

Annex 5: Acceding and candidate countries' policies and measures, emission projections and methodologies

Annex 5 provides a detailed overview of policies and measures, GHG projections and methodologies used for calculating the GHG projections for the acceding and candidate countries.

For the first time, this report includes information on the projections and policies and measures for Bulgaria and Slovenia. Projections for Hungary are also now presented.

Bulgaria

Sources of Information

Bulgaria's third national communication under the United Nations Framework Convention on Climate Change, 2002

Reporting

Two chapters in the third national communication of Bulgaria deal with projections and measures. Policies and measures to reduce greenhouse gas emissions are provided for the energy, transport, industry, agriculture, forestry and waste management sectors. The impact of the measures has been quantified in most cases. The table on policies and measures follows the UNFCCC guidelines.

Projections are based on analyses of projections reported in first and second national communications of GHG emission trends, 1988–99, and they take into account the national strategy for development of the energy sector until

2015 and development plans reported by the relevant institutions for the agriculture, forestry, industry and waste sectors.

Three scenarios until 2015 were developed: without measures, with measures and with additional measures. For forest sinks, optimistic and pessimistic scenarios were developed.

Assessment of Policies and Measures

Table A.185 gives an overview of effects of policies and measures. The without measures scenario is based on the assumption for intensive economic development. It contains all policies and measures adopted before 1994. The with measures projection encompasses currently implemented and adopted policies and measures and those measures given for the energy sector (envisaged growth rate of electricity demand between 2000 and 2015 is 26 %). The with additional measures scenario includes the effects of policies planned.

Table A.183 Information provided on policies and measures

Information provided	Level provided	Comments
Name of policy/measure	+++	
Type of instrument	+++	
Which greenhouse gases?	CO ₂ , CH ₄ , N ₂ O,	Measures for F-gases are not presented
Status of implementation	++	
Implementation body specified	+++	
Quantitative assessment of implementation	++	Estimated mitigation effect for 2005; a few measures are not quantified
Interaction with other PAMs discussed	+	In some cases

+, ++, +++ level of information available increases as the number of + signs increases.

Table A.184 Information provided on projections

Category of information	Level of information provided	Comments
Scenarios considered	Without measures, with measures, with additional measures	Scenarios are given for sectors corresponding with IPCC sectors and gases
Expressed relative to inventory for previous years		Not systematically, some figures in the text
Starting year	2000?	Not clear from the text
Projections	2000?, 2005, 2010, 2015	
Split of projections	Yes	Projections split by IPCC main sectors and gases. F-gases not included
Presentation of results	++	Results presented in both tabular and graphical form
Description of model (level of detail, approach and assumptions)	++	Basic description of the models and further references provided
Discussion of uncertainty	No	
Details of parameters and assumptions	+	Limited information on type of indicators used in scenarios provided

+, ++, +++ level of information available increases as the number of + signs increases.

Table A.185 Summary of the effect of policies and measures by 2010 included in the projections (Mt CO₂ equivalent)

	With measures ⁽¹⁾	With additional measures ⁽²⁾
CO ₂	- 20.7	- 5.8
CH ₄	- 4.4	- 1.9
N ₂ O	6.4	- 0.6
F-gases		
Total by gas	- 18.65	- 8.33
Energy (IPCC Sector 1)	- 25.9	- 6.5
of which transport	NA	NA
Industry (IPCC Sector 2)	- 3.6	0.0
Agriculture (IPCC Sector 4)	- 1.2	0.0
Forestry (IPCC Sector 5)	NA	NA
Waste (IPCC Sector 6)	- 9.7	- 1.7
Total by sector	- 40.4	- 8.2

⁽¹⁾ The effect of policies implemented or adopted is derived from the sum of the potential of the individual scenarios comparing without and with measures.

⁽²⁾ The effect of policies planned is derived from the difference between the with measures and the with additional measures scenarios of the calculations. NA: information is not provided in the 3NC.

Table A.186 Summary of projections by gas in 2010 (Mt CO₂ equivalent)

	Base year 1988	Without measures	With measures	With additional measures
CO ₂	103.86	102.68	78.56	72.75
CH ₄	28.01	30.45	23.63	21.69
N ₂ O	25.23	35.96	31.62	31.00
HFC				
PFC				
SF ₆				
Total	157.09	168.98	133.69	125.49
Percentage change relative to base year		+ 7.5	- 15	- 20

Note: There are some slight differences between the sum of the individual gases and the aggregate given in the third national communication.

Table A.187 Summary of projections by sector in 2010 (Mt CO₂ equivalent)

	Base year, 1988	Without measures	With measures	Change relative to 1988 (%)	With additional measures	Change relative to 1988 (additional measures) (%)
Energy (IPCC Sector 1)	105.9	105.6	79.9	- 24.5	73.4	- 30.6
of which transport						
Industry (IPCC Sector 2)	10.8	9.6	7.2	- 33.6	7.2	- 33.6
Agriculture (IPCC Sector 4)	23.5	26.1	22.3	- 5.1	22.3	- 5.1
Forestry (IPCC Sector 5)						
Waste (IPCC Sector 6)	16.9	9.6	7.2	- 57.2	5.5	- 67.2
Total without LUCF	157.1	151.0	116.7	- 25.7	108.5	- 30.9

Note: The sum of sectoral emissions and projections is not the same as the sum of projections by gas.

Explanations in the third national communication text are not provided. It is unclear what is not included in sectoral projections.

While the with measures scenarios generally refer to environment-friendly development, the with additional measures scenario comprises planned policies and measures.

Evaluation of Projections

The data in Tables A.189–188 are based on information from the third national communication.

The with measures projection shows that the currently implemented or adopted measures of Bulgaria could reduce greenhouse gas emissions by 15 % from the 1998 level by 2010 and with additional measures by approximately 20 % (Table A.186). Table A.187 summarises the projections by sector.

Table A.188 Assessment of the target (2010)

	Mt CO₂ equivalent	Percentage of 1988 level (three gas basket) (%)
Base year emissions (from projections)	157.1	
Commitment (base year emissions)	144.5	- 8
2010 emissions with measures	133.7	- 15
Gap (negative means no gap)	- 10.8	- 7
Effect of additional PAMs	- 8.2	- 5

Some parameters used in scenarios

Parameter	1999	2000	2005	2010	2015	Unit
GDP total	22.7	23.8	29.8	35.7	41.4	10 ⁹ levs. constant prices of 1999
Expected GDP growth rates		(2001-03) 5	(2004-08) 4	(2009-11) 3.5	(2012-15) 3	%
Primary energy consumption with measures		946	1 009	1 128	1 213	PJ
Primary energy consumption without measures		946	969	1 087	1 154	PJ
Average annual increase of the gross electricity demand (minimum scenario)		(2000-05) 2.9	2006-10 1.3	(2010-15) 0.9	(2000-15) 1.5	%
Share of industry on GDP formation	36	36	34	33	31	%
Share of agriculture on GDP formation	15	15	12	12	13	%
Share of services on GDP formation	45	45	49	50	49	%

Description of modelling approach

Emissions from the energy sector are projected with the modelling framework of the ENPEP model (modules MACRO, Demand, Balance, WASP and Impacts) based on three indicators: GDP, population and sectoral energy demand. The GDP forecast was developed in collaboration with the International Monetary Fund. Projections in industry include mainly ferrous industry, chemistry, building materials and the beverage industry. Due to the change in ownership in agricultural land and changes in practices, scenarios in the agricultural sector are difficult to develop. GHG emissions for agriculture are therefore projected under two scenarios, without measures for energy savings and with some measures in livestock breeding. Projections of CO₂ sequestration and land use are based on the forestry act, rules for timber extraction used for construction and combustion. Total GHG emissions are calculated as a sum of all emissions. LUCF is not included in totals.

Country conclusions

The main document used for this summary was the third national communication. The level of detail in the policies and measures chapter is in line with UNFCCC guidelines. The details of the methodology for the projections are partly described. The scenarios are provided for sectors and for total GHGs, and separately for CO₂, methane and nitrous oxide (the totals obtained by gas are not the same as totals obtained by sector). The key policies and measures are presented in tables, potential greenhouse gas savings are summarised only in figures presenting emission projections.

The projected decrease from the base year with measures implemented and adopted is 15 % in the basket of six greenhouse gases by 2010. Additional policies and measures are applicable to reduce GHG emissions to 20 % below base year levels by 2010. This shows that Bulgaria has the potential to go beyond Kyoto targets.

Table A.189 Summary of mitigation policies and measures in energy sector

Policy name	Objective	GHG affected	Type of instrument	Status	Implementing entity(ies)	Mitigation impact by gas (t CO ₂ eq.)		
						1995	2000	2005
Elaboration of Individual heat accounting program	The program sets conditions for carrying out of various services for implementation of EE measures, measuring equipment and accounting of consumed energy	CO ₂ , CH ₄ , N ₂ O	Economic	A	EEA	Significant but cannot be measured at this point.		
Establishment of J I unit	Trading of 3 Mt CO ₂ eq. with the Netherlands	CO ₂ , CH ₄ , N ₂ O	Economic	A	EEA and MOEW	3 Mt for the period 2008–2012		
Coordination of a project under SAVE II: Research of the possible implementation of a large scale program for energy saving in Bulgaria	Assessment of the potential for improvement of energy efficiency in all sectors and branches in Bulgaria.	CO ₂ , CH ₄ , N ₂ O	Research	A	EEA	Expected effect: mitigation of 2 Mt CO ₂ eq.		
SAVE II project: Indicators for energy efficiency in the CEE – pilot project for Hungary and Bulgaria	Integration of Bulgaria to the central database ODYSSEE for monitoring of national progress of each EU country member and achievements of the national goals in the EE sector.		Research	I	EEA	-		
Projects for EE demonstration zones in Blagoevgrad, Plovdiv and Burgas within the frame of UNECE project "ECE-CIS-99-043 Development of Energy Efficiency Project for Mitigation of Climate Changes" under the Energy Efficiency 2000 program in 2 directions: street lighting; heating and hospitals	Reduced energy use in the 3 directions: street lighting, heating and hospitals in the 3 demonstration zones	CO ₂ , CH ₄ , N ₂ O	Economic	I – 1st part of the project i.e. training of representatives from municipalities and preparation of 25 project proposals	EEA and municipalities	Significant		
Project proposal: Pilot project for EE improvement of street lighting in Sofia; PHARE 2001	Reduced power consumption by use of efficient lighting system	CO ₂ , CH ₄ , N ₂ O	Economic	-	EEA	1,700		
Development of National Program of Renewable Energy Sources	Assessment of RES potential in Bulgaria and elaboration of regional and sectoral programs for their penetration	CO ₂ , CH ₄ , N ₂ O	Economic	A	EEA	Significant, but cannot be estimated at this point		
Adoption of a pattern for contracts on energy savings with guaranteed outputs in Bulgaria (joint venture with Energy Agency of Berlin)	Elaboration of a specific model for energy saving contracts with guaranteed output and suitable for Bulgarian conditions	CO ₂ , CH ₄ , N ₂ O	Economic	A, 1st phase is implemented	EEA and Energy Agency of Berlin	Cannot be estimated at this point		
Sustainable energy planning at local level (joint venture with UK company – ESD Ltd.)	Elaboration of regional energy plans for sustainable development and setting of priorities and measures for improvement of energy services at local level	CO ₂ , CH ₄ , N ₂ O	Economic	A	EEA and ESD Ltd.	Cannot be estimated at the moment		
Replacement of heating installation in "Christo Botev" School in Velingsrad	Shift to geothermal energy source	CO ₂ , CH ₄ , N ₂ O	Economic	I	EEA	150		
Information campaign on energy efficiency and Renewable Energy Sources (RES) – PHARE 2000	Public awareness on EE and the benefits of RES		Education	A	EEA	-		
Completion of new NPP units	To compensate for expected early termination of 4 units in Kozloduy NPP	CO ₂	Investment	P	NPP Belene	3 Mt		

