COMPLIANCE COMMITTEE

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Report of the centralized in-depth review of the fourth national communication of the Czech Republic

Note by the secretariat

The report of the centralized in-depth review of the fourth national communication of the Czech Republic was published on 18 September 2008. For purposes of rule 10, paragraph 2, of the rules of procedure of the Compliance Committee (annex to decision 4/CMP.2), the report is considered received by the secretariat on the same date. This report, FCCC/IDR.4/CZE, contained in the annex to this note, is being forwarded to the Compliance Committee in accordance with section VI, paragraph 3, of the annex to decision 27/CMP.1.

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Report of the centralized in-depth review of the fourth national communication of the Czech Republic

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 the Czech Republic 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. The Czech Republic has been a Party to the Convention since 1993 and to its Kyoto Protocol since 2001. Under the Kyoto Protocol, the Czech Republic committed itself to reducing its greenhouse gas (GHG) emissions by 8 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 the Czech Republic, 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: Ms. Maryse Courchesne (Canada), Ms. Jane Ellis (Organisation for Economic Cooperation and Development), Ms. Fatou Ndeye Gaye (Gambia), Mr. Knut Vrålstad (Norway), Mr. Abdelkrim Ben Mohamed (Niger), Mr. Bhawan Singh (Trinidad and Tobago) and Mr. Vlad Trusca (Romania). Ms. Ellis and Mr. Ben Mohamed 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 the Czech Republic's report demonstrating progress (RDP) in achieving its commitments under the Kyoto Protocol, and the supplementary information provided by the Czech Republic 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 the Czech Republic, which provided comments that were considered, as appropriate, in this final version of the report.

B. Summary

5. The ERT noted that the Czech Republic's NC4 complies in general 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 decisions 22/CP.7 and 25/CP.8, the RDP provides detailed information on the progress made by the Czech Republic in achieving its commitments under the Kyoto Protocol. Some supplementary information under Article 7, paragraph 2, of the Kyoto Protocol[1] is provided in both the NC4 and the RDP.

1. Completeness

6. The ERT noted that the NC4 covers all sections required by the reporting guidelines. The ERT also noted that the Czech Republic has reported in the NC4 some elements of the supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol, but has not reported in the NC4 or the RDP information on its efforts to implement policies and measures (PaMs) in such a way as to minimize adverse effects.

2. Timeliness

7. The NC4 and the RDP were submitted on 3 February 2006. Decision 4/CP.8 requested the submission of the NC4 by 1 January 2006. Decision 22/CP.7 set the same date for Parties to submit their RDPs.

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

3. Transparency

8. The ERT acknowledged that the Czech Republic's NC4 is well structured and concise. The NC4 provides clear information on all aspects of implementation of the Convention. The report is structured 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 the Czech Republic to further increase the transparency of its reporting, such as a recommendation to organize the report on PaMs by sector and by gas, and to clarify the type of policy instruments used. The ERT noted that the information contained in the NC4 and the RDP is consistent.

II. Technical assessment of the reviewed elements

A. National circumstances relevant to greenhouse gas emissions and removals

9. In its NC4, the Czech Republic has provided a description of its national circumstances, as well as information on how these national circumstances affect GHG emissions and removals in the Czech Republic, and how national circumstances and changes in national circumstances affect GHG emissions and removals over time. The ERT encourages the Czech Republic to provide more detailed information on how these national circumstances affect GHG emissions and removals.

10. The ERT noted that the main driver of emission trends in the Czech Republic is the overall development of the economy, which has in turn been driven by the political and economic changes of the early 1990s, the transition to a market economy (including a privatization process, reforms and an increase in foreign investments), and continuous growth of the gross domestic product (GDP). Other drivers of emission trends include demographic developments (an increase in population density and in the number of households), increasing use of road transportation, changes in primary energy use (including a transition to cleaner fuels, the launching into operation of two new nuclear power units and development of renewable energy sources), structural changes in the agriculture sector (a decline in numbers of livestock) and an increase in the annual mean surface temperature in the country, which has led to a decrease in demand for district heating. Table 1 illustrates the national circumstances of the country by providing some indicators relevant to GHG emissions and removals.

11. The Czech Republic has provided a summary of information on GHG emission trends by gas and by sector for the period 1990–2003. This information is consistent with the 2005 national GHG inventory submission. Summary tables, including trend tables for emissions by sector, in carbon dioxide equivalent (CO_2 eq) (given in the common reporting format), are also provided in the NC4. The overall GHG emission trend of the Czech Republic shows a large decline (27.7 per cent) between 1990 and 1999 and a stabilization after 2000.

12. Total GHG emissions excluding emissions and removals from land use, land-use change and forestry (LULUCF) decreased by 23.7 per cent between the base year and 2006, whereas total GHG emissions including net emissions/removals from LULUCF decreased by 23.9 per cent in the same period (see table 2). However, the overall GHG emissions of the Czech Republic increased by 1.7 per cent between 2005 and 2006

Table 1. Indicators relevant to greenhouse gas emissions and removals for the Czech Republic

