Czech Republic

Contents

Figures and tables

1. SOURCES OF INFORMATION

Czech Republic submission to the European Commission under the Monitoring Mechanism, Decision 280/2004/EC. Submitted March 2007.

Czech Republic National Allocation Plan for 2008-2012, submitted 8 December 2006.

The European Community's initial report under the Kyoto Protocol - Report to facilitate the calculation of the assigned amount of the European Community pursuant to Article 3, paragraphs 7 and 8 of the Kyoto Protocol (Submission to the UNFCCC Secretariat), EEA Technical report No 10/2006.

Czech Republic 4th National Communication, submitted February 3, 2006.

Czech Republic Initial Report, submitted October 24, 2006.

European Climate Change Programme (ECCP), Database on Policies and Measures in Europe http://www.oeko.de/service/pam/index.php

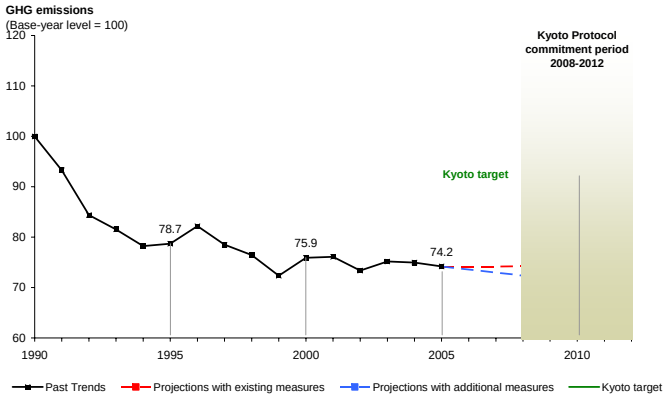
Base-year emissions

Base-year emissions of greenhouse gases are calculated using 1990 emissions for carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) and 1995 emissions for fluorinated gases (SF_6, HFCs and PFCs).

Base-year data is as reported by Member States in the sources noted above. Base year data is not consistent with data reported in *The European Community's initial report under the Kyoto Protocol - Report to facilitate the calculation of the assigned amount of the European Community pursuant to Article 3, paragraphs 7 and 8 of the Kyoto Protocol (Submission to the UNFCCC Secretariat)*, EEA Technical report No 10/2006. This data is currently undergoing a review procedure by UNFCCC and is therefore subject to change.

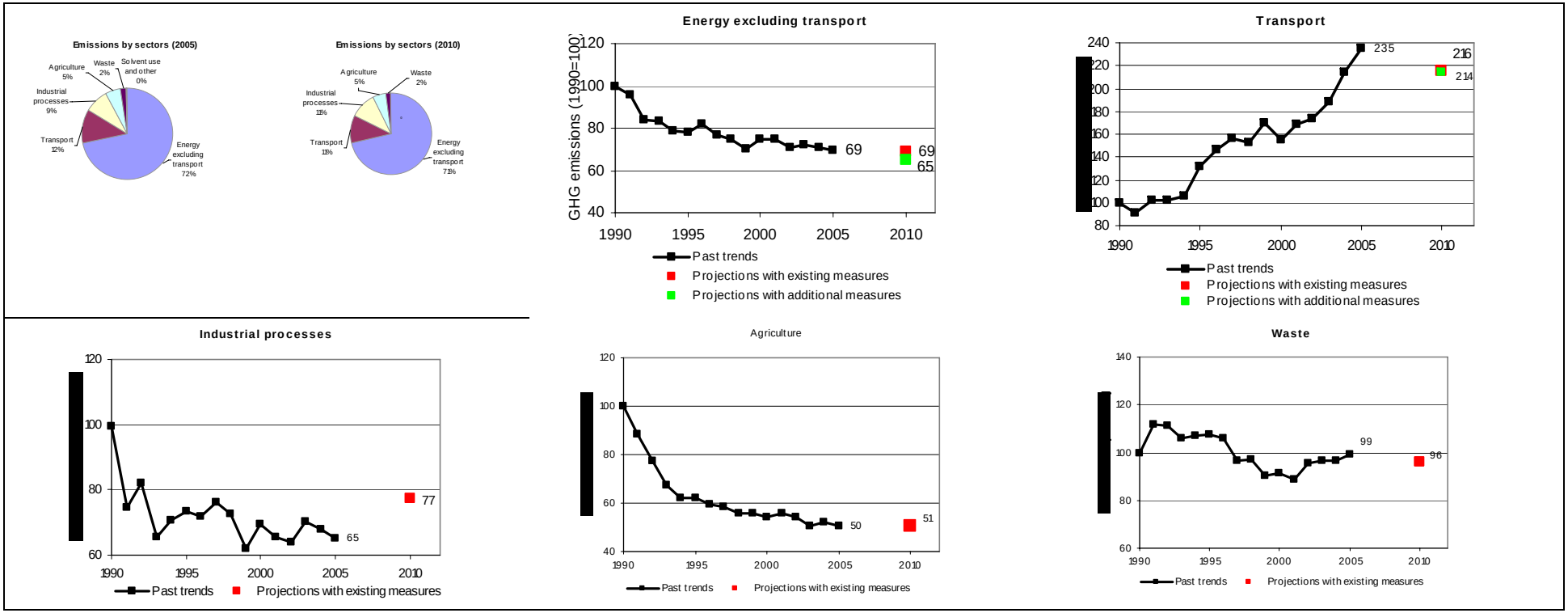
2. SUMMARY

CZECH REPUBLIC	
Emissions base year (initial report)	196.3 Mt
Emissions 2005	145.6 Mt
Emissions base year (for projections)	196.3 Mt
Projections 2010 with existing measures	145.7 Mt
Projections 2010 with additional measures	139.7 Mt
Kyoto target (absolute)	180.6 Mt
Kyoto target (% from base year)	– 8.0 %
Change base year to 2005	– 25.8 %
Change 2004–05	– 1.0 %
Change base year to 2010 with existing measures	– 25.8 %
Change base year to 2010 additional measures	– 28.8 %
Distance to linear target path 2005	– 19.8 index points
Use of Kyoto mechanisms	n.a.
Sinks (Articles 3.3 and 3.4)	n.a.
Emissions in 1990 (Article 3.7)	n.a.



Past emissions: The Czech Republic's GHG emissions were 1.0 % below those of 2004 and 25.8 % below base-year levels in 2005. Between 2004 and 2005, emission decreases from energy use in households and services were partially offset by increases in road transportation. Emissions from industrial processes and agriculture continued their overall decreasing trend. The highest increase between 1990 and 2005 can be seen for transport, emissions more than doubled since then.