Policy name	Objective	GHG affected	Type of instrument	Status	Implementing entity(ies)	Mitigation impact by gas (t CO ₂ eq.)		
						1995	2000	2005
Safety improvement and NPP rehabilitation	Nuclear safety and loading factor improvement by 15%	CO ₂	Investment	A	NPP Kozloduy	2.5 Mt		
TPP rehabilitation	Efficiency, availability and environmental performance improvement, lifetime extension	CO ₂	Investment	A	Ministry Of Energy	1–1.3 Mt		
Electricity transmission losses reduction	Improved operation of HV transmission network	CO ₂	Investment	A	NEC	0.3 Mt		
HPP rehabilitation	Improved efficiency of the HPP	CO ₂	Investment	A	NEC	50–120 kt		
Cogeneration plant rehabilitation and upgrading	Installation of natural gas turbines at District heating plants, efficiency improvement	CO ₂	Investment	P	Ministry of Energy	2 Mt		
Heat transmission and distribution losses reduction	Improved isolation of heat transmission and distribution pipelines	CO ₂	Investment	A	Ministry of Energy	0.5–2 Mt		
Individual heat consumption measurements and control	Installation of individual measurement and control	CO ₂	Investment	A	Households	0.5–4 Mt		
Electricity distribution losses reduction	Improved operation of electricity distribution network	CO ₂	Investment	A	7 DISCO	0.3–0.7 Mt		
2 x 440 MW nuclear power units phase out	To meet EU requirements for EU membership	CO ₂	Investment	P 2003	NPP Kozloduy	5.4 Mt increase		
2 x 440 MW nuclear power units phase out	To meet EU requirements for EU membership	CO ₂	Investment	P under discussion – 2007	NPP Kozloduy	5.1 Mt increase after 2006		
Construction of 2 x 335 MW lignite fired thermal power units	To increase import fuel independence of the country, to fulfil the long term electricity export contracts	CO ₂	Investment	P permit issuing	AES Horizon	2004 (3.3 Mt increase), 2005 (3.3 Mt increase)		
Restructuring of power sector	Liberalization of electricity market	CO ₂	Legislation	A	Ministry of energy	-		
Energy efficiency program for municipalities	Reduced fuel consumption by municipalities, hospitals, schools, etc.	CO ₂	Policy	A	Municipalities, NGOs, EEA	0.5–4.5 Mt		
Natural gas market liberalization	Accelerated penetration of natural gas to the market	CO ₂	Policy	P	Ministry of energy	-		
Natural gas supply to households	Support for fuel switching in households and construction of distribution network	CO ₂	Investment	A	Private companies and municipalities	0.3–3 Mt		
National Program on Renewables	Institutional support for Renewable energy penetration	CO ₂	Policy	P	EEA			
Energy Conservation in Buildings		CO ₂						
Coal prices liberalization	Restructuring of inefficient coal mining	CH ₄ , CO ₂	Policy	I	Ministry Of Energy	-		
Utilization of nuclear units 3 and 4 in NPP Kozloduy till the end of their design lifetime	Improved safety of nuclear units	CO ₂	Policy	P	Government	10 Mt (after 2007)		
Accelerated penetration of renewables for electricity production (micro-hydro and HPP)	Utilization of hydro potential	CO ₂	Investment	P	NEC, Private companies	0.2–3 Mt		

Table A.190 Summary of mitigation policies and measures in transportation

Policy name	Objective	GHG affected	Type of instrument	Status	Implementing entity(ies)	Mitigation impact by gas [t CO ₂ equivalent]		
						1995	2000	2005
1. Normative documents related to the Law on road traffic	Improved road traffic	N ₂ O	legislative	I	MRRB		n.a.	
2. Improvement of the infrastructure of the transport system	Improved infrastructure	N ₂ O	policy (chapter VI – Investment policy)	I	MRRB		gradual reduction of emissions: 2000 – 3,100 t; 2005 – 5,000 t	
3. Strategy for the development of transport infrastructure in the medium term	Environmental performance of transport sector	GHG	policy	A	MTC	–	–	625 kt

Table A.191 Summary of mitigation policies and measures in industrial sector

Policy name	Objective	GHG affected	Type of instrument	Status	Implementing entity(ies)	Mitigation impact by gas [t CO ₂ equivalent]		
						1995	2000	2005
1. Reduced operation time of steam boiler with 5000 Nm ³ /h load	Change in the technological scheme of ammonia transportation	CO ₂	Technical	I	'Neohim' – Dimitrovgrad	63,828	63,828	63,828
2. Shut-down of a compressor for natural gas pressure rise	Optimisation	CO ₂	Technical	I	'Neohim' – Dimitrovgrad	–	32,328	32,328
3. Restructuring of a reforming furnace	Optimisation	CO ₂	Technical	P	'Neohim' – Dimitrovgrad	–	–	17,784
4. Use of heat from cathode waste gas (H ₂)	Reduction of fossil fuel use (10 000 t coal/yr)	CO ₂	Technical	P	'Polimer' – Devnja	–	–	25,000
5. Reduce consumption of CO ₂	Reduced production	CO ₂	Technical	I	'Kotlostroene' – Sofia	5.5	9.4	9.4
6. Reduce fuel use	Reduced production	CO ₂	Technical	I	'Kotlostroene' – Sofia	0.7	0.85	0.85
7. Installation for wood briquettes	Utilisation of waste wood	CO ₂	Technical	I	Sviloba – Svishtov	–	12,480	12,480
8. Installation for production of pallets from waste wood bark	Utilisation of waste wood	CO ₂	Technical	P	Sviloba – Svishtov	–	–	43,440
9. Use of chemical additive for liquid fuels 'Helios'	Improved combustion process	CO ₂	Technical	I	Balkanfarma – Trojan	–	5.4	6.3
10. Gas supply to steam boiler	Reduced emissions	CO ₂	Technical		Balkanfarma – Trojan	–	6.8	6.2
11. New equipment of units; change of burners	Automated dose meters and use of residual and natural gas	CO ₂	Technical	I	Balkanfarma – Dupnica	227,355	227,614	227,614
12. Gas supply of steam plant	Reduction of emissions	CO ₂	Technical	P	Balkanfarma – Dupnica	–	–	14,000
13. Technological upgrading	Optimisation	CO ₂ , N ₂ O	Technical	I	Serdika – Stara Zagora	1,700 1,225	1,860 388	–
14. Restructuring of steam boiler	Shift from residual to natural gas (900 t residual oil/yr)	CO ₂ , N ₂ O	Technical	A	Serdika – Stara Zagora	–	2,200 101	2,100 34
15. Restructuring and replacement of filters	Emission reduction	CO ₂	Technical	A	KCM – Plovdiv	–	4,300	3,700
16. Restructuring of electric filter of lime furnace	Better dust catching	CO ₂	Technical	A	Stomana – Pernik	–	20,100	18,500
17. Construction of dust precipitators	Emission reduction	CO ₂	Technical	A	Stomana – Pernik	–	3,100	2,900
18. New filters to the dust precipitators	Emission reduction	CO ₂	Technical	A	Bentonit – Kardjali	–	560	440
19. Restructuring of industrial sector; privatisation and energy efficiency improvement	Improved efficiency, organizational and low cost measurements for energy efficiency improvement	CO ₂	Policy	A	Privatisation Agency / Private companies	2.1-4 Mt		
20. Closure of non-competitive industrial enterprises	Reduced state subsidy	CO ₂ , N ₂ O	Policy	I	Government	4.3 Mt		
21. Energy efficiency program for industry	To facilitate energy efficiency improvement in industrial enterprises	CO ₂	Program/Policy	A	Ministry of Industry	2.5-6 Mt		

Table A.192 Summary of mitigation policies and measures in agriculture

Policy name	Objective	GHG affected	Type of instrument	Status	Implementing entity(ies)	Mitigation impact by gas [t CO ₂ equivalent]		
						1995	2000	2005
1.Introducing EC standards	Harmonisation with EU legislation		Regulatory	I	MAF	-	-	-
2.Balanced agro-chemical treatment and fertiliser use	Reduced emissions	N ₂ O	Technical	P	MAF	-	1,500 kt	2,100 kt
3. Improved animal productivity and feeding conditions	Reduced emissions	CH ₄ , N ₂ O	Technical	A	MAF	-	230 kt 32 kt	270 kt 41 kt

Table A.193 Summary of mitigation policies and measures in waste management

Policy name	Objective	GHG affected	Type of instrument	Status	Implementing entity(ies)	Mitigation impact by gas [t CO ₂ equivalent]		
						1995	2000	2005
1. Prevention and reduction of waste production	Pilot projects for different type of cities for assessing of the waste charge in relation to the quantity waste generated Elaboration and introducing restrictions for disposal of waste suitable for recycling	CH ₄	Technical	I	MOEW		210 kt	450 kt
2. Reuse and recycling	system for separate collection of waste; wood waste utilisation branch strategies for waste management	CH ₄	Technical	I	MOEW	21 kt	79.8 kt	117.6 kt
3. Environmentally-sound waste disposal	Building up and reconstruction of MSW landfills in accordance to the contemporary technical norms and standards; MSW incineration and composting sludge treatment	CH ₄	Technical	A	MOEW			260 kt
4. Minimisation of the risk from old contaminated sites	Liquidation of old polluted sites							
5. Legal regulation of waste management	municipal regulations, defining the management of municipal and construction waste, generated on the territory of the municipality; Elaboration of regulation on the sludge treatment and implementation of the requirements of Directive 96/278/EEC;	CH ₄	Regulatory	P	MOEW			
6. Public awareness and participation in waste management issues	To couple the issue with the climate change problem	CH ₄	Policy	I	MOEW			
7. Improving of the system for monitoring, data collection and control	Will improve the quality of GHG inventory and will clearly indicate the areas for further improvement (e.g. cadastre and registers about waste sector)	CH ₄	Policy	I	MOEW			

Czech Republic

Sources of Information

The Czech Republic's third national communication under the United Nations Framework Convention on Climate Change, 2001.

Assessment of Policies and Measures

A number of measures are carried out in the Czech Republic to mitigate emissions of greenhouse gases. These measures are concentrated on a specific aspect or sector and also include framework measures. The targets and consequences of a number of adopted measures can, however, be much broader, because it is particularly necessary to decrease detrimental impacts on the environment as a whole. Key measures with the greatest expected benefit include the following framework multi-sectoral measures:

- adopting a strategy for protection of the earth's climate system in the Czech Republic;
- including the aspect of protection of the climate and incorporating a national programme to mitigate changes in the climate of the earth in the newly prepared air protection legislation;
- adopting a new energy act and new act on energy management.

Measures included in the third national communication can be divided into (a) implemented measures, and (b) measures being prepared, classified according to the relevant sector into:

- framework/multi-sector measures
- measures in the sector of energy production and energy consumption
- measures in the transport sector
- measures in the industrial sector

Table A.194 Information provided on policies and measures

Information provided	Level provided	Comments
Name of measure	+++	
Target and/or affected activity	+++	
Type of measure	++	
Which greenhouse gases?	CO ₂ , CH ₄ , N ₂ O, all GHGs	
Status of implementation	+++	
Implementation body specified	+++	
Quantitative assessment of implementation	+	Only some measures are quantified
Interaction with other PAMs discussed	++	In some cases

+, ++, +++ level of information available increases as the number of + signs increases.

Table A.195 Information provided on projections

Category of information	Level of information provided	Comments
Scenarios considered	Reference and high scenarios without, with measures, with additional measures	Scenarios are given for key parameters, and national totals of CO ₂ , CH ₄ and N ₂ O, sectors with measures only
Expressed relative to inventory for previous years	No	
Starting year	2000 (1999)?	Not clear from the text
Projections	2005, 2010, 2015, 2020	
Split of projections	++	Projections split by IPCC main sectors and gases
Presentation of results	++	Results presented in both tabular and graphical form
Description of model (level of detail, approach and assumptions)	+++	Description of the models and further references provided
Discussion of uncertainty	+	Sensitivity analyses on trends in GDP, sensitivity analyses on implementation measures discussed
Details of parameters and assumptions	+++	Information on type of indicators used in scenarios provided

+, ++, +++ level of information available increases as the number of + signs increases.

Table A.196 Summary of the effect of policies and measures by 2010 included in the projections (Mt CO₂ equivalent)

	With measures	With additional measures
CO ₂		
CH ₄		
N ₂ O		
F-gases		
Energy (IPCC Sector 1)		
Industry (IPCC Sector 2)		
Agriculture (IPCC Sector 4)		
Forestry (IPCC Sector 5)		
Waste (IPCC Sector 6)		
Total		

Note: The effect of policies implemented or adopted is derived from the sum of the potential of the individual scenarios comparing without and with measures.

No summary tables were provided in the third national communication on projections.

Table A.197 Detailed information on policies and measures (estimated mitigation effect in 2010, in million tonnes CO₂ equivalent)

Name of measure	Target and/or affected activity	Affected greenhouse gases	Type of measure	State	Implementation authority	Expected benefit in decreasing emissions of greenhouse gases (for each year, not accumulated, in CO ₂ equiv.)			
						1995	2000	2005	2010
<i>Framework / multisectoral measures</i>									
Strategy of protection of the climate system of the Earth in the Czech Republic	Provision for meeting commitments following for CR from the Kyoto Protocol	All greenhouse gases	Policy, framework	Implemented	Government of CR and entrusted Ministries	0	n/a	n/a	n/a
Preparation of the new Clean Air Act	Harmonization of CR legislation with the European Union legislation	CO ₂	Legislative	Prepared	Ministry of the Environment and other bodies of the state administration in the area of air protection	New Act on Energy	n/a	n/a	n/a
New Energy Act	Harmonization of CR legislation with the European Union legislation	CO ₂	Legislative	Implemented	Ministry of Industry and Trade and the Energy Regulation Authority	0	n/a	n/a	n/a
The Act on energy management	Harmonization of CR legislation with the European Union legislation	CO ₂	Legislative	Implemented	Ministry of Industry and Trade	0	n/a	n/a	n/a
<i>Alf Project - Škoda Mladá Boleslav⁴⁰</i>	<i>Energy savings and decreasing emissions in the framework of the Alf project</i>	CO ₂	<i>Economic, voluntary activities</i>	<i>Implemented</i>	<i>German Government in cooperation with Escharwerk AG and RWE Energie</i>	0	27.2	27.2	27.2
<i>Alf Project - Hochtief⁴¹</i>	<i>Energy savings and decreasing emissions in the framework of the Alf project</i>	CO ₂	<i>Economic, voluntary activities</i>	<i>Implemented</i>	<i>Government of the Netherlands in cooperation with BTG Group</i>	0	49	49	49
<i>Proposed B project - biomass sources portfolio⁴²</i>	<i>Energy savings and decreasing emissions in the framework of the Alf project</i>	CO ₂	<i>Economic, voluntary activities</i>	<i>Prepared</i>	<i>Government of the Netherlands in cooperation with BTG Group</i>	0	0	263	244

- measures in the sector of agriculture and forestry
- measures in the waste management sector.

