

Austria

Sources of information

Austria's Third National Communication under the United Nations Framework Convention on Climate Change, 2001

Quality and transparency of reporting

The Third National Communication draws on the draft Austrian climate strategy 2010. It provides a clear list of policies and measures to reduce greenhouse gas emissions in a range of sectors. The impact of the measures has been quantified in most cases. The with measures projection includes measures implemented and adopted by 2001; the with additional measures projection includes measures planned.

The table on policies and measures follows the UNFCCC guidelines.

Table 1: Information provided on policies and measures

Information provided	Level provided	Comments
Policy names	+++	
Objectives of policies	+++	
Which GHGs?	CO ₂ , CH ₄ , N ₂ O, HFC, SF ₆	
Status of implementation	+++	
Implementation body specified	+++	
Quantitative assessment of implementation	+++	Estimated mitigation effect for 2010; a few measures are not quantified
Interaction with other P&Ms discussed	++	In some cases

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

Note: Information on 'Type of instrument' follows largely the UNFCCC Guidelines but introduces the term 'promotive', which in many cases seems to correspond with 'economic'.

Two approaches are taken to develop projections of greenhouse gas emissions and to calculate the total effect of policies and measures. On the one hand, the estimated development according to the draft Austrian climate strategy 2010 is shown, which is based on expert judgements for the year 2010. On the other hand, projections for the period 2000–2020 have been developed based on the model calculations. Both approaches include with measures and with additional measures scenarios and show similar results.

Table 2: Information provided on projections

Category of information	Level of information provided	Comments
Scenarios considered	With measures With additional measures	Expert judgment: Both scenarios are given for sectors partly corresponding with IPCC sectors Model calculations: Both scenarios are given for IPCC sectors and gases
Expressed relative to inventory for previous years	Yes	
Starting year	1999	
Split of projections	+++	Expert judgment: Projections split by sectors partly corresponding with IPCC sectors Model calculations: Projections split by IPCC sectors and gases
Presentation of results	+++	Results presented in both tabular and graphical form
Description of model (level of detail, approach and assumptions)	++	Basic description of the models and further references provided
Discussion of uncertainty	No	A few results of sensitivity analysis provided
Details of parameters and assumptions	++	Summary table for key parameters (input and output parameter are marked)

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

Assessment of policies and measures

Table 3 gives an overview of effects of policies and measures. The figures given for the with measures projection are for policies and measures implemented or adopted by 2001. As there is no scenario without measures, the effect of policies implemented and adopted is derived from the sum of the potentials of the individual measures, which are based on expert judgements according to the draft Austrian climate strategy 2010.

The with additional measures scenario includes the effects of policies planned. The effect of policies planned is derived from the difference between the with measures and the with additional measures scenarios of the model calculations.

Table 3: Summary of the effect of policies and measures by 2010 included in the projections (MtCO₂)

	With measures ^a	With additional measures ^b
CO ₂	3.1–4.1	11.6
CH ₄	0.9	1.3
N ₂ O	n.q.	0.1
F-gases	n.q.	1.4
Energy (IPCC Sector 1)		11.8
Industry (IPCC Sector 2)		1.5
Agriculture (IPCC Sector 4)		0.1
Waste (IPCC Sector 6)		1.1
Total	4.0–5.0	14.5

a The effect of policies implemented or adopted is derived from the sum of the potentials of the individual measures, which are based on expert judgements according to the draft Austrian climate strategy 2010.

b The effect of policies planned is derived from the difference between the with measures and the with additional measures scenarios of the model calculations.

Table 4 gives details of the policies and measures. The measures implemented or adopted by 2001 are included in the with measures projections. The measures planned are included in the with additional measures projections.

Table 4: Detailed information on policies and measures (estimated mitigation effect in 2010, in million tons CO₂ equivalent)

