

Belgium

Sources of information

- Projections of Greenhouse Gas Emissions and the Total Effect of Policies and Measures: Report by Belgium under Council Decision 1999/296/EC, December 2001
- Projections of Greenhouse Gas Emissions and the Total Effect of Policies and Measures: Report by Belgium under Council Decision 1999/296/EC, December 2000
- Belgium's Third National Communication under the United Nations Framework Convention on Climate Change, April 2002

Quality and transparency of reporting

The information on policies and measures is taken from the Third National Communication. Existing policies and measures are well described but their effect is not disaggregated. In the report to the monitoring mechanism, the effects of the main existing policies for CH₄ and N₂O are separated. The ACEA agreement is specifically excluded from the with measures scenario. Belgium is still developing their second national climate plan and additional measures have not yet been clearly defined. Additional technical measures for CO₂ reductions are listed in the report to the monitoring mechanism and their incorporation into the model described.

Table 1: Information provided on policies and measures

Information provided	Level provided	Comments
Policy names	+++	
Objectives of policies	+++	
Which GHGs?	CO ₂ , (CH ₄ and N ₂ O with measures only)	
Status of Implementation	++	
Implementation body specified	+++	
Quantitative assessment of implementation	+	Only aggregated
Interaction with other P&Ms discussed	-	Not included

With measures and with additional measures projections are given for CO₂. For the other gases, only a with measures projection is given. The existing policies are those implemented since 1990. The projections are to the year 2020 and are disaggregated by gas and four sectors: energy; industrial process, agriculture and waste. The energy-related emissions are further disaggregated to: energy transformation; industry; residential and service; and transport. Industrial process emissions are also disaggregated.

Table 2: Information provided on projections

Category of information	Level of information provided	Comments
Scenarios considered	With measures With additional measures	
Expressed relative to inventory for previous years	Yes	
Starting year	2000	
Split of projections	+++	
Presentation of results	++	It is difficult from the tables presented to understand the overall picture.
Description of model (level of detail, approach and assumptions)	+++	
Discussion of uncertainty	–	The fact that two models (Hermes and Markal) were used for the projection period up to 2010 provides some insights on the uncertainty in projections
Details of parameters and assumptions	+++	Good level of detail on model parameters — policies and measures less detail (Table 1)

Assessment of policies and measures

The effect of the policies and measures has not been quantified separately from the effect of parameter assumptions on the projections. For additional measures, it has been assumed here that the difference between the two scenarios is the result of the additional measures. The additional measures are directed towards reduction of energy use, the main effects are in energy transformation and manufacturing and construction. Table 3 summarises the effect of policies and measures. In Table 4, details of policies and measures are given. The policies in the first part of the table are those identified as being included in the with measures projections. The second part of the table contains the details given in the third national communication. It is not clear which of the measures in Table 2 are included explicitly in the projections.

Table 3: Summary of the effect of additional policies and measures in relation to with measures projections included in the projections (MtCO₂ equivalents)

	With measures	With additional measures
Energy transformation		5.7
Manufacturing and construction		5.1
Transport		0.7
Residential and service		2.2
Industrial processes		0.1
Agriculture		—
Waste		—
Total		13.8

Table 4: Detailed Information on policies and measures

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO ₂)		CCPM
							2010	2020	
Policies and measure in the with measures projection									
Residential and service sector	Improving thermal insulation of new buildings in the housing and service sectors	To reduce energy losses by 20 %	CO ₂		Implemented	Government and regions			n
Residential and service sector	Promoting the use of energy-efficient household appliances and lighting	Reduction of energy use	CO ₂	Education and labelling	Implemented	Government and regions			In part (Labelling directive)
Residential and service sector	K55 insulation level for new buildings in the residential sector		CO ₂		Implemented				
Residential and service sector	Insulation standards for the service sector		CO ₂		Implemented				n
Residential and service sector	Subsidies for highly efficient bulbs through agreement with the		CO ₂	Economic	Implemented				n

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO ₂)		CCPM
							2010	2020	
	electricity producing and distributing companies								
Energy transformation	Penetration of renewables	To give priority to renewable energy sources	CO ₂		Implemented				N
Energy transformation	Investment plan in the electricity sector		CO ₂		Implemented				N
Energy transformation	Subsidy of 0.05 euro/kWh for electricity from renewable sources		CO ₂		Implemented				N
Energy transformation	New STAG power plants are built in 1995 and 2000		CO ₂		Implemented				N
Energy transformation	No new nuclear power stations and maximum lifetime for existing nuclear power		CO ₂		Implemented				N

