

Austria

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1. SUMMARY

In 2006, Austria's greenhouse gas emissions were 15 % above the emission level in 1990. The achievement of the Kyoto target requires a reduction of 8 % compared to base year (1990 for all gases) emissions by 2008-2012. With existing measures in place emissions are expected to further rise by 2 % until 2010. With the consideration of additional measures (WAM scenario) emissions are projected to drop to 1 % below base year emissions. Austria plans to purchase Kyoto units equivalent to 9 million tonnes CO₂ equivalent (Mt CO₂-eq.) and to make use of carbon sinks of 0.7 Mt CO₂. Taking these effects into account, emissions are projected to be a little more than 8 % below the base year in the WAM scenario, meaning that the country would reach its target by a narrow margin.

2. GHG PROJECTIONS AND PROGRESS TO KYOTO TARGETS

Austria's base year is for all gases 1990. The reference year used for projections differs slightly to the approved inventory base year, therefore correction factors have been applied to reported projections.

Austria provided two sets of projections:

- Projections according to the draft National Climate Strategy II
- Projections from the inventory methods based model.

The first model is based on energy projections, CO₂ projections for the EU-ETS sectors and expert judgement ('Draft National Climate Strategy II') and the other is based on energy projections based on the National Energy Balance Statistics Austria and a macro-economic model, transport projections based on a bottom-up national transport model, agricultural projections based on a macro-economic model, waste projections based on the national Waste Emergence and projections of solvent scenario ('Inventory Methods Based Model'). Both models consider two scenarios 'With existing measures' (WEM, includes all implemented measures) and 'With additional measures' (WAM, includes measures in the planning stage). The 'Inventory Methods Based Model' gives projections 'by sector and gas' and projections for 2015 and 2020 additionally to 2010. A reduction of GHG emissions is expected for the coming years, however total emissions are projected to be 78.3 Mt CO₂-eq. in 2010 (WAM, 'Draft National Climate Strategy II' model, corrected for reference year) and thus it is expected that the Kyoto target (68.8 Mt CO₂-eq.) will be achieved only with the use of flexible mechanisms (planned 9 Mt CO₂) and reduction effect of carbon sinks (0.7 Mt CO₂). Reductions in comparison to the base year (1990 for all gases) are expected in the Sector Energy (excluding transport) Waste and Agriculture. The main increase in comparison to the base year is expected in the Transport Sector.

Total emissions in 2020 (without LULUCF) are projected to be 87.3 (WAM) Mt CO₂-eq. ('Inventory Methods Based Model'), this equals to 10 % above 1990 levels.

In 2008 no new projections were submitted.

Table 1 shows, for all gases und main sectors:

- GHG emissions projection for the two scenarios 'with existing measures (WEM) and 'with additional measures' (WAM), as reported by Austria.
- Historic emissions (in the 'reference year') as reported together with projections.

For Austria, the reference year is 1990.

Table 1. Summary of reported projections by sector and by gas in 2010 (Mt CO₂-eq.)

	Reference Year	Carbon dioxide			Methane			Nitrous oxide			F-gases (SF ₆ , HFCs and PFCs)			Total*		
		1990	2010 WEM	2010 WAM	1990	2010 WEM	2010 WAM	1990	2010 WEM	2010 WAM	1990	2010 WEM	2010 WAM	1990	2010 WEM	2010 WAM
Energy (excl. transport)	1990	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	42.5	48.9	41.0
Energy supply	1990	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	13.7	17.3	13.6
Energy – industry, construction	1990	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	13.7	17.2	16.6
Energy – other (commercial, residential, agriculture)	1990	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	15.1	14.4	10.8
Transport (energy)	1990	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	12.8	21.7	16.9
Industrial processes	1990	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	10.0	11.1	10.0
Waste	1990	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	3.6	2.2	2.1
Agriculture	1990	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	9.1	7.7	7.2
Other	1990	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	1.0	0.9	0.9
Total (excl. LULUCF)	1990	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	78.9	92.5	78.1

Note: split Energy and Industry adapted (for reasons of comparability between countries) according to Projections of Inventory Methods Based Model

Key: WEM = with existing measures, WAM = with additional measures

Source: 4th National Communication of the Austrian Federal Government (Draft National Climate Strategy II)

Table 2 shows, for all gases and main sectors:

- 1990 GHG emissions as reported in the latest GHG emissions inventory (1990-2006);
- Adjusted GHG emissions projection of the WEM and WAM scenarios. This adjustment of the projections reported in Table 1 is carried out to allow consistency and comparability between projections and the latest (2008) GHG inventory data¹.

¹ The adjustment consists in applying an adjustment factor to projections from Table 1. This factor is the ratio between total emissions in the reference year as reported in the 2008 GHG inventory report (or, if the reference year is the base-year under the Kyoto Protocol, in the report of the review of the initial report under the Kyoto Protocol) and total emissions in the reference year as reported by the country with projections (Table 1).