Sector	Name of policy or measure	Objective and/or activity affected	GHG affected	Type of instrument	Status	Implementing entity/entities	Estimated effect
Energy demand	Agreement between Federation and <i>Länder</i> on energy-saving	Energy-savings in buildings, heating installations and electricity consumption	CO ₂	Regulatory (framework legislation)	Implemented	Federation and <i>Länder</i>	n.q.
Energy demand	Minimum thermal standards for buildings	Energy-savings in buildings	CO ₂	Regulatory (implementation)	Implemented / planned	<i>Länder</i>	0.5 Mt (0.2–0.3 impl.)
Energy demand	Housing support schemes	Energy-savings in dwellings (new and renovation)	CO ₂ , HFC	Promotive	Implemented / planned	<i>Länder</i>	2-2.5 Mt (0.5–1.0 impl./adop.)
Energy demand	Consumption-related heating costs calculation	Energy-savings in buildings	CO ₂	Regulatory	Implemented	Federation	0.1 Mt
Energy demand	Energy efficiency in federal public buildings	Energy-savings in public buildings	CO ₂	Voluntary	Implemented	Federation	0.05 Mt
Energy demand	'Contracting' for public buildings	Energy-savings in public and private sector buildings	CO ₂	Economic / voluntary	Implemented / planned	Federation, <i>Länder</i> , municipalities	0.5 Mt (0.1 impl./ adop.)

Energy demand	Replacement of old heating systems	Energy-savings in buildings by improvement of heating energy supply	CO ₂	Promotive	Implemented / adopted / planned	Länder, municipalities	2.0 Mt (0.5 impl./ adop.)
Energy demand	Harmonised energy codes for buildings	Transparent and comparable declaration of energy consumption of buildings	CO ₂	Economic / information	Planned	Federation, Länder	n.q.
Energy demand	Regular inspection of heating systems	Energy-savings in buildings by efficiency-raising of heating systems	CO ₂	Regulatory	Implemented / adopted / planned	Länder	0.3 Mt (0.1 impl./ adop.)
Energy supply	Preferential market access for 'green electricity'	Raising share of renewable energy sources in electricity supply	CO ₂ , CH ₄	Economic (regulatory)	Implemented	Federation (framework), Länder (executing laws)	0.5 Mt

Energy supply	Public support for renewable energy projects and district heating	Raising share of heat production from renewable energy sources and CHP	CO ₂ , CH ₄	Promotive	Implemented	Federation, <i>Länder</i> , EU	0.7 Mt
Energy supply	Energy tax rebates for CHP	Promotion of combined heat and power production (natural gas and diesel)	CO ₂	Fiscal	Implemented	Federation	n.q.
Energy supply	Preferential framework conditions for CHP	Promotion of combined heat and power production by granting improved feed-in conditions or setting obligatory quota	CO ₂	Economic / regulatory / promotive	Framework law implemented; executing laws planned	Federation (framework), <i>Länder</i> (executing laws) EU (future targets)	0.5 Mt
Energy supply	Further development of targets for 'green electricity'	Raising share of renewable energy sources in electricity supply	CO ₂ , CH ₄	Economic (regulatory)	Planned	Federation (framework), <i>Länder</i> (executing laws)	0.2–0.5 Mt

Energy supply	Stepped-up public support for GHG mitigation projects	Promotion of heat supply from renewable energy, energy efficiency measures etc.	CO ₂	Promotive	Planned	Federation	1.5–2 Mt
Energy supply	'Green electricity' for public buildings	Raising share of electricity production from renewables through purchase power of public entities	CO ₂	Economic	Adopted / planned	Federation, <i>Länder</i> , municipalities	n.q.
Energy supply	Voluntary agreements	Cost efficient GHG reductions in energy industry	CO ₂	Voluntary / negotiated	Planned	Federation	n.q.
Waste management	Waste Management Act 1990	Framework law regulating waste management — minimisation of environmental impacts	CH ₄ , CO ₂	Regulatory	Implemented	Federation (framework), <i>Länder</i> (executing laws)	n.q.
Waste management	Landfill Regulation 1996	Minimisation of waste landfilling	CH ₄	Regulatory	Implemented / adopted	Federation (framework), <i>Länder</i> (executing laws), municipalities	0.9 Mt

Waste management	Landfill Charge Act 1989	Reduction of disposal of waste on landfills; earmarking of revenue for clean-up of contaminated land	CH ₄	Regulatory / fiscal / economic	Implemented	Federation	n.q.
Waste management	Expansion of waste treatment capacities other than landfilling	Banning disposal on landfills by 2004/2008; expanding share of other capacities, e.g. energy efficient incineration	CH ₄ , CO ₂	Regulatory	Planned / adopted	Länder, municipalities	1.1 Mt for measures M24–M28 (0.3 adop.)
Waste management	Promotion of waste recovery	higher share of waste recycling	CH ₄ , CO ₂	Voluntary, information, education, research	Implemented / adopted / planned	Federation, Länder, municipalities	n.q.
Waste management	Efficient energy recovery from waste	energy recovery from waste incineration (CHP)	CH ₄ , CO ₂	Promotive	Adopted	Federation	n.q.
Waste management	Other programmes to launch waste prevention and recovery	prevention of waste; higher share of energy recovery / recycling	CH ₄ , CO ₂	Voluntary, information, research, promotive	Implemented / adopted / planned	Ministry of Environment, Länder	n.q.

