

ESTONIA

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1. SOURCES OF INFORMATION

Estonia's 2007 submission to the European Commission under the Monitoring Mechanism, Decision 280/2004/EC (hereinafter MMS)

Estonia's Third and Fourth National Communication under the United Nations Framework Convention on Climate Change, 2006 (hereinafter 4th NC)

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

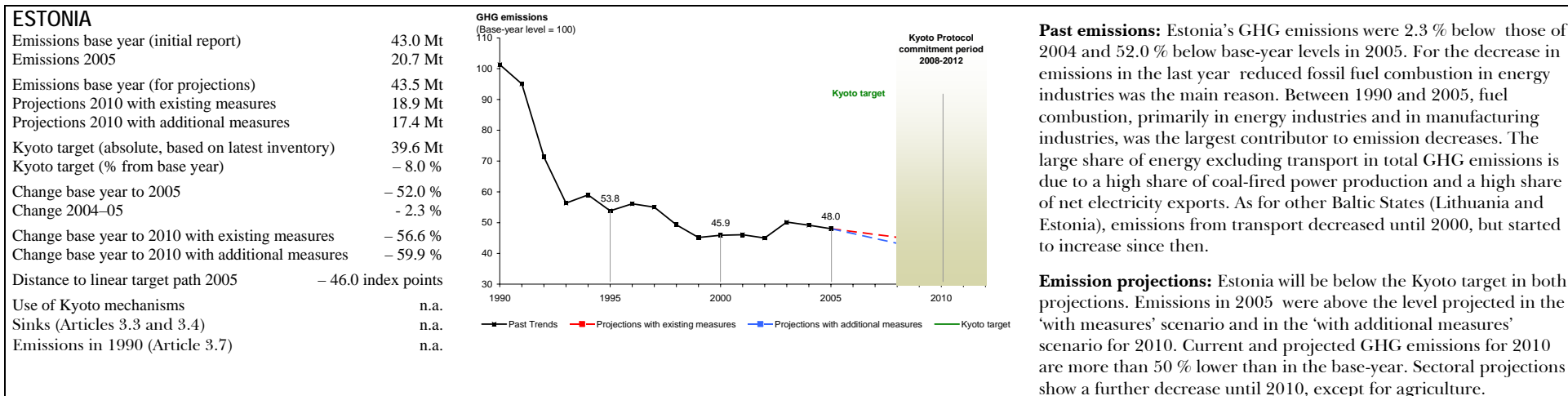
European Climate Change Programme (ECCP), Database on Policies and Measures in Europe <http://www.oeko.de/service/pam/index.php>

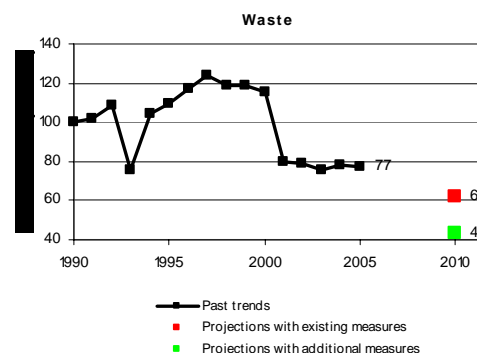
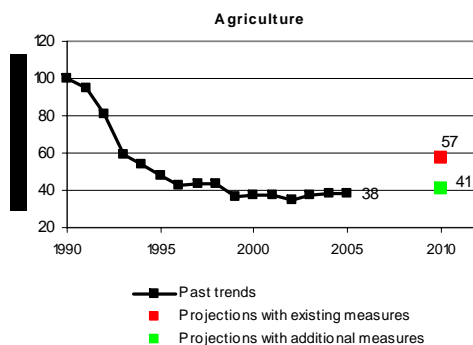
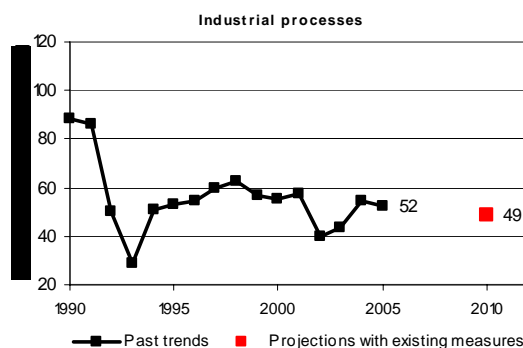
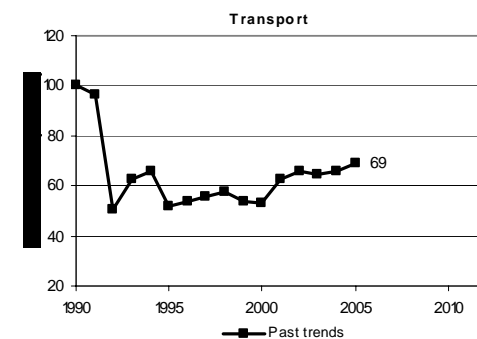
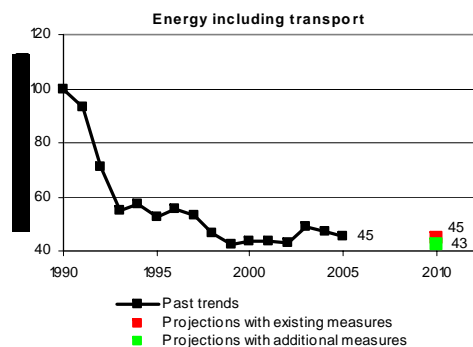
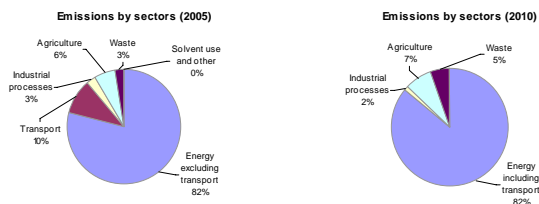
Base-year emissions

The latest Estonian GHG projections and the base year emission level assessment were made for the 4th NC in the year 2005. According to the 4th NC, the total base year emissions of all greenhouse gases for the calculation of the Estonia's assigned amount equalled 43.493 Mt of CO₂ eq. The base year is 1990 for all gases, except F gases, for which the base year is 1995.

