Portugal

Contents

Figures and tables

1. SOURCES OF INFORMATION

Portugal's Report According to Article 3(2) of Decision No.280/2004/EC Concerning a Mechanism for Monitoring Community Greenhouse Gas emissions and for Implementing the Kyoto Protocol, Portuguese Agency for the Environment, May 2007, and with corrections provided in July 2007.

Portugal's National Allocation Plan for 2008-2012, Ministries of the Environment, Land Use and Regional Development and of the Economy and Innovation.

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

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

Base-year emissions
Base-year emissions of greenhouse gases are calculated using 1990 emissions for carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) and 1995 emissions for fluorinated gases (SF_6, HFCs and PFCs).

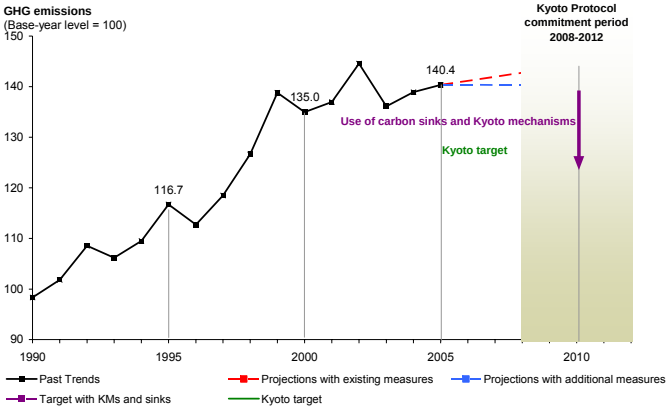
These base-year emissions include net emissions related to Art. 3.7 of the Kyoto Protocol.

Base-year data is as reported by Portugal in the sources noted above. Base year data is consistent with data reported in *The European Community's initial report under the Kyoto Protocol - Report to facilitate the calculation of the assigned amount of the European Community pursuant to Article 3, paragraphs 7 and 8 of the Kyoto Protocol (Submission to the UNFCCC Secretariat)*, EEA Technical report No 10/2006. This data is currently undergoing a review procedure by UNFCCC and is therefore subject to change.

2. SUMMARY

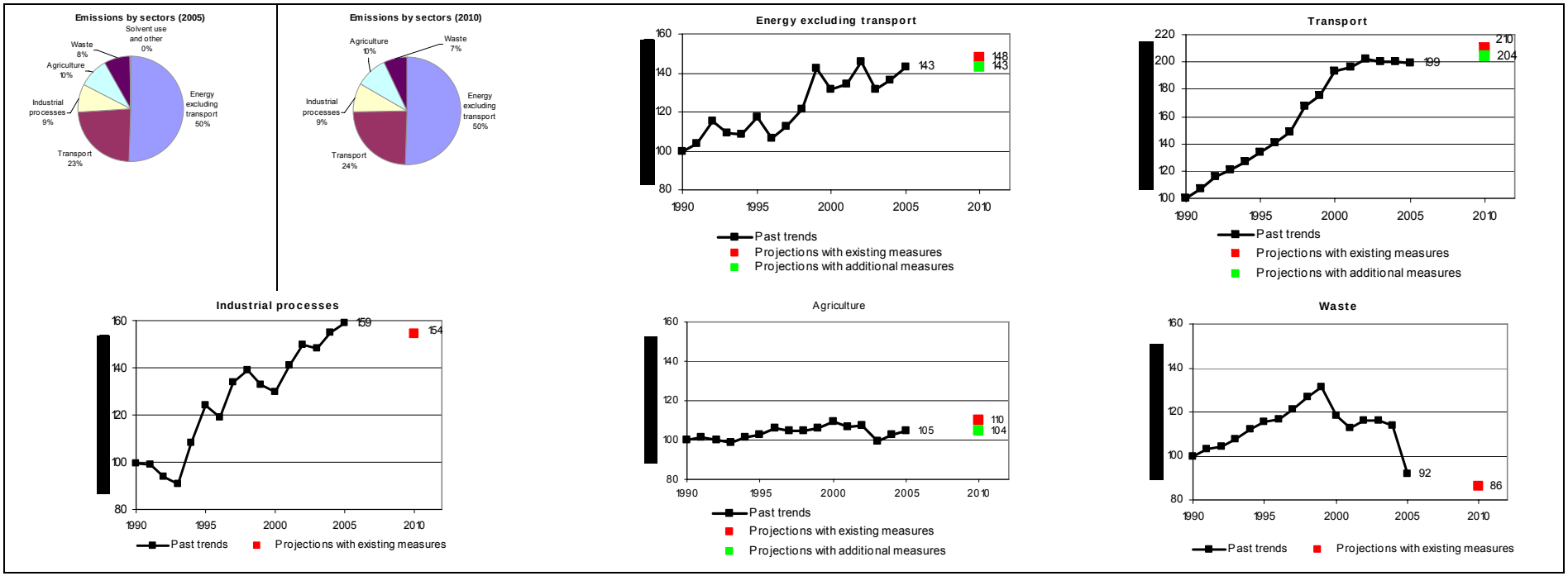
PORTUGAL

Share in total EU-15 GHG emissions 2005	2.0 %
Emissions base year incl. Art. 3.7 (latest inventory)	60.9 Mt
Emissions 2005	85.5 Mt
Emissions base year (for projections)	60.9 Mt
Projections 2010 with existing measures	88.0 Mt
Projections 2010 with additional measures	85.5 Mt
Kyoto target (absolute)	77.4 Mt
Kyoto target (% from base year)	+ 27.0 %
Change base year to 2005	+ 40.4 %
Change 2004–05	+ 1.0 %
Change base year to 2010 with existing measures	+ 44.3 %
Change base year to 2010 with additional measures	+ 40.3 %
Distance to linear target path 2005	+ 7.2 (+20.1) percent points
Use of Kyoto mechanisms	5.8 Mt
Sinks (Articles 3.3 and 3.4)	4.7 Mt
Emissions in 1990 (Article 3.7)	1.0 Mt



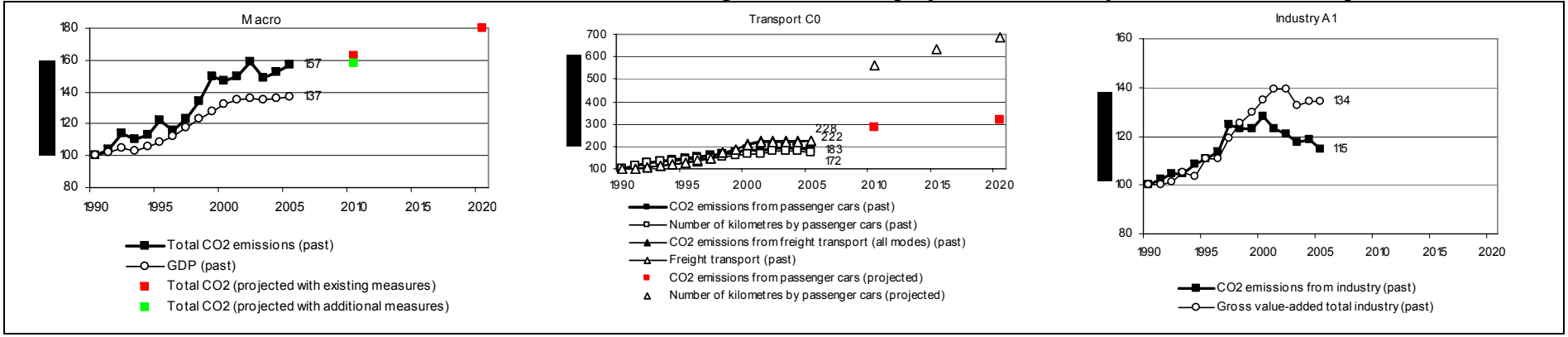
Past emissions: Portugal's GHG emissions were 1.0 % above those of 2004 and 40.4 % above base-year levels in 2005. The main factor for increasing emissions with regard to the previous year was an increase in fossil fuel combustion in public electricity and heat production also due to lower hydro power generation in 2005. Between 1990 and 2005, fuel combustion especially in road transport and electricity and heat production but also in households and services contributed the most to the emission increases.

