

Ireland

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1. SOURCES OF INFORMATION

Data on Policies and Measures and Projections submitted to the European Commission by Ireland in an Excel template intended to accompany national reports submitted under the Monitoring Mechanism, Decision 280/2004/EC (no report submitted). 31 May 2007.

Ireland's 4th National Communication submitted to the UNFCCC, April 2007.

Determining the share of national greenhouse gas emissions for emissions trading in Ireland 2008-2012, prepared for the Irish Government by ICF Consulting and Byrne O Cleirigh, March 2006.

Ireland's National Allocation Plan 2008-2012, as notified to the European Commission July 2006.

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

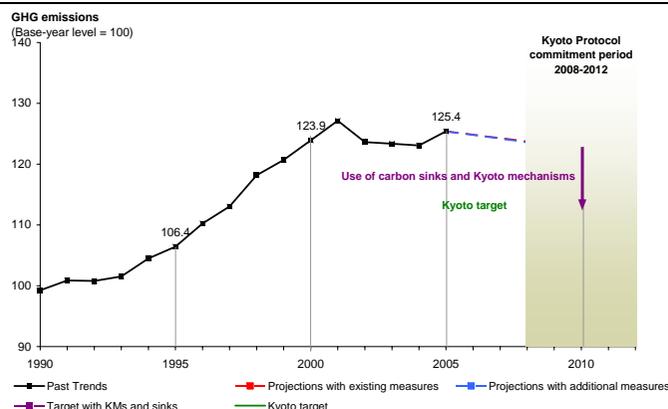
Base-year emissions of greenhouse gases are calculated using 1990 emissions for carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O) and 1995 emissions for fluorinated gases (SF₆, HFCs and PFCs).

Base-year data is as reported by Member States 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

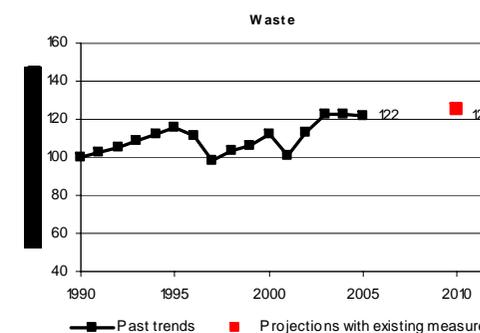
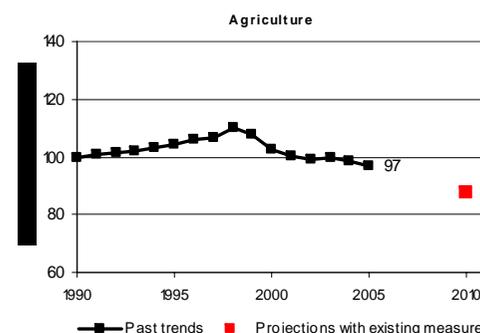
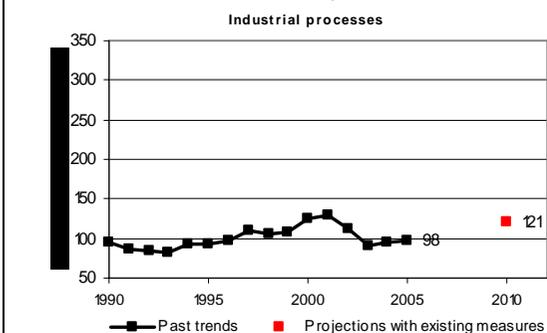
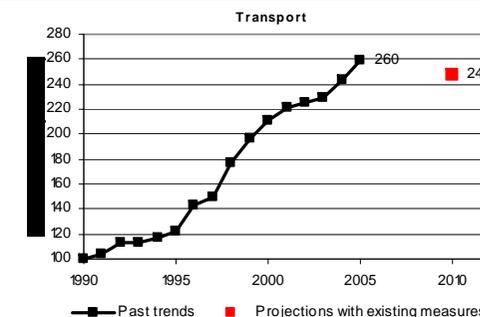
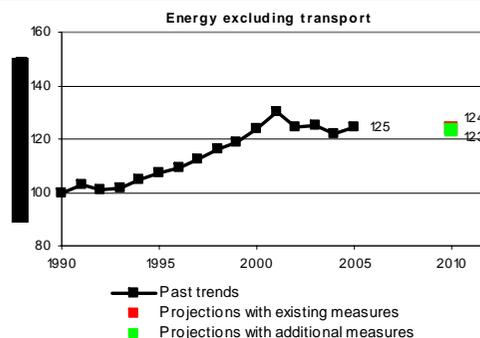
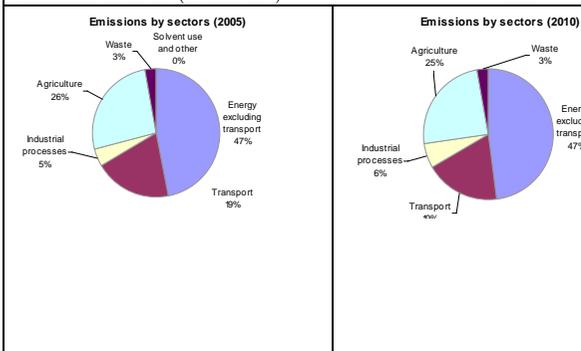
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Share in total EU-15 GHG emissions 2005	1.7 %
Emissions base year (initial report)	55.8 Mt
Emissions 2005	69.9 Mt
Emissions base year (for projections)	55.8 Mt
Projections 2010 with existing measures	68.4 Mt
Projections with additional measures	68.3 Mt
Kyoto target (absolute, based on latest inventory)	63.0 Mt
Kyoto target (% from base year)	+ 13.0 %
Change base year to 2005	+ 25.4 %
Change 2004-05	+ 1.9 %
Change base year to 2010 with existing measures	+ 22.6 %
Change base year to 2010 with additional measures	+ 22.4 %
Distance to linear target path 2005+8.0 (+15.6) percent points	
Use of Kyoto mechanisms	3.6 Mt
Sinks (Articles 3.3. and 3.4)	2.1 Mt
Emissions in 1990 (Article 3.7)	n.a.