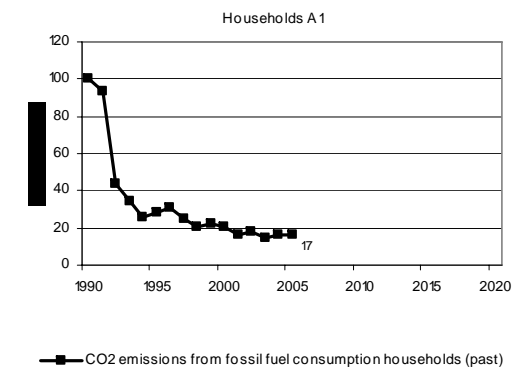
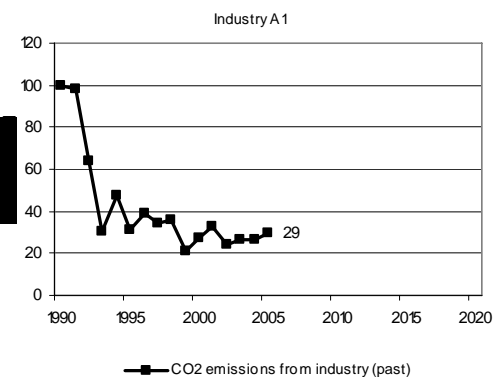
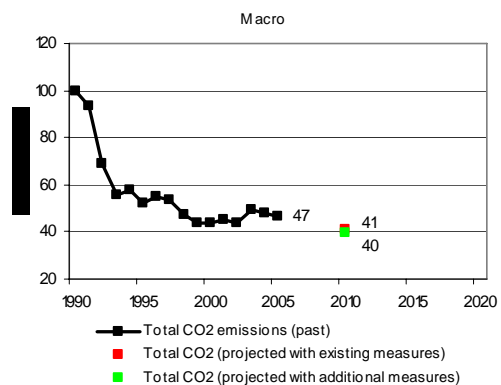
Base year data is consistent with data reported in *The European Community's initial report under the Kyoto Protocol - Report to facilitate the calculation of the assigned amount of the European Community pursuant to Article 3, paragraphs 7 and 8 of the Kyoto Protocol (Submission to the UNFCCC Secretariat)*, EEA Technical report No 10/2006. This data is currently undergoing a review procedure by UNFCCC and is therefore subject to change. The base year data shown in the EC report is 43 022.295 Gg of CO₂ eq. The difference of 572 Gg of CO₂ eq. may result from the fact that the improved methodologies for calculation were used for these data.

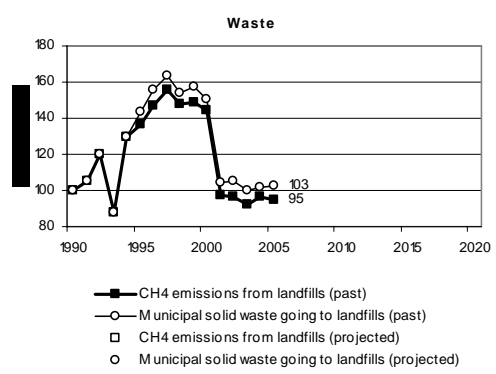
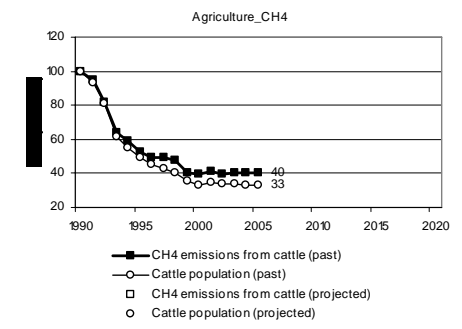
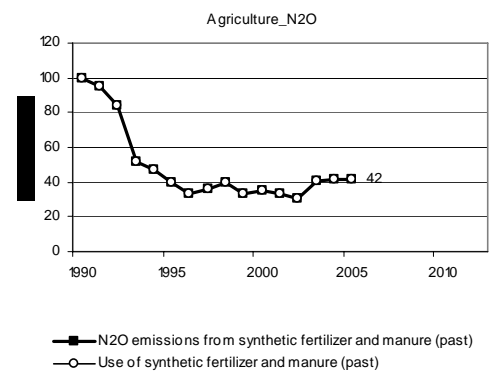
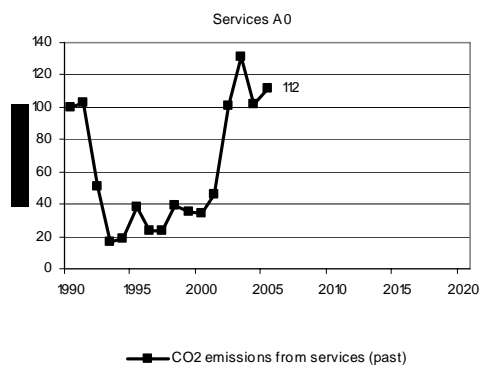
2. SUMMARY