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO ₂)		CCPM
							2010	2020	
Energy use	stations of 40 years								
Waste	Fuel taxes		CO ₂	Fiscal	Implemented				N
	Measures to reduce landfilling of organic waste and recovery of landfill gas		CH ₄		Implemented				Y (Landfill directive)
Energy transformation (fugitive emissions from distribution)	Measures to reduce leaks		CH ₄		Implemented				N
Agriculture	Reduction of fertiliser use		NO ₂		Implemented				?
Fluorinated gases	Measures to reduce emissions		HFC		Implemented	Flemish region			N

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO ₂)		CCPM
							2010	2020	
Policies and measure from the third national communication									
Energy	E1 — Purchase at a guaranteed price of electricity produced from RES	Promotion of RES	CO ₂	Financial	Adopted	Federal State Ministry of Economic Affairs (Energy Administration)			N
	E2 — Green certificates	Promotion of electricity derived from RES or from CHP	CO ₂	Regulation	Adopted	Federal State Ministry of Economic Affairs (Energy Administration)			N
					Implemented	Ministry of Flemish Community (energy Administration)			
					Adopted	Walloon Region General Directorate of Technology, Research and Energy			
					Adopted	Brussels-Capital Region IBGE/BIM			

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO ₂)		CCPM
							2010	2020	
Energy	E3 — Eligibility of producers and consumers of green electricity	Promotion of electricity derived from RES or from CHP	CO ₂	Regulation	Adopted	Federal State Ministry of Economic Affairs (Energy Administration)			N
					Adopted	Ministry of the Flemish Community (Energy Administration)			
					Adopted	Walloon Region General Directorate of Technology, Research and Energy			
					Adopted	Brussels-Capital Region IBGE/BIM			
Energy	E4 — Priority access to the network for green electricity	Promotion of electricity derived from RES or from CHP	CO ₂	Regulation	Adopted	Ministry of Flemish Community (Energy Administration)			N

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO ₂)		CCPM
							2010	2020	
					Adopted	Walloon Region General Directorate of Technology, Research and Energy			
Energy	E5 — Obligations of public service in the area of energy efficiency	Energy efficiency	CO ₂	Regulation	Adopted	Ministry of the Flemish Community (Energy Administration)			N
					Adopted	Walloon Region General Directorate of Technology, Research and Energy			
Energy	E6 — Tax Reductions on investments (industrial sector)	Improvements in energy efficiency (industry)	CO ₂	Financial	Implemented	Federal State Ministry of Finance			N
Energy	E7 — Tax reductions on investments (residential sector)	Improvements in energy efficiency (residential)	CO ₂	Financial	Implemented	Federal State Ministry of Finance			N

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO ₂)		CCPM
							2010	2020	
Energy	E8 — Financing CHP installations	Promotion of CHP	CO ₂	Financial	Adopted	Federal State Ministry of Economic Affairs (Energy Administration)			N
Energy	E9 — Subsidies to companies for investments in energy economy	Improved energy efficiency and promotion of RES	CO ₂	Financial	Implemented	Ministry of the Flemish Community (Energy Administration)			N
Energy	E10 — Subsidies for the installation of photovoltaic panels	Promotion of solar energy (photo-voltaic)	CO ₂	Financial	Implemented	Ministry of Flemish Community (Energy Administration)			N
Energy	E11 — Subsidies for CHP installations	Promotion of CHP systems	CO ₂	Financial	Implemented	Ministry of the Flemish Community (Energy Administration)			N
Energy	E12 — Subsidies to households for improving their energy efficiency	Improvement of energy efficiency	CO ₂	Financial	Implemented	Walloon Region General Directorate of Technology, Research and Energy			N

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO ₂)		CCPM
							2010	2020	
Energy	E13 — Subsidies to municipalities, schools and hospitals for investments leading to energy economy	Improvement of energy efficiency and promotion of RES	CO ₂	Financial	Implemented	Walloon Region General Directorate of Technology, Research and Energy			N
Energy	E14 — Subsidies to federations of companies for investments leading to energy efficiency	Improvement Of energy efficiency	CO ₂	Financial	Implemented	Walloon Region General Directorate of Technology, Research and Energy			N
Energy	E15 — Promotion of the Soltherm solar water heater	Promotion of solar water heaters	CO ₂	Educational/ Financial	Implemented	Walloon Region General Directorate of Technology, Research and Energy			N
Energy	E16 — Subsidies for investments leading to energy efficiency	Improvement of energy efficiency	CO ₂	Financial	Implemented	Brussels — Capital Region IBGE/BIM			N

