



**An Phríomh-Oifig Staidrimh**  
Central Statistics Office

# **Sustainable Development Indicators Ireland 2015**

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*Cover photographs (from top): Aeration process, waste water treatment plant, Clareabbey, Co. Clare, courtesy of Environmental Protection Agency; Kaese primary school, Uganda, courtesy of Irish Aid ; Clones, Co. Monaghan, courtesy of Photographic Unit, National Monuments Agency; Landfill waste, courtesy of Environmental Protection Agency.*

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## Introduction

This is the second edition of Sustainable Development Indicators Ireland, which is published on a biennial basis. The report ***Our Sustainable Future, A Framework for Sustainable Development for Ireland*** (published by the Department of the Environment, Community and Local Government) requested the CSO to develop a sustainable development indicator set in consultation with other government departments and agencies. The present indicator set, compiled as a response to the Department's request, complements two existing CSO indicator reports namely *Measuring Ireland's Progress* and *Environmental Indicators Ireland*. With a view to minimising the overlap between these three indicator sets this report has been limited to 57 indicators.

Conceptually, sustainable development has the objective of achieving continuous improvement in quality of life and well-being, by linking economic development, protection of the environment, and social justice.

The indicators in this publication are presented under four domains: Global Indicators; Economy; Social; and Environment. The Global Indicators domain contains seven indicators and gives a worldwide overview; the other three domains only contain data for Ireland and the EU. The Global indicators show that the EU is in an advantaged position in economic, health and education terms relative to most other regions.

The Economy, Social and Environment domains contain indicators designed to show trends in Ireland since 2000 and to benchmark Ireland against other countries in the European Union. The impacts of the 'Celtic tiger' and the subsequent recession are clearly visible in the data.

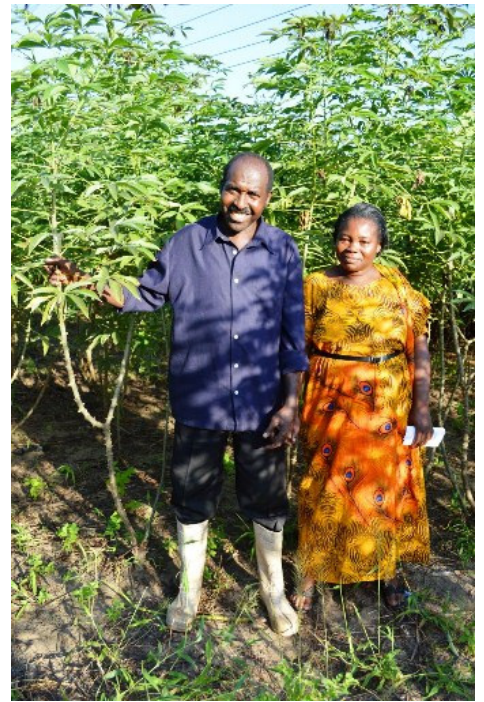
The CSO wishes to thank: Birdwatch Ireland; Department of Education and Skills; Department of the Environment, Community and Local Government; Department of Finance; Department of Health; Department of Social Protection; Department of Transport, Tourism and Sport; DKM Economic Consultants; Environmental Protection Agency; Irish Aid; Revenue Commissioners and Sustainable Energy Authority of Ireland for providing us with data and technical advice on the most appropriate indicators for Ireland.

## Main findings

- The World population is estimated to reach 7.3 billion persons in 2015 and is forecast to increase by 10% to 8.1 billion persons in 2025. In Ireland people have around 24 years additional life expectancy compared with people in Africa. European countries donate a higher proportion of their Gross National Income to official development assistance than other economically-developed regions.
- General government debt in Ireland fell from 79% of GDP in 1995 to 24% in 2006 before increasing to 123% of GDP in 2013.
- Ireland received a net €1.5 billion from the EU in 2000. In 2013 we received €143 million. In 2013, Germany's net contribution was over €16 billion while Poland's net receipts were almost €12 billion.
- Income tax as a proportion of total exchequer tax revenue decreased from 34% in 2000 to 27% in 2006 but then increased to 42% in 2014. In contrast corporation tax increased from 10% in 1995 to 15% in 2006 but fell to 11% in 2014.
- In 2012, persons earning under €20,000 accounted for 9% of total taxable income and paid 0.6% of total income tax. Those earning over €100,000 accounted for 23% of total taxable income and paid 44% of total income tax.
- Public sector wages increased from 33% of general government current expenditure in 2000 to 36% in 2005 before decreasing to 29% in 2013.
- In 2000, public sector wages accounted for eight percentage points more of general government current expenditure than the proportion accounted for by social welfare payments. In 2009 both represented 32% of the total. Since 2010 social welfare payments have exceeded the cost of public sector wages, and in 2013 accounted for 32% of total general government current expenditure.
- In the EU, Ireland had the highest level of completions of residential units per 1,000 persons with a rate of 17.8 in 2007. Spain was the next highest at 15.3. By 2014 the rates had fallen to 1.6 in Ireland and 1.0 in Spain. In contrast, the rate in Germany has been much steadier at around two completions per 1,000 persons during the 2007-2014 period.
- Emigration levels have increased from a low of 25,300 persons in 1997 to 82,000 persons in 2014. Immigration levels peaked in 2007 at 151,000 persons, before falling to 61,000 persons in 2014.
- The proportion of children aged 5-12 being driven to school by car increased from 26% in 1986 to 61% in 2011. The proportion of children aged 13-18 going to school as car passengers rose from 11% to 40% over the same period. In 2011, two out of three persons drove to work.
- Ireland's imported energy dependency increased from 69% in 1990 to 89% in 2013. Our import dependency on oil decreased from 66% of total fuel imports in 2005 to 55% in 2013. Our import dependency on gas increased from 20% to 30% over the same period.
- The number of new private cars registered in either emission band A or B has increased from 12% in 2005 to 95% in 2014.
- The amount of municipal waste sent to landfill decreased from 2 million tonnes in 2001 to just over 1 million tonnes in 2012. The recovery rate of packaging waste increased from 25% in 2001 to 87% in 2012.



# 1. Global Indicators



## Contents

	Indicator	Source
1.1	World population 2015 and 2025	United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision; CSO Census of Population
1.2	Infant mortality and life expectancy 2010	United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Prospects: The 2012 Revision; CSO Quarterly National Household Survey
1.3	Population in developing regions living below \$1 per day 1990-2010	United Nations Millennium Development Goals Report 2014 Statistical Annex
1.4	Employment rate 2013	United Nations Millennium Development Goals Report 2014 Statistical Annex; CSO Quarterly National Household Survey
1.5	Official Development Assistance 2013	Irish Aid annual report 2013
1.6	Net enrolment ratio in primary education 1990-2012	United Nations Millennium Development Goals Report 2014 Statistical Annex; Department of Education and Skills
1.7	Greenhouse gas emissions under Kyoto Protocol 1995-2012	United Nation Framework Convention on Climate Change

*Photographs: Kaese primary school, Uganda; Agricultural development, Tanzania, both courtesy of Irish Aid; beneficiaries of Social Assistance Grants for Empowerment, Karamoja, Uganda, courtesy of Wendy Kasujja.*



## 1.1 World population 2015 and 2025

Region	% of total population			million		
	Under 15	15-64	65 and over	Population 2015	Projected population 2025	% change in population 2025/2015
<b>World</b>	26%	66%	8%	7,325	8,083	10%
<b>Europe</b>	16%	67%	17%	743	741	0%
<b>Africa</b>	41%	56%	3%	1,166	1,468	26%
<b>North America</b>	19%	66%	15%	361	390	8%
<b>Central America</b>	29%	65%	6%	172	193	12%
<b>Caribbean</b>	25%	66%	9%	43	46	6%
<b>South America</b>	25%	67%	8%	415	452	9%
<b>Asia (excluding China)</b>	24%	68%	7%	2,983	3,300	11%
<b>China</b>	18%	72%	9%	1,402	1,449	3%
<b>Oceania</b>	24%	64%	12%	39	45	14%
<b>Ireland</b>	22%	65%	13%	4.6	5.1	9%

Sources: United Nations and CSO

- The world's population is estimated to be 7.3 billion persons in 2015, and is forecast to rise to almost 8.1 billion by 2025. This increase is forecast to occur mainly in Africa, where the population is expected to increase by 300 million (26%), and Asia, where the population is forecast to grow by over 300 million (11%).
- The population of Europe is forecast to fall marginally between 2015 and 2025.
- The highest proportion of under 15s is in Africa, where this age group comprises 41% of the population in 2015. Europe has the highest proportion of persons aged 65 and over (17%), and the lowest proportion of persons aged under 15 (16%).

## 1.2 Infant mortality and life expectancy 2010

Region	deaths before age one per 1,000 live births	life expectancy at birth (years)	
	Infant mortality rate	Males	Females
<b>World</b>	42	67	71
<b>Europe</b>	7	71	79
<b>Africa</b>	73	54	57
<b>North America</b>	7	76	81
<b>Central America</b>	19	73	78
<b>Caribbean</b>	30	69	74
<b>South America</b>	21	70	77
<b>Asia</b>	37	68	72
<b>China</b>	18	73	76
<b>Oceania</b>	22	75	79
<b>Ireland</b>	4	77	82

Source: United Nations

- The highest infant mortality rate in the world in 2010 was in Africa, where 73 infants out of every 1,000 died before reaching their first birthday. The rate was 37 infants per 1,000 in Asia, while in more developed regions, the figure falls to around 7 deaths per 1,000.
- Africa had the lowest life expectancy at birth, both for boys (54 years), and girls (57 years). In contrast, life expectancy in North America was 81 years for females and 76 years for males, and in Europe was 79 years for females and 71 years for males.

### 1.3 Population in developing regions living below \$1 per day 1990-2010

Region	% of region total				
	1990	1999	2005	2010	2015 Goal
<b>Developing Regions</b>	47%	37%	27%	22%	24%
<b>North Africa</b>	5%	5%	3%	1%	3%
<b>Sub-Saharan Africa</b>	57%	58%	52%	48%	28%
<b>Latin America and Caribbean</b>	12%	12%	9%	6%	6%
<b>East Asia</b>	60%	36%	16%	12%	30%
<b>South Asia</b>	52%	43%	38%	30%	26%
<b>South-East Asia</b>	45%	36%	19%	14%	23%
<b>West Asia</b>	5%	5%	5%	4%	3%
<b>Caucasus and Central Asia</b>	10%	20%	7%	4%	5%

Source: United Nations

- The UN Millennium Development Goals target a halving, between 1990 and 2015, in the proportion of persons whose income is less than \$1 per day.
- Sub-Saharan Africa reduced the proportion of the population living on less than \$1 per day from 57% in 1990 to 48% in 2010. South Asia has improved from 52% in 1990 to 30% in 2010.

### 1.4 Employment rate 2013

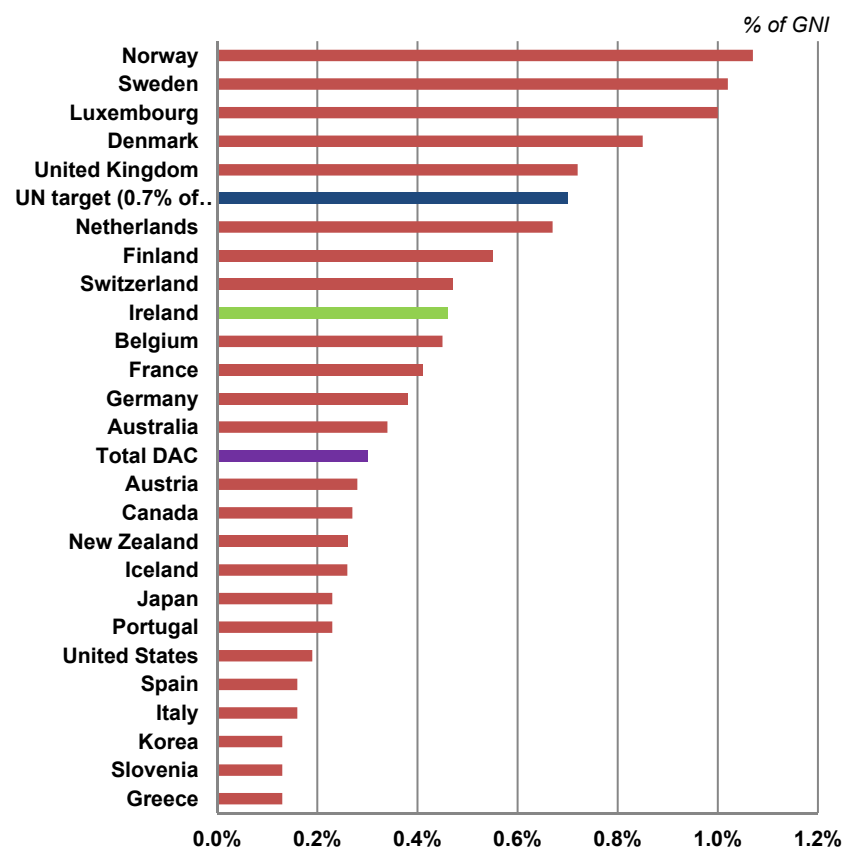
Region	% of persons employed of total population		
	Men	Women	Youth
<b>World</b>	73%	47%	41%
<b>Developed Regions</b>	62%	49%	38%
<b>Developing Regions</b>	75%	47%	42%
<b>North Africa</b>	68%	18%	23%
<b>Sub-Saharan Africa</b>	71%	58%	47%
<b>Latin America and Caribbean</b>	75%	50%	46%
<b>East Asia</b>	74%	61%	50%
<b>South Asia</b>	77%	28%	35%
<b>South-East Asia</b>	79%	57%	45%
<b>West Asia</b>	69%	20%	26%
<b>Oceania</b>	72%	64%	52%
<b>Caucasus and Central Asia</b>	69%	51%	37%
<b>Ireland</b>	72%	61%	:

Sources: United Nations and CSO

Note: Ireland data shows % of people aged 20-64 in employment in 2014.

- One of the UN Millennium Development Goals is to achieve full and productive work for all, including women and young people. North Africa (18%) had the lowest female participation rate in 2013 followed by West Asia (20%).
- Employment rates for youths were substantially lower than elsewhere in North Africa (23%) and West Asia (26%).

### 1.5 Official development assistance 2013



Source: Irish Aid

- In 2013, Ireland ranked ninth in the list of OECD Development Assistance Committee (DAC) donors in terms of their contribution as a percentage of Gross National Income at 0.46%, above the DAC average of 0.3% of GNI, but below the UN target of 0.7%. Norway, at 1.07%, was the largest contributor, relative to its GNI.

### 1.6 Net enrolment ratio in primary education 1990-2012

Region	primary school enrolment rate		
	1990	2000	2012
World	82%	85%	91%
Developed Regions	96%	97%	96%
Developing Regions	80%	83%	90%
North Africa	80%	90%	99%
Sub-Saharan Africa	52%	60%	78%
Latin America and Caribbean	87%	94%	94%
East Asia	97%	96%	97%
South Asia	75%	80%	94%
South-East Asia	93%	93%	94%
West Asia	84%	86%	93%
Oceania	69%	:	89%
Caucasus and Central Asia	:	95%	95%
Ireland	100%	100%	100%

Sources: United Nations and Department of Education and Skills

- One of the UN Millennium Development Goals is that by 2015, all children will be able to complete a full course of primary schooling.
- While the figure for sub-Saharan Africa has increased from 52% in 1990, there were still only 78% of children in this region enrolling in primary school in 2012.

## 1.7 Greenhouse gas emissions under Kyoto Protocol 1995-2012

*Base year 1990=100*

Country	1995	2000	2005	2010	2012
Australia	105	118	126	130	131
Iceland	94	110	109	131	126
New Zealand	106	117	129	121	125
Spain	114	134	152	122	120
Canada	108	122	125	118	118
Portugal	117	138	144	116	113
Japan	108	109	109	102	109
Ireland	107	123	126	112	106
Greece	105	121	129	112	106
Norway	100	107	108	108	105
United States	106	114	116	110	104
Austria	102	103	119	109	103
Switzerland	98	98	102	102	97
Luxembourg	79	76	102	95	92
Netherlands	105	101	99	99	90
Italy	102	106	111	96	89
France	99	101	101	93	89
Finland	101	98	98	106	87
Belgium	105	102	99	91	82
EU 28	93	91	92	84	81
Sweden	102	94	92	89	79
Denmark	110	100	94	90	76
Germany	90	83	80	76	75
United Kingdom	94	90	88	78	75

*Source: United Nations*

- Of the Annex II countries signed up to the Kyoto Protocol, Australia had the highest emissions in 2012 relative to the base year of 1990, at 31% above 1990 levels. Ireland's emissions have fallen since 2005, but still remain 6% above 1990 levels.
- The United Kingdom and Germany had the lowest emissions in 2012, relative to 1990, with both of their indices at 75.