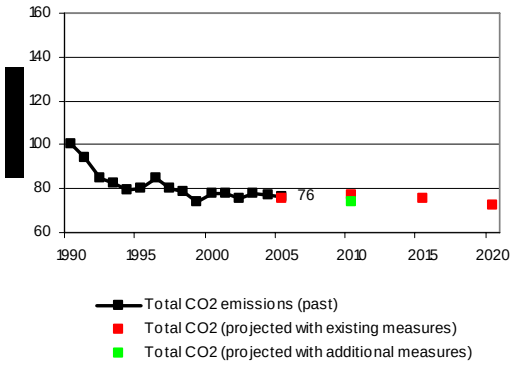
Emission projections: Emissions in 2010 are projected to stabilise at 2005 levels with existing measures, a decrease is projected with the implementation of additional measures. However, the Czech Republic will be below the Kyoto target according to projections 'with existing measures' and 'with additional measures'. Sectoral projections show that emissions are projected to stabilise at 2005 levels, except for transport where emissions are projected to decrease and for industrial processes where emissions are projected to increase compared to 2005 levels.



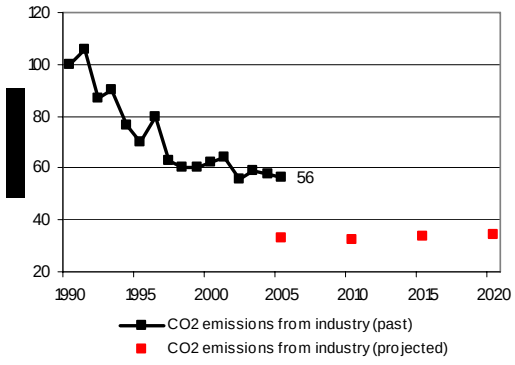
3. REPORTED INDICATORS

Note, that due to the use of different definitions and different timing of submissions projected values may be inconsistent with past values.

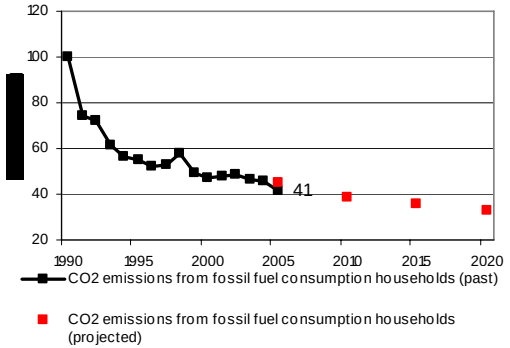
Macro



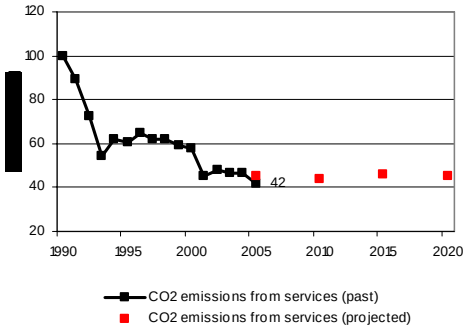
Industry A1



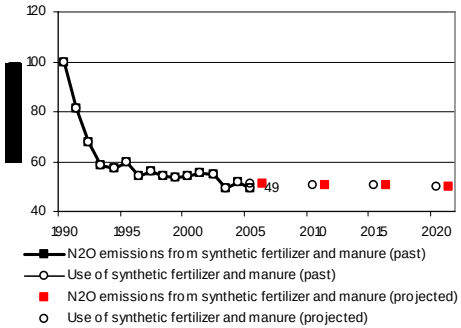
Households A1



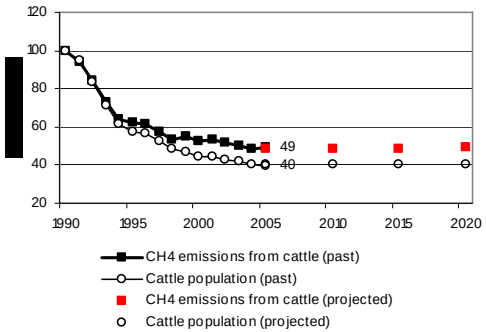
Services A0



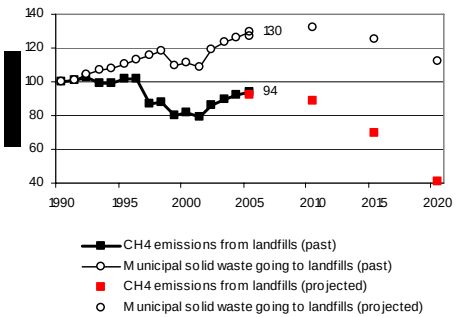
Agriculture_N2O



Agriculture_CH4



Waste



4. OVERVIEW OF CCPM IMPLEMENTATION IN MEMBER STATE

Table 1. Information provided on the implementation of policies and measures

Sector	CCPM	*Status*
Cross-cutting	Emissions trading 2003/87/EC	***N***
Cross-cutting	Kyoto Protocol project mechanisms 2004/101/EC	***N***
Cross-cutting	Integrated pollution prevention and control 96/61/EC	***N***
Energy supply	Promotion of cogeneration 2004/8/EC	***N***
Energy supply	Taxation of energy products 2003/96/EC	***N***
Energy supply	Internal electricity market 2003/54/EC	
Energy supply	Promotion of electricity from RE sources 2001/77/EC	***N***
Energy supply	Internal market in natural gas 98/30/EC	
Energy supply	Emissions from large combustion plants 88/609/EEC	
Energy consumption	Directives on energy labelling of appliances	
Energy consumption	End-use efficiency and energy services 2006/32/EC	
Energy consumption	Ecodesign requirements for energy-using products 2005/32/EC	
Energy consumption	Energy performance of buildings 2002/91/EC	***N***
Energy consumption	Eco-management & audit scheme (EMAS) EC 761/2001	
Energy consumption	Energy-efficiency labelling for office equipment Regulation No. 2422/2001	
Energy consumption	Efficiency fluorescent lighting 2000/55/EC	
Energy consumption	Efficiency of hot water boilers 92/42/EEC	
Transport	Environmental performance freight transport (Marco Polo Programme)	
Transport	Motor challenge, voluntary EC programme	
Transport	Promotion of biofuels for transport 2003/30/EC	***N***
Transport	Integrated European railway area (2^{nd} + 3rd Railway package) (COM(2002)18 final)	
Transport	Transport modal shift to rail 2001/12/EC etc.	
Transport	Consumer information on cars 1999/94/EC	
Transport	Agreement with car manufacturers ACEA etc.	
Industrial Process	F-gas regulation (Regulation No 842/2006)	
Industrial Process	HFC emissions from air conditioning in motor vehicles 2006/40/EC	
Agriculture	Support under CAP (1782/2003)	
Agriculture	Support under CAP - amendment (1783/2003)	
Agriculture	Nitrates 91/676/EEC	
Agriculture	Transition to rural development support No 2603/1999	
Agriculture	Agricultural production methods compatible with environment Regulation (EEC) No 2078/92	
Agriculture	Aid scheme for forestry measures in agriculture (Regulation (EEC) No 2080/92)	***N***
Agriculture	Emission by engines to power agricultural or forestry 2000/25/EC	
Agriculture	Pre-accession measures for agriculture and rural development Regulation (EC) No 1268/1999	
Waste	Directive on waste 2006/12/EC	
Waste	Landfill directive 1999/31/EC	***N***
Waste	Packaging and packaging waste (Directive 94/62/EC, 2004/12/EC, 2005/20/EC)	***N***