	GHG emissions (Tg CO_2 eq)				Change 1990–2000 (%)	Change 2000–2006 (%)	Change 1990–2006 (%)
	1990	1995	2000	2006			
Population (million)	10.36	10.33	10.27	10.23	–0.9	–0.4	–1.3
GDP (2000 USD billion using PPP)	146.05	139.164	149.565	182.19	2.4	21.8	24.7
TPES (Mtoe)	48.98	41.09	40.41	46.05	–17.5	14.0	–6.0
GDP per capita (2000 USD thousand using PPP)	14.09	13.47	14.56	17.81	3.3	22.3	26.4
TPES per capita (toe)	4.73	3.98	3.93	4.50	–16.8	14.4	–4.8
GHG emissions without LULUCF (Tg CO_2 eq)	194.24	152.91	146.96	148.20	–24.3	0.8	–23.7
GHG emissions with LULUCF (Tg CO_2 eq)	190.30	145.36	139.59	144.83	–26.6	3.8	–23.9
CO_2 emissions per capita (Mg)	15.81	12.69	12.34	12.50	–22.0	1.3	–20.9
CO_2 emissions per GDP unit (kg per 2000 USD using PPP)	1.12	0.94	0.85	0.70	–24.5	–17.2	–37.4
GHG emissions per capita (Mg CO_2 eq)	18.74	14.80	14.31	14.49	–23.7	1.3	–22.7
GHG emissions per GDP unit (kg CO_2 eq per 2000 USD using PPP)	1.33	1.10	0.98	0.81	–26.1	–17.2	–38.8

Data sources: (1) GHG emissions data: Czech Republic's 2008 inventory submission; (2) Population, GDP: 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.

13. The most important factor in the overall GHG emissions decrease between 1990 and 2006 was the economic restructuring in the early 1990s and associated decline in emissions in the energy sector, which accounts for the largest share of total GHG emissions (82.2 per cent in 2006). An important decline in GHG emissions in the same period also occurred in the agriculture (50.6 per cent of total) and industrial processes (22.7 per cent) sectors. The most important GHG in the Czech Republic is CO_2, which accounted for 84.4 per cent of the total GHG emissions in the base year and 86.3 per cent in 2006 (excluding LULUCF). Considering the trends by gas over the period 1990–2006, CO_2 emissions decreased by 21.9 per cent, methane (CH_4) emissions by 35.4 per cent and nitrous oxide (N_2O) emissions by 37.7 per cent. Emissions of perfluorocarbons, hydrofluorocarbons and sulphur hexafluoride taken together (hereinafter referred to as fluorinated gases) accounted for 0.04 per cent of total GHG emissions in 1990 and 0.7 per cent in 2006. Table 2 provides an overview of GHG emissions by sector from the base year to 2006 (see also discussion of sectoral trends in chapter II B).

B. Policies and measures

14. As required by the UNFCCC reporting guidelines, the Czech Republic has provided in its NC4 information on its package of PaMs implemented, adopted and planned in order to fulfil its commitments under the Convention and its Kyoto Protocol. The Czech Republic 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 Czech Republic did not provide the following reporting elements required by the UNFCCC reporting guidelines: information on PaMs adopted to implement commitments under Article 4, paragraph 2(a) and (b), of the Convention, organized by sector, subdivided by GHG (UNFCCC reporting guidelines, para. 17); a textual description of the principal PaMs by sector, as set out in section D of the UNFCCC reporting guidelines; and summary tables on PaMs by sector. For some PaMs described, the type or types of policy or measure are not clearly identified.

15. PaMs to mitigate GHG emissions in the Czech Republic focus on energy-related emissions of CO_2, reflecting the importance of these emissions in the national inventory. These PaMs include those developed at the national level, as well as those reflecting European Union (EU)-wide policies. Table 3 provides a summary of the reported information on the PaMs of the Czech Republic.

Table 2. Greenhouse gas emissions by sector in the Czech Republic, 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	156.23	125.52	121.43	120.70	121.78	–22.1	0.9	80.4	82.2
A1. Energy industries	57.97	56.88	59.89	57.54	56.90	–1.8	–1.1	29.8	38.4
A2. Manufacturing industries and construction	46.89	32.96	28.36	26.83	27.91	–40.5	4.0	24.1	18.8
A3. Transport	7.45	9.75	12.61	17.85	18.20	144.2	2.0	3.8	12.3
A4.–A5. Other	35.43	19.45	14.86	13.15	13.12	–63.0	–0.2	18.2	8.9
B. Fugitive emissions	8.50	6.48	5.71	5.33	5.65	–33.5	6.1	4.4	3.8
2. Industrial processes	19.13	14.02	13.32	13.38	14.79	–22.7	10.5	9.8	10.0
3. Solvent and other product use	0.76	0.60	0.57	0.51	0.51	–32.9	–0.2	0.4	0.3
4. Agriculture	15.47	9.58	8.39	7.74	7.64	–50.6	–1.2	8.0	5.2
5. LULUCF	–3.95	–7.55	–7.36	–6.42	–3.37	–14.5	–47.5	–2.0	–2.3
6. Waste	2.65	3.19	3.25	3.42	3.48	31.3	1.8	1.4	2.3
GHG total with LULUCF	190.30	145.36	139.59	139.33	144.83	–23.9	3.9	98.0	97.7
GHG total without LULUCF	194.24	152.91	146.96	145.75	148.20	–23.7	1.7	100.0	100.0

Abbreviations: GHG = greenhouse gas, LULUCF = land use, land-use change and forestry.

Notes: 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.

1. Policy framework and cross-sectoral measures

16. The Czech Ministry of the Environment coordinates the Czech Republic's implementation of the Convention and its Kyoto Protocol; implements some of the country's national climate change policies and actions under the Kyoto Protocol's flexibility mechanisms (principally emissions trading and joint implementation (JI)); coordinates research and development; and oversees links between Czech national and regional environmental programmes. Other ministries are involved in implementing different elements of the climate change policies. Subnational (territorial) energy policies also support the use of renewable energy sources and increased energy efficiency.

