

The Great Transition: Shifting from Fossil Fuels to Solar and Wind Energy Supporting Data - European Union

[Cumulative Installed Solar Photovoltaics Capacity in the European Union, 2000-2013](#)

GRAPH: Cumulative Installed Solar Photovoltaics Capacity in the European Union, 2000-2013

[Solar-generated Electricity in the European Union, 2000-2013](#)

GRAPH: Solar-generated Electricity in the European Union, 2000-2013

[Cumulative Installed Wind Power Capacity in the European Union, 2001-2014](#)

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[Installed Hydroelectric Generating Capacity in the European Union and the United States, 1980-2012](#)

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GRAPH: Coal Consumption in the European Union, 1965-2013

A full listing of data for the entire book is on-line at:

http://www.earth-policy.org/books/tgt/tgt_data

This is part of a supporting dataset for **The Great Transition: Shifting from Fossil Fuels to Solar and Wind Energy**, by Lester R. Brown, with Janet Larsen, J. Matthew Roney, and Emily E. Adams (New York: W.W. Norton & Company, 2015).

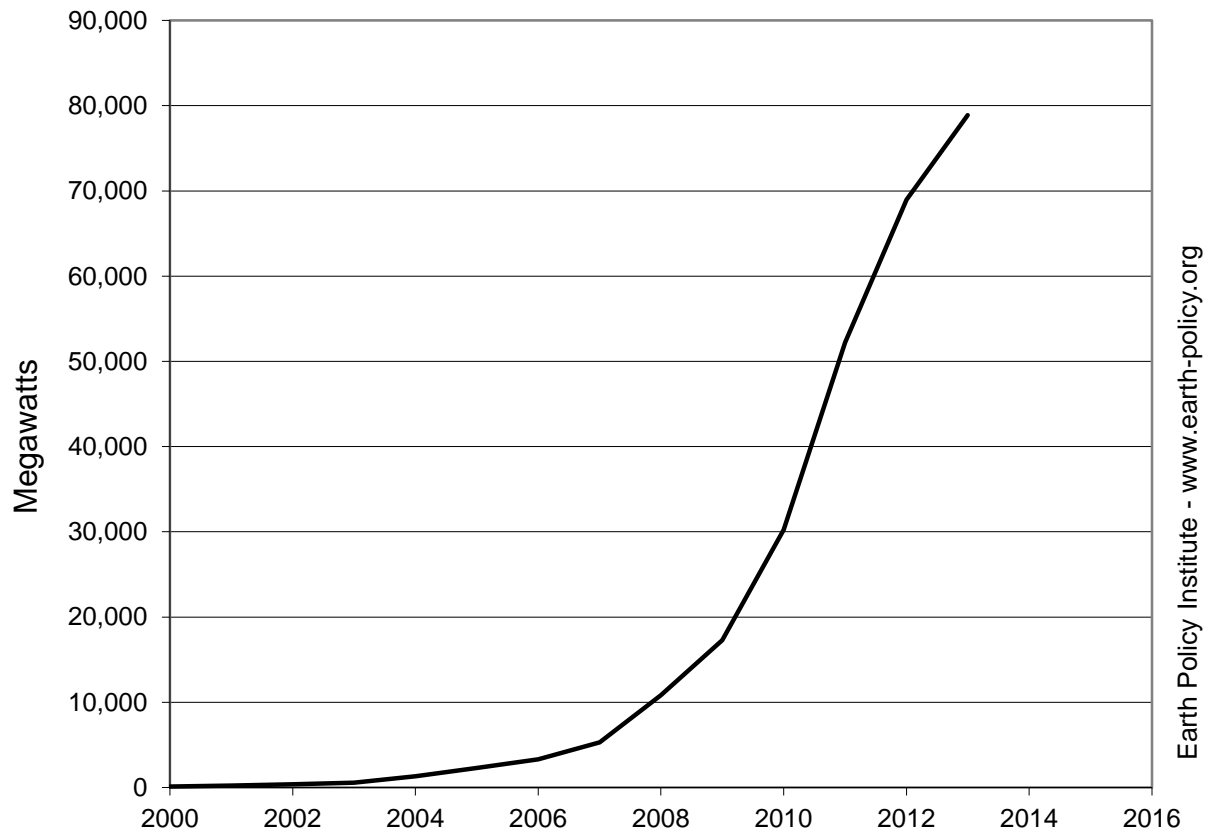
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Cumulative Installed Solar Photovoltaics Capacity in the European Union, 2000-2013