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO ₂)		CCPM
							2010	2020	
Energy	E17 — Subsidies for investments in solar water heaters	Promotion of solar water heaters	CO ₂	Educational/ Financial	Implemented	Brussels-Capital Region IBGE/BIM			N
Energy	E18 — Free energy pre-audits	Energy efficiency	CO ₂	Educational/ Financial	Implemented	Ministry of the Flemish community (Energy Administration)			N
Energy	E19 — Grant towards the cost of an audit energy	Energy Efficiency, promotion of RES	CO ₂	Educational/ Financial	Implemented	Walloon Region General Directorate of Technology, Research and Energy			N
Energy	E20 — Free consultation service for SME's	Energy efficiency, promotion of RUE	CO ₂	Educational/ Financial	Implemented	Walloon Region General Directorate of Technology, Research and Energy			N
Energy	E21 — Subsidies for energy audits	Energy efficiency	CO ₂	Educational/ Financial	Implemented	Brussels-Capital Region IBGE/BIM			N
Energy	E22 — Reductions in tariff for the clients of CHP installations	Promotion of CHP	CO ₂	Financial	Implemented	Federal State Ministry of Economic Affairs — Energy Administration			N

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO ₂)		CCPM
							2010	2020	
Energy	E23 — RUE/electricity Fund	Improvement of energy efficiency, promotion of the RES and the RUE	CO ₂	Financial	Implemented	Federal State Ministry of Economic Affairs — Energy Administration			N
Energy	E24 — Measures to encourage energy efficiency (gas industry)	Energy efficiency	CO ₂	Financial	Implemented	Federal State Ministry of Economic Affairs — Energy Administration			N
Energy	E25 — Financial support for the production of electricity from RES	Promotion of RES	CO ₂	Financial	Implemented	Federal State Ministry of Economic Affairs — Energy Administration			N
Energy	E26 — Energy certification of buildings	Energy efficiency of buildings	CO ₂	Regulation	Adopted	Energy Administration (federal + regional)			N
Energy	E27 — Introduction energy performance standards	Energy efficiency of buildings	CO ₂	Regulation	Flemish Region — implemented : other regions: planned	Energy Administration (regions)			N

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO ₂)		CCPM
							2010	2020	
Energy	E28 — Standards of energy efficiency for boilers and water heaters	Improvement of the energy efficiency of boilers and water heaters	CO ₂	Regulation	Implemented	Federal State Ministry of Social Affairs, Public Health and environmental health			N
Energy	E29 — Energy efficiency labels	Improvement of the energy efficiency of domestic appliances	CO ₂	Regulation	Implemented	Federal State Ministry of Social Affairs, Public Health and environmental health			Y?
Energy	E30 — Benchmarking Agreements (Flemish Region)	Energy efficiency in the industrial sector	CO ₂	Voluntary	Implemented	Ministry of the Flemish Community (Energy Administration)			N
Energy	E31 — Voluntary agreements with industry (Walloon Region)	Energy efficiency in the industrial sector	CO ₂	Voluntary	Implemented	Walloon Region General Directorate of Technology, Research and Energy			N
Energy	E32 — 'Eco-dynamic Company' Label (Brussels-Cap. Region)	Improving energy efficiency in companies	CO ₂	Voluntary	Implemented	Brussels-Capital Region IBGE/BIM			N

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO ₂)		CCPM
							2010	2020	
Energy	E33 — AMPERE Commission	Analysis aimed at planning energy policy	CO ₂	Planning	Implemented	Federal State Ministry of Economic Affairs — Energy Administration			N
Energy	E34 — New infrastructure projects	New infrastructure (wind, photovoltaic)	CO ₂	Planning	Adopted	Ministry of the Flemish Community (Energy Administration)			N
Energy	E35 — Demonstration projects (Flemish Region)	Information and public awareness (energy efficiency and RES)	CO ₂	Education	Implemented	Energy Administration (regions)			N
Energy	E36 — Code of good behaviour for the gas distribution sector	Analysis and prevention of CH ₄ leaks	CH ₄	Voluntary	Planned	Ministry of the Flemish Community (Administration of Environment)			N
Industry	I1 — Adaptation of the VLAREM regulations (N ₂ O) catalysts	Limitations of N ₂ O emissions released by the production of nitric acid	N ₂ O	Regulation	Planned	Flemish Region			N