Legend

***New** national PAM implemented after CCPM was adopted*	***N***
*Existing national PAM **re-enforced** by CCPM*	***R***
*National PAM already in force **before** CCPM was adopted*	***B***
Not reported	

Source: MMS 2007

5. COMPLETENESS OF REPORTING

Table 2. Information provided on policies and measures

Information provided	Level of information provided	Comments
Policy names	+++	
Objectives of policies	+++	
Which greenhouse gases?	+++	All six gases: CO_2, CH_4, N_2O, HFC, PFC, SF_6
Status of Implementation	+++	Not specified from when
Implementation body specified	+++	
Quantitative assessment of implementation	++	Not in all cases and if yes, 2020 assessment is missing.
Interaction with other policies and measures discussed	+	CCPM is provided for 35% only

Table 3. Information provided on projections

Category of Information	Level of information provided	Comments
Scenarios considered	+++	With no measures, with measures and with additional measures
Expressed relative to base year		Base year data was not correctly entered, data from 2000 was introduced instead
Starting year	+++	2004
Split of projections	+++	2005, 2010, 2015, 2020
Presentation of results	+++	Information presented in split by sector and by cases
Description of model (level of detail, approach and assumptions)	+++	
Sensitivity analysis (key inputs to model / high, central and low projections scenarios / robustness of model)	+++	Sensitivity to the price of natural gas, sensitivity to domestic brown coal availability and sensitivity to economic growth rate were analyzed
Discussion of uncertainty	+	Models are described which contain possible drivers of uncertainty, but uncertainty is not covered separately
Details of parameters and assumptions	o	

6. ASSESSMENT OF POLICIES AND MEASURES

Table 4. Summary of the effect of policies and measures included in the 2010 projections (Mt CO_2–eq.)

	With measures	With additional measures
Energy (total, excluding transport)	1.8	5.9
Energy supply	0.0	0.5
Energy – industry, construction	1.4	4.1
Energy – other (commercial, residential, agriculture)	0.3	1.2
Transport (energy)	0.0	0.1
Industrial processes	0.0	0.0
Waste	0.0	0.0
Agriculture	0.0	0.0
Cross-sectoral	NE	NE
Total (excluding LULUCF)	1.8	6.0

Table 5. Detailed information on policies and measures

Policies and measures in the "with measures" projection

Sector	Name	Objective	Type of GHG affected	Type of instrument	Status	Implementing entity	Estimated savings ($kt CO_2$–eq.)		Related CCPM
							2010	2020	
Cross-cutting	Clean air act	Reducing emissions from air pollutants	CO_2, CH4, N2O	Regulatory	implemented	National Government(Ministry of Environment)	NE	NE	NE
Cross-cutting	National program for effective use of energy and utilization of renewable and secondary energy sources	Decrease energy consumption and increase use of RES	CO_2	na	implemented	National Government(Ministry of Industry and Trade and authorized ministries)	NE	NE	NE
Cross-cutting	National Program to Abate the Climate Change Impacts in the CR	Reduction of greenhouse gas emissions and ensuring of meeting the obligations resulting from Kyoto protocol	CO2, CH4, N2O, HFC, PFC, SF6	Other	implemented	National Government(Ministry of Environment, Ministry of Industry and Trade, Ministry of Transport, Ministry of Agriculture, Ministry of Finance, Ministry of Health, Ministry for Regional Development)	NE	NE	NE
Cross-cutting, Energy supply, Energy consumption, Industrial Processes	National allocation plan	Realization of the EU directive 2003/87/EC on system of emission trading in the period 2005 - 2007.	CO_2	Economic, Regulatory	implemented	Others(Industrial enterprises)			Cross-cut: Emissions trading scheme (Dir 2003/87/EC)
Cross-cutting	Integrated national Program for	Complex program aimed at meeting of national emission	SO2, NOX, VOC	Economic, regulatory, other	implemented	National Government(Ministry of Environment,	NE	NE	NE

Sector	Name	Objective	Type of GHG affected	Type of instrument	Status	Implementing entity	Estimated savings ($kt CO_2$–eq.)		Related CCPM
							2010	2020	
	emission reduction in the Czech Republic	bounds of SO2, NOX, VOC and ammonia in 2010.	and ammonia			Ministry of Industry and Trade, Ministry of Agriculture, Ministry of Transport and Telecommunications)			
Energy supply	Energy act	The law establishes the obligation of electricity distributors to buy electricity from combined heat and power plants and from renewable energy sources. It also opens the market with electricity.	CO2	Regulatory	implemented	National Government(Ministry of Industry and Trade, Energy Regulatory Authority)	NE	NE	NE
Cross-cutting, Energy consumption	Energy management act	Basic law defining rules for efficient production and use of energy.	CO2	Regulatory	implemented	National Government(Ministry of Industry and Trade, Energy Regulatory Authority)	NE	NE	NE
Cross cutting, Energy supply	Joint Implementation	Realization of Kyoto Protocol Mechanisms	CO2, CH4, N2O	na	implemented	National Government(Ministry of Environment, Ministry of Industry and Trade), Others(State Environmental Fund, Czech Energy Agency	1562	NE	NE
Energy supply	Preferential feed-in tariffs for electricity produced from	Increase use of RES in power generation	CO_2	Economic, regulatory,	implemented	Others(Electricity producers and distributors)	985	NE	Electricity production from renewable

Sector	Name	Objective	Type of GHG affected	Type of instrument	Status	Implementing entity	Estimated savings ($kt CO_2$–eq.)		Related CCPM
							2010	2020	
	renewable energy sources								energy sources (Dir 2001/77/EC)
Energy supply	Implementation of directive on co-generation	The measure increases energy efficiency and supply security by support of efficient combined heat and power generation	CO2	Economic, regulatory,	implemented	National Government(Ministry of Industry and Trade, Energy Regulatory Authority)	106	NE	Promotion of cogeneration (Dir 2004/8/EC)
Energy supply, industrial processes	Act on IPPC	Preventing all kinds of pollution	CO2, CH4, N2O,	na	implemented	National Government(Ministry of Environment, Ministry of Industry and Trade)	NE	NE	Integrated pollution prevention and control (IPPC) (Dir 96/61/EC)
Cross-cutting, Energy supply, Transport, Waste	Operational program infrastructure	Reduction of the amount of emitted pollutants, improving pollution levels in the affected locations, improvement of the state of health of the population and condition of vegetation, reduction of GHG emissions	CO_2	Economic	implemented	National Government(Ministry of Environment), Others(State Environmental Fund)	154	NE	NE
Energy consumption	Credits obtained by municipalities for support of reconstruction and modernization of living houses	The main aim of the measure is to improve technical status of municipal houses, which leads also to energy and consequently CO2 emission savings	CO2	Economic	implemented	National Government(Ministry for Regional Development), Others(Housing Development Fund, Czech & Moravian Guarantee and Development Bank)	43	NE	NE

