



# Ireland's Energy Statistics

Martin Howley  
Sustainable Energy Ireland



© Sustainable Energy Ireland 2019

---

---

---


---

---

---

---

---



## Overview

- Structure of Irish Energy Statistics
  - Institutional & Legal Structure
  - Data Collection
  - Data Structure
- Sectoral Disaggregation
- Future Work & Opportunities
  - Building Energy Rating
  - Regulated Markets Metered Data
  - Public Sector
  - Carbon Tax

---

---

---

---

---

---

---

---



## Key Institutions

- Sustainable Energy Ireland
- Central Statistics Office
- Department of Communications, Energy & Natural Resources

---

---

---

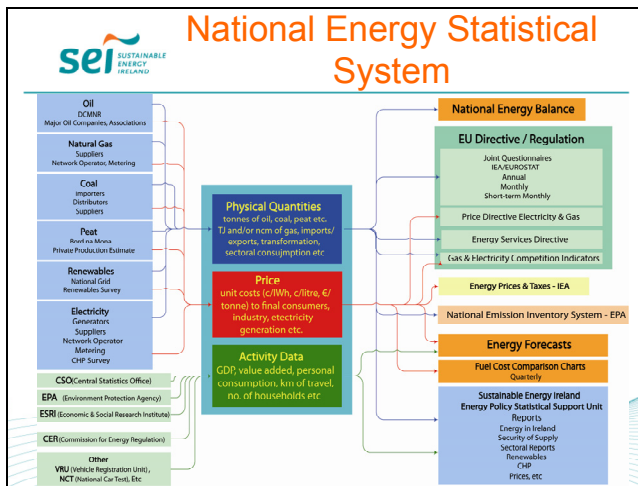
---

---

---

---

---




---

---

---

---

---

---

---

---

---

---




---

---

---

---

---

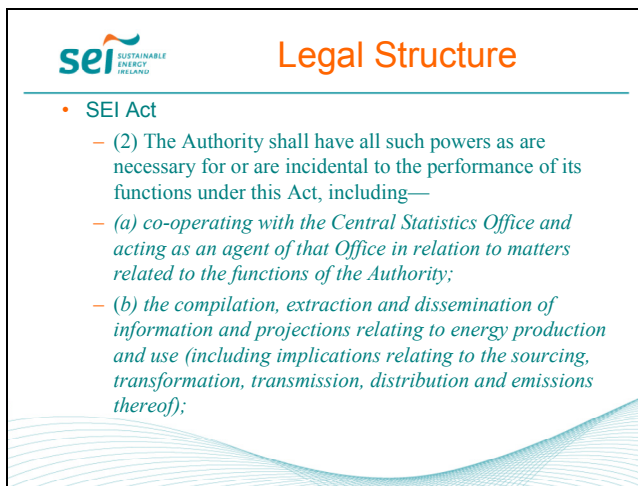
---

---

---

---

---




---

---

---

---

---

---

---

---

---

---

## Legal Structure

- EU Energy Services Directive (S.I. No. 542 of 2009)
  - Provision of information by energy suppliers.
  - 6. (1) SEI may request that an energy supplier provide to it, not more than once each year, aggregated statistical information on that energy supplier's final customers, including such detail and in such format as SEI may specify. An energy supplier shall comply with a request made under this paragraph.
  - (2) In making a request pursuant to paragraph (1), SEI—
    - (a) shall request—
      - (i) such information that, in its view, is sufficient to enable it to properly design and implement energy efficiency improvement programmes and to promote and monitor energy services and other energy efficiency improvement measures, and

---

---

---

---

---

---

---

---

## Legal Structure

- EU Energy Services Directive (S.I. No. 542 of 2009)
  - Provision of information by energy suppliers.
  - (ii) current information on final customer consumption, including, where applicable, load profiles, customer segmentation and geographical location of customers,
  - (b) may request historic information, of a similar character to that specified in subparagraph (a), and (c) shall preserve the integrity and confidentiality of information that is either of private character or commercially sensitive.
  - (3) Where an energy supplier fails to comply in full with a request under paragraph (1) within a period of 6 weeks, or such other longer period as SEI may specify in the request, SEI may apply to the High Court for an order directing the energy supplier concerned to comply with the request.