Waste management	Technical state of art for mechanical-biological treatment of waste	Better investment security for operators of waste treatment sites with respect to technical standards	CH ₄	Standardization	Planned	Federation	n.q.
Transport	Reduction of emissions from passenger cars	Raising market share of advanced engine technologies with low fuel consumption	CO ₂	Voluntary / information	Implemented	Federation, EU	0.5 Mt
Transport	Fuel consumption levy	Fiscal incentive for low fuel consumption vehicles	CO ₂	Fiscal	Implemented	Federation	n.q.
Transport	Road tolls	Internalisation of external costs for use of highways	CO ₂	Fiscal	Implemented	Federation	n.q.
Transport	Vehicle tax adaptation 2000	Internalisation of external costs, especially for strong engines	CO ₂	Fiscal	Implemented	Federation	n.q.
Transport	Rail infrastructure and public transport investments	Changing modal split to the benefit of rail/public transport	CO ₂	Public investments and promotion	Implemented / adopted / planned	Federation, Länder, municipalities	0.3 Mt (0.1 impl./ adop.)

Transport	improvement of fuel quality and promotion of 'bio-diesel'	GHG emissions reduction through fuel improvement and renewable energy sources	CO ₂	Regulatory / fiscal	Implemented / Federation planned		0.1 Mt (0.05 impl.)
Transport	Model projects and programmes for environmentally sound mobility	Model projects with the aim to raise public awareness and to demonstrate new technologies	CO ₂	Information / education / demonstration / research	Implemented	Federation, Länder, municipalities	n.q.
Transport	Model projects and programmes for environmentally sound logistics	GHG emissions reductions in transport sector by logistic support and avoidance of insufficient transportation		Promotion / information / demonstration / research	Implemented	Federation	n.q.
Transport	Mileage based toll for lorries	Internalisation of external costs of road transport	CO ₂	Fiscal	Adopted	Federation	0.3 Mt
Transport	Promotion of energy efficient and alternative motor concepts	Reduction of fleet fuel consumption	CO ₂	Promotive	Planned	Federation, EU	0.1 Mt

Transport	Public awareness raising measures	Reduction of individual private traffic	CO ₂	Information, education	Adopted / planned	Federation, <i>Länder</i>	0.3 Mt (0.1 adop.)
Transport	Improvement of transport logistics	Avoidance of inefficient and unnecessary transportation of goods, aiming at total reduction of road transport	CO ₂	Promotive, information	Implemented / adopted / planned	Federation, <i>Länder</i>	0.7 Mt (0.2 impl./ adop.)
Transport	Further internalisation of costs	Internalisation of external costs of road transport / private traffic	CO ₂	Fiscal	Planned	Federation	n.q.
Transport	Promotion of walking and cycling	Shifting modal split, improving living conditions and safety	CO ₂	Promotive, information, education	Implemented / adopted / planned	(Federation), <i>Länder</i> , municipalities	0.3 Mt (0.1 impl./ adop.)
Transport	Improvement of spatial planning	Avoidance of traffic-inducing settlement structures	CO ₂	Planning / regulatory	Planned	<i>Länder</i>	0.3 Mt
Transport	Traffic management and speed limitation	Avoidance of congestions; promotion of economic driving	CO ₂	Information / regulatory / fiscal	Implemented / planned	Federation, <i>Länder</i>	0.3 Mt (impl. n.q.)