Sector	Name	Objective	Type of GHG affected	Type of instrument	Status	Implementing entity	Estimated savings ($kt CO_2$–eq.)		Related CCPM
							2010	2020	
Energy consumption	Directive on energy performance of buildings	Increase of energy efficiency of relevant buildings by 10 - 20 % is expected to the year 2020.	CO_2	Regulatory	implemented	Others(Investors, building owners and operators)	305	NE	Energy performance of buildings (Dir 2002/91/EC)
Energy consumption	Program for support of reconstruction and revitalization of panel houses	Support to reconstruction, revitalization and modernization of panel buildings. From 2007 the support will be obtained from the Integrated Operational Program	CO2	Economic	implemented	National Government(Ministry for Regional Development), Others(Housing Development Fund, Czech & Moravian Guarantee and Development Bank)	27,5	NE	NE
Energy consumption Energy supply	GEF Efficient lighting initiative	Support of accelerated introduction of energy efficient lighting to newly established markets.	CO_2	Economic, Information, Education	implemented	Others(SEVEn (Centre for effective use of energy), Danish Power Consult S/A)	425	NE	NE
Energy consumption, Energy supply	Support from the State Environmental Fund in the field of air protection	This program aims primarily at air protection and covers fuel switch at small and medium plants, combined heat and power production and development of energy infrastructure of small municipalities.	CO_2	Economic, regulatory, information, education	implemented	National Government(Ministry of Environment), Others(State Environmental Fund	1000	NE	
Energy consumption, energy supply,	State program for support of energy savings and use of	Decreasing the energy intensity of the economy, savings in energy	CO2	Economic, regulatory, information, education	implemented	National Government(Ministry of Industry and Trade),	198	NE	NE

Sector	Name	Objective	Type of GHG affected	Type of instrument	Status	Implementing entity	Estimated savings ($ktCO_2$–eq.)		Related CCPM
							2010	2020	
industrial processes	renewable energy sources - Part A	production materials and minimization of the burdening of the environment by emissions and decreasing emissions of greenhouse gases				Others(Czech Energy Agency)			
Energy consumption, energy supply, industrial processes	State program for support of energy savings and use of renewable energy sources - Part B	Decreasing the energy intensity of the economy, savings in energy production materials and minimization of the burdening of the environment by emissions and decreasing emissions of greenhouse gases	CO2	Economic, regulatory, information, education	implemented	National Government(Ministry of Environment), Others(State Environmental Fund)	101	NE	NE
Energy consumption, energy supply, industrial processes	Operational program industry and enterprise	Increase energy efficiency and use of renewable energy sources in industry	CO3	Economic	implemented	National Government(Ministry of Industry and Trade), Others(Czech Energy Agency, Czech Consolidation Agency)	185	NE	NE
Transport	Portfolio of measures in the transport sector	Decrease of air pollutants	CO2	Economic	implemented	National Government(Ministry of Transport together with other resorts)	29,3	NE	
Agriculture, Forestry	Support for aforestation of non-utilized agricultural areas	he objective of the measure is to decrease CH4 and N2O emissions from non-utilized	CO2	Economic	implemented	National Government(Ministry of Agriculture)	84	NE	Aid scheme for forestry measures in agriculture (Reg (EEC) No

Sector	Name	Objective	Type of GHG affected	Type of instrument	Status	Implementing entity	Estimated savings ($kt CO_2$–eq.)		Related CCPM
							2010	2020	
		agricultural soils an do increase absorption of CO2 in forest areas.							2080/92)
Agriculture, Transport	Support of biofuels production	Increase use of biofuels	CO2	Economic	implemented	National Government(Ministry of Agriculture)	NE	NE	Biofuels Directive (Dir 2003/30/EC)
Waste	Act on packaging and wastes	Harmonization of the Czech legislation with the EU legislation - (1) increase share of recycled wastes to 55 % of all produced wastes in 2012 and increase utilization of municipal wastes to 50 % in 2010 relative to 2000; (2) decrease the mass share of landfilled wastes by 20 % in 2010 relative to 2000 with an outlook of further gradual decrease; (3) decrease the share of landfilled biodegradable municipal wastes to 75 % in 2010, 50 % in 2013 and 35 % in 2020 relative to amount of biodegradable wastes produced in 1995.	CO2, CH4, N2O,	Regulatory	implemented	National Government(Ministry of Environment, Ministry of Industry and Trade)	258	NE	Packaging and packaging waste (Dir 94/62/EC, 2004/12/EC, 2005/20/EC)

Sector	Name	Objective	Type of GHG affected	Type of instrument	Status	Implementing entity	Estimated savings ($ktCO_2$–eq.)		Related CCPM
							2010	2020	
Waste	Utilization of sewage gas and landfill gas	Decreasing emissions of methane from landfills and waste water treatment plants	CH4	Other	implemented	Others(operators of landfills and sewage disposal plants)	76		Landfill Directive (Dir 1999/31/EC)

Policies and measures in the "with additional measures" projection

Sector	Name	Objective	Type of GHG affected	Type of instrument	Status	Implementing entity	Estimated savings ($ktCO_2$–eq.)		Related CCPM
							2010	2020	
Cross cutting, Energy consumption, energy supply, industrial processes	National allocation plan II	Realization of the EU directive 2003/87/EC on system of emission trading in the period 2008 - 2012	CO_2	Economic, regulatory	planned	Others(Industrial enterprises)	2523	NE	Emissions trading scheme (Dir 2003/87/EC)
Energy consumption, energy supply, industrial processes, waste, transport	Operational program environment	Improvement of environment and health of inhabitants	CO_2	Economic	planned	National Government(Ministry of Environment), Others(State Environmental Fund)	1506	NE	NE
Cross cutting, Transport	Regional operational programs	Modernization of technical infrastructure for enterprise, increase of prosperity, growth of tourism and improvement of living conditions of	CO_2	Economic	planned	Regional Entities(Regional councils)	NE	NE	NE

