terms of total effects (the difference between the 'model base' and 'with additional measures' scenarios), broken down into energy subsectors and transport only. However, the fact that the 'with additional measures' scenario is based on a different reference scenario from the 'with measures' scenario makes it difficult to quantify the estimated effects of additional PaMs. On the other hand, the 2007 projections do not contain the total sectoral effects of planned PaMs, but only aggregate effects on a gas-by-gas basis, which does not allow quantification of the effects of PaMs in individual sectors. Therefore, table 5 contains only the estimated effects of PaMs on CO₂ emissions in 2010, since CO₂ is the only gas for which the effects are reported on a sectoral basis. It should also be noted that the division into sectors does not follow the usual reporting structure (effects are not reported for the waste, agriculture or LULUCF sectors).

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

	Effect of implemented and adopted measures (Tg CO ₂)	Relative value (% of base year CO ₂ emissions)	Effect of planned measures (Tg CO ₂)	Relative value (% of base year CO ₂ emissions)
Industry	7.0	0.7	2.0	0.2
TCS	10.2	1.0	2.0	0.2
Households	18.6	1.8	11.0	1.1
Transport	13.5	1.3	0.0	0.0
Energy conversion	17.7	1.7	56.0	5.5
Process-induced emissions	1.0	0.1	NA	NA
Total	76.0	7.5	71.0	7.0

Data source: Germany's fourth national communication.

Abbreviations: TCS = trade/commerce/services, NA = not available.

Note: The total effect on CO₂ emissions of implemented and adopted policies and measures is defined as the difference between the 'without measures' and 'with measures' scenarios; the total effect of planned policies and measures is defined as the difference between the 'model base' scenario and the 'with additional measures' scenario.

43. The total estimated effect of implemented and adopted PaMs on CO₂ emissions in 2010 is 76 Tg CO₂ under the 'with measures' scenario, while the additional effect of planned measures is estimated at 71 Tg CO₂. The sum of these effects amounts to about 14.5 per cent of base year CO₂ emissions, which represents a significant reduction bearing in mind that CO₂ is the major contributor to overall GHG emissions. The effects of PaMs on other gases are not reported on a sectoral basis but as a total, so that the overall effect of implemented and adopted PaMs is estimated at 107 Tg CO₂ eq (8.6 per cent of total base year emissions).

44. In the 2007 projections, the effects of PaMs on all GHGs in 2010 are estimated at 87 Tg CO₂ eq under the 'with measures' scenario and 17 Tg CO₂ eq under the 'with additional measures' scenario. The ERT noted that there was some inaccuracy in adding up the figures for overall emissions in the 2007 projection scenarios, but did not manage to obtain clarification from the Party on this matter.

45. The ERT noted that some progress in the quality of presentation of data has been accomplished through developing an updated set of projection information. However, further improvement can be achieved by providing detailed emission projections supplemented by the aggregate effect of PaMs. Therefore, the ERT recommends that the Party quantify the estimated effects of PaMs across all sectors (including waste, agriculture and LULUCF) and all gases, as well as to provide clearer links between the effects of PaMs and the projections.

D. Vulnerability assessment, climate change impacts and adaptation measures

46. In its NC4, Germany has provided the required information on expected impacts of climate change on the country and on adaptation options under Article 4, paragraph 1(b) and (e), of the Convention with regard to adaptation.

47. Germany acknowledged that it had difficulty in formulating concluding remarks on the expected impacts of climate change. Nevertheless it presented detailed and comprehensive information on the vulnerability assessments. It has also outlined actions taken to promote adaptation, in particular in the areas of integrated management of coastal areas, water resources and agriculture. The ERT noted that additional information in relation to facilitating adequate adaptation in developing countries, particularly in Africa, might be reported in this chapter in future national communications (in accordance with para. 49 of the UNFCCC reporting guidelines). Table 6 summarizes the information on vulnerability and adaptation to climate change presented in the NC4.