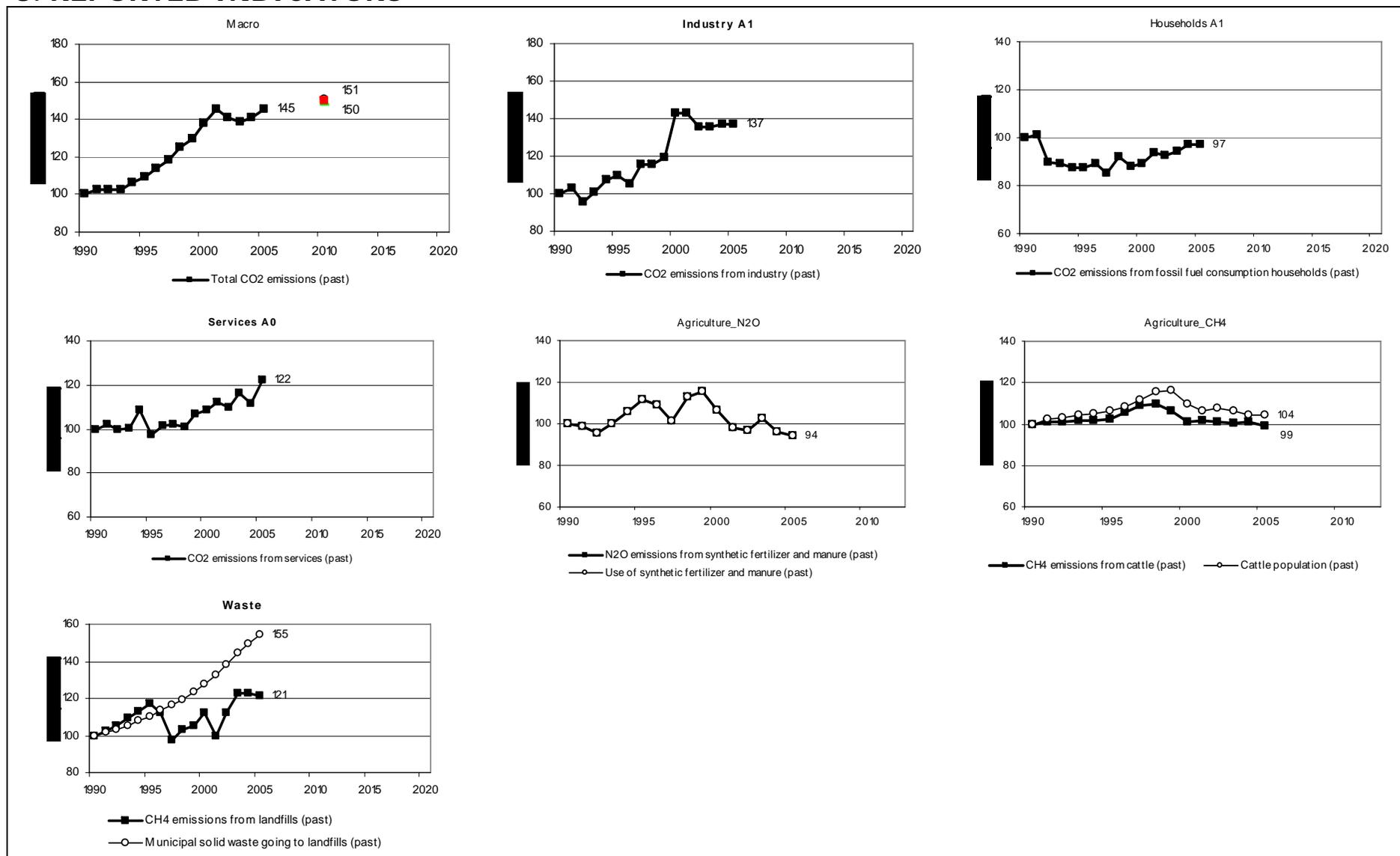


Past emissions: Ireland's GHG emissions were 1.9 % above those of 2004 and 25.4 % above base-year levels in 2005. The main factor for increasing emissions in 2005 compared to the previous year was growing fossil fuel combustion in road transport and in public electricity and heat production. Between 1990 and 2005, fossil fuel combustion both in road transport and in electricity and heat production was by far the largest contributor to emission increases.

Emission projections: Emissions in 2005 were three percentage points above the level projected in the 'with measures' scenario for 2010. With existing domestic measures, Ireland exceeds the Kyoto target by ten percentage points. In order to reach the Kyoto target, Ireland plans to purchase 3.6 Mt Kyoto units per year of the commitment period. Additionally, Ireland intends to make use of carbon sinks of 2.1 million tons per year.