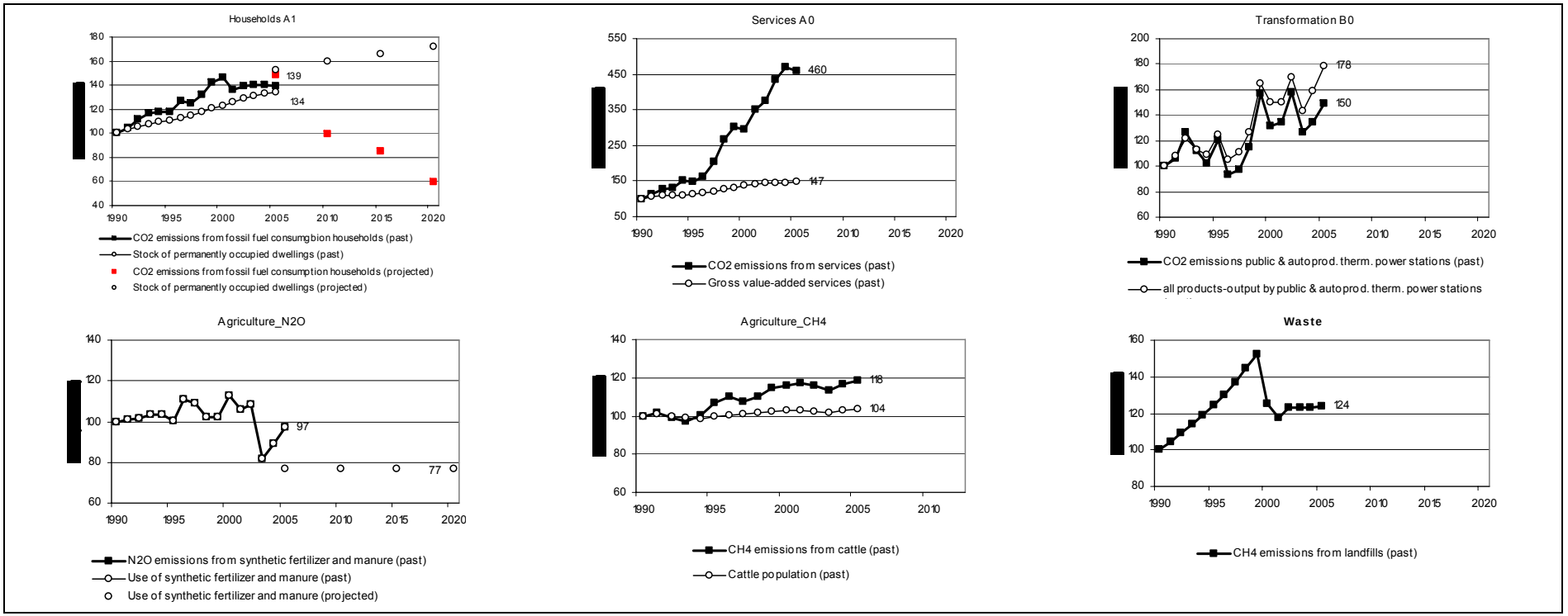
Emission projections: Emissions in 2005 were four percentage points below the level projected with existing measures for 2010. With existing measures Portugal projects to be 44 % above the Kyoto Protocol. Additional domestic measures will reduce this gap to 40 %. Kyoto mechanisms and the use of carbon sinks are projected to close the gap between domestic measures projections and the Kyoto target. Kyoto mechanisms are projected to deliver 5.8 Mt annually, sinks are projected to provide 4.7 Mt.



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.




Households A1
139
134
CO2 emissions from fossil fuel consumgbion households (past)
Stock of permanently occupied dwellings (past)
CO2 emissions from fossil fuel consumption households (projected)
Stock of permanently occupied dwellings (projected)
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460
147
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178
150
CO2 emissions public & autoprod. therm. power stations (past)
all products-output by public & autoprod. therm. power stations
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97
77
N2O emissions from synthetic fertilizer and manure (past)
Use of synthetic fertilizer and manure (past)
Use of synthetic fertilizer and manure (projected)
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118
104
CH4 emissions from cattle (past)
Cattle population (past)
Waste
124
CH4 emissions from landfills (past)

Priority Indicators		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Macro	Total CO_2 emissions, kt	43,352	45,167	49,309	47,908	49,117	53,077	50,179	53,429	58,109	64,766	63,538	64,789	68,993	64,342	66,146	67,918
	GDP, Bio Euro (EC95)	92	94	96	95	97	100	104	108	113	118	122	125	126	124	126	126
Macro B0	CO_2 emissions from energy consumption, kt	38,963	40,756	45,070	43,626	43,949	47,137	44,559	47,028	51,305	58,495	56,970	57,733	61,552	56,962	58,570	60,156
	GDP, Bio Euro (EC95)	92	94	96	95	97	100	104	108	113	118	122	125	126	124	126	126
Transport C0	CO_2 emissions from passenger cars, kt	4,219	4,714	5,339	5,684	5,944	6,216	6,480	6,625	7,066	7,412	7,825	7,629	8,052	8,021	7,979	7,710
	Number of kilometres by passenger cars, Mkm	21,309	23,517	26,462	27,865	28,920	29,987	30,758	31,146	32,920	34,374	36,039	35,276	37,506	37,701	37,926	36,730
Industry A1	CO_2 emissions from industry, kt	9,158	9,398	9,606	9,600	9,938	10,129	10,421	11,433	11,287	11,254	11,742	11,288	11,063	10,736	10,847	10,515
	Gross value-added total industry, Bio Euro (EC95)	20	20	20	21	20	22	22	24	25	26	27	28	28	26	27	27
Households A1	CO_2 emissions from fossil fuel consumption households, kt	1,621	1,700	1,800	1,890	1,910	1,913	2,055	2,018	2,142	2,305	2,364	2,207	2,260	2,273	2,276	2,261
	Stock of permanently occupied dwellings, 1000	2,824	2,928	2,978	3,028	3,077	3,127	3,183	3,242	3,313	3,398	3,477	3,551	3,637	3,698	3,745	3,789
Services A0	CO_2 emissions from fossil fuel consumption in commercial and institutional sector, kt	744	830	934	978	1,136	1,108	1,194	1,528	1,996	2,231	2,197	2,595	2,787	3,221	3,494	3,421
	Gross value-added services, Bio Euro (EC95)	44	46	48	48	48	49	50	52	55	57	60	61	62	63	64	64
Transformation B0	CO_2 emissions from public and autoproducer thermal power stations, kt	13,960	14,778	17,638	15,630	14,292	16,784	12,972	13,609	16,032	21,866	18,316	18,785	22,039	17,680	18,770	20,871
	All products - output and autoproducer thermal power stations, PJ	101	109	122	113	110	125	106	112	128	166	151	151	171	144	160	180