Additional measures should contribute to decreased emissions through implementation of the new air act (1 January 2002), implementation of Directive 96/61/EC on IPPC and the new act on waste and packaging.

Table A.197 gives details of individual policies and measures.

Evaluation of Projections

The reference scenario for trends in the economy of the Czech Republic is constructed as an extrapolation of the long-term trends in the Czech economy, which can be observed over the past 80 years. On the basis of analysis of long-term trends, it can be expected that there will be a long-term average inter-annual growth in GDP of about 3%. This trend would mean no, or only very slow, approximation to the developed countries of the world, as most of these

Table A.197 *cont.*

Name of measure	Target and/or affected activity	Affected greenhouse gases	Type of measure	State	Implementation authority	Expected benefit in decreasing emissions of greenhouse gases (for each year, not accumulated, in CO ₂ equiv.)			
						1995	2000	2005	2010
Sector of energy production and energy consumption									
State program of support for savings of energy and use of renewable energy sources – Part A Program of the Czech Energy Agency	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	CO ₂	Economic Information Educational Research	Implemented	Czech Energy Agency	150	222	297	356
State program of support for savings of energy and use of renewable energy sources Part B – Program of the State Environmental Fund	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	CO ₂	Economic Information Educational Research	Implemented	State Environmental Fund	n/a	73	n/a	n/a
Support from the State Environmental Fund in the area of air protection	Decreasing emissions of pollutants into the air	CO ₂	Economic	Implemented	State Environmental Fund	n/a	1 160	n/a	n/a
GIF Efficient lighting initiative	Decreasing emissions of greenhouse gases through accelerated introduction of energy-saving lighting technology	CO ₂	Economic Information Educational	Implemented	Global Environment Facility (GIF), STVEH (local coordinator)	0	0	425	425
Program of support for reconstruction and recovery of concrete panel buildings	Repair and reconstruction of concrete panel buildings	CO ₂	Economic	Implemented	Ministry for Regional Development	0	n/a	n/a	n/a
Transport									
Set of measures in the transport sector	Decreasing emissions of pollutants	CO ₂ , methane, N ₂ O	Regulative Legislative Economic Fiscal Information	Implemented	Ministry of Transport and Communications in cooperation with other sectors	1 354	1 845	2 797	3 917
Industry									
Introduction of Directive 96/61/EC concerning Integrated Pollution Prevention and Control (IPPC)	Harmonization of the CR legislation with the EU legislation	CO ₂ , methane, N ₂ O	Legislative	Implemented/ prepared	Ministry of the Environment Ministry of Industry and Trade	0	0	n/a	n/a
Agriculture and forestry									
Support for afforestation of unused agricultural areas	More rational use of agricultural land	CO ₂	Economic	Implemented	Ministry of Agriculture	84	84	84	84
Support for the production of alternative motor fuel	Non-foodstuff use of domestic agricultural production	CO ₂	Economic	Implemented	Ministry of Agriculture	n/a	60	n/a	n/a
Waste management									
Draft Act on waste and Draft Act on packaging	Harmonization of the CR legislation with the EU legislation	CO ₂ , methane, N ₂ O	Legislative	Implemented/ prepared	Ministry of the Environment Ministry of Industry and Trade	0	0	n/a	n/a
Utilization of landfill gas and biogas from waste water treatment plants	Decreasing emissions of methane from landfills and waste water treatment plants	methane	Technical	Implemented	Operators of landfills and waste water treatment plants	n/a	n/a	n/a	n/a

n/a: data not available or cannot be estimated at the present time.

Note: benefits of AJJ and JI projects are not included in the overall benefit for the Czech Republic.

Table A.198 Summary of projections by gas in 2010 (Mt CO₂ equivalent)

	Base year	With measures reference scenario	With measures high scenario
CO ₂ without LUCF	164	107.1	125.9
CH ₄	16.7	10.6	10.3
N ₂ O	11.3	8.0	8.2
F-gases		0.7	0.9
PFC			
SF ₆			
Total	192	131.7	145.2
Change relative to base year (%)		- 31	- 23

Table A.199 Summary of projections by sector in 2010 (Mt CO₂ equivalent)

	Base year	With measures	Change relative to 1990 (%)	With additional measures	Change relative to 1990 (additional measures) (%)
Energy (IPCC Sector 1)					
Industry (IPCC Sector 2)					
Agriculture (IPCC Sector 4)					
Forestry (IPCC Sector 5)					
Waste (IPCC Sector 6)					
Total					

Note: No summary tables were provided in the third national communication on projections.

Table A.200 Assessment of the target

	Mt CO ₂ equivalent (reference scenario)	Percentage of 1990 level (six gas basket)	Mt CO ₂ equiv. High scenario	Percentage of 1990 level (six gas basket)
Base-year emissions (from projections)	192		192	
Commitment (base-year emissions)	176.6	- 8.0	176.6	- 8.0
2010 emissions with measures	131.7	- 31	145.2	- 23
2010 emissions with additional measures	125.3	- 35	138.8	- 28
Gap between with measures and commitment (negative means no gap)	- 44.9	- 23	- 31.4	- 16
Effect of additional PAMs	6.4	- 3.3	6.4	- 3.3

countries expect an annual growth in GDP of 2–3 %.

In the high scenario, the strategy of strengthening growth in the national economy prepared by the Czech Republic Ministry of Industry and Trade anticipates that, with substantial support for the economy on the part of the state, there is to be a gradual starting up of rapid economic growth, at the level of 4–6.6 % annually. This scenario anticipates a gradual increase in the rate of increase of GDP from 3.1 % (in purchase prices) in 2000 to 4.1 % in 2001, and up to 6.4 % in 2003. The Czech Republic is expected to gain full membership of the EU in 2004 and it is expected that the high rate of growth of

GDP will continue or possibly increase slightly to up to 6.6 % annually in 2004 and 2005. The high scenario is based on the starting up of significant recovery of the economy in 2000, on the existence of a number of adopted strategic and conceptual national economy documents, acting on intensification of the economy, and on the government strategy to accelerate legislative steps to prepare the Czech Republic for accession to the EU.

The with measures projection shows that the currently implemented or adopted measures in the Czech Republic could reduce greenhouse gas emissions by 2010 by 31 % in the reference scenario, thus meeting their

Summary of key variables and assumptions in the projection analyses

	Statistics			Projection			
	1990	1995	2000	2005	2010	2015	2020
Inter-annual change of GDP (%)							
High scenario	—	- 0.2	1.0	5.8	4.8	5.5	5.5
Reference scenario				3.0	3.0	3.0	3.0
World prices of crude oil (USD/barrel)							
High scenario				26.04	26.66	28.23	28.42
Reference scenario	24.18	17.10	27.59	20.83	21.37	21.89	22.41
Population (million persons)							
Both scenarios			10 268	10 247	10 244	10 200	10 098
Net export of electric power (TWh)							
Both scenarios			10 016	5.0	5.0	5.0	5.0

commitment. Even if high growth in the economy is achieved, emissions are projected to decrease in 2010 by 23 % compared with 1990. Additional measures have been identified that would deliver savings of 6.4 Mt CO₂ in the high scenario.

Description of modelling approach

The projection without measures is a projection that does not include measures that came into effect after 1995 inclusive. This projection is established on the basis of the calculated projection with measures, which is increased by the benefit of measures implemented after 1995.

The projection with measures includes measures that came into effect after 1995, including measures approved in 2000. This projection is calculated using the Markal model and a tabular processor.

The projection with additional measures includes the expected effects of additional measures that are currently being prepared and are expected to be approved in the coming years, and also measures planned in connection with harmonisation with EU regulations. This projection is derived from the projection with measures, decreased by the expected effect of these additional measures.

Country conclusions

The Czech Republic project that with existing measures the Kyoto commitment will be exceeded, even with assumptions of high growth. Nevertheless, additional measures to deliver further emissions reductions have been identified.

Estonia

Sources of Information

Estonia's third national communication under the United Nations Framework Convention on Climate Change, 2001

Reporting

Two chapters in the third national communication deal with projections

and measures. Chapter 4 provides tables, with policies and measures to reduce greenhouse gas emissions in the energy, transport, industry, agriculture, forestry and waste management sectors. The impact of single measures has been partly quantified for years 2000 and 2005.

Table A.201 Information provided on policies and measures

Information provided	Level provided	Comments
Name of policy/measure	+++	
Type of instrument	+++	
Which greenhouse gases?	CO ₂ , CH ₄ , all GHGs	Some NMVOC, SO ₂
Status of implementation	+++	
Implementation body specified	++	In most cases
Quantitative assessment of implementation	+	Estimated mitigation effect for 2005; only some measures are quantified in non-energy sectors
Interaction with other PAMs discussed	++	In some cases

+, ++, +++ level of information available increases as the number of + signs increases.

Table A.202 Information provided on projections

Category of information	Level of information provided	Comments
Scenarios considered	With measures With additional measures	Scenarios are given for sectors corresponding with IPCC sectors and gases
Expressed relative to inventory for previous years	No	
Starting year	1999?	Not clear from the text
Projections	2000, 2005, 2010, 2015, 2020	
Split of projections	Yes	Projections split by IPCC main sectors and gases
Presentation of results	+++	Results presented in both tabular and graphical form
Description of model (level of detail, approach and assumptions)	++	Basic description of the models and further references provided
Discussion of uncertainty	No	
Details of parameters and assumptions	+++	Information on type of indicators used in scenarios provided

+, ++, +++ level of information available increases as the number of + signs increases.

Table A.203 Summary of the effect of policies and measures by 2010 included in the projections (Mt CO₂ equivalent)

	With measures	With additional measures
CO ₂		
CH ₄		
N ₂ O		
F-gases		
Energy (IPCC Sector 1)	- 22.7	- 0.8
Industry (IPCC Sector 2)	- 0.3	0.0
Agriculture (IPCC Sector 4)	- 1.0	- 0.4
Forestry (IPCC Sector 5)	- 0.9	- 1.1
Waste (IPCC Sector 6)	- 0.6	- 0.4
Total	- 25.5	- 2.6

Note: The effect of policies implemented or adopted is derived from the sum of the potential of the individual scenarios comparing without and with measures.

Table A.204 Detailed information on policies and measures (estimated mitigation effect in 2010, in million tonnes CO₂ equivalent)**Energy sector**

Name of policy / measure	Objective and/or activity affected	GHG affected	Type of instruments	Status	Implementing entity/entities	Mitigation impact, Gg in CO ₂ equivalent		
						1995	2000	2005
Long-term National Development Plan for the Fuel and Energy Sector	Reduction of emissions; energy efficiency	CO ₂	Regulatory	Planned, ongoing	MoEA	-	110	800
National Energy Conservation Programme	Reduction of emissions	CO ₂	Regulatory	Planned, ongoing	MoEA	-	90	950
Estonian National Environmental Strategy	Reduction of emissions	CO ₂	Regulatory	Planned, ongoing	All ministries	-	70	190
National Programme for Reduction of Pollutant Emissions from Large Combustion Plants (for 1999-2003)	Reduction of emissions;	CO ₂	Regulatory	Planned, ongoing (up to 2003)	MoEA	-	70	200
Quality requirements for liquid fuels	Reduction of emissions	CO ₂	Regulatory	Implemented	MoEA; EMI	-	5	20
Emission standards of pollutants into ambient air by large combustion plants	Reduction of emissions	CO ₂	Regulatory	Planned, partially implemented	MoE, MoEA	-	n.a.	n.a.
Fuel switch from coal	Reduction of emissions	CO ₂	Voluntary	Implemented	Utilities	350	350	350
Boiler conversion programme		CO ₂	Voluntary	Implemented		5	42	42
Swedish assistance (NUTEK)		CO ₂	Foreign aid	Implemented	MoEA	40	94	131
Renovation of DH systems		CO ₂	Voluntary	Ongoing		2	30	50
Local energy planning		CO ₂	Regulatory	Ongoing		15	28	35
Revised Building Code		CO ₂	Regulatory	Implemented		4	10	18
Implementation of EU SAVE Directive	Energy auditing and certification	CO ₂	Regulatory/voluntary, educational	Planned	MoEA	-	-	15
Renovation of apartment houses		CO ₂	Voluntary	Ongoing		-	-	8
Renovation of Narva Power Plants		CO ₂	Voluntary	Planned	Eesti Energia, MoEA	-	-	500
Labelling of household appliances		CO ₂	Regulatory	Planned, ongoing	MoEA	-	-	10
Regulation establishing target values for pollution level of the ambient air	Reduction of emissions		Regulatory	Planned		-	n.a.	n.a.
Pollution Charge Act	Reduction of emissions		Regulatory	Implemented	MoF	-	n.a.	n.a.

Assessment of Policies and Measures

The Estonian national environmental strategy (RT I 1997, 26, 390), approved by the Parliament in 1997, is the major basis document for the policy-making process in the field of environment.