Table 2. Summary of projections by sector and by gas in 2010 compared to 1990 emissions (Mt CO₂.eq.)

	Reference year	Carbon dioxide			Methane			Nitrous oxide			F-gases (SF ₆ , HFCs and PFCs)			Total		
		1990	2010 WEM	2010 WAM	1990	2010 WEM	2010 WAM	1990	2010 WEM	2010 WAM	1990	2010 WEM	2010 WAM	1990	2010 WEM	2010 WAM
Energy (excl. transport)	1990	41.8	NE	NE	0.8	NE	NE	0.5	NE	NE	NE	NE	NE	43.1	49.6	41.6
Energy supply	1990	13.9	NE	NE	0.4	NE	NE	0.0	NE	NE	NE	NE	NE	14.3	18.1	14.2
Energy – industry, construction	1990	13.4	NE	NE		NE	NE		NE	NE	NE	NE	NE	13.6	17.1	16.5
Energy – other (commercial, residential, agriculture)	1990	14.4	NE	NE	0.0	NE	NE	0.2	NE	NE	NE	NE	NE	15.1	14.4	10.8
Transport (energy)	1990	12.4	NE	NE	0.4	NE	NE	0.3	NE	NE	NE	NE	NE	12.7	21.5	16.8
Industrial processes	1990	7.6	NE	NE	0.1	NE	NE	0.2	NE	NE	NE	NE	NE	10.1	11.2	10.1
Waste	1990	0.0	NE	NE	0.0	NE	NE	0.9	NE	NE	1.6	NE	NE	3.6	2.3	2.2
Agriculture	1990	0.0	NE	NE	3.5	NE	NE	0.1	NE	NE	NE	NE	NE	9.2	7.7	7.2
Other	1990	0.3	NE	NE	4.8	NE	NE	4.3	NE	NE	NE	NE	NE	0.5	0.5	0.5
Total (excl. LULUCF)	1990	62.1	NE	NE	9.2	NE	NE	6.3	NE	NE	1.6	NE	NE	79.2	92.8	78.3

*Source: Austrian GHG Inventory 2008

Key: WEM = with existing measures, WAM = with additional measures

Table 3. Summary of projections by sector and by gas in 2010 compared to 1990 emissions (index 100 = reference year)

	Reference year	Carbon dioxide			Methane			Nitrous oxide			F-gases (SF6, HFCs and PFCs)			Total		
		1990	2010 WEM	2010 WAM	1990	2010 WEM	2010 WAM	1990	2010 WEM	2010 WAM	1990	2010 WEM	2010 WAM	1990	2010 WEM	2010 WAM
Energy (excl. transport)	1990	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100	115.1	96.5
Energy supply	1990	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100	126.2	99.2
Energy – industry, construction	1990	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100	125.3	121.2
Energy – other (commercial, residential, agriculture)	1990	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100	95.6	71.7
Transport (energy)	1990	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100	170.1	132.4
Industrial processes	1990	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100	111.3	99.8
Waste	1990	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100	61.8	59.0
Agriculture	1990	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100	84.4	78.9
Other	1990	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100	90.0	90.0
Total (excl. LULUCF)	1990	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100	117.3	98.9

Key: WEM = with existing measures, WAM = with additional measures

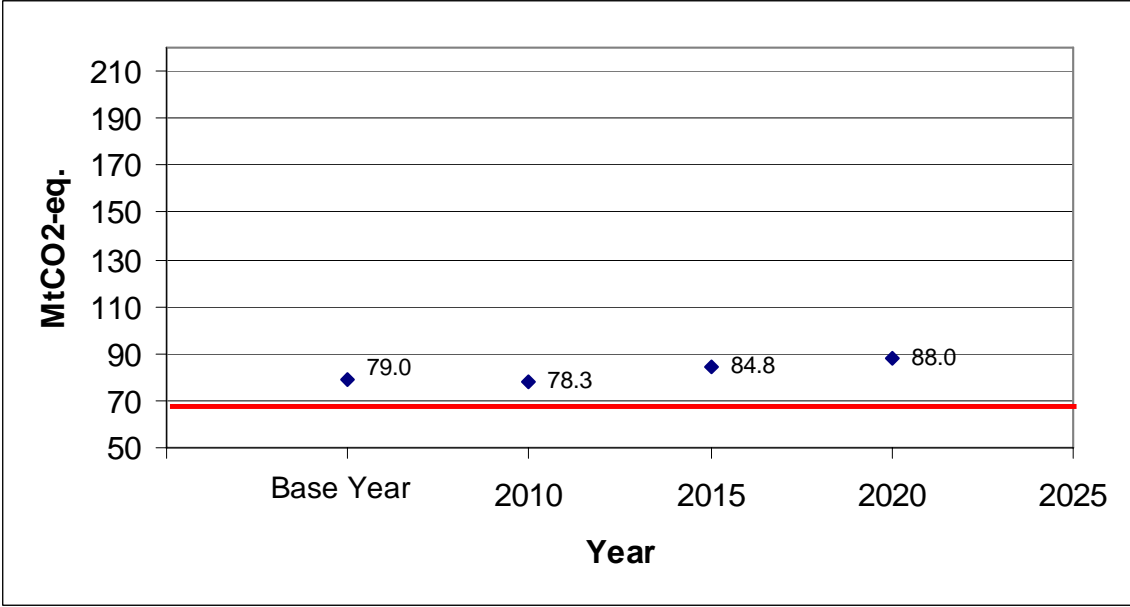
Table 4. Summary of projections in 2010 compared to base year emissions under the Kyoto Protocol