## 2.Economy



## Contents

	<b>Indicator</b>	<b>Source</b>
2.1	Ireland: General government debt and balance 1995-2013	CSO National Accounts
2.2	EU: Net receipts from EU 2000-2013	European Commission
2.3	EU: Per capita net receipts from EU 2000-2013	European Commission
2.4	EU: General government tax revenue 2012	Eurostat
2.5	Ireland: Exchequer tax revenue 1995-2014	Department of Finance
2.6	Ireland: Income tax distribution 2002-2012	Revenue Commissioners
2.7	Ireland: General government expenditure on pay and social welfare 1995-2013	CSO National Accounts and Department of Social Protection
2.8	Euro exchange rates 2001-2014	Eurostat
2.9	Ireland: Gross domestic expenditure on R&D 1995-2013	Eurostat and CSO
2.10	Ireland: Gross fixed capital formation by sector 2000-2013	CSO Institutional Sector Accounts
2.11	EU: Harmonised index of consumer prices for energy products 2014	Eurostat
2.12	Ireland: House completions 1970-2013 and residential property price index 2005-2014	Department of the Environment, Community and Local Government and CSO
2.13	EU: Dwelling completions 2007-2014	DKM, Euroconstruct, Eurostat, CSO, Department of the Environment, Community and Local Government

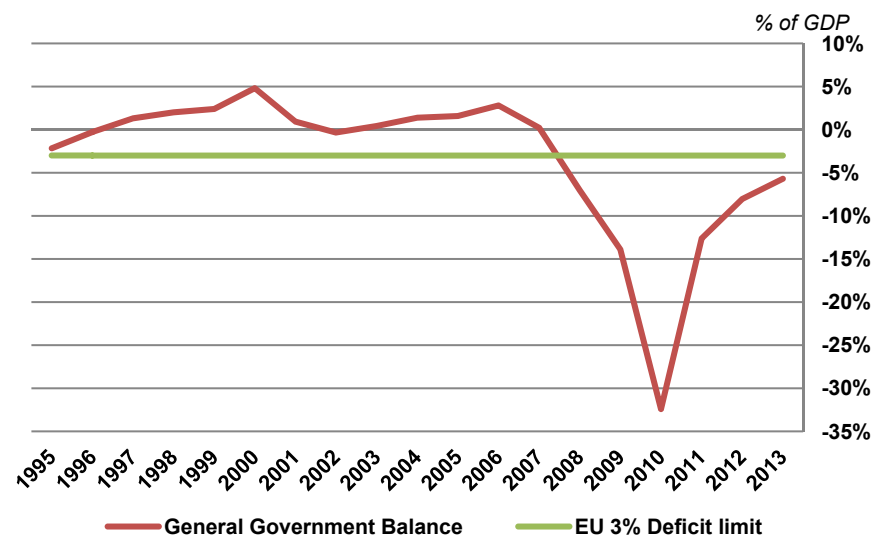
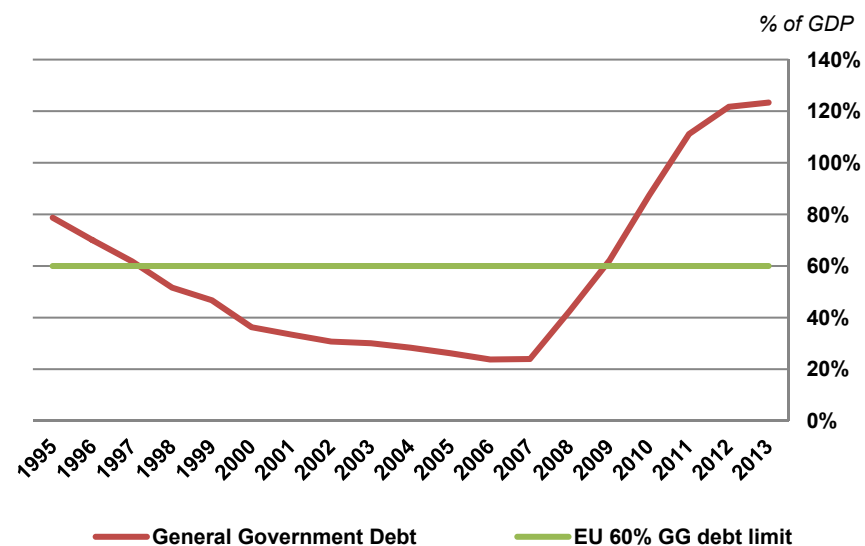


## 2.1 Ireland: General government debt and balance 1995-2013

Year	€m		€m	
	General government debt	Debt as % of GDP	General government balance	Balance as % of GDP
1995	43,061	79%	-1,186	-2%
2000	39,094	36%	5,190	5%
2005	44,329	26%	2,671	2%
2006	43,683	24%	5,162	3%
2007	47,143	24%	453	0%
2008	79,600	43%	-13,145	-7%
2009	104,540	62%	-23,357	-14%
2010	144,163	87%	-53,467	-32%
2011	190,111	111%	-21,588	-13%
2012	210,226	122%	-13,901	-8%
2013	215,550	123%	-9,963	-6%

Source: CSO

- General government debt fell from 79% of GDP in 1995 to 24% of GDP in 2006. It has since risen substantially to 123% of GDP in 2013.
- The general government balance was in surplus most years between 1995 and 2007, with 2006 showing a surplus of over €5 billion. Since 2008, there have been substantial deficits, and the deficit was over 32% of GDP in 2010. This was largely due to €30 billion in bank recapitalisation. The deficit has fallen each year since, and was 6% of GDP in 2013.

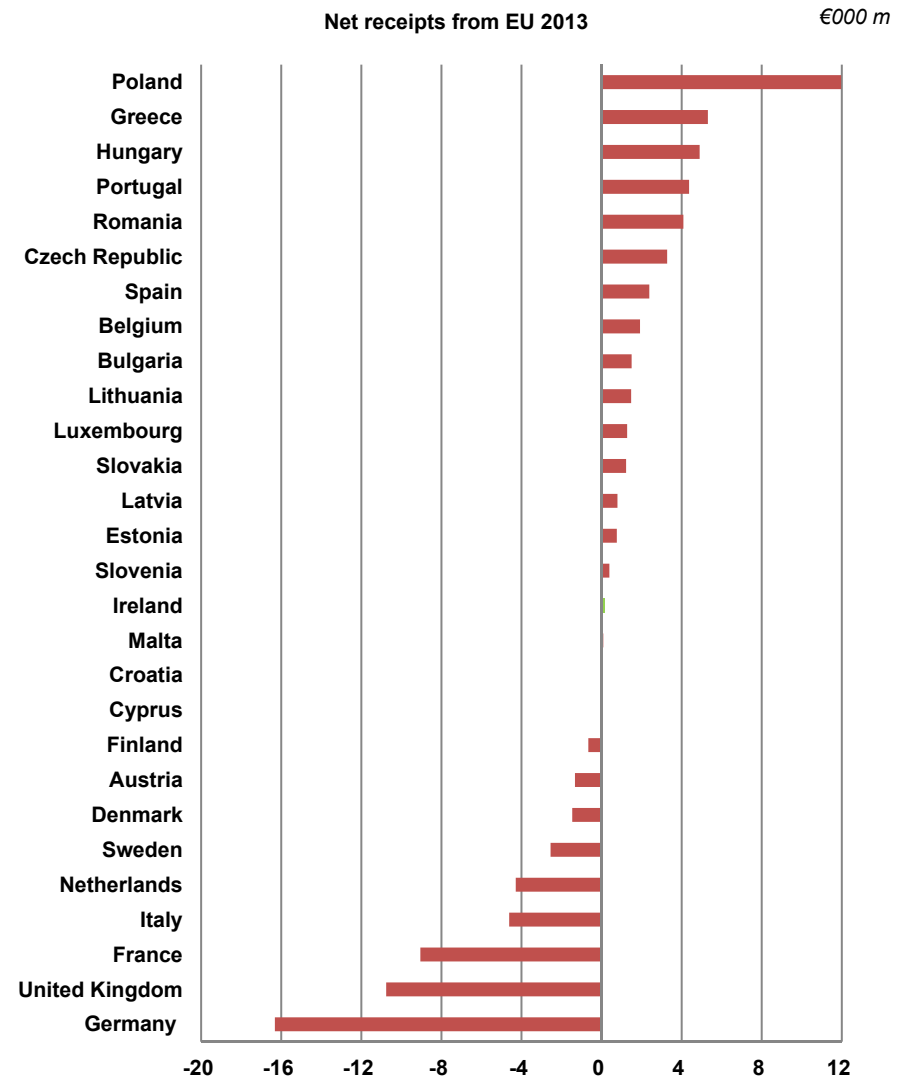


## 2.2 EU: Net receipts from EU 2000-2013

Country	2000	2005	2010	2013
Poland	248	1,702	8,165	11,965
Greece	4,195	3,795	3,439	5,308
Hungary	156	524	2,695	4,899
Portugal	1,955	2,354	2,531	4,370
Romania	158	634	1,174	4,086
Czech Republic	100	85	1,918	3,276
Spain	4,358	5,349	3,095	2,383
Belgium	851	1,552	1,362	1,919
Bulgaria	90	286	870	1,499
Lithuania	48	459	1,333	1,476
Luxembourg	700	879	1,293	1,276
Slovakia	62	250	1,258	1,227
Latvia	51	255	669	794
Estonia	45	149	666	761
Slovenia	34	91	369	388
Ireland	1,543	1,051	671	143
Malta	3	85	51	87
Croatia	0	0	0	52
Cyprus	4	65	-7	42
Finland	167	-114	-393	-662
Austria	-695	-358	-805	-1,329
Denmark	-42	-437	-855	-1,465
Sweden	-1,432	-1,092	-1,597	-2,550
Netherlands	-3,256	-3,854	-3,467	-4,288
Italy	-188	-2,850	-5,835	-4,614
France	-2,133	-3,234	-6,476	-9,052
United Kingdom	-6,010	-3,487	-7,914	-10,760
Germany	-11,518	-7,852	-11,947	-16,320

Source: European Commission

- Since 2000, eleven EU member states have at some point been net contributors to the EU budget since 2000. Germany was the largest net contributor, at over €16 billion in 2013, while Poland was the largest recipient of funds at almost €12 billion in 2013.



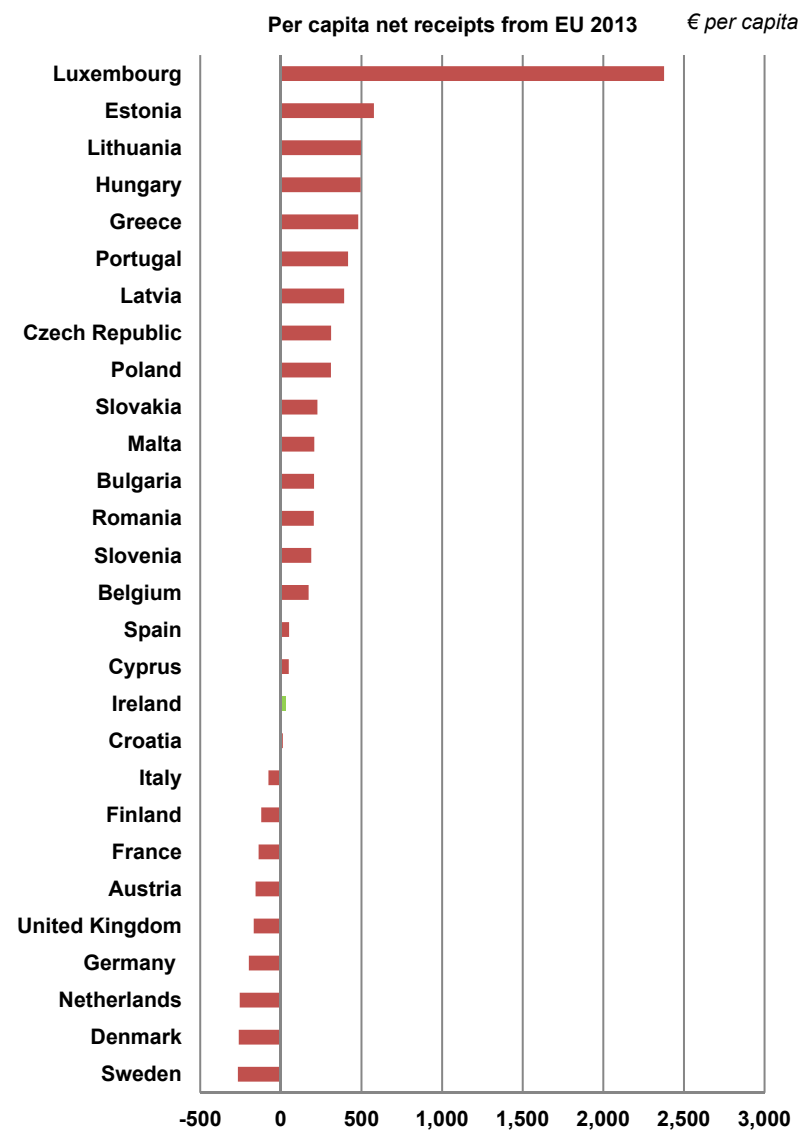


### 2.3 EU: Per capita net receipts from EU 2000-2013

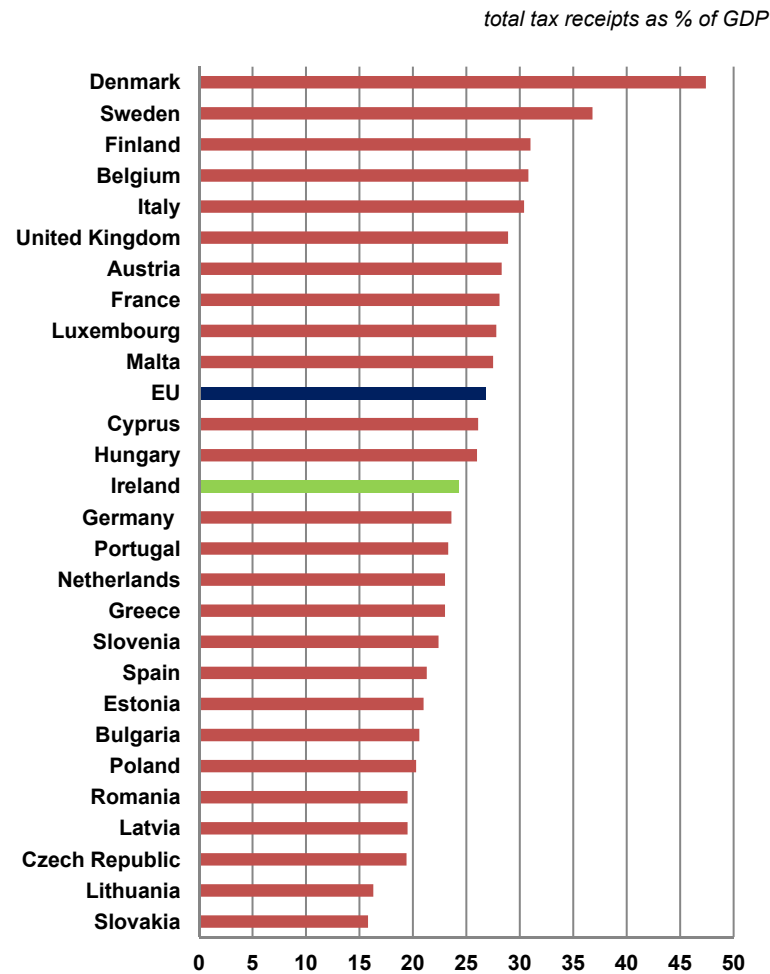
Country	€ per capita			
	2000	2005	2010	2013
Luxembourg	1,614	1,905	2,575	2,377
Estonia	33	111	497	577
Lithuania	14	134	400	497
Hungary	15	52	269	494
Greece	385	342	304	480
Portugal	192	224	238	417
Latvia	21	111	297	392
Czech Republic	10	8	183	312
Poland	6	45	214	311
Slovakia	11	47	232	227
Malta	7	210	123	207
Bulgaria	11	37	115	206
Romania	7	29	55	204
Slovenia	17	46	180	188
Belgium	83	149	126	172
Spain	109	124	67	51
Cyprus	6	87	-8	49
Ireland	408	256	150	31
Croatia	0	0	0	12
Italy	-3	-49	-97	-77
Finland	32	-22	-73	-122
France	-35	-52	-100	-138
Austria	-87	-44	-96	-157
United Kingdom	-102	-58	-128	-168
Germany	-140	-95	-146	-199
Netherlands	-205	-236	-209	-256
Denmark	-8	-81	-154	-261
Sweden	-162	-121	-171	-267

Source: European Commission

- On a per capita basis, Luxembourg was the highest net recipient of funds from the EU in 2013 at €2,377 per capita. Ireland's net receipts per capita have fallen from €408 in 2000 to €31 per capita in 2013. Sweden was the largest net contributor to the EU, on a per capita basis, with €267 in 2013.



## 2.4 EU: General government tax revenue 2012



Source: Eurostat

- Denmark (47%) had the highest general government tax revenue as a percentage of GDP in 2012. Ireland's general government tax revenue (24%) was just below the EU average of 27%.

## 2.5 Ireland: Exchequer tax revenue 1995-2014

Year	% of total tax revenue						€m
	Income tax	Valued added tax	Customs and excise duties	Corporation Tax	Stamp duties and residential property tax	Capital taxes	
1995	36%	25%	22%	10%	3%	1%	14,392
2000	34%	28%	17%	14%	4%	4%	27,072
2005	29%	31%	14%	14%	7%	6%	39,254
2006	27%	30%	13%	15%	8%	8%	45,539
2007	29%	31%	13%	14%	7%	7%	47,249
2008	32%	33%	14%	12%	4%	4%	40,777
2009	36%	32%	15%	12%	3%	2%	33,043
2010	36%	32%	15%	12%	3%	2%	31,753
2011	41%	29%	14%	10%	4%	2%	34,027
2012	41%	28%	14%	12%	4%	2%	36,646
2013	42%	27%	14%	11%	4%	2%	37,806
2014	42%	27%	13%	11%	5%	2%	41,282

Source: Department of Finance

- Total exchequer tax revenue increased from €27.1 billion in 2000 to €47.2 billion in 2007, before declining by €15.5 billion between 2007 and 2010. Total exchequer tax revenue has since increased to €41.3 billion in 2014.
- Income tax as a proportion of total exchequer tax revenue fell from 34% in 2000 to 27% in 2006, before increasing to 42% in 2014. The increase between 2010 and 2011 is due to the introduction of the universal social charge.
- Corporation tax as a proportion of total tax revenue grew from 10% in 1995 to 15% by 2006, but has fallen since, and accounted for 11% in 2014. Capital taxes (Capital gains tax and Capital acquisitions tax) followed a similar trend, where they grew from 1% in 1995 to 8% in 2006, and then fell back to 2% in the years 2009 to 2014.