Additional Priority Indicators		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Transport D0	CO_2 emissions from freight transport on road, kt	4,683	4,823	5,079	5,193	5,535	5,900	6,301	6,930	8,212	8,709	10,029	10,545	10,601	10,565	10,534	10,655
	Freight transport on road, Mtkm	14,217	14,420	15,277	15,683	17,059	18,295	19,376	21,189	24,513	26,269	29,614	31,254	31,479	31,468	31,232	31,583
Industry A1.1	Total CO_2 emissions from iron and steel, kt	639	514	786	890	813	600	589	702	634	670	794	706	175	182	180	195
	Gross value-added - iron and steel industry, Bio Euro (EC95)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Industry A1.2	Energy related CO_2 emissions chemical indsutries, kt	1,479	1,485	1,496	1,320	1,361	1,612	1,478	1,633	1,734	1,849	2,066	1,679	1,704	1,715	1,881	1,827
	Gross value-added - chemical industry, Bio Euro (EC95)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Industry A1.3	Energy related CO_2 emissions - glass pottery and building materials industry, kt	3,331	3,613	3,511	3,524	3,674	3,874	3,890	4,161	3,995	4,043	4,084	3,961	4,213	4,009	3,883	3,823
	Gross value added - glass pottery and building materials industry, Bio Euro (EC95)	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2
Industry C0.1	Total CO_2 emissions from iron and steel, kt	639	514	786	890	813	600	589	702	634	670	794	706	175	182	180	195
	Production of oxygen steel	5	6	8	9	9	7	6	9	9	10	11	11	-	-	-	-
Industry C0.2	Energy related CO_2 emissions from glass, pottery and building materials, kt	3,331	3,613	3,511	3,524	3,674	3,874	3,890	4,161	3,995	4,043	4,084	3,961	4,213	4,009	3,883	3,823
	Cement production, kt	6,128	6,311	6,050	6,165	6,352	6,679	6,535	6,870	6,821	7,380	7,343	6,992	7,544	6,980	6,980	6,980

Supplementary Indicators		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Transport B0 (diesel)	CO_2 emissions of diesel-driven cars, kt	264	315	378	429	529	609	700	834	1,049	1,302	1,583	1,751	1,867	2,025	2,226	2,250
	Number of km, of diesel-dirven passenger cars, Mio km	1,348	1,568	1,906	2,195	2,729	3,146	3,587	4,274	5,377	6,697	8,131	9,059	9,713	10,600	11,749	11,878
Transport (B0) (petrol)	CO_2 emissions of petrol-driven cars, kt	3,955	4,399	4,961	5,254	5,415	5,606	5,776	5,754	5,974	6,059	6,194	5,831	6,140	5,953	5,713	5,416
	Number of km, of petrol-driven passenger cars, Mio km	19,960	21,948	24,555	25,669	26,189	26,837	27,148	26,656	27,299	27,385	27,639	25,956	27,538	26,854	25,949	24,599
Transport C0	CO_2 emissions from passenger cars, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Passenger trasnsport by cars, Mpkm	30,438	33,370	37,341	39,137	40,454	41,799	42,474	42,627	44,669	46,251	48,108	47,310	50,499	50,947	51,420	55,601
Transport E1	CO_2 emissions from domestic air transport, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Domestic air passenger, Mio	1	1	2	2	2	2	2	2	2	2	2	2	3	3	3	3
Industry A1.4	Energy related CO_2 emissions food industry, kt	822	894	909	871	885	927	947	1,098	1,129	1,122	1,022	1,094	1,134	1,151	943	776
	Gross Value Added food, drink and tobacco industry, Mio EUR (EC95)	2,263	2,267	2,360	2,332	2,291	2,368	2,377	2,436	2,471	2,485	2,515	2,521	2,513	2,563	3,329	3,292
Industry A1.5	Energy related CO_2 emissions - paper and printing industry, kt	743	810	888	914	1,052	886	963	987	939	960	1,110	1,018	992	966	1,108	1,168
	Gross value added paper and printing industry, Mio EUR (EC95)	2,173	1,851	1,854	1,903	1,835	1,819	7,403	7,690	8,115	8,644	1,903	1,901	1,799	1,853	2,089	2,066
Households A0	Surface area of permanently occupied dwellings, Mio m²	1,621	1,700	1,800	1,890	1,910	1,913	2,055	2,018	2,142	2,305	2,364	2,207	2,260	2,273	2,276	2,261
	Specific CO_2 emissions of households for space heating, t/m²	464	481	489	497	505	514	523	532	544	558	571	583	597	607	615	622
Services B0	CO_2 emissions from space heating in commercial and institutional, kt	744	830	934	978	1,136	1,108	1,194	1,528	1,996	2,234	2,203	2,598	2,790	3,223	3,499	3,428
	Surface area of services buildings, Mio m²	Not Availab	Not Availab	Not Availab	Not Availab	Not Availab	Not Availab	Not Availab	Not Availab	Not Availab	Not Availab	Not Availab	Not Availab	Not Availab	Not Availab	Not Availab	Not Availab
Transformation D0	CO_2 emissions from public thermal power stations, kt	7,964	8,388	10,823	8,941	7,304	8,962	6,037	6,243	8,307	12,617	10,183	10,603	13,187	9,369	10,355	12,038
	All products output by public thermal power stations, PJ	61	65	80	70	62	74	55	58	74	106	94	94	113	86	99	116
Transformation E0	CO_2 emissions from autoproducer, kt	5,996	6,390	6,815	6,689	6,988	7,822	6,935	7,366	7,725	9,248	8,133	8,182	8,853	8,311	8,415	8,832
	All products output by autoproducer thermal power stations, PJ	46	50	50	52	59	64	63	69	69	78	75	73	76	76	81	85
Transformation	CO_2 emissions from classical power production, kt	13,960	14,778	17,638	15,630	14,292	16,784	12,972	13,609	16,032	21,866	18,316	18,785	22,039	17,680	18,770	20,871
	All products output by public and autoproducer power stations, PJ	140	148	149	154	160	169	172	175	191	212	212	220	220	222	219	226
Transport	CO_2 emissions from transport, kt	9,828	10,495	11,381	11,817	12,419	13,058	13,706	14,480	16,237	17,063	18,774	19,083	19,579	19,473	19,406	19,293
	Total final energy consumption from transport, PJ	137	146	158	165	173	182	191	202	226	237	261	265	272	271	270	267
Industry	Energy related CO_2 emissions paper and printing industries, kt	743	810	888	914	1,052	886	963	987	939	960	1,110	1,018	992	966	1,108	1,168
	Physical output of paper, kt	1,820	1,938	1,926	1,863	1,917	2,036	2,031	2,617	2,678	2,752	3,086	3,271	3,482	3,467	3,561	3,733
Industry	CO_2 emissions form the industry sector	9,158	9,398	9,606	9,600	9,938	10,129	10,421	11,433	11,287	11,254	11,742	11,288	11,063	10,736	10,847	10,515
	Total final energy consumption form industry, PJ	165	173	176	174	177	183	188	205	205	209	217	213	215	207	218	212
Households	CO_2 emissios from houesholds, kt	1,621	1,621	1,700	1,800	1,890	1,910	1,913	2,055	2,018	2,142	2,305	2,364	2,207	2,260	2,273	2,276
	Total final energy consumption from households, PJ	80	79	79	79	79	79	82	81	83	85	86	84	84	86	86	86

