



An Phríomh-Oifig Staidrimh
Central Statistics Office

Environmental Indicators Ireland 2014

Published by the Stationery Office, Dublin, Ireland.

To be purchased from the:

Central Statistics Office, Information Section, Skehard Road, Cork.

Price €5.00

May 2014

© Government of Ireland 2014

Material compiled and presented by the
Central Statistics Office.

Reproduction is authorised, except for commercial
purposes, provided the source is acknowledged.

ISSN 2009-4698

ISBN 978-1-4064-2751-6

Cover photographs (clockwise from top): Achill Water Table, courtesy of Gerry Walker; Farm, near Mitchelstown, Co. Cork, courtesy of John Doherty, Environmental Protection Agency; Windmill, Cork Harbour, courtesy of David Lester; Grand Canal Basin, courtesy of Bronwyn Molony; Biofuel production, courtesy of Green Biofuels Ireland Ltd.

Contents

Page

Introduction.....	4
Main findings.....	5

Domains

1.	Air.....	7
2.	Greenhouse Gases and Climate Change.....	17
3.	Water.....	23
4.	Land Use.....	31
5.	Energy.....	41
6.	Transport.....	51
7.	Waste.....	59
8.	Biodiversity and Heritage.....	67
9.	Environmental Economy.....	73

Appendix.....	81
----------------------	-----------

Definitions.....	82
------------------	----

Introduction

This is the second edition of Environmental Indicators Ireland, which is published on a biennial basis. The National Statistics Board (NSB) 2009-2014 Strategy for Statistics recommended that the CSO support the expansion of evidence-based policy-making by developing a set of indicators based around environmental data. The NSB requested that the selected indicators should be consistent with international statistical concepts and facilitate international comparison.

A total of 90 indicators covering nine separate domains have been selected for this publication. The indicators are updated from the 2012 report to show the most recent data available. In most cases, the same indicators are shown as were used in the 2012 report. Many of the indicators are presented in a time-series format for Ireland, while the international context is shown by comparing Ireland with other EU Member States for the latest year for which data are available.

The environment area is wide-ranging and the nine domains cover areas as diverse as greenhouse gases, waste, and biodiversity. There are a large number of EU legal requirements to compile environment related statistics in areas such as energy balances, waste materials, special habitats, and material flow accounts as part of the wider European Strategy of Environmental Accounting. The environmental economic accounts provide an integrated framework for data, indicators and analysis. Integrating environment-related data with the national accounts framework makes the resulting indicators more consistent among themselves and permits aligning with the social aspects of sustainable development and the employment aspects of green growth. This report attempts to bring together the most important indicators from these domains to facilitate easy access for users.

The CSO wishes to thank: Birdwatch Ireland; Coillte; Department of Agriculture, Food and the Marine; Department of Arts, Heritage and the Gaeltacht; Department of the Environment, Community and Local Government; Department of Transport, Tourism and Sport; DKM Economic Consultants; Environmental Protection Agency; Forest Service; Met Éireann; Sea Fisheries Protection Authority, Sustainable Energy Authority of Ireland and University College Dublin for providing us with data and technical advice on the most appropriate indicators for Ireland.

Photographs in this publication are supplied courtesy of Adrian Redmond; Gerry Walker; Bronwyn Molony; David Lester; Stephen Treacy; Ciarán Counihan; John Doheny, Jonathan Derham and Kevin Delany, Environmental Protection Agency; Forest Service; Photographic Unit, National Monuments Service, and Green Biofuels Ireland Ltd.

Main findings

Air

- Air quality in Ireland has improved quite considerably over the last decade. In 2012, emissions for three of the four pollutants (sulphur dioxide, ammonia and non-methane volatile organic compounds) under the National Emission Ceiling (NEC) Directive were below their respective emissions ceilings. Emissions of nitrogen oxides (NO_x) were 10% above the prescribed ceiling in 2012.
- Benchmarking EU Member States 2011 emissions, in comparison with the 2010 NEC Directive targets, showed Ireland ranked 17th for sulphur dioxide, 21st for nitrogen oxides, 17th for ammonia, and 20th in terms of NMVOC emissions.

Greenhouse Gases and Climate Change

- Greenhouse gas emissions have fallen since 2009, but in 2012 Ireland was 2.1 million tonnes CO₂ eq. above the five years average limit set by the Kyoto Protocol.
- Energy (22%), agriculture (32%), and transport (19%) accounted for 73% of Ireland's greenhouse gas emissions in 2012.
- Ireland's greenhouse gas emissions on a per capita basis were the fourth highest in the EU in 2011.

Water

- Ireland ranked 18th among EU Member States in terms of compliance with bathing water quality guide values in 2012.
- In 2012, 99.9% of public drinking water supplies in Ireland and 98.2% of group water supplies complied with E.coli standards.
- 94% of urban waste water in Ireland received secondary treatment in 2012.

Land Use

- In 2010, 10.3% of Ireland's land was covered by forestry. This was the second lowest proportion of forest cover in the EU.
- Although the area farmed organically increased by 180% between 1997 and 2012, Ireland had the second lowest percentage of agricultural land designated as organic in the EU in 2012.
- Ireland had the fourth largest cattle herd in the EU in 2013 with 7.2% of total cattle numbers.
- House completions in Ireland peaked in 2006 with 93,400 completions and have since fallen to 8,300 in 2013. In 2013, there were 1.8 house completions per 1,000 of population in Ireland.

Energy

- Ireland's primary energy requirement increased from 9.5 million tonnes of oil equivalent in 1990 to 16.4 million in 2008 but then decreased to 13.2 million in 2012.
- Transport accounted for 39% of Ireland's final energy consumption in 2012.
- Renewable energy accounted for 3% of Ireland's total final energy consumption in 2012.
- Ireland had an imported energy dependency ratio of 85% in 2012, the fourth highest in the EU.

Transport

- There has been a substantial increase in the number of low emission vehicles licensed since the introduction in 2008 of motor taxation rates based upon emissions. In 2013, 93% of new private vehicles licensed were in emission bands A and B.
- There was a substantial fall in the number of air passengers travelling through Irish airports from 29.2 million in 2008 to 22.8 million in 2010. This has increased again to 23.6 million in 2012.
- The proportion of women aged 15 or over at work who drove to work increased from 27% in 1986 to 66% in 2011. In contrast the corresponding proportions for men were 42% in 1986 and 55% in 2011.

Waste

- The amount of municipal waste generated fell from 800 kilograms per capita in 2006 to 615 kgs per capita in 2011.
- Municipal waste sent to landfill was 1.3 million tonnes in 2011 which was an improvement of 33% on the two million tonnes in 2007.
- In 2010, there were 10 kgs per capita of electrical waste collected from Irish households, which is more than twice the 4 kgs specified in the EU Waste Electrical and Electronic Equipment (WEEE) directive.

Biodiversity and Heritage

- Ireland had the smallest percentage of land in the EU designated as a Special Protected Area, under the EU Birds Directive, at only 3% of total land area in 2010.
- Ireland at 11% had less land designated as a Special Protected Area under the EU Habitats Directive than the EU average of 14% in 2010.

Environmental Economy

- Revenue from environmental related taxes fell by €240 million between 2008 and 2011.
- Ireland's Domestic Material Consumption fell by over 50% between 2007 and 2011, due mainly to the fall in construction activity.
- In 2013, Ireland imported €6.9 billion of fuel.

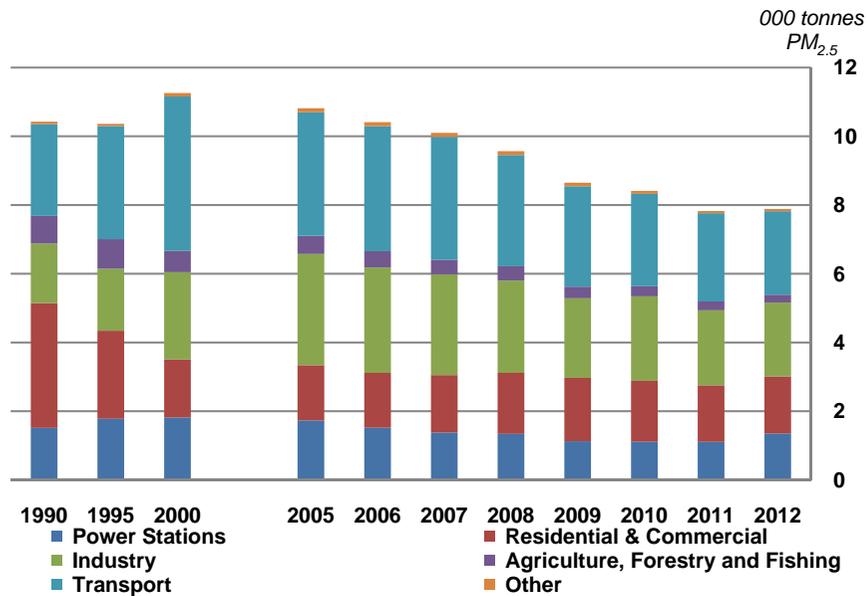
1. Air



Contents

		Source
1.1	Ireland: Particulate matter (PM _{2.5}) emissions 1990-2012	Environmental Protection Agency
1.2	EU: Particulate matter (PM _{2.5}) emissions 2011	European Environment Agency
1.3	Ireland: Sulphur dioxide emissions 1990-2012	Environmental Protection Agency
1.4	EU: Sulphur dioxide emissions 2011 and NEC 2010 ceiling	European Environment Agency
1.5	Ireland: Nitrogen oxides emissions 1990-2012	Environmental Protection Agency
1.6	EU: Nitrogen oxides emissions 2011 and NEC 2010 ceiling	European Environment Agency
1.7	Ireland: Ammonia emissions 1990-2012	Environmental Protection Agency
1.8	EU: Ammonia emissions 2011 and NEC 2010 ceiling	European Environment Agency
1.9	Ireland: NMVOC emissions 1990-2012	Environmental Protection Agency
1.10	EU: NMVOC emissions 2011 and NEC 2010 ceiling	European Environment Agency
1.11	Ireland: Atmospheric deposition rates 1991-2012	Met Éireann, University College Dublin and Coillte
1.12	Ireland: Ozone threshold exceedances 1998–2013	Environmental Protection Agency
1.13	EU: Ozone threshold exceedances April-September 2012	European Environment Agency

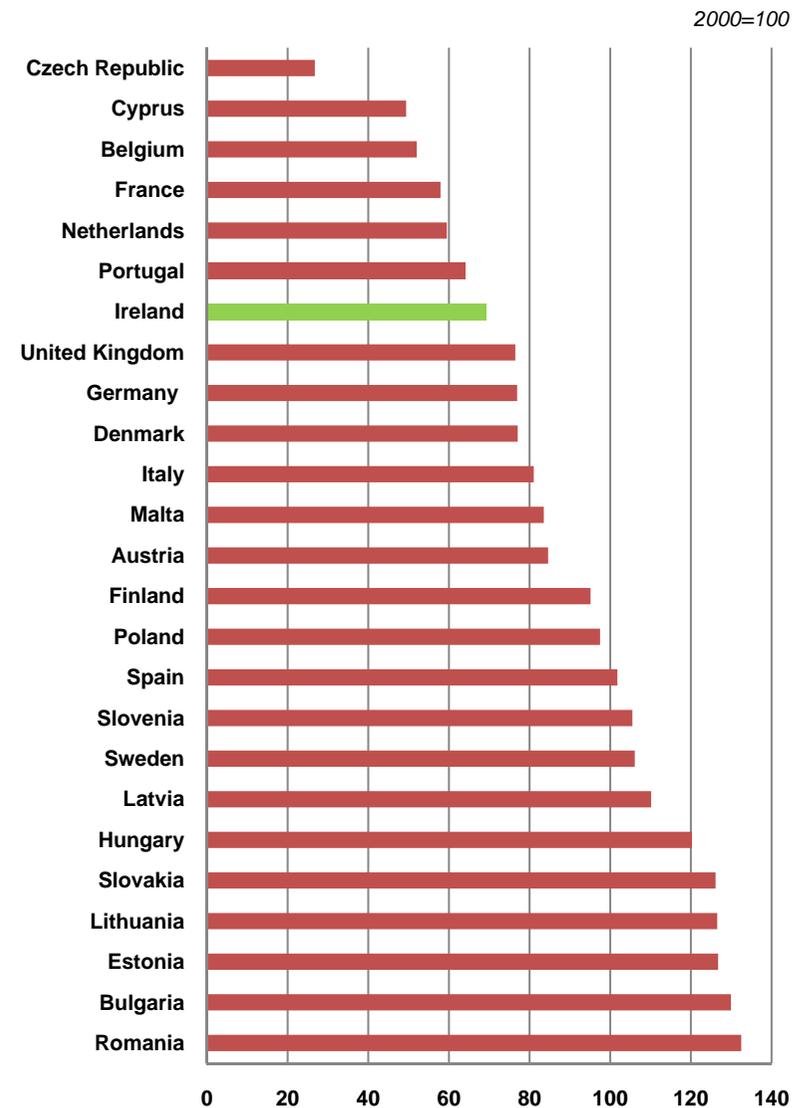
1.1 Ireland: Particulate matter (PM_{2.5}) emissions 1990-2012



Source: Environmental Protection Agency

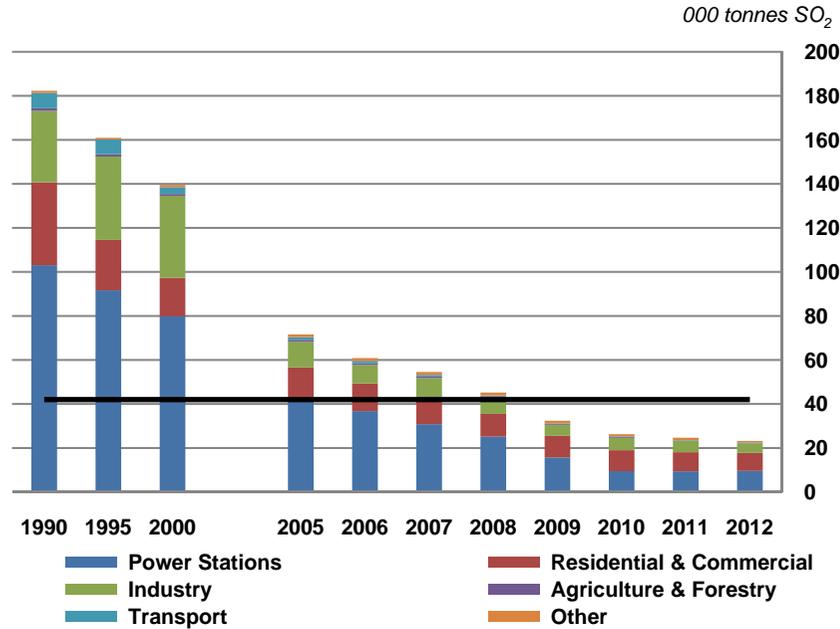
- Emissions of PM_{2.5} varied between 10,100 and 11,400 tonnes between 1990 and 2007. Emissions have decreased by 22% from 10,100 tonnes in 2007 to 7,800 tonnes in 2012.
- Transport accounted for 31% of emissions of PM_{2.5} in 2012, with Industry accounting for 27%.
- Ireland ranked 7th in 2011 among EU Member States for emissions of PM_{2.5} in terms of the relative change since 2000.

1.2 EU: Particulate matter (PM_{2.5}) emissions 2011



Note: Data not available for Greece
Source: European Environment Agency

1.3 Ireland: Sulphur dioxide emissions 1990-2012



Source: Environmental Protection Agency

- Ireland's sulphur dioxide emissions have fallen from 182,300 tonnes in 1990 to 23,200 tonnes in 2012. Emissions from Power stations fell by 93,500 tonnes in the same period.
- The fall in the emissions from Power stations is mainly due to a switch from oil and coal to gas and the installation of technologies which reduce sulphur emissions.
- Ireland has been below the National Emissions Ceiling (NEC 2010) for sulphur dioxide since 2009.
- All 27 Member States were below their ceiling level of emissions in 2011. Ireland ranked 17th among EU Member States in terms of 2011 emissions relative to the 2010 NEC ceiling.

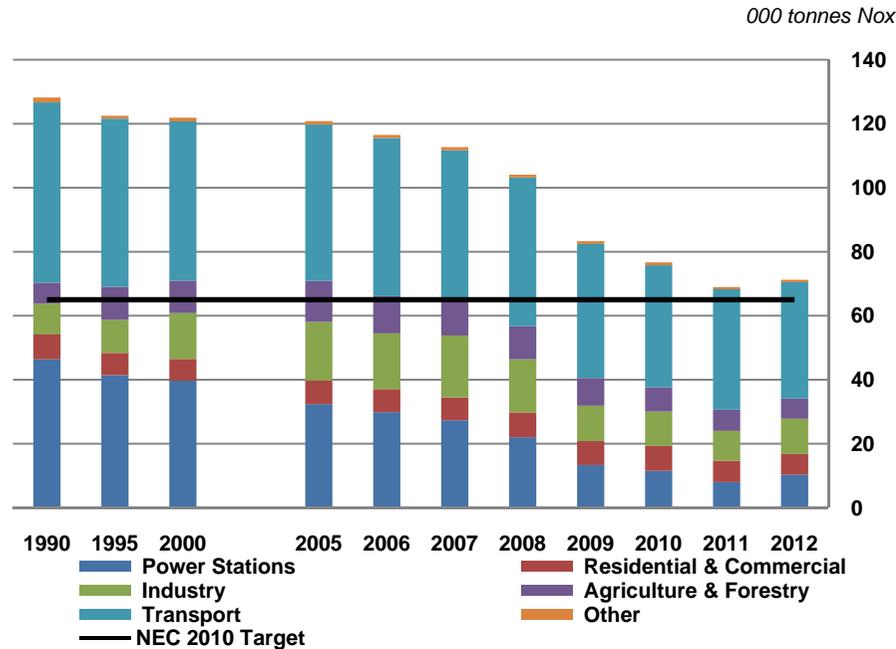
1.4 EU: Sulphur dioxide emissions 2011 and NEC 2010 ceiling

000 tonnes SO₂

Country	2011 emissions	NEC 2010 ceiling	% Below 2010 ceiling
Latvia	3	101	-97%
Hungary	35	500	-93%
Lithuania	36	145	-75%
Denmark	14	55	-75%
Portugal	47	160	-71%
Romania	331	918	-64%
Slovenia	11	27	-60%
Luxembourg	2	4	-56%
Sweden	30	67	-56%
Italy	211	475	-56%
Bulgaria	388	836	-54%
Austria	18	39	-53%
Greece	262	523	-50%
Finland	57	110	-48%
Cyprus	21	39	-46%
Belgium	56	99	-44%
Ireland	25	42	-41%
Slovakia	68	110	-38%
Czech Republic	171	265	-36%
United Kingdom	379	585	-35%
Poland	910	1397	-35%
Spain	499	746	-33%
Netherlands	34	50	-33%
France	255	375	-32%
Estonia	73	100	-27%
Germany	445	520	-14%
Malta	8	9	-12%

Source: European Environment Agency

1.5 Ireland: Nitrogen oxides emissions 1990-2012



Source: Environmental Protection Agency

- Ireland's nitrogen oxides emissions have fallen from 121,000 tonnes in 2005 to 71,200 tonnes in 2012. This is still 10% above the NEC 2010 ceiling of 65,000 tonnes, and slightly above the 2011 level of 69,000 tonnes.
- In 2011, 20 of the EU Member States were below their emissions ceiling. Ireland ranked 21st among EU Member States in terms of emissions relative to the 2010 NEC ceiling.

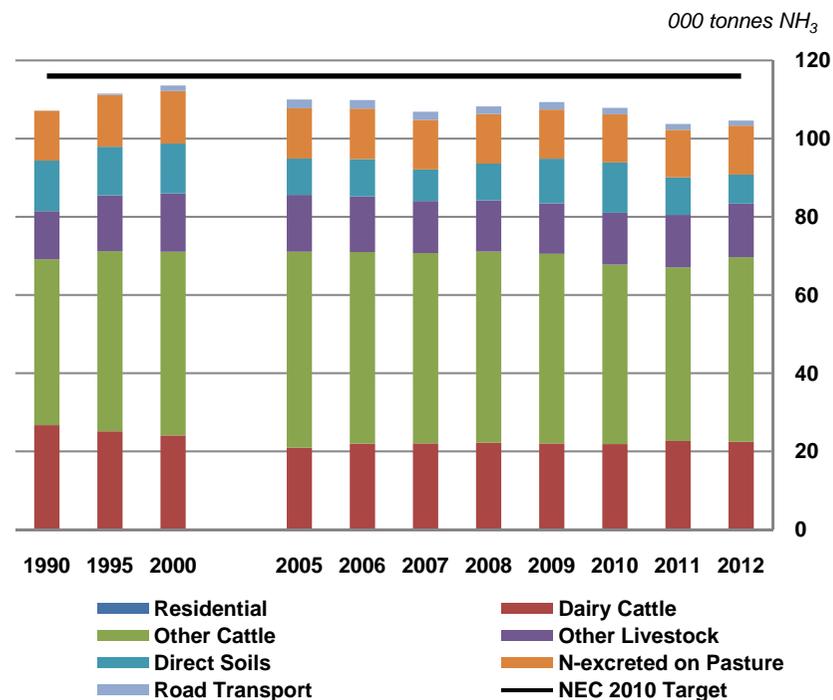
1.6 EU: Nitrogen oxides emissions 2011 and NEC 2010 ceiling

000 tonnes NOx

Country	2011 emissions	NEC 2010 ceiling	% Above/Below ceiling
Lithuania	51	110	-54%
Bulgaria	116	247	-53%
Romania	221	437	-49%
Latvia	32	61	-48%
Estonia	36	60	-41%
Hungary	129	198	-35%
Slovakia	85	130	-35%
Portugal	176	250	-30%
Czech Republic	225	286	-21%
Greece	295	344	-14%
United Kingdom	1,033	1167	-11%
Cyprus	21	23	-9%
Finland	155	170	-9%
Italy	937	990	-5%
Poland	851	879	-3%
Malta	8	8	-2%
Sweden	146	148	-2%
Slovenia	44	45	-1%
Denmark	126	127	-1%
Netherlands	259	260	0%
Ireland	69	65	6%
Spain	934	847	10%
Belgium	210	176	19%
Germany	1,293	1051	23%
France	1,005	810	24%
Austria	144	103	40%
Luxembourg	48	11	338%

Source: European Environment Agency

1.7 Ireland: Ammonia emissions 1990-2012



Source: Environmental Protection Agency

- Ireland was 10% below the NEC 2010 emissions ceiling for ammonia in 2012.
- All but three EU Member States were at or below their respective 2010 ceilings by 2011. Ireland ranked 17th in 2011 in terms of emissions relative to the NEC 2010 ceiling.

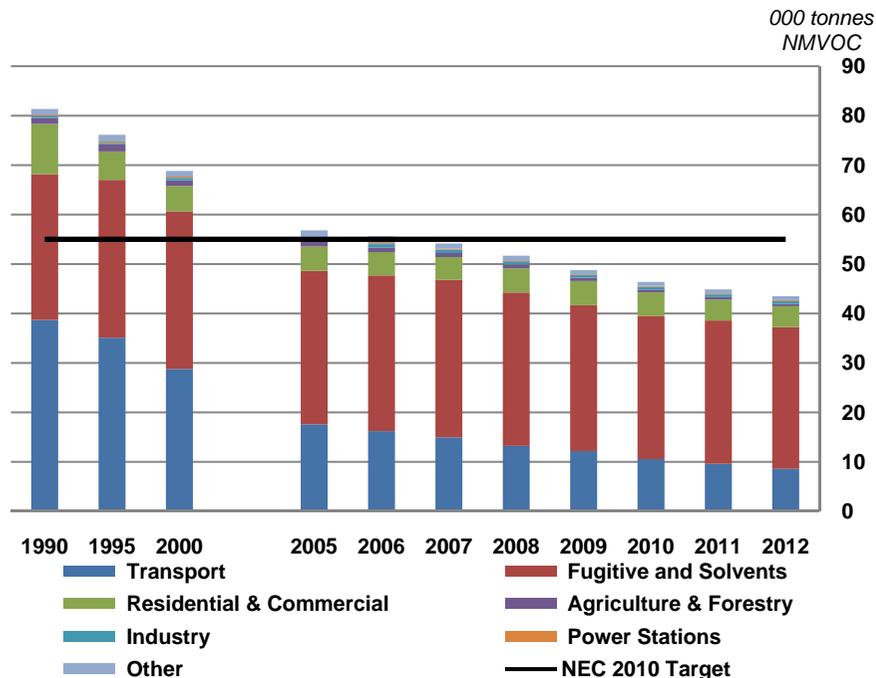
1.8 EU: Ammonia emissions 2011 and NEC 2010 ceiling

000 tonnes NH₃

Country	2011 emissions	NEC 2010 ceiling	% Above/Below ceiling
Latvia	13	44	-71%
Lithuania	29	84	-65%
Estonia	10	29	-64%
Bulgaria	49	108	-55%
Malta	2	3	-48%
Portugal	47	90	-48%
Cyprus	5	9	-43%
Poland	270	468	-42%
Slovakia	24	39	-38%
Luxembourg	5	7	-31%
Hungary	65	90	-28%
Romania	159	210	-24%
Czech Republic	66	80	-18%
Slovenia	17	20	-16%
Greece	62	73	-16%
France	674	780	-14%
Ireland	104	116	-11%
Sweden	52	57	-9%
Belgium	67	74	-9%
Italy	388	419	-7%
Netherlands	119	128	-7%
Austria	62	66	-6%
United Kingdom	290	297	-2%
Denmark	69	69	-1%
Germany	563	550	2%
Spain	381	353	8%
Finland	37	31	20%

Source: European Environment Agency

1.9 Ireland: NMVOC emissions 1990-2012



Source: Environmental Protection Agency

- Ireland's emissions of Non-Methane Volatile Organic Compounds fell below the NEC 2010 ceiling for the first time in 2007. In 2012, 66% of these emissions were from Fugitive and solvents.
- Emissions from transport have fallen from 36,600 tonnes in 1990 to 8,600 tonnes in 2012.
- Ireland ranked 20th among EU Member States in 2011 in terms of emissions relative to the 2010 NEC ceiling. Two EU Member States were still above their emission ceiling in 2011.

1.10 EU: NMVOC emissions 2011 and NEC 2010 ceiling

Country	2011 emissions	NEC 2010 ceiling	% Above/Below ceiling
Malta	3	12	-75%
Slovakia	68	140	-51%
Latvia	70	136	-49%
Bulgaria	95	175	-46%
Greece	158	261	-39%
United Kingdom	752	1200	-37%
Czech Republic	146	220	-34%
Estonia	33	49	-32%
Romania	355	523	-32%
Cyprus	10	14	-31%
France	734	1050	-30%
Belgium	101	139	-28%
Hungary	100	137	-27%
Sweden	177	241	-26%
Slovenia	30	40	-25%
Lithuania	69	92	-25%
Netherlands	144	185	-22%
Austria	126	159	-21%
Poland	652	800	-19%
Ireland	45	55	-18%
Finland	109	130	-16%
Italy	1032	1159	-11%
Spain	598	662	-10%
Denmark	80	85	-6%
Portugal	177	180	-2%
Germany	1008	995	1%
Luxembourg	9	9	4%

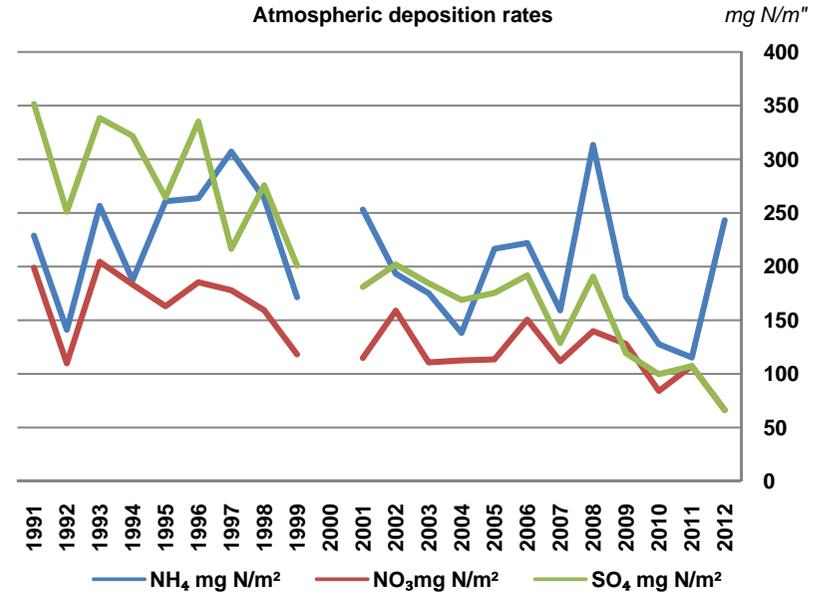
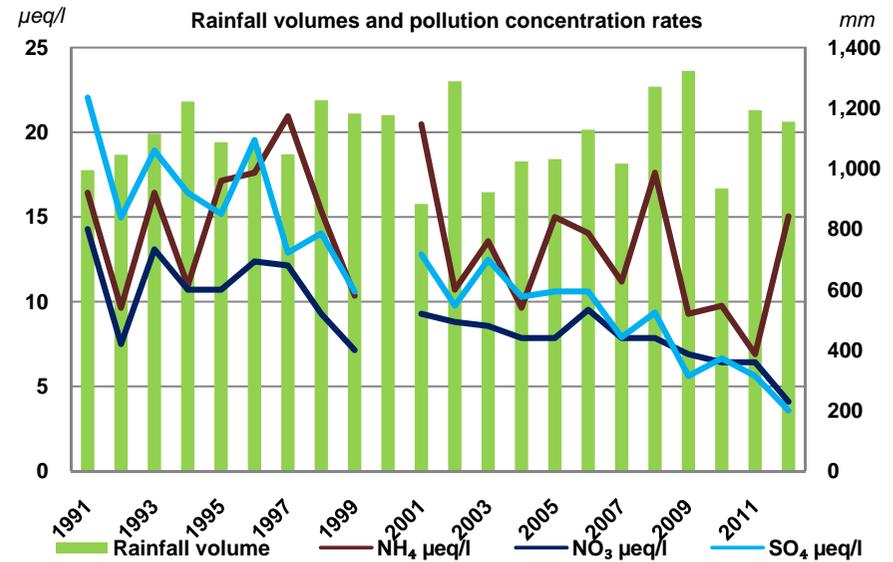
Source: European Environment Agency

1.11 Ireland: Atmospheric deposition rates 1991-2012

Year	Concentration			Deposition			
	Rainfall volume mm	NH ₄ µeq/l	NO ₃ µeq/l	SO ₄ µeq/l	NH ₄ , mg N/m ²	NO ₃ , mg N/m ²	SO ₄ , mg N/m ²
1991	995	16	14	22	229	199	351
1995	1,087	17	10	15	261	163	265
2000	1,177	:	:	:	:	:	:
2005	1,031	15	8	11	217	113	175
2006	1,129	14	10	11	222	150	192
2007	1,016	11	8	8	159	112	129
2008	1,271	18	8	9	313	140	191
2009	1,323	9	7	6	172	128	119
2010	934	10	6	7	128	84	100
2011	1,193	7	6	6	115	107	107
2012	1,155	15	4	4	243	66	66

Source: Met Éireann, University College Dublin and Coillte

- Deposition of sulphate (SO₄) has fallen from 351 mgs per m² in 1991 to 66 mgs per m² in 2012. Similarly, the concentration of SO₄ in rainwater has also dropped from 22 mgs per litre in 1991 to 4 mgs per litre in 2012.
- The level of concentration and deposition of NH₄ in rainfall has varied widely from year to year, mainly due to variations in rainfall.