Sector	Name	Objective	Type of GHG affected	Type of instrument	Status	Implementing entity	Estimated savings ($kt CO_2$–eq.)		Related CCPM
							2010	2020	
		inhabitants.							
Transport	Integrated Operational Program	The program contains an explicit target to support regenerate 28000 dwellings in municipal living houses.	CO2	Economic	planned	National Government(Ministry of Regional Development)	15,7	NE	NE
Transport	Operational Program Transport	Overall improvement of transport infrastructure	CO2, CH4, N2O,	Economic	planned	National Government(Ministry of transport)	849	NE	NE
Energy consumption, energy supply, industrial processes, transport, agriculture, forestry	Ecological tax reform	Support for environmentally sound fuels and means of producing electricity and, on the other hand, putting at a disadvantage fuels and means of producing electricity that are significant sources of emissions of greenhouse gases and other pollutants.	CO2	Economic, regulatory	planned	Others(Energy producers and consumers)	1083	NE	Taxation of energy products and electricity (Dir 2003/96/EC)
Energy consumption, energy supply, industrial processes	Operational Program Enterprise and Innovation	Increased energy efficiency and higher share of renewable energy sources	CO2	Economic	planned	National Government(Ministry of Industry and Trade), Others(Czech Energy Agency, Czech Consolidation Agency)	NE	NE	NE

Source: Öko Institut, (accessed June 2007), ECCP Policies and Measures database, http://www.oeko.de/service/pam/index.php

7. EVALUATION OF PROJECTIONS

Table 6. Summary of projections by gas in 2010 (Mt CO_2–eq.)

	Base-year	With measures	With additional measures
Carbon dioxide (excl. LULUCF)	165.1	127.6	122.2
Methane	18.0	9.1	8.5
Nitrous oxide	12.6	8.1	8.1
F gases total	0.1	0.9	0.9
Total (excl. LULUCF)	196.3	145.7	139.7
% change relative to base year (excl. LULUCF)		25%	28%

Table 7. Summary of projections (6 gas basket) by sector in 2010 (Mt CO_2–eq.)

	Base-year	with measures	% change relative to base-year	with additional measures	% change relative to base-year
Energy (total, excluding transport)	149.997	103.539	-26%	97.643	-30%
Energy supply	NE	73.741		69.872	
Energy – industry, construction	NE	15.328		14.517	
Energy – other (commercial, residential, agriculture)	NE	12.981		11.764	
Transport (energy)	7.449	16.055	119%	15.964	117%
Industrial processes	19.888	15.380	-16%	15.380	-16%
Waste	2.944	2.835	-4%	2.835	-4%
Agriculture	15.473	7.854	-49%	7.854	-49%
Total (excl. LULUCF)	196.281	145.662	-25%	139.675	-28%

Table 8. Summary of projections by sector and by gas in 2010 (Mt CO_2–eq.) compared to base-year emissions

	Carbon dioxide			**Methane**			**Nitrous oxide**			**F-gases** (SF_6, HFCs and PFCs)		
	Base-year	With measures	With additional measures	Base-year	With measures	With additional measures	Base-year	With measures	With additional measures	Base-year	With measures	With additional measures
Energy (excl. transport)	139.466	98.7904	93.5059	9.19443	3.817569	3.257226	1.3361	0.93093	0.87947	NE	NE	NE
Transport (energy)	7.342	15.3784	15.289	0.02625	0.034671	0.034314	0.0806	0.6417	0.64108	NE	NE	NE
Industrial processes	18.251	13.0313	13.0313	0.13839	0.082593	0.082593	1.4229	1.376927	1.376927	NE	0.8894	0.8894
Waste	NE	0.3748	0.3748	2.78271	2.254329	2.254329	0.1612	0.205406	0.205406	NE	NE	NE
Agriculture	NE	NE	NE	5.87895	2.873262	2.873262	9.5945	4.980367	4.980367	NE	NE	NE
Total (excl. LULUCF)	165.05900	127.5749	122.201	18.02073	9.062424	8.501724	12.59530	8.13533	8.08325	0.07605	0.8894	0.8894

Figure 1. Share by sector of 2010 greenhouse gas emissions according to the "With existing measures" projections

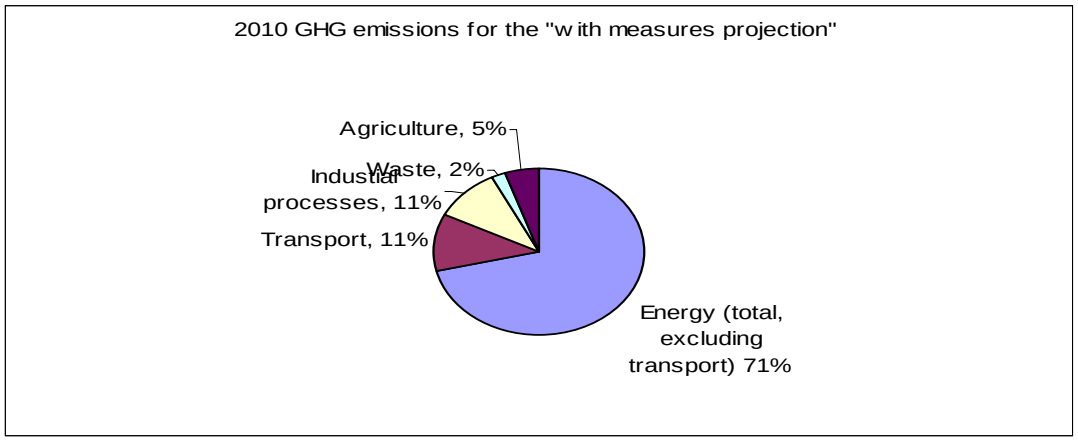


Table 9. Summary of projections (6 gas basket) in 2010, 2015 and 2020 (Mt CO_2–eq.)

	Base-year*	2010	2010 % of base-year level	2015	2015 % of base-year level	2020	2020 % of base-year level
Total (excl. LULUCF)	196.3	139.68	71.2%	134.03	68.3%	128.34	65.4%

* Base-year is 1990 for CO_2, CH_4 and N_2O and 1995 for fluorinated gases (SF_6, HFCs and PFCs).