3. REPORTED INDICATORS



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Priority Indicators		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Macro	Total CO ₂ emissions, kt	32,553	33,400	33,286	33,430	34,684	35,481	37,139	38,623	40,688	42,289	44,884	47,343	45,903	45,146	45,747	47,292
	GDP, Bio Euro (EC95)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	93	156
Macro B0	CO ₂ emissions from energy consumption, kt	30,238	31,162	31,137	31,300	32,309	33,181	34,780	35,945	38,155	39,799	41,949	44,038	42,889	42,667	43,091	44,603
	GDP, Bio Euro (EC95)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	93	156
Transport C0	CO ₂ emissions from passenger cars, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6,304	6,659
	Number of kilometres by passenger cars, Mkm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35,076	37,046
Industry A1	CO ₂ emissions from industry, kt	3,970	4,101	3,785	3,994	4,260	4,365	4,172	4,588	4,600	4,748	5,682	5,661	5,371	5,371	5,445	5,454
	Gross value-added total industry, Bio Euro (EC95)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50
Households A1	CO ₂ emissions from fossil fuel consumption households, kt	7,066	7,132	6,350	6,313	6,195	6,186	6,310	6,011	6,515	6,220	6,315	6,615	6,535	6,670	6,849	6,859
	Stock of permanently occupied dwellings, 1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,297	1,320
Services A0	CO ₂ emissions from fossil fuel consumption in commercial and institutional sector, kt	2,338	2,381	2,332	2,344	2,535	2,277	2,371	2,389	2,359	2,493	2,544	2,622	2,566	2,725	2,608	2,862
	Gross value-added services, Bio Euro (EC95)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55	62
Transformation B0	CO ₂ emissions from public and autoproducer thermal power stations, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15,012	15,282
	All products - output and autoproducer thermal power stations, PJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	198	198

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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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,102
	Freight transport on road, Mtkm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
Industry A1.1	Total CO ₂ emissions from iron and steel, kt	175	19	19	19	19	19	19	19	19	19	19	19	19	2	2	2
	Gross value-added - iron and steel industry, Bio Euro (EC95)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
Industry A1.2	Energy related CO ₂ emissions chemical industries, kt	411	324	329	352	378	380	369	391	409	428	482	495	467	442	434	412
	Gross value-added - chemical industry, Bio Euro (EC95)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14
Industry A1.3	Energy related CO ₂ emissions - glass pottery and building materials industry, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
	Gross value added - glass pottery and building materials industry, Bio Euro (EC95)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
Industry C0.1	Total CO ₂ emissions from iron and steel, kt	175	19	19	19	19	19	19	19	19	19	19	19	19	2	2	2
	Production of oxygen steel	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
Industry C0.2	Energy related CO ₂ emissions from glass, pottery and building materials, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,357
	Cement production, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,400

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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,317
	Number of km, of diesel-driven passenger cars, Mio km	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7,879
Transport (B0) (petrol)	CO ₂ emissions of petrol-driven cars, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,342
	Number of km, of petrol-driven passenger cars, Mio km	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29,167
Transport C0	CO ₂ emissions from passenger cars, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6,659
	Passenger transport by cars, Mpkm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
Transport E1	CO ₂ emissions from domestic air transport, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	108
	Domestic air passenger, Mio	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Industry A1.4	Energy related CO ₂ emissions food industry, kt	1,018	1,124	1,031	1,095	1,155	1,186	1,140	1,271	1,297	1,351	1,632	1,645	1,385	1,180	979	985
	Gross Value Added food, drink and tobacco industry, Mio EUR (EC95)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,985
Industry A1.5	Energy related CO ₂ emissions - paper and printing industry, kt	28	79	76	82	82	86	81	84	88	91	103	97	88	81	72	72
	Gross value added paper and printing industry, Mio EUR (EC95)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
Households A0	Surface area of permanently occupied dwellings, Mio m ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,406
	Specific CO ₂ emissions of households for space heating, t/m ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	129
Services B0	CO ₂ emissions from space heating in commercial and institutional, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,114
	Surface area of services buildings, Mio m ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
Transformation D0	CO ₂ emissions from public thermal power stations, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15,136
	All products output by public thermal power stations, PJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	195
Transformation E0	CO ₂ emissions from autoproducer, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
	All products output by autoproducer thermal power stations, PJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
Transformation	CO ₂ emissions from classical power production, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15,282
	All products output by public and autoproducer power stations, PJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	198
Transport	CO ₂ emissions from transport, kt	5,045	5,245	5,695	5,653	5,892	6,123	7,162	7,505	8,848	9,811	10,535	11,042	11,237	11,419	12,102	12,942
	Total final energy consumption from transport, PJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	181
Industry	Energy related CO ₂ emissions paper and printing industries, kt	28	79	76	82	82	86	81	84	88	91	103	97	88	81	72	72
	Physical output of paper, kt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	45
Industry	CO ₂ emissions from the industry sector	3,970	4,101	3,785	3,994	4,260	4,365	4,172	4,588	4,600	4,748	5,682	5,661	5,371	5,371	5,445	5,454
	Total final energy consumption from industry, PJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80
Households	CO ₂ emissions from households, kt	7,066	7,066	7,132	6,350	6,313	6,195	6,186	6,310	6,011	6,515	6,220	6,315	6,615	6,535	6,670	6,849
	Total final energy consumption from households, PJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	93