---

---

---

---

---

---

---

---

## Data Collection

- Questionnaires to main suppliers
  - Oil, gas, solid fuels, renewables, electricity generators & suppliers
- Data collected in physical units
  - tonnes, litres, cubic metres, TJ
- Results in high level aggregation of energy use

---

---

---

---

---

---

---

---

**sei SUSTAINABLE ENERGY IRELAND Database**

Unit: Tj	A	B	C	D	E	F	Q	R	S	T	U	V
2005	Actor	Activity	Energy	Units			2000	2001	2002	2003	2004	2005
<b>Energy Supply</b>												
<b>Primary Energy Production</b>												
4	Ind. Production											
5	Coal/Biomass/Coal	int	pro	bit	ktonne							0
6	Heat	int	pro	pea	ktonne		4508	4357	2870	5290	4365	
7	... Mixed Heat	int	pro	mppe	ktonne		4245	3789	2302	4724	3829	3371
8	... Solid Fuel	int	pro	pea	ktonne		559	568	568	566	566	566
9	Natural Gas	int	pro	gas	kubicmetre		1198	815	838	673	855	670
10	... Hydro (including pump storage)	int	pro	hyd	GWh		847	595	912	598	630	631.25
11	... Wind	int	pro	win	GWh		244	334	388	454	655	1111.91
12	... Biomass: Wood	int	pro	woo	TJ		5695	6365	6365	6699	7704	7704
13	... Biomass: Wood Waste	int	pro	wow								
14	... Biomass: Other Solid Waste	int	pro	osw								
15	... Biomass: Landfill Gas	int	pro	lfg	TJ		988	1005	803	687	635	1044
16	... Biomass: Sewage Sludge Gas	int	pro	slg	TJ							202
17	... Biomass: Other Biogas	int	pro	obg			180	180	188	180	213	213
18	... Solar	int	pro	sol								
19	... Solar	int	pro	sol	TJ		5	5	7	9	12	12
20	... Geothermal	int	pro	gth	TJ		7	7	10	2	2	2
21	... Heat Pumps	int	pro	hnp								
<b>Foreign Trade</b>												
22	Imports											
23	Exports											
24	Electricity	int	imp	ele	GWh		169	38	565	1176	1574	2045
25	Coal	int	imp	col	ktonne		2631	2918	2750	2446	2716	
26	Other Biomass/Coal	int	imp	bit	ktonne		2587	2833	2687	2427	2655	2695
27	... Anthracite	int	imp	ant	ktonne		51	60	53	57	63	62

**sei SUSTAINABLE ENERGY IRELAND Balance Format**

2004	Units= ktoe	NACE	COAL	Bituminous Coal	Ant # C
Indigenous Production			0	0	
Imports	1,725		1,663		
Exports	5		0		
Mix. Bunkers	0				
Stock Change	-48		47		
<b>Total Primary Energy Requirement</b>	<b>1,677</b>		<b>1,671</b>	<b>1,671</b>	
Transformation Input	1,455		1,387		
Public Thermal Power Plants	1,384		1,364		
Combined Heat and Power Plants	3		3		
Dumped Storage Consumption					
Patient Fuel and Biquettina Plants	18		18		
Oil Refineries & other energy sector	0		0		
Transformation Output	42		0		
Public Thermal Power Plants	0		0		
Combined Heat and Power Plants- Electricity	0		0		
Combined Heat and Power Plants- Heat					
Dumped Storage Generation					
Patient Fuel and Biquettina Plants	42		42		
Oil Refineries	0		0		
<b>Exchanges and transfers</b>	<b>0</b>		<b>0</b>	<b>0</b>	
Electricity					
Heat					
Other					
Own Use and Distribution Losses	0		0		
<b>Available Final Energy Consumption</b>	<b>309</b>		<b>230</b>		
Non-Energy Consumption	0		0		
Final non-Energy Consumption (Feedstocks)	0		0		

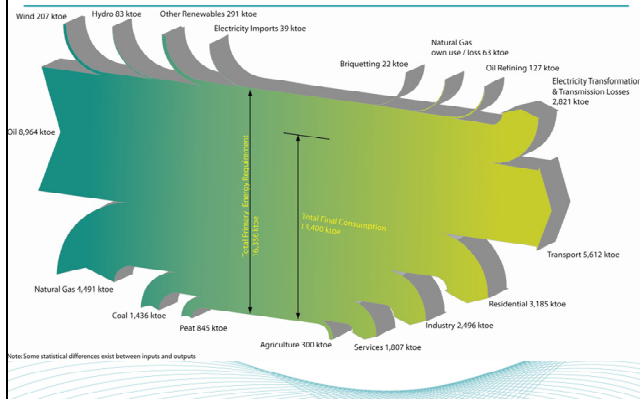
**sei SUSTAINABLE ENERGY IRELAND Detail on fuels**