The national environmental action plan (NEAP) defines concrete, conceptual, legislative, organisational, educational, training and also investment measures

for reaching the objectives set in the national environmental strategy. The implementation process of the new NEAP, accepted by the government on 5 June 2001, is in progress.

Overall coordination in the implementation phase lies with the Ministry of the Environment. Several other ministries jointly responsible for

Transport sector

Name of policy / measure	Objective and/ or activity affected	GHG affected	Type of instruments	Status	Implementing entity/entities	Mitigation impact, Gg in CO ₂ equivalent		
						1995	2000	2005
Quality requirements for liquid fuels	Reduction of emissions	CO ₂	Regulatory	Implemented	MoEA;EMI	-	5	20
Requirements for transport and storage of petrol	Reduction of emission	NMVOG	Regulatory	Implemented	MoE	-	n.a.	n.a.
Motor Vehicles Excise Act	Reduction of emissions	CO ₂ NMVOG	Regulatory	Implemented	MoF	-	n.a.	n.a.
Heavy Goods Vehicle Tax Act	Reduction of emissions	CO ₂ NMVOG	Regulatory	Implemented	MoF	-	n.a.	n.a.
Development Plan of the Transport Sector for 1999-2006	Reduction of emissions	CO ₂	Regulatory	Implemented	MoT	-	5	100

Industrial sector

Name of policy / measure	Objective and/ or activity affected	GHG affected	Type of instruments	Status	Implementing entity/entities	Mitigation impact, Gg in CO ₂ equivalent		
						1995	2000	2005
Estonian National Environmental Strategy	Reduction of emissions	CO ₂	Regulatory	Planned, ongoing	All ministries	-	0,5	12
National Energy Conservation Programme	Reduction of emission	CO ₂	Regulatory	Planned, ongoing	MoEA	-	0,8	35
Quality requirements for liquid fuels	Reduction of emissions	CO ₂ , SO ₂	Regulatory	Implemented	MoEA;	-	n.a.	n.a.
Regulation establishing target values for pollution level of the ambient air	Reduction of emissions	All GHG	Regulatory	Implemented	MoF	-	n.a.	n.a.
Pollution Charge Act	Reduction of emissions	All GHG	Regulatory	Implemented	MoF	-	n.a.	n.a.

Forestry sector

Name of policy / measure	Objective and/ or activity affected	GHG affected	Type of instruments	Status	Implementing entity/entities	Mitigation impact, Gg in CO ₂ equivalent		
						1995	2000	2005
Estonian National Environmental Strategy	Improving forest growth	CO ₂	Regulatory	Implemented	MoE	-	-	-
Estonian Forestry Strategy	Improving forest growth	CO ₂	Regulatory	Planned, ongoing	MoE	-	-	1095,5
Forest Act	Improving forest growth	CO ₂	Regulatory	Implemented	MoE	1460	11951	1739
Restoration of Mining Areas	Improving forest growth	CO ₂	Regulatory	Implemented	MoE	-	8	15

Waste management

Name of policy / measure	Objective and/ or activity affected	GHG affected	Type of instruments	Status	Implementing entity/entities	Mitigation impact, Gg in CO ₂ equivalent		
						1995	2000	2005
Estonian National Environmental Strategy	Reduction of emissions	CH ₄	Regulatory	Planned, ongoing	All ministries	-	n.a.	n.a.
Environmental Impact Assessment and Environmental Auditing Act	Reduction of emissions	CH ₄	Regulatory	Planned, ongoing	MoE	-	n.a.	n.a.
Requirements to Establishing, Using and Closing of Landfills	Reduction of emissions	CH ₄	Regulatory	Planned, ongoing	MoE	-	5	15

Table A.205 Summary of projections by gas in 2010 (Mt CO₂ equivalent)

	Base year	With measures	With additional measures
CO ₂ with LUCF	31.8	8.64	6.91
CH ₄	4.4	2.54	1.83
N ₂ O	1.0	0.48	0.39
HFC			
PFC			
SF ₆			
Total	37.2	11.66	9.13
Change relative to base year (%)		- 68.6	- 75.4

Table A.206 Summary of projections by sector in 2010 (Mt CO₂ equivalent)

	Base year	With measures	Change relative to 1990 (%)	With additional measures	Change relative to 1990 (additional measures) (%)
Energy (IPCC Sector 1)	38.8	16.2	- 58.4	15.4	- 60.3
of which transport					
Industry (IPCC Sector 2)	0.6	0.3	- 44.6	0.3	- 46.3
Agriculture (IPCC Sector 4)	2.4	1.4	- 42.9	1.0	- 57.9
Forestry (IPCC Sector 5)	- 6.3	- 7.2	13.9	- 8.3	31.2
Waste (IPCC Sector 6)	1.6	1.0	- 36.4	0.7	- 58.4
Total without LUCF	43.5	18.9	- 56.5	17.4	- 59.9
Total with LUCF	37.2	11.7	- 68.5	9.1	- 75.4

implementation of some actions have incorporated those actions into their sectoral plans and budgets. County and local governments develop regional and local environmental action plans based on the NEAP experience. Several NGOs promote and raise NEAP awareness among the general public. They are also expected to act as a watchdog over the NEAP implementation process. Finally, the industry sector is expected to use the NEAP as a reference for their future plans related to environmental management.

Table A.204 gives details of the policies and measures by sector.

Evaluation of Projections

The data in Tables A.205–207 are based on information from the third national communication. The projections of the total GHG are based on the concept of global warming potential (GWP) within a 100 year time horizon. The without measures scenario is calculated assuming that the net emission of GHG (on CO₂ equivalent) per every unit of GDP should be constant over time, i.e. that the total increase of GDP is closely connected to the increase of GHG. This assumption is based on close correlation between the decrease of GHG emissions and GDP from 1990 to 1994.

Table A.207 Assessment of the target

Without LUCF	Mt CO ₂ equivalent (reference scenario)	Percentage of 1990 level (six gas basket)
Base-year emissions (from projections)	43.5	
Commitment (base-year emissions)	40.0	- 8.0
2010 emissions with measures	18.9	- 56.5
2010 emissions with additional measures	17.4	- 59.9
Gap between with measures and commitment (negative means no gap)	- 21.1	- 48.5
Effect of additional PAMs	1.5	3.4

Key parameters used in projections

Parameter	Unit	Historical				Projected		
		1990	1995	2000	2005	2010	2015	2020
Population	Million	1.57	1.49	1.37	1.35	1.33	1.31	1.29
GDP (in 1995 constant prices)	Billion EEK	59.0	40.9	52.4	64.3	71.3	79.6	90.0
Annual CPI growth	%	49.0	28.8	5.0	4.0	3.0	2.5	2.5
TPES (excl. motor fuels)	PJ	366.6	200.2	170.4	165.7	166.9	166.7	170.0
Share of renewables*	%	1.8	6.0	11.7	12.7	13.1	13.6	13.9
Pollution charge on CO ₂	EEK/t	-	-	5	11.3	17	25	38
Pollution charge on NO _x	EEK/t	-	48	126	314	782	1947	4848
World oil price**	USD/bbl	23.81	17.18	28.98	20.83	21.37	21.89	22.41

* Share of renewable energy sources in TPES (excl. motor fuels)

** Source of projected figures: Annual Energy Outlook 2001. EIA, US DoE. (1999 USD)

The two projections elaborated were:

- a with measures projection, which reflects the impact of planned measures and the policies and measures implemented in 1995–2000;
- a with additional measures projection, which encompasses additional policies and measures, that may be taken in future.

The with measures projection shows that the currently implemented or adopted measures in Estonia could reduce greenhouse gas emissions by 2010 by 68.6 % and with additional measures by 75.4 %.

Description of modelling approach

Emissions from the energy sector are projected with the modelling framework of the Markal model. Scenarios in the agricultural sector assumed Estonia will reach the level of EU countries. Projections of CO₂ sinks in forestry and land use are primarily focused on the protection of forests, an increase in the area of reforestation, and regulation of

annual harvests. The with additional measures scenario concentrates mainly on forestry activities.

Conclusions

The main document used for this summary was the third national communication. The level of detail in the policies and measures chapter is appropriate and is in line with UNFCCC guidelines. The details of the methodology for the projections are partly described. The scenarios are provided for sectors and for total GHGs, but not separately for sectors, all gases. The key policies and measures are summarised in a table which makes clear the potential greenhouse gas savings.

The projected decrease from the base year with measures implemented (excluding LUCF) and adopted is 56.5 % in the basket of key GHG by 2010. Additional policies and measures are applicable to reduce GHG emissions to 59.9 % below base-year levels by 2010. This shows that Estonia has reserves to fulfil its commitments.

Hungary

Sources of Information

Hungary's third national communication under the United Nations Framework Convention on Climate Change, 2001

Reporting

Two chapters in the third national

communication of Hungary deal with projections and measures. Policies and measures to reduce greenhouse gas emissions are presented for the energy, agriculture and forestry sectors. Reporting is not very transparent. No summary tables are provided, either for measures or for projections.

Table A.208 Information provided on policies and measures

Information provided	Level provided	Comments
Name of policy/measure	?	
Type of instrument	?	
Which greenhouse gases?	CO ₂ , CH ₄	
Status of implementation	?	
Implementation body specified	?	
Quantitative assessment of implementation	+	Estimated mitigation effect for 2012 compared with 2001 for a few measures is quantified
Interaction with other PAMs discussed	+	In some cases

+, ++, +++ level of information available increases as the number of + signs increases.

Table A.209 Information provided on projections

Category of information	Level of information provided	Comments
Scenarios considered	Without measures, with measures, with additional measures	Scenarios are given for sectors corresponding to IPCC sectors and gases
Expressed relative to inventory for previous years	No	
Starting year		
Projections	2000, 2005, 2010, 2015	
Split of projections	+	Projections split by energy, agriculture and forestry
Presentation of results	+	Tables and figures, but not systematic
Description of model (level of detail, approach and assumptions)	+	Basic description of the models and further references provided
Discussion of uncertainty		Limited
Details of parameters and assumptions	+	Information on type of indicators used in scenarios provided, situation across sectors differs

+, ++, +++ level of information available increases as the number of + signs increases.

Assessment of Policies and Measures

Table A.210 Summary of the effect of policies and measures by 2010 included in the projections (Mt CO₂ equivalent)

	With measures	With additional measures
CO ₂		
CH ₄		
N ₂ O		
F-gases		
Energy (IPCC Sector 1)		
of which transport		
Industry (IPCC Sector 2)		
Agriculture (IPCC Sector 4)		
Forestry (IPCC Sector 5)		
Waste (IPCC Sector 6)		
Total		

Note: The effect of policies implemented or adopted is derived from the sum of the potential of the individual scenarios comparing without and with measures.

Evaluation of Projections

Table A.211 Summary of projections by gas in 2010 (Mt CO₂ equivalent)

	Base year	With measures	With additional measures
CO ₂	80.6		
CH ₄	14.0		
N ₂ O	4.0		
HFC			
PFC			
SF ₆			
Total	98.5		
Percentage change relative to base year			

Table A.212 Summary of projections by sector in 2010 (Mt CO₂ equivalent)

	Base year	With measures	Change relative to 1990 (%)	With additional measures	Change relative to 1990 (additional measures) (%)
Energy (IPCC Sector 1)					
of which transport					
Industry (IPCC Sector 2)					
Agriculture (IPCC Sector 4)					
Forestry (IPCC Sector 5)					
Waste (IPCC Sector 6)					
Total					

Note: No summary tables were provided in the third national communication on projections.

Table A.213 Assessment of the target

	Mt CO ₂ equivalent (reference scenario)	Percentage of 1990 level (six gas basket)
Base-year emissions (from projections)	98.5	
Commitment (base-year emissions)	92.6	6.0
2010 emissions with measures		
2010 emissions with additional measures		
Gap between with measures and commitment (negative means no gap)		
Effect of additional PAMs		

Description of modelling approach

The forecast for non-GHG and CO₂ in the energy sector and for transport is provided for 2000, 2010 and 2020, based on reduced fuel consumption. Scenarios A, B, and C for agriculture are provided related to different production quotas concerning EU accession. In forestry, the Casmor model was used: three basic afforestation scenarios were assessed.

Country conclusions

The GHG emission target value accepted in the Kyoto Protocol is 92.6 Mt CO₂. The linear trend from 1994 predicts an annual GHG emission of 100.6 Mt CO₂ for 2008–12. This means that the reduction target for Hungary is 8 Mt CO₂. The baseline scenario results in a reduction of 6.8 Mt CO₂, but the country can reach 11.3 Mt CO₂ through the scenario with measures.

Latvia

Sources of Information

Latvia's third national communication under the United Nations Framework Convention on Climate Change, 2001.

Reporting

The third national communication provides a list of policies and measures to reduce greenhouse gas emissions in a range of sectors. The impact of the measures has been quantified in a few cases. The figures are presented for one scenario. It is not clear from the text if this is with measures or with additional measures.