4. OVERVIEW OF CCPM IMPLEMENTATION IN IRELAND

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

Sector	CCPM	Status
Cross-cutting	Kyoto Protocol project mechanisms 2004/101/EC	N
Cross-cutting	Emissions trading 2003/87/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	B
Energy supply	Internal electricity market 2003/54/EC	N
Energy supply	Promotion of electricity from RE sources 2001/77/EC	R
Energy supply	Internal market in natural gas 98/30/EC	N
Energy supply	Emissions from large combustion plants 88/609/EEC	N
Energy consumption	Directives on energy labelling of appliances	N
Energy consumption	End-use efficiency and energy services 2006/32/EC	N
Energy consumption	Ecodesign requirements for energy-using products 2005/32/EC	N
Energy consumption	Energy performance of buildings 2002/91/EC	N
Energy consumption	Eco-management & audit scheme (EMAS) EC 761/2001	
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 (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.	
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	N
Agriculture	Transition to rural development support No 2603/1999	N
Agriculture	Agricultural production methods compatible with environment Regulation (EEC) No 2078/92	N
Agriculture	Aid scheme for forestry measures in agriculture (Regulation (EEC) No 2080/92)	N
Agriculture	Emission by engines to power agricultural or forestry 2000/25/EC	N
Agriculture	Pre-accession measures for agriculture and rural development Regulation (EC) No 1268/1999	
Waste	Directive on waste 2006/12/EC	R
Waste	Landfill directive 1999/31/EC	N

Waste	Packaging and packaging waste (Directive 94/62/EC, 2004/12/EC, 2005/20/EC)	N
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Legend

New national PAM implemented after CCPM was adopted

Existing national PAM **re-enforced** by CCPM

National PAM already in force **before** CCPM was adopted

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	+++	Clear description
Objectives of policies	+++	Good description of objectives
Which greenhouse gases?	+++	Specifies which gases each PAM deals with
Status of Implementation	++	Status specified for each PAM, but inconsistent between Monitoring Mechanism Excel submission and NAP report.
Implementation body specified	+++	Authorities specified for each PAM
Quantitative assessment of implementation	+++	Nearly all PAMs quantified for 2010 and some for 2020.
Interaction with other policies and measures discussed	+	CCPM linkages given.

Table 3. Information provided on projections

Category of Information	Level of information provided	Comments
Scenarios considered		With measures (WM) and with additional measures (WAM).
Expressed relative to base year	+++	Relative to 1995 for F-gases, 1990 other gases.
Starting year	2004	
Split of projections	+++	Split by gases and full list of sectors. Base year is split across the 3 F-gases but projections are with F-gases together. CH4 and N2O are included in CO2 projections for the energy, transport and industrial processes sectors.
Presentation of results	+++	Clearly presented in Monitoring Mechanism Excel submission as per template.
Description of model (level of detail, approach and assumptions)	++	Some description of models and assumptions.
Sensitivity analysis (key inputs to model / high, central and low projections scenarios / robustness of model)	+++	Sensitivity analysis of five variables, including three scenarios (low, central, high) for the price of EU ETS Allowances.
Discussion of uncertainty	++	Discussed for most sectors.
Details of parameters and assumptions	+	Some provided

6. ASSESSMENT OF POLICIES AND MEASURES

Table 4. Summary of the effect of policies and measures included in the 2010 projections (Mt CO₂-eq.)

	With measures	With additional measures
Energy (total, excluding transport)	2.60	0.12
Energy supply	1.69	0.00
Energy – industry, construction	0.18	0.00
Energy – other (commercial, residential, agriculture)	0.72	0.12
Transport (energy)	2.29	0.00
Industrial processes	0.02	0.00
Waste	1.20	0.00
Agriculture	2.40	0.00
Cross-sectoral	3.02	0.00
Total (excluding LULUCF)	8.51	0.12

Source: Excel tables submitted under the Monitoring Mechanism. The NAP report differs slightly in assigning some policies and measures to "with additional measures" where they are described as "with measures" in the Monitoring Mechanism submission.

Table 5. Detailed information on policies and measures

Policies and measures in the “with measures” projection

Sector	Projection		Name	Type	GHG	Status	Absolute Reduction			Costs
	Scenario	[kt CO ₂ eq. p.a.]					[EUR/t]			
		2005					2010	2020		
Cross-cutting	WM		EU Emissions Trading Scheme	Economic	CO ₂	implemented		3,020		
Energy consumption	WM		Planning Exemptions for micro-renewables	Planning	CO ₂	implemented				
Energy supply	WM		CHP Deployment Programme	Economic	CO ₂	implemented		162		
Energy supply	WM		Renewable Energy Feed-In Tariff	Economic	CO ₂	implemented		1,470	3,260	
Energy supply	WM		Natural Gas Transmission and Distribution	Economic	CH ₄	implemented		60		
Energy supply	WM		Electricity Infrastructure Development Programme	Economic	CO ₂	implemented				
Energy supply	WM		Electricity Demand Side Management Programmes	Economic	CO ₂	implemented				
Energy consumption	WM		Building Regulations 2002 and 2005	Planning	CO ₂	implemented		405		
Energy consumption	WM		Residential Density Guidelines	Information	CO ₂	implemented				
Energy consumption	WM		Building Energy Ratings	Information	CO ₂	implemented				
Energy consumption	WM		Greener Homes Scheme	Economic	CO ₂	implemented		37	52	