OIL	Crude	Refinery Gas	Gasoline	Kerosene	JET Kerosene	Fueloil	LPG	Gasoil / Diesel /DERV	Petroleum Coke
0									
10,680	3,346		1,251	378	1,178	1,058	123	2,637	312
1,391			181	5	0	1,013	23	44	0
105									
28	39		87	8	21	26	-3	-140	0
9,250	3,385	0	1,158	381	1,199	87	87	2,361	312
8,960	3,369	0	1,156	381	1,199	87	87	2,361	312
4,164	3,384	8	0	0	0	697	0	75	0
766						697		68	

## Sectoral detail

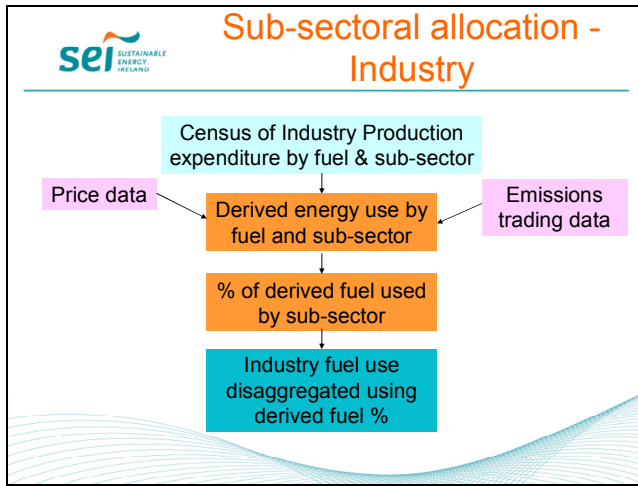
Total Final Energy Consumption		435	351	60
<b>Industry*</b>		<b>163</b>	<b>163</b>	<b>0</b>
Non-Energy Mining	13-14	0	0	
Food, beverages and tobacco	15-16	16	16	
Textiles and textile products	17-18	8	8	
Wood and wood products	20	0	0	
Pulp, paper, publishing and printing	21-22	0	0	
Chemicals & man-made fibres	24	0	0	
Rubber and plastic products	25	0	0	
Other non-metallic mineral products	26	139	139	
Basic metals and fabricated metal products	27-28	0	0	
Machinery and equipment n.e.c.	29	0	0	
Electrical and optical equipment	30-33	0	0	
Transport equipment manufacture	34-35	0	0	
Other manufacturing	36-37, 19	0	0	
<b>Transport</b>		<b>0</b>	<b>0</b>	<b>0</b>
Road Freight		0	0	
Road Private Car		0	0	
Public Passenger Services		0	0	
Rail		0	0	
Domestic Aviation		0	0	
International Aviation		0	0	
Fuel Tourism		0	0	
Unspecified		0	0	
<b>Residential</b>		<b>246</b>	<b>163</b>	<b>59</b>
Commercial/Public Services	26	24	24	1
Commercial Services	26	24	24	1
Public Services	0	0	0	
Agricultural	0	0	0	
Statistical Difference		-2	-1	-0

## Energy Flow in 2008



## Sub-sectoral allocation - Industry

- Until recently based on a 1990 disaggregation
- What information is already being collected or is available?
- Annual Census of Industrial Production
  - Questions on energy expenditure
  - 1998, 2001 and from 2004 onwards energy expenditure questions by individual fuel
- Problem is to convert from expenditure to energy quantity
- Good price data essential
- New Developments