17. The National Programme to Mitigate the Impacts of Climate Change (2004) (hereinafter referred to as the National Programme) provides the framework for Czech national policy on climate change by defining national targets, for example, for reducing energy intensity or for increasing the use of renewable energy sources. This National Programme is defined by the national legislation on air protection (Act No. 86/2002). The Integrated National Programme to Reduce Emissions, approved in 2004, is based on Act No. 86/2002 and is also in accordance with the National Programme. Government funding of 581 million Czech koruny (USD 36 million) between 2004 and 2006 was allocated to implementing associated measures.

18. The National Programme is expected to bring about significant GHG reductions. Under the National Programme, the Government requires different ministries as well as the Vice-Premier to submit information on the implementation and effects of the PaMs under the National Programme by 2008. In response to a request of the ERT, the Czech Republic informed the team that the evaluation of the Programme has indicated good progress in implementing PaMs and some areas for further improvement. It also noted that the National Programme will be replaced by a new Climate Change Protection Policy by September 2008. This policy will include mitigation and adaptation measures such as the programme on transport to implement EU emission standards, the Multifunctional Agriculture and Rural Development Operation Programme, the Operational Programme on the Environment and the Green Investment Scheme according to Article 17 of the Kyoto Protocol.

Table 3. Summary of information on policies and measures

Major policies and measures	Examples/comments
Framework policies and cross-sectoral measures	
Integrated climate programme	The National Programme to Mitigate the Impacts of Climate Change (2004); the National Programme of Sound Energy Management and Use of Renewable and Secondary Energy Sources; the State Environment Policy (2004); the State Energy Conception of the Czech Republic (2004); the Strategy of Sustainable Development (2004); the Energy Management Act (2001); the Clean Air Act.
Energy/electricity/emissions taxation	Preferential purchase tariffs for electricity produced from renewable sources; environmental tax reform for the taxation of energy products and electricity.
European Union (EU) climate policy	Harmonization with EU legislation through the Act on Integrated Planning, Packaging and Waste.
Emissions trading	National Allocation Plan, Act No. 695/2004 Coll.; Decree No. 6962004 Coll. stipulates the procedure for determining, reporting and verifying greenhouse gas emissions.
Policies and measures by sector	
Energy	
Combined heat and power generation	Programmes of the State Environmental Fund of the Czech Republic.
Renewable energy sources	Increasing total consumption of renewable energy sources from 2.7% in 2000 to 11.3% in 2010 and 12.9% in 2020; increase in use of biomass from 40% of total consumption from secondary and renewable energy sources in 2000 to 75% in 2020; double the use of other renewable energy sources by 2010.
Energy efficiency improvements	Obligatory energy audits for buildings and energy management; implementation of directives on the energy performance of buildings and cogeneration; efficient lighting initiative; support for the reconstruction and restoration of panel buildings.
Transport	
Vehicle and fuel taxes	Charging fees for parking and entering selected areas.
Agreements/partnerships	European Commission (EC) agreements: European Automobile Manufacturers' Association (ACEA) (1999), Korean Automobile Manufacturers' Association (KAMA) (2000), Japanese Automobile Manufacturers' Association (JAMA) (2000).
Public and non-road transport	Initiatives for reducing congestion on roads and creating conditions for the regulation of individual automobile transportation (reduction of traffic flows, creation of low-traffic areas, etc.); aim to equip 99% of motor vehicles with catalysers by 2013; programme of support for renewal of the vehicles of urban mass transport and public transport..
Integrated transport planning	Transport Policy of the Czech Republic for 2005–2013; support for reduction in transport intensity; implementation of the EC directive on biofuels; the National Cycling Strategy.
Industrial processes	
Pollution prevention and control	Implementation of EC directive 96/61/EC concerning integrated pollution prevention and control.
Waste management	EC directive 99/31/EC on the landfill of waste; Waste Management Act (1990, Technical standard CSN 83 8034), Waste Landfilling - Degasification of Landfills.

19. Other important framework policies at the national level mentioned in the NC4 include the State Environmental Policy 2004–2010, which is designed to be compatible with the Sixth Environmental Action Programme of the European Commission. The National Programme of Sound Energy Management and Use of Renewable and Secondary Energy Sources (implemented by the Ministry of Environment and Ministry of Trade and Industry) is also outlined in the NC4. This has subsequently been partially superseded by the Action Plan on Energy Efficiency. The NC4 also indicates that environmental tax reform is being considered. This was subsequently approved by the Government and has been in force since January 2008.

20. Implementing EU-wide climate change policies, and/or aiming to improve performance to reach EU standards in different areas, plays an important role in Czech environmental policy. For example, the Infrastructure Operational Programme covers 15–75 per cent of the cost of projects in different areas (transport infrastructure, use of renewable energy and wastewater treatment plants). The Czech Republic is also implementing the EU emissions trading scheme (EU ETS), the EC directive on biofuels in transport, and EU legislation in the area of waste management and packaging management. It has also partially implemented the EC directive on cogeneration.

21. The ERT encourages the Czech Republic to provide in its next national communication information on GHG emissions associated with international bunkers, as well as to specify the status of implementation of the type of PaMs employed.

2. Policies and measures in the energy sector

22. Between 1990 and 2006, GHG emissions from the energy sector decreased by 22.1 per cent (34.5 Tg), driven by a 63.0 per cent reduction in emissions from the category "Other" (22.3 Tg) – mainly in the areas of residential and commercial buildings and appliances – and a 40.5 per cent reduction in emissions from the industrial and construction sector (19.0 Tg). Transport sector emissions, on the other hand, experienced a 44.3 per cent increase (10.7 Tg). Between 1990 and 2003, energy consumption dropped by 13.4 per cent and domestic energy production dropped even more (by 28.7 per cent). Together with fuel switching from coal to petroleum and natural gas, this reduction of emissions from energy consumption is responsible for the large reduction in emissions from energy use in the industrial, commercial and residential sectors.