3. REPORTED INDICATORS





ESTONIA

Additional Priority Indicators		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Transport D0	CO ₂ emissions from freight transport on road, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Freight transport on road, Mtkm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	27
Industry A1.1	Total CO ₂ emissions from iron and steel, kt	3	-	-	-	4	3	2	1	1	1	2	2	2	2	2	3
	Gross value-added - iron and steel industry, Bio Euro (EC95)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industry A1.2	Energy related CO ₂ emissions chemical industries, kt	79	85	33	11	41	48	155	140	32	0	4	2	4	6	6	6
	Gross value-added - chemical industry, Bio Euro (EC95)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Industry A1.3	Energy related CO ₂ emissions - glass pottery and building materials industry, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Gross value added - glass pottery and building materials industry, Bio Euro (EC95)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industry C0.1	Total CO ₂ emissions from iron and steel, kt	3	-	-	-	4	3	2	1	1	1	2	2	2	2	2	3
	Production of oxygen steel	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industry C0.2	Energy related CO ₂ emissions from glass, pottery and building materials, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	726	746
	Cement production, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	698	697

Supplementary Indicators		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Transport B0 (diesel)	CO ₂ emissions of diesel-driven cars, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Number of km, of diesel-driven passenger cars, Mio km	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transport (B0) (petrol)	CO ₂ emissions of petrol-driven cars, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Number of km, of petrol-driven passenger cars, Mio km	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transport C0	CO ₂ emissions from passenger cars, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Passenger transport by cars, Mpkm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transport E1	CO ₂ emissions from domestic air transport, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2
	Domestic air passenger, Mio	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0
Industry A1.4	Energy related CO ₂ emissions food industry, kt	458	476	241	220	350	21	106	94	51	17	17	13	16	16	13	13
	Gross Value Added food, drink and tobacco industry, Mio EUR (EC95)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Industry A1.5	Energy related CO ₂ emissions - paper and printing industry, kt	NO	NO	55	0	1	0	NO	0	0	1	1	2	3	37	3	4
	Gross value added paper and printing industry, Mio EUR (EC95)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Households A0	Surface area of permanently occupied dwellings, Mio m ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	226	225
	Specific CO ₂ emissions of households for space heating, t/m ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38	38
Services B0	CO ₂ emissions from space heating in commercial and institutional, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Surface area of services buildings, Mio m ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transformation D0	CO ₂ emissions from public thermal power stations, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11,800	10,416
	All products output by public thermal power stations, PJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	40
Transformation E0	CO ₂ emissions from autoproducer, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	423	990
	All products output by autoproducer thermal power stations, PJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37	37
Transformation	CO ₂ emissions from classical power production, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9,775	9,100
	All products output by public and autoproducer power stations, PJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37	37
Transport	CO ₂ emissions from transport, kt	3,024	2,919	1,540	1,894	1,988	1,565	1,621	1,682	1,737	1,623	1,605	1,904	1,988	1,946	1,998	2,086
	Total final energy consumption from transport, PJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	29
Industry	Energy related CO ₂ emissions paper and printing industries, kt	NO	NO	55	0	1	0	NO	0	0	1	1	2	3	37	3	4
	Physical output of paper, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	134	131
Industry	CO ₂ emissions from the industry sector	1,786	1,746	1,140	539	848	557	693	605	637	374	484	590	425	476	471	527
	Total final energy consumption from industry, PJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	8
Households	CO ₂ emissions from households, kt	1,365	1,365	1,272	599	471	349	380	426	338	279	307	279	227	241	203	226
	Total final energy consumption from households, PJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	16

4. OVERVIEW OF CCPM IMPLEMENTATION IN ESTONIA

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

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

Legend

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

5. COMPLETENESS OF REPORTING

Estonia provides extensive information on policies and measures in its 4 NC. The key information is summarized in a reader-friendly way in tables on sector-by-sector basis. The 2007 MMS provides updated information on policies and measures, including those in the sphere of the flexible mechanisms under the Kyoto Protocol. It also estimates the GHG reductions from these measures. The MMS contains detailed information on Joint Implementation projects implemented in Estonia. The level of information is summarized in Tables 2 and 3.

Table 2: Information provided on policies and measures

Information provided	Level of information provided	Comments
Policy names	+++	Policy names are provided.
Objectives of policies	+++	Objectives of almost every policy or measure are specified in the text.
Which greenhouse gases?	++	CO ₂ , CH ₄ , N ₂ O. No information on the fluorinated gases.
Status of Implementation	++	It is indicated whether a policy is planned, implemented or expired. No information on which scenario WM or WAD the policy belongs to.
Implementation body specified	+	Implementation bodies are specified in a general way. For instance, "national government". No information which body of the national government is responsible for the implementation.
Quantitative assessment of implementation	++	Quantitative assessment is provided. No information on the methodology of calculations.
Interaction with other policies and measures discussed	+++	

Estonia provides information on GHG projections in its 4 NC. Currently the MMS does not provide any additional information to that provided in the 4th NC. In the 4th NC the energy sector is discussed thoroughly. Less attention is paid to forestry and agriculture sectors. Other IPCC sectors are not considered.

Table 3: Information provided on projections

Category of Information	Level of information provided	Comments
Scenarios considered	+	WM and WAM scenarios are provided for the forestry and agricultural sector. WM and two level WAM scenarios are provided for the energy sector.
Expressed relative to base year	0	No
Starting year	+++	1990. The parameters are given in figures
Split of projections	+	Three sectors, WM and WAM scenarios
Presentation of results	+	Mainly graphs are provided, sometimes there are figures for the sectors considered.