Year	Cumulative Installations Megawatts
2000	122
2001	244
2002	370
2003	567
2004	1,304
2005	2,308
2006	3,291
2007	5,308
2008	10,812
2009	17,298
2010	30,251
2011	52,229
2012	68,962
2013	78,896

Source: BP, *Statistical Review of World Energy June 2014* (London: 2014).

Cumulative Installed Solar Photovoltaics Capacity in the European Union, 2000-2013



Source: BP

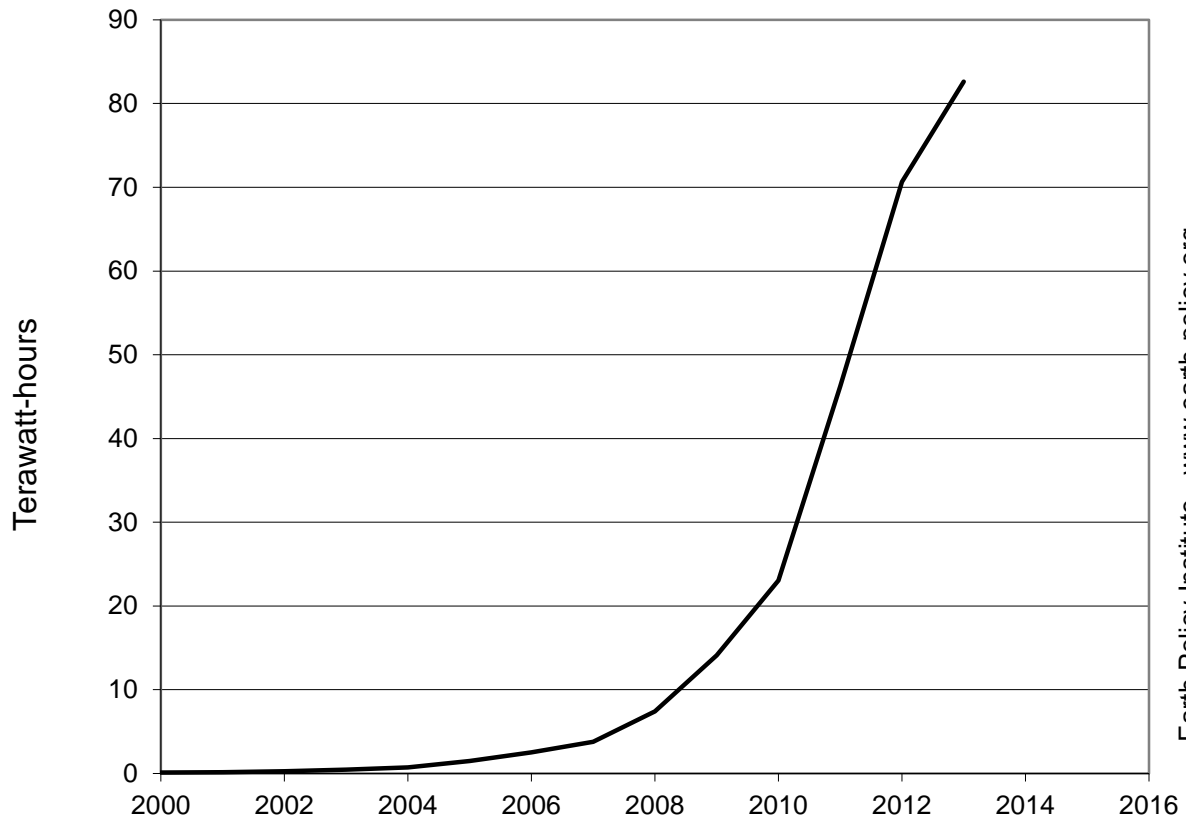
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Solar-generated Electricity in the European Union, 2000-2013

<u>Year</u>	<u>Generation</u> Terawatt-hours
2000	0.1
2001	0.2
2002	0.3
2003	0.4
2004	0.7
2005	1.5
2006	2.5
2007	3.8
2008	7.4
2009	14.1
2010	23.1
2011	46.2
2012	70.6
<u>2013</u>	<u>82.6</u>

Source: BP, *Statistical Review of World Energy June 2014* (London: 2014).