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

Vulnerability area	Examples/comments/adaptation measures reported
Agriculture and food security[align text in this column at the top]	<p>Vulnerability: northward spread of growing areas; more variable yields; changes in the incidence of pest outbreaks and diseases; indirect impacts on products and quality impacts on livestock farming due to impacts on high-grade fodder</p> <p>Adaptation: Changes in growing methods and selection of appropriate crops, adaptation measures based on existing organizations, programmes and legal provisions</p>
Forests	<p>Vulnerability: more frequent droughts that will favour lower-yield tree species; reduction in spruce and beech numbers and the corresponding expansion of pine and oak; increasing risk of forest fires and diseases</p> <p>Adaptation: Replacement of increasingly unstable non-natural coniferous stocks by means of ecological forest conversion</p>
Biodiversity and natural ecosystems	<p>Vulnerability: Trend in northward and eastward spread of species observed; few cases of decline in frequency and distribution of species adapted to cold conditions observed; loss of genetic diversity is expected (5–30% of biodiversity in the coming decades)</p> <p>Adaptation: Conservation and improvement of opportunities for species migration ; adaptation measures for wetlands are suggested</p>
Water resources	<p>Vulnerability: Negative water balance in large parts of Germany may be more frequent; adverse impacts of low water levels and drought on waterway traffic and hydrogeneration</p> <p>Adaptation: sustainable land and water resource management, appropriate flood control and precautionary measures; improvement in short-term forecasts for high and low water</p>
Transport and tourism	<p>Vulnerability: Adverse impacts of windstorms and heavy rainfall on road and rail transport operations and air traffic, of prolonged rainy or dry periods on waterway traffic, and of temperature increases on winter sports in Alpine regions; rising temperatures and less rainfall in summer could tend to favour tourism; seaports and coastal shipping may be affected by the rise in sea levels</p> <p>Adaptation: Appropriate measures in land, sea, rail and air transportation; shifting tourism investments</p>
Human health	<p>Vulnerability: Direct and indirect health impacts depending on socio-economic factors</p> <p>Adaptation: precautionary measures such as improved flood control and improved warning systems; information and education about appropriate behaviour; better heat insulation and cooling of buildings</p>
Coastal zones and marine ecosystems	<p>Vulnerability: increased likelihood of dyke failures due to sea-level rise; loss of agricultural land in areas not enclosed by dykes</p> <p>Adaptation: New coastal protection strategies must take into account the changing demands due to impacts of climate change</p>

48. The ERT noted that substantive suggestions made for the third national communication (NC3) have been taken into consideration regarding this section of the report. The ERT encourages Germany to further report on measures taken to facilitate adequate adaptation to climate change, in particular in relation to Article 4, paragraph 1(e), of the Convention (in accordance with para. 49 of the UNFCCC reporting guidelines).

E. Financial resources and transfer of technology

49. In its NC4, in accordance with Article 12, paragraph 3, of the Convention, Germany has provided details of measures taken to give effect to its commitments under Article 4, paragraphs 3, 4 and 5, of the Convention. Germany has also provided information on assistance given to developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting the costs of adaptation to those adverse effects. Furthermore, Germany has provided information on other financial resources related to the implementation of the Convention provided through bilateral, regional and other multilateral channels. Table 7 summarizes the information on financial resources and technology transfer.

Table 7. Summary of information on financial resources and technology transfer

Official development assistance (ODA)	EUR 11 558.2 million in 1999–2003 Estimations for other years are not available
Climate-related aid in bilateral ODA	EUR 269 979 million 2000–2003 (see tables VII-2, VII-3, VII-4 and VII-5)
Climate-related support programmes	EUR 12.5 million
Contributions to GEF (EUR million)	Contribution to GEF (table VII-1) needs to be clarified
Pledge for the third GEF replenishment	EUR 283.36 million up to 2006
Activities implemented jointly	Amounts not quantified
JI and CDM under the Kyoto Protocol	EUR 3.51 million (See tables VII-10, VII-11, VII-12, VII-13 and VII-14)

Abbreviations: CDM = clean development mechanism, GEF = Global Environment Facility, JI = joint implementation .

50. Germany indicated the “new and additional” financial resources it has provided pursuant to Article 4, paragraph 3, of the Convention. The key information as provided by the Party (summarized in table 7) and main findings of the review team are shown in table VII-1 of the NC4. However, years 2000 and 2003 appear twice and 2002 was missing in the sequence of years. ERT recommends that table VII-1 be reorganized and that its values be revised accordingly.

Transfer of technology

51. In its NC4, Germany has provided details of measures related to the promotion, facilitation and financing of the transfer of, or access to, environmentally sound technologies, and clearly distinguishes between activities undertaken by the public sector and those undertaken by the private sector. It also reports activities related to technology transfer, including success and failure stories, and its activities for financing access by developing countries to ‘hard’ or ‘soft’ environmentally sound technologies. Furthermore, Germany reports on steps taken by federal and state governments to promote, facilitate and finance transfer of technology, and to support development and enhancement of endogenous capacities and technologies of developing countries.

52. The ERT noted that the main substantive elements of this section as provided by the Party are described with a sufficient level of detail and encourages Germany to remove any obstacles to the exchange of technological know-how by regional or global partners, the testing of new innovative technologies and the improvement of information services so that the speed of transfer of technology can be increased. The ERT also encourages Germany to increase the number of projects with developing countries with regard to renewable energy resources.