	Unit	Base-year emissions under the Kyoto Protocol	2010 projections 'with existing measures'	2010 projections 'with additional measures'
Total GHG emissions (excluding LULUCF)	Mt CO ₂ -eq.	79.0	92.8	78.3
	Index (base-year emissions = 100)	100	117.4	99.0

Key: WEM = with existing measures, WAM = with additional measures

Source: 4th National Communication of the Austrian Federal Government, Report of the Review of the Austrian Initial Report

Figure 1. Greenhouse gas projections in 2010, 2015 and 2020 (Mt CO₂-eq.)

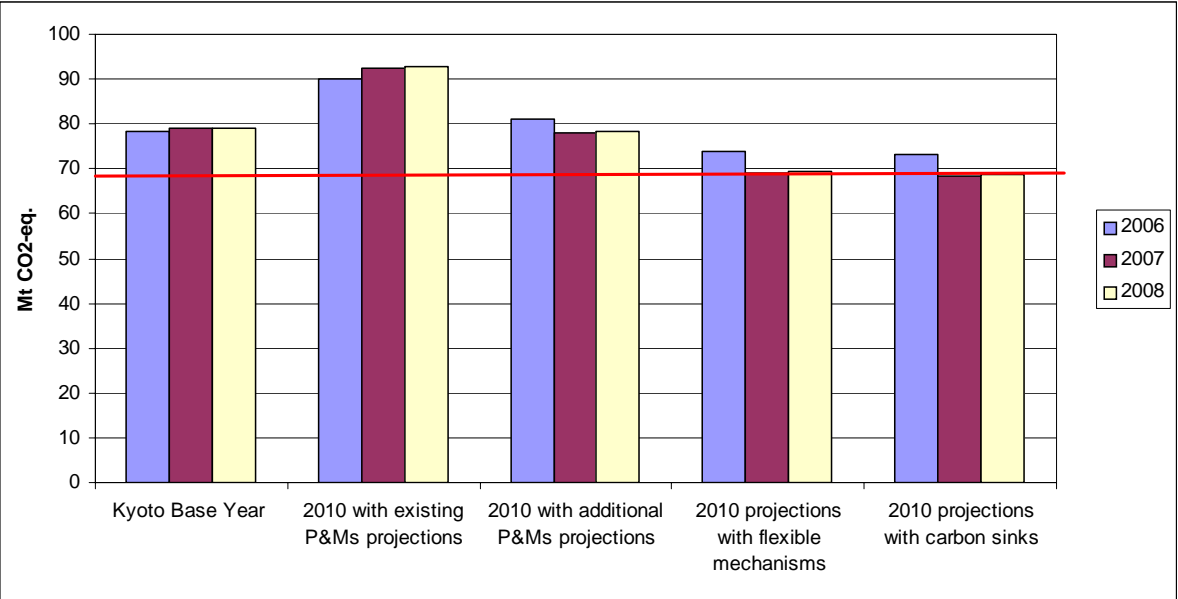


Source: 4th National Communication of the Austrian Federal Government, Report of the Review of the Austrian Initial Report

The graph shows WAM scenario for the year 2010 (best-case scenario), 2015 and 2020. Emissions are projected to decrease with the implementation of additional planned measures until 2010, but are then projected to increase again. To reach the Kyoto target (red line in Figure below) in 2010, Austria plans to purchase Kyoto units (9.0 Mt CO₂) and to use carbon sinks (0.7 Mt CO₂).

Projections for 2015 and 2020 are from the 'Inventory Methods Based Model' (4th National communication), 2010 projections are taken from the 'Draft National Climate Strategy II' (4th National communication) and corrected for changes in the reference year.

Figure 2. Comparison of 2010 projections reported in 2006, 2007 and 2008



Source: Greenhouse gas emission trends and projections in Europe 2006, Greenhouse gas emission trends and projections in Europe 2007

In 2008 there was no new submission of projections. The difference between 2007 and 2008 projections is due to correction for changes in the reference year. Projected emissions for 2010 (corrected WAM scenario with use of flexible mechanisms and reduction effect of carbon sinks) meet the Kyoto target exactly. The projections in the year 2006 are mainly taken from the 3rd National Communication and in 2007 from the 4th National Communication ('Draft National Climate Strategy II'). The data presented in this table is as used for the preparation of the 'Trends and Projections Report' in 2006 and 2007.