Solar-generated Electricity in the European Union, 2000-2013



Source: BP

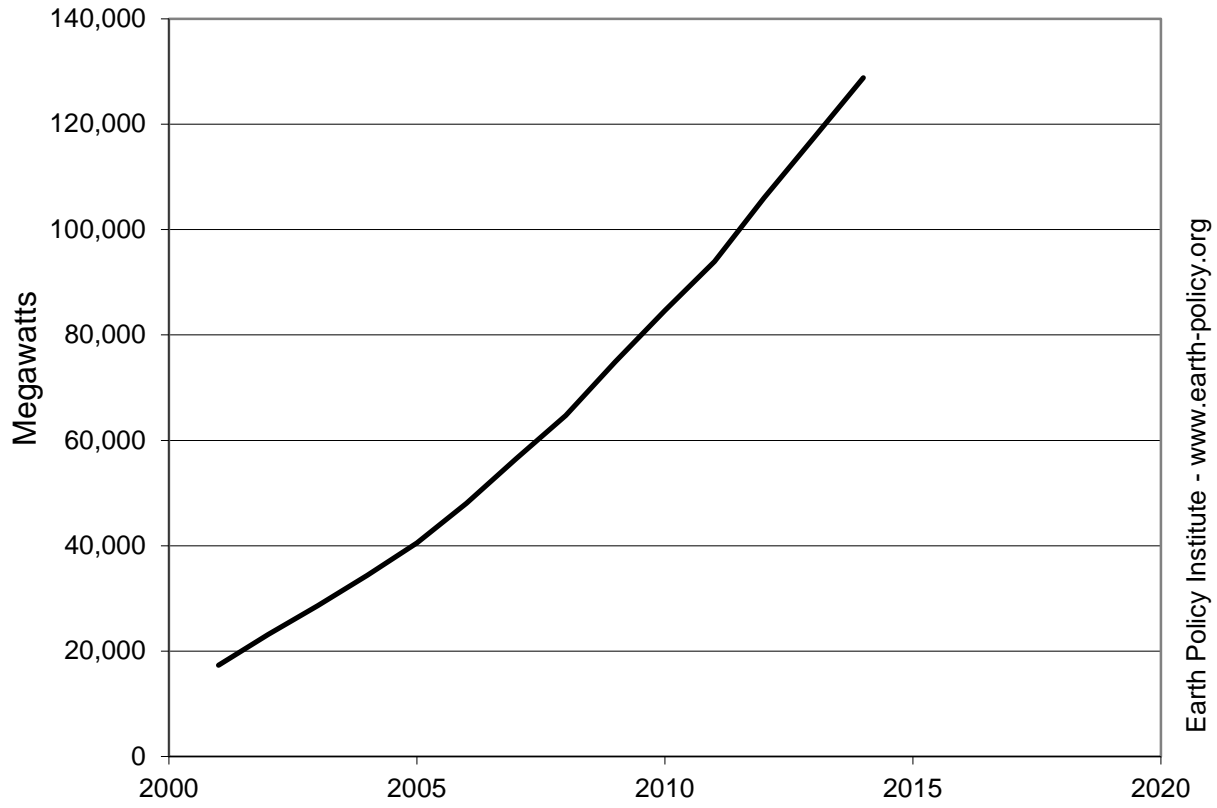
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Cumulative Installed Wind Power Capacity in the European Union, 2001-2014

Year	Cumulative Wind Power Capacity Megawatts
2001	17,315
2002	23,159
2003	28,598
2004	34,371
2005	40,511
2006	48,031
2007	56,517
2008	64,713
2009	74,919
2010	84,650
2011	93,957
2012	106,041
2013	117,384
2014	128,790

Source: Global Wind Energy Council, *Global Wind Report: Annual Market Update 2014* (Brussels: April 2015), p. 45.