Description of model (level of detail, approach and assumptions)	++	The description of the MARKAL model for the projections in the energy sector as well as the main indicators which are the inputs is extensive.
Sensitivity analysis (key inputs to model / high, central and low projections scenarios / robustness of model)	0	No
Discussion of uncertainty	+	A list of uncertainty factors
Details of parameters and assumptions	++	Extensive for the energy sector. Provided for agriculture and forestry.

6. ASSESSMENT OF POLICIES AND MEASURES

The abovementioned documents describe thoroughly the policies and measures carried out in Estonia to mitigate climate change. The list of policies and measures include every PaM, whether it is expired, implemented, or planned.

No GHG reduction targets are set for separate sectors. However, almost all the policies mentioned have the quantifiable targets expressed in terms other than GHG emission reductions. For instance, these are the number of CHP units to be installed, the threshold for CHP energy efficiency, the area covered by forests, etc.

A list of bodies (ministries, governmental agencies, companies) responsible for policies' implementation is provided for each policy.

Information on cross-sectoral policies is provided. The policies and measures (unlike projections) are provided by sector using the sectoral definitions requested by the UNFCCC guidelines (Energy, Transport, Industry, Agriculture, Forestry, and Waste). Policies and measures which have been discontinued but still have impacts on emission levels are included in the projections.

It is not always clear whether a policy belongs to the WM or WAM scenario.

Table 4 provides information on the overall effect of implementation of additional policies and measures in comparison with implemented policies and measures. Unfortunately, there is no information on "without measures scenario", therefore, it is not possible to calculate the total effect of the implemented policies by comparison with a counterfactual situation where no policies are implemented.

Table 5 provides an overview over all policies and measures included in the projections. It is currently not possible to differentiate clearly between WM and WAM scenarios.

Table 4: Summary of the effect of policies and measures included in the 2010 projections (Mt CO₂-eq.)

	With measures	With additional measures
Energy (total, excluding transport)	NE	0.8
Energy supply	NE	NE
Energy – industry, construction	NE	NE
Energy – other (commercial, residential, agriculture)	NE	NE
Transport (energy)	NE	NE
Industrial processes	NE	NE
Waste	NE	0.3
Agriculture	NE	0.4
Total (excluding LULUCF)	NE	1.5

Table 5: Detailed information on policies and measures (under both WM and WAM scenarios)

Sector	Name	Objective	Type	GHG	Status		Absolute Reduction [kt CO ₂ eq. p.a.]			Related CCPM
							2005	2010	2020	
Cross-cutting	Estonian National Environmental Strategy	The Estonian National Environmental Strategy, approved by the Parliament in 1997, is the major basis document for the policy-making process in the field of environment.	Planning	CO ₂		National Government				
Cross-cutting	Pollution Charge Act	The new Act provides rates of the charges to be paid for the release of pollutants or waste into the environment and the procedure for the calculation and payment of the charge.	Economic	CH ₄ CO ₂ HFC N ₂ O PFC SF ₆	implemented	National Government				
Cross-cutting	Activities implemented jointly	The flexible mechanism under the Kyoto protocol provided opportunities decrease the GHGs through the projects. AIJ was the pilot stage of the JI mechanism implementation.	Voluntary/negotiated agreement	CO ₂	expired	National Government				
Cross-cutting	Joint Implementation	The flexible mechanism under the Kyoto protocol provided opportunities decrease the GHGs through the projects.	Voluntary/negotiated agreement	CO ₂	implemented	National Government				
Cross-cutting	Agreement on a Testing Ground for Application of the Kyoto Mechanisms on Energy Projects in the Baltic Sea Region (RT II 2004, 22, 92).	Capacity building and competence to use the JI mechanism, to promote the realisation of high quality projects in the energy sector generating emissions reductions.	Regulatory	CO ₂		National Government				
Cross-cutting	National Allocation Plan for GHG	Motivation of decisive industrial producers to reduce CO ₂ ,	Economic	CO ₂		National Government				

Sector	Name	Objective	Type	GHG	Status		Absolute Reduction [kt CO ₂ eq. p.a.]			Related CCPM
							2005	2010	2020	
	emission allowances	harmonization of the CR legislation with EU legislation								
Cross-cutting	Value Added Tax Act (RT I 2001, 64, 368)	Tax rebates for renewable electricity production	Economic	CO ₂		National Government				
Energy supply	Long-term National Development Plan for the Fuel and Energy Sector	Reduction of emissions; energy efficiency	Regulatory	CO ₂		National Government				
Energy supply	Fuel switch	Reduction of emissions	Voluntary/negotiated agreement	CO ₂	implemented	Companies / Businesses / industrial associations	2	2		
Energy supply	Renovation of district heating systems	Improve efficiency of district heating	Voluntary/negotiated agreement	CO ₂	implemented	Companies / Businesses / industrial associations	5	5		
Energy supply	Renovation of Oil shale power plants - Narva plants	Increasing efficiency	Regulatory	CO ₂	implemented	National Government + Companies / Businesses / industrial associations	53	53		
Energy supply	Green energy project	Promotion of Renewable Energy	Information	CO ₂	implemented	Companies / Businesses / industrial associations				
Energy supply	Renovation of large combustion plants	Energy efficiency improvement	Regulatory	CO ₂	planned	Companies / Businesses / industrial associations	11.8	11.8		
Energy supply	Installation of new wind generators (up	Promotion of renewable energy	Voluntary/negotiated	CO ₂	planned	Companies / Businesses /	53	53		Directive 2001/77/E