3. CLIMATE CHANGE MITIGATION POLICIES AND MEASURES

Table 5. Summary of the effect of policies and measures included in the 2010 projections (Mt CO₂-eq.)

	Top down calculation		Bottom Up calculation	
	Existing Measures	Planned Measures	Existing Measures	Planned Measures
Energy (total, excluding transport)	0.0	7.9	0.0	5.8
Energy supply		3.7		2.2
Energy – industry, construction		0.6		
Energy – other (commercial, residential, agriculture)		3.6		3.6
Transport (energy)		4.8		4.8
Industrial processes		1.1		0.5
Waste		0.1		0.0
Agriculture		0.5		0.3
Cross-sectoral		0.0		
Total (excluding LULUCF)	0.0	14.4	0.0	11.4

Note: The effects of measures detailed above are calculated firstly by determining the difference between total projections in each scenario ('top down calculation') and secondly by summing the reported effect of individual measures ('bottom up calculation').

Source: 4th National Communication of the Austrian Federal Government (Draft National Climate Strategy II)

For Waste and Agriculture it is projected that the sectoral target² will be almost achieved (WAM projection). PAM's in the Energy Sector (total, excl. Transport) followed by the Transport Sector are projected to deliver the highest reductions by 2010. In the Energy Sector 'Minimum thermal standard for buildings' (Thermal minimum standards for buildings are defined in the Technical Construction Regulations of the Länder), 'Thermal insulation of dwellings' (Austria's Climate Strategy sets an important priority on thermal renovation of buildings by shifting and fine tuning of housing subsidies and improving thermal minimum standards) and Promotion of energy efficiency measures and renewable energy projects (About 250 industrial projects with climate change mitigating effects were supported between 2000 and 2003, resulting in CO₂ mitigation effect of 645 000 tonnes annually) are among the existing PAM's that are expected to result in a total reduction of 5.8 Mt CO₂ eq. The WM scenario for transport includes measures as: compulsory labelling for new passenger car's fuel consumption and per kilometre CO₂ emissions (CO₂ labelling and other measures to reduce emissions from passenger cars), fuel consumption based taxation, mileage-based toll for lorries and Promotion of 'bio fuels'. With an additional measure, namely 'Further internalisation of externalities from road transport' the sectoral target for transport could be over attained. Mileage-based road tolls are expected to significantly improve the situation with respect to costs-coverage for infrastructure and to reduce demand for road transport services. Austria is among those Member States arguing strongly in favour of internalisation of external costs. In the waste sector the 'Landfill Regulation 1996' is one of the most important instruments for implementing overall targets of the Waste Management Act.

² target as given in 'Anpassung der Klimastrategie Österreichs zur Erreichung des Kyoto-Ziels 2008-2012, p. 24'

Table 6. Detailed information on Existing Policies and measures

Sector	Name	Type	GHG	Status	Absolute Reduction [kt CO ₂ eq. p.a.]			Costs [EUR/t]
					2005	2010	2020	
Agriculture	Extension of ecological farming	Economic	CH ₄ N ₂ O	implemented			details	
Agriculture	Cultivation of oil-seed crops	Economic Fiscal	CO ₂	implemented			details	
Cross-cutting	Energy related taxes and earmarking for climate change related measures	Fiscal	CO ₂	implemented			details	
Energy consumption	Minimum thermal standards for buildings	Regulatory	CO ₂	implemented			Cluster value	
Energy consumption	Housing support schemes - Constitutional Treaty between Federation and Laendern	Economic Information	CO ₂ HFC	implemented			Cluster value	
Energy consumption	Third Party Financing ('Contracting') for public buildings	Economic Voluntary/ negotiated agreement	CO ₂	implemented			Cluster value	
Energy consumption	Promotion of energy efficiency and renewable energy projects in industry	Economic	CO ₂	implemented		1,100		
Energy supply	Public support for renewable energy projects and district heating	Economic	CH ₄ CO ₂	implemented				
Energy supply	Promotion for electricity from renewable energy sources	Economic	CH ₄ CO ₂	implemented				
Industrial Processes	Regulation on bans and restrictions of HFCs, PFCs, SF₆	Regulatory	HFC SF ₆	implemented			Cluster value	
Industrial Processes	Public procurement and support measures	Economic Information	HFC SF ₆	implemented			Cluster value	
Forestry	Maintenance and extension of vital forests	Information Regulatory Research	CO ₂	implemented			details	
Transport	CO2 labelling and other measures to reduce emissions from passenger cars	Information Regulatory	CO ₂	implemented			details	
Transport	Fuel consumption based taxation	Fiscal	CO ₂	implemented				
Transport	Support of combined transport	Economic Information	CO ₂	implemented		100		
Transport	Model projects and programmes for environmentally sound mobility	Education Information Research	CO ₂	implemented			Cluster value	
Transport	Mileage based toll for lorries	Fiscal	CO ₂	implemented			details	
Transport	Promotion of energy efficient and alternative motor concepts	Information Research	CO ₂	implemented			details	