Assessment of Policies and Measures

Priorities of the policy of environment protection in Latvia are set forth in the declaration on the planned action of the cabinet of ministers and implemented in the preparatory work for accession to the European Union. The Latvian government, in the

declaration, committed to continue work started by the previous governments. The goal is to accelerate the overall development of the country reaching the stage when improvement of macroeconomic indicators results in higher levels of welfare of each resident of Latvia. To reach the goals established by the government in the area of environmental protection, particular attention is devoted to:

- investment projects in the area of household waste;
- potable water and urban wastewater;
- elimination of hazardous waste and creation of a system of final disposal;
- promotion of the development of environmental projects and their implementation in the private sector;
- implementation of the integrated approach to pollution elimination and control, waste management and packaging;
- implementation of the national programme on biological diversity;

Table A.214 Information provided on policies and measures

Information provided	Level provided	Comments
Name of policy/measure	+++	
Type of instrument	++	
Which greenhouse gases?	CO ₂ , CH ₄ , N ₂ O,	Some CO, NO _x
Status of implementation	++	
Implementation body specified	+++	In most cases
Quantitative assessment of implementation	+	Estimated mitigation effect for 2000. For 2005, only a few measures are quantified
Interaction with other PAMs discussed	++	In some cases

+, ++, +++ level of information available increases as the number of + signs increases.

Table A.215 Information provided on projections

Category of information	Level of information provided	Comments
Scenarios considered	With measures With additional measures	Scenarios are given for sectors corresponding to IPCC sectors and gases
Expressed relative to inventory for previous years	No	
Starting year	1999?	Not clear from the text
Projections	2000, 2005, 2010, 2015, 2020	
Split of projections	Yes	Projections split by IPCC main sectors and gases
Presentation of results	+++	Results presented in both tabular and graphical form
Description of model (level of detail, approach and assumptions)	++	Basic description of the models provided
Discussion of uncertainty	No	
Details of parameters and assumptions	+++	Information on type of indicators used in scenarios provided

+, ++, +++ level of information available increases as the number of + signs increases.

Table A.216 Summary of the effect of policies and measures by 2010 included in the projections (Mt CO₂ equivalent)

	With measures	With additional measures
CO ₂	- 11.9	
CH ₄	- 2.8	
N ₂ O	- 1.8	
F-gases		
Energy (IPCC Sector 1)		
Industry (IPCC Sector 2)	- 14.0	
Agriculture (IPCC Sector 4)	0.0	
Forestry (IPCC Sector 5)	- 3.3	
Waste (IPCC Sector 6)	1.2	
Total	0.2	
	- 15.9	

Note: The effect of policies implemented or adopted is derived from the sum of the potential of the individual scenarios comparing without and with measures.

- further development of the monitoring system of environment protection in line with the respective EU provisions; and
- development of environmental education and an environment communication programme.

Questions related to climate change are addressed by the Latvian Environment Agency (MEPRD), the Ministry of Economy (SHMB), and the Latvian

Development Agency Ministry of Finance and Energy Department (LDA ED).

Greenhouse gas emission reduction is not the primary objective of the measures described in the chapter on policies and measures, but is rather a side effect of their implementation. Development scenarios of the sector cover only those activities where it was possible to evaluate the impact on

Table A.217 Detailed information on policies and measures (estimated mitigation effect in 2010, in million tonnes CO₂ equivalent)

Summary of policies and measures in the energy sector

Name of policy or measure	Objective	GHG affected	Type of instrument	Status	Implementing entity or entities	Estimate of mitigation impact, by GHG, Gg in CO ₂ equivalent.		
						1995	2000	2005
Energy generation and transmission (IA1)								
<i>Policy: Use of renewable energy resources in energy generation and transmission sector</i>								
Wider use of fuel wood for centralised district heating	To increase share of wood in the fuel balance earmarked for district heating	CO ₂	Economic, socio-economic	U	Local governments	NE	NE	NE
Renewal of small HPS	Increase the specific weight of renewable resources in total energy balance	CO ₂ , N ₂ O, NO _x , CO	Economic, socio-economic	U	Enterprises	NE	NE	NE
Use of wind energy	Increase the specific weight of renewable resources in total energy balance	CO ₂ , N ₂ O, NO _x , CO	Socio-economic	U	Enterprises	NE	NE	NE
Bio diesel fuel as a internal combustion fuel in small scale co-generation plants	To reduce CO ₂ emissions by replacing diesel fuel by bio diesel fuel in small capacity co-generation equipment internal combustion engines	CO ₂ , CO	Socio-economic	U	Enterprises	NI	NI	+3.9*
<i>Policy: To increase efficiency in the energy generation and transmission sector</i>								
Wider use of co-generation	To increase installed capacity of co-generation plants and the amount of energy produced by co-generation, as well as efficiency of use of energy resources	CO ₂	Economic, socio-economic	U	Local governments or enterprises	NE	NE	NE
Riga district heating rehabilitation project	Project No.1 – increase of efficiency of boiler houses Project No.2 – improvement of work of energy supply system	CO ₂ , N ₂ O, NO _x , CO	Economic	U	Local governments	NI	NE	NE
Projects of the Local Governments' Cradling Fund	To improve operation of the heat supply system, in some projects – to carry out efficient heat insulation of buildings and radical reduction of energy consumption.	CO ₂	Economic, socio-economic	I	Local governments	NI	-22.9	-22.9

Name of policy or measure	Objective	GHG affected	Type of instrument	Status	Implementing entity or entities	Estimate of mitigation impact, by GHG, Gt in CO ₂ equivalent		
						1995	2000	2005
Manufacturing industry and construction (1A2)								
<i>Policy: To increase efficiency of use of energy resources in industry</i>								
Increase of energy efficiency in dairy companies of Latvia	Starting with 2000 annual 3% increase of efficiency in dairy enterprises	CO ₂ , N ₂ O	Economic	A	Enterprises	NI	-0.4	-2.2
Increase of energy efficiency in bakeries of Latvia	Increase of competitiveness of bakeries	CO ₂ , N ₂ O, NO _x , CO	Economic	A	Enterprises	NI	NE	NE
<i>Policy: To increase efficiency of use of energy resources in construction</i>								
Heat efficiency improvement program in buildings	To study the general situation in the country in the area of heat keeping of buildings, provide information on opportunities and efficiency of heat insulation, as well as on the activities to be accomplished for optimisation of situation	CO ₂ , N ₂ O, NO _x , CO	Informational research, educational	P	MEPRD Construction Dpt., ME Energy Dpt., etc.	NI	NI	NE
Reduction of heat losses in buildings. Project No.1. Educational system development project	To start important changes in educational system by increasing cost-efficiency of educational establishments	CO ₂ , N ₂ O, NO _x , CO	Economic	A	MES and local governments	NI	-186.6	NE
Project No.2. 1997-1998 SCORDI program demonstration projects	Solving energy conservation problems on the level of consumers	CO ₂ , N ₂ O, NO _x , CO	Economic	I	Owners of buildings	NI	NE	NE
Project No.3. Energy efficiency improvement demonstration projects implemented within the Swedish government STEM program	To demonstrate economic and technical usefulness of energy conservation	CO ₂	Economic	I	Local governments	NI	-0.36	-0.36
Project No.4. Pilot projects of the PSO program "Energy Efficiency in Buildings of Latvia"	Raising energy efficiency in buildings, reduction of environmentally harmful emissions by reducing energy consumption	CO ₂ , N ₂ O, NO _x , CO	Economic	I	Local governments	NI	NE	NE

Name of policy or measure	Objective	GHG affected	Type of instrument	Status	Implementing entity or entities	Estimate of mitigation impact, by GHG, Gt in CO ₂ equivalent		
						1995	2000	2005
Transport sector (1A3)								
<i>Policy: To restrict use of passenger cars in cities</i>								
Improvement of the public transport system in Riga	To improve public transport system	CO ₂ , N ₂ O, NO _x	Informative, socio-economic	A	Riga Council	NI	NE	NE
Development of cycling	To include cycling transport in the general transport system of Riga	CO, CO ₂ , N ₂ O, NO _x	Economic, informative	A	Riga Council	NI	NE	NE
<i>Policy: To introduce technological measures for CO₂ emission reduction</i>								
Use of Bio-fuel by road transport	To replace gasoline by gasoline-ethanol mix in automobile engines	CO, GOS, NO _x	Economic, socio-economic	P	Enterprises	NI	NI	NE
<i>Policy: Stricter control of the technical condition of transport vehicles</i>								
Construction of technical check-up stations	To improve quality of control of technical condition of motor vehicles	CO ₂ , CO, NO _x	Economic	A	RTSD	NI	NE	NE
Introduction of type approval procedures for new automobiles	Improvement of technical condition of automobiles by raising requirements to new cars	NO _x	Economic	A	RTSD	NI	NE	NE
<i>Policy: Creation of environmentally friendly transport system</i>								
Creation of environmentally friendly transport system	Creation of a targeted, environmentally friendly transport system by balancing availability of transport for economic and social needs and environmental opportunities and resistance	NO _x , CO and GOS	Socio-economic	A	MT and the subordinated institutions	NI	NE	NE
Leakage of volatile substances from fuels (1B2b)								
Reduction of volatile substances from fuels arising from the storage of oil products	To establish the order how all oil depots of Latvia should install steam collection and processing equipment	GOS	Economic, legislative	A	Oil base owner	NI	NE	NE
Reduction of natural gas leakage from pipeline	A/S "Latvijas Gaze" plans to continued gas system modernisation and	CH ₄	Economic	A	A/S "Latvijas Gaze"	NI	NE	NE

Name of policy or measure	Objective	GHG affected	Type of instrument	Status	Implementing entity or entities	Estimate of mitigation impact, by GHG, Gg in CO ₂ equivalent.		
						1995	2000	2005
systems	reconstruction resulting in reduction of methane emissions into environment.							
International activities								
Efficient use of energy in agencies of Latvia	To improve energy efficiency in institutions and reduce environmental impacts on the local, regional and global scale.	CO ₂ , N ₂ O, CO, NO _x	Economic, informative	I	Danish and Latvian specialists	NI	NE	NE
Economically cost-effective use of wood-waste in the local governments' heating systems	To separate heat source from the remaining system and replace heavy fuel oil by another environmentally friendly fuel. To develop the potential of Ludza municipality and to continue similar projects in other locations of Latvia	CO ₂	Economic, informative	A	Dutch energy company "Essent" and "Vides Projekti"	NI	NI	-12
Efficient lighting program	To decrease the impact of lighting on climate change, reforming modern lighting technologies market in Latvia	CO ₂	Economic, socio-economic	A	DPC, Ekodoma	NI	NI	-4.6

Summary of policies and measures in industry

Name of policy or measure	Objective	GHG affected	Type of instrument	Status	Implementing entity or entities	Estimate of mitigation impact, by GHG, Gg in CO ₂ equivalent.		
						1995	2000	2005
Chemical industry (2B)								
<i>Policy: Introduction of the EMS and clean manufacturing practice pursuant to ISO 14001 requirements</i>								
Introduction of EMS and CP in pharmaceutical industry of Latvia	The objective is to integrate EMS in other management systems (quality, health and safety at work) of enterprises.	CO ₂ , N ₂ O, CH ₄	Voluntary, economic, informative	I	Company management	NI	NE	NE
Introduction of EMS and CP chemical industry of Latvia	The objective of the project is to integrate EMS in 4-6 chemical enterprises of Latvia and to achieve that at least one enterprise gets ISO 14 001 certificate or EMAS registration.		Voluntary, economic, informative	P	Company management	NI	NI	NE

Summary of policies and measures in agriculture

Name of policy or measure	Objective	GHG affected	Type of instrument	Status	Implementing entity or entities	Estimate of mitigation impact, by GHG, Gg in CO ₂ equivalent.		
						1995	2000	2005
Agriculture (4)								
Rural development program	To improve productivity of milking cow and pig herds and partly raise revenues of grain producers and field vegetable farmers, encourage rational use of covered areas, compensate energy price rise in covered areas and ensure the domestic demand for vegetables produced in Latvia.	CH ₄ , N ₂ O	Economic	A	Public institutions, local government, agricultural producers	NI	NE	NE
SAPARD rural development program	To introduce agriculture-related EU acquis <i>constitutiva</i> ; to create competitive and sustainable agriculture, well developed and sustainable countryside, diversified and sustainable rural environment	CH ₄ , N ₂ O, CO ₂	Economic	P	RSS and agricultural producers	NE	NE	NE
Good agricultural practice	To lessen the negative impact of business activity on the environment and to respect agricultural production regulations adopted in the developed countries and Europe and the world	N ₂ O	Voluntary	A	Agricultural producers	NI	NE	NE
Processing of animal-origin waste	Processing of animal-origin waste	CO ₂	Regulatory, economic	P	Not identified	NE	NE	NE

Summary of policies and measures in LUCF

Name of policy or measure	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of mitigation impact, by GHG, Gg in CO ₂ equivalent.		
						1995	2000	2005
Changes in forest stock (5A)								
<i>Policy: Sustainable management of forests and forestland</i>								
Targeted afforestation of abandoned agricultural land	To encourage rational use of abandoned agricultural and otherwise not reclaimed land thus increasing forest-covered areas	CO ₂	Voluntary	A	Land owners and users	NI	+2.7*	-7.8
Increase of forest productivity	To increase forest productivity	CO ₂	Economic, legislative	I	Land owners and lawful possessors	NI	NE	NE

Summary of policies and measures in waste management

Name of measure or policy	Objective	The GHG affected	Type of instrument	Status	Implementing entity	Estimate of mitigation impact, by GHG, Gg in CO ₂ equivalent.		
						1995	2000	2005
Solid waste landfills (6A)								
<i>Policy: Reduction of waste in landfills</i>								
Waste recycling	To reduce the amount of household waste in landfills	CH ₄	Economic	A	Enterprises	NE	NE	NI
Biogas generation <u>Project No.1</u> , Modernisation project of "Getlini" – Riga municipal waste landfill	To produce biogas from waste and later use it for energy generation	CH ₄	Economic	A	SIA "Getlini-Eko"	NI	NI	-268.4
<u>Project No.2</u> , Waste management project in Liepaja	To create a modern waste management system and to use the produced biogas for energy generation	CH ₄	Economic	A	SIA "Liepajas RAS"	NI	NI	-35.57

NB: I – implemented, A – adopted, P – planned, NE – impact of the measure is not estimated, NI – the measure has no impact.