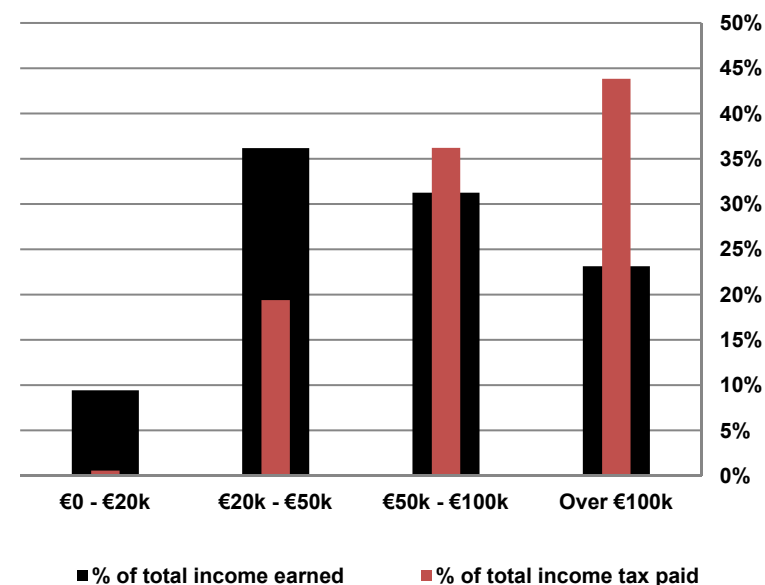
## 2.6 Ireland: Income tax distribution 2002-2012

Year	% of total income earned				% of total income tax paid			
	0- €20,000	€20,000- €50,000	€50,000- €100,000	Over €100,000	0- €20,000	€20,000- €50,000	€50,000- €100,000	Over €100,000
2002	16%	42%	25%	17%	3%	33%	34%	30%
2005	12%	37%	29%	22%	1%	25%	35%	39%
2006	11%	36%	29%	24%	0.6%	22%	35%	43%
2007	10%	35%	30%	25%	0.3%	19%	35%	46%
2008	9%	34%	31%	26%	0.3%	17%	35%	47%
2009	9%	35%	31%	24%	0.3%	17%	36%	46%
2010	10%	37%	31%	23%	0.3%	18%	36%	46%
2011	9%	37%	31%	23%	0.5%	20%	37%	43%
2012	9%	36%	31%	23%	0.6%	19%	36%	44%

Source: Revenue Commissioners

- The proportion of total taxable income earned by those with incomes of less than €20,000 per annum fell from 16% in 2002 to 9% in 2012. The proportion of total income tax paid by this group fell from 3% in 2002 to 0.6% of the total in 2012
- While the proportion of total income earned by those in the €20,000 to €50,000 bracket has fallen from 42% to 36% between 2002 and 2012, the proportion of income tax paid has dropped from 33% of the total to 19%.
- The proportion of total income earned by cases in the €50,000 to €100,000 per annum bracket has grown from 25% to 31% between 2002 and 2012, and the income tax paid by this group has increased, from 34% to 36% of total income tax.
- Income for those cases earning above €100,000 per annum increased from 17% of total taxable income in 2002 to 26% in 2008, and has fallen back to 23% in 2012. In the same time period, the proportion of tax paid by this group grew from 30% to 47% of the total between 2002 and 2008. It has fallen back to 44% of the total in 2012.

Income tax distribution 2012



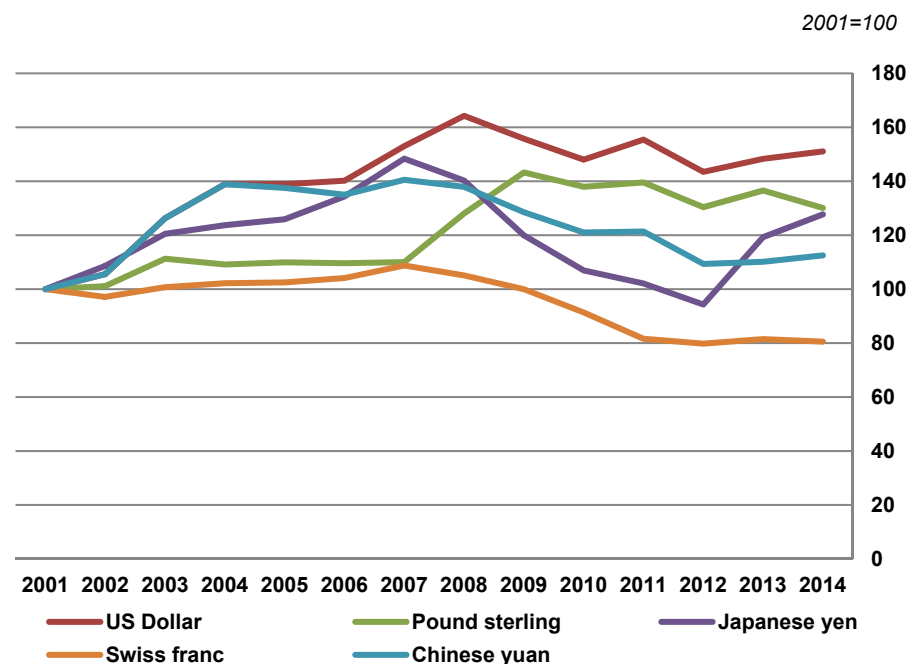
## 2.7 Ireland: General government expenditure on pay and social welfare 1995-2013

Year	% of general government current expenditure		% of GDP	
	Wages, salaries and pensions	Social welfare	Wages, salaries and pensions	Social welfare
1995	31%	29%	11%	10%
2000	33%	25%	8%	6%
2005	36%	26%	10%	7%
2006	35%	27%	10%	7%
2007	35%	28%	10%	8%
2008	34%	29%	11%	10%
2009	32%	32%	12%	12%
2010	30%	33%	12%	13%
2011	30%	33%	11%	12%
2012	29%	32%	11%	12%
2013	29%	32%	11%	12%

Sources: CSO and Department of Social Protection

- Government expenditure on wages, salaries and pensions increased from 31% of total current expenditure in 1995 to 36% in 2005. It has since fallen to 29% in 2013.
- Government expenditure on social welfare fell from 29% of total current expenditure in 1995 to 25% in 2000. It has increased since, to stand at 32% of total current expenditure in 2013.

## 2.8 Euro exchange rates 2001-2014



Source: Eurostat

- The euro appreciated significantly against the US dollar between 2001 and 2014. Referenced to 2001=100, the Euro was at an index of 148 in 2014.
- The relationship between the Swiss franc and the euro was relatively steady up to 2009 but the euro declined from an index of 100 in 2009 to 82 in 2011, and has remained steady since. The euro weakened against the pound sterling and the Chinese yuan by between 10% and 12% respectively between 2009 and 2014, but has strengthened by 8% against the Japanese yen over the same period.

## 2.9 Ireland: Gross domestic expenditure on R&D 1995-2013

Year	Ireland		EU
	€m	% of GNP	% of GDP
1995	648	1.3%	:
2000	1,176	1.3%	1.8%
2005	2,030	1.4%	1.8%
2006	2,217	1.4%	1.8%
2007	2,432	1.4%	1.8%
2008	2,606	1.6%	1.9%
2009	2,736	2.0%	1.9%
2010	2,670	1.9%	1.9%
2011	2,622	1.9%	2.0%
2012	2,723	1.9%	2.0%
2013	:	:	2.0%
<b>Europe 2020 target</b>		2.5%	3.0%

Source: Eurostat, CSO

- Ireland's expenditure on research and development as a percentage of GNP has grown from 1.3% in 2000 to 1.9% in 2012. The Europe 2020 target for Ireland is R&D expenditure of 2.5% of GNP by 2020.

## 2.10 Ireland: Gross fixed capital formation by sector 2000-2013

Year	% of GDP				
	Households including NPISH	General government	Financial corporations	Non-financial corporations	Total economy
2000	8.8%	3.5%	0.8%	10.9%	24.0%
2005	13.5%	3.5%	0.5%	11.4%	28.9%
2006	14.0%	3.8%	0.7%	10.6%	29.1%
2007	11.7%	4.6%	0.7%	10.5%	27.6%
2008	9.2%	5.2%	0.6%	9.2%	24.2%
2009	5.2%	3.7%	0.7%	10.0%	19.7%
2010	3.7%	3.4%	0.5%	8.3%	15.8%
2011	3.1%	2.4%	0.5%	8.6%	14.5%
2012	2.8%	1.9%	0.7%	10.3%	15.6%
2013	2.9%	1.7%	0.6%	10.0%	15.2%

Source: CSO

- Gross fixed capital formation of households grew from 8.8% of GDP in 2000 to 14% in 2006. It fell substantially since then to 2.9% of GDP in 2013.
- Gross fixed capital formation for the total economy decreased from a high of 29.1% of GDP in 2006 to 15.2% of GDP in 2013.

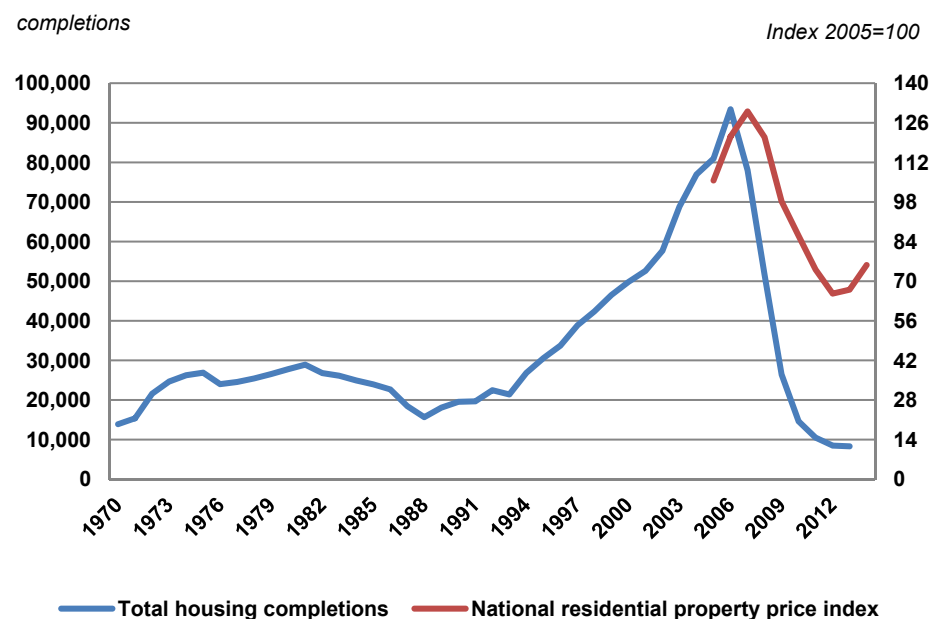
## 2.11 EU: Harmonised index of consumer prices for energy products 2014

Country	2005=100					
	Electricity	Gas	Liquid fuels	Solid fuels	Heat energy	Energy
Sweden	123	229	145	105	121	125
Netherlands	105	138	:	:	:	129
Denmark	131	104	161	124	133	133
Luxembourg	115	154	154	112	148	133
Austria	127	137	143	129	141	134
Slovakia	111	136	:	154	161	134
Belgium	127	143	159	128	:	136
France	133	164	149	124	191	138
Germany	164	133	144	129	146	140
Italy	143	133	137	108	:	141
Bulgaria	125	166	162	164	159	142
Portugal	158	155	185	108	:	145
Finland	163	:	175	:	187	146
Croatia	151	181	155	137	147	147
Czech Republic	141	179	138	170	163	149
EU	152	164	154	156	156	149
Ireland	151	173	153	149	155	150
Poland	152	179	146	170	149	153
Spain	165	169	150	:	:	157
Malta	166	272	:	:	:	158
Slovenia	167	163	179	132	178	159
Hungary	120	191	:	190	126	162
Cyprus	171	174	140	100	:	166
Romania	164	199	161	148	240	181
United Kingdom	199	250	179	183	:	183
Lithuania	162	220	157	238	194	183
Estonia	178	250	162	189	245	190
Greece	190	173	245	131	:	199
Latvia	207	233	:	193	241	205

Source: Eurostat

- In 2014, Ireland, at 50%, was slightly above the average EU increase in consumer prices of energy goods in the EU between 2005 and 2014.

## 2.12 Ireland: House completions 1970-2013 and residential property price index 2005-2014



Sources: Department of the Environment, Community and Local Government and CSO

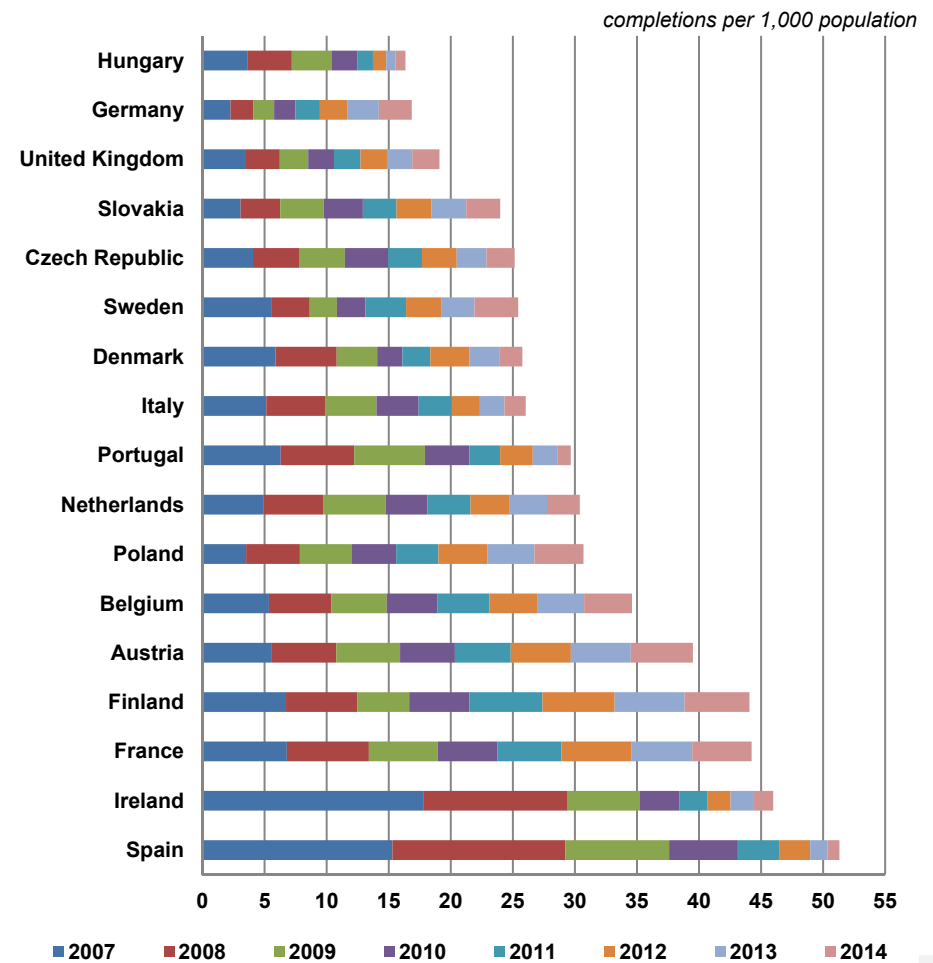
- Completions of residential units increased substantially from 21,400 in 1994 to a high of over 93,000 units in 2006. Since then, annual completions have fallen to 8,300 in 2013.
- Property prices as measured by the residential property price index increased by 14.5% between 2005 and 2007, and then declined by 46% between 2007 and 2012. Prices have since begun to recover, and rose by 13% between 2013 and 2014.

### 2.13 EU: Dwelling completions 2007-2014

Country	per 1,000 population							
	2007	2008	2009	2010	2011	2012	2013	2014
Hungary	3.6	3.6	3.2	2.1	1.3	1.1	0.7	0.8
Germany	2.3	1.9	1.7	1.7	2.0	2.2	2.5	2.7
United Kingdom	3.4	2.8	2.3	2.1	2.1	2.1	2.0	2.2
Slovakia	3.1	3.2	3.5	3.2	2.7	2.8	2.8	2.7
Czech Republic	4.1	3.7	3.7	3.5	2.7	2.8	2.4	2.3
Sweden	5.5	3.1	2.2	2.3	3.3	2.9	2.6	3.5
Denmark	5.9	4.9	3.3	2.0	2.2	3.1	2.4	1.9
Italy	5.1	4.7	4.1	3.4	2.7	2.3	2.0	1.7
Portugal	6.3	5.9	5.7	3.6	2.5	2.6	2.0	1.1
Netherlands	4.9	4.8	5.0	3.4	3.5	3.1	3.1	2.6
Poland	3.5	4.3	4.2	3.6	3.4	4.0	3.8	3.9
Belgium	5.3	5.0	4.5	4.1	4.2	3.8	3.8	3.9
Austria	5.5	5.3	5.1	4.4	4.5	4.8	4.8	5.0
Finland	6.7	5.8	4.2	4.8	5.9	5.8	5.6	5.2
France	6.8	6.6	5.5	4.8	5.2	5.7	4.9	4.8
Ireland	17.8	11.5	5.8	3.2	2.3	1.9	1.8	1.6
Spain	15.3	13.9	8.4	5.5	3.4	2.5	1.4	1.0

Sources: DKM, Euroconstruct, Eurostat, CSO, Department of the Environment, Community and Local Government

- Ireland and Spain had the highest levels of completions of residential units per 1,000 persons in 2007 and 2008, but the rate of completions in both countries has fallen substantially since then.
- There were 1.6 completions in Ireland per 1,000 of population in 2014. This was the fourth lowest level of the 17 EU states for which data are available.