Energy consumption	WM	Planning Exemptions for micro-renewables	Planning	CO ₂	implemented		
Energy supply							
Energy consumption	WM	Power Of One	Information	CO ₂	implemented		
Energy consumption	WM	Large Industry Energy Network	Education	CO ₂	implemented	145	
			Information				
			Voluntary/negotiated agreement				
Energy consumption	WM	Energy Agreements Programme	Education	CO ₂	implemented	37	
			Information				
			Voluntary/negotiated agreement				
Energy consumption	WM	Commercial Bioheat Scheme	Economic	CO ₂	implemented	160	224
Energy consumption	WM	CHP Deployment Programme	Economic	CO ₂	implemented	162	
Energy supply							
Transport	WM	Vehicle Efficiency	Voluntary/negotiated agreement	CO ₂	implemented	480	
Transport	WM	Mineral Oil Tax Relief for Biofuels	Fiscal	CO ₂	implemented	270	
Transport	WM	Dublin Transport Infrastructure	Economic	CO ₂	implemented	270	
			Planning				
Transport	WM	National Car Test	Regulatory	CO ₂	implemented		
Transport	WM	Changes to Motor Tax and Vehicle Registration Tax	Fiscal	CO ₂		50	
Transport	WM	Modal Shift	Economic	CO ₂	implemented	510	
			Information				
			Planning				
Transport	WM	Alignment of transport	Economic	CO ₂	implemented	83	

Transport	WM	investment with spatial planning Biofuels Obligation Scheme	Planning Regulatory	CO ₂		500	878
Transport	WM	Efficient Driving Awareness Campaign	Regulatory	CO ₂		130	
Industrial Processes	WM	F-Gases Regulation	Regulatory	HFC PFC SF ₆		24	
Agriculture	WM	Implementation of CAP Reform (Luxembourg Agreement)	Economic Regulatory	CH ₄ N ₂ O	implemented	2,400	
Agriculture Forestry	WM	REPS 4		CH ₄ CO ₂ N ₂ O	implemented		
Waste	WM	Diversion of biodegradable waste from landfill	Economic Education Information Planning Regulatory	CH ₄	implemented	700	
Waste	WM	Landfill Gas Capture	Economic Regulatory	CH ₄	implemented	500	
						11,575	because some are counted twice

Policies and measures in the “with additional measures” projection

<u>Sector</u>	Projection Scenario	Name	Type	GHG	Status	Absolute Reduction [kt CO ₂ eq. p.a.]			<u>Costs</u>
						2005	<u>2010</u>	2020	[EUR/t]
Cross-cutting	WAM	Climate Change Awareness Campaign	Education	CH ₄	planned				
			Information	CO ₂					
				N ₂ O					
				PFC					
				SF ₆					
Energy consumption	WAM	Levy on Incandescent light bulbs	Economic	CO ₂	planned				
Energy consumption	WAM	Building Regulations 2008	Regulatory	CO ₂	planned		120		
Energy consumption	WAM	Smart Metering	Economic	CO ₂	planned				
			Information						
Transport	WAM	Transport Demand-Side Management Measures	Economic	CO ₂	planned				
			Planning						
			Regulatory						

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

7. EVALUATION OF PROJECTIONS

Tables 6 to 10 are sourced from the Excel tables submitted under the Monitoring Mechanism.

Table 6. Summary of projections by gas in 2010 (Mt CO₂-eq.)

	Base year	With measures	With additional measures
Carbon dioxide (excl. LULUCF)	32.56	49.04	48.92
Methane	13.22	11.94	11.94
Nitrous oxide	9.80	6.75	6.75
F gases	0.20	0.68	0.68
Total (excl. LULUCF)	55.78	68.41	68.29
% change relative to base year (excl. LULUCF)		22.6%	22.4%

Table 7. Summary of projections (6 gas basket) by sector in 2010 (Mt CO₂-eq.)

	Base-year	with measures	% change relative to base-year	with additional measures	% change relative to base-year
Energy (total, excluding transport)	26.51	32.82	24%	32.70	23%
Energy supply	11.81	16.00	36%	16.00	36%
Energy – industry, construction	4.25	5.90	39%	5.90	39%
Energy – other (commercial, residential, agriculture)	10.45	10.93	5%	10.81	3%
Transport (energy)	5.16	12.77	147%	12.77	147%
Industrial processes	3.41	4.13	21%	4.13	21%
Waste	1.46	1.83	25%	1.83	25%
Agriculture	19.24	16.87	-12%	16.87	-12%
Total (excl. LULUCF)	55.78	68.41	23%	68.29	22%

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 (SF ₆ , 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)	25.35	32.82	32.70	0.27	0.00	0.00	0.89	0.00	0.00	0.00	0.00	0.00
Transport (energy)	5.04	12.77	12.77	0.04	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00
Industrial processes	2.18	3.45	3.45	0.00	0.00	0.00	1.04	0.00	0.00	0.20	0.68	0.68
Waste	0.00	0.00	0.00	1.35	1.83	1.83	0.11	0.00	0.00	0.00	0.00	0.00
Agriculture	0.00	0.00	0.00	11.56	10.11	10.11	7.68	6.75	6.75	0.00	0.00	0.00
Total (excl. LULUCF)	32.56	49.04	48.92	13.22	11.94	11.94	9.80	6.75	6.75	0.20	0.68	0.68

Figure 1. Share by sector of 2010 greenhouse gas emissions according to the “With additional measures” projections

Table 9. Summary of projections (6 gas basket) in 2010, 2015 and 2020 (Mt CO₂-eq.)