Transport	Public awareness raising measures	Education Information	CO ₂	implemented	Cluster value
Waste	Waste Management Act 1990	Regulatory	CH ₄ CO ₂	implemented	details
Waste	Landfill Regulation 1996	Regulatory	CH ₄	implemented	details
Waste	Landfill Charge Act 1989	Economic Fiscal Regulatory	CH ₄	implemented	details
Industrial Processes	Combined emission reduction of AT-IND-03 AT-IND-04	Economic Information Regulatory	HFC SF ₆	implemented	1200
Energy consumption	Combined emission reduction of AT-ENC-02 AT-ENC-03 AT-ENC-06 AT-ENC-08	Economic Fiscal Information Regulatory Voluntary/ negotiated agreement	CO ₂ HFC	implemented planned	1600
Transport	AT-ENC-09 Combined emission reduction of AT-TRA-07 AT-TRA-11	Education Information Research	CO ₂	implemented	300

Source: Öko Institut, (accessed accessed 12/06/2008), ECCP Policies and Measures database, <http://www.oeko.de/service/pam/index.php>

Table 7. Detailed information on Planned Policies and measures

Sector	Name	Type	GHG	Status	Absolute Reduction [kt CO ₂ eq. p.a.]		Costs
					2005	2010	2020
Agriculture	Further enforcement of measures to reduce methane and N₂O emissions	Economic Education Information	CH ₄ N ₂ O	planned			details
Transport	Further internalisation of externalities of road transport	Economic Fiscal	CO ₂	planned		1,900	
Energy Consumption	AT-ENC-02	Fiscal	HFC	planned			

Source: Öko Institut, (accessed accessed 12/06/2008), ECCP Policies and Measures database, <http://www.oeko.de/service/pam/index.php>

Table 8. Status of national policies and measures (PAM) in relation to European common and coordinated policies and measures (CCPM)

Status	CCPM	Sector
National policies and measures already in force before CCPM was adopted		
B	Landfill directive 1999/31/EC	Waste
B	Packaging and packaging waste (94/62/EC, 2004/12/EC, 2005/20/EC)	Waste
B	Directive on waste 2006/12/EC	Waste
B	Promotion of cogeneration 2004/8/EC	Energy supply
B	F-gas regulation (842/2006)	Industrial Process
B (R?)	Transport modal shift to rail 2001/12/EC etc.	Transport
B (R?)	Ecodesign requirements for energy-using products 2005/32/EC	Energy consumption
Existing national policies and measures reinforced by CCPM		
R	Integrated pollution prevention and control 96/61/EC	Cross-cutting
R	Taxation of energy products 2003/96/EC	Energy supply
R	Support under CAP (1782/2003)	Agriculture
R	Support under CAP - amendment (1783/2003)	Agriculture
R	Rural development support and CAP(2603/1999, 1698/2005 and 1290/2005)	Agriculture
R	Support for rural development from EAGGF (1257/1999)	Agriculture
R	Nitrates directive 91/676/EEC	Agriculture
R	Promotion of electricity from RE sources 2001/77/EC	Energy supply
R	Energy performance of buildings 2002/91/EC	Energy consumption
R	Efficiency of hot water boilers 92/42/EEC	Energy consumption
R	Marco Polo programme on freight transport	Transport
R	Motor challenge, voluntary EC programme	Energy consumption
R	HFCs in mobile air conditioning 2006/40/EC	Transport
New national policies and measures implemented after CCPM was adopted		
N	Kyoto Protocol project mechanisms 2004/101/EC	Cross-cutting
N	Emissions trading 2003/87/EC	Cross-cutting
N	Internal electricity market 2003/54/EC	Energy supply
N	Internal market in natural gas 98/30/EC	Energy supply
N	Directives on energy labelling of appliances	Energy consumption
N	End-use efficiency and energy services 2006/32/EC	Energy consumption
N	Eco-management & audit scheme (EMAS) EC 761/2001	Energy consumption
N	Energy labelling for office equipment 2422/2001	Energy consumption
N	Efficiency fluorescent lighting 2000/55/EC	Energy consumption
N	Promotion of biofuels for transport 2003/30/EC	Transport
N	Integrated European railway area (COM(2002)18 final)	Transport
N	Consumer information on cars 1999/94/EC	Transport
Status of national policy or measure not reported		
	Support scheme for energy crops under CAP (795/2004)	Agriculture
	Pre-accession measures for agriculture and rural development (1268/1999)	Agriculture
	Agreement with car manufacturers ACEA etc.	Transport

Source: MS responses to the CCPMs questionnaire, 2005. Personal communications.