Industry	Promotion of energy efficiency and renewable energy	Energy-savings and increasing share of renewables in industry	CO ₂	Promotive	Implemented	Federation	0.2 Mt
Industry	Implementation of the IPPC directive	Energy-savings and efficiency raising measures in industry	CO ₂	Regulatory	Implemented	Federation, (EU)	n.q.
Industry	Energy concepts for energy intensive branches	Evaluation of energy-saving potentials in industry	CO ₂	Conceptual, consultative	Implemented	Länder	n.q.
Industry	Energy efficiency programme	Promotion of economic energy-saving in industry	CO ₂	Consultative, promotive	Planned	Federation	0.5 Mt
Industry	Promotion of energy efficiency and renewable energy	Energy-savings and increasing share of renewables in industry	CO ₂	Promotive	Planned	Federation	0.3 Mt
Industry	Voluntary agreements and flexible instruments	Cost efficient GHG reductions in industry	CO ₂	Voluntary/ negotiated agreements, economic	Planned	Federation	1.0–2.0 Mt

Agriculture and Forestry	Extension of ecological farming	Protection of rural environment (soil, water, natural and cultural habitate); production of high quality food	CH ₄ , N ₂ O	Promotive	Implemented	Federation, Länder, EU	n.q.
Agriculture and Forestry	Cultivation of oil-seed crops	Extension of crops for production of bio-fuels	CO ₂	Promotive, fiscal	Implemented	Federation, Länder	n.q.
Agriculture and Forestry	Further enforcement of measures to reduce methane and N ₂ O emissions	Protection of rural environment with more specific focus on GHG mitigation	CH ₄ , N ₂ O	Promotive	Adopted	Federation, Länder, EU	n.q.
Agriculture and Forestry	Maintenance and extension of vital forests	Maintaining biodiversity, productivity, regeneration capacity and vitality of forests	CO ₂	Research, information, regulatory	Implemented / adopted / planned	Federation, Länder	n.q.
Fluorinated Gases	Phase-out of Montreal gases	Protection of the ozone-layer	'Montreal gases'	Regulatory	Implemented	Federation	n.q.
Fluorinated Gases	Partial phase-out of HFCs and SF ₆	Substantial reduction of emissions of gases with high GWP	HFC, SF ₆	Regulatory	Planned	Federation	0.8 Mt

Fluorinated Gases	Public procurement and support measures	Substantial reduction of emissions of gases with high GWP	HFC, SF ₆	Promotive, public procurement	Implemented / adopted / planned	Federation, Länder	0.1 Mt (0.05 impl./ adop.)
Fluorinated Gases	Avoidance of leakage	Substantial reduction of emissions of gases with high GWP	HFC, SF ₆	Voluntary, research	Planned	Federation	0.3
Cross-cutting p&ms	Energy related taxes	Revenue-raising with positive side-effect of potential GHG reductions	CO ₂	Fiscal	Implemented	Federation	0.3
Cross-cutting p&ms	GHG emissions trading	Cost-effective GHG emissions reductions for large stationary emitters	CO ₂	Economic	Planned	Federation	n.q.

Source: Austria's Third National Communication, pages 82–88

Evaluation of projections

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

Table 5 shows the projections by greenhouse gas for 2010 and Table 6 summarises the projections by sector. Energy and industry are projected to increase emissions in the with measures projections, whereas agriculture and waste reduce emissions by 2010.

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

	Base year	With measures	With additional measures
CO ₂	62.1	72.5	60.9
CH ₄	11.3	8.5	7.2
N ₂ O	2.0	2.0	1.9
HFC	0.6	2.4	1.2
PFC	0.0	0.0	0.0
SF ₆	1.2	0.6	0.4
Total	77.2	86.1	71.6
% change relative to base year		11.5 %	-7.3 %

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

	Base year	With measures	% change relative to 1990	With additional measures	% change relative 1990 (additional measures)
Energy (IPCC Sector 1)	49.9	60.1	20.3 %	48.3	-3.3 %
Industry (IPCC Sector 2)	14.7	16.4	11.6 %	14.9	1.6 %
Agriculture (IPCC Sector 4)	5.6	4.8	-14.8 %	4.6	-17.4 %
Waste (IPCC Sector 6)	6.2	4.8	-22.4 %	3.8	-39.7 %
Total	77.2	86.1	11.5 %	71.6	-7.3 %

The with measures projection shows that the currently implemented or adopted measures of Austria do not reduce greenhouse gas emissions by 2010. Instead, greenhouse gas emissions will be 11.5 % above the base year level by 2010, according to the with measures projection.

Even in the with additional measures scenario Austria is expected to exceed its commitment of a 13 % reduction in greenhouse gas emissions under the EU burden sharing agreement. Measures planned will contribute to a 7.3 % reduction in greenhouse gas emissions by 2010. However, it is mentioned in the Third National Communication that the remaining GHG reduction requirement of around 3–3.5 Mt CO₂ equivalent will be fulfilled by making use of the project-based flexible mechanisms of the Kyoto Protocol (JI/CDM).