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO ₂)		CCPM
							2010	2020	
Industry	I2 — Regulations aiming to limit the use of fluorinated greenhouse gasses	Reduced emissions of fluorinated greenhouse gases	HFCs, PFCs, SF ₈	Regulation	Implemented /Adopted	Flemish Region			N
Industry	I3 — 'Best Available Technologies' (Flemish Region)	Implementation of the IPPC directive	All	Regulation	Adopted	Flemish Region			Y
Industry	I4 — Sector agreements (Walloon Region)	Reduction of GHG emissions (Chemistry, paper, mining industries, cement)	All	Voluntary	Adopted/ planned	Walloon Region			N
Industry	I5 — 'Best Available Technologies' (Walloon Region)	Implementation of the IPPC directive	All	Regulation	Adopted	Walloon Region			Y
Agriculture and forestry	A1 — Manure Action Plan 2'	Reduction of agricultural inputs	N ₂ O, CH ₄	Regulation	Adopted	Flemish Region VLM — manure bank			N

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO ₂)		CCPM
							2010	2020	
Agriculture and forestry	A2 — Reduction in pork rearing	Reduction of agricultural inputs	N ₂ O, CH ₄	Financial	Implemented	Flemish Region ALT (Agricultural and horticultural administration)			N
Agriculture and forestry	A3 — Ammonia reduction plan	Reduction in NH ₃ emissions	N ₂ O	Regulation	Adopted	Flemish Region			N
Agriculture and forestry	A4 — 'Organic Agriculture' action plan	10 % of farmed land to be 'organic' by 2010	N ₂ O, CH ₄	Financial /Educational	Planned	Flemish Region ALT (Agricultural and horticultural administration)			N
Agriculture and forestry	A5 — Flanders Rural Development Programme	Improvement of agricultural practices	N ₂ O, CH ₄	Financial /Educational	Adopted/Planned	Flemish Region			N
Agriculture and forestry	A6 — Rural Development Plan (RDP)	Improvement of agricultural policies	CO ₂ , N ₂ O, CH ₄	Financial /Educational	Adopted/Planned	Walloon Region			N
Agriculture and forestry	A7 — Agri-environmental measures	Improvement of agricultural practices	N ₂ O,	Regulation	Adopted/Planned	Walloon Region			N

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO ₂)		CCPM
							2010	2020	
Agriculture and forestry	A8 — Storage, treatment, spreading of farmyard manure	Optimisation of fertilisation	N ₂ O, CH ₄	Financial/Voluntary	Planned	Walloon Region			N
Agriculture and forestry	A9 — Reduced input of mineral nitrogen	Reduction of added nitrogen	N ₂ O,	Regulation	Planned	Walloon Region			N
Agriculture and forestry	A10 — Measure to support reforestation	Reforestation	CO ₂	Financial	Implemented (end:2000)	Federal State Min of Agriculture			N
Agriculture and forestry	A11 — Reconversion of ground (Flemish Region)	Reforestation	CO ₂	Financial	Implemented	Flemish Region Department of Woods and Countryside			N
Agriculture and forestry	A12 — Prohibition of deforestation	Preservation of wooded land	CO ₂	Regulation	Implemented	Flemish Region Department of Woods and Countryside			N
Agriculture and forestry	A13 — Preservation of the ecological stability of forests	Forest Conservation	CO ₂	Financial	Adopted	Walloon Region			N
Agriculture and forestry	A14 — Wood Energy Plan	Recovery of energy from wood	CO ₂	Educational	Adopted	Walloon Region			N

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO ₂)		CCPM
							2010	2020	
Agriculture and forestry	A15 — Investigation of carbon sequestration	Improved knowledge of carbon sinks	CO ₂	R&D	Implemented	Walloon Region			N
Waste	W1 — Moratorium on dumping waste	Closure of biologically active landfill sites	CH ₄	Regulation	Implemented	Flemish region OVAM			Y?
Waste	W2 — Modifications to the VLAREM legislation	Elimination and recovery of discharged gases	CH ₄	Regulation	Planned	Flemish Region AMINAL			N
Waste	W3 — Introduction of specific channels of waste management	Optimised management and recovery of industrial waste	CO ₂ /CH ₄	VOL	Planned	Walloon Region			N
Waste	W4 — Ban on dumping biodegradable organic waste	To stop waste going to landfill sites	CH ₄	Regulation	Planned	Walloon Region			Y
Waste	W5 — Remedial treatment of old landfill sites	Recovery of discharged gas	CH ₄	Regulation	Implemented	Walloon Region			N