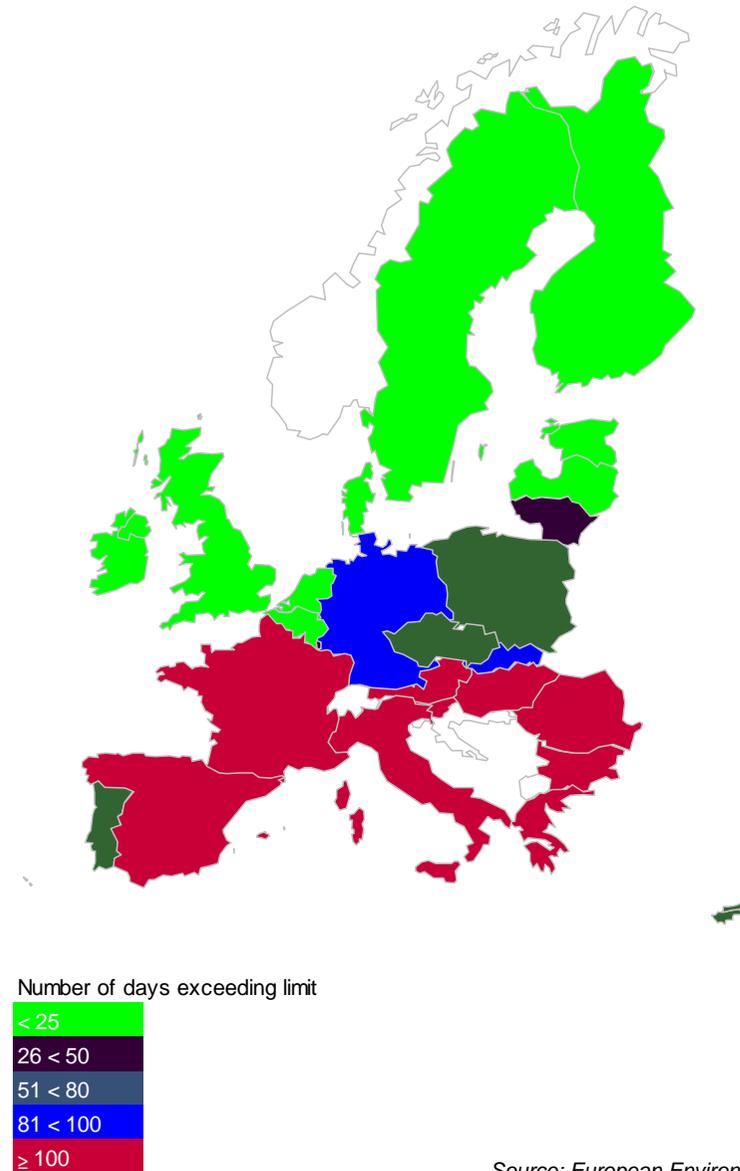
1.12 Ireland: Ozone threshold exceedances 1998–2013

Year	Days
1998	10
1999	7
2000	4
2001	7
2002	0
2003	18
2004	5
2005	3
2006	11
2007	10
2008	12
2009	3
2010	4
2011	3
2012	4
2013	5

Source: Environmental Protection Agency

- Under EU Directive 2008/50/EC, every EU Member State is permitted a maximum of 25 days per year in which an ozone threshold of 120 $\mu\text{g}/\text{m}^3$ may be exceeded. Ireland did not exceed this number of days in any year during the period 1998 to 2013. The year with the highest number of exceedances was 2003, when 18 days were recorded as being above the threshold value.
- During the months of April to September 2012, Estonia and Finland had the fewest number of days exceeding the ozone threshold, when zero and one days respectively were above the 120 $\mu\text{g}/\text{m}^3$ limit. Eighteen EU Member States exceeded the maximum 25 days limit.

1.13 EU: Ozone threshold exceedances April–September 2012



Source: European Environment Agency

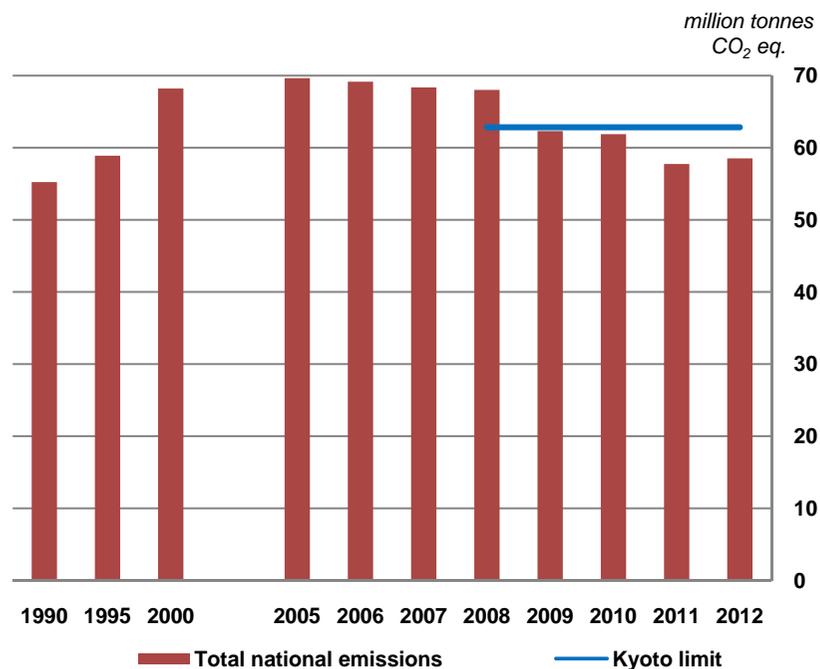
2. Greenhouse Gases and Climate Change



Contents

		Source
2.1	Ireland: Greenhouse gas emissions 1990-2012	Environmental Protection Agency
2.2	EU: Greenhouse gas emissions 2011	Eurostat
2.3	EU: Greenhouse gas emissions per capita 2011	European Environment Agency
2.4	Ireland: Greenhouse gas emissions by gas 1990-2012	Environmental Protection Agency
2.5	Ireland: Greenhouse gas emissions by sector 1990-2012	Environmental Protection Agency
2.6	Ireland: Average annual temperature 1961-2012	Met Éireann
2.7	Ireland: Annual rainfall 1941-2012	Met Éireann

2.1 Ireland: Greenhouse gas emissions 1990-2012



Source: Environmental Protection Agency

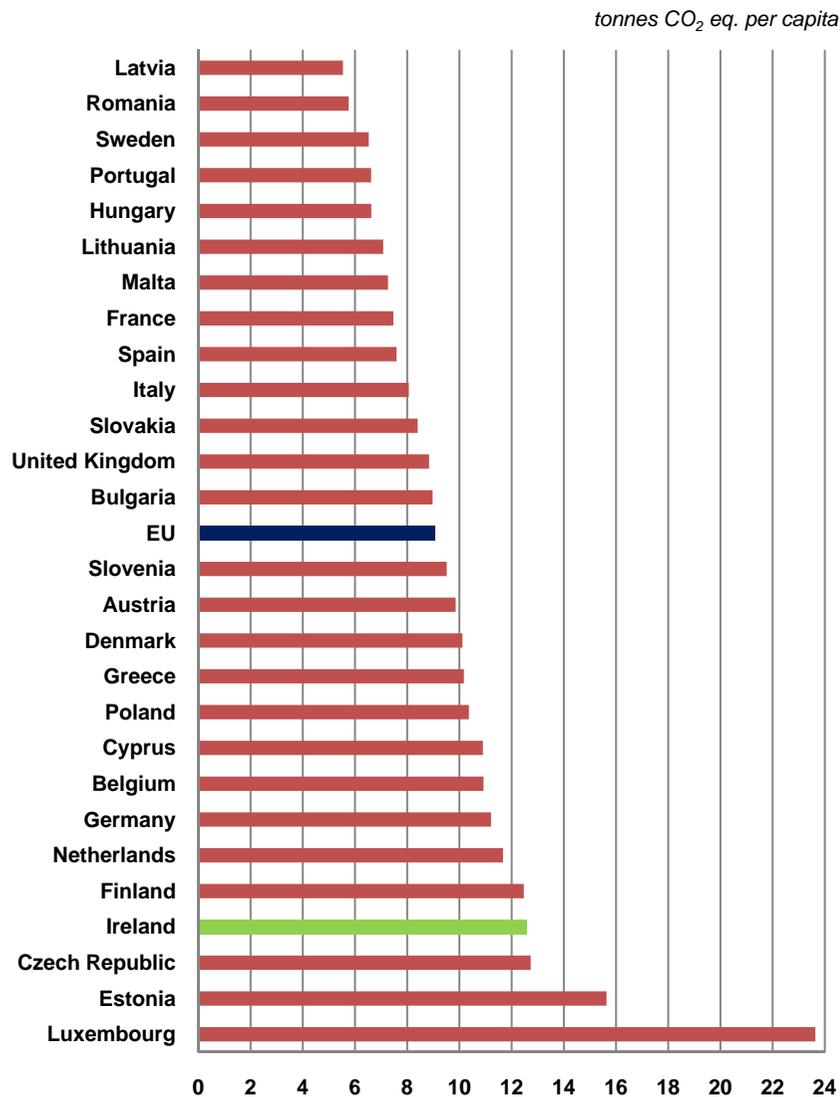
- Under the Kyoto Protocol, Ireland's total emissions are limited to an average of 62.8 million tonnes carbon dioxide (CO₂) equivalent per annum in the period 2008-2012. In 2012, Ireland was 5.68 million tonnes below the Kyoto limit. However, when the impact of the EU Emissions Trading Scheme and forest sinks are taken into account, Ireland exceeded the Kyoto limit by 2.1 million tonnes CO₂.
- Ireland's 2011 emissions ranked 17th among EU countries relative to the Kyoto limit. In 2011, five EU Member States were above their respective Kyoto emissions limits.

2.2 EU: Greenhouse gas emissions 2011

Country	Indexed to Kyoto base year		Above/(Below) target
	2011 Emissions Index	Kyoto target index	
Lithuania	44	92	-52%
Romania	47	92	-49%
Bulgaria	52	92	-44%
Hungary	57	94	-39%
Estonia	57	92	-38%
Latvia	61	92	-34%
Sweden	69	104	-33%
Slovakia	62	92	-33%
Czech Republic	68	92	-26%
Poland	71	94	-24%
United Kingdom	71	88	-19%
France	85	100	-15%
Greece	108	125	-13%
Portugal	112	127	-12%
Finland	89	100	-11%
Belgium	83	93	-10%
Ireland	103	113	-8%
Germany	74	79	-6%
Netherlands	92	94	-2%
Denmark	78	79	-2%
Italy	97	94	4%
Slovenia	97	92	5%
Spain	123	115	7%
Austria	104	87	20%
Luxembourg	91	72	26%

Note: Data not available for Cyprus or Malta
Source: Eurostat

2.3 EU: Greenhouse gas emissions per capita 2011



Source: European Environment Agency

2.4 Ireland: Greenhouse gas emissions by gas 1990-2012

Year	CO ₂	CH ₄	N ₂ O	Other GHGs	Total
1990	59%	25%	16%	0%	55,246
1995	60%	24%	16%	0%	58,903
2000	66%	20%	14%	1%	68,216
2005	68%	18%	12%	2%	69,656
2006	68%	19%	12%	2%	69,166
2007	69%	18%	11%	2%	68,371
2008	69%	18%	11%	2%	68,020
2009	67%	19%	12%	2%	62,312
2010	67%	19%	13%	2%	61,895
2011	65%	20%	13%	2%	57,750
2012	65%	21%	13%	2%	58,531

Source: Environmental Protection Agency

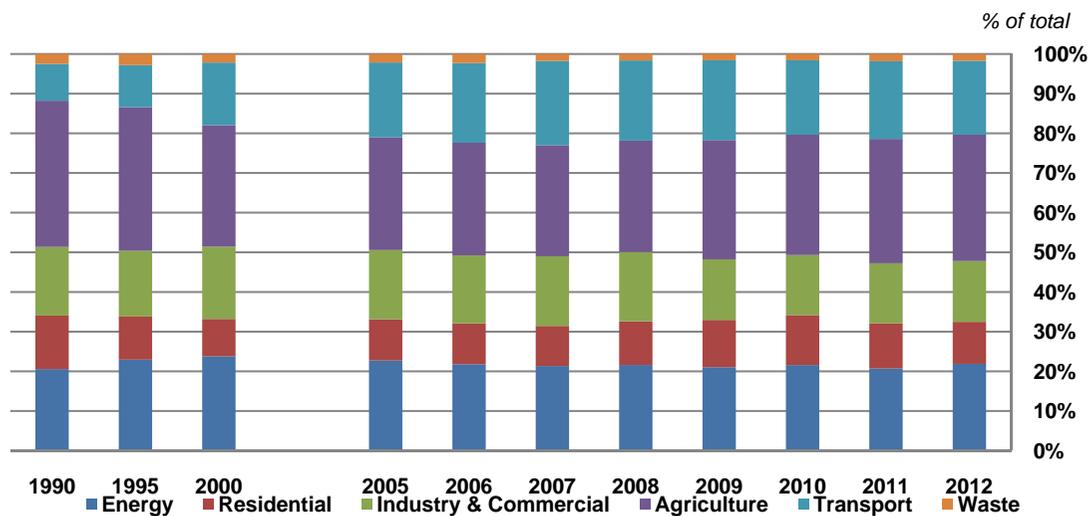
- Although Ireland's emissions of greenhouse gases per capita have been falling steadily since 2001, Ireland had the fourth highest level in the EU in 2011.
- The high emissions levels for Luxembourg can be attributed to the large number of people who travel to and from neighbouring countries to work and contribute to the national emissions.
- At 12.6 tonnes of CO₂ equivalent per capita, Ireland was 40% higher than the EU average of 9 tonnes of CO₂ equivalent per capita in 2011.
- Carbon dioxide (CO₂), which accounted for 59% of Ireland's greenhouse gas emissions in 1990 increased to 65% in 2012.

2.5 Ireland: Greenhouse gas emissions by sector 1990-2012

Year	Energy	Residential	Industry & Commercial	Agriculture	Transport	Waste	Total	Average annual % change
1990	21%	13%	17%	37%	9%	3%	55,246	:
1995	23%	11%	17%	36%	11%	3%	58,903	1.3%
2000	24%	9%	18%	31%	16%	2%	68,216	3.0%
2005	23%	10%	17%	28%	19%	2%	69,656	0.4%
2006	22%	10%	17%	28%	20%	2%	69,166	-0.7%
2007	21%	10%	18%	28%	21%	2%	68,371	-1.1%
2008	22%	11%	17%	28%	20%	2%	68,020	-0.5%
2009	21%	12%	15%	30%	20%	2%	62,312	-8.4%
2010	22%	13%	15%	30%	19%	2%	61,895	-0.7%
2011	21%	11%	15%	31%	20%	2%	57,750	-6.7%
2012	22%	11%	15%	32%	19%	2%	58,531	1.4%

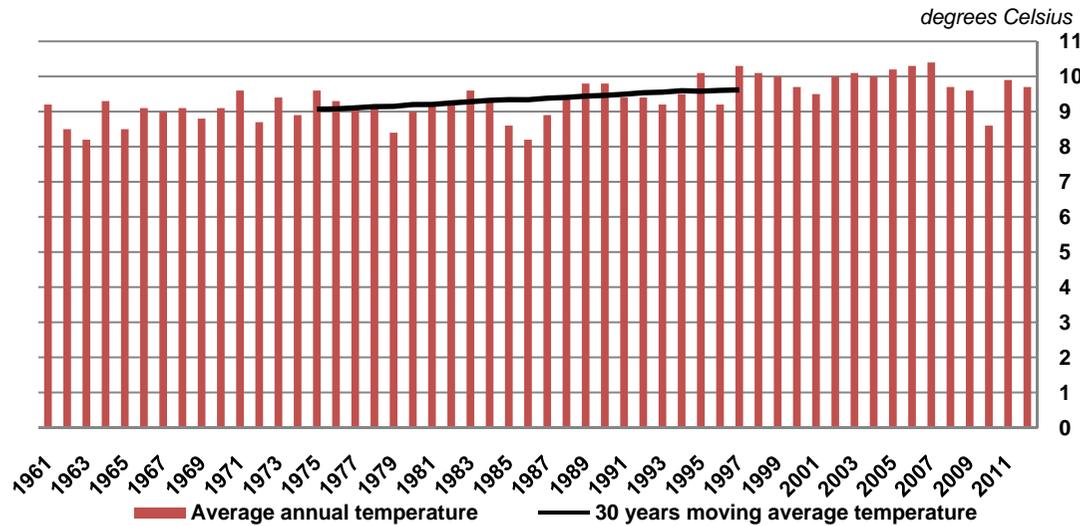
- Agriculture accounted for 32% of Ireland's greenhouse gas emissions in 2012.
- The transport share of greenhouse gas emissions in Ireland increased from 9% in 1990 to 21% in 2007, before falling to 19% in 2012.

Ireland: Share of greenhouse gas emissions by sector 1990-2012



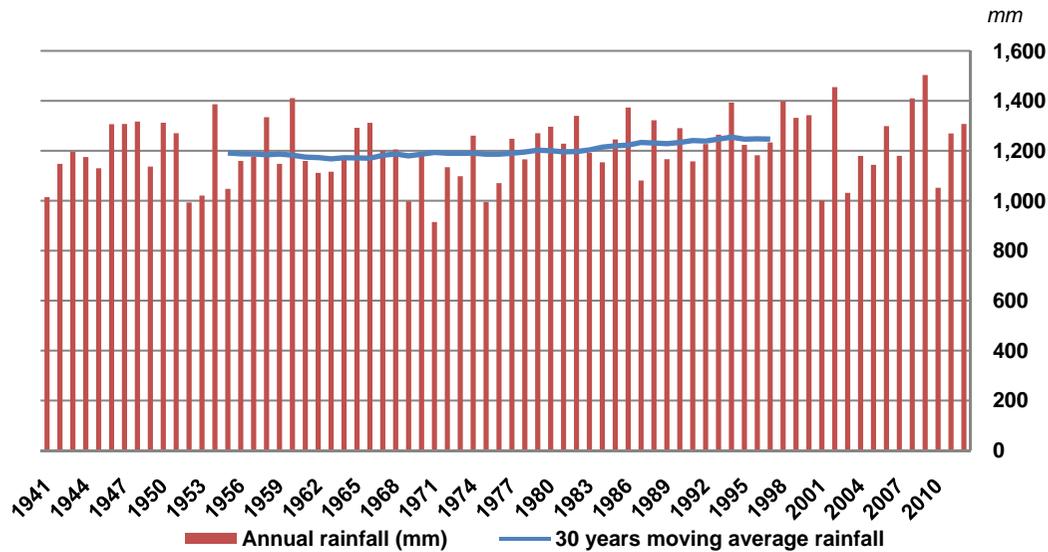
Source: Environmental Protection Agency

2.6 Ireland: Average annual temperature 1961-2012



- Average temperatures in Ireland varied between 8° and 10.5° Celsius since 1961. The warmest year was 2007 with an average temperature of 10.4° Celsius.
- The thirty years moving average shows that the average temperature for 1983-2012 is 0.5° Celsius higher than the average for 1961-1990.
- The wettest year in the period shown was 2009, when 1,503 mms of rain were recorded, whereas the driest year in this period was 1971, when 915 mms of rain were recorded.

2.7 Ireland: Annual rainfall 1941-2012



Source: Met Éireann

3. Water



Contents

	Source
3.1 Ireland: Bathing water quality 1998-2013	Environmental Protection Agency
3.2 EU: Bathing water quality 2012	European Environment Agency
3.3 Ireland: Drinking water quality 1999-2012	Environmental Protection Agency
3.4 Ireland: Urban waste water treatment 1998-2012	Environmental Protection Agency
3.5 Ireland: River water quality 1987-2012	Environmental Protection Agency
3.6 Ireland: Nitrates in groundwater 1995-2012	Environmental Protection Agency
3.7 EU: Chemical status of groundwater bodies 2009	European Environment Agency

3.1 Ireland: Bathing water quality 1998-2013

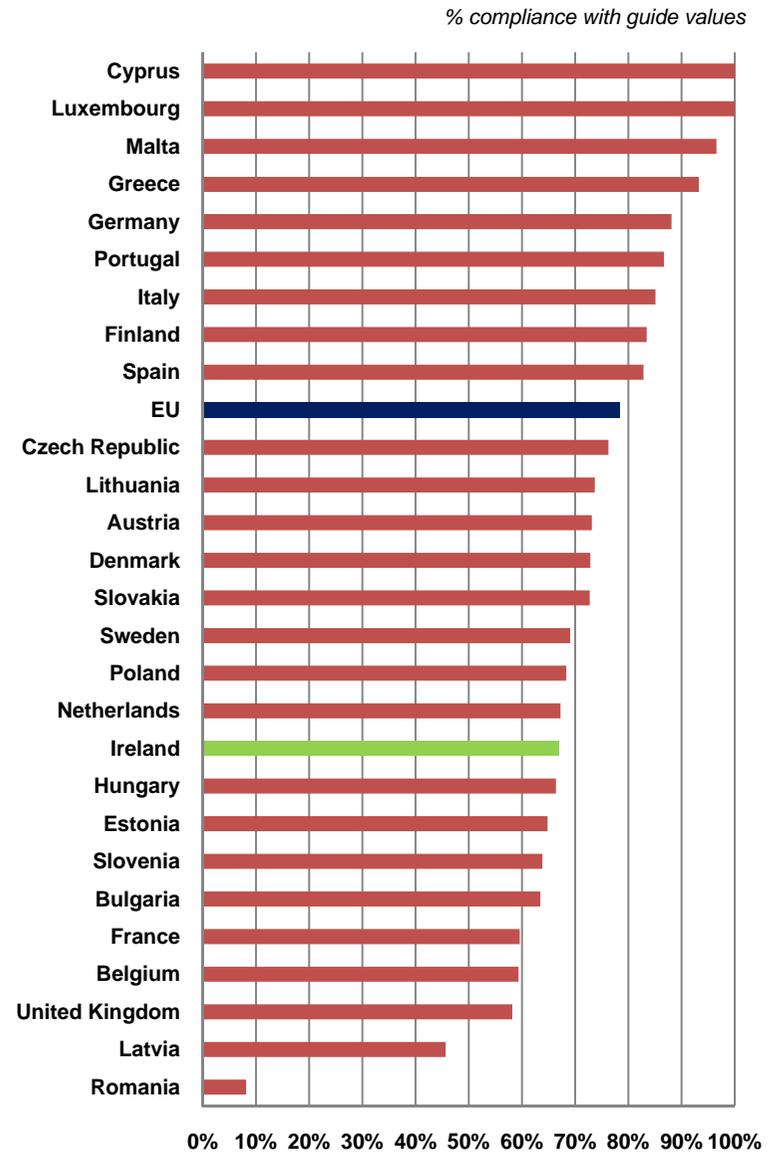
% of total sites surveyed

Year	Sufficient Water Quality	Good Water Quality
1998	98.5%	80.8%
1999	98.5%	89.2%
2000	98.5%	91.5%
2005	96.2%	90.8%
2006	96.9%	90.1%
2007	96.9%	80.2%
2008	93.1%	77.9%
2009	93.1%	82.4%
2010	96.9%	90.1%
2011	98.5%	83.0%
2012	97.1%	66.9%
2013	96.8%	84.4%

Source: Environmental Protection Agency

- During the 1998 to 2013 period, the proportion of sites with good bathing water quality has varied from a high of 91.5% in 2000 to a low of 66.9% in 2012. The 2012 figure was due mainly to an extremely wet summer, and below average sunshine. The proportion stood at 84.4% in 2013.
- Ireland had the tenth worst bathing water quality in the EU in 2012, when 66.9% of sites complied with guide values. This comprises both coastal and inland bathing sites. The EU average was 78% compliance.

3.2 EU: Bathing water quality 2012



Source: European Environment Agency

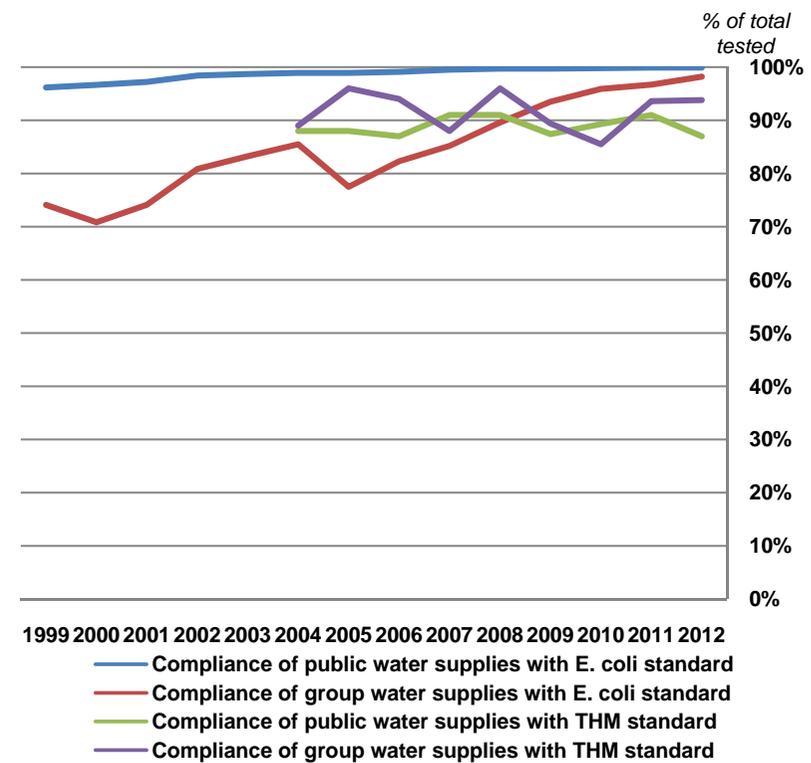
3.3 Ireland: Drinking water quality 1999-2012

Year	% of total tested			
	Compliance of public water supplies with E. coli standard	Compliance of group water supplies with E. coli standard	Compliance of public water supplies with THM standard	Compliance of group water supplies with THM standard
1999	96.2%	74.1%	:	:
2000	96.7%	70.8%	:	:
2005	98.9%	77.5%	88.0%	89.0%
2006	99.1%	82.3%	88.0%	96.0%
2007	99.5%	85.2%	91.0%	88.0%
2008	99.7%	89.6%	91.0%	96.0%
2009	99.7%	93.5%	87.4%	89.4%
2010	99.8%	95.9%	87.4%	89.4%
2011	99.9%	96.7%	89.3%	85.5%
2012	99.9%	98.2%	91.0%	93.6%

Source: Environmental Protection Agency

- The quality of public drinking water supplies has increased from 96% compliance with the E.coli standard in 1999 to almost 100% since 2007. While group water schemes did not have as high levels of compliance in earlier years, the quality of group water schemes has improved to 98% compliance in 2012.
- Before 2004, there was no parametric limit for compliance with levels of trihalomethanes (THM). Public water supplies' compliance rates increased between 2005 and 2009 to 91%, but fell again in 2010 to 87.4%, before returning to 91% again in 2012.
- Group water supplies had a compliance rate of 96% in 2006, but this fell to 85.5% in 2011, and increased again in 2012 to 93.6%.