23. The NC4 reports on a number of PaMs in the energy sector. The State Energy Conception is an overarching policy document that sets out the main priorities for, inter alia, energy efficiency and renewable energy. Indicative targets are presented for reduced overall energy intensity, lower CO_2 emissions from energy industries, increased use of renewable energy sources, including use of biomass. The transport policy for 2005–2013 was adopted in the form of a government resolution in 2005, and formulates the top priority cross-sectional tasks for meeting environmental targets for the transport sector. Tasks include reducing transport intensity, reducing congestion and research and development measures. The ERT noted that PaMs are not reported under sector headings in the NC4, and that either many of the reported PaMs target more than one sector, or several of the PaMs seem to include the same activity. This renders the task of attributing and analysing the efforts and effects of the PaMs difficult.

24. ***Energy industries.*** The Energy Act, adopted in 2000, establishes the right to preferential access to the energy networks for renewable energy sources as well as combined heat and power plants. The Act on the Promotion of the Use of Renewable Energy Sources (2005) further establishes a purchase obligation for all renewable energy for the systems operators and a system for favourable purchase prices, as well as providing for a 15-year guaranteed minimum purchase price for renewable energy. These acts are supplemented by support programmes to reach the overall policy objectives. These include the State Programme to Promote Energy Savings and Use of Renewable Energy, the Industry and Business Operational Programme and the National Programme of Sound Energy Management and Use of Renewable and Secondary Energy Sources for 2006–2009. Responding to a question from the ERT, the Czech Republic indicated that the National Programme of Sound Energy Management and Use of Renewable and Secondary Energy Sources for 2006–2009 has since been cancelled, but that a new programme has been developed – the Governmental Programme for Energy Conservation and the Utilisation of Renewable Energy Sources. This programme includes financial support to install heating boilers, solar heating systems, biomass boilers and heating pumps. It is estimated that CO_2 emissions were reduced by 8,196 tonnes in 2006 as a result of this programme. A summary of measures with estimated abatement effects in 2005 and 2010, presented in table 4.1 of the NC4, indicates an estimated total reduction of 21,364 tonnes CO_2 eq in 2010. The European Environmental Agency (2007) has updated this information (see table 5 below), and estimates the total effect of measures in 2010 at 1.8 million tonnes CO_2 eq, or 6 million tonnes CO_2 eq with additional measures.

25. ***Energy efficiency.*** The Energy Management Act (2000) provides the legal basis for the main support programmes directed at improved efficiency in energy consumption, and also specifies compulsory measures for increasing the economy of energy use. The Act on Integrated Pollution Prevention and Control provides the legal framework for a system of pollution permits, which specifies conditions of operation for industrial installations. The permits can specify emission limits, measures to be taken and conditions for sound use of materials and energy. Support programmes for energy efficiency include the State Programme to Promote Energy Savings and Use of Renewable Energy, the Initiative for Energy-Saving Lighting, the Industry and Business Operational Programme and various programmes for the building sector.

26. ***Transport sector.*** PaMs for the transport sector are covered by several of the general programmes that address energy efficiency and renewable energy. There are separate initiatives for biofuels, through the implementation of the EU directive 2003/30/EC on the promotion of the use of biofuels and other renewable fuels for transport, through the introduction of European emissions standards in the Czech transport sector. There is also a programme aimed at promoting the use of public transport by supporting the modernizing of the public transport fleet.

27. The ERT recommends that the Czech Republic report PaMs for the energy sector in a single section in future national communications, and organize its reporting by gas. The ERT encourages the Czech Republic to report on PaMs influencing GHG emissions from international transportation in its next national communication.

3. Policies and measures in other sectors

28. The reported PaMs from the non-energy sector in the NC4 address primarily GHG emissions from the waste and agriculture sectors. According to the 2008 GHG inventory submission, between 1990 and 2006, GHG emissions from the non-energy sector decreased by 30.5 per cent (38.0 to 26.4 Tg CO_2 eq, excluding LULUCF).

29. ***Industrial processes.*** GHG emissions from industrial processes declined by 22.7 per cent between 1990 and 2006. The ERT noted that PaMs for this sector were mentioned under measures to prevent the risk of pollution of the environment, and are implemented and promoted under the framework of the subprogrammes of the State Programme to Promote Energy Savings and the Use of Renewable Energy Sources.

30. ***Waste.*** Emissions from the waste sector increased by 31.3 per cent between 1990 and 2006. However, two acts harmonize the national legislation with EU legislation in the area of waste management and packaging management, and the reduction of GHG emissions is a side effect of this harmonization. The ERT was informed of implementation of these acts through measures aiming at reducing the disposal of biodegradable municipal waste in landfills and promotion of recycling of materials and consequently at reducing in GHG emissions.

31. ***Agriculture and forestry.*** The NC4 describes programmes in the agriculture sector, which include land-use planning, support for afforestation of unused agricultural land, and adaptation measures, such as non-ploughing seeding procedures and construction of irrigation systems. The ERT noted that the adopted measures that support afforestation of unused agricultural land will have the dual effect of reducing emissions of CO_2, CH_4 and N_2O (in agriculture) and increasing the availability of CO_2 sinks (in forest management).

32. The ERT noted that, in addition to the description of the PaMs for the non-energy sector, the NC4 contains information about the expected effects of these PaMs up to 2010. The ERT also noted that some measures address the protection of sinks and reservoirs. The Czech Republic may wish to further strengthen those PaMs which have the most significant GHG mitigation effect.