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO ₂)		CCPM
							2010	2020	
Waste	W6 — Modifications of waste incineration installations	To improve the environmental performance of incinerators	CO ₂ / CH ₄	Regulation	Implemented	Brussels-Capital Region			N
Waste	W7 — Reduction of waste at source	To reduce the quantity and harmfulness of waste at source	CO ₂ / CH ₄	Educational	Implemented	Brussels-Capital Region			N
Waste	W8 — Recovery of waste	Waste recovery, prevention	CO ₂ / CH ₄	Mixed	Implemented	Brussels-Capital Region			N
Transport	T1 — Improvements to public transport (Flemish Region)	Increase the provision and improve the quality of public transport	CO ₂ , N ₂ O, Ozone	Mixed	Adopted	Flemish Region Mobility Cell			N
Transport	T2 Improvements to public transport (Walloon Region)	Ditto	CO ₂ , N ₂ O, Ozone	Mixed	Implemented	Walloon Region (MET(DG3), SRWT,TEC) + SNCB/NMBS)			N

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO ₂)		CCPM
							2010	2020	
Transport	T3 — Improvements to public transport (Brussels-Cap., Region)	Ditto	CO ₂ , N ₂ O, Ozone	Mixed	Implemented	Brussels-Capital Region AED+STIB/MVIB (Brussels Public transport Company) + Federal State			N
Transport	T4 — Federal Government's rail investment plan	Ditto	CO ₂ , N ₂ O, Ozone	Planned	Adopted	Federal state (Min. Communications and infrastructure) + agreement for state/region co-operation)			N
Transport	T5 — Tax exemption for employer's contribution to the price of public transport season tickets and car pooling	The use of public transport and car pooling for home/work journeys	CO ₂ , N ₂ O, Ozone	Financial	Adopted	Federal State Min. of Finance			N
Transport	T6 — Journey expenses become tax deductible	Use of alternative means of transport for home/work journeys	CO ₂ , N ₂ O, Ozone	Financial	Adopted	Federal State Min. of Finance			N

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO ₂)		CCPM
							2010	2020	
Transport	T7 — Agreed employer's expenses for operating collective transport for members of staff becomes tax deductible	Collective transport of company personnel	CO ₂ , N ₂ O, Ozone	Financial	Adopted	Federal State Min. of Finance			N
Transport	T8 — Implementation of local transport plans(schools and companies)	Collective transport (school children and company personnel)	CO ₂ , N ₂ O, Ozone	Voluntary	Implemented	Flemish Region Mobility Cell			N
Transport	T9 — Pricing policy in favour of public transport	Promotion of the use of public transport	CO ₂ , N ₂ O, Ozone	Financial	Implemented	Flemish Region Mobility Cell, De Lijn company			N
Transport	T10 — Promotion of company staff transport plans	Collective transport of company personnel	CO ₂ , N ₂ O, Ozone	Voluntary	Planned	Walloon Region			N

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO ₂)		CCPM
							2010	2020	
Transport	T11 — Promotion of the use of the bicycles for daily home-school journeys	Use of bicycles for home-school journeys	CO ₂ , N ₂ O, Ozone	Educational	Adopted	Walloon Region municipalities			N
Transport	T12 — Plans for transporting company personnel	Use of alternative means of transport for home/work journeys	CO ₂ , N ₂ O, Ozone	Voluntary	Implemented	Brussels Region MCI+IBGE/BIM +AED			N
Transport	T13 — Improvement of the infrastructure for cyclists and pedestrians	Use of bicycles and walking for short journeys	CO ₂ , N ₂ O, Ozone	Infrastructure	Adopted	Flemish Region Mobility Cell			N
Transport	T14 — Improvement of infrastructure for cyclists	Promotion of the use of bicycles in towns & cities	CO ₂ , N ₂ O, Ozone	Mixed	Implemented / Adopted	Brussels Region AED + municipalities			N