GHG. Knowing that the majority of measures do not have an effect on CO₂ emissions, the impact of all measures is expressed on the CO₂ equivalent basis. The aggregate effect of implementation of measures was estimated as the sum of outcomes of all measures in the table presented.

Table A.217 gives details of individual policies and measures.

Increase of GHG emissions is explained by the start of intensive land management whereby accumulation of carbon in the soil has stopped.

Evaluation of Projections

The national communication presents a more detailed description of one development scenario or the scenario with measures compared with the scenario without measures or the baseline scenario. The scenario with measures is based on the long-term economic development forecast for the time period of 2000 till 2020. This projection is the basis of the future path modelling of GHG emissions in key sectors of economic activity.

Description of modelling approach

Development projections of energy sector were assessed with the Markal

GHG emission reduction generated by measures in 2000-2020, Gg CO₂ equivalent

Measure	2000	2005	2010	2015	2020
<i>Energy transformation</i>	-210.26	-21.56	-20.48	-22.84	-25.44
Bio diesel fuel as a internal combustion fuel in small scale co-generation plants	NI	3.9	NE	NE	NE
Projects of the Local Governments' Crediting Fund	-22.9	-22.9	-16	-16	-16
Increase of energy efficiency in dairy companies of Latvia	-0.4*	-2.2*	-4.12*	-6.48*	-9.08*
Reduction of heat losses in buildings	-186.96	-0.36	-0.36	-0.36	-0.36
<i>Transport</i>		-94.37	-148.72	-234.18	-486.91
Use of bio fuel in road transport	NI	-23.59	-54.08	-78.06	-149.82
Improvement of the public transport system	NO	-11.80	-27.04	-46.84	-112.37
Development of cycling	NO	NO	NO	-15.61	-18.73
Construction of technical check-up stations	NE	-47.19	-40.56	-31.22	-18.73
Creation of environmentally friendly transport system	NE	-11.80	-27.04	-62.45	-187.28
<i>International projects</i>		-16.6	-12	-12	-12
Economically cost effective use of wood-waste in the local governments' heating systems	NI	-12	-12	-12	-12
Efficient lighting program	NO	-4.59	-9.24	NO	NO
<i>Land use change and forestry</i>	2.7	-7.8	-14.78	-14.78	-14.78
Targeted afforestation of abandoned agricultural land	2.7	-7.8	-14.78*	-14.78*	-14.78*
<i>Waste management</i>		-298.62	-296.73	-238.14	-224.49
Biogas generation	NI	-298.62	-296.73	-238.14	-224.49
Total GHG emission reduction	-207.56	-438.94	-501.95	-521.94	-763.62

Table A.218 Summary of projections by gas in 2010 (Mt CO₂ equivalent)

	Base year	With measures	With additional measures
CO ₂ with LUCF	12.3	0.4	
CH ₄	4.1	1.3	
N ₂ O	3.4	1.6	
HFC	No	?	
PFC			
SF ₆	No	0.1	
Total	19.8	3.3	
Percentage change relative to base year		- 83.25	

Table A.219 Summary of projections by sector in 2010 (Mt CO₂ equivalent)

	Base year	With measures	Change relative to 1990 (%)	With additional measures	Change relative to 1990 (additional measures) (%)
Energy (IPCC Sector 1)	24.6	10.0	- 59.4		
Solvent use					
Industry (IPCC Sector 2)	0.1	0.1	- 5.9		
Agriculture (IPCC Sector 4)	5.3	2.0	- 62.4		
Forestry (IPCC Sector 5)	- 10.8	- 9.6	- 11.1		
Waste (IPCC Sector 6)	0.5	0.7	46.4		
Total without LUCF	30.6	12.8	- 58.0		
Total with LUCF	19.8	3.3	- 83.5	0.0	

Table A.220 Assessment of the target

Without LUCF	Mt CO ₂ equivalent (reference scenario)	Percentage of 1990 level (six gas basket)
Base-year emissions (from projections)	30.6	
Commitment (base-year emissions)	28.1	- 8.0
2010 emissions with measures	12.8	- 58.0
2010 emissions with additional measures	12.8	- 58.0
Gap between with measures and commitment (negative means no gap)	- 15.3	- 50.0
Effect of additional PAMs	0.0	0.0

Basic indicators used in macroeconomic forecasts in 1996-2020, % (average annual growth rates)

Indicator	1996-2000	2001-2005	2006-2010	2011-2015	2016-2020
Growth rates of gross domestic product	4.7	5.4	5.2	6.0	5.4
Private consumption	6.4	5.5	5.5	5.5	5.5
Changes in outputs, including					
- Agriculture	-1.2	2.5	4.2	4.5	4.2
- Industry	4.6	5.8	4.5	5.2	4.6
- Services	5.8	5.5	5.7	6.5	5.9
Annual average number of residents, thous., in the final year of the period	2373	2343	2290	2200	2165

optimisation model. Scenarios in industrial processes include CO₂ and F-gases. Scenarios in the agricultural sector are based on the national rural development programme, Sapard. Projections of CO₂ sinks in forestry and land use are primarily focused on increase of forest area and decrease

of annual harvest between 2005 and 2020. In the waste sector it is expected that permanent waste production per resident, after 2015 to unmanaged landfills, will no longer exist.

Conclusions

The main document used for this summary was the third national communication. The key policies and measures are summarised in several tables, but are not entirely quantified. Descriptions of scenarios are limited and not very transparent. It is difficult to find out if the numbers in tables correspond to the with measures or without measures (baseline) scenario.

The projected decrease from the base year with measures implemented and adopted is 58 % in the basket of GHGs by 2010, excluding sinks. The energy sector will decrease by 56.8 %, however this reduction assumes that in 2010 sinks in LUCF will be almost on the level of CO₂ emissions from the energy sector.

Poland

Sources of Information

Poland's third national communication under the United Nations Framework Convention on Climate Change, 2001

Reporting

Two chapters in the third national

communication of Poland deal with projections and measures. Policies and measures to reduce greenhouse gas emissions are provided for the energy (including fugitive emissions), industry, agriculture, forestry and waste management sectors. The impact of the measures has been quantified for selected projects in the period 1996–99.

Table A.221 Information provided on policies and measures

Information provided	Level provided	Comments
Name of policy/measure	+++	
Type of instrument	+++	
Which greenhouse gases?	CO ₂ , CH ₄ , N ₂ O	
Status of implementation	++	
Implementation body specified	++	In most cases
Quantitative assessment of implementation	+	Estimated mitigation effect for 2000 and 2005; a few measures are quantified
Interaction with other PAMs discussed	++	In some cases

+, ++, +++ level of information available increases as the number of + signs increases.

Table A.222 Information provided on projections

Category of information	Level of information provided	Comments
Scenarios considered	With measures, with additional measures	The scenarios differ across the sectors
Expressed relative to inventory for previous years	No	
Starting year	2000	
Projections	2000, 2010, 2020	For some sectors 2005 and 2015 provided
Split of projections	++	Projections split by economical sectors
Presentation of results	+	Results presented in tabular form, only one figure provided, no transparent summary tables/figures provided
Description of model (level of detail, approach and assumptions)	++	Basic description of the models and further references provided
Discussion of uncertainty	No	
Details of parameters and assumptions	+	Limited information on type of indicators used in scenarios provided

+, ++, +++ level of information available increases as the number of + signs increases.

Assessment of Policies and Measures

Table A.223 Summary of the effect of policies and measures by 2010 included in the projections (Mt CO₂ equivalent)

	With measures ⁽¹⁾	With additional measures ⁽²⁾
CO ₂		
CH ₄		
N ₂ O		
F-gases		
Energy (IPCC Sector 1)		
of which transport		
Industry (IPCC Sector 2)		
Agriculture (IPCC Sector 4)		
Forestry (IPCC Sector 5)		
Waste (IPCC Sector 6)		
Total		

⁽¹⁾ The effect of policies implemented or adopted is derived from the sum of the potential of the individual scenarios comparing without and with measures.

Note: No summary tables were provided in the third national communication on projections.

Scenarios are provided for basic sectors of the economy: electrical power engineering, manufacturing industries, transport, agriculture, forestry, public utility, services and households.

No summary tables with projected national total emissions are provided.

Table A.224 gives details of individual policies and measures.

Table A.224 Detailed information on policies and measures (estimated mitigation effect in 2010, in million tonnes CO₂ equivalent)

Energy sector

Name of policy or measure	Instrument Type ¹	Objective and/or activity affected ²	Status of the Action Progress ³	Implementing entity or entities	Estimate of mitigation impact by gas [thousand tonnes/year]	
					2000	2005
1. National Programme for Integration with EU: □ Establishing of free market principles in power gas engineering sectors	Law adaptation / organisation and ownership reform, policy of privatisation of the power engineering sector	Improvement of economy and energy efficiency of power engineering companies	Decision in accordance with the negotiation schedule	RM/MG, MSP		
2. Assumptions for Energy Policy for Poland until 2020 (ZPE20) (Document of the Council of Ministers of 22/02/2000)	Obligatory for public administration; for reference only for the other entities	Objectives: safety, competitiveness, environmental protection. Impact on all the components of environment	Effective from 22 February 2000 upon a Decision of RM (the Council of Ministers)	The Council of Ministers and entire central administration and Voivodes RM	About 480 (about 0.7% increase of combined methods from 12.1% to some 12.8%)	About 6517 (an increase of combined methods from 12.1% to 22%)
a) strategy for transitional period: □ restructuring of hard coal mining	Special Act on Restructuring of Hard Coal Mining	Economical level of coal production. Improvement of coal quality and CH ₄ reduction	Valid from 15/12/2000 ⁴	RM, MG		
□ Long-term contracts	Of civil law and regulatory character, of legal character – MS Ordinance	Modernisation of public power engineering. Reduction of atmosphere pollution. Emission standards and charges	System of Compensation Charges included in the Second Environmental Policy; Ordinance of MS ⁵	President of URE and Power Stations and CHP's		
□ Restructuring of PGNiG	Of legal character	Basis to create a market structure	Governmental Strategy of Privatisation of PGNiG adopted in 2000	MSP, MG, RM and PGNiG		
□ Self-governmental offices and power engineering companies (PEN)	Of legal character	Development of local markets including OZE	Decided in 1997 upon the Act on Energy Law, in the course of implementation	President of URE, Self-governmental offices, PEN		
□ Monitoring system	Recommendation of RM	Supervision over ZPE20 effectiveness	Being considered	MG, URE		
□ New sources of gas supplies	Of legal character	Safety of deliveries, reduction of GHGs emission	Act of 26/05/2001 on Amendments to the Act on Energy Law (PE) is still effective	MG, PGNiG		
b) strategy of integrated management of energy and environment: □ pinch technology analysis □ promotion of OZE □ emission trading (SO ₂ and CO ₂)	Legal, economical and regulatory instruments are expected to be used	Improvement of energy efficiency of companies, and increase of competitiveness with significant reduction of emission and at the cost as low as possible for companies and the whole country	Recommended upon ZPE20 and Resolutions of the Parliament of the Republic of Poland. There are projects of amendments to some Acts and Ordinances of MG. It has been implemented since 1998	MG, MS, President of URE		

Name of policy or measure	Instrument Type ¹	Objective and/or activity affected ²	Status of the Action Progress ³	Implementing entity or entities	Estimate of mitigation impact by gas [thousand tonnes/year]	
					2000	2005
e) strategy of organisational and technological decentralisation of power engineering systems: <ul style="list-style-type: none"> □ investment policy □ development of small CHP's □ development of local markets – local resources (OZE and others) □ assumptions and plans of communes and plans of companies 	Of legal, regulatory, information and education and research character	Development of local energy markets, increase of OZE share, development of small CHP sources, stimulation of activities in communes – as a result, significant growth of energy use efficiency is expected. Strong rationalisation of the energy use and decrease of emission level.	Decided upon the Energy Law; OZE + commune plans – heat, from 1997, commune plans – energy from 1998, CHP from 2000, MG Ordinance of December 2000	MG, territorial self-governments and power engineering companies		
d) strategy of liberalisation of energy efficiency: <ul style="list-style-type: none"> □ privatisation policy □ regulation policy □ price policy 	Market reform in power engineering sector, of legal and regulatory character as well as implementation of competitiveness, including TPA	More severe competitiveness in the sector, acquisition of investment capital for development and budget and improved customer service	Decided and implemented since 1990 and 1997 (PE); revised in 2000 (PE) and ZPE20. Price regulation since 1999 (electricity) and 2000 (gas)	MSP, MG, President of URE		
e) strategy of improvement of energy efficiency: <ul style="list-style-type: none"> □ policy of rationalisation of the utilisation of fuel and energy □ policy of promotion □ educational and research and information policy 	ZPE20 recommends legal, regulatory and supporting instruments (of information and education and research character). PE promotes CHP	Lower energy intensity and energetic costs. Improved competitiveness, rational resource management, environmental protection, meeting international obligations and those of integration with EU	Decided in 2000 and implemented upon PE since June 2000; no amendment to MG Ordinance, the work on a draft of the Act is not continued	MG, MŚ, President of URE, MSWiA, UKiE, KBN		

(¹) The instruments are of economical, fiscal, voluntary, information and educational character, education, research programme (EU) and other.