C. Projections and the total effect of policies and measures

1. Projections

33. The GHG emission projections provided by the Czech Republic in the NC4 include a 'with measures', a 'with additional measures' and a 'without measures' scenario until 2020, and are presented relative to actual inventory data for 2003. Projections are presented on a sectoral basis, and on a gas-by-gas basis for the following GHGs: CO_2, CH_4, N_2O, and the fluorinated gases. In addition, projections were provided in an aggregated format for each sector as well as for a national total, using global warming potential values. However, the ERT noted that the Czech Republic did not provide

separate projections related to emissions from fuel sold to ships and aircraft engaged in international transport.

34. The methodology used to produce the projections of the NC4, is essentially the same as that employed for the Czech Republic's third national communication. Assumptions used to estimate the GHG projections by sector are clearly presented. Prices in 2010 were projected for petroleum (CZK 157 per GJ), natural gas (110), black coal (48) and electricity (360). The population was estimated by the Czech Statistical Office and the economic growth scenario was prepared by the company EGÚ Brno.

35. The ERT noted that since the NC4 was submitted, these projections have been updated and published by the European Environment Agency (2007). The ERT appreciates the provision by the Czech Republic of the updated projections and background data to substantiate them. Table 4 and the figure below provide a summary of GHG emission projections for the Czech Republic.

Table 4. Summary of greenhouse gas projections for the Czech Republic

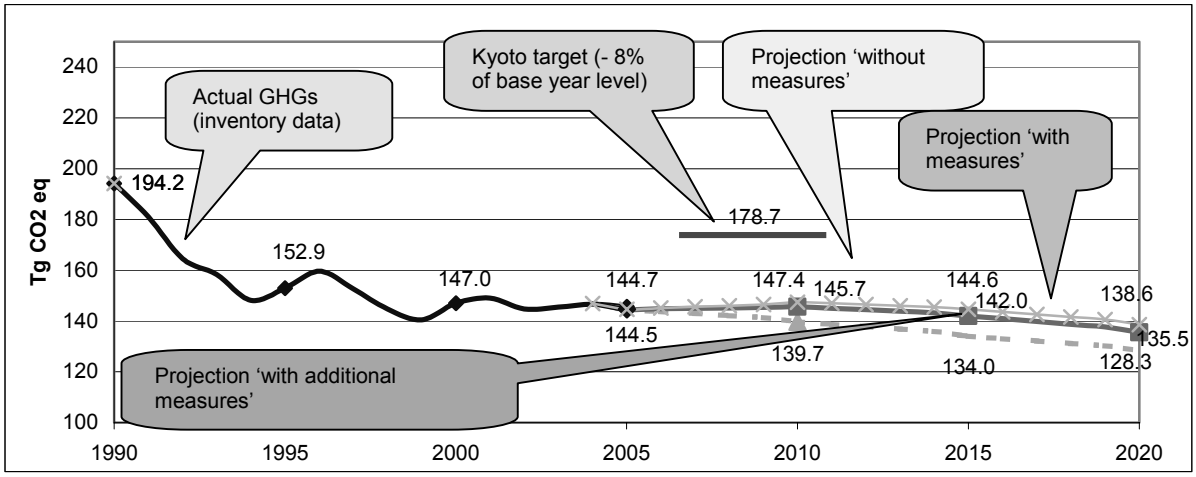
	Greenhouse gas emissions (Tg CO_2 eq per year)	Changes in relation to base year level (%)
Inventory data 1990[a]	194.24	-
Inventory data 2006[a]	148.20	–23.7
Kyoto Protocol base year[b]	194.25	-
Kyoto Protocol target[b]	178.70	–8.0
'With measures' projections for 2010[c]	145.66	–25.0
'With additional measures' projections for 2010[c]	139.68	–28.1

[a] Data source: The Czech Republic's 2008 greenhouse gas inventory submission; the emissions are without land use, land-use change and forestry.
[b] Data source: "Report of the review of the initial report of the Czech Republic" contained in document FCCC/IRR/2007/CZE).
[c] Data sources: (1) European Environment Agency. 2007. *Greenhouse Gas Emission Trends and Projections in Europe 2007 – Country Profile: The Czech Republic*; (2) the updated projections provided by the Czech Republic in response to a request from the expert review team during the in-depth review.

36. The projected 2010 emissions of the Czech Republic are significantly below its Kyoto target (178.7 Tg CO_2 eq). The Czech Republic expects to emit 48.6 Tg CO_2 eq less than its Kyoto Protocol base year emissions under a 'with measures' scenario, and 54.6 Tg CO_2 eq less under the 'with additional measures' scenario. The figure below presents the trends of the 'with measures', 'with additional measures' and 'without measures' scenarios. The 'without measures' scenario presents a projection of 147.4 Tg CO_2 eq in 2010. This shows that the Czech Republic can meet its target under the Kyoto Protocol without implementing any further GHG mitigation measures.

37. The ERT noted that the base year emissions were not presented in the tables of emission projections for the different scenarios in the NC4. In its next national communication, the Czech Republic may wish, for transparency reasons, to include the base year emissions when reporting projections.

Greenhouse gas emission projections



Data source: European Environment Agency. 2007. *Greenhouse Gas Emission Trends and Projections in Europe 2007 – Country Profile: The Czech Republic*; the emissions are without land use, land-use change and forestry.