Ireland: Drinking water quality 1999-2012



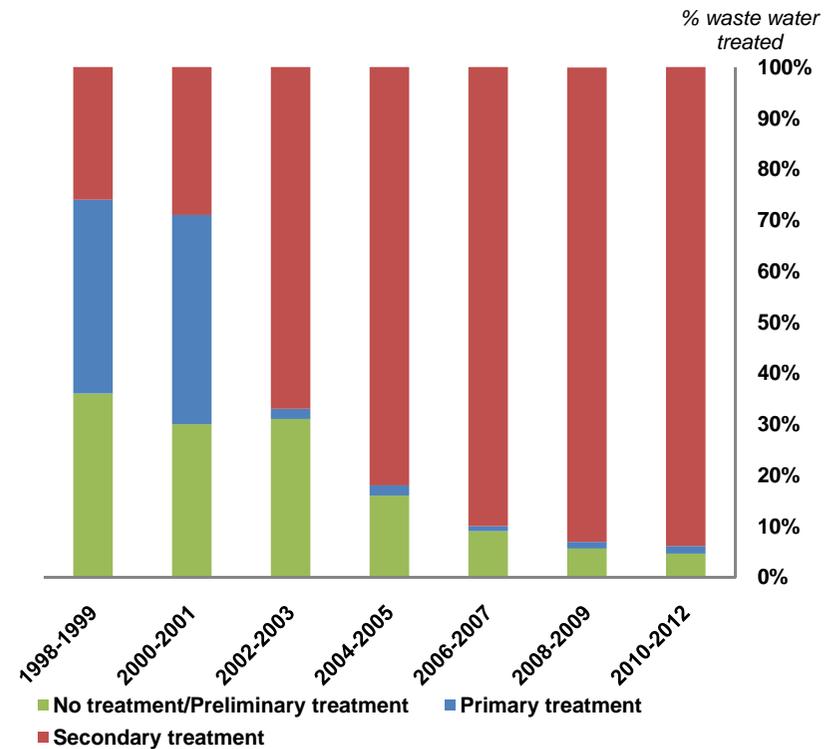
3.4 Ireland: Urban waste water treatment 1998-2012

Years	% waste water treated		
	No treatment / Preliminary treatment	Primary treatment	Secondary treatment
1998-1999	36%	38%	26%
2000-2001	30%	41%	29%
2002-2003	31%	2%	67%
2004-2005	16%	2%	82%
2006-2007	9%	1%	90%
2008-2009	6%	1%	93%
2010-2012	5%	2%	94%

Source: Environmental Protection Agency

- There has been a significant improvement in the level of treatment of urban waste water at agglomerations of over 500 persons. In 2010-2012, 94% of urban waste water received at least secondary treatment compared with only 26% in the 1998-1999 period. Only 5% of urban waste water received none or only preliminary treatment in 2010-2012 compared with 36% in 1998-1999.

Ireland: Urban waste water treatment 1998-2012



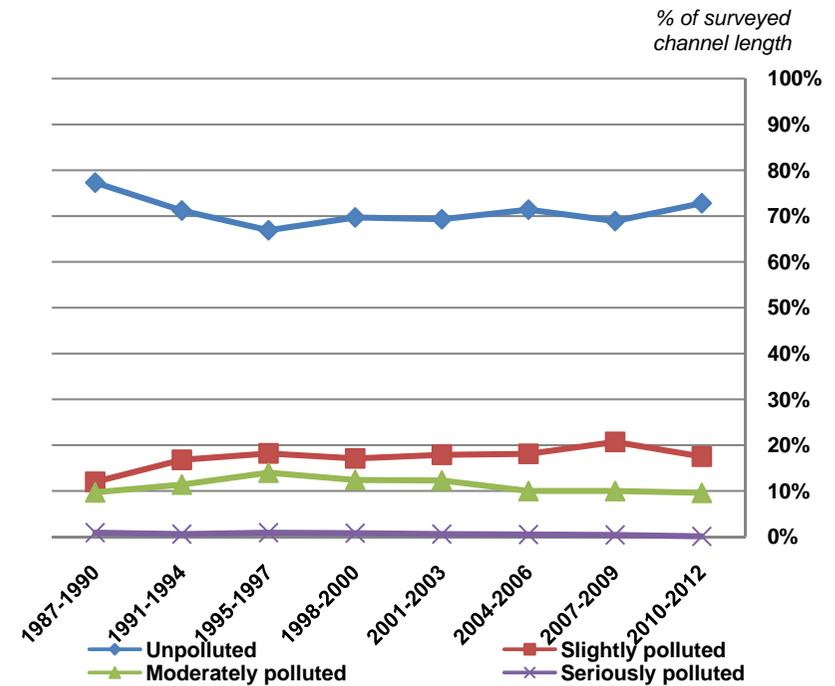
3.5 Ireland: River water quality 1987-2012

Year	% of channel length surveyed			
	Unpolluted	Slightly polluted	Moderately polluted	Seriously polluted
1987-1990	77%	12%	10%	1%
1991-1994	71%	17%	11%	1%
1995-1997	67%	18%	14%	1%
1998-2000	70%	17%	12%	1%
2001-2003	69%	18%	12%	1%
2004-2006	71%	18%	10%	1%
2007-2009	69%	21%	10%	0%
2010-2012	73%	18%	10%	0%

Source: Environmental Protection Agency

- The proportion of unpolluted river water fell from 77% in 1987-1990 to 69% in 2007-2009, but increased to 73% in 2010-2012. The percentage of slightly polluted water has increased from 12% in 1987-1990 to 18% in 2010-2012.
- The level of seriously polluted river water has remained at 1% or less during the 1987 to 2012 period.

Ireland: River water quality 1987-2012



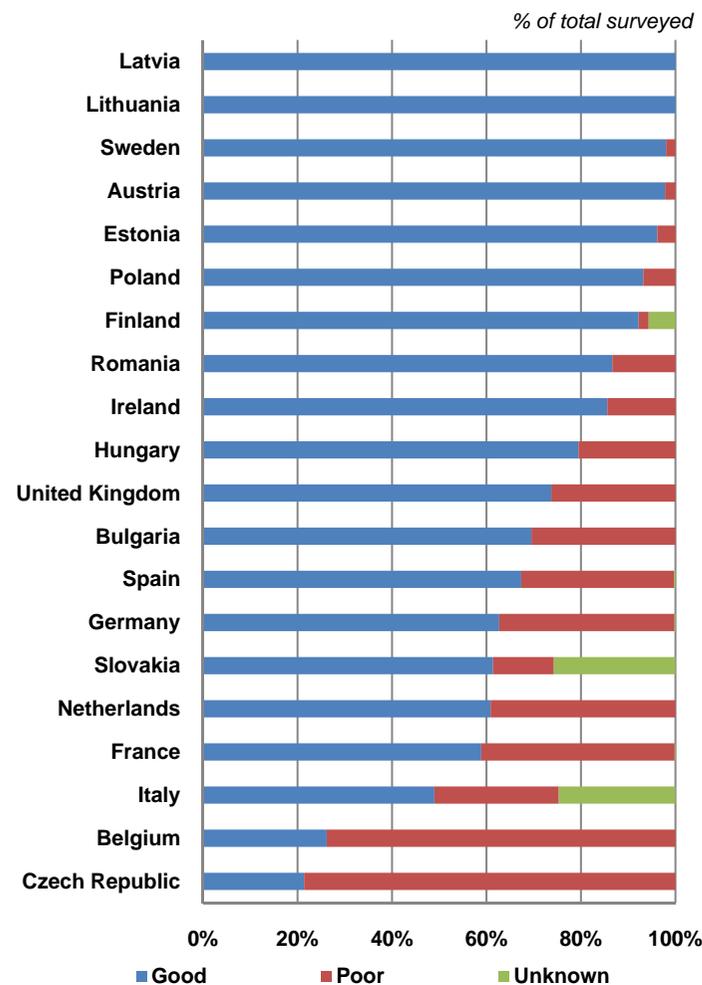
3.6 Ireland: Nitrates in groundwater 1995-2012

Year	NO ₃ mg/l (% of total)					
	< 5	5 - 10	10 - 25	25 - 37.5	37.5 - 50	> 50
1995-1997	14%	18%	48%	14%	5%	0%
1998-2000	19%	16%	48%	10%	5%	2%
2001-2003	15%	17%	47%	12%	7%	2%
2004-2006	17%	12%	49%	11%	9%	2%
2007-2009	22%	20%	41%	12%	4%	1%
2010-2012	27%	22%	39%	9%	2%	0%

Source: Environmental Protection Agency

- Around 50% of cases had between 10 and 25 mg/l of nitrates in groundwater until the 2007-2009 period, when the proportion fell to 41%. The less than 5 mg/l category increased from 14% in 1995-1997 to 27% in 2010-2012.
- From the latest data available for 20 EU Member States, Ireland ranked ninth in the chemical status of groundwater, with 86% of groundwater bodies deemed to be in good condition. Ireland had 776 bodies sampled, of which 664 were of good status.

3.7 EU: Chemical status of groundwater bodies 2009



Note: Data available for 20 EU Member States
Source: European Environment Agency

4. Land Use



Contents

	Source
4.1 Ireland: Land use categories 1990-2012	Environmental Protection Agency
4.2 Ireland: Afforestation 1922-2013	Department of Agriculture, Food and the Marine (Forest Service)
4.3 EU: Forest cover 2010	Forest Europe/State of Europe's Forests 2011 Report
4.4 Ireland: Planting period in public forestry 1920-2012	Coillte
4.5 Ireland: Public forest 2004-2012	Coillte
4.6 Ireland: Organic agricultural land 1997-2012	Department of Agriculture, Food and the Marine
4.7 EU: Organic agricultural land 2012	Research Institute of Organic Agriculture FiBL http://www.organic-world.net
4.8 Ireland: Fertiliser sales 1980-2013	Department of Agriculture, Food and the Marine
4.9 EU: Fertiliser sales 2011	Eurostat (Fertiliser Europe)
4.10 Ireland: Cattle, sheep and pigs June 1980-2013	CSO Agriculture Statistics
4.11 EU: Cattle and pigs December 2013	Eurostat
4.12 Ireland: House completions 1970-2013	Department of the Environment, Community and Local Government
4.13 EU: Dwellings completions 2006-2013	DKM Economic consultants and Euroconstruct; Eurostat

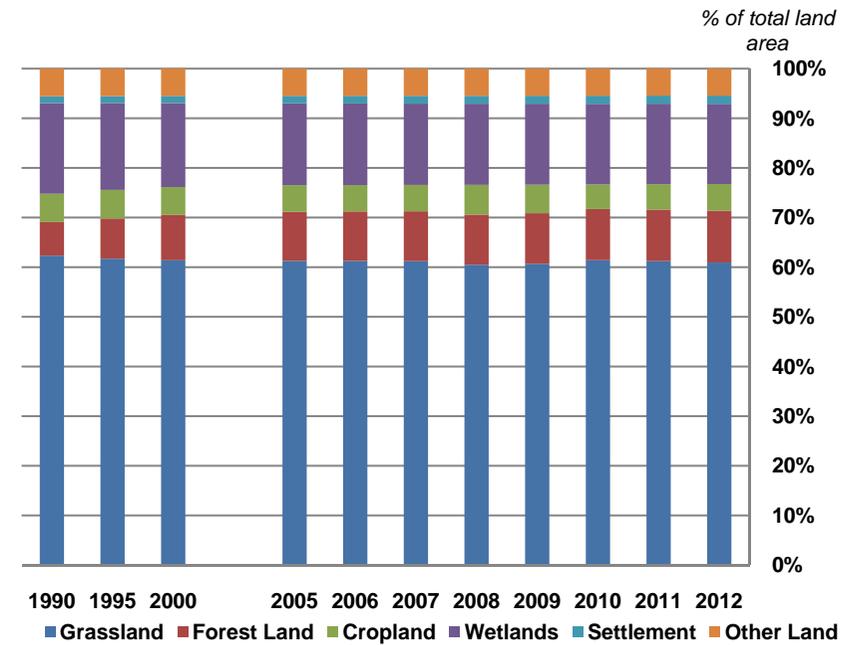
4.1 Ireland: Land use categories 1990-2012

Year	% of total land area					
	Grassland	Forest Land	Cropland	Wetland	Settlement	Other Land
1990	62%	7%	6%	18%	1%	6%
1995	62%	8%	6%	18%	1%	6%
2000	61%	9%	6%	17%	1%	5%
2005	61%	10%	5%	16%	2%	5%
2006	61%	10%	5%	16%	2%	5%
2007	61%	10%	5%	16%	2%	5%
2008	60%	10%	6%	16%	2%	5%
2009	61%	10%	6%	16%	2%	5%
2010	61%	10%	5%	16%	2%	5%
2011	61%	10%	5%	16%	2%	5%
2012	61%	10%	5%	16%	2%	5%

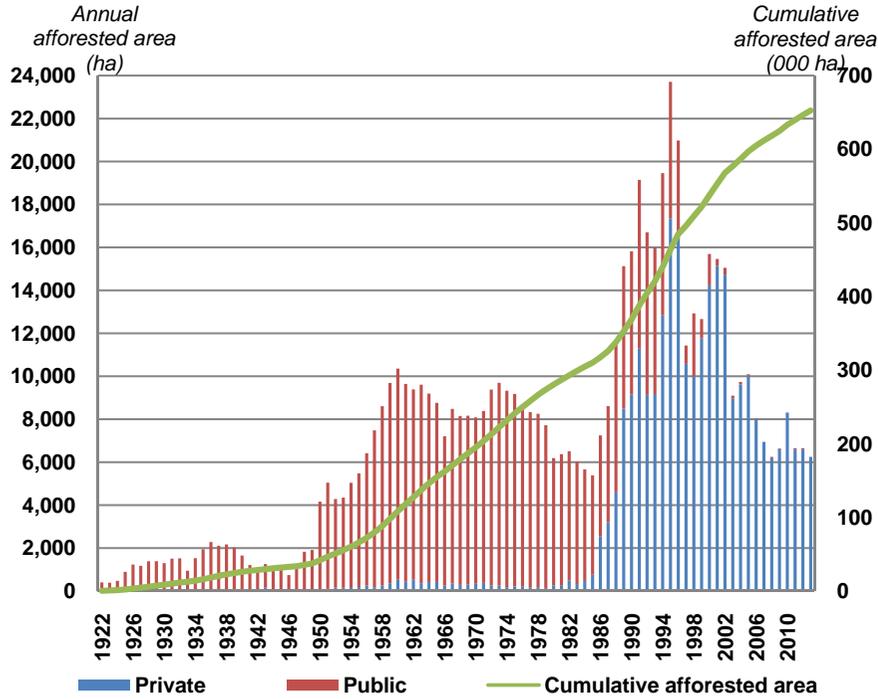
Source: Environmental Protection Agency

- Grassland accounted for between 60% and 62% of total land use between 1990 and 2012.

Ireland: Land use categories 1990-2012



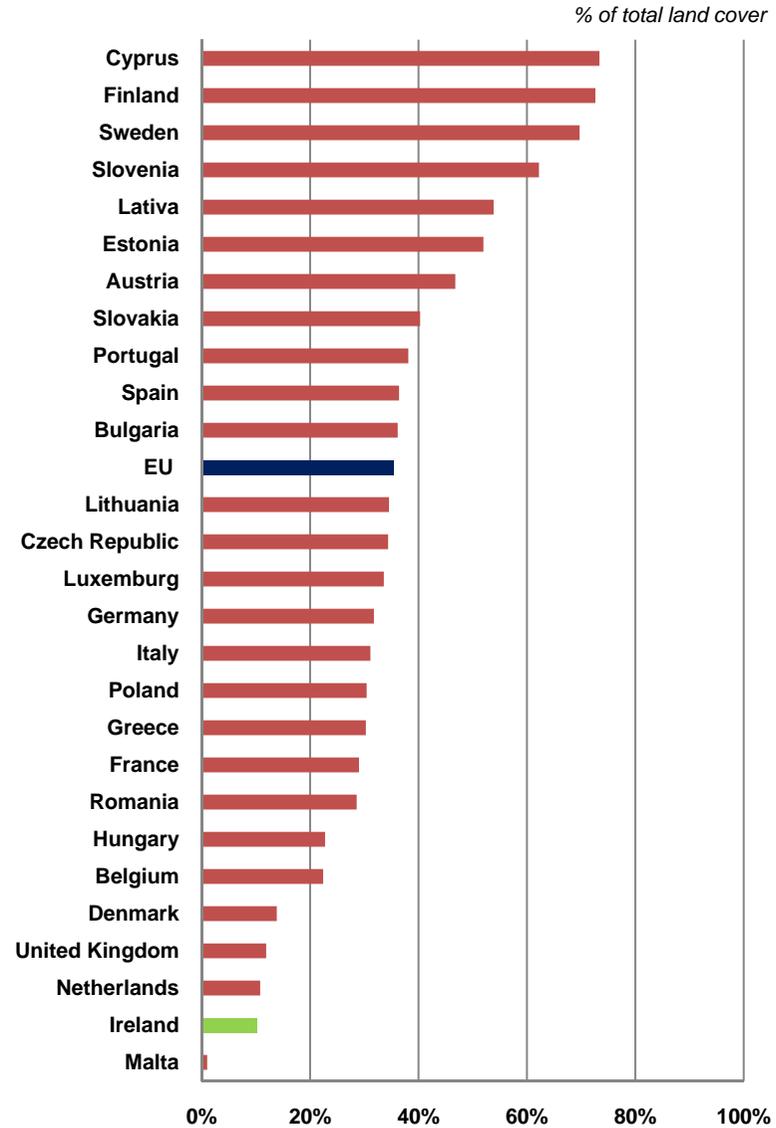
4.2 Ireland: Afforestation 1922-2013



Source: Department of Agriculture, Food and the Marine (Forest Service)

- From 1922 to 1989, afforestation in Ireland was predominantly carried out by the public sector. Since then, private afforestation has dominated, and since 1999, has accounted for over 90% of annual afforestation, increasing to over 99% since 2005.
- By 2013, over 650,000 hectares of land had been afforested in Ireland.
- Forestry accounted for 10.7% of Ireland's total land area in 2010. In contrast, 35.5% of the total land area of the EU in 2010 was under forest cover. Ireland ranked 26th among EU countries in terms of the proportion of land area under forest cover.

4.3 EU: Forest cover 2010



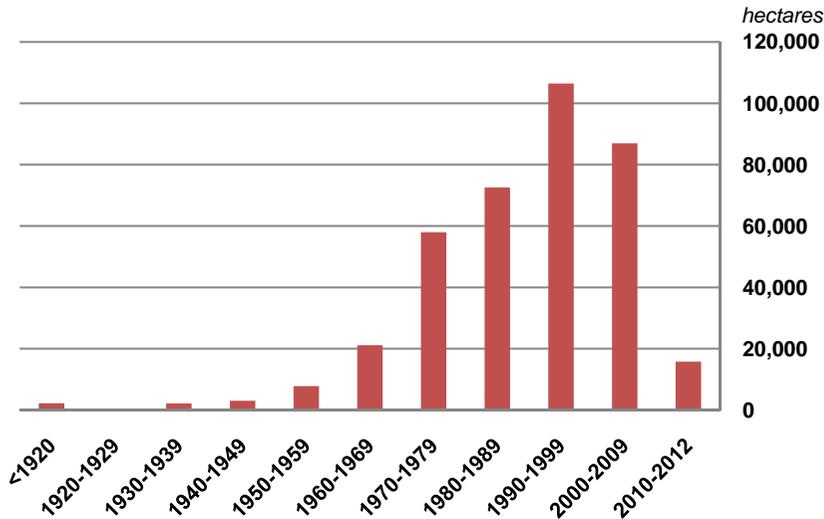
Source: Forest Europe

4.4 Ireland: Planting period in public forestry 1920-2012

000 hectares

Planting period	Coillte	Farm partners	Total
<1920	2	0	2
1920-1929	0	0	0
1930-1939	2	0	2
1940-1949	3	0	3
1950-1959	8	0	8
1960-1969	21	0	21
1970-1979	58	0	58
1980-1989	73	0	73
1990-1999	100	6	106
2000-2009	81	6	87
2010-2012	16	0	16
Total planting	364	13	377
Temporarily Unstocked / Being Restocked	9	-	9
Total	373	13	386

Source: Coillte



4.5 Ireland: Public forest 2004-2012

000 hectares

Year	Area of Afforestation	Area of Reforestation	Area Clearfelled
2004	0.7	9.1	9.9
2005	0.6	7.8	8.4
2006	0.2	6.7	8.0
2007	0.2	7.2	8.1
2008	0.1	7.3	7.2
2009	0.1	5.4	7.8
2010	0.1	5.6	7.4
2011	0.1	6.1	6.8
2012	0.1	6.2	6.6
2004-2012	2.4	61.4	70.1

Source: Coillte

- Of the 377,000 hectares of public forestry planted since records began, over 25% was planted since the year 2000.
- A total of 9,000 hectares or 2.4% of forest land is currently either unstocked or being restocked.
- In the period 2004 to 2012, 70,100 hectares of trees on public forest land were felled. In the same period, 61,400 hectares were reforested.

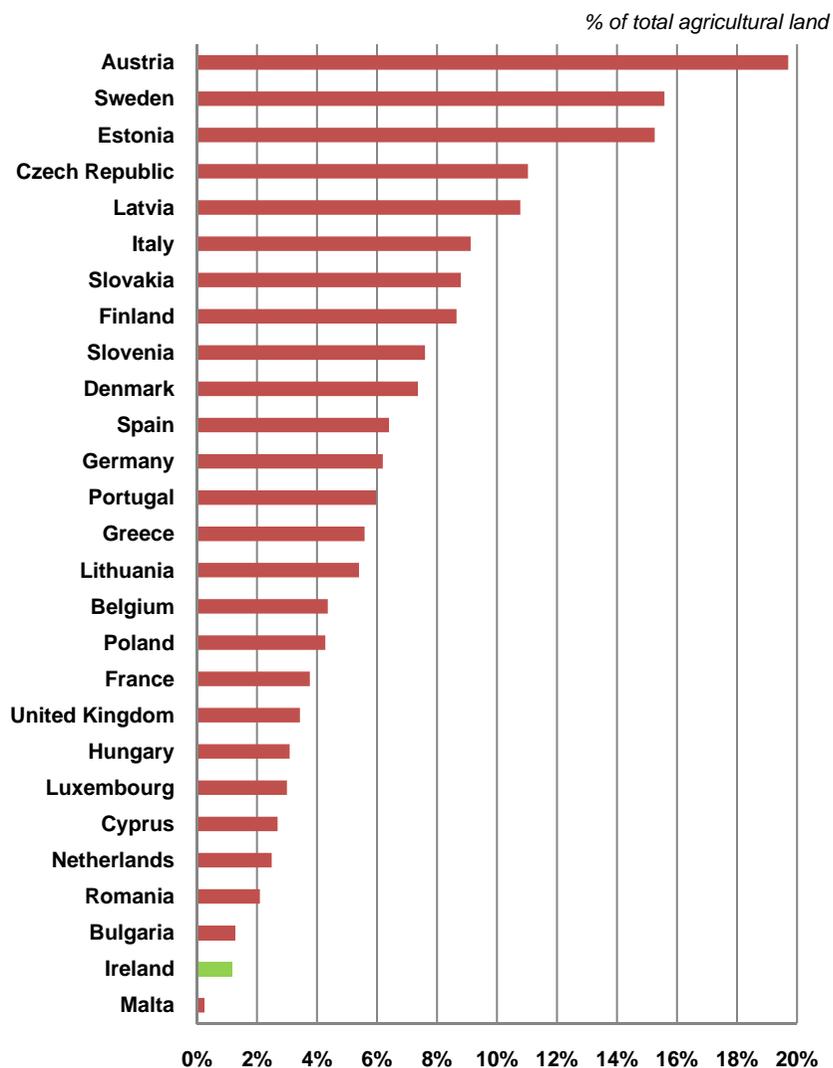
4.6 Ireland: Organic agricultural land 1997-2012

Year	000 hectares		
	Organic land area	Agricultural land area	Organic as % of total agricultural land
1997	19	4,408	0.4%
2000	27	4,408	0.6%
2005	35	4,219	0.8%
2006	40	4,219	1.0%
2007	41	4,139	1.0%
2008	45	4,139	1.1%
2009	48	4,139	1.2%
2010	52	4,569	1.2%
2011	52	4,569	1.2%
2012	52	4,569	1.2%

Source: Department of Agriculture, Food and the Marine

- The amount of land used for organic farming in Ireland has grown by 180% between 1997 and 2012, when it accounted for just over 52,000 hectares.
- Land used for organic farming accounted for 1.2% of total agricultural land in 2012 - the second smallest percentage of agricultural land given over to organic farming in the EU. Austria, with 19.7%, had the highest percentage of agricultural land farmed organically.

4.7 EU: Organic agricultural land 2012



Source: Research Institute of Organic Agriculture FiBL

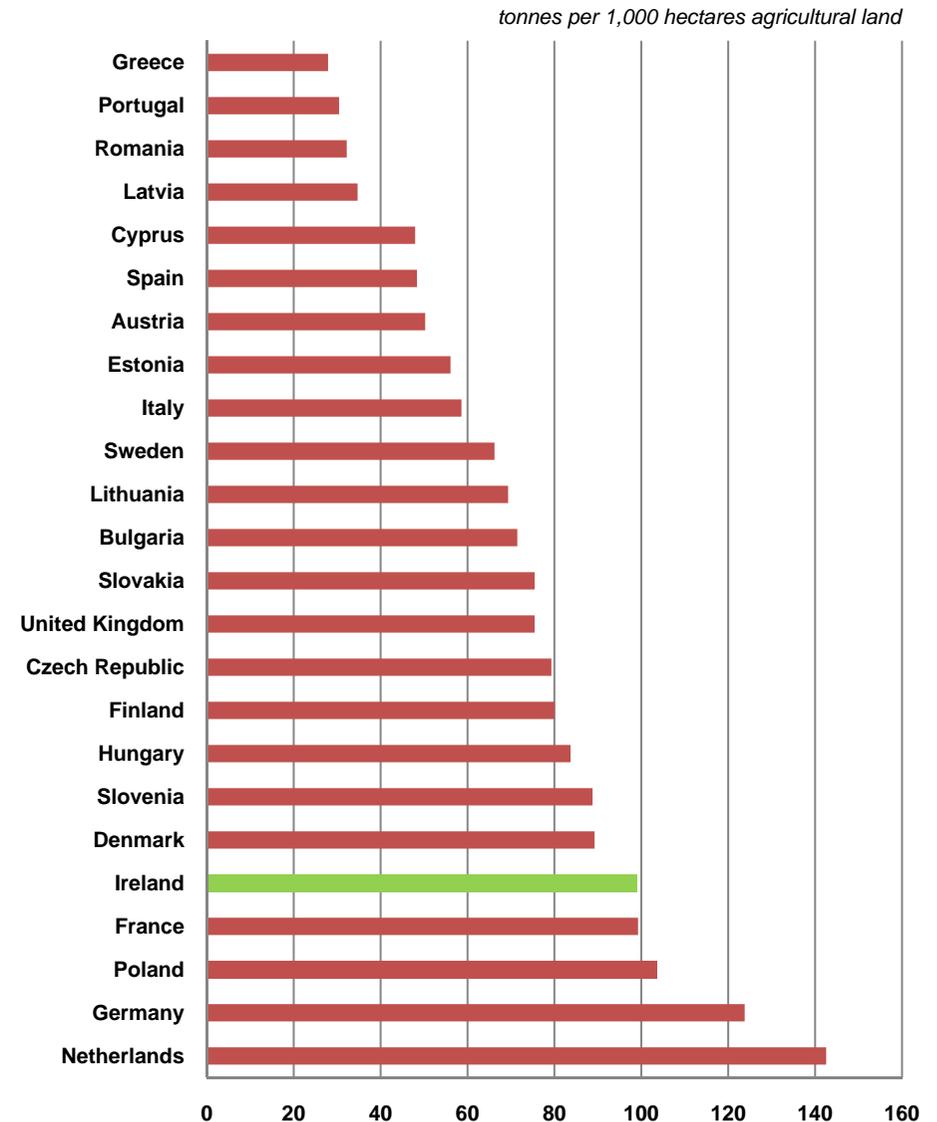
4.8 Ireland: Fertiliser sales 1980-2013

Year	000 tonnes		000 tonnes		Total
	Nitrogen	Average annual % change	Phosphorus	Average annual % change	
1980	248	:	68	:	315
1985	328	5.8%	66	-0.6%	394
1990	379	3.0%	65	-0.4%	444
1995	429	2.5%	62	-0.7%	491
2000	408	-1.0%	49	-4.6%	457
2005	352	-2.9%	39	-4.7%	391
2006	345	-2.0%	37	-3.7%	382
2007	322	-6.8%	32	-12.9%	354
2008	309	-3.9%	26	-18.7%	335
2009	307	-0.7%	20	-23.2%	327
2010	362	18.1%	29	45.0%	392
2011	314	-13.5%	29	-1.9%	342
2012	297	-5.5%	27	-4.7%	324
2013	353	19.0%	37	35.9%	390

Source: Department of Agriculture, Food and the Marine

- Sales of fertilisers fell from 491,000 tonnes in 1995 to 327,000 tonnes in 2009. Since then it has fluctuated, and increased to 390,000 tonnes in 2013, due mainly to lower prices, better weather leading to an improved yield and higher prices for cattle, sheep and milk leading to a better return on usage. The annual fertiliser sales cover the period from October to September.
- Ireland had the fifth highest usage of fertiliser in the EU in 2011, at 99 tonnes per 1,000 hectares of agricultural land. The highest was the Netherlands at 143 tonnes per 1,000 hectares of agricultural land.