Table 7: Assessment of the target

	MtCO ₂ equiv.	% of 1990 level (six gas basket)
Base year (from projections)	77.2	
Commitment	67.2	-13.0 %
With existing P&Ms ¹	86.1	11.5 %
Gap (-ve means no gap)	18.9	24.5 %
Effect of additional P&Ms	14.5	-7.3 %

Description of modelling approach

Emissions from the energy sector are projected with the modelling framework of the Austrian Institute for Economic Research. The framework includes the energy model Dedalus and the macroeconomic multisectoral model Multimac. Resulting figures for energy demand in the Austrian economy are split according to the subsectors of the Austrian greenhouse gas emission inventory and emissions are calculated in accordance with inventory methodology.

The structure of the energy-economy-environment (E3) modelling framework is as follows: The energy model Dedalus is integrated into the macro economic multisectoral model of the Austrian economy Multimac III. The output of Dedalus determines the energy sector variables, which is the energy-economy link. The outcome of the macroeconomic multisectoral model (GDP, output by industries, capital stock for different energy-relevant purposes) determines together with fully exogenous influences (energy prices, technology diffusion for renewables and district heating, transport equipment, demography, etc.) the energy use and CO₂ emissions, which constitute the remaining environmental link.

Dedalus consists of an econometric model for annual energy demand of 13 sectors of the Austrian economy and an input-output model of energy transformation with varying technical coefficients. This model describes the Austrian energy system in sufficient detail to derive emission paths of 13 sectors and the energy transforming processes.

Multimac III is input-output based at a medium aggregation level of 32 industries and combines econometric functions for goods and factor demand, prices, wages and the labour market with the input-output accounting framework.

Emission scenarios for the agriculture, industrial processes and waste sectors are in principle based on the Austrian carbon balance model (ACBM). ACBM is a model that reflects the dynamic behaviour of the carbon cycle in Austria with the aim of establishing a full carbon accounting for Austria. For the current projections, the results of the ACBM scenarios had to be partially adapted according to results of the energy projections (e.g. activities in the industry sector) and to the latest expert judgements (e.g. development of livestock). The emission figures are based on emissions factors from the Austrian greenhouse gas inventory.

¹ The existing measures include measures implemented and adopted in 2001.

Modelling parameters

Parameter	1990	1995	2000	2005	2010	2015	2020	Unit
GDP growth	+4.6	+1.5	+3.9	+2.1	+2.0	+1.9	+2.0	annual average % (for previous 5 years)
Oil price Brent			24.9	16.5	16.5	19.7	22.5	EURO(1990/bbl
Population	7.73	8.05	8.11	8.17	8.21	8.25	8.30	million
Electricity import/export ratio			-2.6	+2.6	+2.0	+2.0	+2.0	%
Number of dwellings	2.97		3.26	3.36	3.44	3.51	3.59	million
Private cars	2.99	3.59	4.03	4.40	4.77	5.10	5.37	million
Energy prices								
Fuel oil			100	78	76	79	84	% of 2000
Electricity			100	92	102	103	106	% of 2000
Gasoline			100	86	84	86	89	% of 2000
Final energy consumption	833	880	945	1,010	1,049	1,085	1,121	PJ
Steel production activity	3,922	4,529	5,366	5,502	5,502	5,447	5,393	1000 tons
Energy efficiency		+18 %			+10 %			%
Cattle	2,584	2,326	2,156	2,092	2,010	1,941	1,875	1000 head
Municipal waste deposition in landfills	4,115	3,529	3,640	3,463	2,700	2,147	1,783	1000 tons

Note: Input parameters to the models are in bold

Country conclusions

The main document used for this summary was the Third National Communication. The level of detail and clarity of the documents from Austria is very good. The details of the methodology for the 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.

The projected increase from the base year with measures implemented and adopted is +11.5 % in the basket of six greenhouse gases by 2010. Additional policies and measures are projected to reduce GHG emissions to 7.3 % below base year levels by 2010. This reduction is still not enough in order to reach the 13 % reduction agreed under the Burden Sharing.

In the with measures scenario emissions from energy (+20 %) and industry (+12 %) increase by 2010 with regard to the base year level, whereas emissions from agriculture (-15 %) and waste (-22 %) reduce. In the with additional measures emissions from industry increase, all other sectors decrease.