### 3. Social



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	<b>Indicator</b>	<b>Source</b>
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3.2	Ireland: Unemployment rate 1985-2014	CSO Live register
3.3	Ireland: Emigration and Immigration 1987-2014	CSO Census of Population
3.4	Ireland: Net migration 1951-2014	CSO Census of Population
3.5	EU: People at risk of poverty 2007-2013	CSO Survey of income and Living Conditions; Eurostat
3.6	Ireland: Old age dependency ratio 1996-2046	CSO Census of Population
3.7	Ireland: Persons aged 80 and over 1926-2011	CSO Census of Population
3.8	Ireland: Life expectancy 1901-2006	CSO Census of Population
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3.10	Ireland: Pupil-teacher ratio 1995-2014	Department of Education and Skills
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3.15	EU: Obesity levels 2008	United Nations: World Health Statistics 2012
3.16	EU: Alcohol consumption 2010	Department of Health; United Nations: World Health Statistics 2012
3.17	EU: Tobacco consumption 2012	European Commission Eurobarometer; Health Service Executive

*Photographs: Clones, Co. Monaghan, courtesy of Photographic unit, National Monument Service; Students from Coosan National School in Co. Westmeath walk to school in May 2014. The school is a participant in An Taisce's Green-Schools Travel programme, which encourages students, teachers and parents to walk, cycle, scoot, use public transport or park 'n' stride instead of the private car on the school run, courtesy of An Taisce Green-Schools.*

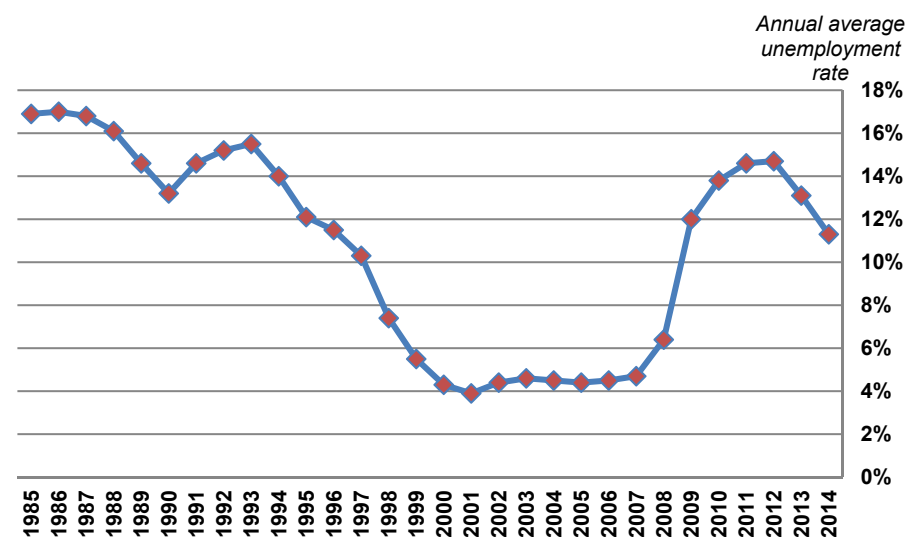
### 3.1 Ireland: Employment rate by age class 1990-2014

Year	20 to 34	35 to 59	60 to 64	20 to 64	65 and over
1990	67%	54%	31%	58%	9%
1995	68%	58%	33%	61%	8%
2000	78%	69%	36%	70%	8%
2005	77%	73%	43%	72%	8%
2006	78%	73%	44%	73%	9%
2007	78%	74%	45%	74%	9%
2008	76%	74%	46%	73%	10%
2009	68%	70%	42%	67%	9%
2010	66%	68%	41%	65%	9%
2011	64%	68%	41%	64%	9%
2012	64%	67%	40%	64%	9%
2013	65%	69%	41%	65%	9%
2014	66%	71%	43%	67%	10%

Source: CSO

- The percentage of persons aged 20 to 34 years in employment was between 76% and 78% between 2000 and 2008. It then fell to 64% in 2011 before recovering to 66% in 2014.
- The percentage of 60-64 year olds in employment increased from 36% in 2000 to a high of 46% in 2008, but it decreased to 43% in 2014.

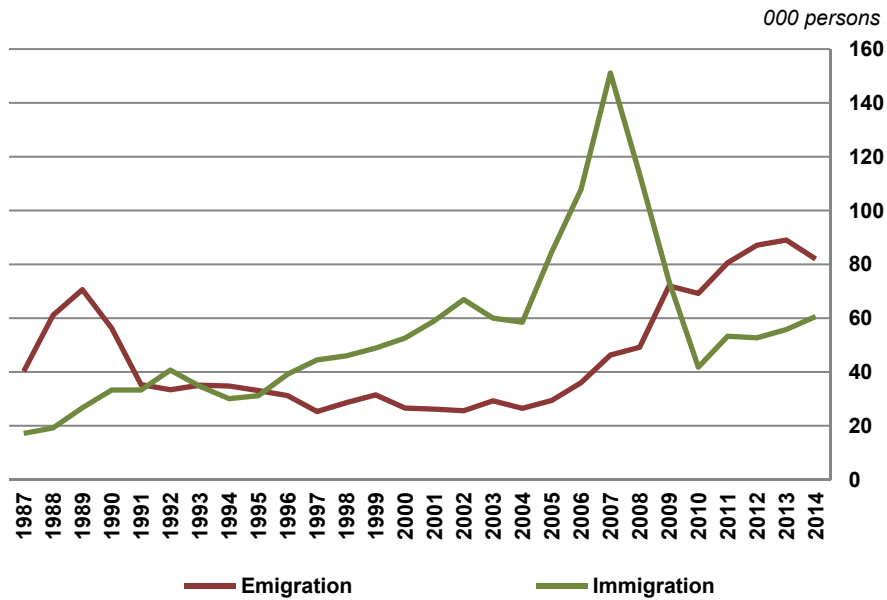
### 3.2 Ireland: Unemployment rate 1985-2014



Source: CSO

- Unemployment fell from a high of 17% in 1986 to 13% in 1990, before increasing to 15.5% in 1993. From then it fell every year until 2001, and it then remained at around 4% until 2007. In 2008, the unemployment rate began to rise again, and stood at almost 15% in 2012, before falling again to 11.3% in 2014.

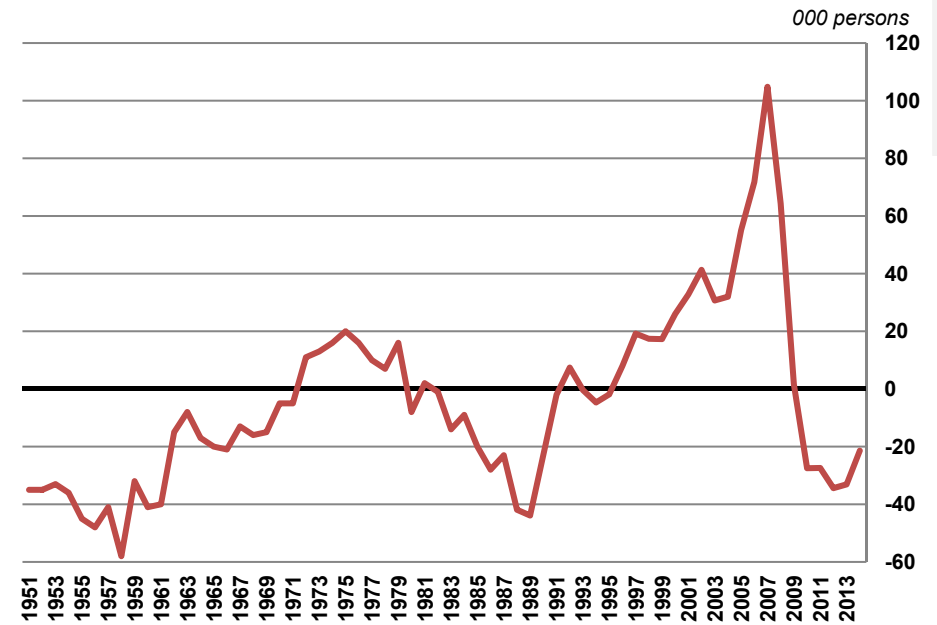
### 3.3 Ireland: Emigration and Immigration 1987-2014



Source: CSO

- Emigration in 1989 was 70,000 persons. The level of emigration fell to a low of 25,300 persons in 1997, and rose to 82,000 persons in 2014.
- Immigration increased from 17,200 persons in 1987 to over 151,000 in 2007, but fell significantly over the next three years to just below 42,000 in 2010. It has since increased slightly again, and was estimated at 60,600 in 2014.

### 3.4 Ireland: Net migration 1951-2014



Source: CSO

- Total net migration from Ireland was 580,000 persons between 1951 and 1971, when emigration exceeded immigration in every year.
- Immigration was at its peak between 2000 and 2008, when it exceeded emigration by a total of 460,000 persons. Since 2010, the numbers emigrating have exceeded those immigrating by between 21,000 and 38,000 persons per year.



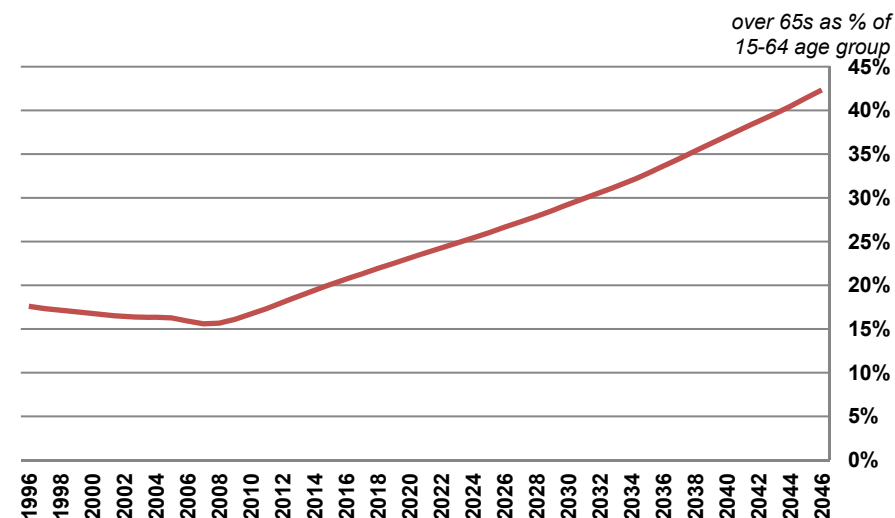
### 3.5 EU: People at risk of poverty 2007-2013

Country	% of total population			
	2007	2009	2011	2013
Czech Republic	10%	9%	10%	9%
Netherlands	10%	11%	11%	10%
Finland	13%	14%	14%	12%
Denmark	12%	13%	13%	12%
Slovakia	11%	11%	13%	13%
France	13%	13%	14%	14%
Hungary	12%	12%	14%	14%
Austria	12%	15%	15%	14%
Slovenia	12%	11%	14%	15%
Sweden	11%	13%	14%	15%
Belgium	15%	15%	15%	15%
Ireland	17%	14%	16%	15%
Cyprus	16%	16%	15%	15%
Malta	15%	15%	16%	16%
Luxembourg	14%	15%	14%	16%
United Kingdom	19%	17%	16%	16%
Germany	15%	16%	16%	16%
EU	:	:	17%	17%
Poland	17%	17%	18%	17%
Estonia	19%	20%	18%	19%
Portugal	18%	18%	18%	19%
Italy	20%	18%	20%	19%
Latvia	21%	26%	19%	19%
Croatia	18%	18%	21%	20%
Spain	20%	20%	22%	20%
Lithuania	19%	20%	19%	21%
Bulgaria	22%	22%	22%	21%
Romania	25%	22%	22%	22%
Greece	20%	20%	21%	23%

Sources: CSO and Eurostat

- In 2013, the Czech Republic had the lowest at risk of poverty rate after social transfers at 9%. Ireland, at 15%, had the twelfth lowest at risk of poverty rate, and was better than the EU rate of 17%.

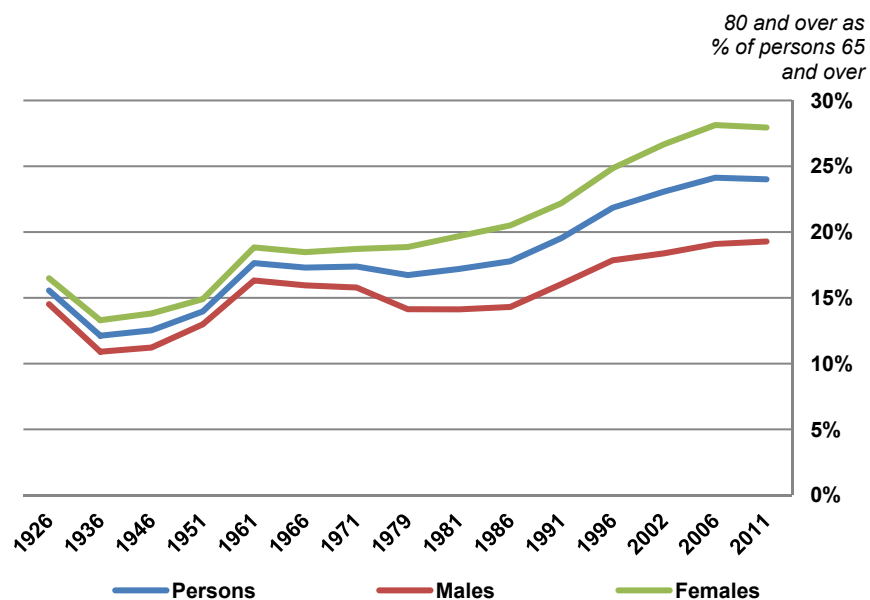
### 3.6 Ireland: Old age dependency ratio 1996-2046



Source: CSO

- The old age dependency ratio, which is the ratio of the population above retirement age (over 65 years) to the population of working age (15 to 64) was 17.3% in 1996. Population projections show that this ratio is expected to increase by over 140% over the coming years, to 42% by 2046.

### 3.7 Ireland: Persons aged 80 and over 1926-2011



Source: CSO

- Persons aged 80 and over as a proportion of persons aged 65 and over remained stable at around 17% between 1961 and 1981. It has since risen steadily to 24% in 2011. Females over aged 80 as a proportion of females over 65 stood at 28% in 2011, while the proportion of males was 19%.

### 3.8 Ireland: Life expectancy 1901-2006

Year	Males at birth	Females at birth	Males at age 65	Females at age 65
1901	49	50	11	11
1911	54	54	13	13
1926	57	58	13	13
1936	58	60	13	13
1941	59	61	12	13
1951	65	67	12	13
1961	68	72	13	14
1971	69	74	12	15
1981	70	76	13	16
1991	72	78	13	17
2002	75	80	15	19
2006	77	82	17	20

Source: CSO

- In 1901, life expectancy for males was 49 years, and 50 years for females. This has increased over the intervening 105 years, and in 2006, life expectancy for males was 77 years, and for females it was 82 years.
- Similarly, life expectancy at age 65 has increased. In 1901, both 65 year old males and females could expect to live for a further eleven years. By 2006, this had increased to 17 years for males and 20 for females.

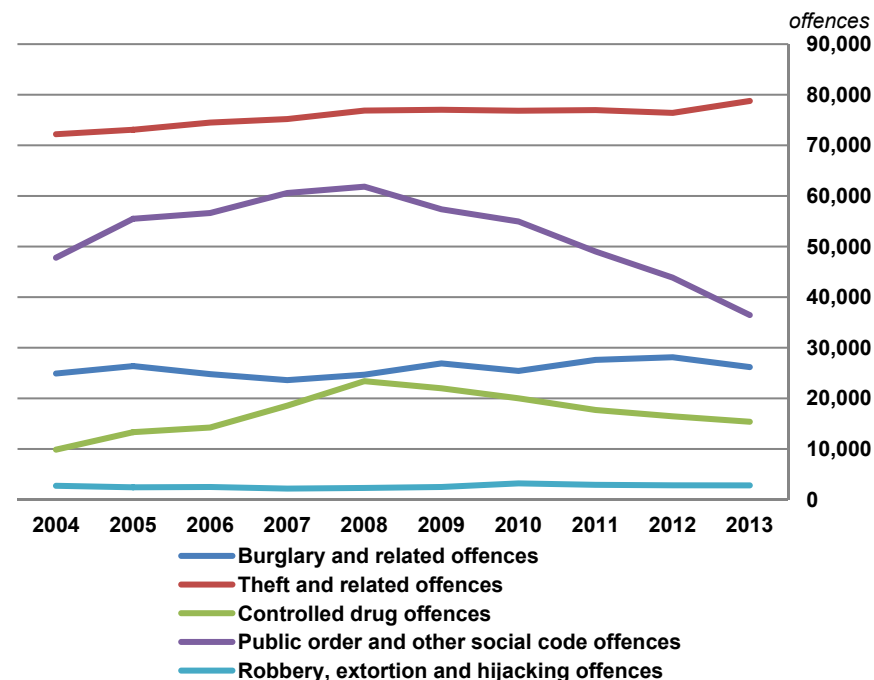
### 3.9 Ireland: Recorded criminal offences 2004-2013

000 offences

Year	Robbery, extortion and hijacking offences	Burglary and related offences	Theft and related offences	Controlled drug offences	Public order and other social code offences
2004	2.7	24.9	72.2	9.9	47.8
2005	2.4	26.4	73.1	13.3	55.5
2006	2.5	24.8	74.5	14.2	56.6
2007	2.2	23.6	75.2	18.6	60.6
2008	2.3	24.7	76.9	23.4	61.8
2009	2.5	26.9	77.0	22.0	57.4
2010	3.2	25.4	76.8	20.0	54.9
2011	2.9	27.6	77.0	17.7	49.0
2012	2.8	28.1	76.4	16.5	43.9
2013	2.8	26.2	78.8	15.4	36.5

Source: CSO

- Recorded drug-related offences grew from just under 10,000 in 2004 to 23,400 in 2008. The number of offences has since fallen to 15,400 in 2013.
- Public order offences also peaked in 2008 at 61,800, and have since fallen back to 36,500. Burglary offences reached a high of 28,100 in 2012, while theft offences have been at around 77,000 per year since 2008 and reached a high of 78,800 in 2013.