	Base-year*	2010	2010 % of base- year level	2015	2015 % of base- year level	2020	2020 % of base- year level
Total (excl. LULUCF)	55.8	68.3	122.4%	69.8	125.2%	68.5	122.8%

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

	Emissions in MtCO ₂ -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	53.4	55.8	55.781*	100%
Kyoto Commitment/burden sharing	60.4	63.0	63.032	13.0%
With existing P&Ms projections	71.3	72.3	68.410	122.6%
Gap (-ve means overachievement of target)	10.9	9.3	5.378	9.6%
With additional P&Ms projections	71.3	72.3	68.290	122.4%
Remaining gap	10.9	9.3	5.258	9.4%
Effect of flexible mechanisms	3.7	3.6	3.607	6.5%
Remaining gap (with use of flexible mechanisms)	7.2	5.7	1.651	3.0%

Above table excludes LULUCF. LULUCF will be covered in the main report, based on the questionnaire submissions.

Source for 2005 data is 'Determining the Share of National Greenhouse Gas Emissions for Emissions Trading in Ireland', Department of the Environment, Heritage and Local Government (DEHLG), Ireland. Source for 2006 data is 'Determining the Share of National Greenhouse Gas Emissions for Emissions Trading in Ireland 2008-2012' March 2006, ICF/BOC for the DEHLG.

* 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 (55.780 MtCO₂.eq). This data is currently undergoing a review procedure by UNFCCC and is therefore subject to change.

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

Table 11 provides a comparison of projections in the Monitoring Mechanism submission and National Allocation Plan for 2008-2012 (NAP 2). The difference between the NAP and Monitoring Mechanism projections is due to the adoption of additional measures since the submission of Ireland's NAP to the Commission in July 2006. The Monitoring Mechanism projections include a number of new measures in both the 'with measures' and 'with additional measures' scenarios, as reported in the National Climate Change Strategy published in April 2007. In summary, the projections for both submissions are consistent and are based on the report *Determining the share of national greenhouse gas emissions for emissions trading in Ireland 2008-2012*, but the policies and measures have been updated.

	Monitoring Mechanism projections	NAP 2 projections	Difference
Energy sector	32.82 ^a	36.52 ^b	--
Energy sector included in EU ETS	--	22.32 ^c	--
Industry sector	4.13 ^d	4.04 ^e	--
Industry sector included in EU ETS	--	3.31 ^f	--
Total Energy & Industry	36.9	40.56	109.8%

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

^b Included are all GHG emissions from "Energy generation" (which includes energy use by industry), "Commercial, 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, 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

Overview of modelling approach

Annex 3 of the Fourth National Communication and section 3 of the *Determining the share of national greenhouse gas emissions for emissions trading in Ireland 2008-2012* report set out the modelling approach for the different sectors and gases, with a discussion of the models' strengths, weaknesses and synergies. Of these seven models, the NAP report refers to three: the overarching energy model linked to HERMES macroeconomic model (by ESRI), the Integrated Power Model for the power generation sub-sector (by ICF Consulting), and the CARBWARE model for land use change and forestry (by COFORD).

The NAP report and *Determining the share of national greenhouse gas emissions for emissions trading in Ireland 2008-2012* report also describe some of the macroeconomic and other assumptions of the models.

Sensitivity analysis

Sensitivity analysis for projections was presented in the report *Determining the share of national greenhouse gas emissions for emissions trading in Ireland 2008-2012*. This analysis included the following five scenarios: 1) no additional measures in the non-ETS sectors, 2) allowance prices of €20 and €30/tCO_{2e}, 3) an unregulated power market, 4) higher transport sector emissions and 5) delayed adoption of abatement options in the cement sector.

Details of the uncertainty assessment

The main uncertainties in each sector are discussed in the report *Determining the share of national greenhouse gas emissions for emissions trading in Ireland 2008-2012*.

9. PROJECTION INDICATOR REPORTING

No indicators were reported.

10. REPORTING OF PARAMETERS ON PROJECTIONS

Mandatory parameters were reported relatively comprehensively for the economic, energy and waste sectors for the years 2005, 2010, 2015 and 2020. Beyond this, numbers of dwellings are reported for the buildings sector, livestock numbers are reported for agriculture and areas of managed forest are provided in forestry sector. Notes describing the methodologies used for the industry and transport sectors are provided.

No recommended parameters were reported.

Table 12. 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 ₂ intensity of GDP, t/Euro million					Total CO ₂ emissions, kt GDP, bio Euro (EC95)				
2	Transport C0	CO ₂ emissions from passenger cars, kt Number of kilometres by passenger cars, Mkm									
3	Transport D0	CO ₂ emissions from freight transport (all modes), kt Freight transport (all modes), Mtkm									
4	Industry A1	Energy related CO ₂ intensity of industry, t/Euro million					CO ₂ emissions from fuel consumption industry, kt Gross value-added total industry, Bio Euro (EC 95)				
5	Households A1	Specific CO ₂ emissions of households, t/dwelling					CO ₂ emissions from fossil fuel consumption households, kt Stock of permanently occupied dwellings, 1000				
6	Services A0	CO ₂ intensity of the services sector, t/Euro million					CO ₂ emissions from fossil fuel consumption services, kt gross value-added services, bio Euro (EC95)				
7	Transformation B0	Specific CO ₂ emissions of public and autoproducer power plants, t/TJ					CO ₂ emissions from public and autoproducer thermal power stations, kt all products-output by public and autoproducer thermal power stations, PJ				
8	Agriculture	Specific N ₂ O emissions of fertilizer and manure use, kg/kg					N ₂ O emissions from synthetic fertilizer and manure use, kt use of synthetic fertiliser and manure, kt nitrogen				