Table 10. Assessment of the target (6 gas basket), with a comparison of 2010 projections in 2005, 2006 and 2007 national reports

	Emissions in MtCO2-equiv., excluding LULUCF			
	2010 projections from 2005	2010 projections from 2006	2010 projections from 2007	2010 projections from 2007 % of base-year level
Base year emissions used for projections	192.0	192.1	196.281	100%
Kyoto Commitment/burden sharing	176.8	176.8	180.579	-8.0%
With existing P&Ms projections	143.6	145.3	145.662	74.2%
Gap (-ve means overachievement of target)	-33.2	-31.5	-34.916	-17.8%
With additional P&Ms projections	141.2	140.8	139.675	71.2%
Remaining gap	-35.6	-36.0	-40.903	-20.8%
Effect of flexible mechanisms	0.0	0.0	0.000	0.0%
Remaining gap (with use of flexible mechanisms)	-35.6	-36.0	-40.903	-20.8%

Above table excludes LULUCF. LULUCF will be covered in the main report, based on the questionnaire submissions
Source for 2005 data is MMS 2005
Source for 2006 data is 4th National Communication (03/02/2006).
* Base year data is consistent with data reported in The European Community's initial report under the Kyoto Protocol - Report to facilitate the calculation of the assigned amount of the European Community pursuant to Article 3, paragraphs 7 and 8 of the Kyoto Protocol (Submission to the UNFCCC Secretariat), EEA Technical report No 10/2006 (196.281 $MtCO_2$.eq). This data is currently undergoing a review procedure by UNFCCC and is therefore subject to change.
** Commission Decision was a few days before Czech Republic submitted MMS 2007 and so cap cut of 15. 065 Mt CO2 eq. is not included in the projections

Table 11. Comparison with projections for the trading sector (EU ETS)

	MMS 2007	NAP 2 projections	Difference
Energy sector	98.8[a]	68.7[e]	
Energy sector included in EU ETS	97.32[c]		--
Industry sector	12.7[b]	26.28[f]	--
Industry sector included in EU ETS	12.7[d]		--
Total Energy & Industry	111.5	101.88[g]	91%

There is a discrepancy between the MMS 2007 CO_2 projection for 2010 and the annual NAP2 allowances calculation. The difference is even bigger since the annual allowance approved by EC is 86.8 Mt, with 15.065 Mt lower as reported in the NAP2.
To prepare NAP 2, only "older" projections were available. To calculate the projections reported in reporting under Article 3.2 of the Decision No 280/2004/EC "newer" input data were available.

* NAP 2 projections does not include the 15.065 Mt CO2 eq. reduction of allowances proposed by the Commission
a/Included are MMS 2007 CO2 VM emissions from the sectors Energy-Transport
b/ Included are MMS 2007 CO2 VM emissions from the sectors Industrial processes
c/Included are MMS 2007 CO2 VM emissions from sectors 1.Energy Industries + 2.Manufacturing Industries and Constructions + 4.Other sectors
d/ Included are MMS 2007 CO2 VM emissions from sectors 2.A. Mineral products, 2.b. Chemical Industry, 2.c. Metal Production, 2.d. Other Production
e/ Calculation includes Public energy production + Energy production - companies, listed in the NAP2 table Specifying the Quantity of Allowances to be Issued Annually in the 2008 – 2012 Period
f/ Calculation includes NAP2 Refineries + Chemical production + Coke + Production and processing of metals + Cement + Lime + Glass + Ceramics + Paper and cellulose
g/ Calculation includes NAP2 Energy Sector + NAP2 Industry sector + individual corrections + CHS, EA, CHP bonuses + JI reserve + new entrance reserve

8. DESCRIPTION OF MODELLING APPROACH

The methods of calculation of greenhouse gas emissions used in the MMS 2007 report are governed by principles defined in the document FCCC/CP/1999/7, part II UNFCCC *Reporting Guidelines on National Communication*. In comparison with the standard projections prepared within UNFCCC, this projection has been extended for requirements ensuing from the „Decision of the European Parliament and of the Council No. 280/2004/EC on the mechanism of the monitoring of greenhouse gas emissions in the European Communities and implementing the Kyoto Protocol" and „Decision of the Commission 2005/166/EC, defining the implementing rules for the Decision of the European Parliament and of the Council No. 280/2004/EC on the mechanism of the monitoring of greenhouse gas emissions in the European Communities and implementing the Kyoto Protocol".

This methodology includes the following steps:
1. Inventory of greenhouse gases;
2. Choice of base year and final year and of projection years for the projection;
3. Choice of the methodology and model instruments to prepare the projection;
4. Collection and analysis of the input data for the projection;
5. Definition of base assumptions;
6. Definition of scenarios;

7. Calculation of scenarios and presentation of results;
8. Calculation of indicators for the monitoring;
9. Sensitivity analysis of the selected assumptions.

2004 was chosen as a base year because the latest available inventory on GHG emission is from 2004.

To prepare the projection of GHGs, greenhouse gas emissions were divided, in conformity with the methodology for greenhouse gas inventory, according to their origin into the following groups:

- Greenhouse gas emissions from combustion processes and fugitive emissions (Sectors 1A and 1B) - *energy linear optimizing model EFOM/ENV was used*
- Greenhouse gas emissions from industrial processes (Sector 2) - *spreadsheet processor approach was applied*
- Emissions from the use of solvents (Sector 3) – no model
- Emissions from agricultural production (Sector 4) - *spreadsheet processor approach*
- Forestry (Sector 5) - *spreadsheet processor approach*
- Wastes (Sector 6) - *spreadsheet processor approach*

Souce: MMS 2007
There is nothing mentioned abour verifying the models.

Sensitivity analysis

Sensitivity analyses were focused on the CO_2 emissions from combustion processes of the total greenhouse gas emissions in the Czech Republic. Sensitivity to the price of natural gas, to avalaibility of domestic brown coal and to the economic growth rate were analysed. The analyses were made for different sectors but only the analyses for GDP growth were made for high, central and low scenarios.

Details of the uncertainty assessment
There was no uncertainty assessment made.

9. PROJECTION INDICATOR REPORTING

Table 12 shows the projection indicators for monitoring and evaluating progress with regard to policies and measures (2005/166/EC) as well as the given numerators and denominators. Information has been provided for the years 2005, 2010, 2015 and 2020.

10. REPORTING OF PARAMETERS ON PROJECTIONS

The mandatory parameters are provided in the Table 13. For most parameters information is provided for 2005, 2010, 2015, 2020 except the waste sector, where no information is provided.
No information was provided for the recommended parameters section of the table.