2. Total effect of policies and measures

38. In the NC4, the Czech Republic presents the estimated and expected total effect of implemented and adopted PaMs in accordance with the 'with measures' definition, compared with a scenario without such PaMs, presented in terms of GHG emissions avoided or sequestered, by gas (on a CO_2 eq basis), in 2003, 2005, 2010, 2015 and 2020. It also presents relevant information on factors and activities for each sector for the years 1990 to 2020. However, the ERT noted that the Czech Republic did not provide the following reporting elements required by the UNFCCC reporting guidelines: an estimate of the total effect of thePaMs in accordance with the 'with measures' definition, compared with a situation without such policies and measures, presented in terms of GHG emissions avoided or sequestered, by gas (on a CO_2 eq basis), for the years 1995 and 2000. Table 5 provides an overview of the total effect of PaMs as reported by the Czech Republic.

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)	1.8	1.2	5.9	3.9
Transport - CO_2	0	NA	0.1	1.3
Industrial processes	0	NA	0	0
Agriculture	0	NA	0	0
Waste management	0	NA	0	0
Total	**1.8**	**0.9**	**6.0**	**3.1**

Data source: European Environment Agency. 2007. *Greenhouse Gas Emission Trends and Projections in Europe 2007– Country Profile: The Czech Republic*.
Abbreviation: NA = not applicable.
Note: The total effect of implemented and adopted policies and measures (PaMs) is defined as the difference between the 'without measures' and 'with measures' scenarios; the total effect of planned PaMs is defined as the difference between the 'with measures' and 'with additional measures' scenarios.

39. The projections of the total effect of PaMs provided by the Czech Republic suggest that the implemented and adopted measures will reduce the 2010 emissions by 1.8 Tg CO_2 eq, which will result entirely from the measures implemented in the energy sector. The reduction effect of planned measures would reduce emissions by an additional 6.0 Tg CO_2 eq, of which 0.1 Tg CO_2 eq is the contribution of

measures in the transport sector and the remainder is the contribution of measures planned in the energy sector. The ERT recommends that the Czech Republic report emissions projections related to fuel sold to ships and aircraft engaged in international transport separately, and not include them in the totals. If this information is not available, the ERT encourages the Czech Republic to mention this in its report. The ERT also recommends that it present an estimate of the total effect of PaMs, taking into account the 'with measures' and 'without the measures' scenarios by gas for 1995 and 2000. The ERT also encourages the Czech Republic to include data from the base year (1990) when presenting emissions projections for the different scenarios in a tabular format.

D. Vulnerability assessment, climate change impacts and adaptation measures

40. In its NC4 the Czech Republic has provided very detailed and comprehensive information on the expected impacts, vulnerability estimates and adaptation measures in relation to climate change for key sectors, including water resources, agriculture and forest management and, to a limited extent, human health. The ERT noted that the production and consumption of drinking water has already decreased by about 33 per cent over the past decade, and that droughts have become more frequent in recent years owing to slight decreases in total precipitation and increased evapotranspiration.

41. The Party used an array of well-known climate scenarios, coupled with biophysical and statistical process models, simple economic models, empirical analogues and expert judgement, to evaluate the potential impacts and vulnerabilities to climate change. As for expected impacts, the ERT noted a decrease in surface and sub-surface water discharge, a greater frequency of floods, an increase in the number of warmer days and a decrease in frost days. It also noted an increased degree of risk for single-species spruce forests. Table 6 summarizes the information on vulnerability and adaptation to climate change presented in the NC4.

42. Serious negative impacts are expected in the investigated sectors owing to the projected warmer climate in the Czech Republic. The ERT commends the Czech Republic's work on scenario development, and encourages it to elaborate more on specific measures for adaptation in the key sectors of vulnerability and adaptation in its next national communication.

E. Financial resources and transfer of technology

1. Financial resources

43. The Czech Republic is not included in Annex II to the Convention, and hence it is not required to provide financial resources to assist developing countries in complying with their obligations under the Convention. Nevertheless, it has reported information on the plans for foreign development assistance for 2005–2007, the total amount of finance provided for official development assistance (ODA) since 2003, and its plans to allocate 0.11 per cent of GDP to ODA by 2008. This reflects the Czech Republic's adoption of the EU principles of foreign development cooperation.

44. The Czech Republic has provided information on its foreign development assistance provided to more than 40 countries. It reported that in 2006 its bilateral cooperation was to be centred on "multi-annual projects in several developing countries" with high priority sectors. The ERT noted that the Czech Republic has provided a detailed report on multilateral cooperation and has indicated its contributions to the United Nations system, the World Bank and the International Monetary Fund. The Czech Republic has also reported, using the methodology of the Organisation for Economic Co-operation and Development, contributions made to the United Nations and other international organizations between 2001 and 2003 that included ODA.

