

# Austria

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## 1. SOURCES OF INFORMATION

2007 Monitoring Mechanism Submission:

- Austria's Projection Greenhouse Gases 2003-2020, Final Report, Vienna, May 2006
- List of EU CCPMs
- Chapter 4 and 5 of 4<sup>th</sup> National Communication
- Anpassung der Klimastrategie Österreichs zu Erreichung des Kyoto-Ziels 2008-2012 (Vorlage zur Annahme im Ministerrat am 21.März 2007)

Oeko Institute, (accessed 14/06/2007), ECCP Policies and Measure database, <http://www.oeko.de/service/pam/index.php>

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

### **Base-year emissions**

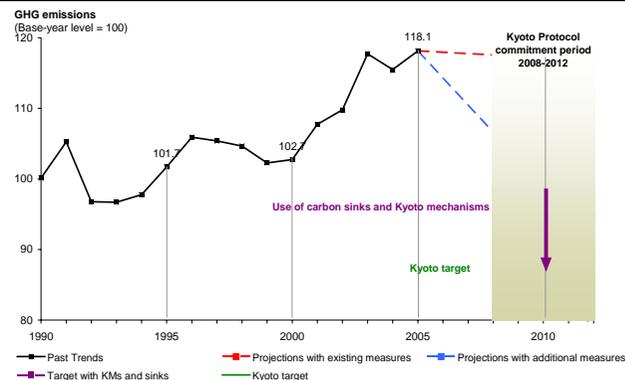
Base-year emissions of greenhouse gases are calculated using 1990 emissions for carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) nitrous oxide (N<sub>2</sub>O) and for fluorinated gases (SF<sub>6</sub>, HFCs and PFCs).

Base-year data is as reported by Member States in the sources noted above. Base year data is not 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.

## 2. SUMMARY

### AUSTRIA

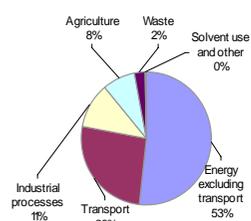
Share in total EU-15 GHG emissions 2005	2.2 %
Emissions base year (initial report)	79.0 Mt
Emissions 2005	93.3 Mt
Emissions base year (for projections)	78.9 Mt
Projections 2010 with existing measures	92.5 Mt
Projections 2010 with additional measures	78.1 Mt
Kyoto target (absolute)	68.7 Mt
Kyoto target (% from base year)	- 13 %
Change base year to 2005	+ 18.1 %
Change 2004-05	+ 2.3 %
Change base year to 2010 with existing measures	+ 17.2 %
Change base year to 2010 with additional measures	- 1.1 %
Distance to linear target path 2005 +18.7 (+27.9) index points	
Use of Kyoto mechanisms	9.0 Mt
Sinks (Articles 3.3. and 3.4)	0.7 Mt
Emissions in 1990 (Article 3.7)	n.a.



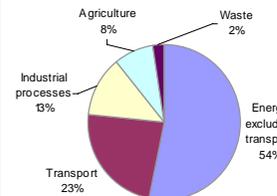
**Past emissions:** In 2005 Austria's GHG emissions were 2.3 % above those of 2004 and 18.1 % above base-year levels. Main factors for increasing emissions with regard to the previous year were growing iron and steel production and increased fuel consumption in households and services and in road transport. Looking at the change 1990-2005, road transport is by far the largest contributor to emission increases, followed by iron and steel production and public heat and power production. One reason for the large increase in transport-related GHG emissions is low road fuel prices in Austria which encourages fuel tourism.

**Emission projections:** Emissions in 2005 were one percentage point above the level projected in the 'with measures' scenario for 2010. This is mainly the result of sharp increases in road transport-related emissions. Austria will not achieve the Kyoto target with additional domestic measures, therefore 9.0 million tonnes of Kyoto units per year of the commitment period will be used as well as sinks according to Article 3.3 (0.7 million tonnes).

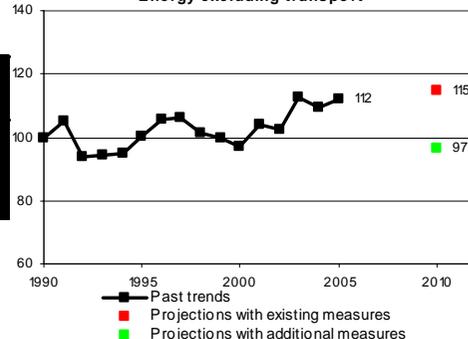
Emissions by sectors (2005)



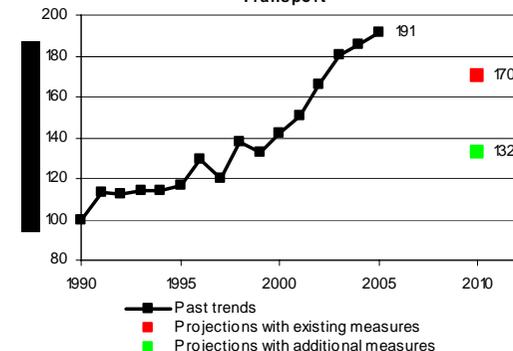
Emissions by sectors (2010)