### 3.10 Ireland: Pupil-teacher ratio 1995-2014

Year	Ratio of enrolled pupils to full-time equivalent teaching posts			
	Primary school	average % change year-on-year	Secondary school	average % change year-on-year
1995	23.5	:	18.0	:
2000	20.3	-2.9%	16.8	-1.4%
2005	17.1	-3.4%	13.4	-4.4%
2006	16.6	-2.9%	13.1	-2.2%
2007	16.0	-3.6%	13.1	0.0%
2008	16.0	0.0%	12.9	-1.5%
2009	15.9	-0.6%	13.0	0.8%
2010	16.0	0.6%	13.6	4.6%
2011	15.7	-1.9%	13.6	0.0%
2012	16.2	3.2%	13.9	2.2%
2013	16.4	1.2%	14.3	2.9%
2014	16.3	-0.6%	14.3	0.0%

Source: Department of Education and Skills

- Pupil-teacher ratios in primary schools aided by the Department of Education and Skills fell from 23.5 in 1995 to 15.7 in 2011. The ratio increased to 16.3 in 2014.
- The pupil-teacher ratio in second level schools aided by the Department of Education and Skills was 18 in 1995, and fell to 12.9 in 2008. It has increased since to 14.3 in 2014.

### 3.11 EU: Average class sizes 2012

Country	pupils	
	Primary	Lower secondary
Lithuania	15.2	19.8
Latvia	15.7	14.9
Luxembourg	15.7	19.3
Croatia	16.9	20.8
Estonia	17.0	15.7
Greece	17.3	21.9
Slovakia	17.3	19.6
Austria	18.3	21.1
Cyprus	18.4	21.2
Poland	18.4	22.4
Slovenia	18.7	19.6
Italy	19.0	21.0
Romania	19.4	20.9
Finland	19.4	20.3
Czech Republic	19.8	21.3
Malta	19.8	21.0
Denmark	20.6	21.1
Bulgaria	20.7	22.1
Portugal	20.8	22.5
Hungary	20.9	21.2
Germany	21.0	24.5
Spain	21.4	24.5
Netherlands	22.6	:
France	22.7	25.1
Ireland	24.4	20.3
United Kingdom	25.1	19.3

Source: Eurostat  
 Note: Data for secondary not available for Netherlands  
 2007 data used for lower secondary for Ireland  
 No data available for Belgium or Sweden

- Ireland had the second highest average class size in primary schools in the EU in 2012, with 24.4 students per class. There was an average of 20.3 students per class in lower secondary school, which was joint seventh lowest among EU countries.



### 3.12 Ireland: Second level and third level completion rates 1995-2013

Year	% of 20-24 year olds completing upper secondary school	% of population aged 25-34 with third level education
1995	74%	:
2000	81%	:
2005	83%	40%
2006	80%	41%
2007	83%	42%
2008	84%	43%
2009	85%	45%
2010	87%	46%
2011	87%	45%
2012	88%	47%
2013	90%	49%

Sources: Department of Education and CSO

- The proportion of 20 to 24 year olds who completed secondary school increased from 74% in 1995 to 90% in 2013.
- In 2013, 49% of 25 to 34 year olds had a third level education. This rate increased from 40% in 2005.

### 3.13 Ireland: Usual means of travel to school 1986-2011

% of children aged 5-12					
Year	On foot	Bicycle	Bus, minibus or coach	Motor car passenger	Other
1986	49%	5%	20%	26%	1%
1991	42%	5%	22%	30%	1%
1996	35%	3%	23%	38%	2%
2002	27%	1%	18%	52%	2%
2006	25%	1%	15%	56%	2%
2011	24%	1%	12%	61%	1%

% of children aged 13-18					
Year	On foot	Bicycle	Bus, minibus or coach	Motor car passenger	Other
1986	33%	16%	36%	11%	4%
1991	30%	14%	37%	15%	4%
1996	28%	8%	40%	20%	4%
2002	26%	4%	38%	28%	4%
2006	25%	2%	36%	32%	5%
2011	23%	2%	30%	40%	4%

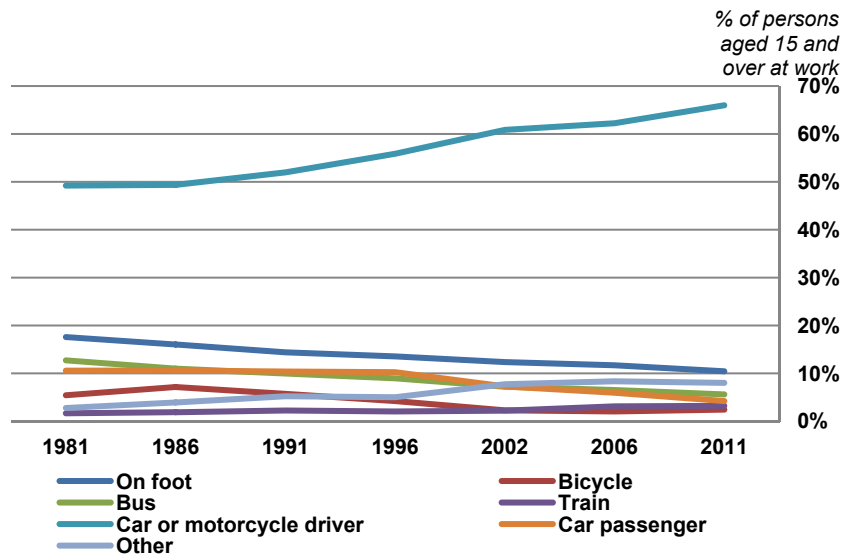
Source: CSO

- The proportion of 5 to 12 year olds (i.e., those of primary school-going age) who travelled to school on foot has fallen from 49% in 1986 to 24% in 2011. The proportion travelling as passengers in cars has, in contrast, risen from 26% to 61% over the same period.
- The proportion of children in the 13 to 18 age bracket (i.e., those of secondary school-going age) who walk to school fell between 1986 and 2011, from 33% to 23%. The percentage cycling to school has dropped from 16% in 1986 to just 2% in 2011, while those travelling as passengers in cars has grown from 11% in 1986 to 40% in 2011.

### 3.14 Ireland: Usual means of travel to work 1981-2011

Year	% of persons aged 15 and over at work						
	On foot	Bicycle	Bus	Train	Car or motorcycle driver	Car passenger	Other
1981	18%	5%	13%	2%	49%	11%	3%
1986	16%	7%	11%	2%	49%	11%	4%
1991	14%	6%	10%	2%	52%	10%	5%
1996	14%	4%	9%	2%	56%	10%	5%
2002	12%	2%	7%	2%	61%	7%	8%
2006	12%	2%	7%	3%	62%	6%	8%
2011	10%	2%	6%	3%	66%	4%	8%

Source: CSO



- The proportion of persons travelling to work by bus has fallen from 13% of the total in 1981 to 6% in 2011. In contrast, the proportion of persons who drive to work either by car or motorcycle have increased from 49% to 66% over the same period.

### 3.15 EU: Obesity levels 2008

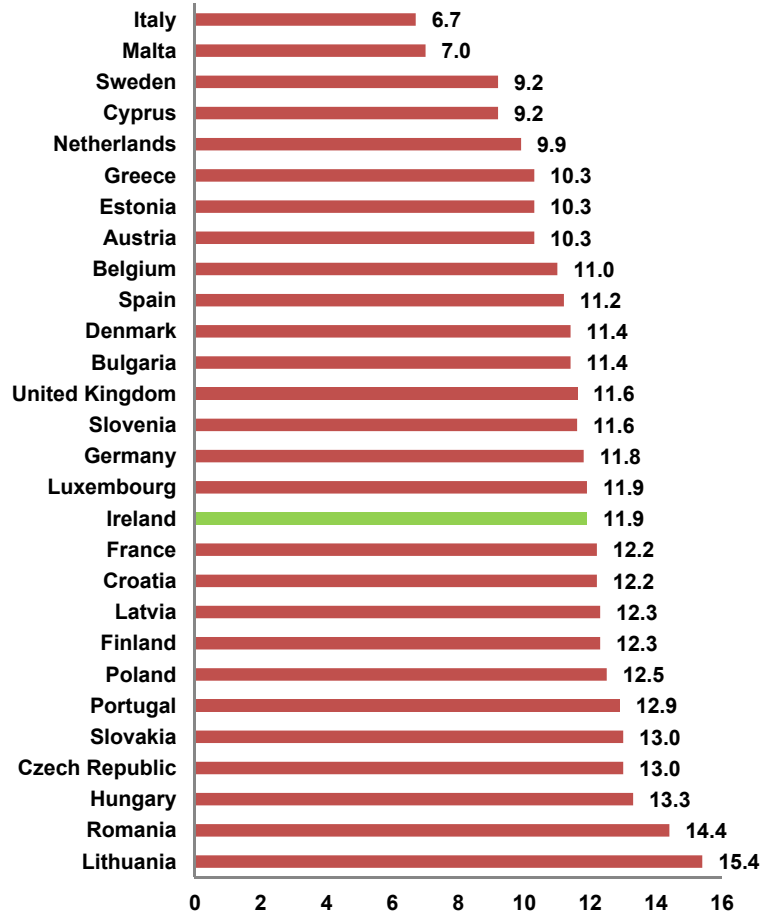
Country	% of adults aged 20 and over who are obese	
	Males	Females
Netherlands	16%	16%
Romania	16%	19%
France	17%	15%
Denmark	17%	15%
Sweden	18%	15%
Greece	19%	16%
Austria	19%	17%
Italy	19%	15%
Estonia	20%	18%
Portugal	20%	22%
Finland	21%	19%
Belgium	21%	17%
Latvia	22%	22%
Bulgaria	22%	20%
Croatia	23%	19%
Poland	23%	23%
Germany	23%	19%
Lithuania	24%	25%
United Kingdom	24%	25%
Luxembourg	25%	22%
Cyprus	25%	22%
Slovakia	25%	24%
Spain	25%	23%
Ireland	26%	23%
Malta	26%	27%
Hungary	26%	23%
Slovenia	28%	26%
Czech Republic	31%	27%

Source: United Nations

- 26% of Irish males over age 20 were classified as obese in 2008. This was the joint third highest proportion in the EU. The proportion of females over 20 who were obese in 2008 was 23%, which was joint sixth highest of EU member states.

### 3.16 EU: Alcohol consumption 2010

litres of pure alcohol per person consumed by adults aged 15 and over



Sources: Department of Health and United Nations

- Ireland had the twelfth highest per capita consumption of alcohol of the EU Member States in 2010, with 11.9 litres of pure alcohol consumed by persons aged 15 and over.

### 3.17 EU: Tobacco consumption 2012

% of persons aged 15 and over who smoke tobacco

Country	Male	Female
Sweden	12%	13%
Ireland	22%	18%
Denmark	27%	24%
United Kingdom	28%	26%
Finland	28%	22%
Netherlands	28%	19%
Italy	28%	21%
Slovenia	30%	25%
Belgium	30%	24%
Slovakia	30%	17%
Luxembourg	30%	24%
France	31%	26%
Portugal	32%	14%
Germany	32%	22%
Malta	34%	21%
Czech Republic	35%	23%
Croatia	36%	30%
Estonia	36%	19%
Hungary	37%	28%
Poland	38%	27%
Romania	39%	22%
Spain	40%	26%
Austria	40%	26%
Cyprus	42%	19%
Bulgaria	42%	31%
Lithuania	43%	19%
Greece	46%	34%
Latvia	52%	22%

Source: European Commission and Health Service Executive  
Data for Ireland refers to 2014

- Tobacco consumption in Ireland is the second lowest in the EU for males aged 15 and over, at 22%. While the proportion of Irish females who smoke is lower than that for males, at 18%, this ranks as the fourth lowest of EU member states.



## 4. Environment

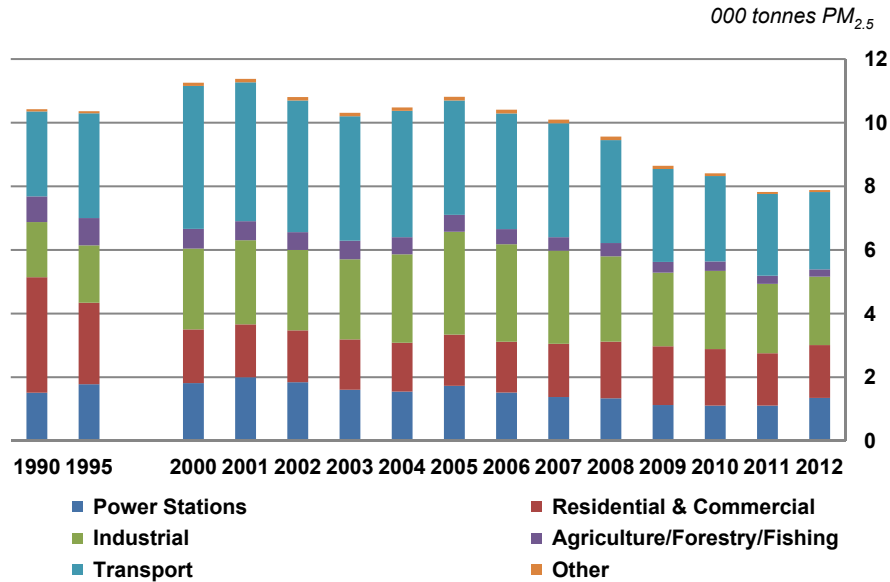


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*Photographs: Aeration process, waste water treatment plant, Clareabbey, Co. Clare, courtesy of Environmental Protection Agency; Stonechat, courtesy of Adrian Redmond; Glendalough, Co. Wicklow, courtesy of Photographic Unit, National Monuments Service.*

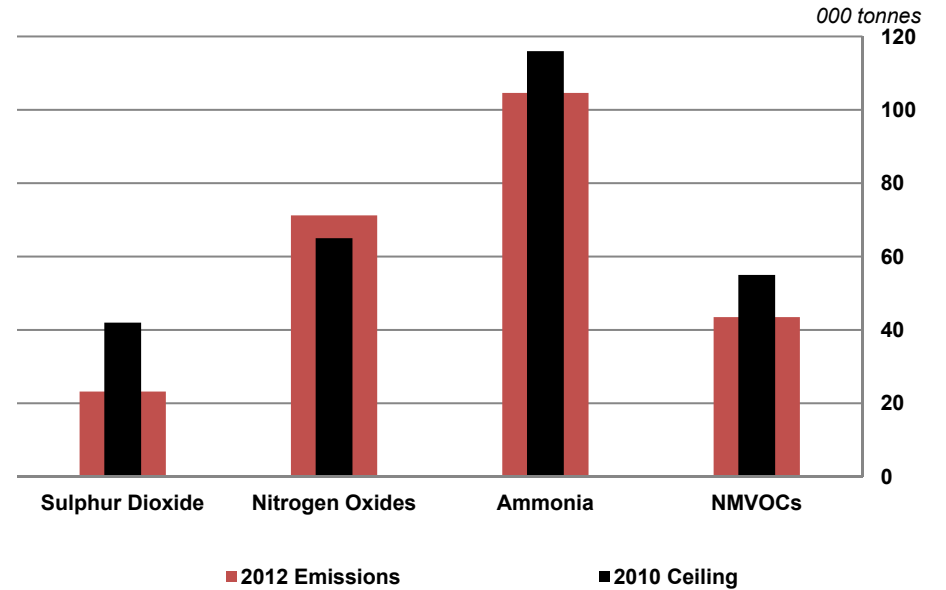
#### 4.1 Ireland: Particulate matter (PM<sub>2.5</sub>) emissions 1990-2012



Source: Environmental Protection Agency

- Emissions of PM<sub>2.5</sub> varied between 10,000 and 11,400 tonnes between 1990 and 2007. Emissions have subsequently decreased by 22% to 7,800 tonnes in 2012.
- Transport accounted for 31% of emissions of PM<sub>2.5</sub> in 2012, with Industry accounting for 27%.

#### 4.2 Ireland: Emissions of pollutants under NEC Directive 2012



Source: Environmental Protection Agency

- Ireland's emissions of sulphur dioxides, ammonia, and non-methane volatile organic compounds were below the 2010 National Emissions Ceiling (NEC) levels in 2012.
- Emissions of nitrogen oxides were 9.6% above the NEC level of 65,000 tonnes in 2012.