4. OVERVIEW OF CCPM IMPLEMENTATION IN PORTUGAL

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

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

Waste	Landfill directive 1999/31/EC	N
Waste	Packaging and packaging waste (Directive 94/62/EC, 2004/12/EC, 2005/20/EC)	

Legend

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

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	+++	All policies named clearly and with descriptive titles
Objectives of policies	+++	Objectives well defined
Which greenhouse gases?	+++	Specifies which gases each PAM deals with
Status of Implementation	++	All PAMs clearly labelled as either Under Implementation or Under Planning
Implementation body specified	+++	The implementing bodies responsible for each PAMs are listed.
Quantitative assessment of implementation	+++	The effect of implementation is quantified for the majority of PAMs for 2010, and in some cases for 2020.
Interaction with other policies and measures discussed	o	Not discussed

Table 3. Information provided on projections

Category of Information	Level of information provided	Comments
Scenarios considered	+++	Emissions projection provided for the 'reference scenario' (WM) and WAM scenario. Also includes overall emissions reduction projections for a set of new measures introduced in 2007 which have not been included in the rest of the report (sectoral and 6 gas basket projections).
Expressed relative to base year	+++	Base years clearly stated
Starting year	+++	Emissions projections start in 2005.
Split of projections	++	Projections split into CO_2, CH_4, N_2O and F-gases. Sector split provides information on Energy, Industrial Processes, Solvents and other, Agriculture, Waste and LULUCF sectors. Projections are provided for 2010 and 2020 but not 2005 or 2015.
Presentation of results	+++	Data is presented clearly in tables and charts
Description of model (level of detail, approach and assumptions)	++	The type of model used is not described in detail, however the approach and assumptions are described in detail. The approach used for several of the sectors and sub-sectors is described.
Sensitivity analysis (key inputs to model / high, central and low projections	+	No mention of sensitivity analysis, however the input parameters have

scenarios / robustness of model)		High and Low scenario values
Discussion of uncertainty	o	No discussion of uncertainty
Details of parameters and assumptions	+++	Parameters and assumptions listed in great detail

Policy names and objectives were reported to a good level of detail, with the information clearly presented in a table.

The effect of key policies was quantified for the majority of policies. Information was provided on the effect of individual key policies rather than overall emissions reductions due to all PAMS.

Emission projections split by gas and by sector were provided correctly.

6. ASSESSMENT OF POLICIES AND MEASURES

Table 4. Summary of the effect of policies and measures included in the 2010 projections (Mt CO_2–eq.)

	With measures	With additional measures
Energy (total, excluding transport)	0.38	1.42
Energy supply	0.28	0.94
Energy – industry, construction	0.00	0.30
Energy – other (commercial, residential, agriculture)	0.10	0.18
Transport (energy)	0.00	0.61
Industrial processes	0.00	0.00
Waste	0.00	0.00
Agriculture	0.00	0.43
Cross-sectoral		
Total	0.38	2.46

The emission reduction potentials presented in Table 4 are calculated using emission projections for 2010 provided in Portugal's 2007 Monitoring Mechanism submission, including a 'without measures' projection.

Table 5. Detailed information on policies and measures
(Where no projection scenario information was reported for a policy or measure, the status field was used to decide which projection scenario it should be included in. A status of implemented, adopted, expired or a blank field was assumed to belong to the "with measures" projection. If the status is reported as planned the policy or measure is included in the "with additional measures" projection scenario)

Policies and measures in the "with measures" projection

Sector	Projection Scenario	Name	Type	GHG	Status	Absolute Reduction [kt CO_2 eq. p.a.] 2005	2010	2020	Costs [EUR/t]
Cross-cutting		Emission Trading	Economic	CO_2	implemented				
Cross-cutting		Fluorinated gases directive		HFC PFC SF_6					
Energy supply	WM	MRe3. Solar Hot Water for Portugal Programme (AQSpP)	Economic	CH_4 CO_2 N_2O	implemented			101	details
Energy supply	WM	MRe2. Energy Efficiency in Buildings	Regulatory	CH_4 CO_2 N_2O	implemented			90	details
Energy supply	WM	MRe1. "E4, E-RES" Programme	Economic	CH_4 CO_2 N_2O	other			280	details
Transport	WM	MRt1. Auto-Oil Programme – Voluntary agreement with the car manufacturing associations (ACEA, JAMA, KAMA)	Voluntary/ negotiated agreement	CH_4 CO_2 N_2O	implemented			175	details
Transport	WM	MRt3. Construction of the South of	Economic	CH_4	implemented			13	details

Sector	Projection Scenario	Name	Type	GHG	Status	Absolute Reduction [kt CO_2 eq. p.a.] 2005	2010	2020	Costs [EUR/t]
		the Tagus River Metro (MST)		CO_2 N_2O					
Transport	WM	MRt2. Expansion of the Lisbon Metro (ML)- extension of the Blue Line; extension of the Yellow Line; Red Line	Economic	CH_4 CO_2 N_2O	implemented		14	details	
Transport	WM	MRt4. Construction of the Oporto Metro (MP)	Economic	CH_4 CO_2 N_2O	implemented		30	details	
Transport	WM	MRt5. Construction of the Mondego Light Metro (MLM)	Economic	CH_4 CO_2 N_2O	implemented		details	details	
Transport	WM	MRt6. Supply changes (reduction in travel time) between Lisbon-Oporto; Lisbon-Castelo Branco; Lisbon-Algarve	Economic	CH_4 CO_2 N_2O	other		78	details	
Transport	WM	MRt7. Enlargement of the fleet of vehicles powered by natural gas of CARRIS and of the STCP	Economic	CH_4 CO_2 N_2O	implemented		1	details	
Transport	WM	MRt8. Incentive Programme for the dismantling of End-of-Life Vehicles	Economic	CH_4 CO_2 N_2O	implemented		2	details	
Transport	WM	MRt9. Reduction of motorway speeds	Education Regulatory	CH_4 CO_2	Other			details	

Sector	Projection Scenario	Name	Type	GHG	Status	Absolute Reduction [kt CO_2 eq. p.a.] 2005	2010	2020	Costs [EUR/t]
				N_2O					
Transport	WM	MRt10. Biofuels Directive	Economic	CH_4 CO_2 N_2O	other		1,243	details	
Agriculture	WM	MRg1. IPPC Directive (Integrated Prevention and Pollution Control)	Regulatory		implemented		details	details	
Waste	WM	MRr1. Directive on Packaging and Packaging Waste	Economic	CH_4 CO_2 N_2O	implemented		900	details	
Waste	WM	MRr2. Landfill Directive	Economic	CH_4	implemented		363	details	
Waste	WM	MRr3. IPPC Directive (Integrated Prevention and Pollution Control)	Regulatory	CH_4 CO_2	implemented				

Policies and measures in the "with additional measures" projection

Sector	Projection Scenario	Name	Type	GHG	Status	Absolute Reduction [kt CO_2 eq. p.a.] 2005	2010	2020	Costs [EUR/t]
Cross-cutting		Green Procurement	Regulatory	CO_2	planned				
Energy supply	WAM	MAi1. Increase in tax on industrial fuels	Economic	CH_4	other		7	details	
Industrial Processes			Fiscal	CO_2 N_2O					