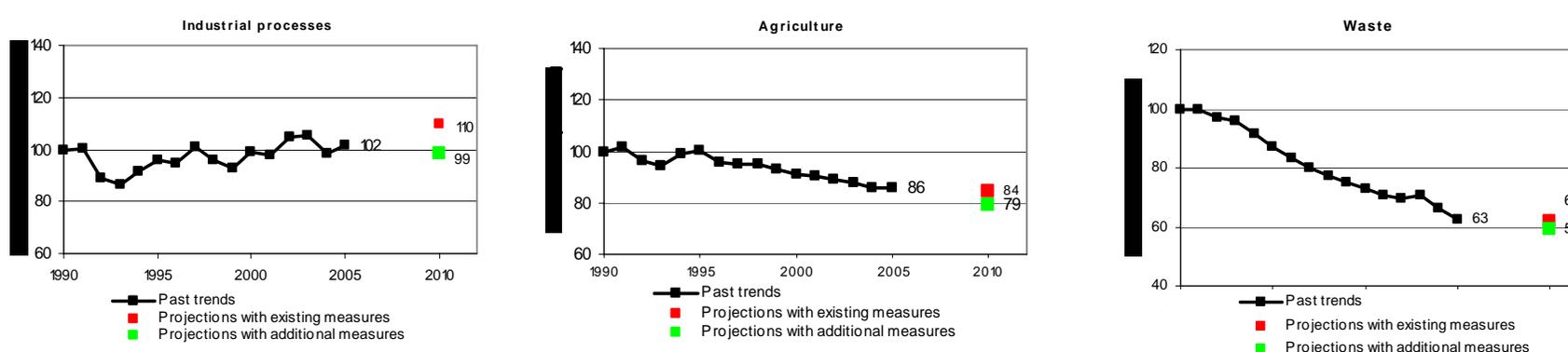


Energy excluding transport



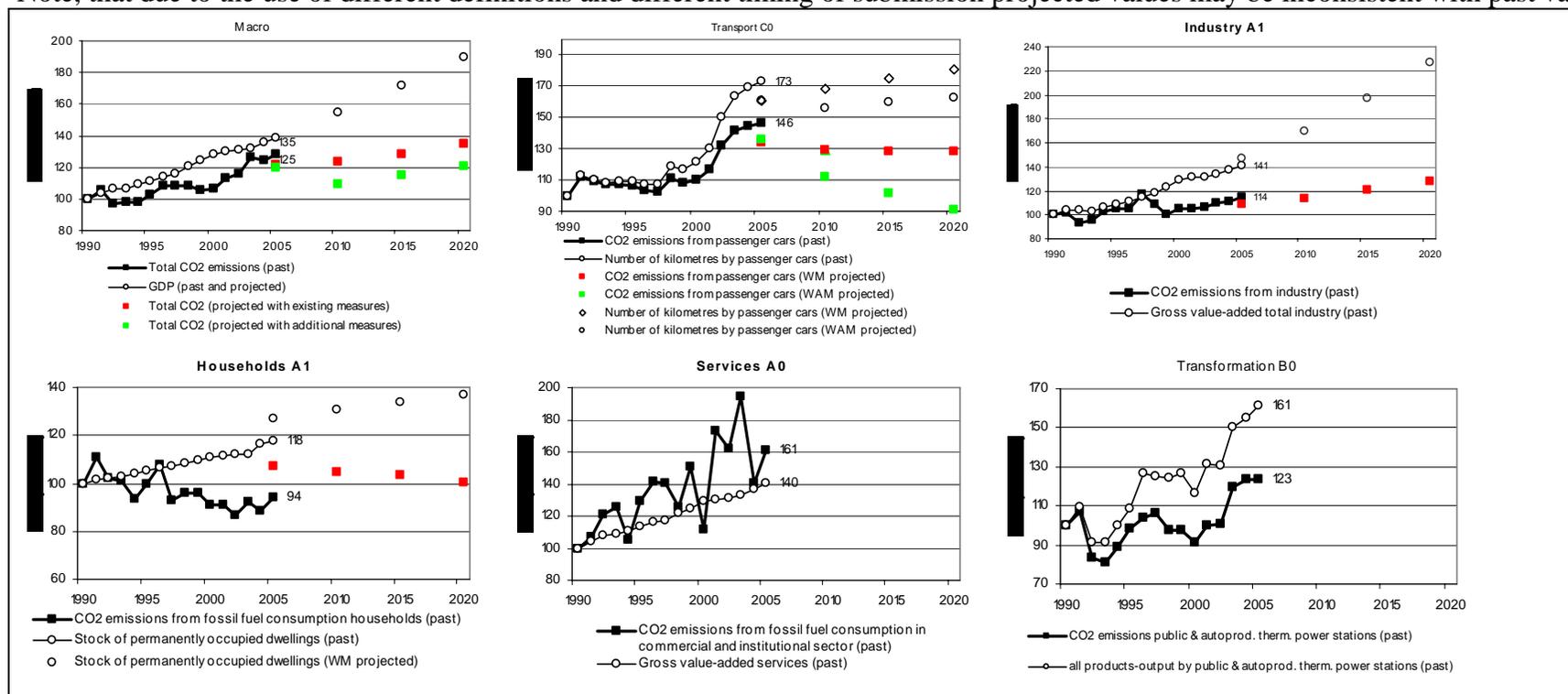
Transport

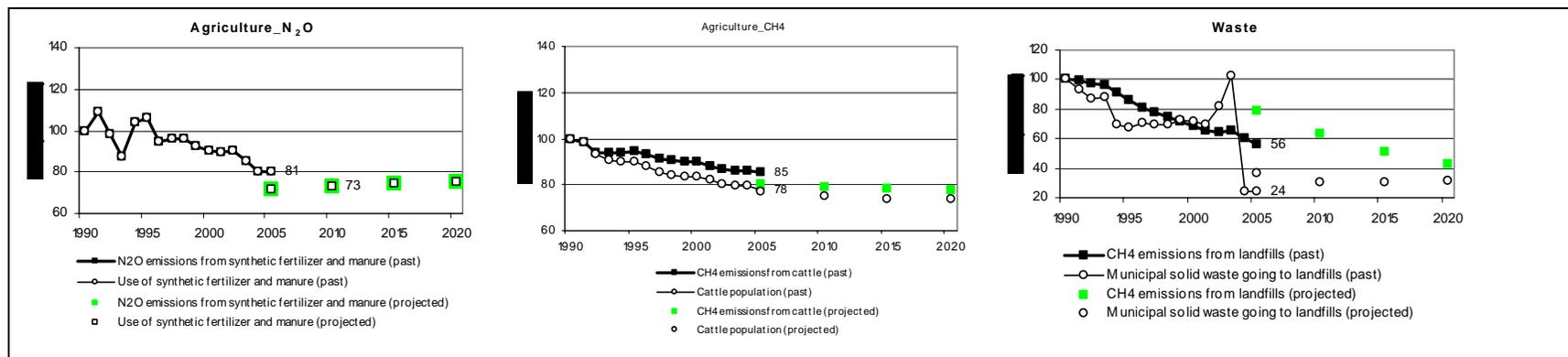




### 3. REPORTED INDICATORS

Note, that due to the use of different definitions and different timing of submission projected values may be inconsistent with past values.





**AUSTRIA – Reported indicators**

Priority Indicators		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Macro	Total CO <sub>2</sub> emissions, kt	61,930	65,483	60,042	60,411	60,763	63,661	67,327	67,148	66,812	65,337	65,960	70,045	71,709	77,972	77,140	79,650
	GDP, Bio Euro (EC95)	164	169	173	174	179	182	187	190	197	204	210	212	214	216	222	226
Macro B0	CO <sub>2</sub> emissions from energy consumption, kt	53,940	57,687	52,784	53,248	53,270	55,951	59,991	59,155	59,171	57,833	57,836	61,962	63,080	69,336	68,582	70,567
	GDP, Bio Euro (EC95)	164	169	173	174	179	182	187	190	197	204	210	212	214	216	222	226
Transport C0	CO <sub>2</sub> emissions from passenger cars, kt	8,748	9,761	9,523	9,359	9,344	9,335	9,051	8,977	9,751	9,495	9,653	10,207	11,516	12,367	12,675	12,786
	Number of kilometres by passenger cars, Mkm	41,327	46,529	45,532	44,899	45,110	45,207	44,287	44,471	48,995	48,437	50,081	53,911	61,924	67,481	70,050	71,547
Industry A1	CO <sub>2</sub> emissions from industry, kt	13,579	13,847	12,694	13,042	14,022	14,203	14,269	15,840	14,738	13,686	14,312	14,343	14,497	14,867	15,116	15,538
	Gross value-added total industry, Bio Euro (EC95)	41	42	42	42	43	44	45	47	48	50	53	54	54	55	56	57
Households A1	CO <sub>2</sub> emissions from fossil fuel consumption households, kt	9,906	11,004	10,104	9,984	9,286	9,858	10,694	9,192	9,514	9,522	9,007	9,000	8,599	9,144	8,770	9,338
	Stock of permanently occupied dwellings, 1000	2,947	2,998	3,016	3,028	3,072	3,109	3,142	3,163	3,191	3,230	3,261	3,284	3,296	3,302	3,429	3,475
Services A0	CO <sub>2</sub> emissions from fossil fuel consumption in commercial and institutional sector, kt	2,518	2,691	3,040	3,154	2,653	3,256	3,570	3,539	3,158	3,801	2,814	4,367	4,069	4,887	3,542	4,056
	Gross value-added services, Bio Euro (EC95)	92	96	99	100	102	105	107	108	112	115	119	120	121	123	126	129
Transformation B0	CO <sub>2</sub> emissions from public and autoproducer thermal power stations, kt	13,557	14,497	11,328	11,014	12,071	13,321	14,119	14,365	13,193	13,256	12,324	13,538	13,642	16,248	16,761	16,698
	All products - output and autoproducer thermal power stations, PJ	81	89	74	74	81	88	103	102	101	103	95	107	106	122	126	131