(²) Types of gas which are affected by business activities, emission factors, and/or accompanying interactions.

(³) Action progress status can be sensible, distinct (year), implemented (year), definite financial expenditures (years, amounts), financing sources planned (years, amounts), expected date of completion (year).

(⁴) Act of 15 December 2000 on amendments to act on the harmonisation of hard coal mining with the performance in free market economy and on special rights and challenges for mining municipalities.

(⁵) Ordinance of the Council of Ministers of 30 December 1997 concerning charges for emitting pollutants to the atmosphere and cutting trees and shrubs, as recently amended by ordinance of 28 December 2000 and ordinance of MO&ZNIŁ of 8 September 1998 concerning emitting to the air pollutants from technological processes and technical operations.

Source: IO&.

Actions leading to reduction in greenhouse gas emissions (CO₂ and CH₄) from municipal waste landfills and waste water treatment plants up to 2000

Tasks	Instruments	Progress Status as at the end of 2000
Starting up the landfill degassing and heat and power generation systems or burning the gas in torches or oxidation in biofilters	Landfill gas monitoring instruction. Recommendations to construct and operate systems of landfill gas extraction and utilisation. Ordinance of the Minister of Economy of 2 February 1999 concerning the obligation to purchase electric energy and heat from renewable energy sources.	Total of 22 biogas utilisation systems were started in which 22.58 Gg of biogas were burned and 34,025 MWh of electric energy as well as 12,128 MWh of thermal energy generated. Monitoring of biogas from municipal landfills in Poland (since 1991, work in progress).
Limitation of biodegradable waste depositing	New technologies of utilisation and rendering selected groups of waste harmless (among others biodegradable waste).	Starting of the production of equipment which supports the process of composting: □ mobile rotary sieve; □ compost mass spreaders; □ biological-kitchen waste disintegrator. Composting of 211.7 thousand tons, which represents 1.8% of the total municipal wastes.
Collection and utilisation of biogas in waste-water treatment plants	Greenhouse gas monitoring from waste-water treatment plants (2001 Plan). Recommendations to construct and operate systems of energetic utilisation of biogas in waste-water treatment plants (2001 Plan).	As at the end of 2000, thirty-nine systems of the total burning output of 58.3 Gg of biogas.
Management of sludge using natural methods	Development of a technology and guidelines for technical and economical assumptions for the equipment to utilise sludge with the use of natural methods. Ordinance of MOŚZNIŁ of 11 August 1999 concerning conditions to be fulfilled while utilising sludge for non-industrial purposes.	A concept of equipment for natural application of sludge.

Source: IOŚ.

Actions leading to reduction in greenhouse gas emissions (CO₂ and CH₄) from municipal waste landfills and waste water treatment plants between 2001 and 2005

	Years				
	2001	2002	2003	2004	2005
Monitoring of landfills [OBREM]. Updating the recommendations to construct and operate biogas systems. Recommendations to construct and operate compost biofilters to neutralise biogas at small-size landfills.		Monitoring of landfills [OBREM].	Monitoring of landfills [OBREM].	Monitoring of landfills [OBREM].	Monitoring of landfills [OBREM].
		Preparation of guidelines for construction of waste recovery plants with minimal gas emission.			
Data base and monitoring of waste-water treatment plants.		Data base and monitoring. Preparation of guidelines for minimisation of greenhouse gas emission from waste-water treatment plants.	Monitoring of waste-water treatment plants.	Monitoring of waste-water treatment plants.	Monitoring of waste-water treatment plants.

Evaluation of projections

Table A.225 Summary of projections by gas in 2010 (Mt CO₂ equivalent)

	Base year	With measures	With additional measures
CO ₂	441.9		
CH ₄	66.0		
N ₂ O	21.7		
HFC			
PFC			
SF ₆			
Total	529.5		
Percentage change relative to base year			

Note: No summary tables were provided in the third national communication on projections.

Table A.226 Summary of projections by sector in 2010 (Mt CO₂ equivalent)

	Base year	With measures	Change relative to 1990 (%)	With additional measures	Change relative to 1990 (additional measures) (%)
Energy (IPCC Sector 1)	461.2	394.0	- 19.3	372.0	- 19.3
transport	28.2	34.3	21.3	37.8	33.8
Industry (IPCC Sector 2)	19.1		- 100.0		- 100.0
Agriculture (IPCC Sector 4)	29.1		- 100.0		- 100.0
Forestry (IPCC Sector 5)	1.1		- 100.0		- 100.0
Waste (IPCC Sector 6)	19.1		- 100.0		- 100.0
Total without LUCF	528.5	394.0	- 25.4	372.0	- 29.6
Total	529.5	372.0	- 29.8	372.0	- 29.8

Note: No summary tables were provided in the third national communication on projections. The base-line scenario was included as with measures and the passive one as without measures.

Table A.227 Assessment of the target

Without LUCF – Energy only	Mt CO ₂ equivalent (reference scenario)	Percentage of 1990 level (six gas basket)
Base year emissions (from projections)	461.2	
Commitment (Base year emissions)	433.6	- 6.0
2010 emissions with measures	394.0	- 14.6
2010 emissions with additional measures	372.0	- 19.3
Gap between with measures and commitment (negative means no gap)	- 39.6	- 8.6
Effect of additional PAMs	- 22.0	- 4.8

Note: No summary tables were provided in the third national communication on projections.

Description of modelling approach

For the energy sector two types of scenarios, base-line and passive/reduction, are based on the determination of energy demand. For N₂O emissions, there are three defined types of scenario, reference, survival, and progress.

Country conclusions

The main document used for this summary was the third national communication. The level of detail in the policies and measures chapter differs among the sectors. The details of

the methodologies for the projections are partly described. The scenarios are provided for economic sectors. Examples of policies and measures are summarised in a table, but mitigation impact by gas is not provided.

Total energy emissions are decreasing in presented scenarios, however the transport emissions are increasing in all scenarios. The evaluation of emission in agriculture was based on assumptions in the context of the accession of Poland to EU. According to the estimates, CO₂ emissions will decrease by 0–25 %,

Some parameters used in scenarios

Parameter	1996	2000	2010	2020	Unit
GDP total base-line	385	498	936	1 561	Bill.PLN.Constant prices of 1996)
GDP total passive		492	804	1 073	Bill.PLN.Constant prices of 1996)
Population base-line/passive	38.5	38.8	39.4	39.9	Million
GDP energy intensity (96 = 100) base-line	100	83	49	31	
GDP energy intensity (96 = 100) passive		84	61	53	

CH₄ by 8–12 %, and N₂O by 6–12 % in 2010–20. In the LUCF sector, an increase of CO₂ absorption of 10 million tonnes is expected.

Slovakia

Sources of Information

Slovakia's third national communication under the United Nations Framework Convention on Climate Change, 2001

Reporting

Two chapters in the third national communication of Slovakia deal with projections and measures. Policies and measures to reduce greenhouse gas emissions are provided for the energy, transport, industry, agriculture, forestry and waste management sectors. The impact of the measures has been quantified in most cases. The table on policies and measures follows the UNFCCC guidelines, but not all discussed policies and measures are presented in the table.

Two approaches are taken to develop projections of greenhouse gas emissions and to calculate the total effect of policies and measures. Energy and

forestry projections are based on model calculations; the other sectors' projections are based on expert judgement. Both approaches include without, with measures and with additional measures scenarios.

Assessment of policies and measures

Table A.230 gives an overview of effects of policies and measures. The without measures scenario represents extrapolation of the actual situation from the aspect of source structure and fuel consumption. The figures given for the with measures projection are for policies and measures implemented or adopted by 2001.

The with additional measures scenario includes the effects of policies applicable and/or planned. The effect of policies planned is derived from the difference between the with measures and the with additional measures scenarios of the model calculations.

Table A.228 Information provided on policies and measures

Information provided	Level provided	Comments
Name of policy/measure	+++	
Type of instrument	+++	
Which greenhouse gases?	CO ₂ , CH ₄ , N ₂ O, PFCs, HFCs, SF ₆	
Status of implementation	++	
Implementation body specified	++	In most cases
Quantitative assessment of implementation	++	Estimated mitigation effect for 2010; a few measures are not quantified
Interaction with other PAMs discussed	++	In some cases

+, ++, +++ level of information available increases as the number of + signs increases.

Table A.229 Information provided on projections

Category of information	Level of information provided	Comments
Scenarios considered	Without measures, with measures, with additional measures	Scenarios are given for sectors corresponding to IPCC sectors and gases
Expressed relative to inventory for previous years	No	
Starting year	1998	
Projections	2000, 2005, 2010, 2015	
Split of projections	Yes	Projections split by IPCC main sectors and gases
Presentation of results	+++	Results presented in both tabular and graphical form
Description of model (level of detail, approach and assumptions)	++	Basic description of the models and further references provided
Discussion of uncertainty	No	
Details of parameters and assumptions	+	Limited information on type of indicators used in scenarios provided

+, ++, +++ level of information available increases as the number of + signs increases.

Table A.230 Summary of the effect of policies and measures by 2010 included in the projections (Mt CO₂ equivalent)

	With measures ⁽¹⁾	With additional measures ⁽²⁾
CO ₂	NA	
CH ₄		
N ₂ O		
F-gases		
Energy (IPCC Sector 1)	- 1.5	- 3.9
of which transport	0.0	- 0.1
Industry (IPCC Sector 2)	0.0	0.0
Agriculture (IPCC Sector 4)	0.3	- 1.0
Forestry (IPCC Sector 5)	- 0.7	- 0.4
Waste (IPCC Sector 6)	- 0.4	- 0.1
Total	- 2.3	- 5.5

⁽¹⁾ The effect of policies implemented or adopted is derived from the sum of the potential of the individual scenarios comparing without and with measures.

⁽²⁾ The effect of policies planned is derived from the difference between the with measures and the with additional measures scenarios of the calculations. NA: information is not provided in the 3NC.

Table A.231 gives details of individual policies and measures.

Table A.231 Detailed information on policies and measures (estimated mitigation effect in 2010, in million tonnes CO₂ equivalent)

Characteristics and reduction potential of some mitigating measures in the energy sector

Name of policy/measure	Objective and/or Activity affected	GHC affected	Type of instrument	Status	Implementing entity/institution	Mitigation		Impact		ΔGHC	[MtCO ₂ eqn./year]
						2008	2009	2010	2010		
Act No. 308/1991 Coll. on Protection of the Air	Reduction of emissions of the basic pollutants	CO ₂ CH ₄ N ₂ O	Regulatory and economic	I	Slovak Ministry of Environment Environmental authorities	258	1,305	1,372	1,342		1,342
Implementation of combined cycles	Increase in energy efficiency	CO ₂	Regulatory and economic	I	Slovak Ministry of Economy SEA	0	972	814	911		911
Thermal insulation of buildings	Reduction of final energy consumption in sector: MVV & RH	CO ₂	Regulatory and technical	I	MVV & RH SR	0	78	803	834		834
Utilisation of renewable energy sources	Decrease in fossil fuel consumption	CO ₂	Regulatory and technical	I	Slovak Ministry of Economy SEA	150	1,138	1,057	2,334		2,334
Shifting of services from individual to public transport	Decrease in hydrocarbon fuel consumption Environmental protection	CO ₂ CH ₄ N ₂ O	Regulatory and technical	II	Slovak Ministry of Transport, Postal and Telecommunications	0	132	200	406		406
						0	1	2	3		3
						0	0	79	34		34

Characteristics and reduction potential of some mitigating measures in agriculture

Name of policy/measure	Objective and/or Activity affected	GHC affected	Type of instrument	Status	Implementing entity/institution	Mitigation		Impact		ΔGHC	[MtCO ₂ eqn./year]
						2008	2009	2010	2010		
Reduction of the livestock number	Intensification of agricultural production Harmonization with EU legislation ⁷	CH ₄ N ₂ O Total	Regulatory	I	The Ministry of Agriculture SR	0	0	22	-2		-2
						0	0	-548	-291		-291
						0	0	-524	-206		-206
Treatment of animal excrement in biogas	Application of FES Reduction of GHG emissions	CH ₄ N ₂ O Total	Technical	I	The Ministry of Agriculture SR	0	0	37	78		78
						0	0	598	549		549
						0	0	428	918		918