4.9 EU: Fertiliser sales 2011



Source: Eurostat (Fertiliser Europe)

4.10 Ireland: Cattle, sheep and pigs June 1980-2013

Year	000		000		000	
	Total cattle	Average annual % change	Total sheep	Average annual % change	Total pigs	Average annual % change
1980	6,909	:	3,292	:	1,031	:
1985	6,819	-0.3%	4,487	6.4%	1,004	-0.5%
1990	6,816	0.0%	8,539	13.7%	1,194	3.5%
1995	7,034	0.6%	8,332	-0.5%	1,550	5.4%
2000	7,037	0.0%	7,555	-1.9%	1,722	2.1%
2005	6,992	-0.1%	6,392	-3.3%	1,688	-0.4%
2006	6,978	-0.2%	5,973	-6.6%	1,643	-2.6%
2007	6,891	-1.2%	5,522	-7.6%	1,588	-3.4%
2008	6,902	0.2%	5,061	-8.3%	1,462	-7.9%
2009	6,891	-0.2%	4,778	-5.6%	1,385	-5.3%
2010	6,607	-4.1%	4,745	-0.7%	1,516	9.5%
2011	6,493	-1.7%	4,830	1.8%	1,549	2.2%
2012	6,754	4.0%	5,170	7.0%	1,571	1.4%
2013	6,903	2.2%	5,077	-1.8%	1,552	-1.2%

Source: CSO

- Sheep numbers declined from a record of 8.5 million in 1990 to 4.8 million in 2011 – a fall of 44%. Cattle numbers increased marginally from 6.9 million in 1980 to 7 million in 1995, before falling to 6.5 million in 2011. Both sheep and cattle numbers have recovered since, and stood at 5.1 million and 6.9 million respectively in 2013.
- In 2013, Ireland had 7.2% of the total cattle population of the EU and 1% of the total pig population.

4.11 EU: Cattle and pigs December 2013

Country	% of total	
	Cattle	Pigs
Malta	0.0%	0.0%
Cyprus	0.1%	0.2%
Luxembourg	0.2%	0.1%
Estonia	0.3%	0.2%
Latvia	0.5%	0.3%
Slovenia	0.5%	0.2%
Slovakia	0.5%	0.4%
Bulgaria	0.7%	0.4%
Greece	0.8%	0.7%
Lithuania	0.8%	0.5%
Hungary	0.9%	2.0%
Finland	1.0%	0.9%
Czech Republic	1.5%	1.1%
Sweden	1.7%	1.0%
Portugal	1.7%	1.4%
Denmark	1.8%	8.5%
Austria	2.2%	2.0%
Romania	2.4%	3.6%
Belgium	2.8%	4.4%
Netherlands	4.7%	8.3%
Poland	6.4%	7.6%
Spain	6.5%	17.7%
Italy	7.2%	5.9%
Ireland	7.2%	1.0%
United Kingdom	11.1%	3.0%
Germany	14.5%	19.3%
France	21.9%	9.2%
EU	100.0%	100.0%
Total livestock (000)	87,243	145,252

Source: Eurostat

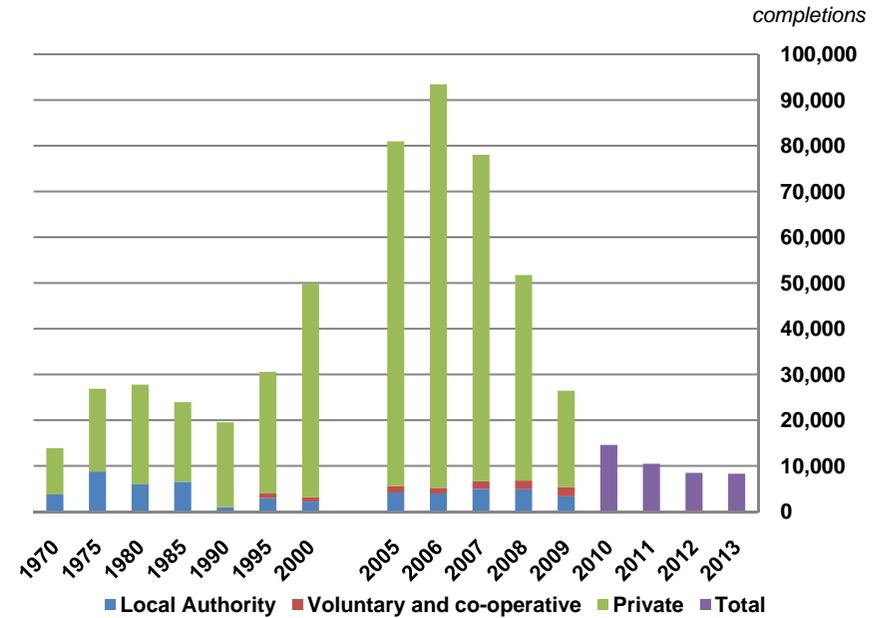
4.12 Ireland: House completions 1970-2013

Year	% of total completions			Total 000	Average annual % change
	Local Authority	Voluntary and co- operative	Private		
1970	27%	0%	73%	13.9	:
1975	33%	0%	67%	26.9	14.1%
1980	22%	0%	78%	27.8	0.7%
1985	27%	0%	73%	23.9	-2.9%
1990	5%	0%	95%	19.5	-4.0%
1995	10%	3%	87%	30.6	9.4%
2000	4%	2%	94%	49.8	10.3%
2005	5%	2%	93%	81.0	10.2%
2006	4%	1%	94%	93.4	15.4%
2007	6%	2%	92%	78.0	-16.5%
2008	10%	4%	87%	51.7	-33.7%
2009	13%	8%	80%	26.4	-48.9%
2010	:	:	:	14.6	-44.8%
2011	:	:	:	10.5	-28.2%
2012	:	:	:	8.5	-19.0%
2013	:	:	:	8.3	-2.2%

Source: Department of the Environment, Community and Local Government

- Total house completions rose steadily from 19,500 in 1990 to 93,400 in 2006 before falling sharply to just 8,300 in 2013.
- The percentage of house completions by Local Authorities has risen from 4% in 2006 to 13% in 2009. Over the same period the percentage of Voluntary and co-operative house completions has risen from 1% to 8%.

Ireland: House completions 1970-2013



- In 2006 – the peak year for house completions – private houses accounted for 94% of all house completions. This declined to 80% in 2009.

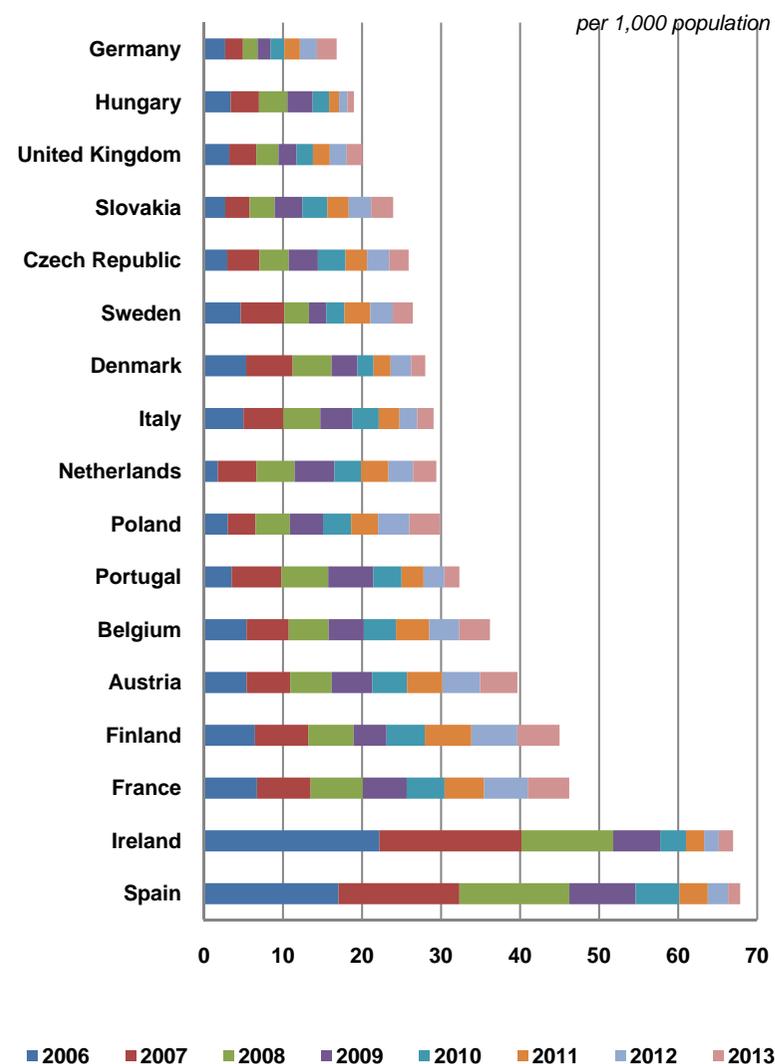
4.13 EU: Dwellings completions 2006-2013

Country	per 1,000 population							
	2006	2007	2008	2009	2010	2011	2012	2013
Germany	2.7	2.3	1.9	1.7	1.7	2.0	2.2	2.5
Hungary	3.4	3.6	3.6	3.2	2.1	1.3	1.1	0.8
United Kingdom	3.2	3.4	2.8	2.3	2.1	2.1	2.1	2.0
Slovakia	2.7	3.1	3.2	3.5	3.2	2.7	2.8	2.8
Czech Republic	3.0	4.1	3.7	3.7	3.5	2.7	2.8	2.5
Sweden	4.6	5.5	3.1	2.2	2.3	3.3	2.9	2.5
Denmark	5.3	5.9	4.9	3.3	2.0	2.2	2.6	1.8
Italy	5.0	5.1	4.7	4.1	3.3	2.6	2.3	2.1
Netherlands	1.8	4.9	4.8	5.0	3.4	3.5	3.1	3.0
Poland	3.0	3.5	4.3	4.2	3.6	3.4	4.0	3.9
Portugal	3.5	6.3	5.9	5.7	3.6	2.8	2.6	1.9
Belgium	5.4	5.3	5.0	4.5	4.1	4.2	3.8	3.9
Austria	5.4	5.5	5.2	5.1	4.4	4.5	4.8	4.7
Finland	6.5	6.7	5.8	4.2	4.8	5.9	5.8	5.3
France	6.7	6.8	6.6	5.5	4.8	5.0	5.5	5.3
Ireland	22.2	18.0	11.6	5.9	3.3	2.3	1.9	1.8
Spain	17.0	15.3	13.9	8.4	5.5	3.6	2.6	1.5

Source: DKM, Euroconstruct, Eurostat

- Ireland and Spain had the highest levels of dwelling completions per 1,000 population over the period 2006 to 2013, despite both countries showing large falls since 2006.
- In 2013, there were 1.8 house completions per 1,000 population in Ireland. This was the joint third lowest level of completions of the 17 EU countries for which data were available.

EU: Dwellings completions 2006-2013



5. Energy



Contents

		Source
5.1	Ireland: Primary energy requirement and final energy consumption 1990-2012	Sustainable Energy Authority of Ireland
5.2	EU: Final energy consumption by economic sector 2012	Eurostat
5.3	EU: Final energy consumption by fuel type 2012	Eurostat
5.4	EU: Energy intensity 2012	Eurostat
5.5	Ireland: Primary energy production 1990-2012	Sustainable Energy Authority of Ireland
5.6	Ireland: Renewable energy production 1990-2012	Sustainable Energy Authority of Ireland
5.7	Ireland: Electricity generation from renewable sources 1990-2012	Sustainable Energy Authority of Ireland
5.8	EU: Electricity generation from renewable sources 2012	Eurostat
5.9	Ireland: Heat consumption from renewable sources 1990-2012	Sustainable Energy Authority of Ireland
5.10	Ireland: Transport use from renewable sources 2006-2012	Sustainable Energy Authority of Ireland
5.11	Ireland: Imported energy dependency 1990-2012	Sustainable Energy Authority of Ireland
5.12	EU: Imported energy dependency 2012	Eurostat
5.13	Ireland: Fuel imports 1990-2012	Sustainable Energy Authority of Ireland

5.1 Ireland: Primary energy requirement and final energy consumption 1990-2012

000 tonnes oil eq.

Year	Primary energy requirement	Final energy consumption	Final energy consumption as % of Primary energy requirement
1990	9,497	7,249	76.3%
1995	10,568	7,979	75.5%
2000	13,780	10,814	78.5%
2005	15,829	12,607	79.6%
2006	15,889	12,977	81.7%
2007	16,234	13,263	81.7%
2008	16,353	13,232	80.9%
2009	14,752	12,011	81.4%
2010	14,837	11,947	80.5%
2011	13,872	11,172	80.5%
2012	13,231	10,762	81.3%

Source: Sustainable Energy Authority of Ireland

- Ireland's primary energy requirement increased from 9.5 million tonnes of oil equivalent (t.o.e.) in 1990 to 16.4 million t.o.e. in 2008 before falling to 13.2 million t.o.e. in 2012.
- Final energy consumption as a proportion of the primary energy requirement has grown from 76% in 1990 to 81% in 2012.
- Transport accounted for 39% of Ireland's final energy consumption in 2012, which was the sixth highest proportion in the EU.
- Oil accounted for 57% of Ireland's total final energy consumption in 2012, which was the fifth highest proportion in the EU (see Table 5.3).

5.2 EU: Final energy consumption by economic sector 2012

% of total final energy consumption

Country	Transport	Industry	Residential	Agriculture	Services	Other
Finland	19%	43%	21%	3%	8%	6%
Slovakia	23%	42%	20%	1%	14%	0%
Romania	24%	30%	36%	2%	8%	1%
Czech Republic	25%	34%	25%	2%	13%	1%
Sweden	26%	36%	23%	1%	14%	0%
Latvia	27%	17%	35%	3%	19%	0%
Hungary	26%	21%	34%	3%	15%	0%
Belgium	27%	36%	20%	2%	12%	3%
Poland	27%	23%	31%	6%	13%	0%
Estonia	28%	20%	34%	4%	15%	0%
Germany	29%	29%	27%	0%	15%	0%
Netherlands	29%	27%	20%	7%	17%	0%
Austria	31%	33%	24%	2%	9%	0%
EU	32%	26%	26%	2%	13%	1%
Lithuania	33%	21%	32%	2%	13%	0%
Denmark	33%	16%	31%	5%	14%	0%
Italy	33%	25%	26%	2%	13%	0%
Bulgaria	33%	28%	26%	2%	11%	0%
France	33%	20%	28%	3%	15%	1%
Greece	37%	17%	29%	2%	13%	2%
United Kingdom	37%	19%	30%	1%	12%	1%
Ireland	39%	21%	25%	2%	12%	0%
Slovenia	39%	25%	24%	2%	9%	0%
Spain	40%	30%	17%	2%	11%	0%
Portugal	40%	25%	19%	3%	12%	1%
Cyprus	55%	9%	20%	2%	13%	1%
Malta	60%	10%	17%	0%	12%	2%
Luxembourg	62%	14%	10%	1%	13%	0%

Source: Eurostat

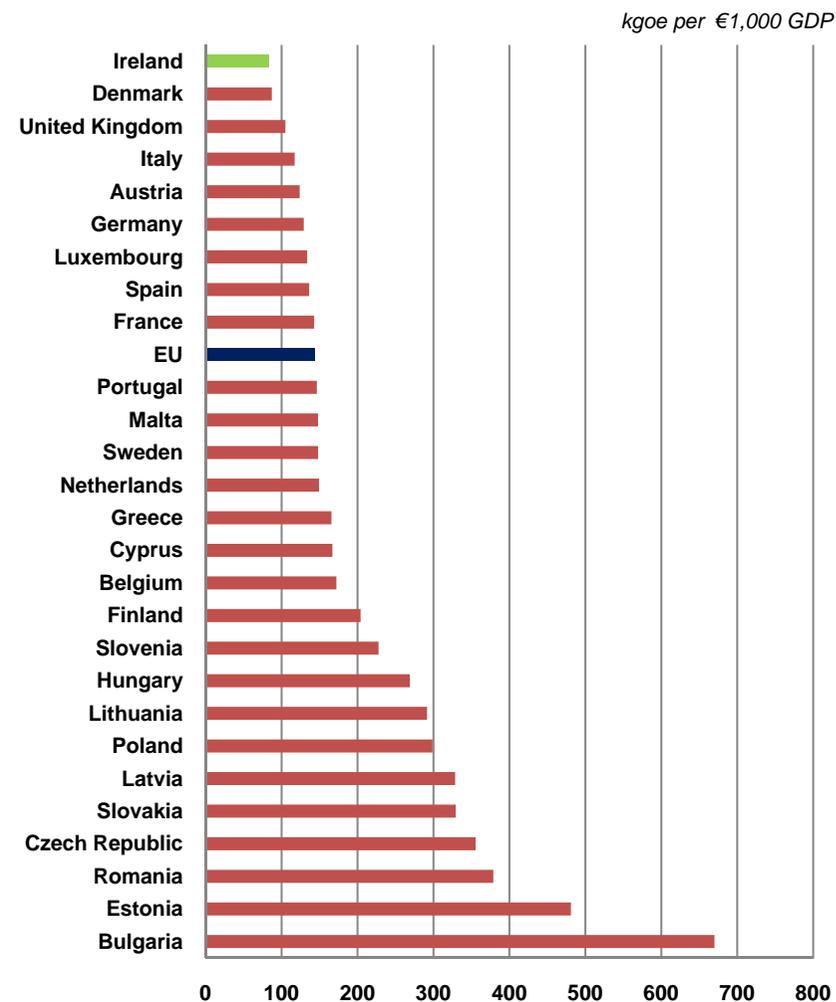
5.3 EU: Final energy consumption by fuel type 2012

% of total final energy consumption

Country	Oil	Solid fuel	Gas	Electricity	Renewable energy	Derived heat
Latvia	32%	2%	10%	15%	27%	13%
Finland	29%	3%	4%	28%	20%	17%
Sweden	28%	3%	2%	34%	19%	14%
Romania	30%	4%	27%	16%	17%	7%
Estonia	34%	3%	8%	21%	17%	17%
Lithuania	34%	5%	11%	16%	16%	19%
Austria	36%	4%	18%	20%	14%	7%
Portugal	49%	0%	10%	25%	14%	2%
Slovenia	49%	1%	11%	22%	13%	4%
Bulgaria	34%	5%	13%	26%	13%	11%
Denmark	41%	1%	11%	19%	10%	18%
Greece	58%	1%	6%	26%	9%	0%
Poland	32%	19%	15%	17%	9%	9%
Czech Republic	26%	12%	25%	20%	8%	9%
Hungary	28%	3%	35%	19%	8%	7%
France	43%	3%	20%	25%	8%	2%
Spain	48%	2%	18%	25%	7%	0%
EU	39%	4%	23%	22%	7%	4%
Germany	38%	5%	25%	21%	6%	5%
Cyprus	73%	0%	0%	22%	6%	0%
Italy	38%	3%	30%	21%	5%	3%
Belgium	40%	4%	30%	21%	5%	1%
Slovakia	22%	14%	33%	20%	4%	7%
Ireland	57%	5%	16%	19%	3%	0%
Luxembourg	67%	1%	15%	13%	2%	2%
Netherlands	35%	3%	39%	18%	2%	4%
United Kingdom	42%	3%	32%	20%	2%	1%
Malta	64%	0%	0%	35%	1%	0%

Source: Eurostat

5.4 EU: Energy intensity 2012



Source: Eurostat

- Ireland had the lowest energy intensity in the EU in 2012, at 83 kgs of oil equivalent (kgoe) per €1,000 of GDP.

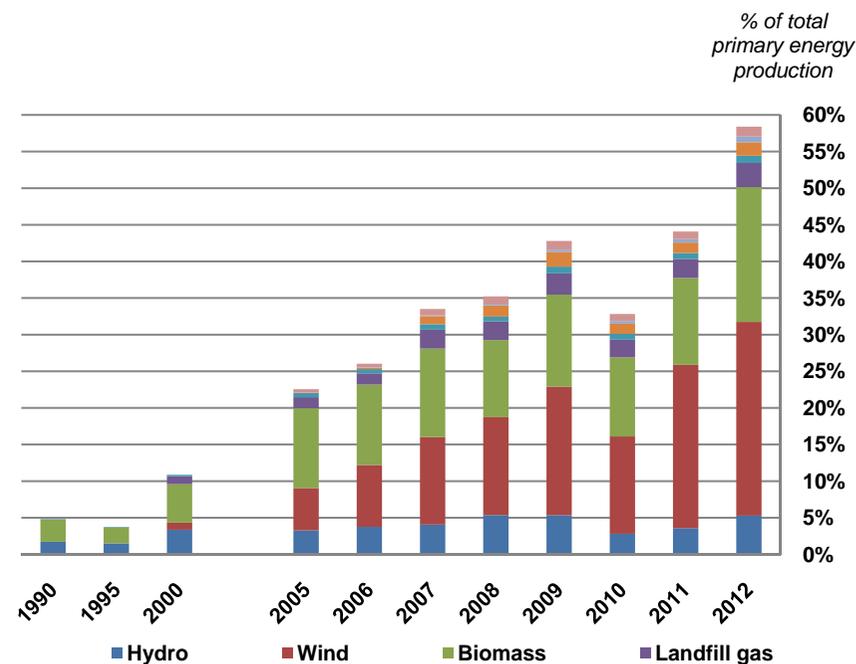
5.5 Ireland: Primary energy production 1990-2012

% of total primary energy production			
Year	Peat products	Natural gas	Renewable energy
1990	41%	54%	5%
1995	41%	55%	4%
2000	45%	44%	11%
2005	50%	28%	23%
2006	49%	25%	26%
2007	44%	22%	33%
2008	42%	23%	35%
2009	39%	18%	43%
2010	54%	13%	33%
2011	45%	10%	44%
2012	24%	14%	58%

Source: Sustainable Energy Authority of Ireland

- The use of renewable energy sources as a proportion of total primary energy production in Ireland increased from 5% in 1990 to 58% in 2012.
- Natural gas, as a proportion of total primary energy production has fallen from 54% in 1990 to 14% in 2012.
- Peat increased from 39% to 54% of total primary energy production between 2009 and 2010, and then fell to 24% in 2012.

5.6 Ireland: Renewable energy production 1990-2012



Source: Sustainable Energy Authority of Ireland

- Wind has become the main source of renewable energy production in recent years, increasing from less than 1% of total renewable energy production in 1995 to over 45% in 2012.
- The share of water and biomass has fallen over the same period and they now account for 9% and 31% respectively of the total renewable energy being produced.

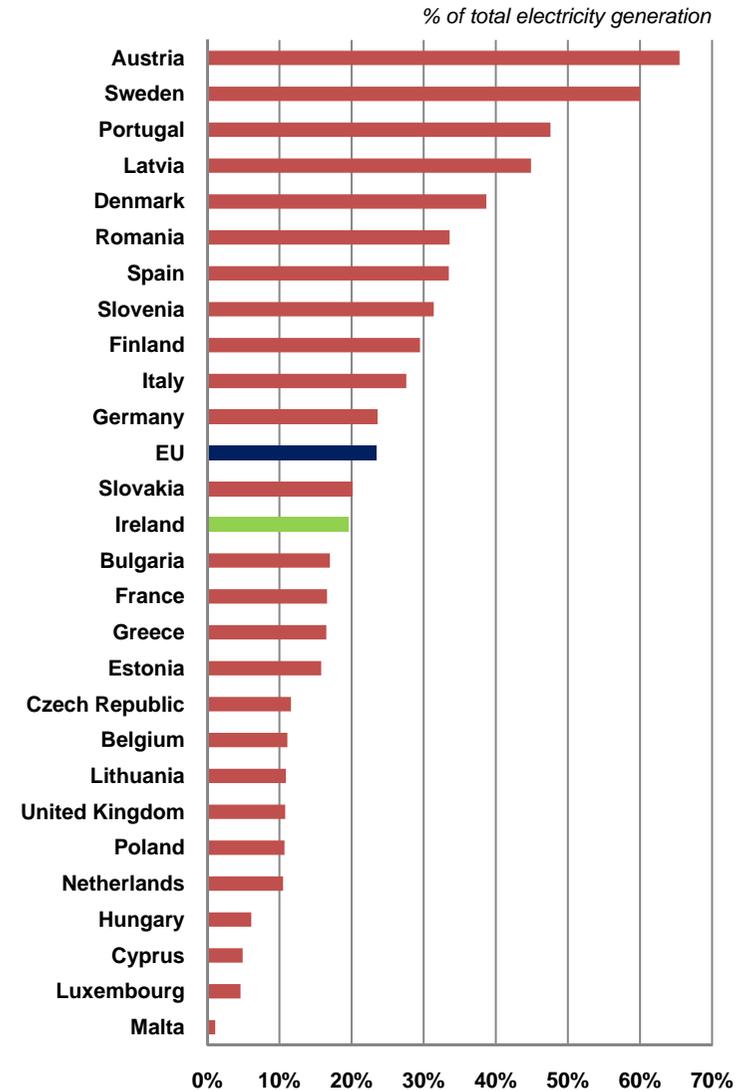
5.7 Ireland: Electricity generation from renewable sources 1990-2012

Year	% of total electricity generated			
	Hydro	Wind	Biomass	Total
1990	5.3%	0.0%	0.0%	5.3%
1995	4.5%	0.1%	0.0%	4.6%
2000	3.4%	1.0%	0.0%	4.8%
2005	2.7%	4.0%	0.0%	7.2%
2006	2.6%	5.6%	0.0%	8.7%
2007	2.5%	6.8%	0.0%	9.9%
2008	2.5%	7.9%	0.1%	11.1%
2009	2.6%	10.2%	0.2%	13.7%
2010	2.6%	11.2%	0.4%	14.9%
2011	2.7%	13.7%	0.5%	17.6%
2012	2.7%	15.3%	0.9%	19.6%

Source: Sustainable Energy Authority of Ireland

- The use of renewable energy sources in the generation of electricity increased from 5.3% in 1990 to 19.6% in 2012. The EU Renewable Energy Directive 2010 target for electricity for Ireland was 13.2%.
- Wind is the main source, with its share growing to 15.3% of total electricity generation in 2012.
- Ireland's use of renewable energy in total electricity generation in 2012 at 19.6% was 13th highest among EU countries.
- Austria had the highest proportion of renewable energy in total electricity generation; 66% of its electricity generation was from renewable energy sources in 2012.

5.8 EU: Electricity generation from renewable sources 2012



Source: Eurostat

5.9 Ireland: Heat consumption from renewable sources 1990-2012

% of total heat consumption

Year	Biomass	Biogas	Solar	Geothermal	Total
1990	2.5%	0.1%	0.0%	0.0%	2.6%
1995	2.1%	0.1%	0.0%	0.0%	2.1%
2000	2.3%	0.1%	0.0%	0.0%	2.4%
2005	3.2%	0.1%	0.0%	0.1%	3.5%
2006	3.4%	0.1%	0.0%	0.2%	3.7%
2007	3.4%	0.1%	0.0%	0.2%	3.8%
2008	3.1%	0.1%	0.1%	0.3%	3.5%
2009	3.6%	0.2%	0.1%	0.3%	4.2%
2010	3.6%	0.2%	0.1%	0.3%	4.3%
2011	4.0%	0.2%	0.2%	0.4%	4.7%
2012	4.4%	0.2%	0.2%	0.4%	5.2%

Source: Sustainable Energy Authority of Ireland

- Consumption of heat from renewable energy sources has grown from 2.6% in 1990 to 5.2% in 2012. Biomass accounted for 4.4% of the total heat consumption in 2012. The national target for heat from renewable energy sources is 12% by 2020.

5.10 Ireland: Transport use from renewable sources 2006-2012

% of total transport energy consumption

Year	Biodiesel	Biogasoline	Pure plant oil	Total
2006	0.0%	0.0%	0.0%	0.1%
2007	0.4%	0.1%	0.0%	0.5%
2008	0.8%	0.4%	0.1%	1.2%
2009	1.3%	0.6%	0.0%	1.9%
2010	1.6%	0.8%	0.1%	2.4%
2011	1.8%	0.8%	0.0%	2.6%
2012	1.6%	0.8%	0.0%	2.4%

Source: Sustainable Energy Authority of Ireland

- Renewable energy sources for transport have only been used since 2006 and have grown to 2.4% of total transport energy consumption in 2012. Biodiesel and biogasoline accounted for almost all of the renewable fuel sources.
- The national and EU targets for transport use from renewable energy sources is 10% by 2020. This target was announced in the 2007 Energy White Paper.