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

Vulnerable area	Examples/comments/adaptation measures reported
Water resources	***Vulnerability***: Very substantial change in the annual distribution of outflow; spring peak discharge of most rivers occurs about two months earlier on average; a greater reduction in water levels in summer and autumn; a shortening of the winter stratification and ice coverage periods; an increase in surface water temperature in summer; warmer water temperatures, leading to higher biological oxygen demand levels and health risk of aquatic communities. ***Adaptation***: Two groups of measures: those currently defined as part of the environmental policy of the Czech Republic, which are concerned with providing for sustainable development and are necessary regardless of any expected climate change; and adaptation measures that supplement the first group in that they constitute modifications taking into account a change in climatic conditions in the Czech Republic.
Agriculture	***Vulnerability***: An increase in extreme weather conditions, causing flooding or extended droughts; an increase in days when temperature is higher and a decrease in frost days; an earlier start and a later end to the growing season; phenology, rate of crop maturation and yield changes; risks from early and late frosts; thermophilic crop species; heat stress for other crops; increased risk of drought; effect on harvest yields; development and multiplication of pests and diseases; chemical input, leading in turn to higher costs and risks to the environment. ***Adaptation***: Protection against erosion and other negative effects caused by cultivation (compacting, reduction of fertilization with organic fertilizers); change in the composition of species of agricultural crops cultivated and farm animals raised; agrotechnical procedures that minimize the loss of soil moisture; action to reduce the risk of erosion processes as a consequence of flash storms and strong winds; irrigation management, using processes such as micro-irrigation.
Forestry management	***Vulnerability***: Forests affected especially through increasing temperatures and increasing CO_2 concentrations; air pollution effects; increase in the degree of risk, especially for single-species spruce forests and lower altitude broad-leaved species; increased presence of pathogens; high pollutant deposition; weakened forest stands less resistant to the detrimental effects of extreme climatic conditions: drought, extreme temperatures, wind and snow. ***Adaptation***: Gradually changing the current species composition of forest stands through a greater proportion of broad-leaved species; adoption of effective economic and legislative instruments for achieving targets: better means of management, sounder technologies and integrated forest protection, control of the spreading of detrimental factors from more southerly areas (stricter quarantine regulations) and an increase in awareness of the environmental functions of forests and of the forest as a CO_2 sink.
Human health	***Vulnerability***: Mainly caused by impacts on water quality and transportation. ***Adaptation***: The National Programme to Mitigate the Impacts of Climate Change and its measures for the water management sector, and the Transport Policy for 2005–2013.

2. Transfer of technology

45. The Czech Republic is not an Annex II Party and so is not bound by the commitments relating to the provision of financial resources and the promotion of technology transfer to developing countries, as defined in Article 4, paragraphs 3–5, of the Convention. The ERT commended the Czech Republic for its support to a number of developing countries, including least developed countries, and encourages the Czech Republic to continue on this path, since it has plans for a steady increase in ODA until 2015.

F. Research and systematic observation

46. The Czech Republic provides detailed information on its actions relating to research and systematic observation. The ERT noted that attention is given to international cooperation and exchange of scientific, technological and socio-economic information. Information is also provided on international cooperation in the research of the climate system, including support for developing countries.

47. In addition to participating in the activities of the World Meteorological Organization (WMO) and the United Nations Environment Programme, the Czech Republic cooperates on a number of international projects concerned with the climate, such as the RC LACE (model ARPEGE-CLIMAT) project. The Czech Republic also actively participates in international projects concerned with modelling the climate, determining the uncertainty of climate change and estimating the impacts of

climate change, such as the PRUDENCE, SOLICE, MAGMA, QUANTIFY and ENSEMBLES projects. The ERT noted that the Czech Republic also regularly provides assistance to developing countries for training activities and offers assistance in the installation and calibration of instruments (e.g. for monitoring of the ozone layer).

48. Systematic observation of the climate system is performed by the Czech Hydrometeorological Institute, which acts as the state institute in the areas of air quality, hydrology, water quality, climatology and meteorology with the responsibility to establish and operate the state monitoring and observation network, including international exchange of data according to the principles of the WMO. The ERT noted that the Czech Republic participates in the Global Climate Observing System (GCOS), in the network of GCOS Surface Network ground-level stations and in the Global Atmosphere Watch network, following the climate monitoring principles set forth by GCOS, the Global Ocean Observing System, and the Global Terrestrial Observing System.

G. Education, training and public awareness

49. In the NC4, the Czech Republic has provided a detailed report on the state environment policy (2004), which is cross-cutting and includes climate change issues. The targets and measures envisaged in this policy include the creation of an interconnected system of environmental education, enlightenment and awareness.

50. The National Programme for the Development of Education in the Czech Republic (known as the White Book) stipulates education principles for students between the ages of 3 and 19. In 2005, an act on pre-school, elementary, secondary, higher vocational and other forms of education came into effect. The Czech Republic also reported the training of employees of the state administration in environmental education. It indicated that raising awareness of climate change is primarily achieved via regular workshops and publications.

51. The Ministry of the Environment publishes a number of publications, periodicals and other training material, and its professional staff serve as training instructors. It further provides information in the media and supports training institutions such as the network of environmental education centres, the network of environmental consulting centres and the European Association of Environmental Studies. The Ministry facilitates free public access to information on climate change via its website.

52. Non-governmental organizations are involved in many areas of environmental education. Civil society, students, children and parents participate and are involved in the decision-making process. Resource centres assist in the production and presentation of materials which aim to raise awareness of environmental issues. The ERT noted that the Czech Republic also reported on its international cooperation in environmental education and awareness raising.

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

53. The Czech Republic's RDP includes five chapters, which contain all the information required by decisions 22/CP.7 and 25/CP.8. The ERT noted that the Czech Republic's RDP includes detailed information regarding: domestic measures, including legal and institutional steps for implementing commitments under the Kyoto Protocol to mitigate GHG emissions and programmes for domestic compliance and enforcement; trends in, and projections of, GHG emissions; evaluation of the contribution of domestic measures, in light of the trends and projections, to meeting the Czech Republic's commitments under the Kyoto Protocol; and activities, actions and programmes undertaken by the Czech Republic 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. These two reports are contained in a single document.

54. The Czech Republic's total GHG emissions excluding the LULUCF sector in 2006 were 23.7 per cent lower than the base year emissions. Based on the projections presented in the RDP, the Czech Republic expects to meet its GHG emissions reduction target under the Kyoto Protocol under both 'without measures' and 'with measures' scenarios.