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO ₂)		CCPM
							2010	2020	
Transport	T15 — Improvement of transport infrastructure around the Port of Antwerp	Use of different modes of transport	CO ₂ , N ₂ O, Ozone	Infrastructure	Implemented	Federal State + SNCB/NMBS = Port of Antwerp			N
Transport	T16 — Improvement of the quality of transport by navigable waterway (Flemish Region)	Increase of the proportion of goods transported by navigable waterway	CO ₂ , N ₂ O, Ozone	Infrastructure	Adopted	Flemish Region: Mobility Cell			N
Transport	T17 — Improvement of systems to promote the use of alternative modes of transport	Changing between modes of transport	CO ₂ , N ₂ O, Ozone	Infrastructure	Planned	Flemish Region: Mobility Cell			N
Transport	T18 — Improvement of the quality of navigable waterways	Increased proportion of goods transported by navigable waterway	CO ₂ , N ₂ O, Ozone	Infrastructure	Adopted	Walloon Region			N

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO ₂)		CCPM
							2010	2020	
Transport	T19 — Creation of multimodal platforms (hubs) (Walloon Region)	Changing between modes of transport	CO ₂ , N ₂ O, Ozone	Infrastructure	Adopted	Walloon region			N
Transport	T20 — Rationalisation of the traffic flow and parking for heavy loads in cities	Freeing up city traffic	CO ₂ , N ₂ O, Ozone	Regulation	Planned	Brussels Region Police + AED			N
Transport	T21 — Creation of multimodal platforms (hubs) (Region Brussels)	Changing between modes of transport	CO ₂ , N ₂ O, Ozone	Infrastructure	Adopted	Brussels Region Port of Brussels + SNCB/NMBS + SDRB			N
Transport	T22 — Modulation of the size of the European road tax	Promotion of less polluting vehicles	CO ₂ , N ₂ O, Ozone	Financial	Implemented	Federal State Min of Finance			N
Transport	T23 — LPG Allowance	Promotion of less polluting vehicles	CO ₂ , N ₂ O, Ozone	Financial	Implemented	Federal State Min of the Environment			N

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO ₂)		CCPM
							2010	2020	
Transport	T24 — Reduction of the tax for bringing LPG vehicles onto the road	Promotion of less polluting vehicles	CO ₂ , N ₂ O, Ozone	Financial	Adopted	Regions (Cooperation agreement)			N
Transport	T25 — Reduction of the tax for bringing 'Euro 4' cars onto the road	Promotion of less polluting vehicles	CO ₂ , N ₂ O, Ozone	Financial	Adopted	Regions (Cooperation agreement)			N
Transport	T26 — Revision of the tax for bringing second-hand vehicles onto the road	Promotion of less polluting vehicles	CO ₂ , N ₂ O, Ozone	Financial	Adopted	Regions (Cooperation agreement)			N
Transport	T27 — Modulation of the tax for getting the vehicle on the road depending on polluting emissions	Promotion of less polluting vehicles	CO ₂ , N ₂ O, Ozone	Financial	Adopted	Regions (Cooperation agreement)			N

Sector	Name	Objective	GHG affected	Type of instrument	Status	Implementing entity	Estimate of savings (MtCO ₂)		CCPM
							2010	2020	
Transport	T28 — Promotion of 'clean' vehicles	Changing the behaviour patterns of consumption	CO ₂ , N ₂ O, Ozone	Educational	Implemented	Flemish Region: Aminabel-air section			N
Transport	T29 — Traffic Regulation	Reduce polluting emissions due to car traffic	CO ₂ , N ₂ O, Ozone	Planned	Implemented	Flemish Region Mobility Cell			N
Transport	T30 — Training of mobility advisors	To strengthen the authority of mobility organisations	CO ₂ , N ₂ O, Ozone	Educational	Implemented	Walloon Region MET(DG1, DG2, DG3,) + DGRNE + DGATLP)			N
Transport	T31,T32 — Mobility observatory	Monitoring and evaluation of policies	CO ₂ , N ₂ O, Ozone	Planned	Adopted	Walloon Region			N
Transport	T33 — Campaigns promoting the use of bicycles in the city	Promotion of the use of bicycles in the city	CO ₂ , N ₂ O, Ozone	Educational	Implemented	Brussels Region AED + municipalities			N

Evaluation of projections

Table 5 shows the projections by greenhouse gas for 2010 and Table 6 summarises the projections by sector. Both the with measures and with additional measures scenarios give an increase in emissions compared to the base year. Methane is the only gas that is projected to decrease by 2010, due to changes in agriculture and waste. Emissions from these sectors and manufacturing and construction are projected to decrease, but all other sectors are projected to have increasing emissions.