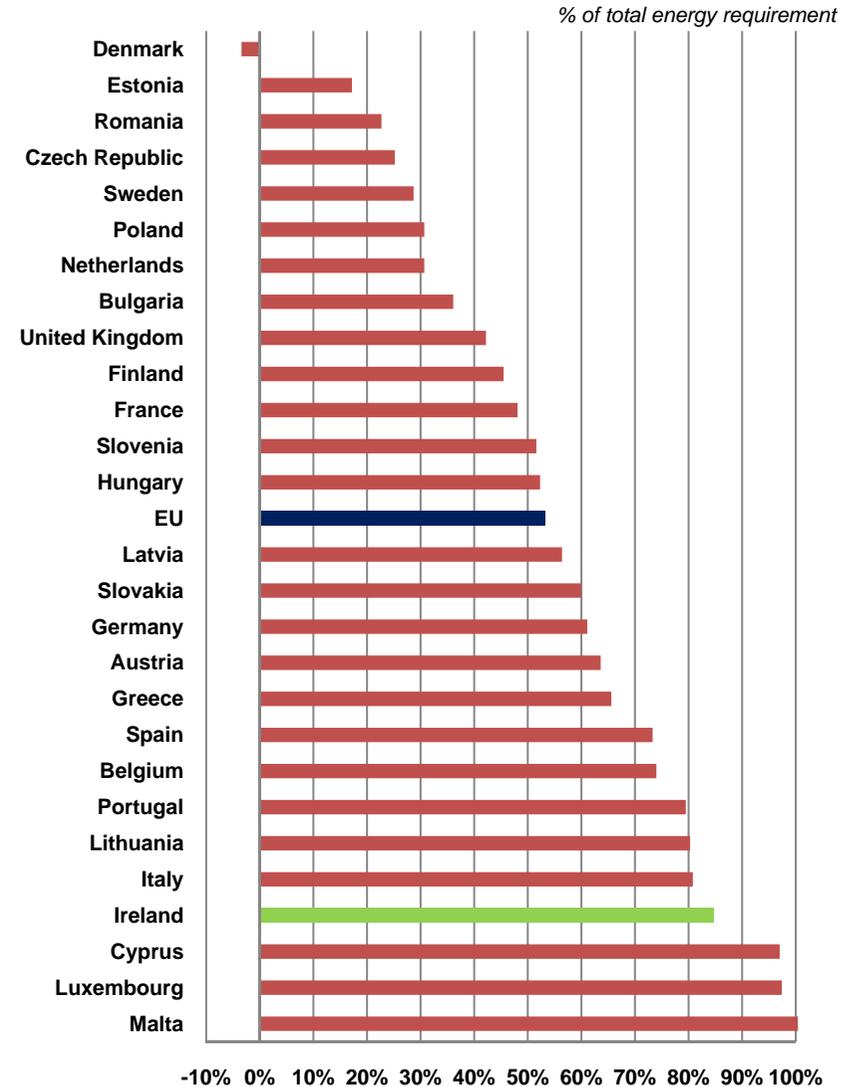
5.11 Ireland: Imported energy dependency 1990-2012

Year	% of total energy requirement				Total import dependency
	Oil	Gas	Coal	Peat, electricity and other fuels	
1990	49%	0%	20%	0%	69%
1995	51%	1%	17%	0%	69%
2000	56%	17%	12%	0%	85%
2005	59%	18%	12%	1%	90%
2006	58%	22%	10%	1%	91%
2007	55%	24%	9%	1%	88%
2008	55%	25%	10%	0%	90%
2009	53%	27%	9%	1%	90%
2010	51%	29%	6%	1%	87%
2011	50%	28%	10%	1%	89%
2012	46%	28%	10%	1%	85%

Source: Sustainable Energy Authority of Ireland

- Ireland's imported energy dependency increased from 69% in 1990 to 91% in 2006 then fell to 85% in 2012.
- The import dependency on oil has fallen from 59% in 2005 to 46% in 2012. Gas accounted for 28% of Ireland's imported energy dependency in 2012. In 2012, Ireland had the fourth highest level of imported energy dependency in the EU, at 85%.

5.12 EU: Imported energy dependency 2012



Source: Eurostat

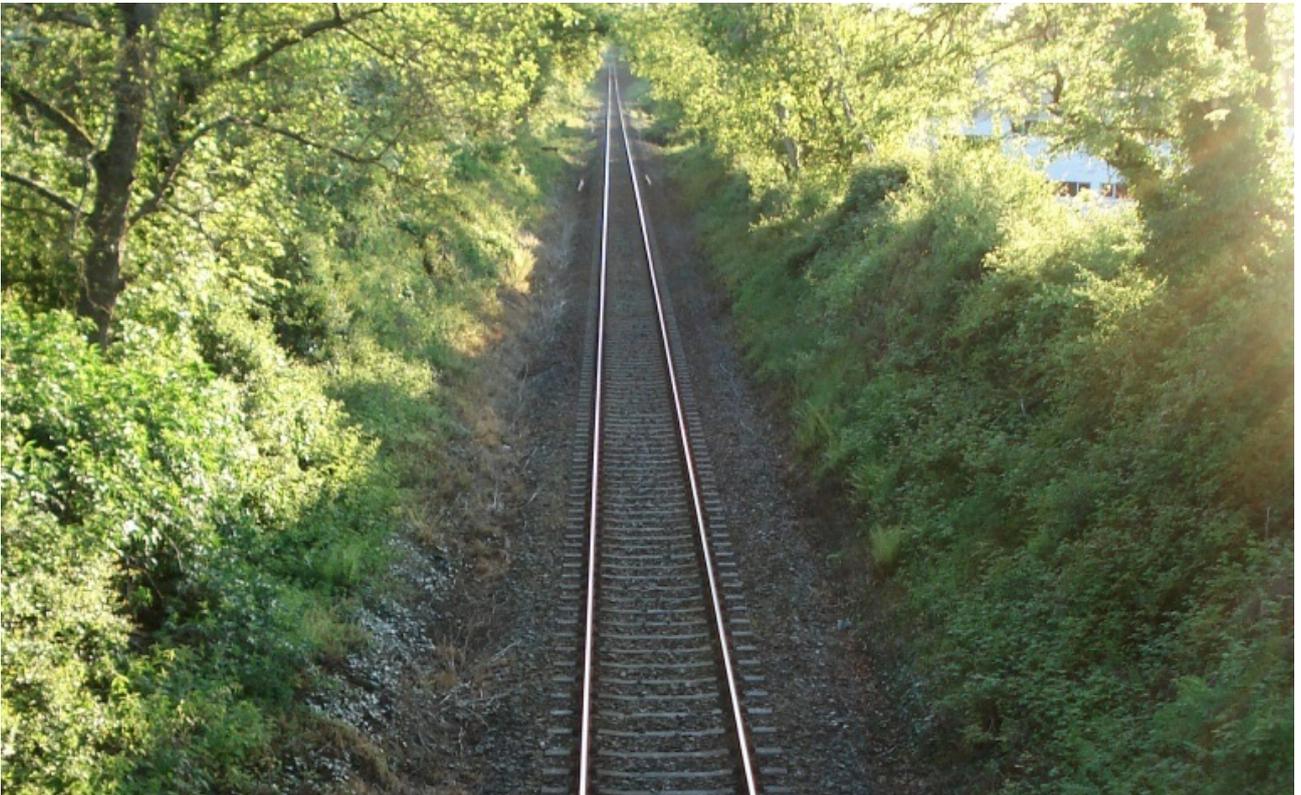
5.13 Ireland: Fuel imports 1990–2012

Year	% of total					Total 000 tonnes oil eq.
	Coal	Crude oil	Other oil products	Natural gas	Electricity	
1990	29%	29%	42%	0%	0%	6,903
1995	24%	30%	45%	1%	0%	7,738
2000	14%	24%	42%	20%	0%	12,378
2005	13%	23%	43%	21%	1%	14,598
2006	11%	22%	42%	25%	1%	14,718
2007	10%	24%	39%	27%	1%	14,417
2008	11%	22%	39%	28%	0%	14,944
2009	10%	21%	39%	30%	0%	13,418
2010	7%	23%	36%	34%	0%	13,253
2011	11%	24%	34%	32%	0%	12,558
2012	12%	24%	31%	34%	0%	11,471

Source: Sustainable Energy Authority of Ireland

- Ireland's imports of fuel, expressed in tonnes of oil equivalent, have been falling since 2006. The proportion accounted for by imports of natural gas has grown from 20% in 2000 to 34% in 2012.
- Other oil products, (such as diesel, gasoline, LPG, kerosene and jet kerosene) accounted for 31% of Ireland's fuel imports in 2012.

6. Transport



Contents

		Source
6.1	Ireland: Vehicles under current licence 1985-2012	Department of Transport, Tourism and Sport
6.2	EU: Passenger cars 2012	Eurostat
6.3	Ireland: New private vehicles licensed by emission class 2005-2013	CSO Transport Statistics
6.4	Ireland: Road freight transport 1990-2012	CSO Road freight transport surveys
6.5	EU: Road freight transport 2012	Eurostat
6.6	Ireland: Rail and bus passenger and vehicle traffic 1996-2012	CSO Transport Statistics
6.7	EU: Rail passenger traffic 2012	Eurostat
6.8	Ireland: International passengers through Irish ports 1995-2012	CSO Tourism and Travel Statistics
6.9	EU: International air passengers 2012	Eurostat
6.10	Ireland: Means of travel to work 1986-2011	CSO Census of Population

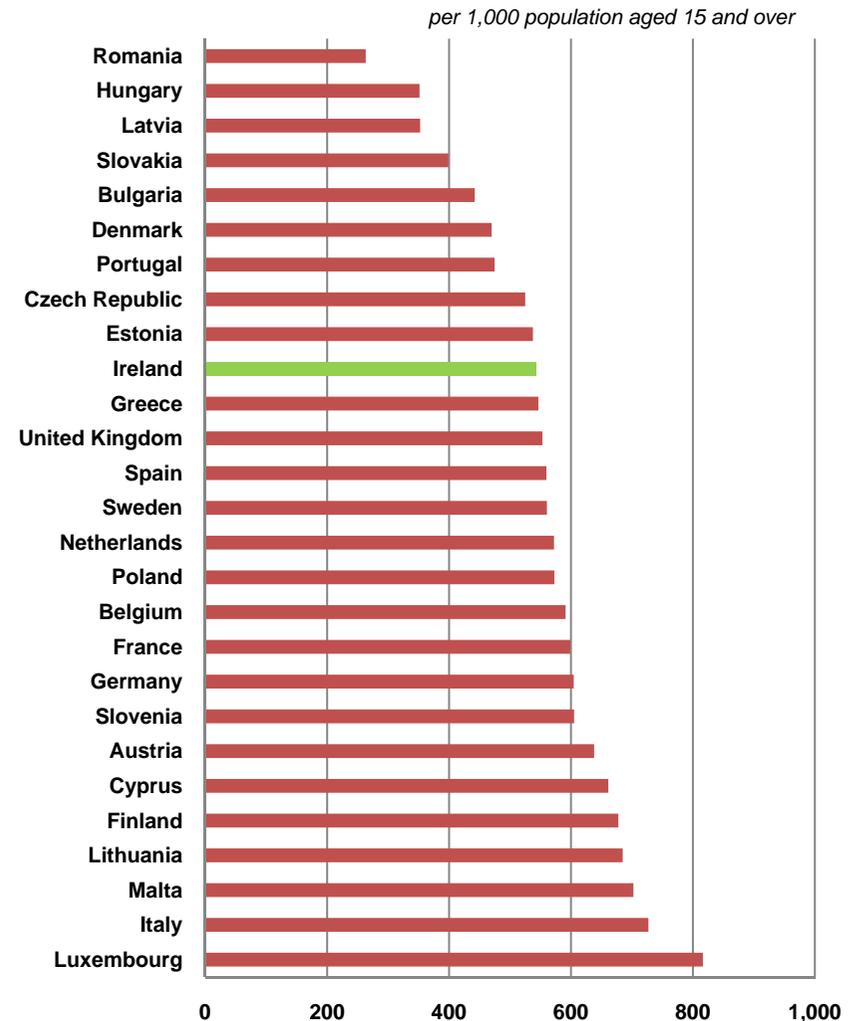
6.1 Ireland: Vehicles under current licence 1985-2012

Year	Private cars 000	Average annual % change	Goods vehicles 000	Average annual % change	Other vehicles 000	Average annual % change	Total 000
1985	710	:	93	:	112	:	915
1990	796	2.3%	143	8.9%	115	0.5%	1,054
1995	990	4.5%	142	-0.2%	130	2.6%	1,263
2000	1,319	5.9%	206	7.7%	157	3.8%	1,682
2005	1,662	4.7%	287	6.9%	190	3.8%	2,139
2006	1,779	7.0%	319	11.2%	199	4.7%	2,296
2007	1,883	5.8%	346	8.6%	213	7.0%	2,442
2008	1,924	2.2%	351	1.6%	222	4.3%	2,498
2009	1,902	-1.1%	344	-2.1%	221	-0.3%	2,468
2010	1,873	-1.6%	327	-4.9%	217	-2.1%	2,416
2011	1,888	0.8%	321	-1.9%	216	-0.1%	2,425
2012	1,883	-0.3%	309	-3.7%	211	-2.3%	2,403

Source: Department of Transport, Tourism and Sport

- The number of licensed vehicles increased by 164%, from 915,000 to 2.4 million, between 1985 and 2012. Private cars accounted for the majority of this growth with an increase of almost 1.2 million between 1985 and 2012.
- The number of goods vehicles licensed has grown more than threefold in the same period from 93,000 to 309,000. As with private cars, the numbers peaked in 2008 and there were subsequently decreases from 2009 to 2012.
- Ireland had 543 passenger cars per 1,000 of the population aged 15 or over in 2012. This was the 10th lowest in the EU. Luxembourg had the highest ratio, at 816 and Romania the lowest at 263.

6.2 EU: Passenger cars 2012



Note: Data for Denmark refers to 2008
 Data for France refers to 2009
 Data for Greece refers to 2010
 Data for Italy and Sweden refers to 2011
 Source: Eurostat

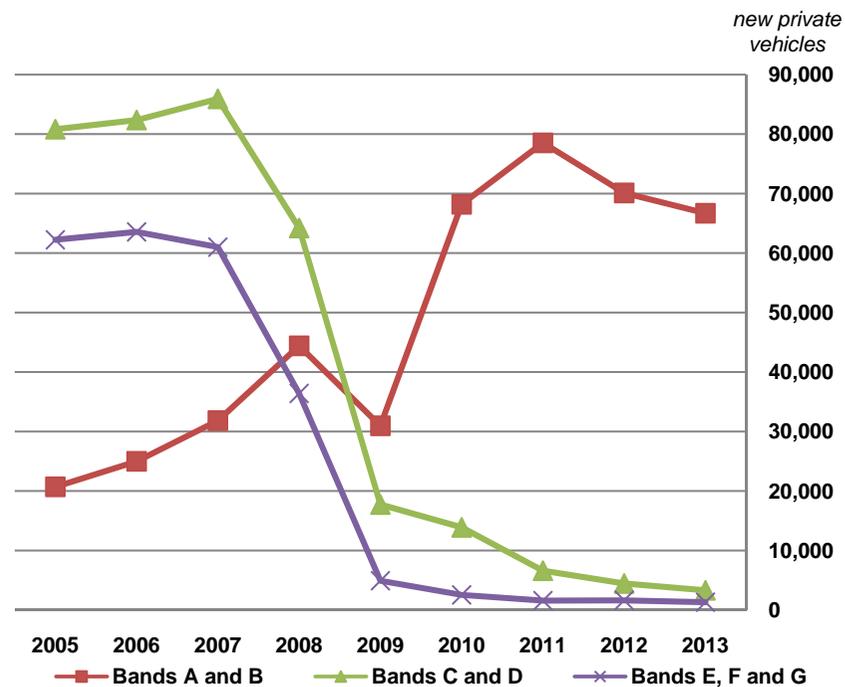
6.3 Ireland: New private vehicles licensed by emission class 2005-2013

Year	% of total				Total 000
	Bands A and B	Bands C and D	Bands E, F and G	Unclassified	
2005	12%	49%	37%	2%	166.3
2006	14%	48%	37%	1%	173.3
2007	18%	48%	34%	1%	180.8
2008	30%	44%	25%	1%	146.5
2009	57%	33%	9%	2%	54.4
2010	80%	16%	3%	0%	84.9
2011	90%	8%	2%	0%	86.9
2012	92%	6%	2%	0%	76.3
2013	93%	5%	2%	0%	71.3

Source: CSO

- On July 1st 2008, the basis for motor taxation charges changed from engine size to the emission rating of the vehicle.
- The proportion of new vehicles registered in emission bands A and B increased from 12% in 2005 to 93% in 2013.

Ireland: New private vehicles licensed by emission class 2005-2013



6.4 Ireland: Road freight transport 1990-2012

Year	<i>million</i>	Average annual % change	<i>000</i>	Average annual % change	<i>million</i>	Average annual % change
	Tonne-kilometres		Tonnes carried		Vehicle-kilometres	
1990	5,130	:	81,440	:	783	:
1995	5,493	1.4%	85,317	0.9%	974	4.5%
2000	12,263	17.4%	191,264	17.5%	1,595	10.4%
2005	17,819	7.8%	291,883	8.8%	2,312	8.1%
2006	17,322	-2.8%	299,030	2.4%	2,242	-3.0%
2007	18,707	8.0%	299,307	0.1%	2,332	4.0%
2008	17,289	-7.6%	245,788	-17.9%	2,207	-5.4%
2009	12,071	-30.2%	148,328	-39.7%	1,585	-28.2%
2010	10,924	-9.5%	125,865	-15.1%	1,457	-8.1%
2011	9,941	-9.0%	110,260	-12.4%	1,338	-8.2%
2012	9,895	-0.5%	108,078	-2.0%	1,316	-1.6%

Source: CSO

- Road freight transport in Ireland peaked in 2007, when there were just under 300 million tonnes carried and over 18.7 billion tonne-kilometres travelled. This fell significantly in the next five years, with only 108 million tonnes carried and just under 10 billion tonne-kilometres travelled in 2012.
- Relative to 2006, Ireland had the second lowest tonne-kilometres and vehicle-kilometres travelled of EU Member States for which data were available in 2012. Tonne-kilometres were at 58% of the level in 2006.

6.5 EU: Road freight transport 2012

Country	<i>2006=100</i>	
	Tonne-kilometres	Vehicle-kilometres
Romania	51.8	58.0
Ireland	57.6	58.3
Belgium	58.1	50.4
Greece	61.3	70.3
Italy	66.3	68.5
Austria	66.6	74.1
Portugal	73.5	65.9
Cyprus	76.9	88.4
Denmark	78.5	76.5
France	81.6	83.5
Spain	82.4	78.8
Netherlands	81.5	79.0
Sweden	83.9	90.4
Finland	85.7	84.1
Luxembourg	90.3	77.0
United Kingdom	93.3	90.9
Germany	93.0	96.2
Czech Republic	101.7	87.6
Estonia	104.4	88.1
Hungary	110.7	101.3
Latvia	113.3	65.8
Lithuania	129.3	113.6
Slovenia	131.2	116.9
Slovakia	133.7	111.8
Poland	173.3	143.5
Bulgaria	177.1	139.4

Note: Data not available for Malta
United Kingdom data refers to 2011
Source: Eurostat

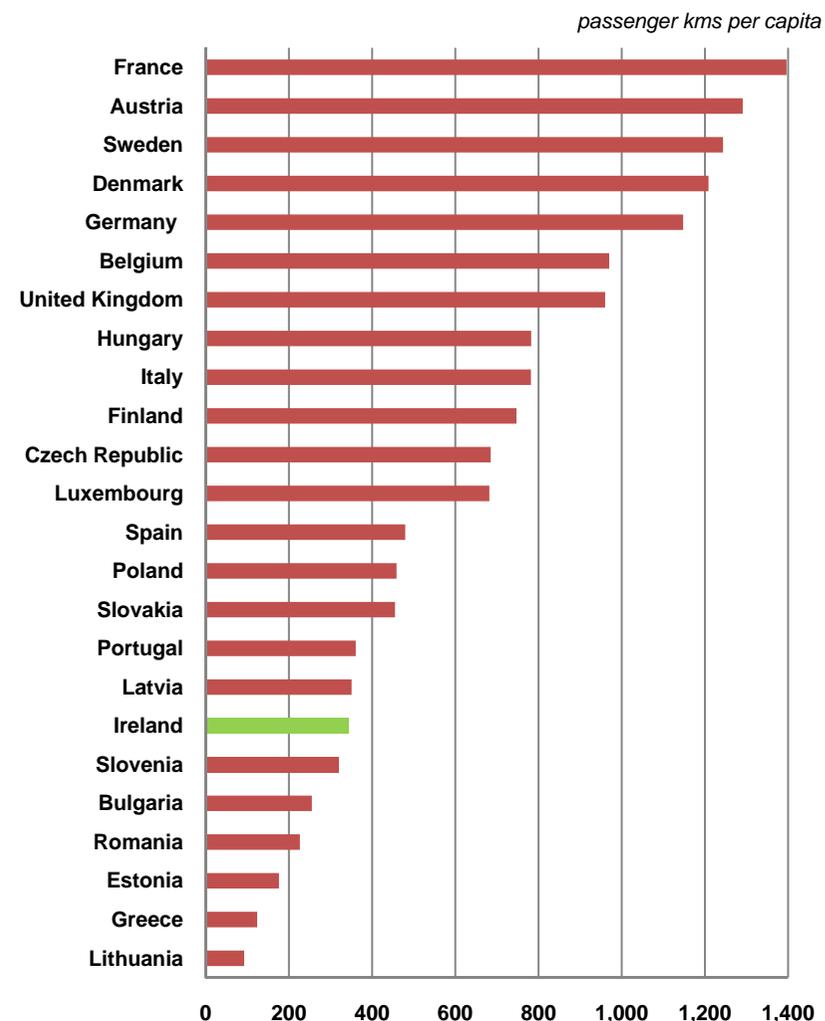
6.6 Ireland: Rail and bus passenger and vehicle traffic 1996-2012

Year	million		million	
	Rail passenger-kilometres	Average annual % change	Bus and coach vehicle-kilometres	Average annual % change
1996	1,295	:	:	:
2000	1,389	1.8%	256	:
2005	1,781	5.1%	291	2.6%
2006	1,872	5.1%	295	1.4%
2007	2,007	7.2%	305	3.4%
2008	1,976	-1.6%	315	3.3%
2009	1,683	-14.8%	329	4.4%
2010	1,678	-0.3%	311	-5.5%
2011	1,638	-2.4%	308	-1.0%
2012	1,578	-3.7%	298	-3.2%

Source: CSO

- Rail usage increased in Ireland between 1996 and 2007, growing from almost 1.3 billion passenger-kilometres to just over 2 billion passenger-kilometres. However, it had decreased to just under 1.6 billion passenger-kilometres in 2012.
- Bus and coach travel in Ireland increased by 29% in the period 2000 to 2009, from 255 million vehicle-kilometres in 2000 to 329 million vehicle-kilometres in 2009. However, it has since fallen to 298 million vehicle-kilometres in 2012.
- There were 344 kilometres per capita travelled by rail passengers in Ireland in 2012. France, at 1,397 had the highest kilometres per capita travelled in 2012.

6.7 EU: Rail passenger traffic 2012



Note: Data for Belgium and Luxembourg refers to 2011
 Data for Greece and Italy refers to 2010
 No data available for Netherlands
 Data not applicable for Cyprus or Malta
 Source: Eurostat

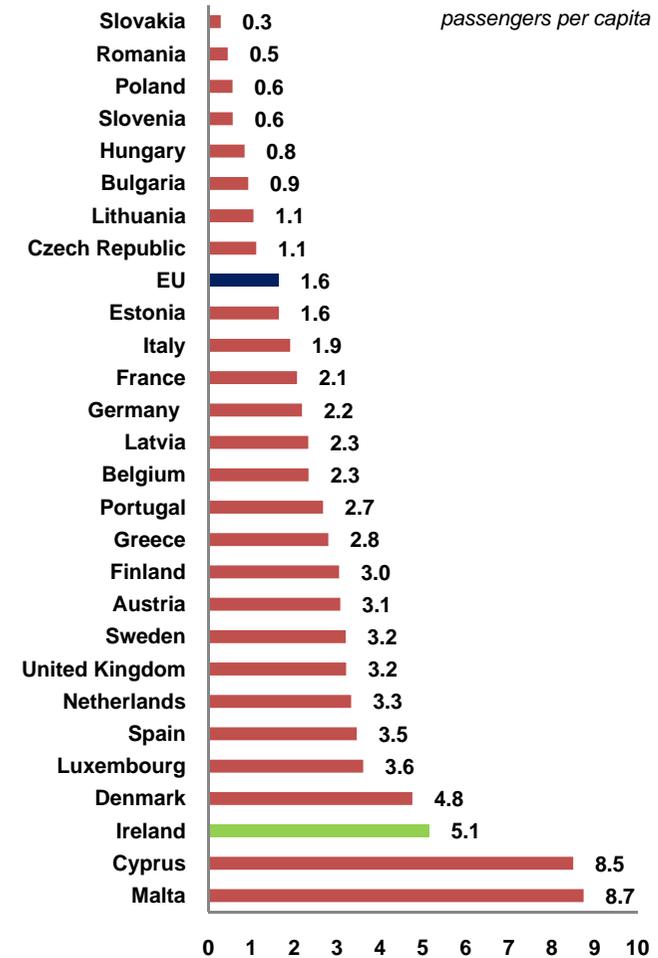
6.8 Ireland: International passengers through Irish ports 1995-2012

Year	000		000	
	Air passengers	Average annual % change	Sea passengers	Average annual % change
1995	9,560	:	4,244	:
2000	16,383	11.4%	4,508	1.2%
2005	23,571	7.5%	3,269	-6.2%
2006	25,623	8.7%	3,005	-8.1%
2007	29,128	13.7%	3,067	2.1%
2008	29,240	0.4%	2,855	-6.9%
2009	25,712	-12.1%	2,791	-2.3%
2010	22,826	-11.2%	2,998	7.4%
2011	23,355	2.3%	2,805	-6.4%
2012	23,646	1.2%	2,657	-5.3%

Source: CSO

- Air passengers travelling to and from Ireland increased by over 19.5 million, or 206% between 1995 and 2008 when there were over 29 million passengers. Passenger numbers then fell by 22% between 2008 and 2010, but have increased by 3.6% between 2010 and 2012.
- Passenger numbers travelling to and from Ireland by sea fell by 38% between 2000 and 2009, from 4.5 million to 2.8 million passengers. There was an increase in passenger numbers to 3 million in 2010, but numbers fell again by 150,000 between 2011 and 2012.
- In 2012, Ireland had 5.1 air passengers per capita which was over three times the EU average of 1.6 passengers per capita. The highest were Cyprus and Malta (two other small islands) with 8.7 and 8.5 respectively air passengers per capita.

6.9 EU: International air passengers 2012



Source: Eurostat

6.10 Ireland: Means of travel to work 1986-2011

% of total female population aged over 15 at work

Females						
Year	1986	1991	1996	2002	2006	2011
On foot	19%	17%	16%	15%	14%	12%
Bicycle	6%	4%	3%	1%	1%	1%
Bus, minibus or coach	15%	13%	12%	9%	8%	6%
Train, DART or LUAS	2%	2%	2%	2%	3%	3%
Motor cycle or scooter	1%	1%	0%	0%	0%	0%
Motor car: Driver	27%	35%	44%	58%	62%	66%
Motor car: Passenger	16%	14%	13%	8%	6%	5%
Other means (incl. Lorry or van)	1%	1%	1%	0%	0%	0%
Work mainly at or from home	8%	9%	6%	4%	5%	3%
Not stated	6%	4%	3%	1%	1%	3%

% of total male population aged over 15 at work

Males						
Year	1986	1991	1996	2002	2006	2011
On foot	9%	8%	9%	9%	9%	8%
Bicycle	5%	5%	4%	3%	3%	3%
Bus, minibus or coach	6%	5%	5%	5%	5%	4%
Train, DART or LUAS	1%	1%	1%	2%	3%	3%
Motor cycle or scooter	2%	1%	1%	2%	1%	1%
Motor car: Driver	42%	41%	48%	53%	54%	55%
Motor car: Passenger	5%	4%	6%	6%	5%	3%
Other means (incl. Lorry or van)	4%	6%	7%	12%	13%	14%
Work mainly at or from home	22%	26%	16%	8%	6%	6%
Not stated	4%	3%	3%	2%	2%	4%

Source: CSO Census of Population

- Between 1986 and 2011, the proportion of females driving to work has increased from 27% to 66%. The proportion of females travelling to work as car passengers fell from 16% to 5% in the same period.
- The proportion of males driving to work rose from 42% to 55% between 1986 and 2011.
- The proportion of males working mainly at or from home has fallen from 22% in 1986 to 6% in 2011. The proportion of females working mainly at or from home fell from 8% to 3%.
- There were 12% of working women aged 15 or over who walked to work in 2011 compared with 8% of working men aged 15 or over.