Table 12. Indicators for projections to monitor and evaluate progress with policies and measures (2005/166/EC) Annex III

Nº	Eurostat Sectors	Indicator	2005	2010	2015	2020	Numerator/denominator	2005	2010	2015	2020
1	Macro	CO_2 intensity of GDP, t/Euro million					Total CO_2 emissions, kt	124,946	127,575	124,960	119,687
							GDP, bio Euro (EC95)	49,235	60,746	73,322	87,271
2	Transport C0	CO_2 emissions from passenger cars, kt	9,277	9,627	9,715	9,487					
		Number of kilometres by passenger cars, Mkm	36,200	39,100	40,100	40,101					
3	Transport D0	CO_2 emissions from freight transport (all modes), kt	4,788	5,032	4,952	4,617					
		Freight transport (all modes), Mtkm	61,427	67,577	71,677	74,504					
4	Industry A1	Energy related CO_2 intensity of industry, t/Euro million	0.84868	0.66532	0.57175	0.49280	CO_2 emissions from fuel consumption industry, kt	15,334	15,233	15,788	15,958
							Gross value-added total industry, Bio Euro (EC 95)	18,069	22,896	27,613	32,383
5	Households A1	Specific CO_2 emissions of households, t/dwelling	2.1361	1.7934	1.5893	1.4413	CO_2 emissions from fossil fuel consumption households, kt	9,331	8,077	7,397	6,853
							Stock of permanently occupied dwellings, 1000	4,368	4,504	4,654	4,755
6	Services A0	CO_2 intensity of the services sector, t/Euro million	0.20915	0.16191	0.13544	0.10909	CO_2 emissions from fossil fuel consumption services, kt	4,339	4,201	4,354	4,304
							gross value-added services, bio Euro (EC95)	20,748	25,945	32,150	39,451
7	Transformation B0	Specific CO_2 emissions of public and autoproducer power plants, t/TJ	176.286	180.6587	171.2996	160.3157	CO_2 emissions from public and autoproducer thermal power stations, kt	63,777	65,441	62,740	58,665
							all products-output by public and autoproducer thermal power stations, PJ	361.78	362.24	366.26	365.94
8	Agriculture	Specific N_2O emissions of fertilizer and manure	0.019643	0.019643	0.019643	0.019643	N_2O emissions from synthetic fertilizer and manure use, kt	6.3231	6.2575	6.2266	6.2035

		use, kg/kg					use of synthetic fertiliser and manure, kt nitrogen	321.90	318.56	316.99	315.81
9	Agriculture	Specific CH_4 emissions of cattle production, kg/head	0.0754636	0.0754636	0.0754636	0.0754636	CH_4 emissions from cattle, kt	106.40	106.40	107.16	107.91
							cattle populations, 1000 head	1,410	1,410	1,420	1,430
10	Waste	Specific CH_4 emissions from landfills, kt/kt	0.0284526	0.0263786	0.0218105	0.0143710	CH_4 emissions from landfills, kt Municipal solid waste going to landfills, kt	85.87	82.78	64.64	38.15
								3,018	3,138	2,964	2,655

Table 13. List of parameters on projections (Annex IV of Implementing Provisions[1])

1. Mandatory parameters on projections	2005	2010	2015	2020	Unit
Assumptions for general economic parameters					
GDP (value at given years or annual growth rate and base year)	49,235	60,746	73,322	87,271	Value (Euro 1995 basis)
Population (value at given years or annual growth rate and base year)	10,234	10,283	10,306	10,284	Thousand People
International coal prices at given years in euro per tone or GJ (Gigajoule)	1.72	1.85	1.97	2.10	€ per tone or GJ (Gigajoule)
International oil prices at given years in euro per barrel or GJ	7.62	6.55	6.62	7.02	€ per barrel or GJ
International gas prices at given years in euro per m3 or GJ	5.17	4.45	4.49	4.77	€ per m3 or GJ
Assumptions for the energy sector					
Total gross inland consumption (PJ) (split by oil,gas,coal,renewables,nuclear,other)	1,602.75	1,628.01	1,612.57	1,587.57	
Oil (fossil)	362.00	362.00	359.00	355.00	Petajoule (PJ)
Gas (fossil)	321.00	340.00	353.00	360.00	Petajoule (PJ)
coal	855.00	843.00	798.00	738.00	Petajoule (PJ)
wood	36.52	42.03	55.43	82.93	Petajoule (PJ)
bio-oils	3.00	10.89	13.04	13.98	Petajoule (PJ)
solar	0.11	0.21	0.54	0.78	Petajoule (PJ)
Other renewable (wind, geothermal etc)	25.12	29.88	33.56	36.88	Petajoule (PJ)
Total electricity production by fuel type (oil, gas, coal, renewables, nuclear, other)	53,392	54,267	54,650	55,406	
Oil (fossil)	314	264	136	78	GWh
Gas (fossil)	1,172	1,686	1,656	1,814	GWh
Coal	48,856	48,961	48,978	48,794	GWh
Renewable	3,050	3,356	3,881	4,719	GWh
Energy demand by sector split by fuel (delivered)					
Assumptions on weather parameters, especially heating or cooling degree days					
Heating Degree Days	3,800	3,800	3,800	3,800	Annual HDD
Cooling Degree Days					
Assumptions for the industry sector					
For Member States using macroeconomic					

[1] Commission Decision of 10 February 2005 laying down rules implementing Decision No 280/2004/EC of the European Parliament and of the Council concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol

models:					
The share of the industrial sector in GDP and growth rate					
Industry	18,069	22,896	27,613	32,383	Value (Euro 1995 basis)
Construction	2,368	2,647	2,955	3,290	Value (Euro 1995 basis)
For Member States using other models:					
The production index for industrial sector					
Clinker production	1.0093	1.0425	1.03714	1.03131	GVA or index units
Lime production	0.89576	1.0374	1.02856	1.0059	GVA or index units
Glass production	0.99278	1.0286	1.00418	1.00409	GVA or index units
Bricks and ceramics production	0.98649	1.0103	1.00617	1.00361	GVA or index units
Ethylene production	1.07966	1	1	1	GVA or index units
Ammonia production	1.03149	1	1	1	GVA or index units
Pig iron production	0.87263	1.057	1	1	GVA or index units
Steel production	0.89578	1.0541	1	1	GVA or index units
Sinter production	0.93974	1.0583	1	1	GVA or index units
Coke production	0.95325	1.0093	1	1	GVA or index units
Assumptions for the transport sector					
For Member States using macroeconomic models:					
The growth of transport relative to GDP	5,223	6,147	7,217	8,464	Gg fuel consumed/GDP
For Member States using other models:					
The growth of passenger person kilometers	109,000	117,700	120,700	120,700	Million passenger km
The growth of freight tone kilometers	61,427	67,577	71,677	74,504	Million tone km
Fleet turnover assumptions (vehicle replacement)	0.072	0.08	0.09	0.1	
Assumptions for buildings (in residential and					