## AUSTRIA

<b>Additional Priority Indicators</b>		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Transport D0	CO <sub>2</sub> emissions from freight transport on road, kt	3,132	3,703	3,884	4,229	4,192	4,574	6,434	5,425	6,716	6,273	7,146	7,823	8,547	9,426	9,625	10,159
	Freight transport on road, Mtkm	16,078	22,644	24,632	28,839	28,472	33,762	59,094	46,935	65,786	60,361	73,576	83,857	94,968	108,199	110,737	117,897
Industry A1.1	Total CO <sub>2</sub> emissions from iron and steel, kt	8,509	8,144	7,028	7,355	7,871	8,714	8,388	9,407	8,824	8,629	9,527	9,346	10,122	10,221	10,318	11,405
	Gross value-added - iron and steel industry, Bio Euro (EC95)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Industry A1.2	Energy related CO <sub>2</sub> emissions chemical industries, kt	961	965	1,080	1,088	1,034	1,068	1,116	1,194	1,119	1,393	1,274	1,474	1,533	1,616	1,742	1,361
	Gross value-added - chemical industry, Bio Euro (EC95)	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3
Industry A1.3	Energy related CO <sub>2</sub> emissions - glass pottery and building materials industry, kt	1,669	1,668	1,673	1,621	1,693	1,520	1,551	1,698	1,600	1,467	1,548	1,506	1,590	1,584	1,599	1,656
	Gross value added - glass pottery and building materials industry, Bio Euro (EC95)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Industry C0.1	Total CO <sub>2</sub> emissions from iron and steel, kt	8,509	8,144	7,028	7,355	7,871	8,714	8,388	9,407	8,824	8,629	9,527	9,346	10,122	10,221	10,318	11,405
	Production of oxygen steel	3,921	3,896	3,592	3,738	3,968	4,538	4,032	4,718	4,801	4,722	5,183	5,346	5,647	5,707	5,901	6,408
Industry C0.2	Energy related CO <sub>2</sub> emissions from glass, pottery and building materials, kt	1,669	1,668	1,673	1,621	1,693	1,520	1,551	1,698	1,600	1,467	1,548	1,506	1,590	1,584	1,599	1,656
	Cement production, kt	4,679	4,821	4,822	4,858	4,763	3,839	3,779	3,909	3,668	3,658	4,047	4,035	4,061	4,129	4,335	4,552

Supplementary Indicators		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Transport B0 (diesel)	CO <sub>2</sub> emissions of diesel-driven cars, kt	1,448	1,663	1,776	1,919	2,170	2,393	2,637	2,897	3,349	3,553	3,901	4,388	5,201	5,881	6,354	6,658
	Number of km, of diesel-driven passenger cars, Mio km	7,494	8,666	9,306	10,097	11,447	12,621	14,049	15,603	18,214	19,618	21,883	24,990	30,022	34,263	37,343	39,361
Transport (B0) (petrol)	CO <sub>2</sub> emissions of petrol-driven cars, kt	7,300	8,098	7,747	7,440	7,175	6,943	6,413	6,080	6,403	5,942	5,751	5,820	6,315	6,486	6,321	6,128
	Number of km, of petrol-driven passenger cars, Mio km	33,833	37,863	36,225	34,802	33,663	32,585	30,237	28,868	30,780	28,819	28,197	28,921	31,902	33,218	32,707	32,186
Transport C0	CO <sub>2</sub> emissions from passenger cars, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Passenger transport by cars, Mpkm	63,168	71,120	69,549	68,134	68,342	68,488	67,095	67,241	73,933	72,946	75,271	80,867	92,700	100,816	104,444	106,462
Transport E1	CO <sub>2</sub> emissions from domestic air transport, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Domestic air passenger, Mio	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Industry A1.4	Energy related CO <sub>2</sub> emissions food industry, kt	870	933	854	885	912	950	888	1,042	943	887	1,127	1,085	1,262	1,064	987	768
	Gross Value Added food, drink and tobacco industry, Mio EUR (EC95)	2,753	2,890	3,082	2,989	3,102	3,268	3,136	3,178	3,417	3,714	3,671	3,556	3,744	4,021	3,909	3,971
Industry A1.5	Energy related CO <sub>2</sub> emissions - paper and printing industry, kt	2,268	2,619	2,226	2,057	2,574	2,303	2,242	2,818	2,633	2,154	2,174	2,022	1,944	2,019	1,978	2,283
	Gross value added paper and printing industry, Mio EUR (EC95)	2,654	2,495	2,238	2,431	2,678	2,920	2,826	3,032	3,028	3,515	3,795	4,030	3,851	3,636	3,901	3,927
Households A0	Surface area of permanently occupied dwellings, Mio m <sup>2</sup>	8,907	9,867	9,035	8,884	8,254	8,754	9,477	8,070	8,329	8,341	7,902	7,839	7,475	7,939	7,615	8,097
	Specific CO <sub>2</sub> emissions of households for space heating, t/m <sup>2</sup>	249	255	258	259	265	272	277	281	284	290	295	298	303	307	331	337
Services B0	CO <sub>2</sub> emissions from space heating in commercial and institutional, kt	NA	NA	NA													
	Surface area of services buildings, Mio m <sup>2</sup>	NA	NA	NA													
Transformation D0	CO <sub>2</sub> emissions from public thermal power stations, kt	10,166	10,843	7,793	7,434	7,855	8,897	9,961	9,967	9,101	9,174	8,895	10,262	10,064	12,420	12,253	11,993
	All products output by public thermal power stations, PJ	61	64	48	51	56	62	75	73	73	73	66	79	80	95	97	102
Transformation E0	CO <sub>2</sub> emissions from autoproducer, kt	3,391	3,654	3,535	3,580	4,216	4,424	4,158	4,397	4,092	4,082	3,429	3,277	3,578	3,827	4,508	4,705
	All products output by autoproducer thermal power stations, PJ	20	25	26	24	25	26	28	29	28	29	29	28	26	27	29	29
Transformation	CO <sub>2</sub> emissions from classical power production, kt	5,771	5,931	3,678	2,907	3,426	4,266	6,999	7,280	6,254	5,985	6,187	6,925	6,587	8,626	8,013	8,079
	All products output by public and autoproducer power stations, PJ	33	32	22	20	24	27	51	52	49	48	45	51	44	56	51	58
Transport	CO <sub>2</sub> emissions from transport, kt	12,400	13,993	13,937	14,116	14,078	14,463	16,039	14,976	17,171	16,596	17,734	18,897	20,755	22,676	23,283	24,029
	Total final energy consumption from transport, PJ	195	216	217	221	221	226	244	234	260	251	268	280	298	318	329	344
Industry	Energy related CO <sub>2</sub> emissions paper and printing industries, kt	2,932	3,090	3,252	3,301	3,603	3,599	3,653	3,817	4,009	4,142	4,385	4,250	4,419	4,564	4,852	4,950
	Physical output of paper, kt	2,268	2,619	2,226	2,057	2,574	2,303	2,242	2,818	2,633	2,154	2,174	2,022	1,944	2,019	1,978	2,283
Industry	CO <sub>2</sub> emissions from the industry sector	13,579	13,847	12,694	13,042	14,022	14,203	14,269	15,840	14,738	13,686	14,312	14,343	14,497	14,867	15,116	15,538
	Total final energy consumption from industry, PJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Households	CO <sub>2</sub> emissions from households, kt	242	9,906	11,004	10,104	9,984	9,286	9,858	10,694	9,192	9,514	9,522	9,007	9,000	8,599	9,144	8,770
	Total final energy consumption from households, PJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

#### 4. OVERVIEW OF CCPM IMPLEMENTATION IN MEMBER STATE

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

Agriculture	Pre-accession measures for agriculture and rural development Regulation (EC) No 1268/1999	<b>No longer relevant for Austria</b>
Waste	Directive on waste 2006/12/EC	B
Waste	Landfill directive 1999/31/EC	B
Waste	Packaging and packaging waste (Directive 94/62/EC, 2004/12/EC, 2005/20/EC)	B

*Legend***New** national PAM implemented after CCPM was adoptedExisting national PAM **re-enforced** by CCPMNational PAM already in force **before** CCPM was adopted