Sector	Projection Scenario	Name	Type	GHG	Status	Absolute Reduction [kt CO_2 eq. p.a.] 2005	2010	2020	Costs [EUR/t]
Energy supply	WAM	MAe2. Energy efficiency improvement in the energy supply systems, considering electricity generation from co-generation	Economic	CH_4 CO_2 N_2O	other		200	details	
Energy supply	WAM	MAe3. Improvement in energy efficiency from the electricity demand-side	Regulatory	CH_4 CO_2 N_2O	other		795	details	
Energy supply	WAM	MAe4. Promotion of electricity produced from renewable energy sources	Economic	CH_4 CO_2 N_2O	other		855 more	details	
Energy supply	WAM	MAe5. Introduction of natural gas in the Autonomous Region of Madeira	Regulatory	CH_4 CO_2 N_2O	other		5	details	
Energy supply Industrial Processes	WAM	MAi3. Incentives to the substitution of fuel oil co-generation by natural gas generation	Economic	CH_4 CO_2 N_2O	planned		189	details	
Energy supply	WAM	MAe1. Energy efficiency improvement in the electricity generation sector	Regulatory	CH_4 CO_2 N_2O	other		146	details	
Energy supply	WAM	MAr1. Realignment of the tax burden on diesel fuel for heating (residential sub-sector)	Economic Fiscal	CH_4 CO_2 N_2O	other		14	details	
Energy supply	WAM	MAs1 Realignment of the tax	Economic	CH_4	other		59	details	

Sector	Projection Scenario	Name	Type	GHG	Status	Absolute Reduction [kt CO_2 eq. p.a.] 2005	2010	2020	Costs [EUR/t]
		burden on diesel fuel for heating (services sub-sector)	Fiscal	CO_2 N_2O					
Energy supply	WAM	Renewable energies	Economic Other	CO_2	planned		Cluster value		
Energy supply	WAM	Operational start of new natural gas combined power plants	Regulatory	CO_2	planned		Cluster value		
Energy supply	WAM	Subsitution of coal in thermic power plants		CO_2	planned		Cluster value		
Energy supply		Combined emission reduction of PT-ENS-12 PT-ENS-13 PT-ENS-14	Economic Other Regulatory	CO_2	planned		901		
Transport	WAM	MAt3. Review of the current tax regime on private vehicles	Economic Fiscal	CH_4 CO_2 N_2O	planned		7	details	
Transport	WAM	MAt7. Regulation on Energy Management in the Transport Sector	Regulatory	CH_4 CO_2 N_2O	other		18	details	
Transport	WAM	MAt10. Logistical Platforms	Economic		other		details	details	
Transport	WAM	MAt1. Reduction of Taxis´ service days	Regulatory	CH_4 CO_2 N_2O	planned		3	details	

Sector	Projection Scenario	Name	Type	GHG	Status	Absolute Reduction [kt CO_2 eq. p.a.] 2005	2010	2020	Costs [EUR/t]
Transport	WAM	MAt2. Enlargement of the fleet of taxi vehicles powered by natural gas	Economic	CH_4 CO_2 N_2O	planned			details	
Transport	WAM	MAt4. Metropolitan Authority of Lisbon Transports	Economic Regulatory	CH_4 CO_2 N_2O	other		245	details	
Transport	WAM	MAt8. Railway connection to Aveiro Sea Port	Economic	CH_4 CO_2 N_2O	other		40	details	
Transport	WAM	MAt9. Shipping routes	Economic	CH_4 CO_2 N_2O	other		150	details	
Transport	WAM	MAt11. Restructuring of supply of CP (national railway) service	Economic	CH_4 CO_2 N_2O	other		44	details	
Transport	WAM	MAt5. Metropolitan Authority of Oporto Transports	Economic Regulatory	CH_4 CO_2 N_2O	other		101	details	
Transport	WAM	Biofuels	Fiscal	CO_2	other		655		
Transport	WAM	MAt6. Incentive Programme for the dismantling of End-of-Life Vehicles (further objectives)	Economic	CH_4 CO_2 N_2O	other			details	

Sector	Projection Scenario	Name	Type	GHG	Status	Absolute Reduction [kt CO_2 eq. p.a.] 2005	2010	2020	Costs [EUR/t]
Energy supply Industrial Processes	WAM	MAi3. Incentives to the substitution of fuel oil co-generation by natural gas generation	Economic	CH_4 CO_2 N_2O	planned		189	details	
Industrial Processes	WAM	MAi2. Review of the Regulation on the Management of Energy Consumption (RGCE)	Voluntary/ negotiated agreement	CH_4 CO_2 N_2O	other		32	details	
Agriculture	WAM	MAg2. Treatment and energy recovery of livestock waste	Economic	CH_4 N_2O	other		429	507	
Agriculture	WAM	MAg1. Evaluation and promotion of carbon sequestration in agricultural soil	Economic	CO_2	adopted		500	details	

Source: Öko Institut, (accessed 13th June 2007), ECCP Policies and Measures database, http://www.oeko.de/service/pam/index.php

7. EVALUATION OF PROJECTIONS

Table 6. Summary of projections by gas in 2010 (Mt CO_2–eq.)

	Base year	With measures	With additional measures
Carbon dioxide	44.34	70.5	68.5
Methane	11.23	10.4	10.0
Nitrous oxide	5.36	6.35	6.34
F gases	0.01	0.748	0.75
Total	60.9	88.0	85.5
% change relative to base year		44.3%	40.3%

Base year CO_2 emissions include the effect of Article 3.7., whereas emissions projections for 2010 exclude all LULUCF emissions.

Table 7. Summary of projections (6 gas basket) by sector in 2010 (Mt CO_2–eq.)

	Base year	with measures	% change relative to base year	with additional measures	% change relative to base year
Energy (total, excluding transport)	30.1	44.6	48%	43.2	43%
Energy supply	16.2	24.6	51%	23.6	46%
Energy – industry, construction	9.3	11.9	28%	11.6	25%
Energy – other (commercial, residential, agriculture)	4.6	8.1	75%	7.9	72%
Transport (energy)	10.1	21.2	110%	20.5	104%
Industrial processes	4.9	7.5	54%	7.5	54%
Waste	7.1	6.1	-14%	6.1	-14%
Agriculture	7.9	8.6	10%	8.2	4%
Article 3.7	1.0	NA	NA	NA	NA
Total	60.9	88.0	44%	85.5	40%

Base year emissions include the effect of Article 3.7, whereas emissions projections for 2010 exclude all LULUCF emissions.

The overall *with measures* and *with additional measures* projections for 2010, 88 $MtCO_2$ eq and 85.5 $MtCO_2$ eq respectively, have not changed from Portugal's 2006 report.
However, Portugal is still significantly above its 27% commitment under the EU burden sharing agreement.