7. Waste



Contents

		Source
7.1	Ireland: Municipal waste generated 2001-2011	Environmental Protection Agency
7.2	EU: Municipal waste generated 2012	Eurostat
7.3	Ireland: Municipal waste sent to landfill 2001-2011	Environmental Protection Agency
7.4	EU: Municipal waste sent to landfill 2012	Eurostat Statistics
7.5	Ireland: Recovery of packaging waste 2001-2011	Environmental Protection Agency
7.6	EU: Recovery of packaging waste 2011	Eurostat Statistics
7.7	Ireland: Electrical waste collected 2007-2011	Environmental Protection Agency
7.8	EU: Electrical waste collected from private households 2010	Eurostat
7.9	Ireland: Collection of construction and demolition waste 2004-2011	Environmental Protection Agency

Photographs: Electrical waste recycling, Gortadroma Landfill, Co. Limerick, courtesy of John Doherty, Environmental Protection Agency; Recycling of packaging waste, courtesy of Jonathan Derham, Environmental Protection Agency

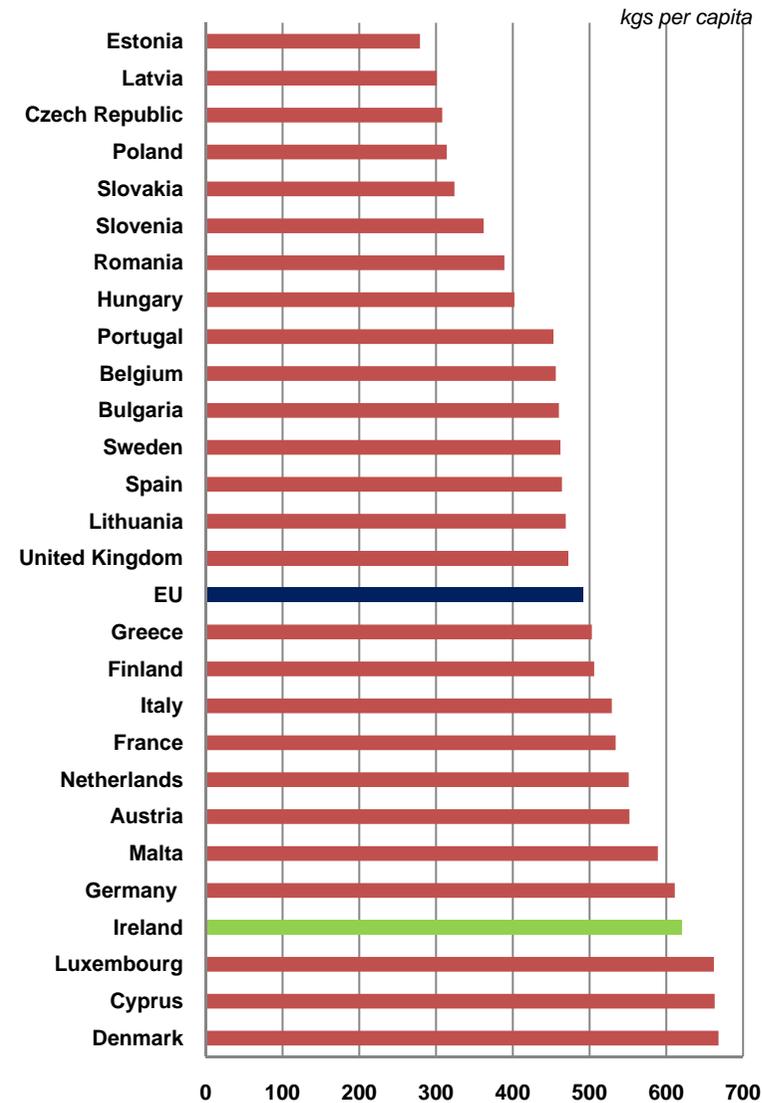
7.1 Ireland: Municipal waste generated 2001-2011

000 tonnes				
Year	Municipal waste	% change year on year	kgs per capita	% change year on year
2001	2,704	:	690	:
2002	2,720	0.6%	690	0.0%
2003	2,918	7.3%	750	8.7%
2004	3,001	2.8%	740	-1.3%
2005	3,041	1.3%	740	0.0%
2006	3,385	11.3%	800	8.1%
2007	3,398	0.4%	780	-2.5%
2008	3,224	-5.1%	730	-6.4%
2009	2,953	-8.4%	660	-9.6%
2010	2,846	-3.6%	620	-6.1%
2011	2,823	-0.8%	615	-0.8%

Source: Environmental Protection Agency

- Municipal waste generated in Ireland was at its highest in 2007, when there were 3.4 million tonnes, compared with 2.7 million tonnes in 2001. It has fallen each year since 2007 and there were just over 2.8 million tonnes generated in 2011. Waste generated per capita declined from 800 kgs per person in 2006 to 615 in 2011.
- Ireland had the fourth highest level of municipal waste per capita in 2012. The lowest level of waste generation per capita was in Estonia with 279 kgs, while Denmark had the highest level at 668 kgs per capita. The EU average for municipal waste generated in 2012 was 492 kgs per capita.

7.2 EU: Municipal waste generated 2012



Note: Ireland data refers to 2011
Source: Eurostat

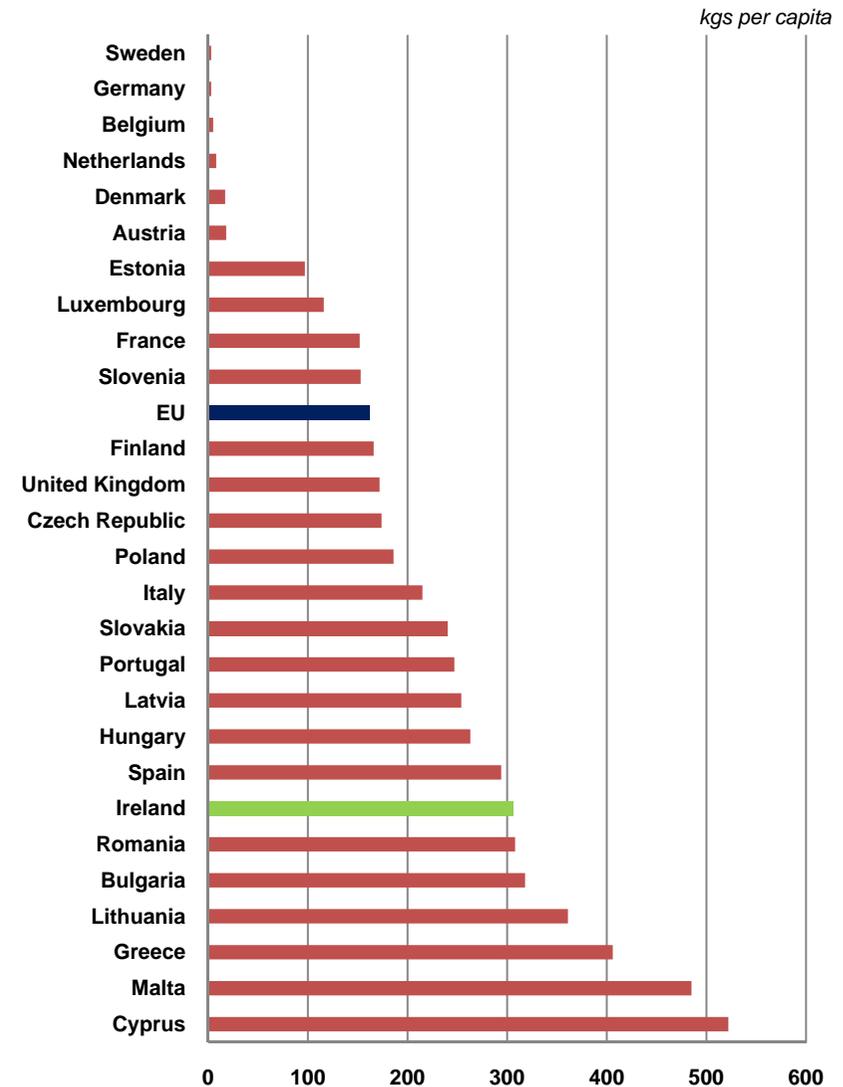
7.3 Ireland: Municipal waste sent to landfill 2001-2011

000 tonnes				
Year	Waste managed	Waste sent to landfill	% change year on year	Municipal waste disposal rate
2001	2,390	1,992	:	87%
2002	2,559	1,902	-4.5%	80%
2003	2,559	1,833	-3.6%	72%
2004	2,704	1,819	-0.8%	67%
2005	2,779	1,833	0.8%	66%
2006	3,100	1,981	8.0%	64%
2007	3,175	2,015	1.7%	64%
2008	3,104	1,939	-3.8%	63%
2009	2,825	1,724	-11.1%	61%
2010	2,580	1,496	-13.2%	58%
2011	2,547	1,344	-10.2%	53%

Source: Environmental Protection Agency

- The amount of municipal waste sent to landfill was between 1.8 and 2 million tonnes between 2001 and 2008, but it fell sharply from 2009 to 1.3 million tonnes in 2011.
- The disposal rate of municipal waste, which is the amount sent to landfill as a proportion of the amount of waste managed, has fallen every year since 2001, and stood at 53% in 2011.
- EU Member States such as Germany, Netherlands, Belgium, and Sweden send little or no waste to landfill, as waste disposal in these countries is based almost entirely upon incineration. Ireland had the seventh highest rate of municipal waste sent to landfill in 2012.

7.4 EU: Municipal waste sent to landfill 2012



Note: Data for Ireland refers to 2011
Source: Eurostat

7.5 Ireland: Recovery of packaging waste 2001-2011

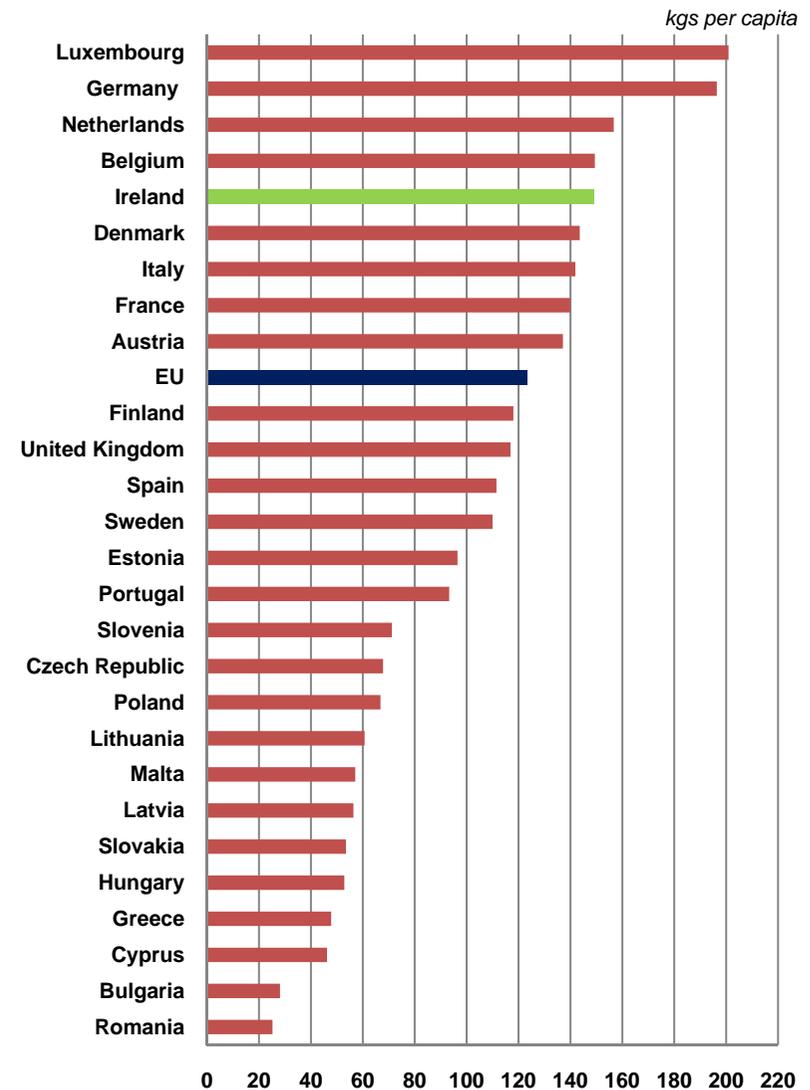
000 tonnes

Year	Managed	Recovered	Recovery rate
2001	873	221	25%
2002	899	296	33%
2003	1,006	420	42%
2004	851	480	56%
2005	925	555	60%
2006	1,028	590	57%
2007	1,056	672	64%
2008	1,027	664	65%
2009	972	680	70%
2010	864	637	74%
2011	864	682	79%

Source: Environmental Protection Agency

- Over the past decade, Ireland has substantially increased its rate of recovery of packaging waste such as cardboard, paper, glass, plastic, steel, aluminium and wood. The Packaging Directive (94/62/EC) target of 50% set for 2005 was reached in 2004 and the 2011 target of 60% has been exceeded since 2007.
- By 2011, the recovery rate for packaging waste had reached 79%.
- In 2011, Ireland recovered 149 kgs of packaging waste per capita, which was the fifth highest level in the EU.

7.6 EU: Recovery of packaging waste 2011



Source: Eurostat

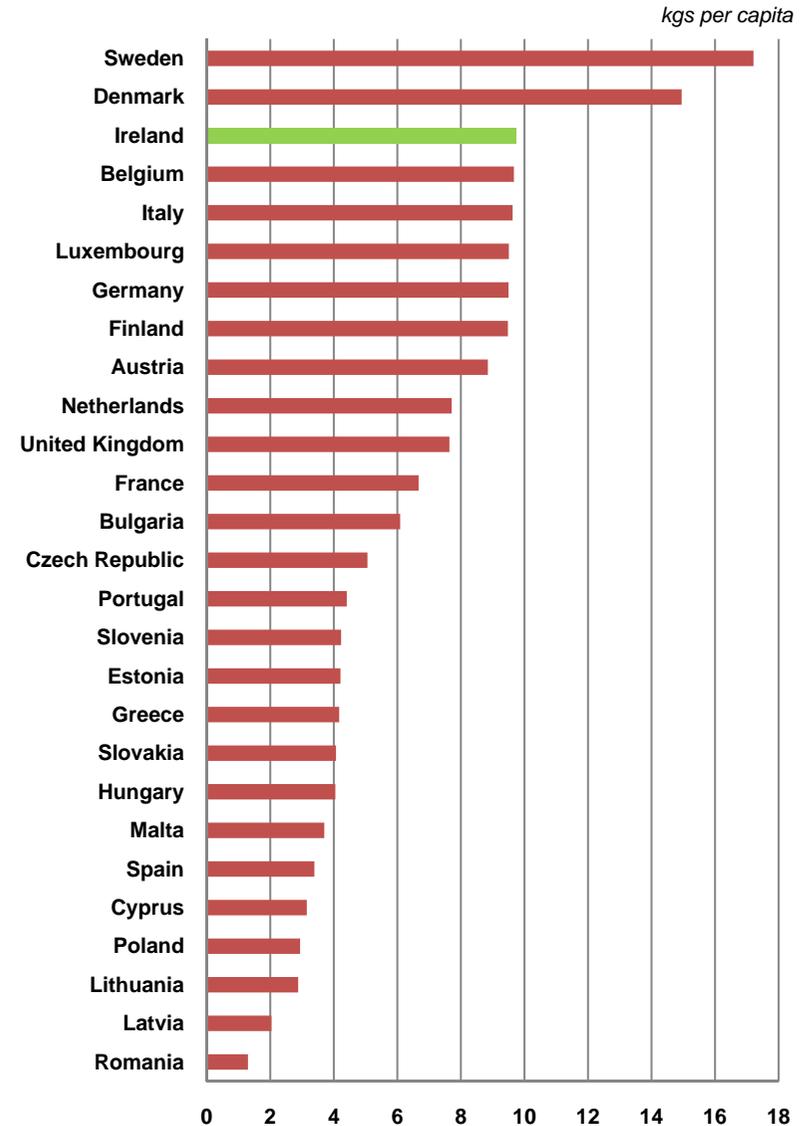
7.7 Ireland: Electrical waste collected 2007-2011

Year	% of total					Total tonnes
	Large household appliances	Fridges and freezers	TVs and monitors	Lighting equipment	Other WEEE	
2007	50%	13%	13%	1%	23%	51,294
2008	44%	13%	14%	1%	28%	51,965
2009	38%	14%	15%	1%	33%	45,327
2010	36%	14%	14%	2%	34%	45,012
2011	33%	15%	16%	2%	35%	41,092

Source: Environmental Protection Agency

- The proportion of large household appliances, such as washing machines and cookers in the total Waste Electrical and Electronic Equipment (WEEE) has fallen from 50% of the total to 33% between 2007 and 2011.
- There has been an increase in the proportion of other WEEE, such as stereos, telephones, vacuum cleaners and computers between 2007 and 2011 from 23% to 35%.
- Expressed in kgs per capita, Ireland had the third highest level of WEEE collected from private households in 2010, behind only Sweden and Denmark. At 9.7 kgs per capita, this is more than twice the 4 kgs per capita specified by the WEEE Directive.

7.8 EU: Electrical waste collected from private households 2010



Source: Eurostat

7.9 Ireland: Collection of construction and demolition waste 2004-2011

000 tonnes

Year	Soil and stones	Other construction and demolition waste	Total	% change
2004	8,492	2,676	11,168	:
2005	12,646	2,286	14,931	34%
2006	13,883	2,937	16,820	13%
2007	13,560	4,232	17,792	6%
2008	10,537	2,986	13,523	-24%
2009	3,771	1,323	5,094	-62%
2010	2,517	947	3,465	-32%
2011	1,976	1,028	3,004	-13%

Source: Environmental Protection Agency

- The collection of construction and demolition waste increased from 11.2 million tonnes in 2004 to almost 17.8 million tonnes in 2007. The amount collected fell substantially between 2007 and 2011, when only three million tonnes were collected, reflecting the decline in the building industry over that period.

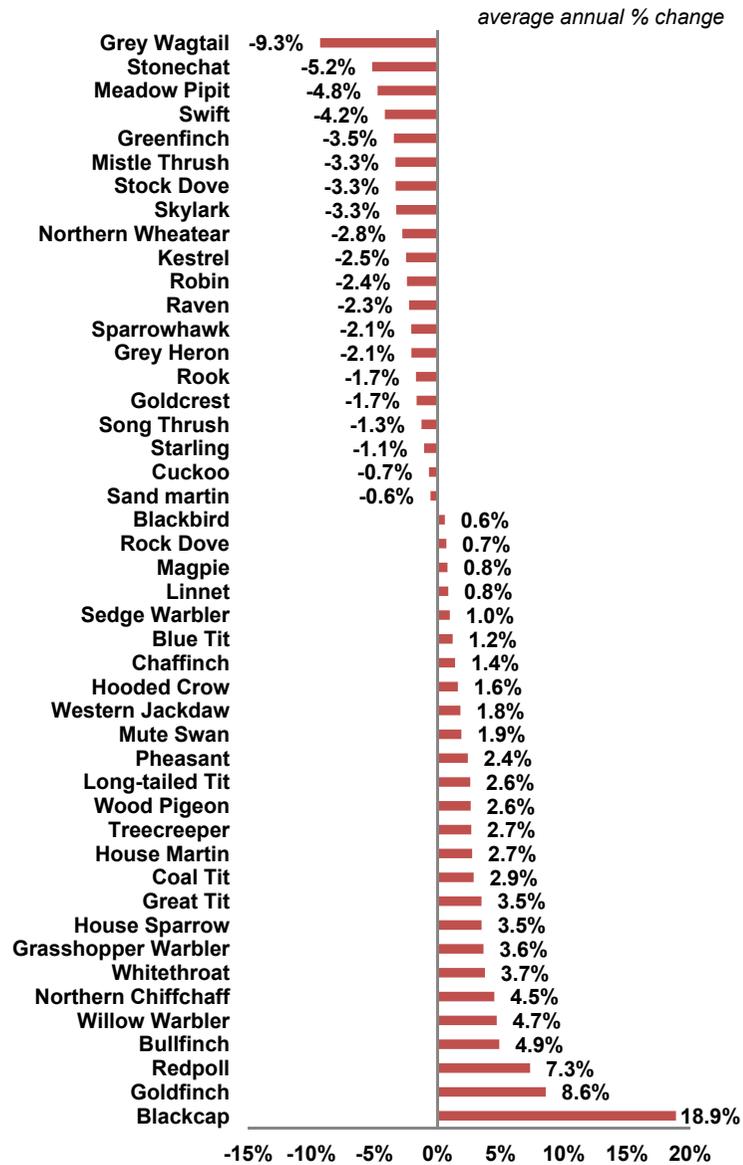
8. Biodiversity and Heritage



Contents

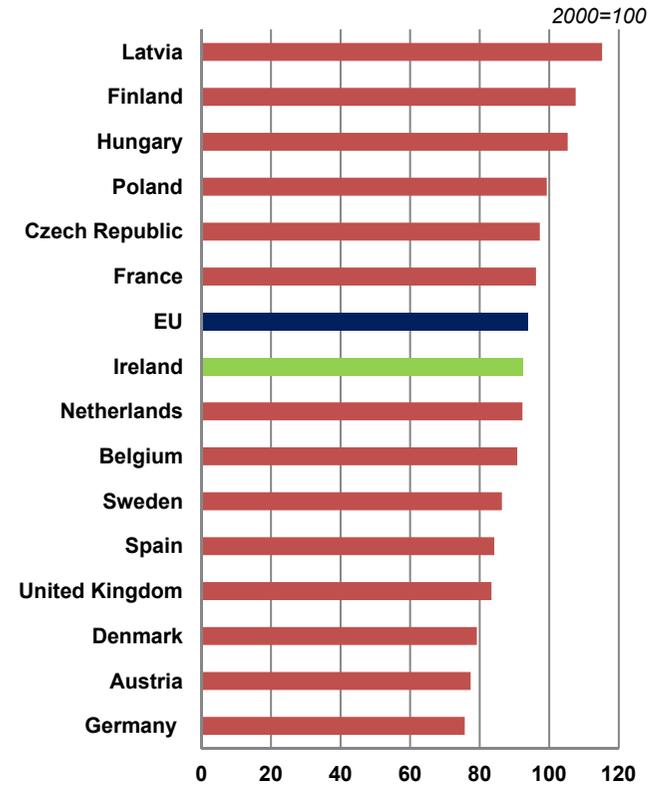
		Source
8.1	Ireland: Countryside birds 1998-2012	Birdwatch Ireland
8.2	EU: Common farmland birds 2008	Eurostat
8.3	EU: Protected areas under EU Birds Directive 2010	European Commission
8.4	EU: Protected areas under EU Habitats Directive 2010	European Commission
8.5	Ireland: National monuments 2010	Department of Arts, Heritage and the Gaeltacht (Heritage Ireland)
8.6	Ireland: Record of protected structures 2013	Department of Arts, Heritage and the Gaeltacht (Heritage Ireland)

8.1 Ireland: Countryside birds 1998-2012



Source: Birdwatch Ireland

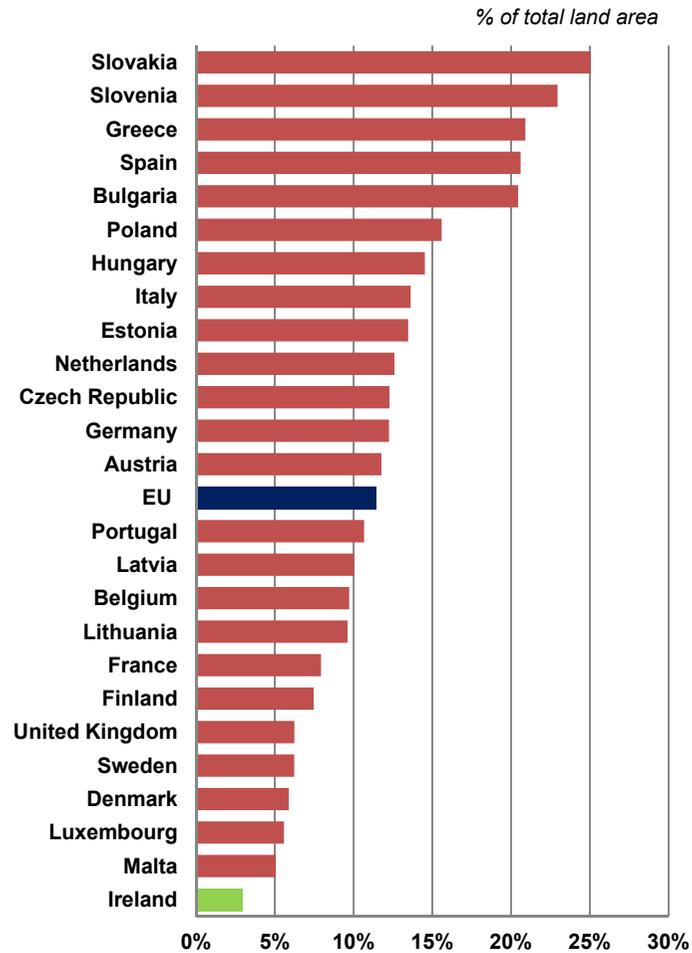
8.2 EU: Common farmland birds 2008



Note: Data available for 15 EU Member States
Source: Eurostat

- Of a total of 54 bird species surveyed over the 1998-2012 period, 16 were found to be in decline, 20 were increasing, and 18 were stable. The biggest increases were in blackcaps and goldfinches, while grey wagtails and stonechats showed the biggest declines.
- Of the 15 countries for which there were data available in 2008 on 36 species of common farmland birds, Ireland's index relative to 2000, at 92.4, was slightly lower than the average index for the EU of 94.

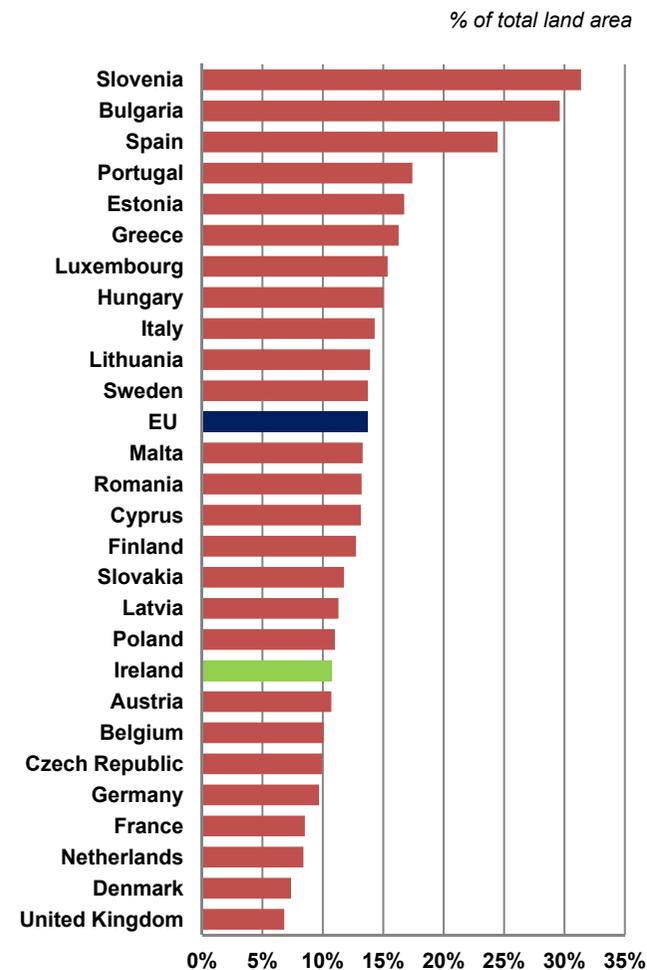
8.3 EU: Protected areas under EU Birds Directive 2010



Note: Data not available for Romania
Source: European Commission

- Ireland, at 3%, had the smallest area designated as a Special Protected Area under the EU Birds Directive in 2010. The EU average was 11.4%.

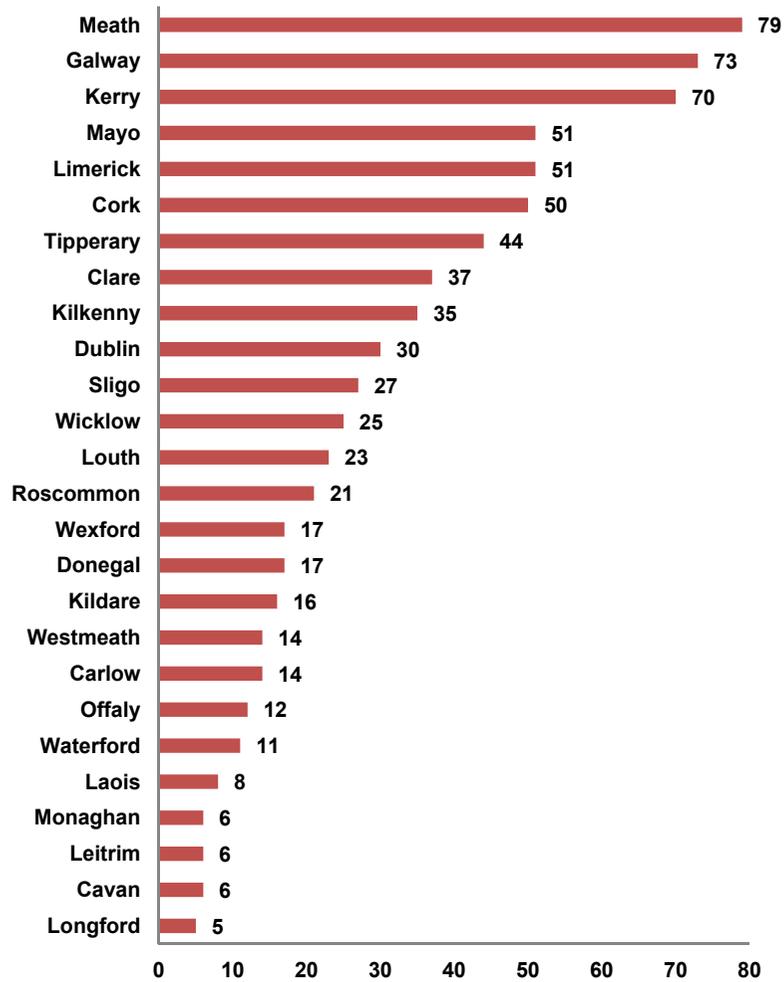
8.4 EU: Protected areas under EU Habitats Directive 2010



Source: European Commission

- In 2010, Ireland had 10.7% of its land area designated as a Special Protected Area under the EU Habitats Directive. This was the ninth smallest proportion of land area in the EU. The EU average was 13.7%.