Characteristics and reduction potential of some mitigating measures in forestry

Name of policy/measure	Objective and/or Activity affected	GHC affected	Type of instrument	Status	Implementing entity/institution	Mitigation		Impact		ΔGHC	[MtCO ₂ eqn./year]
						2008	2009	2010	2010		
Soil stock protection	Increase of soil carbon stock – lower effect	CO ₂	Regulatory	I	Slovak Ministry of Agriculture	0	73	51	90		90
	Increase of soil carbon stock – higher effect	CO ₂	Regulatory	I	Slovak Ministry of Agriculture	0	88	88	142		142
Regulation of timber Extraction	Reduction of permanently deforested area – lower effect	CO ₂	Regulatory	I	Slovak Ministry of Agriculture	0	538	608	998		998
	Reduction of permanently deforested area – higher effect	CO ₂	Regulatory	I	Slovak Ministry of Agriculture	0	668	998	1,328		1,328
Abandonment of non-forest areas	Increase of GHG sinks – lower effect	CO ₂	Regulatory	I	Slovak Ministry of Agriculture	0	1	18	23		23
	Increase of GHG sinks – higher effect	CO ₂	Regulatory	I	Slovak Ministry of Agriculture	0	2	13	47		47

Characteristics and reduction potential of some mitigating measures in waste management

Name of policy/measure	Objective and/or Activity affected	Emissions affected	Type of instrument	Status	Implementing entity/institution	Mitigation		ADG (GtCO ₂ eqn./year)	
						2010	2010	2010	2010
Support of separated waste collection and utilisation of biologically active waste	Reduction of emissions, and the amount of biologically active waste disposed in landfills: – lower effect	CH ₄	Regulatory	I	Slovak Ministry of Environment	8	58	208	428
Biogas combustion	– higher effect	CH ₄				8	101	473	699
Waste water treatment – effluent	Reduction of CH ₄ emissions and harmonisation with EU: – lower effect	CH ₄	Regulatory	I	Slovak Ministry of Environment	8	11	34	53
	– higher effect	CH ₄				8	21	55	84
Waste water treatment – industrial waste	Reduction of CH ₄ emissions and harmonisation with EU: – lower effect	CH ₄	Regulatory	I	Slovak Ministry of Environment	8	11	34	59
	– higher effect	CH ₄				8	22	57	95
Waste water treatment	Harmonisation with EU	N ₂ O	Regulatory	P	Slovak Ministry of Environment	8	-3**	-8	-8

I – Policy or measure already been implemented (using criteria of updated IPCC guidelines, 1999/7).

S – Adopted, approved policy or measure.

P – Planned, prepared policy or measure.

Table A.232 Summary of projections by gas in 2010 (Mt CO₂ equivalent)

	Base year	Without measures	With measures	With additional measures
CO ₂	57.2			
CH ₄	6.8			
N ₂ O	5.9			
HFC	0.0			
PFC	0.3			
SF ₆	0.03			
Total	70.1			
Percentage change relative to base year				

Table A.233 Summary of projections by sector in 2010 (Mt CO₂ equivalent)

	Base year	Without measures	With measures	Change relative to 1990 (%)	With additional measures	Change relative to 1990 (additional measures) (%)
Energy (IPCC Sector 1)	57.8	43.5	42.0	- 27.3	38.1	- 34.1
of which transport	5.2	5.4	5.4	3.8	5.3	1.9
Industry (IPCC Sector 2)	4.7	4.2	4.2	- 10.6	4.2	- 10.6
Agriculture (IPCC Sector 4)	7.9	5.5	5.8	- 26.6	4.8	- 39.2
Forestry (IPCC Sector 5)	- 2.4	- 1.1	- 1.8	- 25.0	- 2.2	- 8.3
Waste (IPCC Sector 6)	2.1	1.6	1.2	- 42.9	1.1	- 47.6
Total without LUCF	72.5	54.8	53.2	- 26.6	48.2	- 33.5
Total with LUCF	70.1	53.7	51.4	- 26.7	46.0	- 34.4

Evaluation of projections

The data in Tables A.232–234 are based on information from the third national communication.

Table A.233 summarises the projections by sector. Transport is projected to increase emissions in the with measures projections, forestry shows decreasing sinks, whereas energy as a whole, industry, agriculture, and the waste sector are reducing emissions by 2010.

The with measures projection shows that the currently implemented or

adopted measures of Slovakia could reduce greenhouse gas emissions by 2010 by 27 % and with additional measures by 34 %.

Description of modelling approach

Emissions from the energy sector are projected with the modelling framework of the ENPEP model. Scenarios in the agricultural sector assume the reduction in the total number of livestock and/or changes in representation of number of livestock in individual categories, treatment of animal waste, biogas utilisation, increased fertiliser

Table A.234 Assessment of the target

Without LUCF	Mt CO ₂ equivalent (reference scenario)	Percentage of 1990 level (six gas basket)
Base year emissions (from projections)	72.5	
Commitment (base year emissions)	66.7	- 8.0
2010 emissions with measures	53.2	- 26.6
2010 emissions with additional measures	48.2	- 33.5
Gap between with measures and commitment (negative means no gap)	- 13.5	- 18.6
Effect of additional PAMs	- 5.0	- 6.9

Some parameters used in scenarios

Parameter	1998	2000	2005	2010	2015	Unit
GDP total	612.7	634.3	724.7	864.9	1 022.2	Billion Slovak crowns constant prices (1995)
Crude oil processed	5.3	5.3	5.4	5.5	5.6	Million tonnes
Annual growth rate of heat consumption	0.31	1.49	- 1.84	- 1.84		%
Annual growth rate of electricity consumption	0.76-2.26		1.4-2.5	2.67-4.87		%
Share of industry on GDP formation	23.2	22	18.2	15.9	15.9	%
Coal mining		2.86	3.0-1.71	3.1-1.66	3.04-1.51	Million tonnes
Maximum share of biogas combustion	0	0	10	25	40	%

consumption and an increase of per hectare production. Projections of CO₂ sinks in forestry and land use were modelled using measures that are primarily focused on the protection of forests and agricultural soil stock, regulation of timber extraction and afforestation of non-forest areas. The Slovakian greenhouse gas emission inventory and emissions are calculated in accordance with IPCC inventory methodology.

Country conclusions

The main document used for this summary was the third national communication. The level of detail in the policies and measures chapter is appropriate and is in line with UNFCCC guidelines. The details of

the methodology for the projections are partly described. The scenarios are provided for sectors and for total GHGs, but not separately for CO₂, methane and nitrous oxide. The key policies and measures are summarised in a table which makes clear the potential greenhouse gas savings.

The projected decrease from the base year with measures implemented and adopted is 26.6 % in the basket of six greenhouse gases by 2010, excluding land-use change and forestry. Additional policies and measures are applicable to reduce GHG emissions to 33.5 % below base year levels by 2010 (excluding LUCF). This shows that Slovakia has the potential to go beyond Kyoto targets.

Slovenia

Sources of information

Slovenia's first national communication under the United Nations Framework Convention on Climate Change, 2002

Reporting

Two chapters in the first national communication of Slovenia deal with projections and measures. Policies and measures to reduce greenhouse gas emissions are provided for the energy, industry, agriculture and waste sectors. Structure and content of chapters is not fully consistent with UNFCCC guidelines. Tables on policies and measures are not provided.

Two scenarios until 2020 were developed: A describes the development of emissions in the event of already implemented measures, without their intensification or the introduction of

new emission reduction measures. Projection B (with additional measures) is targeted specifically at emission reduction, and takes into account planned measures or measures under investigation.

Projections of energy-induced emissions have been made using the model of Slovenia's energy system implemented in the MESAP programming environment. The model was used to support the national energy programme in 1994–97.

Assessment of Policies and Measures

Table A.237 gives an overview of effects of policies and measures. Scenario A contains all policies and measures already adopted. Scenario B includes the effects of policies planned and/or applicable.

Table A.235 Information provided on policies and measures

Information provided	Level provided	Comments
Name of policy/measure	+	
Type of instrument	+	
Which greenhouse gases?	CO ₂ , CH ₄ , N ₂ O, F-gases	Not consistent through sectors
Status of implementation	+?	
Implementation body specified	+	
Quantitative assessment of implementation		Not quantified
Interaction with other PAMs discussed		Not possible to assess

+, ++, +++ level of information available increases as the number of + signs increases.

Table A.236 Information provided on projections

Category of information	Level of information provided	Comments
Scenarios considered	A: with measures already implemented, B: measures planned	Scenarios are given for sectors and gases
Expressed relative to inventory for previous years	++	- % index 1986–2010
Starting year	1997?	Not clear from the text
Projections	2000?, 2005, 2010, 2015, 2020	
Split of projections	Yes	Projections split by IPCC main sectors and gases
Presentation of results	+	Results presented in both tabular form
Description of model (level of detail, approach and assumptions)	+	Limited description of the models and assumptions
Discussion of uncertainty	No	
Details of parameters and assumptions	+	Rather limited information on type of indicators used in scenarios provided

+, ++, +++ level of information available increases as the number of + signs increases.

Table A.237 Summary of the effect of policies and measures by 2010 included in the projections (Mt CO₂ equivalent)

	Scenario A	Scenario B
CO ₂	1.8	- 1.1
CH ₄	- 0.1	- 0.5
N ₂ O	- 0.1	0.0
F-gases		
Total by gas	1.95	- 2.28
Energy (IPCC Sector 1)	1.6	- 1.2
of which transport	3.8	- 0.3
Industry (IPCC Sector 2)	0.5	- 0.5
	- 0.1	0.0
Agriculture (IPCC Sector 4)	- 0.3	- 0.1
Forestry (IPCC Sector 5)		
Waste (IPCC Sector 6)	0.2	- 0.4
Total by sector	2.1	- 2.3

Note: The effect of policies implemented or adopted is derived from the sum of the potential of the individual scenarios comparing without and with measures.

The effect of policies planned is derived from the difference between the with measures and the with additional measures scenarios of the calculations. NA: information is not provided in the 3NC.

Table A.238 Summary of projections by gas in 2010 (Mt CO₂ equivalent)

	Base year 1986	Scenario A	Scenario B
CO ₂	15.55	17.36	16.27
CH ₄	2.53	2.40	1.90
N ₂ O	1.82	1.75	1.68
HFC	0.3	0.649	?
PFC			
SF ₆			
Total	20.2	22.15	19.90
Change relative to base year (%)		9.64	- 1

Table A.239 Summary of projections by sector in 2010 (Mt CO₂ equivalent)

	Base year 1986	Scenario A	Change relative to 1986 (%)	Scenario B	Change relative to 1986 B (%)
Energy (IPCC Sector 1)	15.2	16.8	10.3	15.6	2.2
of which transport	2.0	5.8	189.4	5.5	172.9
Industry (IPCC Sector 2)	1.2	1.8	43.6	1.3	4.4
Solvent use (IPCC Sector 3)	0.1	0.0		0.0	
Agriculture (IPCC Sector 4)	2.6	2.3	- 11.3	2.2	- 15.1
Forestry (IPCC Sector 5)	NA	NA		NA	!
Waste (IPCC Sector 6)	1.0	1.2	23.4	0.8	- 20.3
Total without LUCF	20.1	22.1	10	19.9	- 1.0

Note: Sum of sectoral emissions and projections is not the same as sum of projections by gas. Explanation in the text not provided. It is unclear what is not included in sectoral projections. NA: information not available.

Evaluation of projections

The data in Tables A.238–240 are based on information from the first national communication.

The with measures projection shows that the currently implemented or adopted measures of Slovenia will increase greenhouse gas emissions by 2010 by 9.6 % and with Scenario

B measures Slovenia could decrease emissions by approximately 1 % (Table A.238). Table A.239 summarises the projections by sector.

Description of modelling approach

Models are based on constant emission factors. Both scenarios are based on the same GDP growth rate (3.8 %) and other macroeconomic expectations,

Table A.240 Assessment of the target (2010)

	Mt CO₂ equivalent	Percentage of 1986 level (three gas basket) (%)
Base year emissions (from projections)	20.2	
Commitment (base year emissions)	18.6	- 1.1 %
2010 emissions with measures	22.1	1.3 %
Gap (negative means no gap)	3.6	17.7 %
Effect of additional PAMs (B)	- 2.3	- 11.3 %

gradual liberalisation of national energy markets, the end of brown coalmining in 2007, the operation of Krsko nuclear power plant and the construction of a new hydropower plant (912 GWh in 2010). For the agricultural sector, both scenarios assume that the volume of production will remain constant, as will the use of fertiliser.

Scenario B assumes additionally the active participation of industry (voluntary agreements), broader use of economic instruments such as a carbon tax; in the transport sector the reduction of specific consumption of cars by 25 % in 2010, and more active policy regarding selecting alternative means of transport. Expectations in agriculture include an increased share of cattle grazing, building of methane capture at pig farms, utilisation of 10 % capacities for production of biogas in large animal farms, reduction in herds of cattle.

Country conclusions

The main document used for this summary was the third national communication. The level of detail in the policies and measures chapter is not fully in line with UNFCCC guidelines. The scenarios are provided for sectors and for total GHGs, and separately for CO₂, methane, nitrous oxide and F-gases. The key policies and measures are not presented in tables, potential greenhouse gas savings are not summarised transparently. Only one figure presenting aggregated emissions for Scenarios A and B is provided.

The projected increase of emissions from the base year with measures implemented and adopted is more than 9 % in the basket of six greenhouse gases by 2010. Additional applicable policies and measures could reduce GHG emissions by less than 2 % below base year levels by 2010. This shows that Slovenia has not developed policies and measures to reach Kyoto targets in the commitment period.