Note: Austria had implemented national measures in the waste, agriculture and energy sector before CCPMs entered into force. Austria has also implemented energy related measures in important fields where CCPMs are still missing, especially regarding renewable energy sources for space heating and hot water.

4. METADATA

Sources of information

Anpassung der Klimastrategie Österreichs zu Erreichung des Kyoto-Ziels 2008-2012 (Vorlage zur Annahme im Ministerrat am 21. März 2007)

Austria's Initial Report under the Kyoto Protocol, Federal Ministry of Agriculture and Forestry, Environment and Water Management, Vienna, November 2006

Report of the Review of the Initial Report of Austria, August 8th 2007

Annual greenhouse gas inventory 1990-2006 and the inventory report 2008, March 14th 2008

Austria's Projection Greenhouse Gases 2003-2020, Final Report, Vienna, May 2006

Austria's 4th National Communication submitted to the UNFCCC, dated 18.10.2006.

Database on Policies and Measures in Europe <http://www.oeko.de/service/pam/index.php> (accessed 12/06/2008)

List of EU CCPMs

Updated information regarding projected emissions and use of flexible Instruments (letter)

Questionnaire on the use of activities under Articles 3.3 and 3.4 under the Kyoto Protocol

Questionnaire on the use of the Kyoto Protocol mechanisms in meeting the 2008-2012 targets

Kyoto base-year emissions

Kyoto base-year emissions are presented throughout, except Table 1 which presents projections reference year emissions (see below). Kyoto base year emissions of greenhouse gases were calculated using 1990 emissions for carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O) and for fluorinated gases (SF₆, HFCs and PFCs).

Kyoto base-year emissions have now been reviewed and set for all EEA countries.

Projections reference year emissions

Projections reference year emissions are presented in Table 1.

Projections reference year emissions are defined as projections-consistent emissions data for a given historic year, as chosen by the Member State. Inventory recalculations from year to year may mean that latest inventory data cannot be compared with projections based on older inventory data. Where such an inconsistency has arisen, MS projections have been corrected by applying the following formula:

Corrected projection = projections reported by MS * latest inventory emissions for the same reference year / reference year emissions reported by MS alongside projections

Quality of Reporting

Member State reporting in the sources detailed above was assessed semi-qualitatively. Scoring was attributed according to the level of detail and clarity: from 0 (representing no reported) to +++ (representing very detailed and/or clear reporting). Guidance used for this assessment included the reporting requirements laid down in:

- EU legislation: Monitoring Mechanism (280/2004/EC) and Implementing Provisions (2005/166/EC)
- UNFCCC reporting guidelines for national communications available in English, French, Spanish ('Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications - FCCC/CP/1999/7')

The following tables detail reporting considered to be best practice for the purposes of this assessment.

Table 9. Information provided on policies and Kyoto flexible mechanisms

Information provided	Level of information provided	Comments
Policy names	+++	
Objectives of policies	+++	
Types of policies	+++	
Which greenhouse gases?	+++	
Status of Implementation	+++	
Implementation body	+++	
Quantitative assessment of emission reduction effect and cost of policies	+	Estimated mitigation effect for 2010; not all measures quantified
Interaction with other national and EU level policies	++	in some cases
Measures implementing community legislation	+++	
Arrangements for flexible mechanisms	+++	
Balance between domestic action and flexible mechanisms	++	

Table 10. Information provided on projections

Category of Information	Level of information provided	Comments
WM and WAM projections	+++	
Policies included in each projection	+++	
Expressed relative to historic reference year data	+++	
Starting year	++	term 'starting year' not mentioned only for 'Inventory Methods Based Model'
Split of projections	+	
Presentation of results	+++	
Description of methodologies	++	only for 'Inventory Methods Based Model' exhaustive
Sensitivity analysis	++	
Discussion of uncertainty	++	
Details of parameters and assumptions	++	
Indicators for projections	+++	