55. The Czech Republic has actively participated as a host country of JI projects under the Kyoto Protocol. Taking into account the projected level of GHG emissions in the first commitment period, the Party is considering participating in international emissions trading. The Czech Republic is not planning to participate as an investing country in project-based flexible mechanisms, so information on supplementarity regarding the use of flexible mechanisms is not required.

56. In its RDP, the Czech Republic presented activities envisaged for estimating GHG emissions and removals by sinks from the LULUCF sector. The ERT encourages the Czech Republic to provide more information regarding LULUCF activities under the Kyoto Protocol in its next national communication. The ERT noted that the Czech Republic has made significant progress in preparing to achieve the GHG emissions reduction commitments under the Kyoto Protocol.

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

57. The Czech Republic has provided some 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 the Czech Republic to implement the relevant provisions of the Kyoto Protocol. The supplementary information is placed in different sections of the NC4 and RDP. Table 7 provides references to the NC4 and RDP chapters in which supplementary information is provided.

Table 7. 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	NA (the Czech Republic is not planning to participate in flexible mechanisms as an investing country)
Policies and measures in accordance with Article 2	NC4, chapter 4, pp. 30–49 NC4, annex, chapter 4, p. 79 RDP, chapter 2, pp. 85–90
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	NC4, chapter 4, pp. 30–36 NC4 annex, chapter 5, pp. 79–81 RDP, chapter 2, pp. 85–88
Information under Article 10	NC4, chapter 7, pp. 68–69 NC4 annex, chapters 6 and 7, pp. 81–84 RDP, chapter 5, pp. 95–98
Financial resources[a]	NA (the Czech Republic is not included in Annex II to the Convention)

Abbreviations: NA = not applicable, NC4 = fourth national communication, RDP = report demonstrating progress.
[a] As a country with an economy in transition, the Czech Republic is not required to report on the implementation of Article 11 of the Kyoto Protocol, including on the provision of new and additional resources.

58. The Czech Republic has not reported its efforts 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, and information on activities to limit GHG emissions from international aviation and marine bunker fuels. The ERT recommends that the Czech Republic include these reporting elements in its next national communication.

59. In the NC4 and the RDP, the Czech Republic has provided a limited description of its national inventory system, national registry system, and national legislative arrangements and administrative

procedures relating to the implementation of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol. The initial review under the Kyoto Protocol concluded that the national system meets the requirements for the implementation of general and specific functions and that the national registry is fully compliant with the registry requirements.[2] The ERT took note of these conclusions.

IV. Conclusions

60. In the Czech Republic, total GHG emissions excluding emissions and removals from LULUCF decreased by 23.7 per cent between the base year and 2006, and total GHG emissions including net emissions/removals from LULUCF decreased by 23.9 per cent during the same period. The overall GHG emissions of the Czech Republic increased by 1.7 per cent in 2005–2006. The most important factor in the overall GHG emissions decrease between 1990 and 2006 was the decline in emissions in the energy sector.

61. In the NC4 and the RDP, the GHG emission projections provided by the Czech Republic include a 'with measures', a 'with additional measures' and a 'without measures' scenario until 2020, and are presented relative to actual inventory data for 2003. Projections were presented by sector and by gas. The ERT noted that the Czech Republic is expecting to emit below its target level under the Kyoto Protocol under both 'with measures' and 'without any measures' scenarios. The ERT commends the Czech Republic for its voluntary support to a number of developing countries, including least developed countries.

62. In the course of the IDR, the ERT formulated a number of recommendations relating to the completeness and transparency of the Czech Republic's reporting under the Convention and its Kyoto Protocol. The key recommendations[3] are that the Czech Republic:

- Organize information on PaMs by sector and by gas and provide a summary table;
- Present an estimate of the total effect of PaMs, taking into account the 'with measures' and 'without measures' scenarios by gas for 1995 and 2000;
- Include the information on its efforts 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, and information on activities to limit GHG emissions from international aviation and marine bunker fuels;
- Include the description of its national inventory system, the description of its national registry system, and the description of its national legislative arrangements and administrative procedures relating to the implementation of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol.

63. The ERT also encourages the Czech Republic to provide more detailed information on how national circumstances affect GHG emissions and removals; to clarify the status of implementation of PaMs; to provide more information on PaMs related to LULUCF; and to present base year data together with projected emissions.

[2] FCCC/IRR/2007/CZE.
[3] 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/CZE. Report on the in-depth review of the third national communication of the Czech Republic. Available at <http://unfccc.int/resource/docs/idr/cze03.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/2006/CZE. Report of the individual review of the greenhouse gas inventory of the Czech Republic submitted in 2006. Available at <http://unfccc.int/resource/docs/2007/arr/cze.pdf>.

FCCC/IRR/2007/CZE. Report of the review of the initial report of the Czech Republic. Available at <http://unfccc.int/resource/docs/2007/irr/cze.pdf>.

Fourth national communication and report demonstrating progress of the Czech Republic. Available at <http://unfccc.int/resource/docs/natc/czenc4.pdf>.

2008 greenhouse gas inventory submission of the Czech Republic. Available at <http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/4303.php>.

European Environment Agency. 2007. *Greenhouse Gas Emission Trends and Projections in Europe 2007 – Country Profile: The Czech Republic*. Available at <http://reports.eea.europa.eu/eea_report_2007_5/en>.

B. Additional information provided by the Czech Republic

Responses to questions during the review were received from Mr. Pavel Zámyslický (Ministry of Environment of the Czech Republic), including additional material on policies and measures (PaMs), in particular in the areas of energy industries, international aviation, transport, industrial processes (fluorinated gases) and waste. Mr. Zámyslický also provided a recent estimate of the mitigation effect of the PaMs and projections and a description of the national system for inventory preparation and the national registry.

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