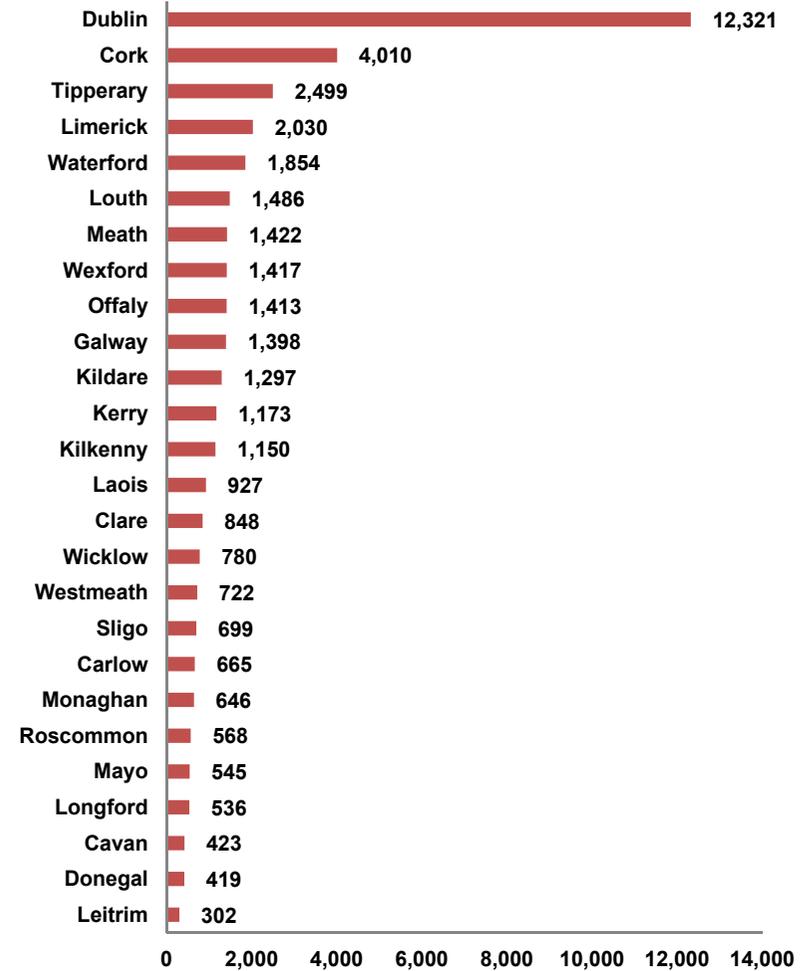
8.5 Ireland: National monuments 2010



Source: Department of Arts, Heritage and the Gaeltacht (Heritage Ireland)

- Ireland had 748 national monuments in 2010. County Meath had the highest number with 79.

8.6 Ireland: Record of protected structures 2013



Source: Department of Arts, Heritage and the Gaeltacht (Heritage Ireland)

- There were 41,550 protected structures recorded in Ireland in 2013. Of these 12,321 or just under 30% were in Dublin.

9. Environmental Economy



Contents

		Source
9.1	Ireland: Environmental tax revenue 2008-2012	CSO National Accounts
9.2	EU: Environmental tax revenue 2012	Eurostat Statistics
9.3	Ireland: General government environmental expenditure 2000-2012	CSO National Accounts
9.4	Ireland: Wholesale price index for energy products 1980-2013	CSO Wholesale price indices
9.5	Ireland: Consumer price index for energy products 1980-2013	CSO Consumer price indices
9.6	EU: Harmonised index of consumer prices for energy products 2013	Eurostat
9.7	Ireland: Resource use 1995-2012	CSO: Environmental Accounts
9.8	EU: Resource productivity 2011	Eurostat Statistics
9.9	Ireland: Imports and exports of fuels 1990-2013	CSO Trade statistics and VIMA
9.10	EU: Imports of fuels 2013	Eurostat Statistics
9.11	Ireland: Sea fishery landings 1990-2012	Sea Fisheries Protection Authority
9.12	EU: Sea fishery landings 2012	Eurostat Statistics

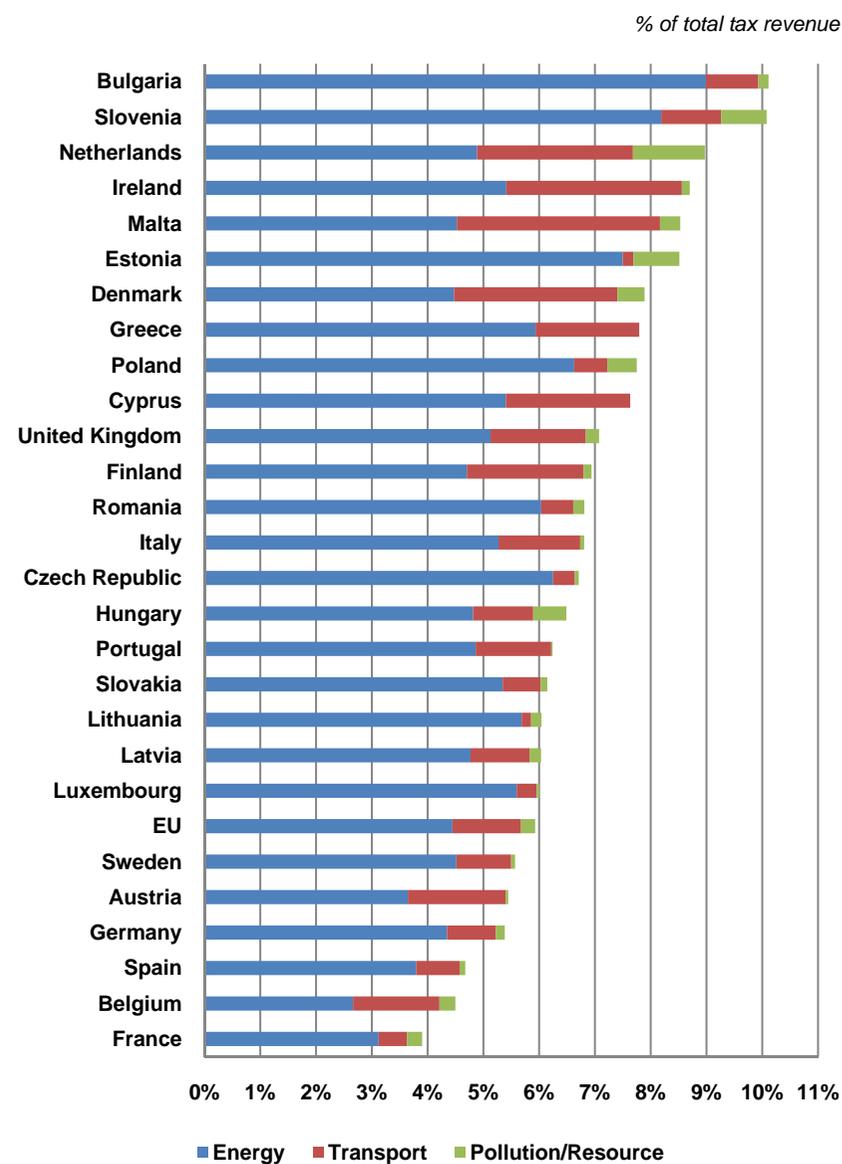
9.1 Ireland: Environmental tax revenue 2008-2012

	€ million				
Tax	2008	2009	2010	2011	2012
Energy taxes	2,250	2,268	2,481	2,556	2,534
Duty on imported hydrocarbon oil products	1,426	1,529	1,405	1,636	1,572
Duty on domestic hydrocarbon oil products	743	641	694	482	463
Electricity Tax	-	2	7	7	7
National Oil Reserves Agency levy	81	93	140	130	130
Carbon Tax	-	2	235	301	363
Transport taxes	1,997	1,523	1,522	1,449	1,474
Vehicle Registration Tax	938	373	395	394	384
Air Travel Tax	-	92	103	44	34
Motor tax (business)	477	476	461	455	476
Motor tax (households)	583	582	563	556	581
Pollution and Resource taxes	61	56	62	61	66
Plastic bag levy	27	23	20	16	14
Landfill levy	33	32	41	44	51
Fisheries protection	1	1	1	1	1
Total	4,308	3,847	4,065	4,066	4,075
% change		-10.7%	5.7%	0.0%	0.2%
% of total receipts from Taxes and Social Contributions	8.2%	8.5%	9.3%	8.9%	8.7%

Source: CSO
2012 data are provisional

- Environmental taxation revenue fell sharply between 2008 and 2009. The fall was due in large part to the collapse in new car sales which significantly reduced revenue from Vehicle Registration Tax (VRT) following the change to the calculation of VRT based on the emission rating of the vehicle. Revenue increased in 2010, due to the introduction of the carbon tax which yielded €235 million.
- Environmental taxes accounted for 8.7% of Ireland's total tax revenues in 2012. This was the fourth highest percentage in the EU and is above the EU average of 5.9%.

9.2 EU: Environmental tax revenue 2012



Source: Eurostat

9.3 Ireland: General government environmental expenditure 2000-2012

			€m
Year	Subsidies	Capital transfers	Total
2000	61	0	61
2005	96	15	111
2006	134	18	152
2007	94	71	165
2008	157	18	175
2009	168	23	191
2010	153	49	202
2011	100	16	116
2012	104	9	112

Source: CSO

- Environmental subsidies in Ireland are entirely comprised of subsidies for the protection of the environment, also known as the Rural Environment Protection Scheme (REPS). These payments, mainly made to the agricultural sector, have increased from €61 million in 2000 to a high of €168 million in 2009. The payments have since fallen to €104 million in 2012.
- Capital transfers by government are payments to households or enterprises to fund or part-fund the cost of fixed assets. In the environment context these include grants for initiatives such as energy conservation and rural development.

9.4 Ireland: Wholesale price index for energy products 1980-2013

2005=100

Year	Petrol	Auto-diesel	Gas oil	Fuel oil	Petroleum fuels	Electricity	Energy products
1980	35	31	34	34	34	49	38
1985	62	63	58	65	65	82	69
1990	59	56	48	45	48	67	54
1995	56	56	45	51	52	67	56
2000	80	78	73	77	78	69	73
2005	100	100	100	100	100	100	100
2006	108	106	111	115	112	107	109
2007	113	109	112	120	116	120	118
2008	122	127	140	149	141	122	128
2009	117	107	103	125	117	121	120
2010	133	125	125	152	141	115	123
2011	145	139	142	173	158	115	129
2012	152	145	151	184	168	119	134
2013	149	142	149	177	163	122	135

Source: CSO

- Wholesale prices of all fuel types increased substantially between 2000 and 2008 before falling in 2009. However, most prices increased again in 2010 and 2012 before falling in 2013. Fuel oil prices increased from an index of 100 in 2005 to 177 in 2013. Electricity prices have shown the smallest increase in the same time period; the index stood at 122 in 2013.

9.5 Ireland: Consumer price index for energy products 1980-2013

December 2006=100

Year	Electricity	Gas	Natural gas	Liquid fuels	Solid fuels	Heat energy	Petrol	Diesel	Motor oil
1980	36	21	34	32	28	29	34	35	28
1985	63	39	55	62	51	53	69	75	56
1990	61	41	49	52	55	53	66	67	55
1995	62	45	49	47	60	56	63	66	60
2000	66	49	49	73	68	63	88	83	72
2005	96	65	63	97	88	88	101	99	90
2006	100	82	81	107	94	97	108	105	96
2007	112	91	89	106	103	104	109	105	103
2008	114	91	88	135	112	113	117	122	108
2009	116	94	90	91	121	107	108	99	111
2010	112	84	78	120	118	108	127	119	113
2011	119	89	83	149	118	119	144	139	116
2012	133	103	98	164	119	130	158	151	118
2013	140	110	104	158	123	135	153	146	119

Source: CSO

- The consumer price index for petrol and diesel increased by 16% and 22% respectively between 2005 and 2008. Prices then fell in 2009, before increasing again by 42% and 47% respectively by 2013.
- Electricity prices have increased steadily since 2000. Prices increased by 47% between 2000 and 2005, and then rose by 24% between 2005 and 2011. Prices increased by a further 18% between 2011 and 2013.
- In 2013, Ireland had the fourteenth lowest increase of 52% in consumer prices of energy goods in the EU since 2005.

9.6 EU: Harmonised index of consumer prices for energy products 2013

2005=100

Country	Electricity	Gas	Liquid fuels	Solid fuels	Heat energy	Energy
Latvia	207	237	:	183	250	209
Greece	176	179	262	132	:	204
Estonia	190	259	171	192	252	198
Lithuania	171	243	154	202	220	191
United Kingdom	189	238	202	178	:	182
Romania	168	191	161	143	238	177
Hungary	135	220	:	185	141	174
Cyprus	193	182	146	101	:	171
Malta	203	271	:	:	:	171
Slovenia	170	161	178	133	180	161
Spain	158	168	159	:	:	159
Czech Republic	158	184	137	168	162	155
Poland	157	172	153	171	145	155
Ireland	146	169	163	140	153	152
EU	150	164	165	155	156	152
Finland	162	:	190	:	180	148
Bulgaria	130	173	168	171	159	148
Portugal	154	154	191	110	:	147
Italy	141	143	141	107	:	145
Belgium	141	152	171	126	:	144
Germany	161	133	156	131	148	143
France	126	164	160	121	186	139
Luxembourg	115	172	164	111	159	139
Slovakia	118	136	:	153	161	137
Austria	128	137	152	124	137	137
Denmark	128	109	165	126	129	133
Netherlands	106	140	:	:	:	131
Sweden	127	228	147	105	119	128

Source: Eurostat

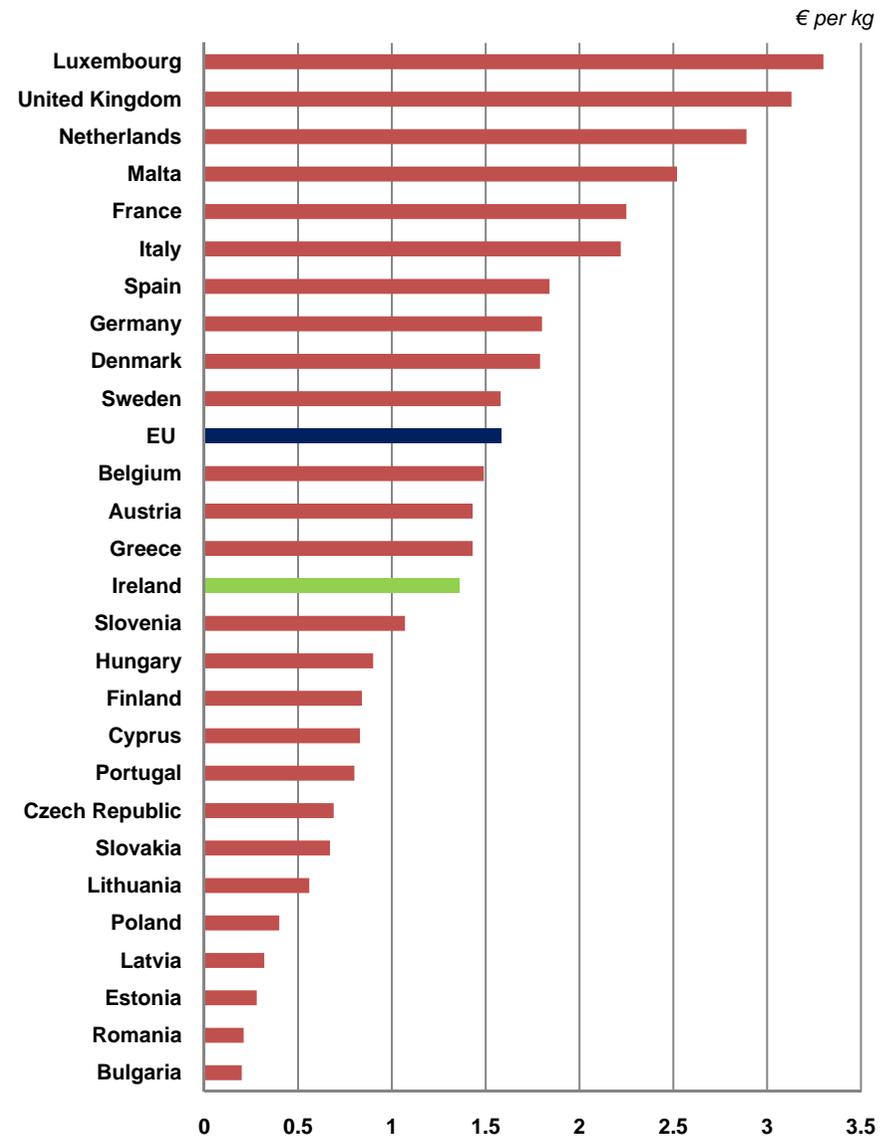
9.7 Ireland: Resource use 1995-2012

<i>000 tonnes</i>				
Year	Domestic Extraction	Exports	Imports	Domestic Material Consumption
1995	105,600	10,800	24,400	119,100
2000	164,600	12,100	29,700	182,300
2001	171,600	12,400	30,200	189,300
2002	169,400	12,300	30,000	187,100
2003	165,000	12,200	30,600	183,500
2004	172,100	13,600	34,000	192,500
2005	188,600	14,200	37,100	211,600
2006	211,400	14,100	39,300	236,700
2007	208,600	14,700	42,500	236,400
2008	171,600	14,900	39,900	196,600
2009	139,500	13,200	32,800	159,100
2010	122,500	14,700	35,500	143,400
2011	100,100	15,700	35,800	120,100
2012	91,600	16,400	34,200	109,500

Source: CSO
Provisional data

- Both Domestic Extraction and Domestic Material Consumption increased steadily between 2000 and 2006 in Ireland. Both then fell by over 50% between 2007 and 2012 as the level of building and construction activity decreased.
- Ireland's resource productivity of €1.36 per kg in 2011 was the fourteenth highest in the EU. It was below the EU average of €1.58 per kg.

9.8 EU: Resource productivity 2011



Source: Eurostat

9.9 Ireland: Imports and exports of fuels 1990-2013

Year	Imports				€ million
	Coal, coke and briquettes	Petroleum	Gas	Electricity	
				% of total	
1990	18%	80%	2%	0%	1,019
1995	17%	81%	2%	0%	851
2000	4%	84%	12%	0%	2,300
2005	4%	82%	12%	1%	4,020
2006	4%	81%	14%	1%	4,719
2007	3%	78%	18%	1%	5,728
2008	3%	75%	21%	1%	6,594
2009	4%	74%	20%	1%	4,445
2010	3%	76%	20%	0%	5,602
2011	3%	77%	19%	1%	6,946
2012	3%	76%	20%	0%	7,160
2013	3%	73%	23%	1%	6,883

Year	Exports				€ million
	Coal, coke and briquettes	Petroleum	Gas	Electricity	
1990	26%	70%	3%	0%	115
1995	33%	65%	2%	0%	153
2000	14%	85%	1%	0%	285
2005	10%	85%	2%	3%	616
2006	13%	78%	4%	6%	562
2007	9%	87%	1%	3%	687
2008	7%	91%	1%	1%	832
2009	9%	90%	1%	0%	595
2010	6%	92%	2%	0%	1,028
2011	5%	92%	3%	0%	1,354
2012	4%	94%	2%	0%	1,647
2013	9%	88%	2%	1%	824

Source: CSO and VIMA

- Ireland's imports of fuel have increased from €2.3 billion in 2000 to €6.9 billion in 2013.
- Imports of petroleum represented 73% of the total value of fuel imports in 2013. This was the 8th lowest proportion among EU countries.

9.10 EU: Imports of fuels 2013

Country	% of total fuel imports value			
	Coal, coke and briquettes	Petroleum	Gas	Electricity
Hungary	2%	55%	31%	12%
Czech Republic	3%	58%	30%	8%
Slovakia	6%	61%	33%	1%
Italy	3%	64%	30%	3%
Germany	4%	65%	30%	1%
Austria	5%	66%	22%	7%
Latvia	1%	67%	29%	3%
Ireland	3%	73%	23%	1%
Slovenia	2%	73%	11%	14%
Belgium	2%	74%	22%	2%
France	2%	74%	22%	1%
United Kingdom	5%	78%	15%	2%
Estonia	0%	78%	15%	7%
Spain	2%	79%	19%	0%
Portugal	2%	79%	17%	2%
Bulgaria	3%	80%	16%	1%
Lithuania	1%	84%	13%	3%
Romania	4%	85%	10%	0%
Poland	5%	87%	6%	2%
Denmark	4%	89%	0%	6%
Finland	3%	89%	2%	6%
Sweden	2%	90%	5%	3%
Greece	0%	90%	8%	1%
Netherlands	4%	91%	4%	1%
Cyprus	0%	97%	3%	0%
Malta	0%	99%	1%	0%
Luxembourg	0%	99%	0%	0%

Source: Eurostat

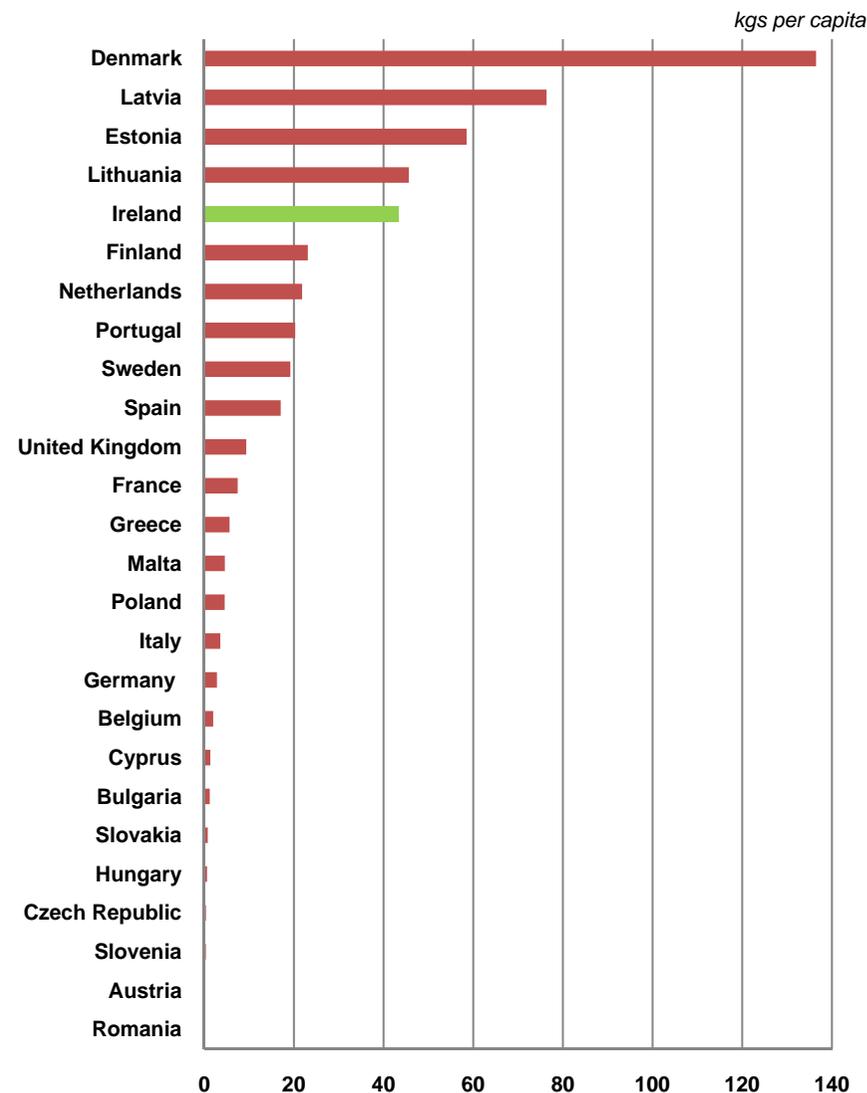
9.11 Ireland: Sea fishery landings 1990-2012

Year	live weight (000 tonnes)					Average annual % change
	Demersal	Deepwater	Pelagic	Shellfish	Total	
1990	28.4		109.7	28.4	166.5	:
1995	46.2		305.5	32.3	384.0	18.2%
2000	36.7		206.3	29.5	272.5	-6.6%
2005	26.0	2.3	218.6	44.5	291.4	1.3%
2006	25.9	1.7	192.3	52.0	271.9	-6.7%
2007	42.3	0.7	146.1	25.7	214.8	-21.0%
2008	37.0	0.7	162.3	22.7	222.7	3.7%
2009	39.7	0.8	159.5	22.3	222.3	-0.2%
2010	40.9	0.5	179.9	24.8	246.0	10.6%
2011	45.0	0.5	127.6	25.8	198.9	-19.1%
2012	50.0	0.6	239.5	39.4	329.6	65.7%

Sources: 1990-2000 Department of Marine and Natural Resources, 2001-2010 Sea Fisheries Protection Authority

- Sea fishery landings fell from a high in 1995 of 384,000 tonnes to 215,000 tonnes in 2007. There has been a recovery since 2007, with 330,000 tonnes landed in 2012. The 2012 figure included 69,000 tonnes of Norwegian landings of pelagic fish.
- In 2011, Ireland's sea fishery landings were the fourth highest per capita in the EU, with 43.4 kgs of fish caught per head of population.

9.12 EU: Sea fishery landings 2012



Note: Data for Austria, Slovakia, Czech Republic and Hungary refers to 2010
Source: Eurostat

Appendix

Definitions

Domain 1 – Air

Particulate matter (1.1 and 1.2)

There are many sources of **particulate matter** (dust) including vehicle exhaust emissions, soil and road surfaces, construction works and industrial emissions. Particulate matter can be formed from reactions between different pollutant gases. Small particles can penetrate the lungs and cause damage. These are known as PM₁₀ (diameter less than 10µm) and PM_{2.5} (diameter less than 2.5µm). There are high levels of PM₁₀ in many cities and towns. In smokeless fuel zones, levels of particulate matter decreased after the ban on bituminous coal in Dublin in 1990 and extended to other parts of Ireland subsequently.

PM_{2.5} has similar effects on health as PM₁₀. However, PM_{2.5} is a better indicator of anthropogenic (man-made) emissions than PM₁₀. Fine particulate matter PM_{2.5} is responsible for significant negative impacts on human health. Further, there is as yet no identifiable threshold below which PM_{2.5} would not pose a risk.

National Emissions Ceiling 2010 Directive (1.3 to 1.10)

Directive 2001/81/EC of the European Parliament and the Council on National Emission Ceilings for certain pollutants (NEC Directive) sets upper limits for each Member State for the total emissions in 2010 of the four pollutants responsible for acidification, eutrophication and ground-level ozone pollution (sulphur dioxide, nitrogen oxides, non-methane volatile organic compounds and ammonia), but leaves it largely to the Member States to decide which measures – on top of Community legislation for specific source categories - to take in order to comply. Ireland's limits are as follows:

- Sulphur dioxide (SO₂) 42 kilotonnes
- Nitrogen Oxides (NO_x) 65 kilotonnes
- NMVOC's 55 kilotonnes
- Ammonia (NH₃) 116 kilotonnes

Sulphur dioxide (1.3 and 1.4)

The main source of **sulphur dioxide** in Ireland is burning coal and oil to heat homes and industries and to produce electricity. It is an irritant gas which attacks the throat and lungs. Prolonged exposure can lead to increases in respiratory illnesses like chronic bronchitis. It contributes to the formation of acid rain which damages vegetation and buildings.

Levels have decreased over recent years due to increased use of low-sulphur "smokeless" coal, increased use of natural gas instead of solid fuels and reduced industrial emissions through Integrated Pollution Control (IPC) licensing.

Nitrogen oxides (1.5 and 1.6)

Emissions from traffic are the main source of **nitrogen oxides** in Ireland along with electricity generating stations and industry. Nitrogen dioxide can affect the throat and lungs. The main effects are emphysema and cellular damage. It has a brown colour and gives rise to a brown haze. Oxides of nitrogen contribute to the formation of acid rain and of ozone. Levels in Ireland are moderate but are increasing due to growth in traffic numbers.

Ammonia (1.7 and 1.8)

Ammonia (NH₃) emissions are associated with acid deposition and the formation of secondary particulate matter. The agriculture sector accounts for virtually all ammonia emissions in Ireland. Grasslands ultimately receive the bulk of the 40 million tonnes of animal manures produced annually in Ireland along with over 300,000 tonnes of nitrogen in fertilisers. A proportion of the nitrogen in these inputs is volatilised into the air as ammonia.

Non-methane volatile organic compounds (1.9 and 1.10)

Non-methane volatile organic compounds (NMVOCs) are emitted as gases from the use of a wide array of products including paints, paint strippers, glues, adhesives and cleaning agents. Several constituents of gasoline are important NMVOCs, which are emitted by combustion and evaporation. NMVOCs also arise as a product of incomplete combustion of other fuels, especially solid fuels and as such there are significant emissions from residential fuel combustion. The principal environmental problem associated with NMVOCs is their contribution to the formation of ground level ozone. Fugitive emissions are intentional or unintentional releases of gases from anthropogenic activities. Intentional or unintentional release of greenhouse gases may also occur during the extraction, processing and delivery of fossil fuels to the point of final use.

Atmospheric deposition rates (1.11)

Concentration reflects the amount of the substance measured in rainfall. **Deposition** is an estimate of the amount that fell to earth; this is the amount that ecosystems receive. In a closed system, emissions of NO_x, SO₂ and NH₃ in Ireland would combine with rainfall and fall back (deposit) on Irish soil. In reality, some travel long-distances and fall in other regions, similarly we receive some from other regions. However, the changes in emissions follow pan-European legislation so in general emissions of SO₂ and deposition of sulphate should follow a similar pattern. Knowing the concentration in rainwater and the rainfall volume provides an estimate of the total amount deposited. However, there is not 100% efficiency, i.e., not all air concentrations are dissolved into water.