Sector	Name	Objective	Type	GHG	Status		Absolute Reduction [kt CO ₂ eq. p.a.]			Related CCPM
							2005	2010	2020	
	to 75MW)		agreement			industrial associations				C
Energy supply	Introduction of cogeneration of Heat and Electricity	Increase of energy efficiency through the introduction of co-generation	Voluntary/negotiated agreement	CO ₂	planned	Companies / Businesses / industrial associations	3	3		
Energy supply	New methods for landfilling of oil shale ash	Emission reductions	Regulatory	CO ₂	planned	Companies / Businesses / industrial associations	22 15-30	22 15-30		
Energy supply	Enhancing of oil shale enrichment	Enhancing of oil shale enrichment	Voluntary/negotiated agreement	CO ₂	planned	Eesti Põlevkivi AS	10	10		
Energy consumpt	Renovation of DH boilers and boiler plants	Boiler conversions to wood fuel have been carried out in the framework of several projects and aid programmes (e.g. Boiler conversion programme, Swedish assistance, etc.).	Voluntary/negotiated agreement	CO ₂	implemented	National government	10			
Energy consumpt	Renovation of residential buildings	Energy conservation through the renovation of residential buildings (total of 4 million cubic meters)	Voluntary/negotiated agreement	CO ₂	implemented	Companies / Businesses / industrial associations	10	10		Directive 2002/91/EC – Energy Performance of Buildings
Energy consumpt	Energy Efficiency of Equipment Act	Requirements for labelling of household electrical appliances	Regulatory	CO ₂	implemented	Companies / Businesses / industrial associations	10			
Energy consumpt	District Heating Act	Introduction of zoning principle in the DH supply	Regulatory	CO ₂	implemented	Companies / Businesses /				

Sector	Name	Objective	Type	GHG	Status		Absolute Reduction [kt CO ₂ eq. p.a.]			Related CCPM
							2005	2010	2020	
						Municipalities				
Energy consumpt	Replacement of electrical appliances in households	Energy efficiency improvement through installation of better electrical equipment	Voluntary/negotiated agreement	CO ₂	implemented	Owners				
Industrial Processes	Estonian National Environment Strategy (Industry)		Regulatory	CO ₂	implemented	National Government	12			
Industrial Processes	Integrated Pollution Prevention and Control Act (RT I 2001, 85, 512)	Prevention and control of pollution arising from environmentally hazardous activities	Regulatory	CH ₄ CO ₂ HFC N ₂ O PFC SF ₆	implemented	Companies / Businesses / industrial associations				
Industrial Processes	Efficiency improvements in cement production	Reduction of GHG emissions through improvement of energy consumption and technological improvement leading to low specific emissions	Voluntary/negotiated agreement	CO ₂	planned	Companies / Businesses / industrial associations	12	12		
Industrial Processes	Efficiency improvements in lime production	Reduction of GHG emissions through improvement of energy consumption and technological improvement leading to low specific emissions	Voluntary/negotiated agreement	CO ₂	planned	Companies / Businesses / industrial associations	1	1		
Industrial Processes	Environmental Management systems	Improvement of overall management of an enterprise with the aim to identify and manage significant environmental aspects	Voluntary/negotiated agreement	CH ₄ CO ₂ HFC N ₂ O PFC SF ₆	implemented	Over 100 enterprises				
Industrial Processes	Eco-labeling	Signalling that a product enhances sustainable production or/and consumption	Voluntary/negotiated agreement	CH ₄ CO ₂ HFC N ₂ O	implemented	Kreenholmu Valduse AS				

Sector	Name	Objective	Type	GHG	Status		Absolute Reduction [kt CO ₂ eq. p.a.]			Related CCPM
							2005	2010	2020	
				PFC SF ₆						
Industrial Processes	Voluntary agreements	Improvement of environmental performance of the enterprises and enhancement of corporate responsibility	Voluntary/negotiated agreement	CH ₄ CO ₂ HFC N ₂ O PFC SF ₆	implemented	7 companies				
Industrial Processes	Voluntary environmental reporting	Enhancement of environmental reporting through wider range and content of the report than mandatory reporting	Information	CH ₄ CO ₂ HFC N ₂ O PFC SF ₆	implemented	Few enterprises such as Eesti Energia AS, State Forest Management Center, Kunda Nordic Cement				
Transport	Quality requirements for liquid fuels		Regulatory	CO ₂	implemented		20			
Transport	Development Plan of the Transport Sector for 1999-2006		Regulatory	CO ₂	implemented		100			
Transport	Subsidies for Public transport		Regulatory	CO ₂ N ₂ O	planned	National Government, MoEAC,	32	32		
Transport	Promotion of railway transport		Regulatory	CO ₂	planned	National Government, MoEAC,	34	34		
Transport	Improvement of road quality		Regulatory	CO ₂ N ₂ O	planned	National Government, MoEAC,	21	21		
Transport	Technical inspection of vehicles	Detecting the cars not meeting technical or/and environmental requirements	Regulatory	CO ₂ N ₂ O	planned	Motor Vehicles Registration Center	10	10		EU Directive 98/14/EC
Transport	Increasing share of new vehicles		Regulatory	CO ₂ N ₂ O	planned	National Government,	23	23		

