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.

Table 1: Information provided on policies and measures

Information provided	Level provided	Comments
Name of policy/measure	+++	
Type of instrument	+++	
Which GHGs?	CO_2, CH_4, N_2O, 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 P&Ms discussed	++	In some cases

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

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.

Table 2: 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	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

Assessment of policies and measures

Table 3 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 3: Summary of the effect of policies and measures by 2010 included in the projections ($MtCO_2$ eq.)

	With measures[a]	With additional measures[b]
CO_2	NA	
CH_4		
N_2O		
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**

a The effect of policies implemented or adopted is derived from the sum of the potentials of the individual scenarios comparing *without* ant *with measures*,
b 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 3NC.

Table 4 gives details of individual policies and measures.

Table 4: Detailed information on polices and measures (estimated mitigation effect in 2010, in million tons CO_2 equivalent)

Characteristics and reduction potential of some mitigating measures in energy sector

Name of policy/measure	Objective and/or Activity affected	GHG affected	Type of instrument	Status	Implementing entity/entities	Mitigation [GgCO$_2$ equiv./year] 2000	Impact 2005	ΔGHG 2010	ΔGHG 2015
Act No. 309/1991 Coll. on Protection of the Air	Reduction of emissions of the basic pollutants	CO_2 CH_4 N_2O	Regulatory and economic	I	Slovak Ministry of Environment Environmental authorities	258 4 1	1,365 88 10	1,372 92 13	1,342 72 11
Implementation of of combined cycles	Increase in energy efficiency	CO_2	Regulatory and economic	I	Slovak Ministry of Economy SEA	0	972	814	911
Thermal insulation of buildings	Reduction of final energy consumption in sectors MVV & RR	CO_2	Regulatory and technical	I	MVV & RR SR	0	78	803	634
Utilisation of renewable energy sources	Decrease in fossil fuel consumption	CO_2	Regulatory and technical	I	Slovak Ministry of Economy SEA	159	1,138	1,857	2,334
Shifting of services from individual to public transport	Decrease in hydrocarbon fuel consumption Environmental protection	CO_2 CH_4 N_2O	Regulatory and technical	S	Slovak Ministry of Transport, Posts and Telecommun.	0 0 0	132 1 6	269 2 19	405 3 34

Characteristics and reduction potential of some mitigating measures in agriculture

Name of policy/measure	Objective and/or Activity affected	GHG affected	Type of instrument	Status	Implementing entity/entities	Mitigation [GgCO$_2$ equiv./year] 2000	Impact 2005	ΔGHG 2010	ΔGHG 2015
Reduction of the livestock number	Intensification of agricultural production Harmonisation with EU legislation[7]	CH_4 N_2O Total	Regulatory	I	The Ministry of Agriculture SR	0 0 0	0 0 0	22 –546 –524	2 –291 –290
Treatment of animal excrements to biogas	Application of RES Reduction of GHG emissions	CH_4 N_2O Total	Technical	I	The Ministry of Agriculture SR	0 0 0	0 0 0	32 398 430	70 849 919

Characteristics and reduction potential of some mitigating measures in forestry

Name of policy/measure	Objective and/or Activity affected	GHG affected	Type of instrument	Status	Implementing entity/entities	Mitigation [GgCO$_2$ equiv./year] 2000	Impact 2005	ΔGHG 2010	ΔGHG 2015
Soil stock protection	Increase of soil carbon stock – lower effect*	CO_2	Regulatory	I	Slovak Ministry of Agriculture	0	73	51	99
	Increase of soil carbon stock – higher effect	CO_2	Regulatory	I	Slovak Ministry of Agriculture	0	88	80	142
Regulation of timber Extraction	Reduction of permanently deforested area – lower effect	CO_2	Regulatory	I	Slovak Ministry of Agriculture	0	330	660	990
	Reduction of permanently deforested area – higher effect	CO_2	Regulatory	I	Slovak Ministry of Agriculture	0	660	990	1,320
Afforestation of non-forest areas	Increase of GHG sinks – lower effect	CO_2	Regulatory	I	Slovak Ministry of Agriculture	0	1	10	31
	Increase of GHG sinks – higher effect	CO_2	Regulatory	I	Slovak Ministry of Agriculture	0	2	13	42