### 4.3 EU: Greenhouse gas emissions 2012

Indexed to Kyoto base year (1990)

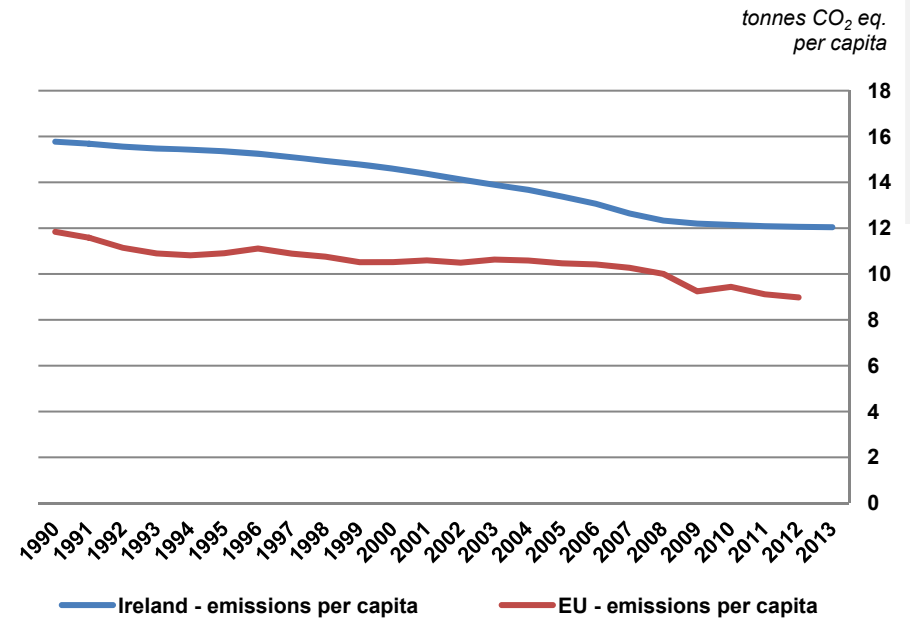
Country	2012 emissions index	Kyoto target index	% Above/below target	Emission limit in 2020 compared with 2005 emission levels
Latvia	42	92	-54%	17%
Romania	43	92	-54%	19%
Lithuania	44	92	-52%	15%
Estonia	45	92	-51%	11%
Bulgaria	46	92	-50%	20%
Hungary	54	94	-43%	10%
Slovakia	59	92	-36%	13%
Czech Republic	68	92	-26%	9%
Poland	71	94	-25%	14%
Sweden	80	104	-23%	-17%
Greece	104	125	-17%	-4%
United Kingdom	75	87.5	-15%	-16%
Finland	86	100	-14%	-16%
Belgium	80	92.5	-14%	-15%
France	87	100	-13%	-14%
Croatia	84	95	-11%	11%
Portugal	114	127	-10%	1%
Ireland	105	113	-7%	-20%
Denmark	74	79	-6%	-20%
Italy	89	93.5	-5%	-13%
Netherlands	90	94	-4%	-16%
Germany	76	79	-4%	-14%
Slovenia	93	92	1%	4%
Spain	118	115	2%	-10%
Austria	101	87	16%	-16%
Luxembourg	90	72	25%	-20%

Source: Eurostat

Note: Data not available for Cyprus or Malta

- Ireland's 2012 emissions ranked 18<sup>th</sup> among EU countries relative to their Kyoto limit. In 2012, four EU Member states (Slovenia, Spain, Austria and Luxembourg) were above their respective Kyoto emissions limits.
- Under the Kyoto Protocol, Ireland is obliged by 2020 to have reduced its greenhouse gas emissions to 20% below the 2005 levels.

### 4.4 Ireland and EU: Greenhouse gas emissions per capita 1990-2013



Sources: Environmental Protection Agency and European Environment Agency

- Ireland's emissions of greenhouse gases per capita have been falling since 1990, and in 2013 stood at 12 tonnes of CO<sub>2</sub> equivalent per capita. The average for the EU in 2012 was 9 tonnes of CO<sub>2</sub> equivalent per capita.



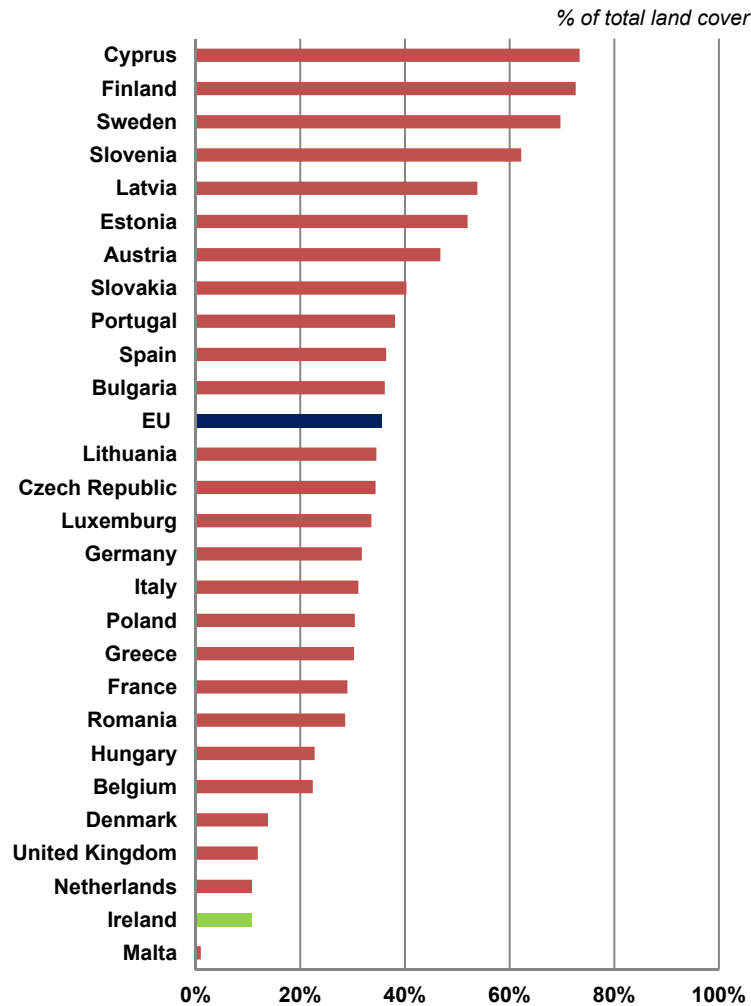
#### 4.5 Ireland: Greenhouse gas emissions by sector 1990-2013

Year	% of total						Total	Average annual % change
	Agriculture	Energy	Transport	Industry & commercial	Residential	Waste		
1990	36%	21%	9%	17%	14%	3%	55,299	
1995	36%	23%	11%	17%	11%	3%	58,998	1.3%
2000	30%	24%	16%	18%	9%	3%	68,280	3.0%
2005	28%	23%	19%	18%	10%	3%	69,839	0.5%
2006	28%	22%	20%	17%	10%	3%	69,104	-1.1%
2007	28%	21%	21%	18%	10%	2%	68,392	-1.0%
2008	28%	22%	20%	18%	11%	2%	67,969	-0.6%
2009	30%	21%	20%	15%	12%	2%	62,201	-8.5%
2010	30%	22%	19%	15%	13%	2%	61,634	-0.9%
2011	31%	21%	19%	15%	11%	2%	57,672	-6.4%
2012	31%	22%	19%	15%	11%	2%	58,221	1.0%
2013	32%	20%	19%	15%	11%	3%	57,813	-0.7%

Source: Environmental Protection Agency

- Agriculture accounted for 32% of Ireland's greenhouse gas emissions in 2013.
- The transport share of greenhouse gas emissions in Ireland increased from 9% in 1990 to 21% in 2007 before falling to 19% in 2013.
- Total greenhouse gas emissions for Ireland peaked at 69.8 million tonnes of CO<sub>2</sub> equivalent in 2005. They have fallen every year since, except for 2012, and stood at 57.8 million tonnes in 2013.

#### 4.6 EU: Forest cover 2010



Source: Forest Europe

#### 4.7 Ireland: River water quality 1987-2012

Year	<i>% of surveyed channel length</i>			
	Unpolluted	Slightly polluted	Moderately polluted	Seriously polluted
1987-1990	77.3%	12.0%	9.7%	0.9%
1991-1994	71.2%	16.8%	11.4%	0.6%
1995-1997	66.9%	18.2%	14.0%	0.9%
1998-2000	69.7%	17.1%	12.4%	0.8%
2001-2003	69.3%	17.9%	12.3%	0.6%
2004-2006	71.4%	18.1%	10.0%	0.5%
2007-2009	68.9%	20.7%	10.0%	0.4%
2010-2012	72.8%	17.5%	9.6%	0.1%

Source: Environmental Protection Agency

- Forestry accounted for 10.7% of Ireland's total land area in 2010, which was the second lowest level in the EU. In contrast, 35.5% of the total land area of the EU was under forest cover.
- The proportion of unpolluted river water fell from 77% in the period 1987-1990 to 69% in the period 2007-2009. This increased again in the 2010-2012 period to 73%. The percentage of slightly polluted water increased from 12% in 1987-1990 to 17.5% in 2010-2012.
- The level of seriously polluted river water was 0.1% in the period 2010-2012.

#### 4.8 Ireland: Nitrates in groundwater 1995-2012

Year	NO <sub>3</sub> 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%

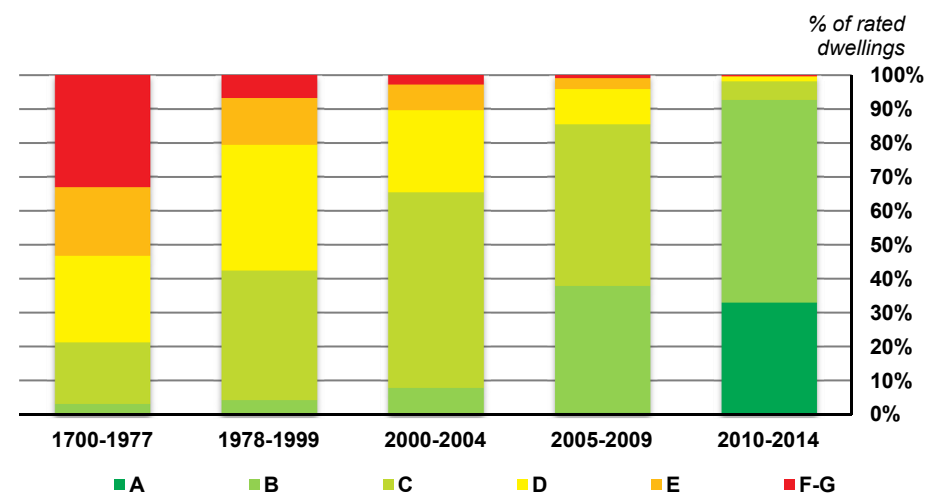
Source: Environmental Protection Agency

- The levels of nitrates in groundwater have been decreasing. The proportion of samples between 37.5 and 50 mg/litre fell from 9% in 2004-2006 to 2% in the 2010-2012 period, and the proportion over 50 mg/litre fell from 2% to zero during the same period.

#### 4.9 Ireland: Domestic Building Energy ratings 2009-2014

Period of construction	Energy rating						Total dwellings
	A	B	C	D	E	F-G	
1700-1977	0%	3%	18%	25%	20%	33%	156,021
1978-1999	0%	4%	38%	37%	14%	7%	158,324
2000-2004	0%	8%	58%	24%	8%	3%	93,456
2005-2009	1%	37%	48%	10%	3%	1%	95,816
2010-2014	33%	60%	5%	1%	0%	0%	8,059

Source: CSO



- Of the 8,059 dwellings built between 2010 and 2014 which had a building energy rating audit, 93% received an A or B rating. This contrasts with 38% for dwellings built between 2005 and 2009.
- The energy rating of older houses tends to be lower, with 78% of houses built before 1978 with an energy rating of D or lower. In contrast, only 1% of dwellings built between 2010 and 2014 were given this rating.

#### 4.10 Ireland: Total primary energy requirement 1990-2013

Year	% of total primary energy requirement					ktoe
	Petroleum	Natural gas	Coal	Renewable	Peat	
1990	47%	15%	22%	2%	15%	9,497
1995	52%	18%	17%	1%	11%	10,568
2000	57%	22%	13%	2%	6%	13,780
2005	58%	22%	12%	2%	5%	15,828
2006	56%	25%	10%	3%	5%	15,867
2007	55%	26%	10%	3%	5%	16,219
2008	55%	28%	9%	4%	5%	16,303
2009	52%	29%	8%	5%	6%	14,740
2010	49%	32%	8%	5%	5%	14,755
2011	49%	30%	9%	6%	6%	13,814
2012	46%	30%	11%	6%	6%	13,496
2013	47%	29%	10%	7%	5%	13,332

Source: Sustainable Energy Authority of Ireland

- Petroleum products are the main fuel in Ireland's total primary energy requirement (TPER), accounting for 47% in 2013. This proportion has fallen from a high of 58% in 2005.
- The proportion of coal in TPER has fallen from 22% in 1990 to 10% in 2013. Similarly, the share of peat has fallen since the 1990s. These have been replaced mainly by natural gas, which accounted for 29% of TPER in 2013.

#### 4.11 Ireland: Progress towards renewable targets 1990-2013

Year	% generated by renewable energy			
	Electricity	Transport	Heat	Renewable contribution in gross final energy consumption
1990	5%	0%	3%	2%
1995	5%	0%	2%	2%
2000	5%	0%	2%	2%
2005	7%	0%	3%	3%
2006	9%	0%	4%	3%
2007	10%	0%	4%	4%
2008	11%	1%	4%	4%
2009	13%	2%	4%	5%
2010	15%	2%	4%	6%
2011	17%	4%	5%	7%
2012	19%	4%	5%	7%
2013	21%	5%	6%	8%
2020 target	40%	10%	12%	16%

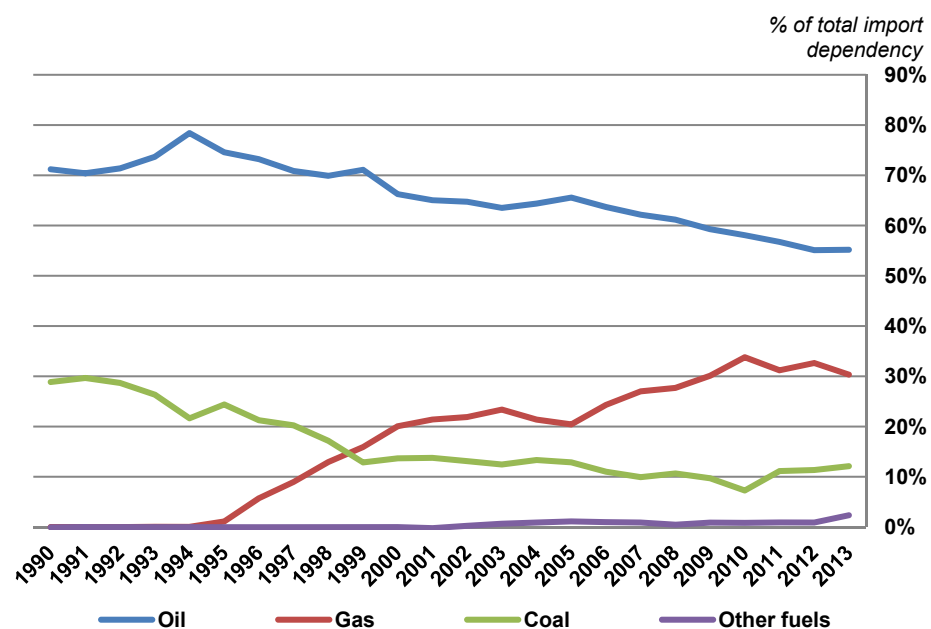
Source: Sustainable Energy Authority of Ireland

- The share of electricity generated by renewable energy has grown from 5% in 1990 to 21% in 2013. The EU Directive (2001/77/EC) target for 2010 of 13.2% was achieved. The 2020 target is that 40% of electricity will be generated from renewable sources.
- Renewable transport energy accounted for 5% of road and rail transport in 2013. Renewable heat accounted for 6% of all thermal energy in 2013. The 2020 target is that 12% of heating energy will be generated by renewable energy.