Sector	Name	Objective	Type	GHG	Status		Absolute Reduction [kt CO ₂ eq. p.a.]			Related CCPM
							2005	2010	2020	
						MoEAC, owners				
Agricult	Rural Development Plan	GHG reduction through increasing production efficiency and solving problems of sustainable development	Planning	CH ₄ CO ₂ N ₂ O	implemented	National Government				Pre-accession measures for agriculture and rural development 1268/1999/EC
Agricult	Organic farming act	Reduction of N ₂ O from the use of fertilizers as well as enhancement of sustainable production	Regulatory	N ₂ O	implemented	National Government				
Forestry	Forest Act	The limit of the forest use so that natural balance and forestry reproduction are secured.	Regulatory	CO ₂	implemented	National Government	1,739			
Forestry	Restoration of Mining Areas	Decreasing of CO ₂ emission through development of sinks	Regulatory	CO ₂	implemented	National Government	15			
Forestry	Re-forestation of out-of-use agricultural land (approx. 100thousand hectar)	Decreasing of CO ₂ emission through development of sinks	Regulatory	CO ₂	implemented	National Government	330	330		
Waste	Reduction of landfilled waste by 25%	To reduce the amount of waste deposited to the landfills, hence, decreasing the CH ₄ emissions.	Regulatory Voluntary/ negotiated agreement	CH ₄	planned	Ministry of Environment, households, local governments	4	4		Directive on waste 2006/12/EC Packaging and packaging waste (Directive 94/62/EC,

Sector	Name	Objective	Type	GHG	Status		Absolute Reduction [kt CO ₂ eq. p.a.]			Related CCPM
							2005	2010	2020	
										2004/12/E C, 2005/20/E C)
Waste	New requirements for landfills	To equip the landfills (existing and future ones) with all equipment stipulated by the EU regulation	Regulatory	CH ₄	Other	Ministry of Environment	3	3		Landfill directive 1999/31/E C

Source: Öko Institut, (accessed 06/2007), ECCP Policies and Measures database, <http://www.oeko.de/service/pam/index.php>

Policies and measures in the “with additional measures” projection

No policies and measures reported in the "with additional measures" projection.

7. EVALUATION OF PROJECTIONS

Table 6 provides the results of the projections for the year 2010 for the 'with measures' and the 'with additional measures' scenarios, split by greenhouse gas.

The same information split by sector is presented in tables 7 and 8. Figure 1 demonstrates the share of greenhouse gas emissions by sector for the year 2010 in the WM scenario projections. In table 9 the total emissions of the projections for the years 2010, 2015 and 2020 for the 'with additional measures' variant are summarised.

In table 10 the results of the target assessment are shown with a comparison of 2010 projections in 2005, 2006 and 2007.

Table 6: Summary of projections by gas in 2010 (MtCO₂ equivalent)

	Base year	with measures	with additional measures
Carbon dioxide (excl. sinks)	38,1	15,8	15,2
Methane	4.4	2,5	1,8
Nitrous oxide	1.0	0,5	0,4
F-gases	NE	NE	NE
Total (excl. sinks)	43,5	18,9	17,4
% change relative to base year (excl. sinks)		-56.6%	-59.9%

Source: Estonia Country Profile 2006 and IR

Table 7: Summary of projections (6 gas basket) by sector in 2010 (Mt CO₂-eq.)

	Base-year	with measures	% change relative to base-year	with additional measures	% change relative to base-year
Energy (total, excluding transport)	36,1	16,2	44.9%	15,4	42.7%
Energy supply	NE	NE	NE	NE	NE
Energy – industry, construction	NE	NE	NE	NE	NE
Energy – other (commercial, residential, agriculture)	NE	NE	NE	NE	NE
Transport (energy)	2,7	NE	NE	NE	NE
Industrial processes	0,6	0,3	50%	0,3	50%
Waste	1,6	1,0	62.5%	0,7	43.7%
Agriculture	2,4	1,4	58%	1,0	41.6%
Total (excl. LULUCF)	43,5	18,9	43.4%	17,4	40%

Source: Estonia Country Profile 2006

Table 8: Summary of projections by sector and by gas in 2010 (Mt CO₂-eq.) compared to base-year emissions

	Carbon dioxide			Methane			Nitrous oxide			F-gases (SF ₆ , HFCs and PFCs)		
	Base-year	With measures	With additional measures	Base-year	With measures	With additional measures	Base year	With measures	With additional measures	Base-year	With measures	With additional measures
Energy (excl. transport)	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Transport (eNErgy)	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Industrial processes	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Waste	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Agriculture	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Total (excl. LULUCF)	38.1	15.8	15.2	4.4	2.5	1.8	1.0	0.5	0.4	NE	NE	NE

Source: Estonia Country Profile 2006

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

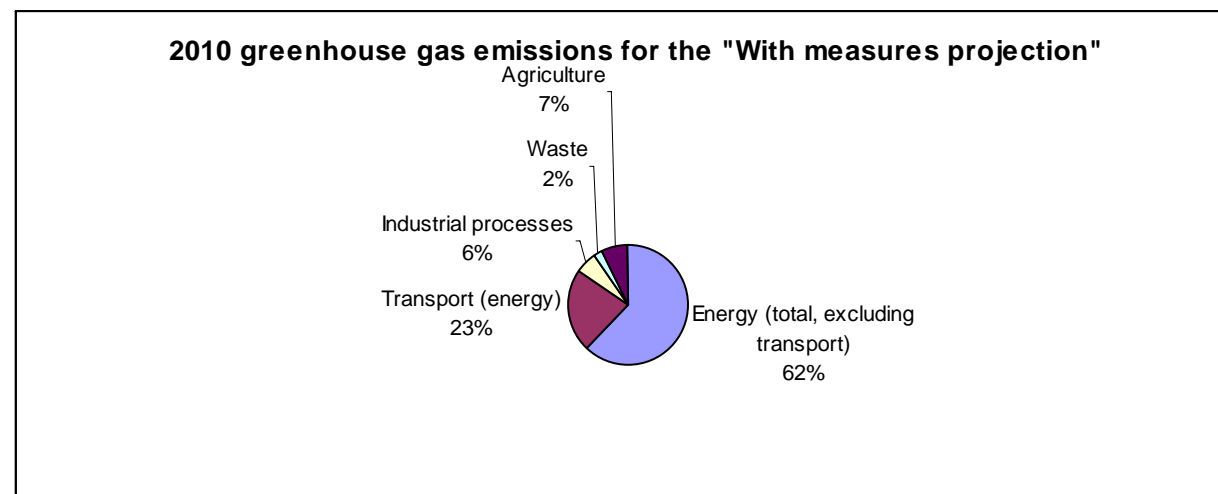


Table 9: Summary of projections (6 gas basket) in 2010, 2015 and 2020 (Mt CO₂-eq.) under WAM scenario