### 2004 Expenditure data - CSO

	Fuel - Hard Coal	Fuel - Coke	Fuel - Gas Oil	Fuel - Heavy Oil	Fuel - Petrol	Fuel - Autodiesel	Fuel - LPG	Fuel - Other	Fuel - Natural Gas	Fuel - Derived Gas	Fuel - Renewable Energy	Fuel - Heat	Fuel - Electricity	Fuel - Other	Fuel - Total
10 - 14	0	0	8,798	7,420	130	14,188	307	2,723	7,804	0	0	153	44,870	0	80,489
15 - 16	1,861	0	10,310	17,220	4,581	13,278	304	759	98,812	663	33	7,654	153,365	3,521	236,155
17 - 18	848	0	1,388	840	68	988	37	77	297	241	0	48	6,471	114	11,430
19	0	0	16	3	0	20	0	0	33	0	0	0	284	3	341
20	0	1,727	1,649	164	1,324	249	101	854	0	0	2,464	0	23,388	169	31,844
21 - 22	48	0	783	787	1,173	1,208	258	244	4,861	118	0	150	24,755	298	34,720
24	0	0	3,778	6,933	1,702	2,378	248	2,188	26,895	189	-1	3,300	79,858	913	128,386
26	0	1,146	186	634	1,455	45	234	2,056	73	0	163	25,038	320	31,647	
28	37	16,063	9,266	2,962	372	24,198	572	107	11,791	539	21	38	42,653	79	109,634
27 - 28	0	0	1,653	52,935	632	2,913	418	258	2,834	401	0	29	33,757	297	96,232
29	0	0	738	896	702	2,628	169	284	2,863	304	0	172	13,418	519	22,851
30 - 33	0	0	2,832	1,838	894	804	394	581	6,189	7,843	2,480	289	89,288	2,063	115,703
34 - 35	0	0	471	144	374	1,409	210	899	1,818	9	0	51	7,210	51	12,802
36 - 37, 23	0	0	1,553	2,121	644	3,354	61	252	502	138	2	85	20,333	227	28,417
40	138,842	0	0	135,336	58	1,373	18	1,172	283,654	0	95,593	0	39,371	232,518	843,685
1 - 4	141,574	16,063	43,855	225,058	12,128	70,977	3,283	9,903	391,277	10,508	101,091	12,127	584,059	241,101	1,884,353
1 - 3	2,752	16,063	43,855	89,726	13,071	69,694	3,283	9,731	107,623	10,508	5,498	12,127	544,988	8,528	940,658
15 - 37	2,752	16,063	35,857	88,308	11,941	55,417	2,958	6,009	99,819	10,498	5,498	11,974	499,817	8,575	850,180

### 2004 Expenditure data expressed as energy quantities

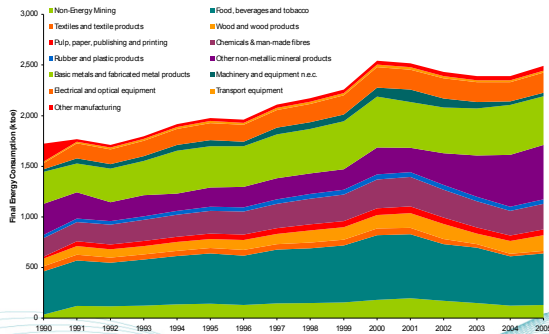
NAACE code	Description	Hard coal	Coke	Gas oil	Heavy fuel	Natural gas	Derived gas	Renewable energy	Heat	Electricity	Other	Total
10 - 14	Mining and quarrying	0.000	0.000	29,488	9,805	24,480	0.111	0.000	6,460	88,303	0.003	151,112
15 - 16	Manufacture of food products	14,514	0.000	28,772	67,905	161,371	6,877	46,000	22,025	148,881	10,138	550,485
17 - 18	Manufacture of textiles and leather products	6,818	0.000	3,433	3,313	1,378	2,400	0.000	0.138	7,223	0.308	25,000
20	Manufacture of wood and wood products	0.000	0.000	3,543	6,487	3,652	0.003	101,000	0.000	26,106	0.486	141,328
21 - 22	Manufacture of pulp, paper and paper products publishing and printing	0.387	0.000	2,261	3,104	20,836	1,261	0.000	0,432	27,831	0.858	56,759
24	Manufacture of chemicals, chemical products and man-made fibres	0.000	0.000	10,904	27,341	113,714	1,981	0.000	9,406	89,135	2,637	250,108
25	Manufacture of rubber and plastic products	0.000	0.000	3,309	0,730	8,984	0,774	0.000	0,459	27,947	0,929	43,142
26	Manufacture of other non-metallic mineral products	128,281	234,012	26,737	11,681	50,540	4,980	0.000	0,104	47,808	0,227	502,209
27 - 28	Manufacture of basic metals and fabricated metal products	0.000	0.000	4,773	375,001	12,147	4,000	0.000	0,072	37,879	0,855	434,576
29	Manufacture of machinery and equipment n.e.c.	0.000	0.000	2,125	2,741	12,272	3,245	0.000	0,485	14,977	1,476	37,331
30 - 33	Manufacture of electrical and optical equipment	0.000	0.000	8,461	7,252	25,946	83,179	0.000	0,832	99,859	5,984	231,282
34 - 35	Manufacture of transport equipment	0.000	0.000	1,380	0,998	7,792	0,985	0.000	0,147	8,948	0,147	18,157
36 - 37, 19, 23, 40 - 41	Manufacturing n.e.c. Electricity, gas and water supply	0.000	0.000	4,531	8,376	2,280	1,484	0.000	0,245	22,980	0,800	40,330
1 - 4	All Industries											
1 - 3	Transportable goods industries	148	234	127	828	454	110	146	38	688	25	2,485
15 - 37	Manufacturing industries	148	234	161	814	421	110	146	34	688	25	2,200