Not reported

N
R
B

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

## 5. COMPLETENESS OF REPORTING

**Table 2. Information provided on policies and measures**

Information provided	Level of information provided	Comments
Policy names	+++	
Objectives of policies	+++	
Which greenhouse gases?	CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, HFC, SF <sub>6</sub>	
Status of Implementation	+++	
Implementation body specified	+++	
Quantitative assessment of implementation	++	Estimated mitigation effect for 2010; not all measures are quantified
Interaction with other policies and measures discussed	++	In some cases

**Table 3. Information provided on projections**

Referring to the Austrian Projections according to the Draft National Climate Strategy II Strategy (used for Trends and Projections Report)

Category of Information	Level of information provided	Comments
Scenarios considered	+ WM/WAM	Scenarios not described
Expressed relative to base year	No	Only absolute numbers
Starting year	2004	
Split of projections	+	No split by gases, sector split not equivalent to IPCC sectors
Presentation of results	+	Table
Description of model (level of detail, approach and assumptions)	+	superficial and short description
Sensitivity analysis (key inputs to model / high, central and low projections scenarios / robustness of model)	-	
Discussion of uncertainty	-	
Details of parameters and assumptions	-	

Referring to the Austrian Projections from the inventory based model

Category of Information	Level of information provided	Comments
Scenarios considered	+++ WM/WAM	The measures in all scenarios are based on the policies and measures for climate protection detailed in the Austrian Climate Strategy 2002. The scenario "WM" includes all measures before 25th Jan. 2005. The scenario "WAM" additionally takes into account measures in the planning stage, which may become effective before 2020.
Expressed relative to base year	No	Only absolute numbers
Starting year	2003	
Split of projections	+++	Split by gases and by IPCC sector
Presentation of results	+++	Presentation in graphs and tables

Description of model (level of detail, approach and assumptions)	+ + +	Sectoral projections include methodology and assumptions, detailed description of the energy model
Sensitivity analysis (key inputs to model / high, central and low projections scenarios / robustness of model)	+ + +	Different sectoral sensitivity analyses (energy industries, manufacturing industries, transport, agriculture), high and low scenarios (e.g. oil price, prices of agricultural products)
Discussion of uncertainty	+	Mentioned as part of sensitivity
Details of parameters and assumptions	+ + +	The considered source categories include chapter on assumptions

## 6. ASSESSMENT OF POLICIES AND MEASURES

**Table 4. Summary of the effect of policies and measures included in the 2010 projections (Mt CO<sub>2</sub>-eq.)**

	With measures	With additional measures
Energy (total, excluding transport)		
Energy supply	2.2	
Energy – industry, construction		
Energy – other (commercial, residential, agriculture)	3.6	
Transport (energy)	4.8	
Industrial processes	0.5	
Waste	0.0	
Agriculture	0.3	
Cross-sectoral		
<b>Total (excluding LUCF)</b>	<b>5.6</b>	

The information is taken from Chapter 4 of the 4<sup>th</sup> National Communication, where it is not specified if the specific policies and measures refer to the “With Measures” or “With Additional Measures” scenario.

Table 5. Detailed information on policies and measures

## Policies and measures in the “with measures” projection

Sector	Projection Scenario	Name	Type	GHG	Status	Absolute Reduction [kt CO <sub>2</sub> eq. p.a.]			Costs [EUR/t]
						2005	2010	2020	
Cross-cutting	WM	<a href="#">Energy related taxes and earmarking for climate change related measures</a>	Fiscal	CO <sub>2</sub>	implemented		<a href="#">details</a>		
Cross-cutting		<a href="#">Implementation of emissions trading scheme</a>	Economic	CO <sub>2</sub>	implemented			5,500	
Cross-cutting		<a href="#">Austrian JI/CDM Programme</a>	Economic	CH <sub>4</sub> CO <sub>2</sub> HFC N <sub>2</sub> O PFC SF <sub>6</sub>	implemented			8,500	<a href="#">more</a>
Energy consumption	WM	<a href="#">Promotion of energy efficiency and renewable energy projects in industry</a>	Economic	CO <sub>2</sub>	implemented			1,100	
Energy supply	WM	<a href="#">Public support for renewable energy projects and district heating</a>	Economic	CH <sub>4</sub> CO <sub>2</sub>	implemented				
Energy supply	WM	<a href="#">Promotion for electricity from renewable energy sources</a>	Economic	CH <sub>4</sub> CO <sub>2</sub>	implemented				
Energy supply		<a href="#">Implementation of cogeneration directive</a>	Economic	CO <sub>2</sub>	implemented				
Energy consumption	WM	<a href="#">Minimum thermal standards for buildings</a>	Regulatory	CO <sub>2</sub>	implemented			Cluster value	
Energy consumption	WM	<a href="#">Housing support schemes - Constitutional Treaty between Federation and Laendern</a>	Economic Information	CO <sub>2</sub> HFC	implemented			Cluster value	
Energy consumption	WM	<a href="#">Third Party Financing ("Contracting") for public buildings</a>	Economic Voluntary/ negotiated agreement	CO <sub>2</sub>	implemented			Cluster value	

Energy consumption		<a href="#">Improvement of technical building standards and energy codes for buildings</a>	Economic Information	CO <sub>2</sub>			Cluster value
Energy consumption		<a href="#">Inclusion of energy efficiency aspects in land use planning</a>	Economic Planning	CH <sub>4</sub> CO <sub>2</sub> N <sub>2</sub> O	implemented		<a href="#">details</a>
Energy consumption	WM	<a href="#">Promotion of energy efficiency and renewable energy projects in industry</a>	Economic	CO <sub>2</sub>	implemented		1,100
Energy supply							
Energy consumption		Combined emission reduction of	Economic	CO <sub>2</sub>	implemented		1600
		AT-ENC-02	Fiscal	HFC	planned		
		AT-ENC-03	Information				
		AT-ENC-06	Regulatory				
		AT-ENC-08	Voluntary/ negotiated agreement				
		AT-ENC-09					
Transport	WM	<a href="#">CO2 labelling and other measures to reduce emissions from passenger cars</a>	Information Regulatory	CO <sub>2</sub>	implemented		<a href="#">details</a>
Transport	WM	<a href="#">Fuel consumption based taxation</a>	Fiscal	CO <sub>2</sub>	implemented		
Transport	WM	<a href="#">Support of combined transport</a>	Economic Information	CO <sub>2</sub>	implemented		100
Transport	WM	<a href="#">Model projects and programmes for environmentally sound mobility</a>	Education Information Research	CO <sub>2</sub>	implemented		Cluster value
Transport	WM	<a href="#">Mileage based toll for lorries</a>	Fiscal	CO <sub>2</sub>	implemented		<a href="#">details</a>
Transport	WM	<a href="#">Promotion of energy efficient and alternative motor concepts</a>	Information Research	CO <sub>2</sub>	implemented		<a href="#">details</a>
Transport	WM	<a href="#">Public awareness raising measures</a>	Education Information	CO <sub>2</sub>	implemented		Cluster value
Transport		<a href="#">Promotion of walking and cycling</a>	Education	CO <sub>2</sub>	implemented		<a href="#">details</a>