	Base-year*	2010	2010 % of base-year level	2015	2015 % of base-year level	2020	2020 % of base-year level
Total (excl. LULUCF)	43.5	17.4	49.1%	NE	NE	NE	NE

Source: Estonia Country Profile 2006

Base year is 1990 for all gases except 1995 for F-gases

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

	Emissions in MtCO ₂ -equiv., excluding LULUCF*			
	2010 projections from 2005	2010 projections from 2006	2010 projections from 2007	2010 projections from 2007 % of base-year level
Base year emissions used for projections	43.4930	43.4930	43.493	100%
Kyoto Commitment/burden sharing	40.0136	40.0136	40.014	-8%
With existing P&Ms projections	18.8600	18.8600	18.860	43.36%
Gap (-ve means overachievement of target)	-21.1536	-21.1536	-21.1536	-48.6%
With additional P&Ms projections	17.4300	17.4300	17.430	40.1%
Remaining gap	-22.5836	-22.5836	-22.5836	-51.9%
Effect of flexible mechanisms	0	0	0.0	NA
Remaining gap (with use of flexible mechanisms)	-22.5836	-22.5836	-22.5836	-51.9%

Source for all projections data is 4th National Communication.Source for the Effect of flexible mechanisms for 2007 (947 M CO₂-eq. annually) is MMS 2007. This is the result of the JI projects implemented on the territory of Estonia. These reductions will not enter either in the Kyoto AAU nor in the country's GHG Inventories.

*Above table excludes LULUCF. LULUCF will be covered in the main report, based on the questionnaire submissions

In Table 11 a comparison is drawn concerning the projections for the trading sector between emissions projections for the year 2010 under the WAM scenario as reported in 4th NC and the NAP 2. It should be noted that energy use from industry is normally included in the energy sector for projections under the UNFCCC and included in the industry sector for NAP 2 projections. Due to these and other differences in the sector definitions projections for the individual sectors might not be comparable.

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

	4 th NC	NAP 2 projections	Difference
Energy sector	15.4 ^a	NE ^c	NE
Energy sector included in EU ETS	NE ^b	21.73 ^d	NE
Industry sector	0.3 ^e	NE ^g	NE
Industry sector included in EU ETS	NE ^f	1.586 ^h	NE
Total Energy & Industry	15.7	NE	NE

a Included are GHG emissions from the energy sector as reported in 4th NC under "with additional measures" scenario

b Included should be CO₂ emissions from the sectors energy industries (1.A.1), Manufacturing industries and construction (1.A.2), Other (1.A.5), Fugitive emissions from fuels (1.B), Solvent and other product use(3), Other (7) as reported

c Included should be GHG emissions from Energy Generation (1.A.1) and Commercial and institutional, Residential, and Agricultural energy use (1.A.4) as reported in the NAP 2 Summary Table Recent and projected greenhouse gas emissions per common reporting format sector

d Included are CO₂ emissions from installations covered by EU ETS as reported in the NAP 2 Summary Table Recent and projected greenhouse gas emissions per common reporting format sector

e Included are GHG emissions from the Industrial processes as reported in the Country Report under "with additional measures" scenario

f Included should be CO₂ emissions from the Industrial processes and energy use in other sectors (1.A.4) as reported in MMS 2007 under "with additional measures" scenario

g Included should be GHG emissions from Industrial Processes (2) and All Other Sectors as reported in the NAP 2 Summary Table Recent and projected greenhouse gas emissions per common reporting format sector

g Included are CO₂ emissions from installations covered by EU ETS from Industrial Processes (2) as reported in the NAP 2 Summary Table Recent and projected greenhouse gas emissions per common reporting format sector

8. DESCRIPTION OF MODELLING APPROACH

Overview of modelling approach

The latest emissions projections by sector for Estonia are provided in the 4th NC. The sectors covered are the energy sector, agriculture and forestry. Two scenarios have been described for every sector – "With Measures" scenario and "With Additional Measures" scenario. Projections by sectors are usually given for the key-years 2010, 2020 and sometimes 2030.

In the energy sector the available projections have been calculated based on MARKAL model. MARKAL is a dynamic linear programming "bottom-up" model, which finds the optimal development of the energy system in time under given technology characteristics and boundary conditions. It runs considering different options of fuel supply and basic assumptions of macroeconomic development. The MARKAL models allow a wide flexibility in representation of energy supply and demand technologies and are typically used to examine the role of energy technologies under specific policy constraints, e.g. CO₂ mitigation, local air pollution reduction, etc.

For the development of the main energy indicators until 2010 the forecasted in the National Long-Term Development Plan for the Fuel and Energy Sector until 2015 (with a vision until 2030) 2001 and 2002 data were used. GDP forecasts are based on the actual value of 2000 GDP in market prices, actual growth in 2001 and 2002, and the annual growth forecast from that in turn bases on the forecast of the Ministry of Finance of Estonia until 2030.

As it is stated in the NAP II for the years 2008-2012, the information used for MARKAL model needs updating since the GDP forecasts have change dramatically over the last years and are no longer adequate.