## Sub-sectoral allocation - Industry

2004	Units = Mtoe	NACE	OIL	Coal	Refinery Gas	Gasoline	Kerosene	JET Kerosene	Fueloil	LPG	Gasoil / Diesel / GSR	Petroleum Coke
Industry			372	0	0	0	128	0	387	63	186	234
Non-Energy Mining		13-14	121				3		11	1	45	60
Food, beverages and tobacco		15-16	286				27		113	13	37	88
Textiles and textile products		17-18	45				3		5	17	5	0
Wood and wood products		20	7				2		5	0	0	0
Pulp, paper, publishing and printing		21-22	8				1		2	0	5	0
Chemicals and man-made fibres		24	65				12		37	3	43	0
Rubber and plastic products		25	10				0		1	2	6	0
Other non-metallic mineral products		26	59				6		19	3	22	0
Basic metals and fabricated metal products		27-28	229				52		169	13	3	0
Machinery and equipment n.e.c.		29	91				1		3	8	3	75
Electrical and optical equipment		30-33	48				1		4	2	41	0
Transport equipment manufacture		34-35	4				0		1	1	1	0
Other manufacturing		36-37, 39	5				1		2	0	1	0

Sub-sectoral consumption allocated based on pro-rata of spend by the sub-sectors' on the individual fuels recorded by CSO in the Census of Industrial Production

## Sub-sectoral time series - Industry



## Transport Disaggregation

- Overall quantities of petrol, diesel and electricity were known
- Energy use by most modes of transport not known
- Some pieces of the jigsaw were known
  - Rail
  - Public Bus Passenger Services – excise rebate
  - Air – kerosene, aviation gasoline...
  - Almost all petrol (gasoline) used by private car – but also some taxis, small commercial vehicles and lawn mowers etc...

## Transport – problems and questions

- How to split diesel consumption between private cars and goods carriage
- What's the effect of 'fuel tourism'?
- What's driving transport energy growth – private car growth or freight growth...?
- Car Transport - are purchasing trends (bigger cars) offsetting technical improvements in car engine efficiency?
- Car Transport – are we really driving much more than in other EU Member States?

---

---

---

---

---

---

---

---

## Jigsaw Pieces

### National Car Test

Private cars tested after 4 years and every 2 years thereafter. Taxis tested every year.

8 million tests since 2000.

### Fuel Tourism

Before 1995 N.I. prices lower than Republic.

Environment Ministry all island model.