Table 5: Summary of projections by gas in 2010 (MtCO₂ equivalent)

	Base year	2010 — with measures	2010 — with additional measures
CO ₂	118.3	140	126.2
CH ₄	14.1	10.5	10.5
N ₂ O	12.1	14.3	14.3
HFC, PFC, SF ₆	0.5 ^a	2.6	2.6
Total without sinks	145	167.4	153.6
Sinks	-2.1	-2	-2
Total with sinks	142.9	165.4	151.6

^a This figure is the inventory for fluorinated gases in 1995

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

	1990	2010 — with measures	Relative to 1990	2010 — with additional measures	Relative to 1990
Energy transformation sector	32.4	32.8	1 %	27.1	-16 %
Manufacturing and construction	32	29.8	-7 %	24.7	-23 %
Transport sector	20.2	29.7	47 %	29	44 %
Residential and services	25.4	33.7	33 %	31.5	24 %
Industrial processes	13.3	20.7	56 %	20.6	55 %
Agriculture	15.4	14.3	-7 %	14.3	-7 %
Waste	5	2.1	-58 %	2.1	-58 %
Other	0.9	1.6	78 %	1.6	78 %
Fluorinated gas		2.6	0 %	2.6	0 %
Sinks	-2.1	-2		-2	

An assessment of the position relative to the target is given in Table 7. Belgium's commitment under the Burden Sharing Agreement is -7.5 % of the 1990 six gas basket. Based on the without sinks total, this gives a commitment to reduce emissions by 10.9 MtCO₂ eq. The 'with measures' projection is for an increase of 22.4 MtCO₂ eq, giving a gap of 33.3 MtCO₂ eq or 23 % of the 1990 total. Additional policies and measures totalling 13.8 MtCO₂ eq have been identified. The draft second national climate plan proposed that Kyoto mechanisms are used to achieve half of the reductions needed. However, additional domestic measures will still be needed to meet the commitment if the Kyoto mechanisms are limited to 50 % of the reductions.

Table 7: Assessment of target

	MtCO ₂ equiv.	% of 1990 level (six gas basket)
Base year (from projections)	145	
Commitment	134.1	-7.5 %
With existing P&Ms	167.4	24.8 %
Gap (-ve means no gap)	33.3	22.9 %
Effect of additional P&Ms	13.8	9.5 %

Description of modelling approach

Background

Projections are produced for the medium term (2010) and the long term (2020).

Medium term projections.

These are produced using a combination of the Hermes and EPM models. For the with measures scenario the results are emissions of the three main greenhouse gases from all sectors. The additional measures scenario results is only for energy related emissions.

Long term projections.

A combination of the GEM-E3 and Markal models is used to estimate emissions for the long term. The three main greenhouse gases are covered but only energy related emissions.

Model Descriptions

EPM

The EPM model (Energy/Emissions Projection Model)¹ is a techno-economic bottom-up simulation model. The model explains the consumption of energy and corresponding greenhouse gas emissions by looking at activity variables in physical units. It contains a detailed representation of emission sources and of the main factors that determine the evolution in demand. Expected technological developments are taken into account and the model can simulate technical options. Non-energy related emissions can also be determined.

EPM distinguishes between 90 industrial activities within the energy intensive industry sectors, 14 different building types in the residential sector and 30 subsectors in commercial.

Hermes

Hermes is a macro-sectoral econometric top-down simulation model². It is a dynamic and annual model that allows for simulations to be performed of the impacts of macro-economic and sectoral policies, multinational economic policies, energy policies and new technologies. The model is oriented towards the demand side, which is modelled in some detail, but also includes the supply side. The demand for energy is estimated through econometric analysis.

¹ Econotec 'Application du modèle EPM au développement de scénarios d'émissions de CO₂ à l'horizon 2010 pour la Belgique — rapport d'avancement' étude effectuée pour les Services fédéraux des Affaires scientifiques, techniques et culturelles, 2001

² 'A description of the Hermes II model for Belgium' Working paper no 05-00 of the Federal Planning Bureau 2000. <http://www.plan.be/en/pub/wp/wplist.stm>

The exogenous variables for the model are the detailed prices for energy products, monetary policy variables (interest rates, exchange rates), fiscal and budgetary variables, European policy and demographic variables. The output of the model consists of input/output tables for 9 sectors, the demand for production factors, the accounts of economic agents, the detailed consumption structure for households and the equilibrium between supply and demand for 8 energy products.

In the most recent version of Hermes, the environmental component was further developed. This allowed the analysis to be extended to the evolution in CO₂ emissions per sector and the effect of fiscal and other measures.