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

	Carbon dioxide			Methane			Nitrous oxide			F-gases (SF6, 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 (incl. transport)	29.26	43.43	42.02	0.49	0.75	0.74	0.37	0.41	0.41	0.00	0.00	0.00
Energy supply	16.07	24.06	23.13	0.11	0.40	0.39	0.06	0.13	0.12	0.00	0.00	0.00
Energy – industry, construction	9.16	11.76	11.46	0.04	0.04	0.04	0.07	0.10	0.10	0.00	0.00	0.00
Energy – other (commercial, residential, agriculture)	4.03	7.61	7.43	0.35	0.30	0.30	0.24	0.19	0.19	0.00	0.00	0.00
Transport (energy)	9.83	20.42	19.82	0.07	0.05	0.05	0.15	0.68	0.67	0.00	0.00	0.00
Industrial processes	4.27	6.14	6.14	0.01	0.01	0.01	0.57	0.60	0.60	0.01	0.75	0.75
Waste	0.01	0.48	0.48	6.58	4.94	4.94	0.47	0.66	0.66	0.00	0.00	0.00
Agriculture	0.00	0.00	0.00	4.07	4.65	4.22	3.81	4.00	4.00	0.00	0.00	0.00
Total	44.34	70.46	68.46	11.23	10.40	9.96	5.36	6.35	6.34	0.01	0.75	0.75

Base year CO_2 emissions include the effect of Article 3.7., whereas emissions projections for 2010 exclude all LULUCF emissions.

Figure 1. Share by sector of 2010 greenhouse gas emissions according to the "with measures" projection

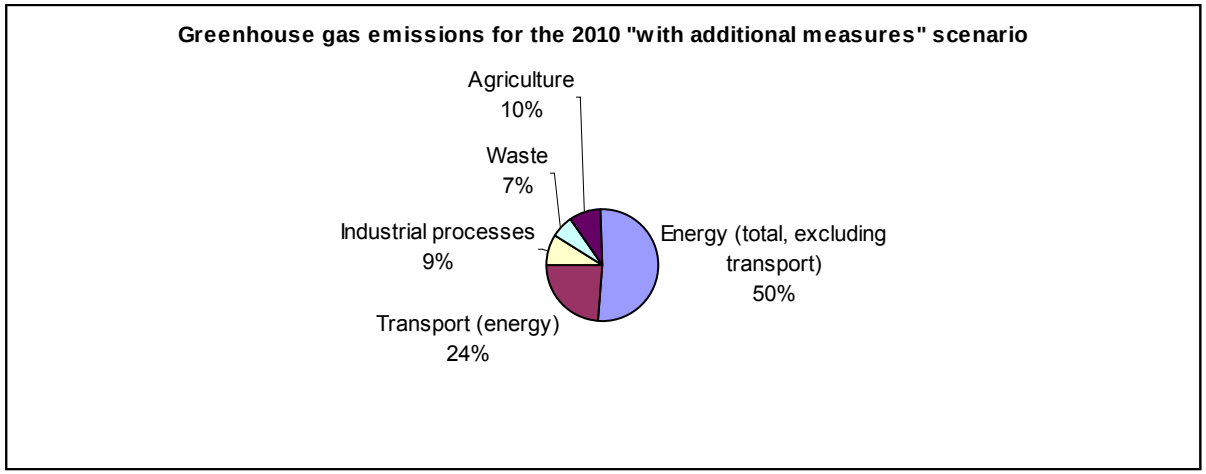

Table 9. Summary of projections (6 gas basket) in 2010, 2015 and 2020 (Mt CO_2–eq.)

	Base year*	2010	2010, % of base year level	2015	2015, % of base year level	2020	2020, % of base year level
Total	60.9	85.5	140.3%	NE	NA	94.0	154.3%

Base year emissions include the effect of Article 3.7., whereas emissions projections for 2010 exclude all LULUCF emissions.

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

	Emissions in MtCO2-equiv., excluding LULUCF			
	2010 projections from 2005	**2010 projections from 2006**	**2010 projections from 2007**	**2010 projections from 2007, % of base year level**
Base year emissions used for projections	59.4	60	60.9*	100%
Kyoto Commitment/burden sharing	75.5	76.1	77.4	27.0%
With existing P&Ms projections	90.4	88.0	88.0	144.3%
Gap (-ve means overachievement of target)	14.9	11.9	10.6	17.3%
With additional P&Ms projections	84.5	85.6	85.5	140.3%
Remaining gap	9.0	9.5	8.1	13.3%
Effect of flexible mechanisms	0.0	1.9	5.8**	9.5%
Remaining gap (with use of flexible mechanisms)	9.0	7.6	2.3	3.8%

Base year emissions reported in 2007 include the effect of Article 3.7, whereas emissions projections for 2010 exclude all LULUCF emissions.

Source for 2005 data is the June 2005 Monitoring Mechanism Submission: RELATÓRIO DE PORTUGAL NO ÂMBITO DO ARTIGO 3(2) DA DECISÃO N.º 280/2004/CE Instituto do Ambiente Junho de 2005 (no English translation of the whole document available). Source for 2006 data is the Portuguese Climate Change Programme (PNAC) Instituto do Ambiente, Portugal May 2006, Policies and Measures and Projections (2010-2020).

* Base year data is consistent with data reported in The European Community's initial report under the Kyoto Protocol - Report to facilitate the calculation of the assigned amount of the European Community pursuant to Article 3, paragraphs 7 and 8 of the Kyoto Protocol (Submission to the UNFCCC Secretariat), EEA Technical report No 10/2006 (60.94 MtCO2-eq). This data is currently undergoing a review procedure by UNFCCC and is therefore subject to change.

** The effect of flexible mechanisms is estimated to be 29 MtCO2eq in Portugal's 2007 submission, which would lead to Portugal significantly overachieving its targets.

In addition to the WM and WAM scenario projections presented in the above table, Portugal has put into place a series of measures introduced in 2007 (mainly concerning transport and power generation) which are estimated to have the effect of reducing 2010 emissions by a further 1.56 $MtCO_2eq$, which would mean Portugal would be closer to achieving their 2010 Kyoto target. However, due to the recent introduction of these measures it was not possible to incorporate them into the WAM scenario projections, hence they are not considered as part of the projections data. Portugal also provided a 'without measures' (WOM) scenario in their 2007 MMS.

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

Table 11 provides a comparison of projections in the Monitoring Mechanism submission (MMS) and National Allocation Plan (NAP). The projections are almost identical. The differences are partly due to differences in assigning sectors to the "Energy" and "Industry" sectors:
For the Energy sector, GHG totals per sector are only given in summary table III of the NAP, where 'All other sectors' includes six sectors, some of which are additional to the energy sector reported in the MMS. Hence there is a slightly higher total for the Energy sector in the NAP.
The Industry sector totals are also slightly different between the MMS (which includes Solvents) and the NAP (which does not - Solvents are included in 'All other sectors').

	MMS projections	NAP 2 projections	Difference
Energy sector	44.59 [a]	44.88 [b]	--
Energy sector included in EU ETS	--	32.92 [c]	--
Industry sector	6.75 [d]	7.20 [e]	--
Industry sector included in EU ETS	--	3.95 [f]	--
Total Energy & Industry	51.3	52.084	101.5%

a Included are all GHG emissions from the "Energy (total, excluding transport)" sector

b Included are all GHG from "Energy generation" (which includes energy use by industry), "Commercial and institutional, Residential and Agricultural energy use" and "All other sectors"
c Included are CO2 emissions from the ETS sectors "Energy generation" (which includes energy use by industry), "Commercial and institutional, Residential and Agricultural energy use" and "All other sectors"
d Included are all GHG emissions from the sector "Industrial processes"
e Included are all GHG emissions from the sector "Industrial processes"
f Included are CO2 emissions from the sector "Industrial processes"

8. DESCRIPTION OF MODELLING APPROACH

The type of model used was not specified, however the sources of all inputs and assumptions for all the different sub-sectors were specified in great detail.
Estimates for With Measures projections are estimated on the basis of energy demand forecasts derived from macro-economic indicators, together with information on the implementation of sectoral PAMs adopted or in force on 1st January 2005.
Estimates for With Additional Measures GHGs include the effects of additional PAMs.