9	Agriculture	Specific CH ₄ emissions of cattle production, kg/head					CH ₄ emissions from cattle, kt				
							cattle populations, 1000 head				
10	Waste	Specific CH ₄ emissions from landfills, kt/kt					CH ₄ emissions from landfills, kt				
							Municipal solid waste going to landfills, kt				

Table 13. List of parameters on projections (Annex IV of Implementing Provisions¹)

1. Mandatory parameters on projections	units	2005	2010	2015	2020	Member state notes
Assumptions for general economic parameters						
GDP (value at given years)	Bio Euro 2000 basis	108.8	143.3	155.5	181.9	GDP at Market Prices (€bl) 1995 constant prices
GDP growth rate						5.3% pa until 2011. Source ESRI Medium Term Review November 2005
Population growth	1000 people	4131	4423	4746	5021	Source: Central Statistics Office (CSO)
Population growth rate and base year	% 2005 value	100%	107%	115%	122%	Source: CSO
International coal prices at given	€ per GJ	2.64	2.22		2.22	2020 figure is average 2010-2020 figure. Source: ICF Consulting, 2005 constant prices
International oil prices at given	€ per GJ	10.06	7.65		6.92	2020 figure is average 2010-2020 figure. Source: ICF Consulting, 2005 constant prices
International gas prices at given	€ per GJ	5.88	5.61		4.72	2020 figure is average 2010-2020 figure. Source: ICF Consulting, 2005 constant prices
Assumptions for the energy sector						ICF-BOC energy power sector emissions computations not estimated in this manner. ICF Integrated Power Model was used to determine emissions from energy sector (see model description in ICF-BOC report, which includes key

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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	units	2005	2010	2015	2020	Member state notes
						assumptions. Electricity demand is used as an input to the IPM Model and the values are based on ESB Generation Adequacy Report 2005 to 2011.
Total gross inland consumption (PJ)						
Total electricity production by fuel type		23.06	29.31	32.42	36.35	
Oil (fossil)	TWh	1.62	1.63	1.60	1.63	Output from ICF's Integrated Planning Model (IPM). Figures in TWh.
Gas (fossil)	TWh	13.01	16.86	19.19	22.11	
coal	TWh	6.43	6.43	6.43	6.43	
Renewable	TWh	1.995	4.379	5.194	6.171	
Nuclear (IEA definition for energy calc.)	TWh					
Other	TWh	3.24	3.14	3.24	3.02	'Other' includes electricity from pumped storage, peat, and from waste. Electricity imports from Northern Ireland are not estimated separately as the basis for emissions in ICF-BOC report.
Energy demand by sector	Ktoe	8012.8	8835.9	9306.1	9898.6	All figures for energy demand by sector are in Ktoe. Figures for Energy Industries from IPM.
Energy Industries	Ktoe	4674.6	5289.4	5586.8	5944.6	
Oil (fossil)	Ktoe	415.8	415.8	415.8	415.8	
Gas (fossil)	Ktoe	2545.2	3132.4	3444.9	3805.2	
coal	Ktoe	1638	1670.7	1670.7	1670.7	
Renewables	Ktoe	75.6	70.5	55.4	52.9	
Nuclear (IEA definition for energy calc.)	Ktoe					
Other	Ktoe	856.8	839.1	844.2	834.1	'Other' includes electricity from electricity and peat
Industry		0	0	0	0	Figures for industry not available
Oil (fossil)						
Gas (fossil)						
coal						
Renewables						
Other						

1. Mandatory parameters on projections	units	2005	2010	2015	2020	Member state notes
Commercial (Tertiary)	Ktoe	1254.5	1410.5	1505.4	1578.5	Figures from ESRI November 2005 Mid-Term Review (High growth to 2012 Low growth 2012-20)
Oil (fossil)	Ktoe	826.8	899.3	962.5	1011.2	
Gas (fossil)	Ktoe	389.7	473.4	505.2	529.7	
coal	Ktoe	36	36	36	36	
Renewables	Ktoe	2	1.8	1.7	1.6	
Other	Ktoe	782.1	975.1	1052.2	1097.6	'Other' includes electricity from electricity and peat
Residential	Ktoe	2083.7	2136	2213.9	2375.5	Figures from ESRI November 2005 Mid-Term Review (High growth to 2012 Low growth 2012-20)
Oil (fossil)	Ktoe	1125.9	1028.7	995.6	1102.8	
Gas (fossil)	Ktoe	647.9	886.8	1053	1142.8	
coal	Ktoe	267.5	181.2	128.9	96.1	
Renewables	Ktoe	42.4	39.3	36.4	33.8	
Other Please Specify in Column I	Ktoe	925.9	979	1002.3	967.8	'Other' includes electricity from electricity and peat
Transport	Ktoe	0	0	0	0	
Oil (fossil)						
Gas (fossil)						
Renewables						
Other Please Specify in Column I						
Assumptions on weather parameters						None specified
Assumptions for the industry sector						
<i>For Member States using macroeconomic models:</i>						This methodology was not used for industrial emissions for derivation of either energy-related or process emissions. Instead a bottom-up survey of major emitters was used and based on plant specific data – this bottom up methodology for industry when combined with the power sector modelling is considered to cover 97% of emissions from participants in ETS and includes both energy and process emissions from industry and the whole of the electricity generation sector.