F. Research and systematic observation

53. Germany has provided information on its actions relating to research and systematic observation, and addressed both domestic and international activities, including the World Climate Programme, the International Geosphere–Biosphere Programme, the Global Climate Observing System and the Intergovernmental Panel on Climate Change. The NC4 also reflects action taken to support related capacity-building in developing countries.

54. The ERT noted that duplication in the NC3 has been corrected in the NC4 and that detailed information about the climate system of Germany is provided. The Federal Ministry of Education and Research remains the main sponsor of climate-related research programmes and continues to promote the integration of German global climate change research into international and European programmes. However, the ERT considers that even though research into the climate system appears to have increased since it was reported on in the NC3, there is still a lack of coordination and cooperation among the non-university and university institutions.

55. In the climate system and variability section of the NC4, more emphasis is given to understanding the Earth as a system, and the climate system in particular, than was given in the NC3. The efforts of the German climate research programme DEKLIM and the Hamburg Max Planck Institute's research on biogeochemistry and chemistry are very important to the understanding of natural climate variability and biological and chemical interactions in the Earth's system, and thus of the uncertainties in the climate system. In the hydrological cycle section, the main projects are described. Since water availability and distribution could become a problem in future, some investigations into river basins have been carried out. Also, in order to understand the influence of large-scale climatic anomalies on climate variability in the Baltic region, the BALTEX project has been initiated. In the section on agriculture and forestry, emissions and sinks for CO₂, CH₄, ammonia and N₂O were assessed. In the marine and polar section, Germany's participation in the core projects on sediments and ice deposits in key areas of the Ocean Drilling Programme and the European Project for Ice Coring in Antarctica was detailed. In the observation systems section, a description of the involvement of German institutions was given.

56. In the climate impacts section of the NC4, the activities of the Potsdam Institute for Climate Impact Research in its work with the British Tyndall Centre for Climate Change Research are mentioned. Brief information about the German ecosystem, socio-ecological/socio-economic, energy, and fusion research programmes was provided. The ERT encourages the Party to give more details of any specific research projects with regard to climate change and to reorganize the content of sections VIII 1 3 and VIII 3 2, to avoid duplication and confusion. The ERT stressed that technology transfer on renewable energy resources is important to combating climate change, and that any related project and activities should be reported in detail.

G. Education, training and public awareness

57. In its NC4, Germany has provided information on its actions relating to education, training and public awareness. The Federal Government's efforts in the 2005 National Climate Protection Programme are focused in particular on the households and transport sectors. International environmental policy has been expanded to include education for sustainable development.

58. Education in sustainable development has been continuing extensively in school and out-of-school education, in initial and further vocational training, in university and further education, in knowledge transfer and in general information and public relations work. The national focal point for education holds and updates the inventory of the numerous climate education activities undertaken at federal, state and local government levels. The ERT recommends that the Party also report on capacity-building and training activities that it is supporting in developing countries.

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

59. Germany's RDP includes five chapters which contain all of the information required by decisions 22/CP.7 and 25/CP.8. The ERT found the information contained in the RDP to be consistent with that provided in the NC4.

60. Since 1990, the inter-ministerial working group on CO₂ reduction has been responsible for coordinating national climate policy through its seven working groups. Between 1990 and 2005, Germany implemented numerous PaMs to reduce GHG emissions, including the Climate Protection Programmes of 2000 and 2005, ecological tax reform between 1990 and 2003, and the promotion of renewable energy. The ERT noted there were at least three separate measures listed in the 2000 and 2005 Climate Protection Programmes targeting emissions from international aviation, but no details were given

on their implementation in the RDP. Germany has also taken significant action to reduce CH₄ emissions from the waste sector by reducing the amount of untreated biodegradable waste deposited in landfills.

61. GHG emissions in all sectors in Germany have decreased since 1990, including in the transport sector. As part of the EU burden-sharing agreement, Germany committed itself to reducing its emissions by 21 per cent in relation to the base year level. According to the 2007 projections provided by Germany at the time of the review, Germany is on track to meet this target. Total emissions in 2010 in the ‘with measures’ scenario are projected to be 940 Tg CO₂ – about 3.4 per cent below the Kyoto Protocol target.

62. The institutional infrastructure necessary for the use of the Kyoto Protocol mechanisms in Germany has been developed as described in the RDP. The Federal Government passed the Project Mechanism Act in 2005, providing a legal basis for the use of the clean development mechanism (CDM) and joint implementation (JI), and designating a national enforcement authority responsible for CDM and JI projects. Germany has elected to account for forest management under Article 3, paragraphs 3 and 4, of the Kyoto Protocol.

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

63. Germany has provided most of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol in its NC4 and RDP, reflecting the steps it has taken 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.