To calculate the joint effect of non-fiscal and fiscal measures, the bottom-up estimates of non-fiscal measures from EPM have been integrated into the top-down model HERMES.

Markal

Markal is a long-term multi-period energy technology optimisation model^{3,4}. It contains a technology description of the main energy transformation and energy use processes in Belgium. Each potentially available energy technology is described by its technological characteristics, its costs and its current installed capacity. The model chooses energy production and consumption options that maximises the net total welfare of the energy users, given exogenous bounds on availability of energy sources or technologies or on total emissions.

GEM-E3 Model

The GEM-E3 model is an applied general equilibrium model, representing the EU Member States individually linked through trade^{5,6}. It aims to cover the interactions between the economy, the energy system and the environment. The model computes simultaneously the different market equilibrium under the Walras law and within the macroeconomic equilibrium it determines the optimum balance for energy demand/supply and emission/abatement. The projected energy demand derived from the GEM-E3 model is used as an input into the MARKAL model, which subsequently determines the least cost way to satisfy the demand.

Macro-economic assumptions

The assumptions about the Belgian macro-economic development are based on predictions from the European Commission and the OECD for the period up to 2006. For the period 2007–2012, no external information was available so the hypothesis was based on the growth trends over the last 20 years. Parameters for the modelling are shown in Table 8. The structure of the electricity supply for 2000 and 2012 is given in Table 9. The estimates for wind and water energy are consistent with other sources but do not necessarily correspond the EU or Belgian targets.

³ *Marcal, a model to support greenhouse gas reduction policies*. 2001. DWTC/SSTC — Final report CES-KULeuven, VITO

⁴ *How to achieve the Kyoto target in Belgium – modelling methodology and some results*, Working paper series no2000-09, KULeuven-CES

⁵ P Capros, T Geogakopoulos, D. Van Regermorter, S Proost, T.F.N Schmidt and K Conrad, *European Union: the GEM-E3 General Equilibrium Model*, in *Economic and Financial Modelling*, Special Double Issue Vol 4, No 2&3 pp51–160, 1997

⁶ *GEM-E3: The GEM-E3 model: Reference Manual (detailed technical documentation of the model)*, Capros et al 1997 available on <http://gem-e3.zew.de>

Table 8: Parameters for the projections

Parameter	2000/05	2005/10	Unit
Population			
GDP ^a	2.7	2.4	Annual average growth rate
Oil (international price)	4.5	4.5	Price growth rate (USD 90/bl)
Gas (international price)	4.2	4.2	Price growth rate (USD 90/boe)
Coal (international price)	0	0.3	Price growth rate
Transport passenger growth			Annual average growth rate
Freight growth			Annual average growth rate

Source: 3rd National Communication and Questionnaire
^aGDP growth rates are from 2001–2006 and 2007–2012

Table 9: Production of electricity (TWh)

	2000	2012
Water and wind energy	0.4	3.1
Nuclear energy	47.3	48.2
Thermal energy	35.4	51.8
<i>Petroleum products</i>	0.6	0.9
<i>Steel oven and coke gases</i>	2.6	2.1
<i>Natural gas</i>	17.3	43.2
<i>Bio mass and waste</i>	1.5	1.5
<i>Other combustibles</i>	0.5	0.5
<i>Coal</i>	12.9	3.5
Total	83.1	103.1

Source: 3rd National Communication

Country conclusions

The main documents used for this summary were the document provided under the monitoring mechanism and the Third National Communication. The level of detail in the documents is good but quantification of the effect of policies and measures is weak. The details of the methodology for the projections are available and contain a reasonable level of detail on the models and parameters. Additional policies and measures are only for CO₂.

The with measures projections is for an increase of 15 % compared to 1990. Belgians burden sharing agreement is a reduction of 7.5 %, giving a gap of 33MtCO₂ eq (23 %). Additional policies and measures are identified to give savings of 13.8 MtCO₂ eq. The Kyoto Mechanisms will be used to fill half of the gap, but additional domestic measures will also be required to meet the commitment.

There is an active programme of policies and measures in all sectors. The Federal nature of Belgium means that policies may be implemented in some regions but not in others. In the energy sector, most of the policies and measures have been implemented, but in other sectors more of the policies are at the adoption or planning stage. Details of policies and measures are given in the 3rd National Communication but there is no clear indication which have been included in the with measures projection. The model used is an econometric model. Its projections are based upon historical activity and emissions data, which include the effects of all measures taken up to the year 2000.