Sensitivity analysis

There is no direct mention in the report of sensitivity analyses being carried out, however many of projection parameters have both High and Low scenario values (listed in Annex II).

Details of the uncertainty assessment

Again there is no mention of an uncertainty assessment, however as described above the sources of all inputs are listed in detail.

9. PROJECTION INDICATOR REPORTING

Indicators 1, 2, 4, 5, 6, 7, and 9 were reported for the years 1990, 2010 and 2020. Indicator 3 is reported for 2010 and 2020, and indicators 8 and 10 are reported for 1990.
Where indicators are reported, numerators and denominators are provided.

10. REPORTING OF PARAMETERS ON PROJECTIONS

Around half of the mandatory parameters are reported, typically for the years 2010, 2015 and 2020. General economic parameters not provided are population and population growth rates. Considering the energy parameters, demand is not reported for the transport sector.

Almost all assumptions are reported for the industry sector, except for the production index. The level of private consumption and the rate of change of floor space are missing from the buildings assumptions. Finally assumptions in the waste sector are only provided for municipal waste disposed to landfills.

No recommended parameters are provided.

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

N°	Eurostat Sectors	Indicator	1990	2005	2010	2015	2020	Numerator/denominator	1990	2005	2010	2015	2020
1	Macro	CO_2 intensity of GDP, t/Euro million	653.51		500.00		422.32	Total CO_2 emissions, kt	60123		70464		78130
								GDP, bio Euro (EC95)	92	126.05	140.93		185
2	Transport C0	CO_2 emissions from passenger cars, kt	4219		12144		13513						
		Number of kilometres by passenger cars, Mkm			120018	134868	146265						
3	Transport D0	CO_2 emissions from freight transport (all modes), kt			8253		9798						
		Freight transport (all modes), Mtkm											
4	Industry A1	Energy related CO_2 intensity of industry, t/Euro million	457.90		211.30		181.03	CO_2 emissions from fuel consumption industry, kt	9158		5848		5945
								Gross value-added total industry, Bio Euro (EC 95)	20		27.676	30.632	32.84
5	Households A1	Specific CO_2 emissions of households, t/dwelling	0.57		0.72		0.64	CO_2 emissions from fossil fuel consumption households, kt	1621		2863		2768
								Stock of permanently occupied dwellings, 1000	2824		3950	4130	4300
6	Services A0	CO_2 intensity of the services sector, t/Euro million	16.91		48.95		44.69	CO_2 emissions from fossil fuel consumption services, kt	744		4343		5354
								gross value-added services, bio Euro (EC95)	44		88.72	103.86	119.82
7	Transformation B0	Specific CO_2 emissions of public and autoproducer power plants, t/TJ	138.22		182.48		132.96	CO_2 emissions from public and autoproducer thermal power stations, kt	13960		19708		21406
								all products-output by public and autoproducer thermal power stations, PJ	101		108		161
8	Agriculture	Specific N_2O emissions of fertilizer and manure use, kg/kg	0.03	0.00	0.00	0.00	0.00	N_2O emissions from synthetic fertilizer and manure use, kt	12				
								use of synthetic fertiliser and manure, kt nitrogen	369	150	150	150	150

9	Agriculture	Specific CH_4 emissions of cattle production, kg/head	0.01	0.00	0.01		0.01	CH_4 emissions from cattle, kt	181		212		203
								cattle populations, 1000 head	35786	43725	41444		37410
10	Waste	Specific CH_4 emissions from landfills, kt/kt						CH_4 emissions from landfills, kt	185				
								Municipal solid waste going to landfills, kt	3738		1070		615

Table 13. List of parameters on projections (Annex IV of Implementing Provisions[1])

1. Mandatory parameters on projections	Base Year	2005	2010	2015	2020
Assumptions for general economic parameters					
GDP (value at given years)	92	126.046	140.929		185
GDP growth rate		1.1	3		
Population (value at given years)					
Population growth rate (% of 2005 value)					
International coal prices at given years in euro per tonne or GJ (Gigajoule)					
International oil prices at given years in euro per barrel or GJ					
International gas prices at given years in euro per m3 or GJ					
Assumptions for the energy sector					
Total gross inland consumption (PJ)	0	0	1082.6	1182.5	1263.8
Oil (Fossil)			547.60	547.50	573.90
Gas (Fossil)			178.90	267.80	355.80
Coal			142.50	142.50	95.60
Renewable			213.60	224.70	238.50
Nuclear (IEA definition for energy calc.)					
Net electricity import (-+)			9.00	0.00	0.00
Total electricity production by fuel type (PJ)	0	0	186.30	224.70	261.30
Oil (Fossil)			12.70	4.00	5.00

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

1. Mandatory parameters on projections	Base Year	2005	2010	2015	2020
Gas (Fossil)			38.50	75.80	115.40
Coal			50.40	50.40	33.50
Renewable			84.70	94.50	107.40
Nuclear (IEA definition for energy calc.)					
Energy demand by sector	0	0	572.3	641	691.5
Energy Industries	0	0	429.1	488.7	531.7
Oil (Fossil) (PJ)			59.40	35.90	37.60
Gas (Fossil) (PJ)			104.00	177.10	252.30
Coal (PJ)			139.60	139.60	92.80
Renewable (PJ)			126.10	136.10	149.00
Other (PJ)			1.40	1.40	1.40
Industry	0.00	0.00	143.20	152.30	159.80
Oil (Fossil) (PJ)			66.10	64.40	63.60
Gas (Fossil) (PJ)			52.50	64.00	73.20
Coal (PJ)			2.90	2.90	2.80
Renewable (PJ)			21.70	21.00	20.20
Other (PJ)			124.40	134.30	140.90
Commercial			0.00	57.00	0.00
Oil (Fossil) (PJ)			52.7	57.00	62.1
Gas (Fossil) (PJ)			8.4	10.5	13.1
Coal (PJ)					
Renewable (PJ)			0.7	0.9	1.2
Other (PJ)			0.25	0.31	0.39
Residential			89.50	89.20	88.40
Oil (Fossil) (PJ)			28.50	26.40	25.00
Gas (Fossil) (PJ)			12.60	14.10	14.50
Coal (PJ)			0.00	0.00	0.00
Renewable (PJ)			48.40	48.70	48.90
Other (PJ)					
Assumptions on weather parameters, especially heating or cooling degree days					

1. Mandatory parameters on projections	Base Year	2005	2010	2015	2020
Assumptions for the industry sector					
Gross value-added total industry, Bio Euro (EC95)	20		27.676	30.632	32.84
For Member States using macroeconomic models:					
The share of the industrial sector in GDP(%)			19.6	18.8	17.7
GDP growth rate (Euro 2000 basis/yr)[1]			2	2.05	1.4
For Member States using other models:					
The production index for industrial sector					
Assumptions for the transport sector					
For Member States using macroeconomic models:					
The growth of transport relative to GDP					
For Member States using other models:					
The growth of passenger person kilometres			120018	134868	146265
The number of km by passenger cars (Mkm)	21309	54136	62840		75709
The growth of freight (tonne kilometres)		22,552	25,980	29,412	31,028
Freight transport, all modes (Mtkm)		25426	29298		36687
Assumptions for buildings (in residential and commercial or tertiary sector)					
Gross value-added - services, Bio Euro (EC95)	44		88.724	103.858	119.816
For Member States using macroeconomic models:					
The level of private consumption (excluding private transport)			NA	NA	NA
The share of the tertiary sector in GDP and the growth rate (%)			63	63.9	64.7
For Member States using other models:					
The rate of change of floor space for tertiary buildings and dwellings					
The number of dwellings and number of employees in the tertiary sector					
The number of dwellings (1000 dwellings)	2824		3950	4130	4300
The number of employees in the tertiary sector (1000 employees)			3000	3090	3190
Assumptions in the agriculture sector					
For Member States using macroeconomic models:					