Characteristics and reduction potential of some mitigating measures in waste management

Name of policy/measure	Objective and/or Activity affected	GHG affected	Type of instrument	Status	Implementing entity/entities	Mitigation [GgCO$_2$ equiv./year] 2000	Impact 2005	ΔGHG 2010	ΔGHG 2015
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		Regulatory	I	Slovak Ministry of Environment				
Biogas combustion	– higher effect	CH_4 CH_4				0 0	90 181	260 428	428 689
Waste water treatment – effluents	Reduction of CH_4 emissions and harmonisation with EU – lower effect	CH_4	Regulatory	I	Slovak Ministry of Environment	0	11	34	53
	– higher effect	CH_4				0	21	55	84
Waste water treatment – industrial waters	Reduction of CH_4 emissions and harmonisation with EU – lower effect	CH_4	Regulatory	I	Slovak Ministry of Environment	0	11	34	59
	– higher effect	CH_4				0	22	57	95
Waste water treatment	Harmonisation with EU	N_2O	Regulatory	P	Slovak Ministry of Environment	0	–3**	–6	–8

I – *policy and measure have been already implemented (using criteria of updated IPCC Guidelines 1999/7)*
S – *adopted, approved policy or measure*
P – *planned, prepared policy/measure*

Evaluation of projections

The data in Tables 5–7 are based on information from the Third National Communication.

Table 5: Summary of projections by gas in 2010 ($MtCO_2$ equivalent)

	Base year	Without measures	With measures	With additional measures
CO_2	57.2			
CH_4	6.8			
N_2O	5.9			
HFC	0.0			
PFC	0.3			
SF_6	0.03			
Total	**70.1**			
% change relative to base year				

Table 6 summarises the projections by sector. Transport is projected to increase emissions in the *with measures* projections, Forestry is decreasing sinks, whereas energy as a whole, industry, agriculture, and waste sector reduce 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 %.

Table 6: Summary of projections by sector in 2010 ($MtCO_2$ eq.)

	Base year	Without measures	With measures	% change relative to 1990	With additional measures	% change relative 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 %**

Table 7: Assessment of the target

Without LUCF	**$MtCO_2$ equiv.** ***Ref. scenario***	**% 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 (-ve means no gap)	–13.5	–18.6 %
Effect of additional P&Ms	–5.0	–6.9 %

Description of modelling approach

Emissions from the energy sector are projected with the modelling framework of the ENPEP model. Scenarios in agricultural sector assumed the reduction of total number of livestock and/or change of representation of number of livestock in individual categories, treatment of animal waste-biogas utilisation, increase fertiliser consumption and increase of per hectar production. Projections of CO_2 sinks in Forestry and land use were modelled using measures that are primarily focused on protection of forests and agricultural soil stock, regulation of timber extraction and afforestation of non-forest areas. Slovakian greenhouse gas emission inventory and emissions are calculated in accordance with IPCC inventory methodology.

Some parameters used in scenarios

Parameter	**1998**	**2000**	**2005**	**2010**	**2015**	**Unit**
GDP total	612.7	634.3	724.7	864.9	1022.2	Bill.SKK.Constant prices of 1995)
Crude oil processed	5.3	5.3	5.4	5.5	5.6	**mil tones**
Annual growth rate 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	**Mt**
Max. share of biogas combustion	0	0	10	25	40	%

Country conclusions

The main document used for this summary was the Third National Communication. The level of detail in policies and measures chapter is appropriate and is 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 CO_2 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 potential to go beyond Kyoto targets.