Scenarios in agricultural sector assumed Estonia will reach the level of EU countries. Projections of CO₂ sinks in Forestry and land use are primarily focused on protection of forest, increase area of reforestation and regulation of annual harvest. The WAM scenario grounds mainly on forestry activities.

There is no information provided on whether the model has been verified.

Sensitivity analysis

There are no data on whether the sensitivity analysis has been carried out or the robustness of the model has been checked.

Details of the uncertainty assessment

There are no data on uncertainty in key inputs as well as on the major sources of errors.

9. PROJECTION INDICATOR REPORTING

The majority of indicators were not reported.

10. REPORTING OF PARAMETERS ON PROJECTIONS

The majority of projection parameters were not reported.

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

N°	Eurostat Sectors	Indicator	2005 2010 2015 2020				Numerator/denominator	2005 2010 2015 2020			
1	Macro	CO ₂ intensity of GDP, t/Euro million					Total CO ₂ emissions, kt GDP, bio Euro (EC95)				
2	Transport C0	CO ₂ emissions from passenger cars, kt Number of kilometres by passenger cars, Mkm									
3	Transport D0	CO ₂ emissions from freight transport (all modes), kt Freight transport (all modes), Mtkm									
4	Industry A1	Energy related CO ₂ intensity of industry, t/Euro million					CO ₂ emissions from fuel consumption industry, kt Gross value-added total industry, Bio Euro (EC 95)				
5	Households A1	Specific CO ₂ emissions of households, t/dwelling					CO ₂ emissions from fossil fuel consumption households, kt Stock of permanently occupied dwellings, 1000				
6	Services A0	CO ₂ intensity of the services sector, t/Euro million					CO ₂ emissions from fossil fuel consumption services, kt gross value-added services, bio Euro (EC95)				
7	Transformation B0	Specific CO ₂ emissions of public and autoproducer power plants, t/TJ					CO ₂ emissions from public and autoproducer thermal power stations, kt all products-output by public and autoproducer thermal power stations, PJ				
8	Agriculture	Specific N ₂ O emissions of fertilizer and manure use, kg/kg					N ₂ O emissions from synthetic fertilizer and manure use, kt use of synthetic fertiliser and manure, kt nitrogen				
9	Agriculture	Specific CH ₄ emissions of cattle production, kg/head					CH ₄ emissions from cattle, kt cattle populations, 1000 head				
10	Waste	Specific CH ₄ emissions from landfills, kt/kt					CH ₄ emissions from landfills, kt Municipal solid waste going to				



Source: 4th National Communication

Table 13: List of parameters on projections (Annex IV of Implementing Provisions¹)

1. Mandatory parameters on projections	2005	2010	2015	2020
Assumptions for general economic parameters				
GDP (value at given years or annual growth rate and base year)	7.469	9.892	12.39	14.88
Population (value at given years or annual growth rate and base year)	1.35	1.35	1.40	1.40
International coal prices at given years in euro per tonne or GJ (Gigajoule)	1.60	1.60	1.60	1.60
International oil prices at given years in euro per barrel or GJ	4.50	5.80	7.10	8.40
International gas prices at given years in euro per m3 or GJ	3.20	4.16	5.12	6.08
Assumptions for the energy sector				
Total gross inland consumption (PJ) (split by oil, gas, coal, renewables, nuclear, other)				
Total electricity production by fuel type (oil, gas, coal, renewables, nuclear, other)				
Energy demand by sector split by fuel (delivered)				
Assumptions on weather parameters, especially heating or cooling degree days				
Assumptions for the industry sector				
<i>For Member States using macroeconomic models:</i>				
The share of the industrial sector in GDP and growth rate				
<i>For Member States using other models:</i>				
The production index for industrial sector				
Assumptions for the transport sector				
<i>For Member States using macroeconomic models:</i>				
The growth of transport relative to GDP				
<i>For Member States using other models:</i>				
The growth of passenger person kilometres				
The growth of freight tonne kilometres				
Assumptions for buildings (in residential and commercial or tertiary sector)				
<i>For Member States using macroeconomic models:</i>				
The level of private consumption (excluding private transport)				
The share of the tertiary sector in GDP and the growth rate				
<i>For Member States using other models:</i>				
The rate of change of floor space for tertiary buildings and dwellings				
The number of dwellings and number of employees in the tertiary sector				
Assumptions in the agriculture sector				
<i>For Member States using macroeconomic models:</i>				
The share of the agriculture sector in GDP and relative growth				
<i>For Member States using other models:</i>				
Livestock numbers by animal type (for enteric fermentation beef, cows, sheep, for manure management pigs and poultry)				
The area of crops by crop type				
Emissions factors by type of livestock for enteric fermentation and manure management (t)				
Assumptions in the waste sector				
Waste generation per head of population or tonnes of municipal solid waste				
The organic fractions of municipal solid waste				
Municipal solid waste disposed to landfills, incinerated or				

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

1. Mandatory parameters on projections	2005	2010	2015	2020
composted (in tonnes or %)				
Assumptions in the forestry sector				
Forest definitions				
Areas of (ha):	228750	232500	240000	243750
managed forests	0	0	0	0
unmanaged forests				

Source: 4th National Communication

11. COUNTRY CONCLUSIONS

The main document used for this summary is the Estonian 4th 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 sectors-all gases. The key policies and measures are summarised in the Table 4, which makes clear the potential greenhouse gas savings.

The projected emission level in 2010 is 18.860 (Mt CO₂-eq.) under with measures implemented (excluding LULUCF) scenario. This is 21.1536 Mt CO₂-eq. below the Kyoto target level in 2010. This shows that Estonia has reserves to fulfil its commitments even if its GDP is going to increase.