Transport		<a href="#">Promotion of biofuels</a>	Information Fiscal Regulatory	CO <sub>2</sub>	implemented	1,400	
Transport		<a href="#">Promotion of public transport systems</a>	Economic Information	CO <sub>2</sub>	implemented		
Transport		<a href="#">Adaptation of legal framework to climate protection goals</a>	Regulatory	CO <sub>2</sub>	implemented	400	
Transport		<a href="#">Adaptation of land use and regional planing</a>	Planning	CO <sub>2</sub>	implemented		
Transport		<a href="#">Increase of efficiency and shifting to energy efficient vehicles and transport systems, increased application of telematic systems</a>	Planning	CO <sub>2</sub>	implemented		<a href="#">details</a>
Transport		Combined emission reduction of AT-TRA-07 AT-TRA-11	Education Information Research	CO <sub>2</sub>	implemented	300	
Industrial Processes	WM	<a href="#">Regulation on bans and restrictions of HFCs, PFCs, SF6</a>	Regulatory	HFC SF <sub>6</sub>	implemented		Cluster value
Industrial Processes	WM	<a href="#">Public procurement and support measures</a>	Economic Information	HFC SF <sub>6</sub>	implemented		Cluster value
Industrial Processes	WM	<a href="#">Avoidance of leakage</a>	Regulatory	HFC SF <sub>6</sub>	planned		<a href="#">details</a>
Industrial Processes		Combined emission reduction of AT-IND-03 AT-IND-04	Economic Information Regulatory	HFC SF <sub>6</sub>	implemented	1200	
Agriculture	WM	<a href="#">Extension of ecological farming</a>	Economic	CH <sub>4</sub> N <sub>2</sub> O	implemented		<a href="#">details</a>
Agriculture	WM	<a href="#">Cultivation of oil-seed crops</a>	Economic Fiscal	CO <sub>2</sub>	implemented		<a href="#">details</a>
Forestry	WM	<a href="#">Maintenance and extension of vital forests</a>	Information Regulatory Research	CO <sub>2</sub>	implemented		<a href="#">details</a>
Waste	WM	<a href="#">Waste Management Act 1990</a>	Regulatory	CH <sub>4</sub> CO <sub>2</sub>	implemented		<a href="#">details</a>

Waste	WM	<a href="#">Landfill Regulation 1996</a>	Regulatory	CH <sub>4</sub>	implemented	<a href="#">details</a>
Waste	WM	<a href="#">Landfill Charge Act 1989</a>	Economic Fiscal Regulatory	CH <sub>4</sub>	implemented	<a href="#">details</a>
Waste		<a href="#">Efficient energy recovery from waste</a>	Economic	CH <sub>4</sub> CO <sub>2</sub>	implemented	<a href="#">details</a>
Waste		<a href="#">Other programmes to launch waste prevention and recovery</a>	Economic Information Research Voluntary/ negotiated agreement	CH <sub>4</sub> CO <sub>2</sub>	implemented	<a href="#">details</a>
Waste		<a href="#">Define technical state of art for mechanical-biological treatment of waste</a>	Regulatory	CH <sub>4</sub>	implemented	<a href="#">details</a>

#### Policies and measures in the “with additional measures” projection

Sector	Projection Scenario	Name	Type	GHG	Status	Absolute Reduction [kt CO <sub>2</sub> eq. p.a.]			Costs [EUR/t]
						2005	2010	2020	
Energy supply		<a href="#">Further development of targets for renewable energy sources and implementation of the EU directive on renewables</a>	Economic Regulatory	CO <sub>2</sub>	planned		1,700		
Energy consumption		<a href="#">Energy Efficiency Programme (Implementation of Energy Efficiency Directive)</a>	Economic Information	CO <sub>2</sub>	planned		800		
Transport	WAM	<a href="#">Further internalisation of externalities of road transport</a>	Economic Fiscal	CO <sub>2</sub>	planned		1,900		
Transport		<a href="#">Air traffic</a>	Economic Research	CO <sub>2</sub>	planned		<a href="#">details</a>		
Agriculture	WAM	<a href="#">Further enforcement of measures to reduce methane and N<sub>2</sub>O emissions</a>	Economic Education Information	CH <sub>4</sub> N <sub>2</sub> O	planned		200		<a href="#">more</a>

Source: Öko Institut, (accessed 14/06/2007), ECCP Policies and Measures database, <http://www.oeko.de/service/pam/index.php>

## 7. EVALUATION OF PROJECTIONS

**Table 6a. Summary of projections (Projections according to draft national climate strategy II) by gas in 2010 (Mt CO<sub>2</sub>-eq.)**

Not available

**Table 7b. Summary of projections (Projections from the inventory based model) by gas in 2010 (Mt CO<sub>2</sub>-eq.)**

	Base-year	With measures	With additional measures
Carbon dioxide (excl. LUCF)	61.3	76.6	67.7
Methane	9.8	7.2	7.2
Nitrous oxide	5.7	4.6	4.6
F-gases	1.6	1.5	1.5
<b>Total (excl. LUCF)</b>	<b>78.4</b>	<b>89.9</b>	<b>81.0</b>
% change relative to base year (excl. LUCF)		14.8%	3.3%

**Table 8a. Summary of projections (6 gas basket) (Projections according to draft national climate strategy II) by sector in 2010 (Mt CO<sub>2</sub>-eq.)**

	Base-year	with measures	% change relative to base-year	with additional measures	% change relative to base-year
<b>Energy (total, excluding transport)</b>	28.8	31.7	10%	24.4	-15%
Energy supply	13.7	17.3	26%	13.6	-1%
Energy – industry, construction	IE	IE		IE	
Energy – other (commercial, residential, agriculture)	15.1	14.4		10.8	-28%
<b>Transport (energy)</b>	12.8	21.7	70%	16.9	32%
<b>Industry (energy demand and process), incl solvents and F-Gases</b>	24.7	29.2	18%	27.5	11%
<b>Waste</b>	3.6	2.2	-38%	2.1	-41%
<b>Agriculture</b>	9.1	7.7	-16%	7.2	-21%
<b>LULUCF</b>		-0.7		-0.7	
<b>Total (excl. LUCF)</b>	<b>78.93</b>	<b>91.8</b>	<b>16%</b>	<b>77.4</b>	<b>-2%</b>

**Table 9b. Summary of projections (6 gas basket) (Projections from the inventory based model) by sector in 2010 (Mt CO<sub>2</sub>-eq.)**

	Base-year	with measures	% change relative to base-year	with additional measures	% change relative to base-year
Energy (total, excluding transport)	42.3	47.2	12%	43.8	4%
Energy supply	14.1	17.2	22%	14.6	4%
Energy – industry, construction	13.1	15.6	19%	15.1	15%
Energy – other (commercial,	15.1	14.4	-5%	14.2	-6%

residential, agriculture)					
Transport (energy)	12.6	21.6	71%	16.1	27%
Industrial processes	10.5	11.1	6%	11.1	6%
Waste	4.5	2.8	-38%	2.8	-38%
Agriculture	8.5	7.3	-14%	7.2	-14%
<b>Total (excl. LUCF)</b>	<b>78.4</b>	<b>89.9</b>	<b>15%</b>	<b>81.0</b>	<b>3%</b>

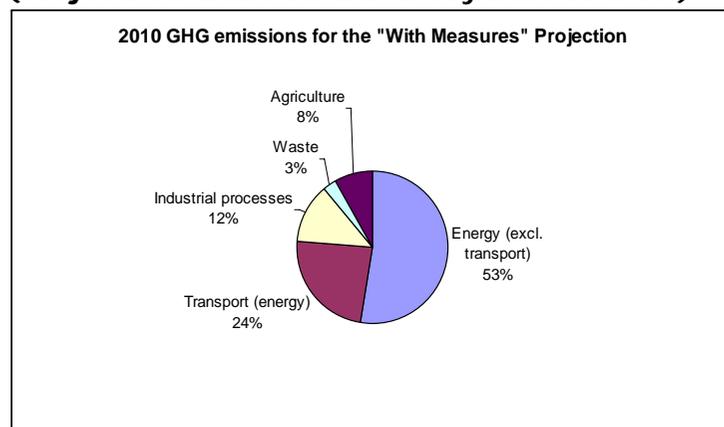
**Table 10a. Summary of projections (Projections according to draft national climate strategy II) by sector and by gas in 2010 (Mt CO<sub>2</sub>-eq.) compared to base-year emissions**