Table 11. Parameters for Projections

1. Mandatory parameters on projections	2005	2010	2015	2020	Units
Assumptions for general economic parameters					
GDP (value at given years or annual growth rate and base year)	226.2	252.4	281.5	310.8	bio €
Population (value at given years or annual growth rate and base year)	8 131 400	8255400	8347900	8400900	
International coal prices at given years in euro per tonne or GJ (Gigajoule)	not included in model				
International oil prices at given years in euro per barrel or GJ	35	35.5	35.5	35.5	\$/GJ
International gas prices at given years in euro per m3 or GJ	not included in model				
Assumptions for the energy sector					
Total gross inland consumption (PJ) (split by oil, gas, coal, renewables, nuclear, other)	1392	1462	NE	1630	PJ
Total electricity production by fuel type (oil, gas, coal, renewables, nuclear, other)	NE	NE	NE	NE	
Energy demand by sector split by fuel (delivered)	NE	NE	NE	NE	
Assumptions on weather parameters, especially heating or cooling degree days	NE	NE	NE	NE	
Assumptions for the industry sector					
<i>For Member States using macroeconomic models:</i>					
The share of the industrial sector in GDP and growth rate	29.6/3.2	30.9/3.0	32.1/3.0	33.5/2.9	%
<i>For Member States using other models:</i>					
The production index for industrial sector	105	122	142	164	
Assumptions for the transport sector					
<i>For Member States using macroeconomic models:</i>					
The growth of transport relative to GDP (with tank tourism)	0.37	0.35	0.33	0.31	vehicle km/€
<i>For Member States using other models:</i>					
The growth of passenger person kilometres (with tank tourism)	139954	143600	146629	149422	mio.p-km
The growth of freight tonne kilometres	125033	134153	144253	156023	mio.t-km
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)	226406	224572	224128	221566	TJ
The share of the tertiary sector in GDP and the growth rate	NE	NE	NE	NE	
<i>For Member States using other models:</i>					
The rate of change of floor space for tertiary buildings and dwellings	NE	NE	NE	NE	
The number of dwellings and number of employees in the tertiary sector	NE	NE	NE	NE	
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)					
Cattle total (conventional farming)	1678193	1641316	1614253	1607802	heads
Cattle total (organic farming)	309797	298944	291486	289654	heads
Pigs total (conventional farming)	3165329	3173757	3180291	3181754	heads
Pigs total (organic farming)	38458	42801	45777	46418	heads

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Hens total (conventional farming)	11725621	11725621	11725621	11725621	heads
Hens total (organic farming)	628737	628737	628737	628737	heads
Sheep total (conventional farming)	248655	254951	256949	257562	heads
Sheep total (organic farming)	76683	79028	79567	79567	heads
The area of crops by crop type	NE	NE	NE	NE	
Emissions factors by type of livestock for enteric fermentation and manure management (t)	NE	NE	NE	NE	
Assumptions in the waste sector					
Waste generation per head of population or tonnes of municipal solid waste	NE	NE	NE	NE	
The organic fractions of municipal solid waste	NE	NE	NE	NE	
Municipal solid waste disposed to landfills	970.6	793.8	809.9	823	Gg/a
Assumptions in the forestry sector					
Forest definitions					
Areas of:					
managed forests	NE	NE	NE	NE	
unmanaged forests	NE	NE	NE	NE	

2. Recommended parameters on projections	2005	2010	2015	2020	Units
Assumptions for general economic parameters					
GDP growth rates split by industrial sectors in relation to 2000	NE	NE	NE	NE	
Comparison projected data with official forecasts	NE	NE	NE	NE	
Assumptions for the energy sector					
National coal, oil and gas energy prices per sector (including taxes)	NE	NE	NE	NE	
National electricity prices per sector as above (may be model output)	NE	NE	NE	NE	
Total production of district heating by fuel type	NE	NE	NE	NE	
Assumptions for the industry sector					
Assumptions fluorinated gases:					
Aluminium production and emissions factors	NE	NE	NE	NE	
Magnesium production and emissions factors	NE	NE	NE	NE	
Foam production and emissions factors	NE	NE	NE	NE	
Stock of refrigerant and leakage rates	NE	NE	NE	NE	
<i>For Member States using macroeconomic models:</i>					
Share of GDP for different sectors and growth rates*	NE	NE	NE	NE	
Iron and Steel*		1.9	1.3	1.2	% p.a.
Chemical*		4.1	3.5	3	% p.a.
Non Metallic Mineral Products*		2.6	1.3	1.1	% p.a.
Pulp, Paper and Printing*		2.5	3.4	3.5	% p.a.
Wood and Wood Products*		2.3	2.7	2.6	% p.a.
Rate of improvement of energy intensity (2003 = 100)	98	88	81	75	
<i>For Member States using other models:</i>					
Index of production for different sectors	NE	NE	NE	NE	
Rate of improvement or index of energy efficiency	NE	NE	NE	NE	
Assumptions for buildings (in residential and commercial / tertiary sector)					
<i>For Member States using macroeconomic models:</i>					
Share of tertiary and household sectors in GDP	NE	NE	NE	NE	
Rate of improvement of energy intensity	NE	NE	NE	NE	
Commercial/Institutional		0	(2005-2010)	0	(2010-2020)
Residential		0.6	(2005-2010)	0.6	(2010-2020)
Agriculture/Forestry/Fisheries		0.5	(2005-2010)	0.5	(2010-2020)