---

---

---

---

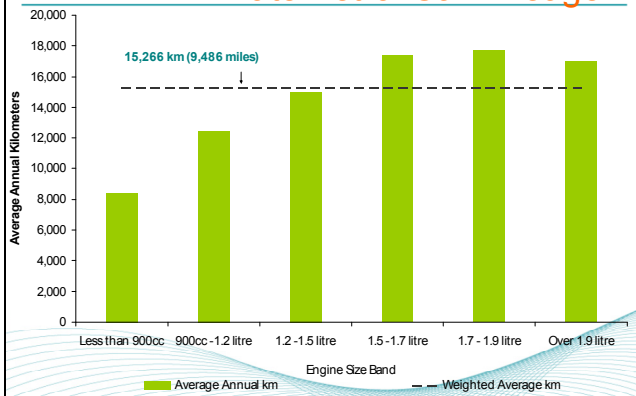
---

---

---

---

## National Car Test Analysis - Private Petrol Car Mileage




---

---

---

---

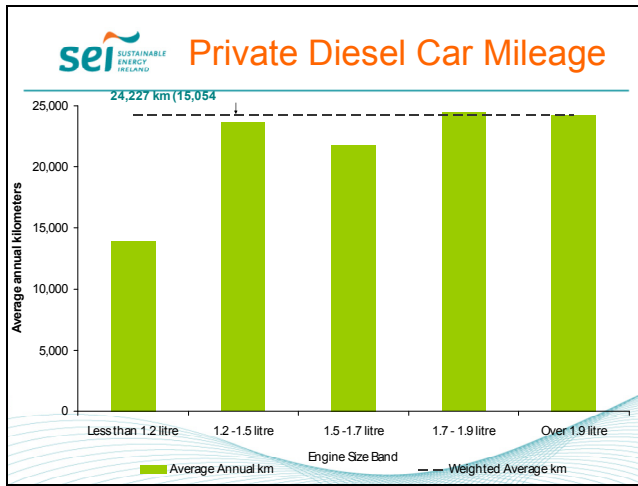
---

---

---

---






---

---

---

---

---

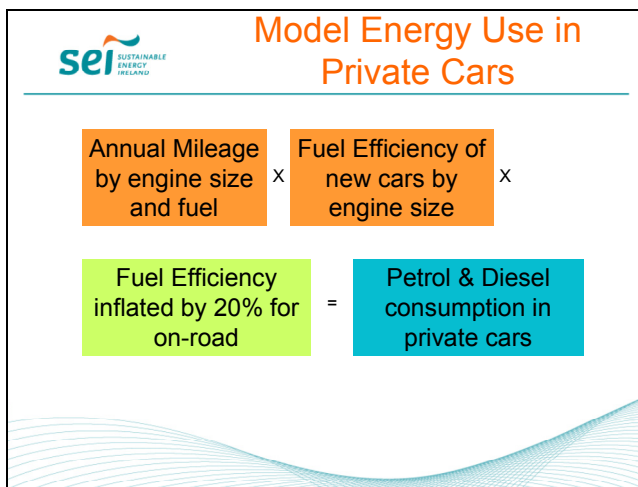
---

---

---

---

---




---

---

---

---

---

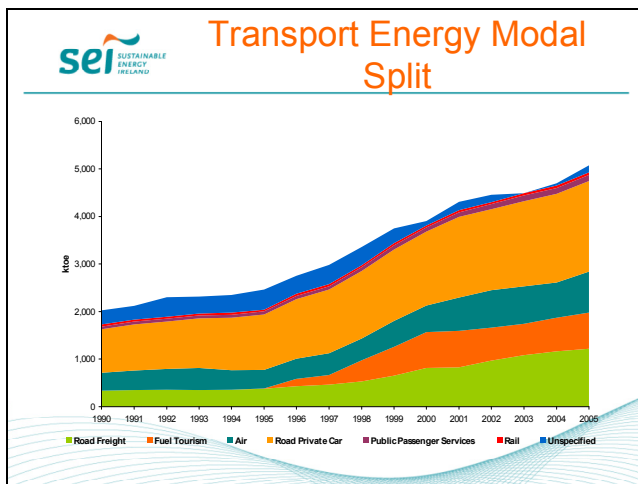
---

---

---

---

---




---

---

---

---

---

---

---

---

---

---

- Building Energy Rating
  - Large sample, building performance, floor area etc.
- Regulated Markets Metered Data
  - Electricity and Gas
- Public Sector
  - Display Energy Rating
  - Electricity & gas meter inventory
  - Other data collection
- Carbon Tax
- Dedicated energy use surveys

---

---

---

---

---

---

---

---

- Ireland's 2008 Energy Balance
  - [http://www.sei.ie/Publications/Statistics\\_Publications/Energy\\_Balance/Provisional\\_2008\\_Energy\\_Balance.pdf](http://www.sei.ie/Publications/Statistics_Publications/Energy_Balance/Provisional_2008_Energy_Balance.pdf)
- Historic Balances
  - [http://www.sei.ie/Publications/Statistics\\_Publications/Energy\\_Balance/Previous\\_Energy\\_Balances/Expanded\\_Balances\\_1990-2007.pdf](http://www.sei.ie/Publications/Statistics_Publications/Energy_Balance/Previous_Energy_Balances/Expanded_Balances_1990-2007.pdf)
- Energy in Transport
  - [http://www.sei.ie/Publications/Statistics\\_Publications/EPSSU\\_Publications/Energy\\_in\\_Transport/Energy\\_In\\_Transport\\_2009\\_Report.pdf](http://www.sei.ie/Publications/Statistics_Publications/EPSSU_Publications/Energy_in_Transport/Energy_In_Transport_2009_Report.pdf)

---

---

---

---

---

---

---

---

## Ireland's Energy Statistics

Thank you.