Only one observation was made in 2000, and as this value is uncertain, it has been omitted from the table.

Ozone threshold exceedances (1.12 and 1.13)

The **ozone** layer is the Earth's natural sunscreen, filtering out harmful ultraviolet (UV) rays from the sun. UV rays can cause damage to humans and other forms of life.

Although the ozone layer is high up in the atmosphere, chemical substances used at the surface of the planet can damage it. If the ozone layer is damaged, UV rays can get through and cause damage to humans and other forms of life.

Domain 2 – Greenhouse Gases and Climate Change

Greenhouse gas emissions (2.1 to 2.5)

Climate change refers to significant change in the measures of climate, such as temperature, rainfall, or wind over a long period of time. Climate change is a natural phenomenon. However, the current phase of climate change is being accelerated by human activities that result in the emission of greenhouse gases. Greenhouse gases are those gases which contribute to the greenhouse effect. There are six greenhouse gases:

- Carbon dioxide (CO₂)
- Methane (CH₄)
- Nitrous Oxide (N₂O)
- Hydrofluorocarbons (HFC)
- Perfluorocarbons (PFC)
- Sulphur Hexafluoride (SF₆)

Each of these gases is controlled by the global environmental agreement known as the Kyoto Protocol. Hydrofluorocarbons (HFC), Perfluorocarbons (PFC) and Sulphur Hexafluoride (SF₆) are collectively known as fluorinated greenhouse gases and are further controlled by specific EU legislation.

Carbon dioxide is the most important of the greenhouse gases as it is currently responsible for just over 60% of the 'enhanced greenhouse effect'.

Ireland's Kyoto Limit (2.1)

The baseline emissions total for Ireland is calculated as the sum of CO₂, CH₄ and N₂O emissions in 1990 and the contribution from fluorinated gases in 1995. The baseline value was established at 55.607 Mt CO₂ eq. following an in-depth review of Ireland's 2007 submission to the United Nations Framework Convention on Climate Change (UNFCCC) and results in total allowable emissions of 314.18 Mt CO₂ eq. in the commitment period 2008-2012 under the **Kyoto Protocol**. This equates to an average of 62.84 Mt CO₂ eq. per annum. Compliance with the Kyoto Protocol limit is achieved by ensuring that Ireland's total greenhouse gas emissions in the period 2008-2012, adjusted for any offsets from approved forest sinks as well as any surrender of purchased Kyoto Protocol credits, are below 314.18 Mt CO₂ eq. at the end of the five-years period.

Average annual temperature and annual rainfall (2.6 and 2.7)

The thirty-years moving average shows the average temperature for a thirty year period. For example, the figure plotted at 1975 is the average temperature in the period 1961 to 1990, while the figure plotted at 1995 is the average temperature in the period 1981 to 2010.

Domain 3 - Water

Bathing water quality (3.1 and 3.2)

Bathing water assessment and classification according to EU Bathing Water Directive 2006/7

Bathing waters are classified as poor quality when microbiological enumerations are worse than the "sufficient" values set out in the directive.

For inland waters

Parameter	Excellent quality	Good quality	Sufficient
Intestinal enterococci (cfu/100 ml)	200 (*)	400 (*)	330 (**)
Escherichia coli (cfu/100 ml)	500 (*)	1 000 (*)	900 (**)

(*) Based upon a 95 percentile evaluation.

(**) Based upon a 90 percentile evaluation.

For coastal waters and transitional waters

Parameter	Excellent quality	Good quality	Sufficient
Intestinal enterococci (cfu/100 ml)	100 (*)	200 (*)	185 (**)
Escherichia coli (cfu/100 ml)	250 (*)	500 (*)	500 (**)

(*) Based upon a 95 percentile evaluation

(**) Based upon a 90 percentile evaluation

Both **Escherichia coli** and **Intestinal Enterococci** are types of bacteria that live predominantly in the gut of warm blooded animals, including humans. They generally enter the water environment in run-off containing small amounts of faeces from deposition on agricultural land or urban areas, from the land-spreading of manures, or directly from wastewater treatment systems and overflows. Their lifetime outside the gut generally ranges from a few hours to a few days depending on sunlight, temperature, and other environmental conditions.

Drinking water quality (3.3)

Trihalomethanes (**THM**'s) are formed in drinking-water primarily as a result of chlorination of organic matter present naturally in raw water supplies. The rate and degree of THM formation increase as a function of the chlorine and humic acid concentration, temperature, pH and bromide ion concentration.

Before 2004, there was no parametric limit for compliance with levels of trihalomethanes (THM). In 2009 the limit changed from 150 ug/l to 100 ug/l. Table 3.3 shows the compliance rate from 2004 to 2012 as if the compliance rate was 100 ug/l.

Urban waste water treatment (3.4)

The Urban Waste Water (UWW) regulations define an agglomeration as 'an area where the population and/or economic activities are sufficiently concentrated for urban waste water to be collected and conducted to an urban waste water treatment plant or to a final discharge point'. Normally there is one agglomeration with a waste water collection system treated by one waste water treatment plant. In the UWW report, the EPA report on villages, towns and cities with 500 people or more.

The Urban Waste Water Treatment Regulations 2001-2010 and the 1991 Urban Waste Water Treatment Directive (UWWTD) set requirements on the provision of **waste water** collection systems and treatment plants, provide for the monitoring of waste water discharges and specify limits for certain parameters in the discharges.

The Regulations and UWWTD specify monitoring requirements and set limits on the concentration of biochemical oxygen demand, chemical oxygen demand and total suspended solids in waste water discharges.

River water quality (3.5)

River water is the principal source of drinking water in Ireland. The Environmental Protection Agency (EPA) conducts an assessment of river water quality every three years on behalf of Local Authorities. Samples are taken from over 3,000 locations around Ireland. These biological surveys began in 1971. River water quality is classified into four quality classes based on a scheme of biotic indices, which codify the characteristic changes induced in flora and fauna of rivers and streams in the presence of pollution. Unpolluted waters include pristine waters and also waters of a less high but acceptable standard. Slightly polluted and moderately polluted waters are mainly characterised by eutrophication and may not be able to support fish survival. Seriously polluted waters are characterised by the presence of high concentrations of biodegradable organic waste. These waters are of very little beneficial use.

Nitrates in groundwater (3.6)

Nitrates can cause serious problems when they end up in groundwater or surface water by causing increased growth of algae and eutrophication of water systems. The drop in oxygen that comes with the presence of nitrates can lead to fish kills. The problem stems from the practice of spreading animal wastes – which contain nitrates in high concentrations – on land to improve crops and pastures.

These pollutants can also affect humans. For example, when nitrates in our drinking water are metabolised in the stomach this can lead to the formation of nitrous amines, which are thought to be carcinogenic.

Chemical status of groundwater bodies (3.7)

Groundwater monitoring programmes are required to provide a coherent and comprehensive overview of water status within each river basin, to detect the presence of long-term anthropogenically induced trends in pollutant concentrations and ensure compliance with Protected Area objectives. As stressed in the Groundwater Directive, reliable and comparable methods for groundwater monitoring are an important tool for assessment of groundwater quality (and this is applicable to quantity as well). A groundwater body will be at good chemical status if the following criteria are satisfied:

- *General water quality*: The concentrations of pollutants should not exceed the quality standards applicable under other relevant Community legislation;
- *Impacts on ecosystems*: The concentration of pollutants should not be such as would result in failure to achieve the environmental objectives specified for associated surface waters nor any significant diminution of the ecological or chemical quality of such bodies nor in any significant damage to terrestrial ecosystems which depend directly on the groundwater body;
- *Saline intrusion*: The concentrations of pollutants should not exhibit the effects of saline or other intrusions as measured by changes in conductivity.

The Water Framework Directive (WFD) requires both surveillance and operational programmes to be established to provide the information needed to support the assessment of chemical status and identification and monitoring of pollutant trends.

The data on water bodies by count shows total numbers of all water bodies (including all horizons) assigned to a particular class of chemical status (either at country level or RBD level).

Domain 4 – Land Use

Land use categories (4.1)

Forest Land

Forest land is an area greater than one hectare which has a closed canopy of trees or where afforestation has been grant aided (though the canopy may not as yet be fully developed). It does not include Orchards or Hedgerows.

Cropland

Cropland is the CSO's annual estimate of crop areas based on survey returns.

Grassland

Lands reported as natural grasslands (ungrazed) is based on land cover in 1990, and subsequent gains and removals based on the dynamic demand from other land uses, most notably grazing land and forestry. The land cover information does not indicate the condition of these grasslands and whether they are fit for grazing. A comparison of utilised agricultural areas and the land cover data indicates that (in any given year) we do not graze all our natural grasslands. It may be that over time, patterns of rotational grazing means that all these lands are grazed.

Exploited peatland

Exploited peatland is based on Bord na Mona's assessment of their own land management practices extrapolated across the commercial peat extraction sector. It also includes an estimate of sod peat cutting based on the SEAI Energy Balances.

Unexploited wetland

Unexploited wetland is based on an extrapolation of the 1990 CORINE area of peatlands and wetlands adjusted to account for afforestation and other demands for land. There has also been some managed and unmanaged rewetting of exploited peatland.

Corine Land Cover (CLC) is a map of the European environmental landscape based on interpretation of satellite images. It provides comparable digital maps of land cover for each country for much of Europe. This is useful for environmental analysis and for policy makers.

Corine stands for *Coordination of Information on the Environment*. The EU established Corine in 1985 to create pan-European databases on land cover, biotopes (habitats), soil maps and acid rain.

Settlement

Settlement area is extrapolated from the 1990 CORINE area for urban and suburban land covers. Extrapolation is based on road completions, housing and other construction statistics. The original CORINE figure includes urban green areas (e.g. parks and leisure facilities). These are not included in the estimated of land use change.

Other Land

Other land is the residual area when all other land use types have been estimated. It is assumed to include rock and sand areas, natural grasslands and hedgerows (unless already reported under agricultural areas).

Afforestation (4.2)

Afforestation is the man-made establishment of new forests on treeless lands which did not carry forest in contemporary history, which implies a transformation from Non-Forest to Forest.

Forest cover (4.3)

This is defined as land spanning more than 0.5 hectares with trees higher than 5 metres and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use.

1. Forest is determined both by the presence of trees and the absence of other predominant land uses. The trees should be able to reach a minimum height of 5 metres in situ.
2. Includes areas with young trees that have not yet reached but which are expected to reach a canopy cover of 10 percent and tree height of 5 metres. It also includes areas that are temporarily unstocked due to clear-cutting as part of a forest management practice or natural disasters and which are expected to be regenerated within 5 years. Local conditions may, in exceptional cases, justify that a longer time frame is used.
3. Includes forest roads, firebreaks and other small open areas; forest in national parks, nature reserves and other protected areas such as those of specific environmental, scientific, historical, cultural or spiritual interest.
4. Includes windbreaks, shelterbelts and corridors of trees with an area of more than 0.5 hectares and width of more than 20 metres.
5. Includes abandoned shifting cultivation land with a regeneration of trees that have, or is expected to reach, a canopy cover of 10 percent and tree height of 5 metres.
6. Includes areas with mangroves in tidal zones, regardless of whether this area is classified as land area or not.
7. Includes rubber-wood, cork oak, energy wood and Christmas tree plantations.
8. Includes areas with bamboo and palms provided that land use, height and canopy cover criteria are met.
9. Excludes tree stands in agricultural production systems, such as fruit tree plantations (incl. olive orchards) and agri-forestry systems when crops are grown under tree cover.

Public forest (4.4 and 4.5)

Afforestation is land planted for the first time with trees. Reforestation is land planted for the 2nd or 3rd time with trees. The area clearfelled in any given year will not be reforested for up to 4 years after clearfelling. Therefore the area felled in 2010 is not the same land that was reforested in 2010. Clearfelling started towards the end of one year may continue into the following year. The category "Temporarily Unstocked/Being Restocked" refers to land that is felled and in the process of being reforested but the details of the restocking has not been captured by our inventory system.

Farm partners means that a farmer owns the land and Coillte manages the tree crop and shares in the profit.

Organic agricultural land (4.6 and 4.7)

Organic farming is a system of farming which avoids the use of soluble fertilisers, pesticides, growth regulators, feed additives and other chemicals. The organic farmer relies on the use of crop rotations, animal manure, clover, low stocking rates and good animal husbandry for producing outputs.

Fertiliser sales (4.8 and 4.9)

Well-structured soils that are rich in nutrients are said to be highly fertile. Given sufficient light, warmth and water, they will produce abundant crops. However, the nutrients removed by crops or feeding animals must be replaced or soil fertility will be run down.

Nutrients can be replaced by returning to the soil, plant, animal or human waste, such as sewage sludge, or by adding mineral fertilizers. To grow well, crops need a balanced supply of essential nutrients. The main nutrients are nitrogen, phosphorus and potassium. These and most other nutrients are normally dissolved in water in the soil.

Livestock numbers (4.10 and 4.11)

The data for cattle are obtained by the CSO from Department of Agriculture Food and the Marine's Animal Identification and Movement (AIM) system, formerly known as the Cattle Movement Monitoring System (CMMS). This system was introduced at the beginning of 2000 and involves electronically recording data on animal movements. Information on cattle numbers and on flows into and out of the cattle population has been available from this system since December 2002.

House completions (4.12 and 4.13)

House completions data series are based on the number of new dwellings, including apartments, connected by ESB Networks to the electricity supply. These represent the number of homes completed and available and do not reflect any work-in progress. ESB Networks have indicated that there was a higher backlog in work-in-progress in 2005 than usual (estimated as being in the region of 5,200 units). This backlog was cleared through the connection of an additional 2,000 houses in Quarter 1 2006 and 3,000 houses in Quarter 2 2006.

Local authority house completions do not include second-hand houses acquired by them. New units acquired under Part V, Planning & Development Acts 2000-2006 for local authority rental purposes are included.

Voluntary & co-operative housing consists of housing provided under the capital loan & subsidy and capital assistance schemes.

Dwellings completions for EU countries includes both houses and apartments.

Domain 5 – Energy

Primary energy requirement and final energy consumption (5.1 to 5.3)

Total Primary Energy Requirement (TPER) is a measure of all energy consumed, including that consumed and/or lost in transformation and transmission/distribution processes (e.g. electricity generation transmission and distribution; oil refining). $TPER = \text{Indigenous Production} + \text{Imports} - \text{Exports} - \text{Marine Bunkers} - \text{Stock Change}$.

Total Final Consumption (TFC) represents the amount of energy consumed by the different sectors of the economy after all transformations have been completed. It also excludes any losses that may occur in this process or in the transmission of these secondary sources of energy. The processes are the generation of electricity, oil refining and the production of briquettes (production of secondary energies).

Derived heat covers the total heat production in heating plants and in combined heat and power plants. It includes the heat used by the auxiliaries of the installation which use hot fluid (space heating, liquid fuel heating, etc.) and losses in the installation/network heat exchanges. For auto-producing entities (entities generating electricity and/or heat wholly or partially for their own use as an activity which supports their primary activity) the heat used by the undertaking for its own processes is not included.

Energy intensity (5.4)

Gross Domestic Product (GDP) is the central aggregate of National Accounts. GDP represents the total value added (output) in the production of goods and services in the country. GDP at market prices is the final result of the production activity of resident producer units. GDP is compiled both in constant prices and in current prices. Constant price data indicate the development of volumes, while current price data reflect volume and price movements. **The GDP figures are taken at chain-linked volumes, reference year 2005.**

The gross inland consumption of energy is calculated as the sum of the total primary energy requirement of the five types of energy: coal, electricity, oil, natural gas and renewable energy sources.

The energy intensity ratio is the result of dividing the gross inland consumption of energy by the GDP. Since gross inland consumption of energy is measured in kgoe (kilogram of oil equivalent) and GDP in €1000 at constant prices, this ratio is measured in kgoe per €1000. **Energy intensity** measures the energy consumption of an economy and its overall energy efficiency.

Primary energy production and renewable energy (5.5 to 5.10)

Production refers to the quantities of fuels extracted or produced, calculated after any operation for removal of inert matter or impurities (e.g. sulphur from natural gas). It refers only to indigenous production of fuels in Ireland.

Peat is a combustible soft, porous or compressed, fossil sedimentary deposit of plant origin with high water content (up to 90% in the raw state), easily cut, of light to dark brown colour.

Natural gas comprises gases, occurring in underground deposits, whether liquefied or gaseous, consisting mainly of methane. It includes both "non-associated" gas originating from fields producing only hydrocarbons in gaseous form and "associated" gas produced in association with crude oil as well as methane recovered from coal mines (colliery gas).

Hydro-power: Potential and kinetic energy of water converted into electricity in hydroelectric plants. Pumped storage is treated separately in the energy balance.

Wind energy: Kinetic energy of wind exploited for electricity generation in wind turbines.

Solid biomass: This covers organic, non-fossil material of biological origin which may be used as fuel for heat production or electricity generation. It comprises: **Charcoal:** covers the solid residue of the destructive distillation and pyrolysis of wood and other vegetal material and **Wood, wood wastes, other solid wastes:** Covers purpose-grown energy crops (poplar, willow etc.), a multitude of woody materials generated by an industrial process (wood/paper industry in particular) or provided directly by forestry and agriculture (firewood, wood chips, bark, sawdust, shavings, chips, black liquor etc.) as well as wastes such as tallow, straw, rice husks, nut shells, poultry litter, crushed grape dregs etc. Combustion is the preferred technology for these solid wastes. The quantity of fuel used is reported on a net calorific value basis.

Landfill gas: A gas composed principally of methane and carbon dioxide produced by anaerobic digestion landfill wastes.

Biogas: A gas composed principally of methane and carbon dioxide produced by anaerobic digestion of biomass, comprising: Sewage sludge gas, produced from the anaerobic fermentation of sewage sludge and other biogas, such as biogas produced from the anaerobic fermentation of animal slurries and of wastes in abattoirs, breweries and other agri-food industries.

Liquid biofuel: This covers the following fuels: **Bioethanol:** ethanol produced from biomass and/or biodegradable fraction of waste; **Biodiesel:** a diesel quality liquid fuel produced from biomass or used fried oils; **Biomethanol:** methanol produced from biomass and/or the biodegradable fraction of waste; **Biodimethylether:** a diesel quality fuel produced from biomass and/or the biodegradable fraction of waste; **Other Liquid Biofuel:** liquid biofuels, used directly as a fuel, not included in biogasoline or biodiesels.

Solar energy: Solar radiation exploited for hot water production and electricity generation, by: flat plate collectors, for domestic hot water or for the seasonal heating of swimming pools; photovoltaic cells; solar thermal-electric plants. Passive solar energy for the direct heating, cooling and lighting of dwellings or other buildings is not included.

Geothermal energy: Energy available as heat emitted from within the earth's crust, usually in the form of hot water or steam. It is exploited at suitable sites: for electricity generation using dry steam or high enthalpy brine after flashing or directly as heat for district heating, agriculture etc. Ground source geothermal energy is also included in the category.

In calculating the contribution of hydro and wind energy the effects of weather fluctuation are smoothed through normalisation. The normalised figures are what will be reported to Europe as progress towards renewable electricity targets and are required by the Renewable Energy Directive (2009/28/EC).

Energy dependency (5.11 and 5.12)

Energy dependency shows the extent to which an economy relies upon imports in order to meet its energy needs. The indicator is calculated as net imports divided by the sum of gross inland energy consumption plus bunkers. The data are based on tonnes of oil equivalent.

Fuel imports (5.13)

The fuel import data presented in this table are based upon IEA/Eurostat/UNECE energy surveys which are carried out by SEAI and DCENR.

Domain 6 – Transport

Vehicles under current license (6.1)

Vehicles under current license includes private cars, goods vehicles, motor cycles, tractors, dumpers, excavators, public service vehicles, exempt vehicles and other vehicles.

New private vehicles licensed by emission class (6.3)

New vehicles registered after 1st July 2008 are subject to motor vehicle duty based on CO₂ emissions rather than on engine size, as was previously the case. The table below sets out the seven separate band classes.

Band	CO ₂ emissions – grams per km
A	0 – 120 g
B	More than 120 g/km up to and including 140 g/km
C	More than 140 g/km up to and including 155 g/km
D	More than 155 g/km up to and including 170 g/km
E	More than 170 g/km up to and including 190 g/km
F	More than 190 g/km up to and including 225 g/km
G	More than 225 g/km

Road freight transport (6.4 and 6.5)

Tonne-Kilometres: For end-to-end journeys this is the result of multiplying the weight of goods carried by the distance they were carried

Tonnes Carried is the weight of goods (including empties) carried inclusive of packaging etc. but excluding the weight of demountable containers (if any) in which the goods are carried.

Rail and bus transport (6.6)

Bus transport refers to large public service vehicles (PSVs) which cover all buses and coaches except those in private use, school buses and youth community buses.

Means of travel to work (6.10)

The data in this table is in response to the question in the Census of Population:

“How do you usually travel to work, school or college?”

The respondent is asked to choose only one option, representing the longest part of their usual journey. This data takes account only of people working, and does not include students, unemployed or retired people.

Domain 7 – Waste

Municipal waste (7.1 to 7.4)

Municipal waste means solid household waste as well as commercial and other waste that, because of its nature or composition, is similar to household waste. It excludes municipal sludges and effluents. Municipal waste consists of three main elements - household, commercial (including non-process industrial waste) and street cleansing waste (street sweepings, street bins, municipal parks and cemeteries maintenance, waste, litter campaign material).

Waste management means the collection, transport, recovery and disposal of waste, including the supervision of such operations and the after-care of disposal sites and including actions taken as a dealer or broker.

Disposal means any operation which is not recovery even where the operation involves, as a secondary consequence, the reclamation of substances or energy.

Recovery of packaging waste (7.5 and 7.6)

Packaging is used to contain, protect and present goods. Virtually all packaging eventually becomes waste. Packaging is made from such materials as cardboard, paper, glass, plastic, steel, aluminium, wood and composite materials such as those used in milk and juice cartons.

Recovery means any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy.

Collection of Electrical waste (7.7 and 7.8)

Large household appliances include dishwashers, washing machines and cookers. Other WEEE includes stereos, telephones, toys, vacuum cleaners, toasters and computers.

Collection of construction and demolition waste (7.9)

Construction and demolition (C&D) waste is all waste that arises from construction, renovation and demolition activities and all wastes mentioned in Chapter 17 of the European Waste Catalogue (EWC).

The bulk of the tonnage is made up of soil and stones, while the remainder mainly comprises rubble, metals, timber, plastic and wood.

There was between a 98% to 99% recovery rate in construction and demolition waste in 2009 and 2010. However, the Environmental Protection Agency point out that there is a discrepancy in the data between the quantity of C & D reported as collected and the quantity treated (recovered or disposed). This amounted to 0.8 million tonnes of soil and stones and 0.1 million tonnes of other C & D waste in 2010 and therefore, the figures for recovery rates need to be treated with some caution.

Domain 8 – Biodiversity and Heritage

Countryside birds (8.1)

The countryside bird survey is based on a random approach stratified by region and the survey design and field methodology closely follows that of the UK Breeding Bird Survey (BBS) which is undertaken in Britain and Northern Ireland. The Republic of Ireland was divided into eight regions, based on the administrative divisions of the National Parks and Wildlife Service. These regions varied in size and each contained between three and four counties.

Bird counts were undertaken during two visits. The first was in the early part of the breeding season (April to mid-May) and the second at least four weeks later (from mid-May to the end of June). This reflects the abundance of residents and early migrants which tend to be more easily detected during the first visit and later migrants which are more abundant during the second visit.

Of the 54 species, 46 are shown in Graph 8.1 for presentation purposes. The eight species not shown, along with their respective average annual rates of change between 1998 and 2012 are:

Species	2012/1998
White Wagtail and Pied Wagtail	0.5%
Barn Swallow	0.3%
Mallard	0.2%
Spotted Flycatcher	0.0%
Dunnock	0.0%
Reed Bunting	-0.1%
Winter Wren	-0.2%
Yellowhammer	-0.4%

Red and Amber lists have been created using seven quantitative criteria in an attempt to identify conservation priorities on the island. Species that are Red-listed are globally threatened, are declining rapidly in number or range, or have declined historically and not shown recent recovery. Amber-listed species have an unfavourable status in Europe, a very small population size, a population which has declined moderately in recent years, has a localised distribution, or occurs in internationally important numbers.

Common farmland birds (8.2)

The indicator is an aggregated index of population trend estimates of a selected group of breeding bird species dependent on agricultural land for nesting or feeding. Indices are calculated for each species independently and are weighted equally when combined in the aggregate index using a geometric mean. Aggregated EU indices are calculated using population-weighted factors for each country and species.

Protected areas (8.3 and 8.4)

The **Habitats Directive** 92/43/EEC was adopted in 1992. The main aim of this Directive is to promote the maintenance of biodiversity, taking account of economic, social, cultural and regional requirements. While the Directive makes a contribution to the general objective of sustainable development; it ensures the conservation of a wide range of rare, threatened or endemic species, including around 450 animals and 500 plants. Some 200 rare and characteristic habitat types are also targeted for conservation in their own right.

Member States are required to designate **Special Protection Areas (SPAs)** for 194 particularly threatened species and all migratory bird species. SPAs are scientifically identified areas critical for the survival of the targeted species, such as wetlands. They are part of the Natura 2000 ecological network set up under the Habitats Directive 92/43/EEC.

Progress has been made in the designation of **Special Areas of Conservation** and of **Special Protection Areas** under the EU Birds Directive in Ireland but the EU Commission views Ireland's list as incomplete.

National monuments (8.5)

The term 'national monument' as defined in Section 2 of the National Monuments Act (1930) means a monument 'the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic or archaeological interest attaching thereto. National monuments in State care include those which are in the ownership or guardianship of the Minister for Arts, Heritage and the Gaeltacht.

Record of protected structures (8.6)

The definition in legislation of the Record of Protected Structures is given as:

For the purpose of protecting structures, or parts of structures, which form part of the architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest, every development plan shall include in that record every structure which is, in the opinion of the planning authority, of such interest within its functional area.

Domain 9 – Environmental Economy

Environmental taxes (9.1 and 9.2)

A carbon tax was introduced by the government in 2010, which placed a tax upon auto diesel, petrol, aviation gasoline, kerosene, marked gas oil, fuel oil, LPG (Other), Auto LPG, and natural gas.

Environmental subsidies (9.3)

REPS (Rural Environment Protection Scheme), is a scheme designed to reward farmers for carrying out their farming activities in an environmentally friendly manner and to bring about environmental improvement on existing farms. The objectives of the scheme are to:

- Establish farming practices and production methods which reflect the increasing concern for conservation, landscape protection and wider environmental problems;
- Protect wildlife habitats and endangered species of flora and fauna;
- Produce quality food in an extensive and environmentally friendly manner.

Wholesale price indices (9.4)

The industrial producer price index for a sector measures, in index form, changes in prices received by Irish manufacturers for goods fully or partially produced in Ireland and sold to the home and export markets by that sector. The other three wholesale price index series incorporate imported and home produced goods sold by manufacturers and wholesale outlets. All constituent series are compiled using a Laspeyres type index formula. Identical items are priced each month so that changes in the cost of this constant basket reflect price changes only.

Consumer prices and Harmonised index of consumer prices (9.5 and 9.6)

The **Consumer Price Index** is designed to measure the change in the average level of prices (inclusive of all indirect taxes) paid for consumer goods and services by all private households in the country and by foreign tourists holidaying in Ireland. Over 50,000 prices are collected for a representative basket consisting of 632 item headings in a fixed panel of retail and service outlets throughout the country during the week containing the second Tuesday of each month up to and including the third Tuesday of each month.

Harmonised indices of consumer prices (HICPs) give comparable measures of inflation for the countries and country groups where they are produced. They are economic indicators that measure the change over time of the prices of consumer goods and services acquired by households. In other words they are a set of consumer price indices (CPIs) calculated according to a harmonised approach and a single set of definitions. In particular, HICPs provide the official measure of consumer price inflation in the euro area for the purposes of monetary policy and the assessment of inflation convergence as required under the Maastricht criteria.

Resource use and resource productivity (9.7 and 9.8)

Domestic material consumption (DMC) equals domestic extraction plus imports minus exports. DMC measures the annual amount of raw materials extracted from the domestic territory of the national economic area, plus all physical imports minus all physical exports.

Domestic extraction covers the annual amount of solid, liquid and gaseous raw materials (except for water and air) extracted from the national territory to be used as material factor inputs in economic processing i.e. acquiring value within the economic system. These materials consist of biomass, construction and industrial minerals, gross ores and fossil fuels. Concerning the water content of the raw materials, the convention is to account for all raw materials in fresh weight, with the exception of grass harvest, fodder directly taken up by ruminants, and timber harvest.

Resource productivity is calculated as real GDP divided by domestic material consumption. The GDP data in Table 9.8 is in chain-linked volumes to the reference year 2005 at 2005 exchange rates.

Imports and exports of fuels (9.9 and 9.10)

The data are a combination of Customs-based non-EU trade statistics and estimates from the Intrastat survey of Irish traders involved in trade with other EU member states. Imports and exports are classified according to the United Nations' Standard Trade Classification, Revision 4 (SITC Rev 4). The SITC has been developed by the United Nations for the advancement of the international comparability of statistics on external trade.

Sea fishery landings (9.11 and 9.12)

Boarfish figures are reported separately to the four main species classes from 2009, because though often demersal in habits they are landed in very large quantities and have relatively low value by weight.

Fish which spend most of their time on or close to the seabed are classified as demersal. By contrast, pelagic species spend most of their time somewhere in the water column off the bottom.

Aquaculture and farmed fish are excluded from these figures.