1. Mandatory parameters on projections	units	2005	2010	2015	2020	Member state notes
The share of the industrial sector in GDP and growth rate						
<i>For Member States using other models:</i>						<p>This methodology was not used to any significant extent. A bottom-up methodology was used for the most energy intensive plants at plant level. An emissions growth index of 2.4% per year from 2003 to 2012 was used for Food and Drinks sector whose emissions are ~ 1 MT CO₂e. The sector has 33 sites in ETS in a variety of different subsectors dairies, brewing etc and the sector projects a 2.4 % per annum growth in energy related CO₂ emissions before any additional measures. For smaller non-ETS industries (total CO₂ emissions in 2003 of ~ 0.9 MT) the annual growth rate of 3.5% was applied to 2003 emissions values from 2003 to 2012 in line with macro economic projections of energy emissions growth in services sector based on ESRI macroeconomic model.</p>
The production index for industrial sector						
Assumptions for the transport sector						<p>Neither of these indices were used as the basis of transport emissions. The National Roads Authority has published growth indices for total kms travelled by private cars (and LGVs in one index) and for total kms by HGVs in a separate index. These indices were published in 2003 for each year out to 2040 and these were used to provide projections of kms of passenger cars and HGV (i.e. kms travel distances) from 2002 to 2040. These indices were used to project transport emissions by a pro rata on the verified 2003 national emissions and they assume no change in the average number of kms travelled by private cars over the period. The resultant values for emissions from cars and HGVs were then adjusted to account for potential savings from engine efficiency gains in private cars and infrastructural improvements based inter alia on GHG reductions cited in the EIS's for major projects such as the new Dublin Port Tunnel due to be commissioned in 2006. With Measures emissions from road transport were also reduced by an additional 250 kt CO₂ pa in the years</p>

1. Mandatory parameters on projections	units	2005	2010	2015	2020	Member state notes
						2008-2012 annum to account for savings due to mineral oil tax relief for biofuels. Estimates of emissions were subsequently revised upwards in line with European Commission Decision on Ireland's National Allocation Plan for 2008-2012
<i>For Member States using macroeconomic models:</i>						
The growth of transport relative to GDP						
<i>For Member States using other models:</i>						
The growth of passenger person kilometres						
The growth of freight tonne kilometres						
Assumptions for buildings (in residential and commercial or tertiary sector)						
<i>For Member States using macroeconomic models:</i>						
The level of private consumption (excluding private transport)						
The share of the tertiary sector in GDP and the growth rate						
<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						
The number of dwellings	1000 dwellings	1435	1657	1859	1989	
Number of employees in the	1000					

1. Mandatory parameters on projections	units	2005	2010	2015	2020	Member state notes
tertiary sector	employees					
Assumptions in the agriculture sector						
<i>For Member States using macroeconomic models:</i>						
The share of the agriculture sector in GDP and relative growth						
<i>For Member States using other models:</i>						
Livestock numbers by animal type						
Total cattle	1000 heads	6999	6173	5876	5876	
Dairy cattle	1000 heads	1357	1262	1192	1192	
Non-dairy cattle	1000 heads	5642	4911	4684	4684	
Sheep	1000 heads	6636	5960	5669	5669	
Swine	1000 heads	1760	1618	1574	1574	
Poultry	1000 heads	16328	16337	16345	16345	
Other	1000 heads					
The area of crops by crop type						
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	kt	3267	3849	3743	3253	

1. Mandatory parameters on projections	units	2005	2010	2015	2020	Member state notes
The organic fractions of municipal solid waste	%	62	60	62	62	
Municipal solid waste disposed to landfills	%	35	18	5	1	
Municipal solid waste disposed incinerated	%	0	9	15	20	
Municipal solid waste disposed composted	%	4	10	12	13	
Municipal solid waste disposed to landfills	kt	114345	69282	18715	3253	
Assumptions in the forestry sector						
Forest definitions						
Areas of:						
managed forests	hectares	252000	322000	392000	462000	
unmanaged forests						

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				
<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				
Assumptions for buildings (in residential and commercial / tertiary sector)				
<i>For Member States using macroeconomic models:</i>				
Share of tertiary and household sectors in GDP				
Rate of improvement of energy intensity				
<i>For Member States using other models:</i>				
Number of households				
Number of new buildings				
Rate of improvement of energy efficiency (1990 = 100)				
Assumptions for the transport sector				
<i>For Member States using econometric models:</i>				
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				
<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				

11. COUNTRY CONCLUSIONS

Without considering the effects of LULUCF, Ireland is predicted to exceed its Kyoto target by 1.65 MtCO₂-eq in the “with additional measures” scenario and including the use of flexible mechanisms. Compared with the 2006 report, the projections are around 4 MtCO₂-eq lower and the base year remains the same, meaning that Ireland is now predicted to be closer to its Kyoto target in 2010.

Ireland’s policies and measures and projections were clearly reported in the Excel Monitoring Mechanism submission. However some inconsistencies were noted with the NAP report, including allocation of measures to “with measures” and “with additional measures” scenarios and the total projections in these scenarios. The reporting could also be improved by providing a sensitivity analysis, uncertainty assessment, projection indicators and a more complete set of projection parameters.