Not available

**Table 11b. Summary of projections (Projections from the inventory based model) by sector and by gas in 2010 (Mt CO<sub>2</sub>-eq.) compared to base-year emissions**

	Carbon dioxide			Methane			Nitrous oxide			F-gases (SF <sub>6</sub> , 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)	41.122	46.153	42.837	0.6857	0.5742	0.5594	0.50118	0.45075	0.44296			
Transport (energy)	12.405	21.426	15.928	0.0611	0.0119	0.0108	0.17081	0.14636	0.12304			
Industrial processes	7.715	9.041	8.962	0.0075	0.0075	0.0075	1.14452	0.60666	0.60666	1.585	1.473	1.473
Waste	0.021	0.011	0.011	4.4413	2.4915	2.4915	0.04106	0.27903	0.27903			
Agriculture	0	0	0	4.6021	4.1069	4.0868	3.85418	3.15407	3.14942			
<b>Total (excl. LUCF)</b>	<b>61.263</b>	<b>76.631</b>	<b>67.738</b>	<b>9.7977</b>	<b>7.192</b>	<b>7.156</b>	<b>5.71175</b>	<b>4.63688</b>	<b>4.60112</b>	<b>1.585</b>	<b>1.473</b>	<b>1.473</b>

**Figure 1. Share by sector of 2010 greenhouse gas emissions according to the "With existing measures" projections (Projections from the inventory based model)**



**Table 12a. Summary of projections (Projections according to draft national climate strategy II) (6 gas basket) in 2010, 2015 and 2020 (Mt CO<sub>2</sub>-eq.)**

Not available for 2015 and 2020

**Table 13a. Summary of projections (Projections from the inventory based model) (6 gas basket) in 2010, 2015 and 2020 (Mt CO<sub>2</sub>-eq.)**

	Base-year	2010	2010 % of base- year level	2015	2015 % of base- year level	2020	2020 % of base- year level
Total (excl. LUCF)	78.4	81.0	103.3%	84.1	107.4%	87.3	111.4%

**Table 14a. Assessment of the target (6 gas basket), with a comparison of 2010 projections (Projections according to draft national climate strategy II) in 2005, 2006 and 2007 national reports**

	Emissions in MtCO <sub>2</sub> -equiv., excluding LUCF			
	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	77.64	77.64	78.9	100%
Kyoto Commitment/burden sharing	67.5	67.5	68.7	-13.0%
With existing P&Ms projections	84.4	84.4	92.5	118.0%
Gap (-ve means overachievement of target)	16.9	16.9	23.8	30.4%
With additional P&Ms projections	70.55	70.55	78.1	99.7%
Remaining gap	3.0	3.0	9.4	12.0%
Effect of flexible mechanisms	3.0	3.0	9.0	11.5%
Effect of carbon sinks			0.7	0.9%
Remaining gap (with use of flexible mechanisms)	0.0	0.0	-0.3	-0.4%

**Table 15b. Assessment of the target (6 gas basket), with a comparison of 2010 projections (Projections from the inventory based model) in 2005, 2006 and 2007 national reports**

	Emissions in MtCO <sub>2</sub> -equiv., excluding LUCF			
	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	77.64	77.64	78.4	100%
Kyoto Commitment/burden sharing	67.5	67.5	68.2	-13.0%

With existing P&Ms projections	84.4	84.4	89.9	114.8%
Gap (-ve means overachievement of target)	16.9	16.9	21.8	27.8%
With additional P&Ms projections	70.55	70.55	81.0	103.3%
Remaining gap	3.0	3.0	12.8	16.3%
Effect of flexible mechanisms	3.0	3.0	9.0	11.5%
Remaining gap (with use of flexible mechanisms)	0.0	0.0	3.8	4.8%

Above table excludes LUCF. LUCF will be covered in the main report, based on the questionnaire submissions. Source for 2005 and 2006 data is the Austrian Climate Change Strategy (Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft: Nationaler Zuteilungsplan für Österreich gemäß §11 EZG, 31. März 2004, mit Ergänzungen vom 7. April 2004). The effect of flexible mechanisms (2007) is taken from NAP II (Nationaler Zuteilungsplan für Österreich gemäß §11 EZG für die Periode 2008-2012; January 2007)

\* Base year data for 2007 is not 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 (78.959 MtCO<sub>2</sub>e). This data is currently undergoing a review procedure by UNFCCC and is therefore subject to change.

In Table 11 a comparison is drawn concerning the projections for the trading sector between the "With Additional Measures" scenario and the "Business As Usual" scenario stated in the NAP 2. It is predicted that the emissions in the NAP 2 projections will be 5.2% above the WAM scenario. The difference is in all probability related to the two different scenarios and less influenced by different sector aggregation in WAM projection and NAP 2 projection based on ETS definitions.

**Table 16. Comparison with projections for the trading sector (EU ETS) in Mt CO<sub>2</sub>-eq.**

	WAM scenario	NAP 2 projections	Difference
Energy sector	13.976 <sup>a</sup>	16.7 <sup>d</sup>	--
Energy sector included in EU ETS	--	15.713 <sup>c</sup>	--
Industry sector	22.314 <sup>b</sup>	25.0 <sup>d</sup>	--
Industry sector included in EU ETS	--	22.446 <sup>c</sup>	--
Total Energy & Industry	36.290	38.159	105.2%

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.

<sup>a</sup> Included are CO<sub>2</sub> emissions from Energy Industries (1A) (source: Austria's Projections of GHG 2003-2020, Final Report)

<sup>b</sup> Included are CO<sub>2</sub> emissions from the sectors Industrial Processes (sector 2) including energy use (source category 1A2) (source: Austria's Projections of GHG 2003-2020, Final Report)

<sup>c</sup> Business as Usual Values for CO<sub>2</sub> for Energy and Industry (source: Nationaler Zuteilungsplan für Österreich gemäß §11 Emissionszertifikatengesetz für die Periode 2008-2012, Jan. 2007)

<sup>d</sup> Business as Usual Projection for GHG emissions (Source: Anpassung der Klimastrategie Österreichs zur Erreichung des Kyoto Ziels 2008-2013)

## 8. DESCRIPTION OF MODELLING APPROACH<sup>1</sup>

### Overview of modelling approach

In general, the sectoral methodology is consistent with the one used for Austria's national greenhouse gas inventory. The forecast of activities is modelled on the structure of the national inventory and forecasts used for emissions factors are undertaken on a sectoral basis.

**Energy Projections:** The Energy model used in Austria is an extension of the model system, that had been used for previous energy projections and used for Austria's third national communication to the UNFCCC. The model, namely PROMETEUS, is a macroeconomic energy and environment model; the energy system and the economy are integrated into one disaggregated model. Almost all parameteres are based on econometric estimates with the time series for Austria. It uses the form at of the enrgy balances of the INternationl Energy Agency. Economy is disaggregated into 31 sectors, taking into account NACE sector definitions.

**Transport Projections:** The calculation of transport emissions bases on different models: AUTRAF results from a simple multiple linear regression, where the recorded transport volumes and vehicle mileages in the past are used as dependent variables and the GDP, population, the fuel prices, the motorization etc. are used as independent variables. GLOBEMI model is used for calculation of road emissions and takes into account stock, types, registration of vehicles, as well as an assumption of the tank tourism. GEORG model calculates energy consumption and off-road emissions, which bases on a fleet model and predicts the stock of each category of mobile sources. Projections for aviation base on an extrapolation of the trend of the latest years.

**Industry Projections:** The applied methodology is the same as for the Austria Inventory, whereby the production projections result partly from the macro-economic model. For metal production the final energy demand of the energy projections were partly used as activity data.