commercial or tertiary sector)					
For Member States using macroeconomic models:					
The level of private consumption (excluding private transport)					
The share of the tertiary sector in GDP and the growth rate	20,748	25,945	32,150	39,451	Value (Euro 1995 basis)
For Member States using other models:					
The rate of change of floor space for tertiary buildings and dwellings					
Average floor space per dwelling	95.2	96	98	100	M^2
The number of dwellings and number of employees in the tertiary sector					
The number of dwellings	4,368	4,504	4,654	4,755	1000 dwellings
Number of employees in the tertiary sector	2,866	2,895	2,924	2,953	1000 employees
Assumptions in the agriculture sector					
For Member States using macroeconomic models:					
The share of the agriculture sector in GDP and relative growth	2,828	3,110	3,388	3,682	Value (Euro 1995 basis)
For Member States using other models:					
Livestock numbers by animal type (for enteric fermentation beef, cows, sheep, for manure management, pigs and, poultry)					
27. Beef	1,410	1,410	1,420	1,430	Thousand Places[8].
28. Cattle	844	844	850	856	Thousand Places[8].
29. Dairy cows	566	566	570	574	Thousand Places[8].
30. Sheep	120	150	170	200	Thousand Places[8].
31. Pigs	2,950	3,100	3,100	3,150	Thousand Places[8].
32. Poultry	25,000	23,000	23,500	24,000	Thousand Places[8].
The area of crops by crop type					
Arable land	3,054,658	2,986,500	2,944,950	2,897,750	Hectares
Hop gardens	6,180	6,000	6,100	6,200	Hectares
Vineyards	18,710	18,710	18,710	18,710	Hectares
Grassland	971,748	1,003,350	1,017,750	1,030,150	Hectares
Emissions factors by type of livestock for enteric fermentation and manure management (t)					
34. enteric fermentation beef,	75.464	75.464	75.464	75.464	Tones CH4 /thousand places
35. enteric fermentation cattle	52.030	52.030	52.030	52.030	Tones CH4 /thousand

					places
36. enteric fermentation dairy cows	110.430	110.430	110.430	110.430	Tones CH4 /thousand places
37. enteric fermentation sheep	8.000	8.000	8.000	8.000	Tones CH4 /thousand places
38. manure management beef,	9.210	9.210	9.210	9.210	Tones CH4 /thousand places
39. manure management cattle	6.000	6.000	6.000	6.000	Tones CH4 /thousand places
40. manure management dairy cows	14.000	14.000	14.000	14.000	Tones CH4 /thousand places
41. manure management sheep	0.190	0.190	0.190	0.190	Tones CH4 /thousand places
42. manure management Pigs	3.000	3.000	3.000	3.000	Tones CH4 /thousand places
43. manure management Poultry	0.078	0.078	0.078	0.078	Tones CH4 /thousand places
Assumptions in the waste sector					
Waste generation per head of population or tones of municipal solid waste					
The organic fractions of municipal solid waste					
Municipal solid waste disposed to landfills, incinerated or composted (in tones or %)					
Assumptions in the forestry sector					
Forest definitions	Practically all the forests in the Czech Republic can be considered to be temperatezone managed forests under the IPCC definition of forest management (GPG Chapter 3, IPCC 2003). With respect to the definition thresholds of the Marrakesh Accords (MA), forest land is defined as land with woody vegetation and with tree crown cover of at least 20 %, over an area exceeding 0.05 ha containing trees able to reach a minimum height of 2 m at maturity. This definition excludes the areas of permanently unstocked cadastral forest land, which was (as mentioned above) treated within the category of Other Land. Hence, Forest Land in this emission projection corresponds to the national definition of timberland (Czech Forestry Act 84/1996). In 2004, the stocked forest area (timberland) qualifying under the category of Forest Land equaled 2 591 th. ha, representing about 98 % of the cadastral forest				

	land in the Czech Republic (the remaining area represents the permanently unstocked areas treated as Other Land).				
Areas of:					
managed forests	2,647,000	2,657,000	2,602,000	2,665,000	Hectares
unmanaged forests	0	0	0	0	Hectares

2. Recommended parameters on projections	2005	2010	2015	2020
Assumptions for general economic parameters				
GDP growth rates split by industrial sectors in relation to 2000				
Comparison projected data with official forecasts				
Assumptions for the energy sector				
National coal, oil and gas energy prices per sector (including taxes)				
National electricity prices per sector as above (may be model output)				
Total production of district heating by fuel type				
Assumptions for the industry sector				
Assumptions fluorinated gases:				
Aluminium production and emissions factors				
Magnesium production and emissions factors				
Foam production and emissions factors				
Stock of refrigerant and leakage rates				
For Member States using macroeconomic models:				
Share of GDP for different sectors and growth rates				
Rate of improvement of energy intensity (1990 = 100)				
For Member States using other models:				
Index of production for different sectors				
Rate of improvement or index of energy efficiency				
Assumptions for buildings (in residential and commercial / tertiary sector)				
For Member States using macroeconomic models:				
Share of tertiary and household sectors in GDP				
Rate of improvement of energy intensity				
For Member States using other models:				
Number of households				
Number of new buildings				
Rate of improvement of energy efficiency (1990 = 100)				
Assumptions for the transport sector				
For Member States using econometric models:				
Growth of transport relative to GDP split by passenger and freight				
Improvements in energy efficiency split by vehicle type				
Improvements in energy efficiency split by vehicle type, whole fleet/new cars				
Rate of change of modal split (passenger and freight)				
Growth of passenger road kilometres				
Growth of passenger rail kilometres				
Growth of passenger aviation kilometres				
Growth of freight tonne kilometres on road				
Growth of freight tonne kilometres by rail				
Growth of freight tonne kilometres by navigation				

2. Recommended parameters on projections	2005	2010	2015	2020
Assumptions for the agriculture sector				
For Member States using econometric models:				
Agricultural trade (import/export)				
Domestic consumption (e.g. milk/beef consumption)				
For Member States using other models:				
Development of area of crops, grassland, arable, set-aside, conversion to forests etc				
Macroeconomic assumptions behind projections of agricultural activity				
Description of livestock (e.g. by nutrient balance, output/animal production, milk production)				
Development of farming types (e.g. intensive conventional, organic farming)				
Distribution of housing/grazing systems and housing/grazing period				
Parameters of fertiliser regime:				
Details of fertiliser use (type of fertiliser, timing of application, inorganic/organic ratio)				
Volatilisation rate of ammonia, following spreading of manure on the soil				
Efficiency of manure use				
Parameters of manure management system:				
Distribution of storage facilities (e.g. with or without cover):				
Nitrogen excretion rate of manures				
Methods of application of manure				
Extent of introduction of control measures (storage systems, manure application), use of best available techniques				
Parameters related to nitrous oxide emissions from agricultural soils				
Amount of manure treatment				

11. COUNTRY CONCLUSIONS

The 2007 Monitoring Mechanism submission (MMS) of the Czech Republic contains comprehensive information on projection for different scenarios and sectors as well as information on policies and measures. However information on sensitivity analyses is not complete and uncertainty was not discussed.

The Czech Republic's Kyoto target is an 8% reduction in emissions compared with the base year. The latest 'with additional measures' projections in the MMS 2007 predict that the Czech Republic will overachieve its implied Kyoto commitment of 180.6 $MtCO_2$-eq, by 40.9 $MtCO_2$-eq.

It should be noted that in the MMS 2007 report, emission data from 2000 was reported as the base year emissions. To correct the mistake, base year data was taken from the Czech Republic's Initial Report 2006, however in this case the sectoral breakdown is not as detailed as in the MMS2007.