Cumulative Installed Wind Power Capacity in the European Union, 2001-2014



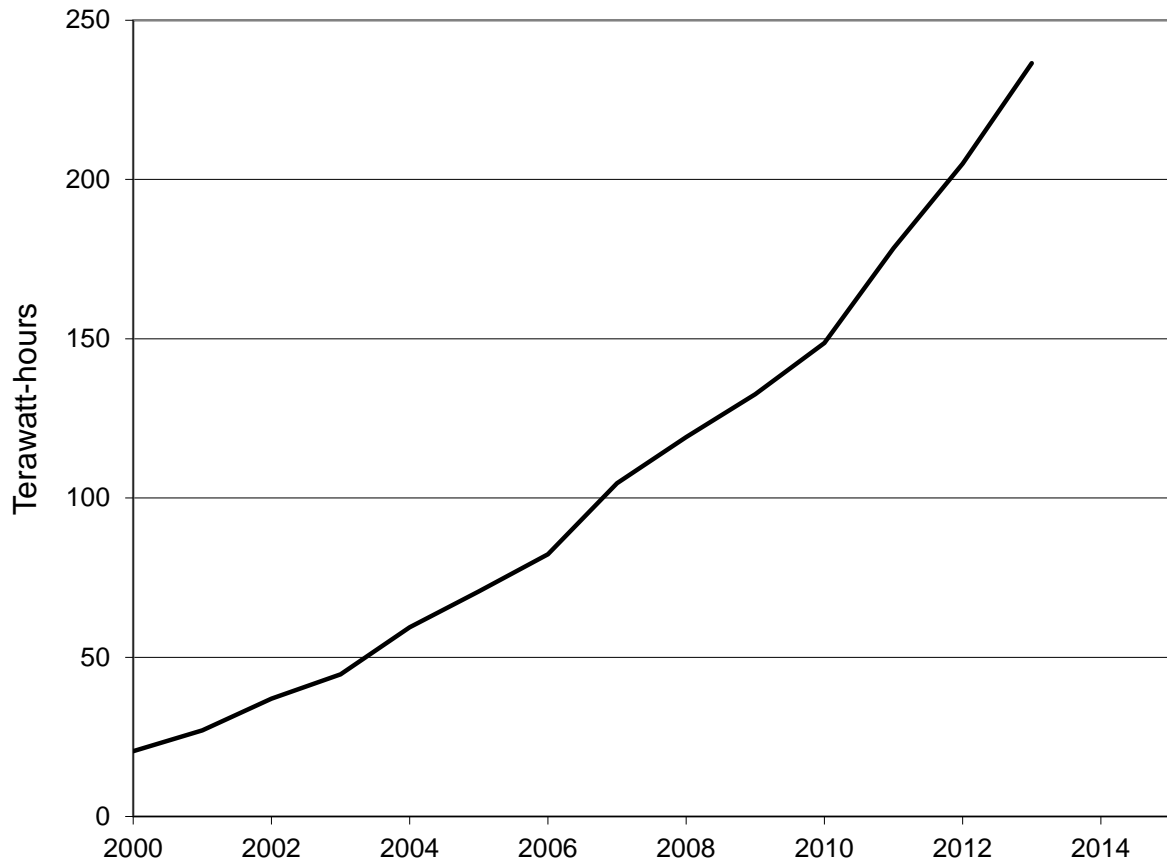
Source: GWEC

Wind-generated Electricity in the European Union, 2000-2013

Year	Wind-generated Electricity Terawatt-hours
2000	20
2001	27
2002	37
2003	45
2004	59
2005	71
2006	82
2007	105
2008	119
2009	133
2010	149
2011	178
2012	205
2013	236

Source: BP, *Statistical Review of World Energy June 2014* (London: 2014).