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
Policies and measures in accordance with Article 2	NC4, chapter 4, RDP chapter 2
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	RDP, chapter 2
Information under Article 10	RDP, chapter 5
Financial resources	NC4 chapter 7, RDP chapter 5.5

Abbreviations: NC4 = fourth national communication, RDP = report demonstrating progress.

64. Germany did not report the following elements of the supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol in either the NC4 or the RDP: (a) a description of the national inventory system; (b) a description of the national registry; and (c) information on what efforts Germany is making to implement PaMs in such a way as to minimize the adverse effects, including the effects of climate change, on international trade, and the adverse social, environmental and economic impacts on other Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention. The ERT recommends that Germany include this information in its next national communication.

65. Germany has provided sufficient information on its national inventory system and national registry in its initial report under the Kyoto Protocol submitted on 27 December 2006. The expert review of that report found that Germany’s inventory and national registry were well developed.³

IV. Conclusions

66. On the basis of the information provided in Germany’s NC4 and RDP, as well as additional information provided by Germany in response to questions raised by the ERT during the review, the ERT developed an understanding of the German approach to climate policy and the state of the Party’s

³ FCCC/IRR/2007/DEU.

implementation of its commitments under the Convention and its Kyoto Protocol. The ERT noted that Germany is likely to reach its ambitious emission reduction target under the Kyoto Protocol by means of domestic measures alone.

67. Germany reduced its CO₂ emissions between 1990 and 2006 by 14 per cent and its overall GHG emissions by 17 per cent over the same period. Germany has reduced its emissions in all major sectors, and most of the reductions were achieved between 1990 and 2000.

68. In its NC4 and RDP, Germany has presented GHG projections for the period from 1990 to 2020. Based on this information and on information provided during the review, three scenarios are included in this report: (a) a baseline ('without measures'); (b) 'with measures' (including the effect of currently implemented and adopted PaMs); and (c) 'with additional measures'. The projected reductions in GHG emissions are, in relation to the base year, 16.6 per cent under the baseline scenario, 23.7 per cent under the 'with measures' scenario and 25.0 per cent under the 'with additional measures' scenario. Thus, the projections indicate that Germany can meet its Kyoto Protocol target (a 21 per cent reduction) under the 'with measures' scenario.

69. In the course of the IDR, the ERT formulated a number of recommendations relating to the completeness and transparency of Germany's reporting under the Convention and its Kyoto Protocol. The key recommendations⁴ are that Germany:

- Include in its next national communication an executive summary and the CRF summary trend tables and provide more background information on the structure of industrial production and sectoral emission trends;
- Provide information on types of policy or measure and implementing entity or entities; report on PaMs no longer in place; quantify the estimated effects of PaMs across all sectors (including waste, agriculture and LULUCF) and all gases, and provide clearer links between the effects of PaMs and the projections; and explain significant changes in the effect of PaMs from previous estimates;
- Provide information on projections covering all sectors and all gases, preferably in both tabular and graphic format; and prepare GHG projections relating to fuel sold for use by ships and aircraft engaged in international transport, and include them in its next national communication;
- Report further on the capacity-building and training activities that it is supporting in developing countries;
- Report all elements of the supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol in its next national communication.

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. FCCC/KP/CMP/2005/8/Add.2. 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. FCCC/KP/CMP/2005/8/Add.3. Available at <<http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=51>>.

FCCC/IDR.3/DEU. Report on the in-depth review of the third national communication of Germany. Available at <<http://unfccc.int/resource/docs/idr/deu03.pdf>>.

FCCC/SBI/2007/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/2007/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/2006/DEU. Report of the individual review of the greenhouse gas inventory of Germany submitted in 2006. Available at <<http://unfccc.int/resource/docs/2006/arr/deu.pdf>>.

Fourth national communication of Germany. Available at <<http://unfccc.int/resource/docs/natc/gernc4.pdf>>.

Report demonstrating progress of Germany. Available at <<http://unfccc.int/resource/docs/dpr/deu1.pdf>>.

2008 greenhouse gas inventory submission of Germany. Available at <http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items4303.php>.

B. Additional information provided by the Party

Responses to questions during the review were received from Mr. Georg Maue from the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. The following documents were also provided during the review:

BMU. 2007. *Report for Assessment of the Projected Progress of the Federal Republic of Germany 2007 Pursuant to Implementation of the Kyoto Protocol – Report Pursuant to Article 3 (2)*. Berlin.

BMU. 2007. *Report on implementation of the key elements of an integrated energy and climate programme adopted in the closed meeting of the Cabinet on 23/24 August 2007 in Meseberg*. Available at <http://www.bmu.de/files/pdfs/allgemein/application/pdf/gesamtbericht_iekp_en.pdf>.

RWI. 2008. *Die Klimavorsorgeverpflichtung der Deutschen Wirtschaft: Monitoringbericht 2003–2004*. Essen.