#### 4.12 Ireland: Imported energy dependency 1990-2013

Year	% of total import dependency				Imported fuel ktoe	Import dependency
	Oil	Gas	Coal	Other fuels		
1990	71%	0%	29%	0%	6,899	69%
1995	75%	1%	24%	0%	7,727	69%
2000	66%	20%	14%	0%	12,373	85%
2005	66%	20%	13%	1%	14,763	90%
2006	64%	24%	11%	1%	14,844	91%
2007	62%	27%	10%	1%	14,526	88%
2008	61%	28%	11%	0%	15,074	91%
2009	59%	30%	10%	1%	13,406	89%
2010	58%	34%	7%	1%	13,276	87%
2011	57%	31%	11%	1%	12,703	89%
2012	55%	33%	11%	1%	11,784	85%
2013	55%	30%	12%	2%	12,252	89%

Source: Sustainable Energy Authority of Ireland



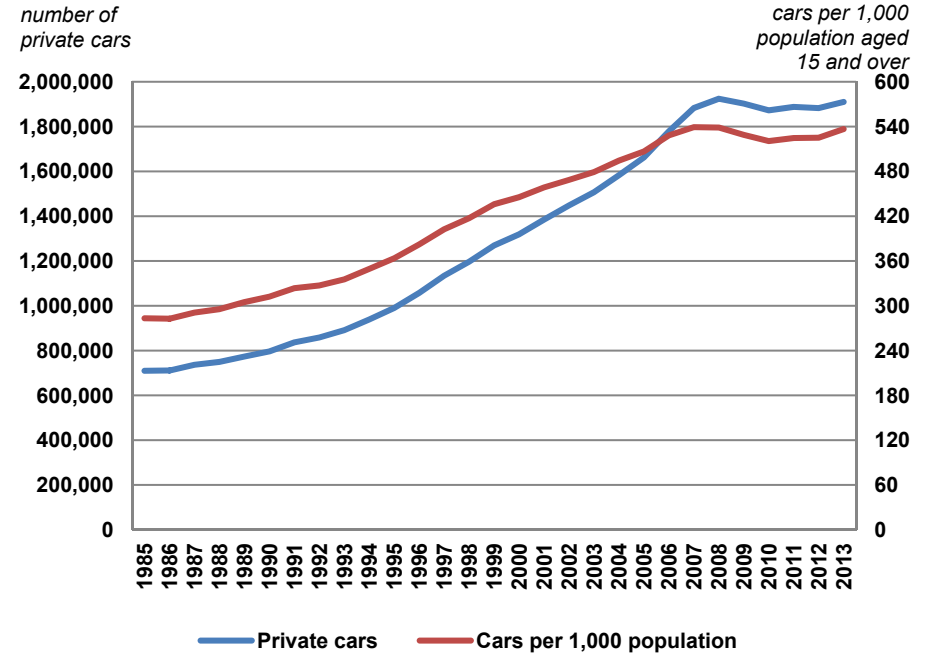
- Ireland's imported energy dependency has increased from 69% in 1990 to 89% in 2013.
- The import dependency on oil has fallen from 71% of total fuel imports in 1990 to 55% in 2013, while import dependency on gas has increased to 30% in 2013.

#### 4.13 Ireland: Private cars per 1,000 population 1985-2013

Year	Private cars 000	Cars per 1,000 population aged 15 and over	average % change year-on-year
1985	710	283	:
1990	796	312	2.0%
1995	990	364	3.1%
2000	1,319	445	4.1%
2005	1,662	507	2.5%
2006	1,779	528	4.2%
2007	1,883	539	2.1%
2008	1,924	539	-0.1%
2009	1,902	529	-1.8%
2010	1,873	521	-1.6%
2011	1,888	525	0.8%
2012	1,883	525	0.1%
2013	1,910	537	2.2%

Sources: Department of Transport, Tourism and Sport and CSO

- The number of private cars in Ireland was 283 per 1,000 of the population aged 15 years and over in 1985. This number grew every year until 2007, when there were 539 cars per 1,000. The rate fell to 525 cars per 1,000 of the population in 2011 but has increased to 537 in 2013.

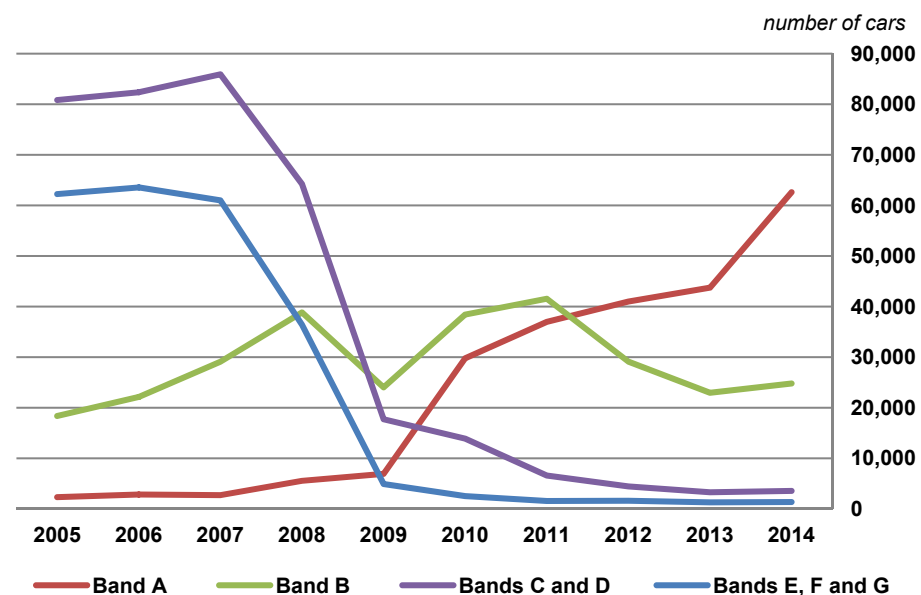


#### 4.14 Ireland: New private cars licensed by emission class 2005-2014

Year	emission bands					% of total
	A	B	C and D	E, F and G	Unclassified	
2005	1%	11%	49%	37%	2%	166,270
2006	2%	13%	48%	37%	1%	173,273
2007	2%	16%	48%	34%	1%	180,754
2008	4%	27%	44%	25%	1%	146,470
2009	13%	44%	33%	9%	2%	54,432
2010	35%	45%	16%	3%	0%	84,907
2011	43%	48%	8%	2%	0%	86,932
2012	54%	38%	6%	2%	0%	76,256
2013	61%	32%	5%	2%	0%	71,348
2014	68%	27%	4%	1%	0%	92,361

Source: CSO

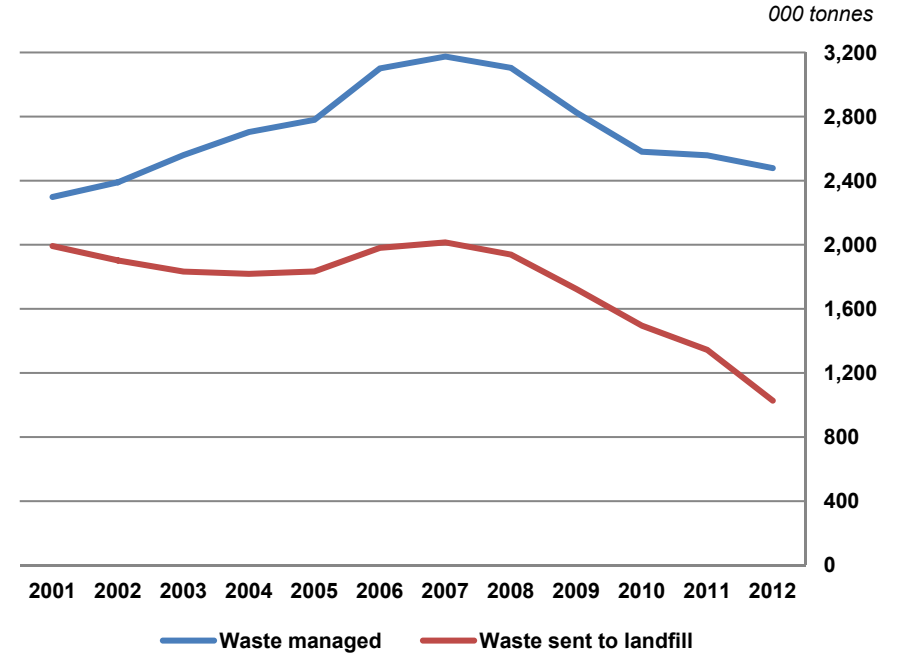
- On July 1<sup>st</sup> 2008, the basis for motor taxation charges changed from engine size to the emission rating of the vehicle.
- The proportion of new vehicles registered in emission band A increased from 1% in 2005 to 68% in 2014.



#### 4.15 Ireland: Municipal waste sent to landfill 2001-2012

000 tonnes			
Year	Municipal waste managed	Municipal waste sent to landfill	Municipal waste disposal rate
2001	2,298	1,992	87%
2002	2,390	1,902	80%
2003	2,559	1,833	72%
2004	2,704	1,819	67%
2005	2,779	1,833	66%
2006	3,100	1,981	64%
2007	3,175	2,015	64%
2008	3,104	1,939	63%
2009	2,825	1,724	61%
2010	2,580	1,496	58%
2011	2,558	1,344	53%
2012	2,478	1,028	41%

Source: Environmental Protection Agency



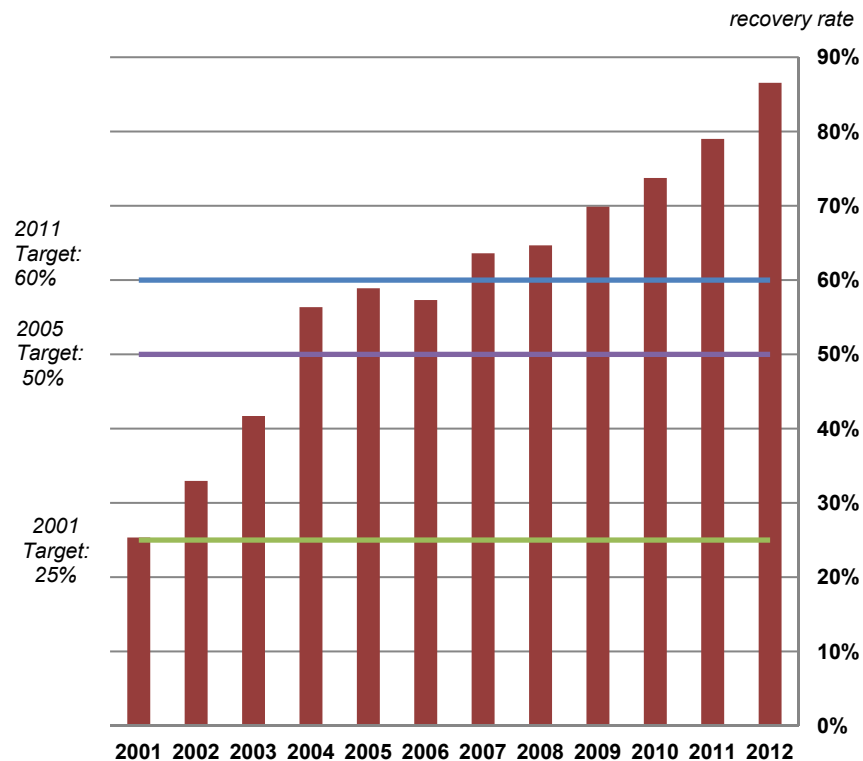
- The amount of municipal waste sent to landfill was between 1.8 and 2 million tonnes between 2001 and 2008. It has fallen sharply since, and in 2012 was almost half the 2007 level at just over 1 million tonnes.



#### 4.16 Ireland: Recovery of packaging waste 2001-2012

Year	000 tonnes		Recovery rate
	Managed	Recovered	
2001	873	221	25%
2002	899	296	33%
2003	1,006	420	42%
2004	851	480	56%
2005	925	545	59%
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%
2012	810	701	87%

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 2012, the recovery rate for packaging waste had reached 87%.

#### 4.17 Ireland: Domestic water supply sources 2002-2011

*% of total households*

Year	Public mains	Local Authority group scheme	Private group scheme	Other private source	No piped water
2002	75%	9%	4%	11%	0%
2006	77%	9%	3%	10%	0%
2011	78%	9%	3%	10%	0%

*Source: CSO Census of Population*

- The proportion of households connected to public water mains has increased from 75% in 2002 to 78% in 2011.

#### 4.18 Ireland: Domestic waste water treatment 2002-2011

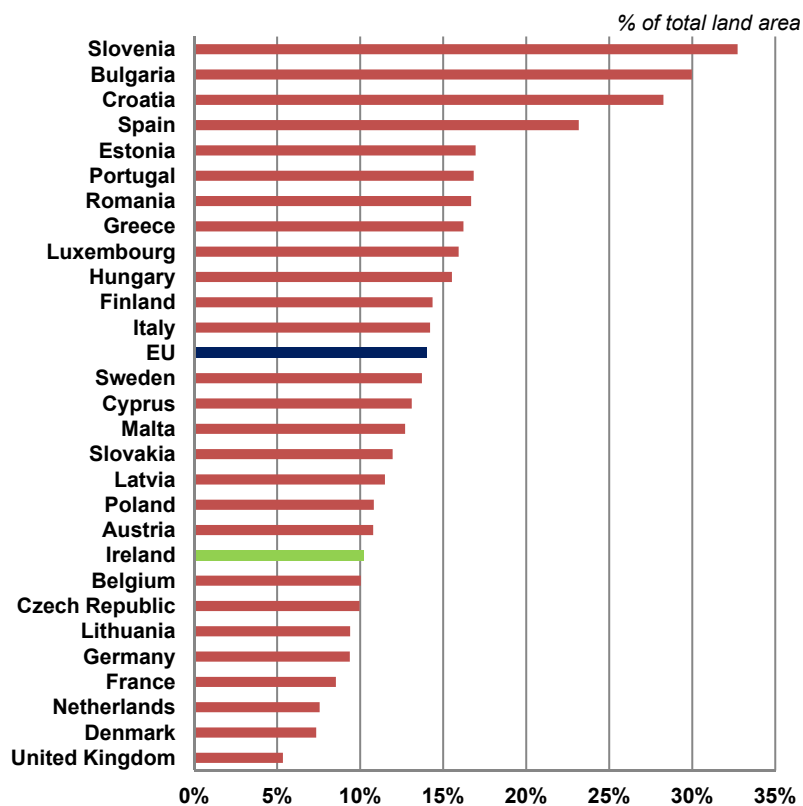
*% of total households*

Year	Public scheme	Individual septic tank	Individual treatment not septic tank	Other type of sewerage	No sewerage facility
2002	66%	33%	0%	1%	1%
2006	68%	30%	2%	0%	0%
2011	68%	27%	3%	1%	0%

*Source: CSO Census of Population*

- The proportion of households whose waste water treatment system is via an individual septic tank fell from 33% in 2002 to 27% in 2011. This was offset by an increase in individual treatments without a septic tank from zero to 3%, and an increase in connections to public schemes from 66% to 68%.

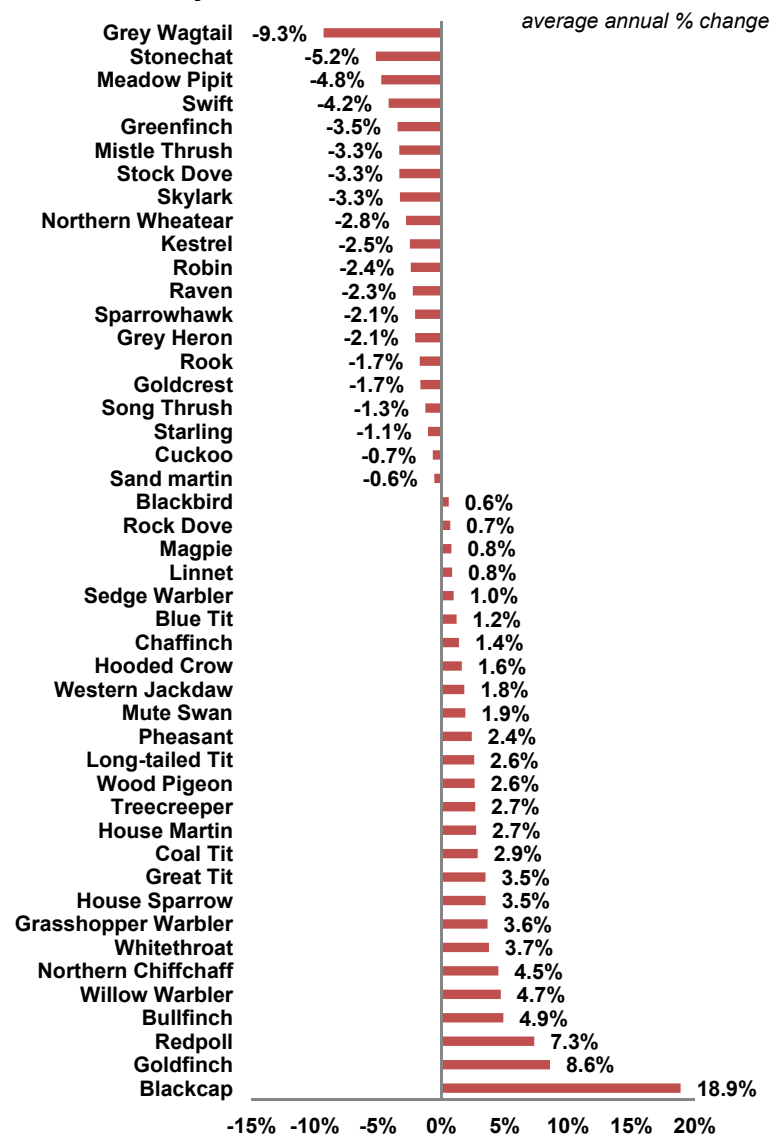
#### 4.19 EU: Protected areas under EU Habitats Directive 2013



Source: European Commission

- In 2013, Ireland had 10.2% of its land area designated as a Site of Community Importance under the EU Habitats Directive. This was the ninth smallest proportion of land area in the EU. The total designated area in the EU was 14%.
- 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.

#### 4.20 Ireland: Countryside birds 1998-2012



Source: Birdwatch Ireland



# Appendix

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## Definitions and notes

### Domain 2 – Economy

#### General government debt and balance (2.1)

**General government consolidated gross debt** at nominal value is the standardised measure of indebtedness of EU governments. The general government sector comprises the sub-sectors of central government, local government, and social security funds. The debt of commercial State companies/public corporations is excluded. It takes account of all liabilities included in the traditional national definition of National Debt, without any offsetting of liquid assets, together with the liabilities of non-commercial State agencies and local authorities.