1. Mandatory parameters on projections	Base Year	2005	2010	2015	2020
The share of the agriculture sector in GDP and relative growth					
For Member States using other models:					
Livestock numbers by animal type (1000 heads)					
Total Cattle	0	1443	1484	1415	1347
Dairy cattle		338	322	296	271
Non-dairy cattle		1105	1162	1119	1076
sheep		2275	2237	2289	2340
swine		2348	2225	2226	2227
poultry		33065	33628	31575	29520
Other, please specify[2]		2239	2228	2234	2239
The area of crops by crop type (hectares)					
Vineyard		220286	220286	220286	220286
Fresh Fruit		76445	82570	85632	88694
Dry Fruit		72352	73448	73997	74545
Olive grove		374474	404474	419474	434474
Wheat		152190	101967	76856	51745
Corn		105695	95125	89841	84556
Triticale		16628	11926	9575	7224
Rice		20534	23724	25319	26914
Oats		61898	58852	57330	55807
Barley		19475	19475	19475	19475
Potato		41273	41273	41273	41273
Tomato		12925	12925	12925	12925
Hop		24	0	0	0
Tobacco		2298	0	0	0
Fertilizer Used (Synthetic & Manure) (kt Nitrogen)	369	150	150	150	150
The emissions factors (t CO2e per 1000 heads)					
enteric fermentation Dairy cattle		2.373	2.373	2.373	2.373
enteric fermentation Non-dairy cattle		1.218	1.218	1.218	1.218
enteric fermentation sheep		0.21	0.21	0.21	0.21

1. Mandatory parameters on projections	Base Year	2005	2010	2015	2020
manure management Dairy cattle		0.063	0.063	0.063	0.063
manure management Non-dairy cattle		0.042	0.042	0.042	0.042
manure management sheep		0	0	0	0
manure management Swine		0.966	0.966	0.966	0.966
manure management Poultry		0	0	0	0
Emissions factors by type of livestock for enteric fermentation and manure management (t)					
Assumptions in the waste sector					
Waste generation per head of population or tonnes of municipal solid waste					
The organic fractions of municipal solid waste					
Municipal solid waste disposed to landfills, incinerated or composted (in tonnes or %)					
Municipal solid waste disposed to landfills (kt)	3738		1070		615
Assumptions in the forestry sector					
Forest definitions	Areas occupied with forest trees with a minimum cover of at least 10%, occupying an area of at least 0.5 ha and a width not inferior to 20 metres. Includes: • the young settlements and plantations, which density, in the future, will be of at least 10% of cover, and height greater than 5 metres. • the seed orchards and the tree nurseries. • the wind-breakers and hedges, as long as they respect established forestry criteria. • forestry land previously occupied by settlements that, due to a forest fire are now occupied by burnt vegetation or naked land, with a significant presence of dead or carbonized material. • forestry land previously occupied by settlements that were cut down and are now occupied by stumps and insignificant ground vegetation. • other forested areas: forestry land that, in maturity, does not reach a height above 5 metres.				

1. Mandatory parameters on projections	Base Year	2005	2010	2015	2020
Areas of:					
managed forests (Hectares)		1136000	1164000	1185000	1206000
unmanaged forests (Hectares)		2224000	2280000	2320000	2361000

Table Footnotes

[1] Includes construction and public works sector

[2] Other bovine, goats, other caprine, horses, mules, asses.

2. Recommended parameters on projections	2005	2010	2015	2020
Assumptions for general economic parameters				
GDP growth rates split by industrial sectors in relation to 2000				
Comparison projected data with official forecasts				
Assumptions for the energy sector				
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				
Assumptions for the industry sector				
Assumptions fluorinated gases:				
Aluminium production and emissions factors				
Magnesium production and emissions factors				
Foam production and emissions factors				
Stock of refrigerant and leakage rates				
For Member States using macroeconomic models:				
Share of GDP for different sectors and growth rates				
Rate of improvement of energy intensity (1990 = 100)				
For Member States using other models:				
Index of production for different sectors				
Rate of improvement or index of energy efficiency				
Assumptions for buildings (in residential and commercial / tertiary sector)				
For Member States using macroeconomic models:				
Share of tertiary and household sectors in GDP				
Rate of improvement of energy intensity				
For Member States using other models:				
Number of households				
Number of new buildings				
Rate of improvement of energy efficiency (1990 = 100)				
Assumptions for the transport sector				
For Member States using econometric models:				
Growth of transport relative to GDP split by passenger and freight				
Improvements in energy efficiency split by vehicle type				
Improvements in energy efficiency split by vehicle type, whole fleet/new cars				
Rate of change of modal split (passenger and freight)				
Growth of passenger road kilometres				
Growth of passenger rail kilometres				
Growth of passenger aviation kilometres				
Growth of freight tonne kilometres on road				
Growth of freight tonne kilometres by rail				
Growth of freight tonne kilometres by navigation				

2. Recommended parameters on projections	2005	2010	2015	2020
Assumptions for the agriculture sector				
For Member States using econometric models:				
Agricultural trade (import/export)				
Domestic consumption (e.g. milk/beef consumption)				
For Member States using other models:				
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				

11. COUNTRY CONCLUSIONS

Based on this year's projections, and excluding LULUCF[2], the *with measures* scenario shows that greenhouse gas emissions increase will be 44% above base year in 2010 reducing to 40% for the *with additional measures* scenario. These projections have not changed since the 2005 report. Base year emissions considered this year are 973 829 t greater than last year due to the inclusion of the net effect of Article 3.7 of the Kyoto Protocol.

Taking into account Article 3.7 in the base year emissions, the gap between Portugal's projected emissions-without LULUCF in 2010 for *with additional measures* and its Kyoto commitment target for 2010 is 8.1 $MtCO_2$ eq. Portugal intends to make use of the flexible mechanisms under articles 6, 12 and 17 of the Kyoto Protocol in order to reduce its emissions by 5.8 $MtCO_2$ eq, which would result in emissions 2.3 $MtCO_2$ eq. greater than the Kyoto burden sharing agreement.

Portugal's recently introduced measures in 2007 are estimated to contribute a further 1.56 $MtCO_2$eq to emission reductions in 2010. However these additional measures were not modelled in the general emission projections.

Changes in comparison with the 2006 submission

The most significant difference between the 2006 and 2007 submissions is the inclusion of Article 3.7 emissions in the base year emissions in the 2007 emission projections. This accounts for the base year emissions changing from 60 $MtCO_2$ eq. to 60.9 $MtCO_2$ eq. in the latest submission, with consequent changes in Portugal's Kyoto commitment targets for 2010.

With regards to flexible mechanisms, in both the 2006 and 2007 submissions Portugal estimated it would use flexible mechanisms under articles 6, 12 and 17 of the Kyoto Protocol to reduce its emissions in order to fulfil the gap to its Kyoto commitment.

[2] Only net emissions associated with Article 3.7 are included in the base year.