**Agriculture Projections** are also based on a macro-economic model, where input parameters have been estimated in a study and deducted from the model (PASMA, Positive Agricultural Sector Model Austria). The major driving forces of the sector are the prices of farm commodity markets, technological progress and policy variables.

**Waste Projections** use the same methodology as the Austrian Inventory and refers to projected national waste emergence.

### Sensitivity analysis

A sensitivity assessment was undertaken for specific sector, analysing increase and decrease of key factors or a combination of key factors. IN particular, the influence of CO<sub>2</sub> eq emissions on oil price changes 50% up or down, is presented for energy effected sectors only. There is an additional sensitivity analysis for transport which is based on a combination of

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<sup>1</sup> This chapter refers to the methodology of the projection set based on the inventory model. Information on the method for the projections according to draft national climate strategy II is very limited.

different parameters and another analysis for the agricultural sector based on a change of product prices.

All these assessments are based on macroeconomic results, calculating effects on energy or live stock. It is necessary to mention that the emission results have no general linear dependence on changes of an input factor. This is the reason why all presented sensitivity data cannot be seen as a functional dependency with varied parameters the emission effect can be seen only of the specific values of the parameters given.

The robustness of the models is not addressed.

### **Details of the uncertainty assessment**

The variation of the chosen input parameters in the Sensitivity Analysis can be seen as an indicator of the overall uncertainty caused by changed input data. Assumed activities, emission factors and results are discussed for each sector. It is stated, that in general the uncertainty contribution of a sectoral emission to the uncertainty of the national total, if the sectoral emission is no key source, is negligible.

There is no overall uncertainty available; the only sector where an uncertainty is given is the sector "consumption of halocarbons and SF6", where it is estimated to be 50%.

Concerning the uncertainty of other sectors, there are references given to the Austrian NIR. Major sources of error are not discussed, as well as efforts to minimise uncertainty.

## **9. PROJECTION INDICATOR REPORTING**

Eight of the ten required indicators are reported completely, that means for 2005, 2010, 2015 and 2020; and numerator and denominator are available. The two missing one's are Services A0 and Transformation B0.

## **10. REPORTING OF PARAMETERS ON PROJECTIONS**

The parameters are discussed detailed in the report, as part of an Assumptions chapter for each sector. The parameters are reported for the "With Measures " and the "With Additional Measures" Scenario. Some parameters are not exactly in the unit as required in the Implementing Provision.

Mandatory Parameters for the Industry and Forestry Sector are missing, whereas the other sectors are covered well. The recommended parameters referring to the assumptions for transport sector are all available and for buildings are partly available.

Table 17. 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 <sub>2</sub> intensity of GDP, t/Euro million	332	304	282	269	Total CO <sub>2</sub> emissions, kt	75,037	76,631	79,304	83,565
							GDP, bio Euro (EC95)	226	252	281	311
2	Transport C0	CO <sub>2</sub> emissions from passenger cars, kt	11,695	11,274	11,215	11,214		11,695	11,274	11,215	11,214
		Number of kilometres by passenger cars, Mkm	66,555	69,568	72,222	74,747		66,555	69,568	72,222	74,747
3	Transport D0	CO <sub>2</sub> emissions from freight transport (all modes), kt	9,140	9,181	9,791	10,492		9,140	9,181	9,791	10,492
		Freight transport (all modes), Mtkm	105,447	112,992	121,574	131,178		105,447	112,992	121,574	131,178
4	Industry A1	Energy related CO <sub>2</sub> intensity of industry, t/Euro million	247	222	203	187	CO <sub>2</sub> emissions from fuel consumption industry, kt	14,791	15,433	16,370	17,397
							Gross value-added total industry, Bio Euro (EC 95)	60	69	80	93
5	Households A1	Specific CO <sub>2</sub> emissions of households, t/dwelling	2.83	2.70	2.59	2.47	CO <sub>2</sub> emissions from fossil fuel consumption households, kt	10,627	10,391	10,219	9,936
							Stock of permanently occupied dwellings, 1000	3,749	3,844	3,939	4,030
6	Services A0	CO <sub>2</sub> intensity of the services sector, t/Euro million					CO <sub>2</sub> emissions from fossil fuel consumption services, kt				
							gross value-added services, bio Euro (EC95)				
7	Transformation B0	Specific CO <sub>2</sub> emissions of public and autoproducer power plants, t/TJ					CO <sub>2</sub> emissions from public and autoproducer thermal power stations, kt				
							all products-output by public and autoproducer thermal power stations, PJ				
8	Agriculture	Specific N <sub>2</sub> O emissions of fertilizer and manure use, kg/kg	0.02	0.02	0.02	0.02	N <sub>2</sub> O emissions from synthetic fertilizer and manure use, kt	4	4	4	4
							use of synthetic fertiliser and manure, kt nitrogen	179	181	186	187
9	Agriculture	Specific CH <sub>4</sub> emissions of cattle production, kg/head	0.07	0.07	0.07	0.07	CH <sub>4</sub> emissions from cattle, kt	136	133	132	131
							cattle populations, 1000 head	1,989	1,941	1,905	1,896
10	Waste	Specific CH <sub>4</sub> emissions from landfills, kt/kt	0.13	0.13	0.10	0.08	CH <sub>4</sub> emissions from landfills, kt	127	102	82	68
							Municipal solid waste going to landfills, kt				

Table 18. List of parameters on projections (Annex IV of Implementing Provisions<sup>2</sup>)

1. Mandatory parameters on projections	2005	2010	2015	2020
<b>Assumptions for general economic parameters</b>				
GDP (value at given years or annual growth rate and base year)				
GDP growth (% , real, base year 2000)	2.2	2.2	2.0	2.0
Population (value at given years or annual growth rate and base year)	8131400	8255400	8347900	8400900
Population growth (%)	0.32	0.27	0.18	0.10
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				
Internation oil price (BRENT, real, base year 23000) (\$/GJ)	35.0	35.5	35.5	35.5
International gas prices at given years in euro per m3 or GJ	Not included in model			
<b>Assumptions for the energy sector</b>				
Total gross inland consumption (PJ) (split by oil, gas, coal, renewables, nuclear, other)	1392.618	1461,913		1630,093
Total electricity production by fuel type (oil, gas, coal, renewables, nuclear, other)				
Total Transformation input , average annual change in %	2.2% (2005-2010)		1.9% (2010-2020)	
Energy demand by sector split by fuel (delivered				
Final Energy Consumption by fuel and by sectors				
Coal- total manufacturing	36477	37915		45459
Coal Transport Sector	26	24		19
Coal- total other sectors	6300	4589		1986
Oil- total manufacturing	29532	27220		26322
Oil Transport Sector	271515	270771		293225
Oil- total other sectors	121456	113973		90537
Gas- total manufacturing	93955	102263		124555
Gas Transport Sector	9091	9698		10712
Gas- total other sectors	84530	85926		83555
Renewables- total manufacturing	36315	40930		48654
Renewables –Transport Sector	4685	11391		13208
Renewables - total other sectors	80756	81239		82525
Electricity- total manufacturing	86851	87416		94021
Electricity –Transport Sector	12467	13259		15216
Electricity - total other sectors	117644	141294		205357
District Heating- total manufacturing	8685	9304		10548
District Heating –Transport Sector	0	0		0
District Heating - total other sectors	45858	52588		66941
Assumptions on weather parameters, especially heating or cooling degree days	Constant HDD			
<b>Assumptions for the industry sector</b>				
<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				
<b>Assumptions for the transport sector</b>				
<i>For Member States using macroeconomic models:</i>				
The growth of transport relative to GDP (vehicle-km/Euro, with tank tourism)	0.37	0.35	0.33	0.31
<i>For Member States using other models:</i>				
The growth of passenger person kilometres (with tank tourism)	139954	143600	146629	149422