**General government balance (GGB)** is the standard European measure of the fiscal balance, which is used to monitor compliance with the Stability and Growth Pact. It is defined in the EU regulation governing reporting of deficit and debt levels for the Excessive Deficit Procedure as net lending / net borrowing adjusted for the impact on debt interest of transactions in interest rate swaps.

Note that, as only those inflows and outflows which affect financial net worth count as revenue and expenditure in this calculation, the EDP net lending / net borrowing is also equivalent to the change in the financial net worth of General Government due to transactions in financial assets and liabilities.

#### Net receipts from EU (2.2 and 2.3)

Net national receipts from the EU are calculated by subtracting an individual member state's total revenue from the EU from its total contribution.

Own resources provide the EU's main revenue. There are three kinds of own resources:

➤ **own resource from value added tax (VAT)**

A standard percentage is levied on the harmonised VAT base of each EU country. The VAT resource accounts for around €14 billion. The VAT base to be taxed is capped at 50% of GNI for each country. This rule is intended to prevent less prosperous countries having to pay a disproportionate amount (in such countries consumption – and so VAT – tend to account for a higher percentage of national income).

➤ **own resource based on gross national income (GNI)**

A standard percentage is levied on the GNI of each EU country. It is used to balance revenue and expenditure, i.e. to fund the part of the budget not covered by other sources of income. Although designed simply as a balancing system, this has become the largest source of revenue – €110 billion in 2013.

➤ **other revenues**

The budget also has other sources of revenue, e.g.: taxes on EU staff salaries, contributions from non-EU countries to certain programmes and fines on companies for breaching competition laws, etc.

#### General government tax revenue and Exchequer tax revenue (2.4 and 2.5)

Exchequer taxes account for the majority of the revenue in the Exchequer balance, which is the traditional domestic budgetary aggregate which measures the central government's net surplus borrowing position.

General government refers to all arms of government, and, in Ireland's case includes central government, local authorities, the HSE, VECs, non-commercial semi-state bodies, the social insurance fund, and the national pension reserve fund.

### **Income tax distribution (2.6)**

The data presented is from 2002 only, as prior to that year the tax year was April to April, and therefore, previous years are not directly comparable.

A married couple where both members have elected or have been deemed to have elected for joint assessment is counted as one tax unit and the incomes of both members are aggregated in the statistics. For this reason, the text accompanying Table 2.6 refers to 'cases' rather than persons.

### **General government expenditure on pay and social welfare (2.7)**

Most public sector workers benefit from unfunded pension schemes. In line with international accounting conventions, the wages of these workers are increased by an estimate of the amount that the employer would have to contribute if these pensions were actually being funded. This is calculated as the actuarial value of the pension entitlements accrued by employees in respect of their year's work less any pension contributions actually paid by these employees.

A large public sector in Ireland is relatively recent and the value of pension contributions thus calculated exceeds the value of pensions actually paid, by the Government, to retired employees. To balance the accounts, this excess is routed back to Government and treated as pension contributions paid by employees towards their future pension entitlements.

### **Gross domestic expenditure on R&D (2.9)**

Research and experimental development (R&D) comprises creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society and the use of this stock of knowledge to devise new applications.

Gross domestic expenditure on R&D is composed of: Business enterprise expenditure in R&D; Higher Education expenditure in R&D; Government expenditure in R&D; and Private Non-profit expenditure in R&D. Investment in research and development made outside of Ireland by foreign companies with subsidiaries based in Ireland is not included in the figures for Ireland.

### **Gross fixed capital formation by sector (2.10)**

Fixed assets are produced tangible or intangible assets that are used in the production process for more than one year. **Gross fixed capital formation** consists of producers' acquisitions less disposals of fixed assets.

**Households and NPISH** consist of persons in their capacity as holders of financial assets or as borrowers. The business assets and liabilities of unincorporated self-employed persons are also mainly reflected in this sector. Large autonomous unincorporated enterprises (quasi-corporations) are in principle included in the non-financial corporations sector.

**Non-Profit Institutions Serving Households (NPISH)** consist of non-profit institutions such as charities and non-commercial agencies not owned by the government, such as some schools and hospitals.

**General Government** consists of central and local government and the social security fund. Central government includes the National Pension Reserve Fund, and non-commercial agencies owned and funded by government, but does not include commercial state-owned companies (which are proper to Non-Financial Corporations or Financial Corporations as appropriate).

**Financial Corporations** are corporate bodies producing financial services on a commercial basis. As with Non-Financial Corporations they can take various legal forms, with a range of ownership arrangements.



**Non-Financial Corporations** are corporate bodies producing goods and non-financial services on a commercial basis. They include public limited companies, private companies and other corporate forms of business, whether owned by residents (including the government) or non-residents or both. In particular, therefore, Irish subsidiaries of foreign companies and the Irish branches of foreign companies operating in Ireland on a branch basis are included; while the foreign subsidiaries of Irish companies and the foreign branches of Irish companies operating abroad are excluded (they form part of the rest of the world sector).

### **Harmonised index of consumer prices (2.11)**

**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.

### **House completions and residential property price index (2.12 and 2.13)**

The **House completions** data series is 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.

The **Residential Property Price Index** (RPPI) is designed to measure the change in the average level of prices paid for residential properties sold in Ireland. The index is mix-adjusted to allow for the fact that different types of property are sold in different periods. The RPPI is compiled using data on mortgage drawdowns provided on a monthly basis by 8 of the main Mortgage Lending Institutions under Section 13 of the Housing Act (2002). This data provides details on the characteristics of properties bought (such as building type and size) as well as the price paid. It is transactions based; meaning that prices are recorded only where a sale occurs. Not all residential property transactions are funded by a mortgage (i.e. they are cash based) and these transactions are excluded from the scope of the index.

## **Domain 3 – Social**

### **Employment rate (3.1)**

The employment rate is calculated by dividing the number of employed persons in the 20-64 age category, as estimated by the Quarterly National Household Survey, by the total number of persons in that age category, as estimated by Census of Population estimates.

### **Unemployment rate (3.2)**

The unemployment rate is the number of persons unemployed as a percentage of the labour force.

### **People at risk of poverty (3.5)**

Households which are considered to be at risk of poverty have a household income below a given percentage (usually 60%) of the national median income. The rate is calculated by ranking households by income from smallest to largest and the median or middle value is extracted. A household with an income of less than 60% of the median is considered to be at risk of poverty at a 60% level.

### **Old age dependency ratio (3.6)**

The dependency ratio is calculated by dividing the estimated population aged 65 years and over by the estimated population aged 15 to 64. The figures presented are based on projections calculated from the 2011 Census of Population.

The projections are based on one of six scenarios of future fertility and migration rates published by the CSO. The data is based upon the M2F1 scenario, which bases population estimates on moderate migration levels, and a total fertility rate of 1.9.

Details of the various population scenarios projected by the CSO are available at [http://www.cso.ie/en/media/csoie/releasespublications/documents/population/2013/poplabfor2016\\_2046.pdf](http://www.cso.ie/en/media/csoie/releasespublications/documents/population/2013/poplabfor2016_2046.pdf)

### **Life expectancy (3.8)**

Life expectancy figures are calculated based on a three year period centered on the given year.

### **Pupil-teacher ratio (3.10)**

The Pupil-teacher ratio at primary level is calculated by dividing total enrolment in all National schools as of 30th September in a given year by the number of teaching posts in June of the following year.

The Pupil-Teacher ratio at second level is calculated by dividing total full time enrolment in all second level schools as of 30th September in a given academic year by the number of full time equivalent teachers in the same year.

### **Second level and third level completion rates (3.12)**

The 2011 version of the **International Standard Classification of Education (ISCED 2011)** is used for the table on third level education and incorporates 8 levels of education:

**ISCED 2011 level 0 - Early childhood education:** Programmes at this level are typically designed with a holistic approach to support children's early cognitive, physical, social and emotional development and introduce young children to organized instruction outside the family context. ISCED level 0 refers to those early childhood programmes that have an intentional education component. These programmes aim to develop socio-emotional skills necessary for participation in school and society and to develop some of the skills needed for academic readiness and to prepare them for entry to primary education.

**ISCED 2011 level 1 - Primary:** Programmes at this level are typically designed to provide students with fundamental skills in reading, writing and mathematics (i.e., literacy and numeracy), and to establish a sound foundation for learning and understanding of core areas of knowledge, personal and social development, preparing for lower secondary education. It focuses on learning at a basic level of complexity with little if any specialisation.

**ISCED 2011 level 2 - Lower Secondary:** Programmes at this level are typically designed to build upon the learning outcomes from ISCED level 1. Usually the educational aim is to lay the foundation for lifelong learning and human development on which education systems may systematically expand further educational opportunities. Some education systems may already offer vocational education programmes at ISCED level 2 to provide individuals with skills relevant to employment.

**ISCED 2011 level 3 – Upper Secondary:** Programmes at this level are typically designed to complete secondary education in preparation for tertiary education, or to provide skills relevant to employment, or both.

**ISCED 2011 level 4 – Post-Secondary Non-Tertiary:** Post-secondary non-tertiary education provides learning experiences building on secondary education and preparing for labour market entry as well as tertiary education. It aims at the individual acquisition of knowledge, skills and competencies below the high level of complexity characteristic of tertiary education. Programmes at ISCED level 4 are typically designed to provide individuals who completed ISCED level 3 with non-

tertiary qualifications that they require for progression to tertiary education for employment when their ISCED level 3 qualification does not grant such access.

**ISCED 2011 level 5 – Short-Cycle Tertiary:** Programmes at this level are often designed to provide participants with professional knowledge, skills and competencies. Typically they are practically based, occupationally specific and prepare students to enter the labour market. However, programmes may also provide a pathway to other tertiary education programmes. Academic tertiary education programmes below the level of a bachelor programme or equivalent are also classified as ISCED level 5.

**ISCED 2011 level 6 – Bachelor or equivalent:** Programmes at this level are often designed to provide participants with intermediate academic and/or professional knowledge, skills and competencies, leading to a first degree or equivalent qualification. Programmes at this level are typically theoretically based but may include practical components and are informed by state of the art research and/or best professional practice. They are traditionally offered by universities and equivalent tertiary educational institutions.

**ISCED 2011 level 7 – Master or equivalent:** Programmes at this level are often designed to provide participants with advanced academic and/or professional knowledge, skills and competencies, leading to a second degree or equivalent qualification. Programmes at this level may have a substantial research component, but do not yet lead to the award of a doctoral qualification. Typically, programmes at this level are theoretically based but may include practical components and are informed by state of the art research and/or best professional practice. They are traditionally offered by universities and other tertiary educational institutions.

**ISCED 2011 level 8 – Doctoral or equivalent:** Programmes at this level are designed primarily to lead to an advanced research qualification. Programmes at this level are devoted to advanced study and original research and typically offered only by research-oriented tertiary educational institutions such as universities. Doctoral programmes exist in both academic and professional fields.

#### **Usual means of travel to school and work (3.13 and 3.14)**

The figures presented in these tables include only those for whom there is an answer to the specific question, and therefore, categories “none” or “not stated” are omitted.

#### **Obesity levels (3.15)**

This is measured as the percentage of population aged 20 years and over with a body mass index  $\geq 30.00 \text{ kg/m}^2$ .

#### **Alcohol consumption (3.16)**

The figures for Ireland are measured in terms of pure alcohol consumed, based on sales of beer, cider, wine and spirit as per the Revenue Commissioners statistical report, and therefore do not take into account black market sales or cross border shopping.

The international figures for 2008 have been produced by projecting the 2005 estimates. They measure the recorded amount of alcohol consumed per adult (>15 years of age) over a calendar year in a country, in litres of pure alcohol – the indicator only takes into account consumption from recorded alcohol production, import, export, and sales data, often via taxation.

#### **Tobacco consumption (3.17)**

This survey was carried out by TNS Opinion & Social network in the 27 Member States of the European Union between 25 February and 11 March 2012. Some 26,751 respondents from different social and demographic groups were interviewed face-to-face at home in their mother tongue on behalf of the Directorate-General Health and Consumers (DG SANCO). The methodology used is that of Eurobarometer surveys as carried out by the Directorate-General for Communication.

## Domain 4 – Environment

### Particulate matter (PM<sub>2.5</sub>) emissions (4.1)

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 PM<sub>10</sub> (diameter less than 10µm) and PM<sub>2.5</sub> (diameter less than 2.5µm). There are high levels of PM<sub>10</sub> 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<sub>2.5</sub> has similar effects on health as PM<sub>10</sub>. However, PM<sub>2.5</sub> is a better indicator of anthropogenic (man-made) emissions than PM<sub>10</sub>. Fine particulate matter PM<sub>2.5</sub> is responsible for significant negative impacts on human health. Further, there is as yet no identifiable threshold below which PM<sub>2.5</sub> would not pose a risk.

### Emissions of pollutants under National Emissions Ceiling Directive (4.2)

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, 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 (SO<sub>2</sub>)            42 kilotonnes
- Nitrogen Oxides (NO<sub>x</sub>)            65 kilotonnes
- NMVOCs                                55 kilotonnes
- Ammonia (NH<sub>3</sub>)                    116 kilotonnes

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 Prevention Control (IPPC) licensing.

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 is also aesthetically unpleasant as it has a brown colour and gives rise to a brown haze. Oxides of nitrogen contribute to the formation of acid rain and ozone. Levels in Ireland are moderate but are increasing due to growth in traffic numbers.

**Ammonia** (NH<sub>3</sub>) 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** (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 NMVOC 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.

### **Greenhouse gas emissions (4.3 to 4.5)**

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 (CO<sub>2</sub>)
- Methane (CH<sub>4</sub>)
- Nitrous Oxide (N<sub>2</sub>O)
- Hydrofluorocarbons (HFC)
- Perfluorocarbons (PFC)
- Sulphur Hexafluoride (SF<sub>6</sub>)

Each of these gases is controlled by the global environmental agreement known as the Kyoto Protocol. Hydrofluorocarbons (HFC), Perfluorocarbons (PFC) and Sulphur Hexafluoride (SF<sub>6</sub>) 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'.

Further detailed information on air emissions, greenhouse gases, and Ireland's targets under the Kyoto Protocol, is available at <http://www.epa.ie/downloads/pubs/air/airemissions>

The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialised countries and the European community for reducing greenhouse gas (GHG) emissions. These amount to an average of five per cent against 1990 levels over the five-year period 2008-2012.

The major distinction between the Protocol and the Convention is that while the Convention encouraged industrialised countries to stabilize GHG emissions, the Protocol commits them to do so.

Recognising that developed countries are principally responsible for the current high levels of GHG emissions in the atmosphere as a result of more than 150 years of industrial activity, the Protocol places a heavier burden on developed nations under the principle of "common but differentiated responsibilities." The Convention divides countries into three main groups according to differing commitments:

### **Forest cover (4.6)**

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 are 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 agro-forestry systems when crops are grown under tree cover.

#### **River water quality (4.7)**

**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 (4.8)**

**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 drinking water are metabolised in the stomach this can lead to the formation of nitrous amines, which are thought to be carcinogenic.

#### **Domestic Building Energy ratings (4.9)**

A Building Energy Rating (BER) is an *indication* of the energy performance of a dwelling (represented in units of kWh/m<sup>2</sup>/annum). Actual energy performance will depend on how the occupants operate the dwelling. A BER is based on the characteristics of major components of the dwelling including: wall, roof and floor dimensions; window and door sizes and orientations, as well as the construction type and insulation, ventilation and air tightness features; the system for heat supply (including renewable energy), distribution, and control; and the type of lighting. The BER certificate indicates the annual primary energy usage and carbon dioxide emissions associated with the provision of space heating, water heating, ventilation, lighting, and associated pumps and fans. The energy use is calculated on the basis of a notional family with a standard pattern of occupancy - hence data in this release giving average primary energy use or carbon dioxide emissions are not based on actual data. A BER only covers electricity used for heating, lighting and ventilation with associated pumps and fans. Electricity used for cooking, refrigeration, laundry and other appliance use are not included.

Since 1<sup>st</sup> January 2009, a BER certificate and advisory report is compulsory for all homes being sold or offered for rent. A BER is also required for new dwellings that apply for planning permission on or after 1<sup>st</sup> January 2007. A BER certificate is required to avail of the grants for energy-efficiency improvements to the home that are provided under the Better Energy Homes scheme.



#### **Total primary energy requirement (4.10)**

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).  $TPER = \text{Indigenous Production} + \text{Imports} - \text{Exports} - \text{Marine Bunkers} - \text{Stock Change}$ .

#### **Progress towards renewable energy targets (4.11)**

In calculating renewable transport, weightings can be applied for double certificates in accordance with the Article 21(2) of Directive (2009/28/EC) where the contribution made by biofuels produced from wastes, residues, non-food cellulosic material, and ligno-cellulosic material shall be considered to be twice that made by other biofuels.

#### **Imported energy dependency (4.12)**

**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.

#### **New private vehicles licensed by emission class (4.14)**

New vehicles registered after 1<sup>st</sup> July 2008 are subject to motor vehicle duty based on CO<sub>2</sub> emissions rather than on engine size, as was previously the case. The table below sets out the seven separate band classes.

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

#### **Municipal waste sent to landfill (4.15)**

**Municipal waste** means household waste as well as commercial and other waste that, because of its nature or composition, is similar to household waste. It excludes municipal sludge 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).

#### **Recovery of packaging waste (4.16)**

**Packaging** is used to contain, protect and present goods. 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.

#### **Protected areas under EU Habitats directive (4.19)**

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.

### **Countryside birds (4.20)**

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 4.20 for presentation purposes. The eight species not shown, along with their respective average annual rates of change between 1998 and 2012 are:

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