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<i>For Member States using other models:</i>					
Number of households	3740	3807	3921	4035	x1000
Number of new buildings	NE	NE	NE	NE	
Rate of improvement of energy efficiency (1990 = 100)	NE	NE	NE	NE	
Assumptions for the transport sector					
<i>For Member States using econometric models:</i>					
Growth of transport relative to GDP split by passenger and freight	NE	NE	NE	NE	
Passenger	0.62	0.57	0.52	0.52	(p- km/Euro)
Freight	0.56	0.53	0.52	0.5	(t- km/Euro)
Improvements in energy efficiency split by vehicle type	NE	NE	NE	NE	
Passenger cars – gasoline (MJ/km)	2.6	2.49	2.4	2.34	
Passenger cars – diesel (MJ/km)	2.28	2.2	2.14	2.08	
Heavy duty vehicles (MJ/km)	10.07	9.91	9.89	9.9	
Improvements in energy efficiency split by vehicle type, whole fleet/new cars	NE	NE	NE	NE	
Rate of change of modal split (passenger and freight)	NE	NE	NE	NE	
Passenger Transport-passenger cars	69.70 %	70.40 %	71.00 %	71.50 %	
Passenger Transport-bus	12.90 %	12.60 %	12.50 %	12.30 %	
Passenger Transport-moped	0.30 %	0.30 %	0.30 %	0.30 %	
Passenger Transport-motorcycle	0.80 %	0.90 %	0.90 %	0.90 %	
Passenger Transport-rail	7.20 %	6.90 %	6.70 %	6.50 %	
Passenger Transport-electr. Local transport	3.00 %	3.00 %	3.00 %	3.00 %	
Passenger Transport-bicycle	3.50 %	3.30 %	3.20 %	3.00 %	
Passenger Transport-pedestrian	2.50 %	2.50 %	2.50 %	2.50 %	
Freight Transport-road	67.00 %	68.00 %	70.00 %	70.00 %	
Freight Transport-rail	27.00 %	26.00 %	25.00 %	25.00 %	
Freight Transport-navigation (Danube)	5.00 %	5.00 %	5.00 %	5.00 %	
Growth of passenger road kilometres					
Passenger cars with tank tourism	99034	102474	105336	107935	
Bus	15191	15407	15590	15732	
Moped	329	322	322	322	
Motorcycle	1000	1112	1179	1202	
Growth of passenger rail kilometres					
Rail	8541	8480	8387	8287	
Electr.local transport	3571	3689	3796	3900	
Growth of passenger aviation kilometres					
Growth of freight tonne kilometres on road					
Light duty vehicles	499	540	579	615	
Heavy duty vehicles (with tank tourism)	104947	112451	120994	130563	
Growth of freight tonne kilometres by rail	16360	17655	18924	20839	
Growth of freight tonne kilometres by navigation	3226	3506	3756	4006	
Assumptions for the agriculture sector					
<i>For Member States using econometric models:</i>					
Agricultural trade (import/export)	NE	NE	NE	NE	
Domestic consumption (e.g. milk/beef consumption)	NE	NE	NE	NE	
<i>For Member States using other models:</i>					
Development of area of crops, grassland, arable, set-aside, conversion to forests etc	NE	NE	NE	NE	
Macroeconomic assumptions behind projections of agricultural activity	NE	NE	NE	NE	

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Description of livestock (e.g. by nutrient balance, output/animal production, milk production)	NE	NE	NE	NE
Development of farming types (e.g. intensive conventional, organic farming)	NE	NE	NE	NE
Distribution of housing/grazing systems and housing/grazing period	NE	NE	NE	NE
Parameters of fertiliser regime:	NE	NE	NE	NE
Details of fertiliser use (type of fertiliser, timing of application, inorganic/organic ratio)	NE	NE	NE	NE
Volatilisation rate of ammonia, following spreading of manure on the soil	NE	NE	NE	NE
Efficiency of manure use	NE	NE	NE	NE
Parameters of manure management system:	NE	NE	NE	NE
Distribution of storage facilities (e.g. with or without cover):	NE	NE	NE	NE
Nitrogen excretion rate of manures	NE	NE	NE	NE
Methods of application of manure	NE	NE	NE	NE
Extent of introduction of control measures (storage systems, manure application), use of best available techniques	NE	NE	NE	NE
Parameters related to nitrous oxide emissions from agricultural soils	NE	NE	NE	NE
Amount of manure treatment	NE	NE	NE	NE

*growth rates based on GDP (2004-2010; 2010-2020; 2015-2020)

The parameters given above only refer to the 'With Measures' Scenario of the 'Inventory Methodes Based Model', although Austria also provided the parameter for the 'With Additional Measures' Scenario. For parameter referring to transport, data are available considering 'with tank tourism' and 'without tank tourism'. In 2003 about 30 % of the transport-related CO₂ emissions were caused by tank tourism. The scenario 'WM' assumes that the passenger person kilometers will increase in the following years, both with and without tank tourism. In the table above parameters for with 'tank tourism' are given.'