<sup>2</sup> 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

<b>1. Mandatory parameters on projections</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
(mio.pkm)				
The growth of freight tonne kilometres (with tank tourism) (mio.tkm)	125033	134153	144253	156023
<b>Assumptions for buildings (in residential and commercial or tertiary sector)</b>				
<i>For Member States using macroeconomic models:</i>				
The level of private consumption (excluding private transport)				
Energy consumption-stationary sources (1A4) (TJ)	270.507	265.712	259.159	246.237
<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				
<b>Assumptions in the agriculture sector</b>				
<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
Cattle total (organic farming)	309797	298944	291486	289654
Pigs total (conventional farming)	3165329	3173757	3180291	3181754
Pigs total (organic farming)	38458	42801	45777	46418
Hens total (conventional farming)	11725621	11725621	11725621	11725621
Hens total (organic farming)	628737	628737	628737	628737
The area of crops by crop type				
Emissions factors by type of livestock for enteric fermentation and manure management (t)				
<b>Assumptions in the waste sector</b>				
Waste generation per head of population or tonnes of municipal solid waste				
Landfilled waste (Gg/a)	970.6	793.8	809.9	823.0
The organic fractions of municipal solid waste	Constant			
Municipal solid waste disposed to landfills, incinerated or composted (in tonnes or %)				
<b>Assumptions in the forestry sector</b>				
Forest definitions				
Areas of:				
managed forests				
unmanaged forests				

<b>2. Recommended parameters on projections</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
<b>Assumptions for general economic parameters</b>				
GDP growth rates split by industrial sectors in relation to 2000				
Comparison projected data with official forecasts				
<b>Assumptions for the energy sector</b>				
National coal, oil and gas energy prices per sector (including taxes)				
National electricity prices per sector as above (may be model output)				
Total production of district heating by fuel type				

<b>2. Recommended parameters on projections</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
<b>Assumptions for the industry sector</b>				
Assumptions fluorinated gases:				
Aluminium production and emissions factors				
Magnesium production and emissions factors				
Foam production and emissions factors				
Stock of refrigerant and leakage rates				
<i>For Member States using macroeconomic models:</i>				
Share of GDP for different sectors and growth rates				
Rate of improvement of energy intensity (1990 = 100)				
<i>For Member States using other models:</i>				
Index of production for different sectors				
Rate of improvement or index of energy efficiency				
<b>Assumptions for buildings (in residential and commercial / tertiary sector)</b>				
<i>For Member States using macroeconomic models:</i>				
Share of tertiary and household sectors in GDP				
Rate of improvement of energy intensity				
Commercial/Institutional	0.0 (2005-2010)		0.0 (2010-2020)	
Residential	0.6 (2005-2010)		0.6 (2010-2020)	
Agriculture/Forestry/Fisheries	0.5 (2005-2010)		0.5 (2010-2020)	
<i>For Member States using other models:</i>				
Number of households (Stock of permanently occupied dwellings) (1000)	3740	3807	3921	4035
Number of new buildings				
Rate of improvement of energy efficiency (1990 = 100)				

<b>2. Recommended parameters on projections</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
<b>Assumptions for the transport sector</b>				
<i>For Member States using econometric models:</i>				
Growth of transport relative to GDP split by passenger and freight				
Passenger (p-km/Euro)	0.62	0.57	0.52	0.52
Freight (t-km/Euro)	0.56	0.53	0.52	0.50
Improvements in energy efficiency split by vehicle type				
Passenger cars – gasoline (MJ/km)	2.60	2.49	2.40	2.34
Passenger cars – diesel (MJ/km)	2.28	2.20	2.14	2.08
Heavy duty vehicles (MJ/km)	10.07	9.91	9.89	9.90
Improvements in energy efficiency split by vehicle type, whole fleet/new cars				
Rate of change of modal split (passenger and freight)				
Passenger Transport-passenger cars	69.7%	70.4%	71.0%	71.5%
Passenger Transport-bus	12.9%	12.6%	12.5%	12.3%
Passenger Transport-moped	0.3%	0.3%	0.3%	0.3%
Passenger Transport-motorcycle	0.8%	0.9%	0.9%	0.9%
Passenger Transport-rail	7.2%	6.9%	6.7%	6.5%
Passenger Transport-electr. Local transport	3.0%	3.0%	3.0%	3.0%
Passenger Transport-bicycle	3.5%	3.3%	3.2%	3.0%
Passenger Transport-pedestrian	2.5%	2.5%	2.5%	2.5%
Freight Transport-road	67%	68%	70%	70%
Freight Transport-rail	27%	26%	25%	25%
Freight Transport-navigation (Danube)	5%	5%	5%	5%
Growth of passenger road kilometres				
Passenger cars with tank tourism (mio.p-km)	99034	102474	105336	107935
Bus (mio.p-km)	15191	15407	15590	15732
Moped (mio.p-km)	329	322	322	322
Motorcycle (mio.p-km)	1000	1112	1179	1202
Growth of passenger rail kilometres				
Rail (mio.p-km)	8541	8480	8387	8287
Electr.local transport (mio.p-km)	3571	3689	3796	3900
Growth of passenger aviation kilometres				
Growth of freight tonne kilometres on road				
Light duty vehicles (mio.t-km)	499	540	579	615
Heavy duty vehicles (with tank tourism) (mio.t-km)	104947	112451	120994	130563
Growth of freight tonne kilometres by rail (mio.t-km)	16360	17655	18924	20839
Growth of freight tonne kilometres by navigation	3226	3506	3756	4006

<b>2. Recommended parameters on projections</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>
<b>Assumptions for the agriculture sector</b>				
<i>For Member States using econometric models:</i>				
Agricultural trade (import/export)				
Domestic consumption (e.g. milk/beef consumption)				
<i>For Member States using other models:</i>				
Development of area of crops, grassland, arable, set-aside, conversion to forests etc				
Macroeconomic assumptions behind projections of agricultural activity				
Description of livestock (e.g. by nutrient balance, output/animal production, milk production)				
Development of farming types (e.g. intensive conventional, organic farming)				
Distribution of housing/grazing systems and housing/grazing period				
Parameters of fertiliser regime:				
Details of fertiliser use (type of fertiliser, timing of application, inorganic/organic ratio)				
Volatilisation rate of ammonia, following spreading of manure on the soil				
Efficiency of manure use				
Parameters of manure management system:				
Distribution of storage facilities (e.g. with or without cover):				
Nitrogen excretion rate of manures				
Methods of application of manure				
Extent of introduction of control measures (storage systems, manure application), use of best available techniques				
Parameters related to nitrous oxide emissions from agricultural soils				
Amount of manure treatment				

The parameters given above only refer to the “With Measures” Scenario, 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 the table above data consider “with tank tourism”.

## 11. COUNTRY CONCLUSIONS

The main documents used for this summary is the information submitted in 2007 under the Monitoring Mechanism Decision (280/2004). Austria provided two sets of projections:

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

The first set of projections is more recent but does not provide sufficient level of detail. A description of the method, sensitivity analysis, parameters, assumptions, gas breakdown and 2020 projections are missing.

The level of detail and clarity of the second set of projections is very good. Details of the methodology for the model-based projections are available and contain a reasonable level of detail on the models and parameters.

The policies and measures are summarised in a table, which makes clear the potential greenhouse gas savings.

According to Austria's request the first set of projections is used. The projected increase from the base year with measures implemented and adopted is +17.2% in the basket of six greenhouse gases by 2010. Additional policies and measures are projected to reduce GHG emissions to -1.1% below base-year levels. Further progress towards the achievement of the agreed burden sharing of -13% will be made by use of project-based flexible mechanisms of the Kyoto Protocol (JI/CDM) in the extent of 9 Mio. t CO<sub>2</sub> and the use of carbon sinks (0.7 Mio. t CO<sub>2</sub> CO<sub>2</sub>).