Wind-generated Electricity in the European Union, 2000-2013



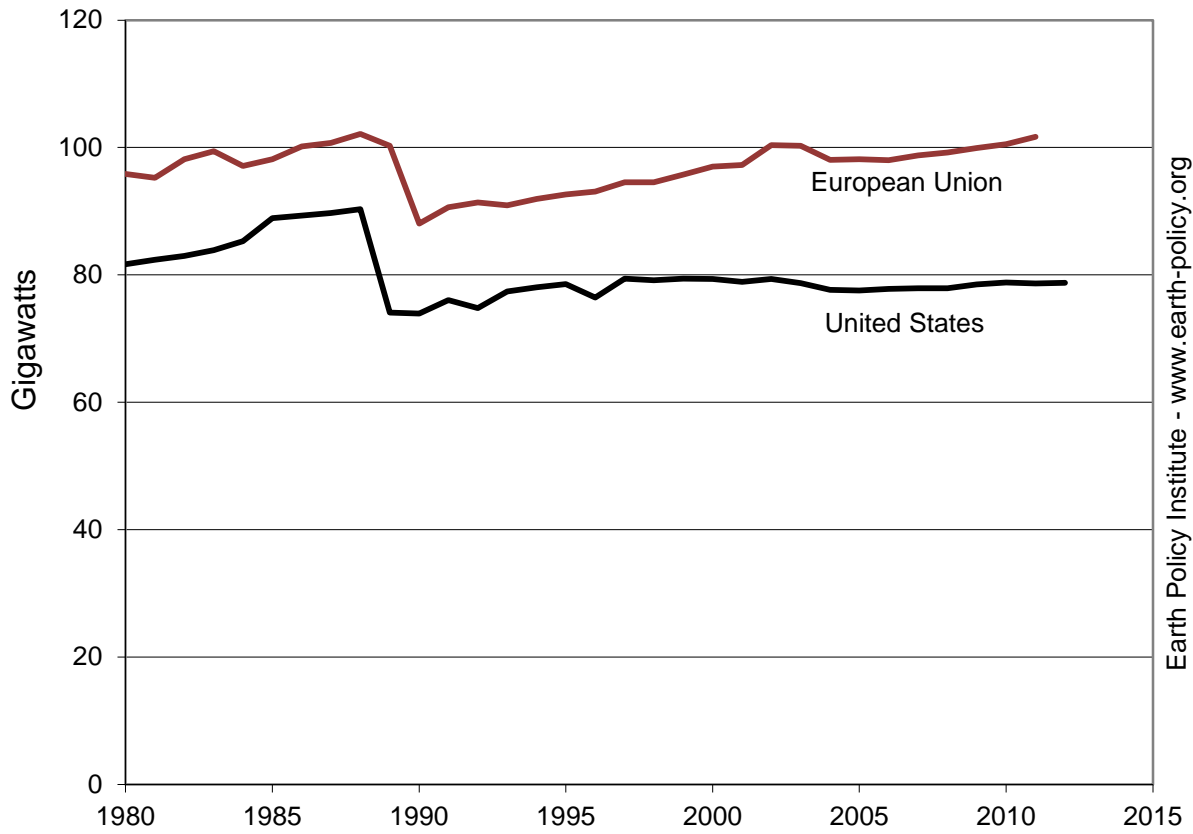
Source: BP

Installed Hydroelectric Generating Capacity in the European Union and the United States, 1980-2012

Year	European Union	United States
	Gigawatts	
1980	95.9	81.7
1981	95.2	82.4
1982	98.2	83.0
1983	99.4	83.9
1984	97.1	85.3
1985	98.1	88.9
1986	100.2	89.3
1987	100.7	89.7
1988	102.1	90.3
1989	100.3	74.1
1990	88.1	73.9
1991	90.6	76.0
1992	91.4	74.8
1993	90.9	77.4
1994	91.9	78.0
1995	92.7	78.6
1996	93.1	76.4
1997	94.5	79.4
1998	94.6	79.2
1999	95.7	79.4
2000	97.0	79.4
2001	97.3	78.9
2002	100.4	79.4
2003	100.3	78.7
2004	98.1	77.6
2005	98.2	77.5
2006	98.0	77.8
2007	98.8	77.9
2008	99.2	77.9
2009	99.9	78.5
2010	100.5	78.8
2011	101.7	78.7
2012	101.8	78.7

Source: Compiled by Earth Policy Institute from U.S. Department of Energy, Energy Information Administration, *International Energy Statistics*, electronic database, at www.eia.gov/countries/data.cfm, viewed 26 January 2015.

Installed Hydroelectric Generating Capacity in the European Union and the United States, 1980-2012



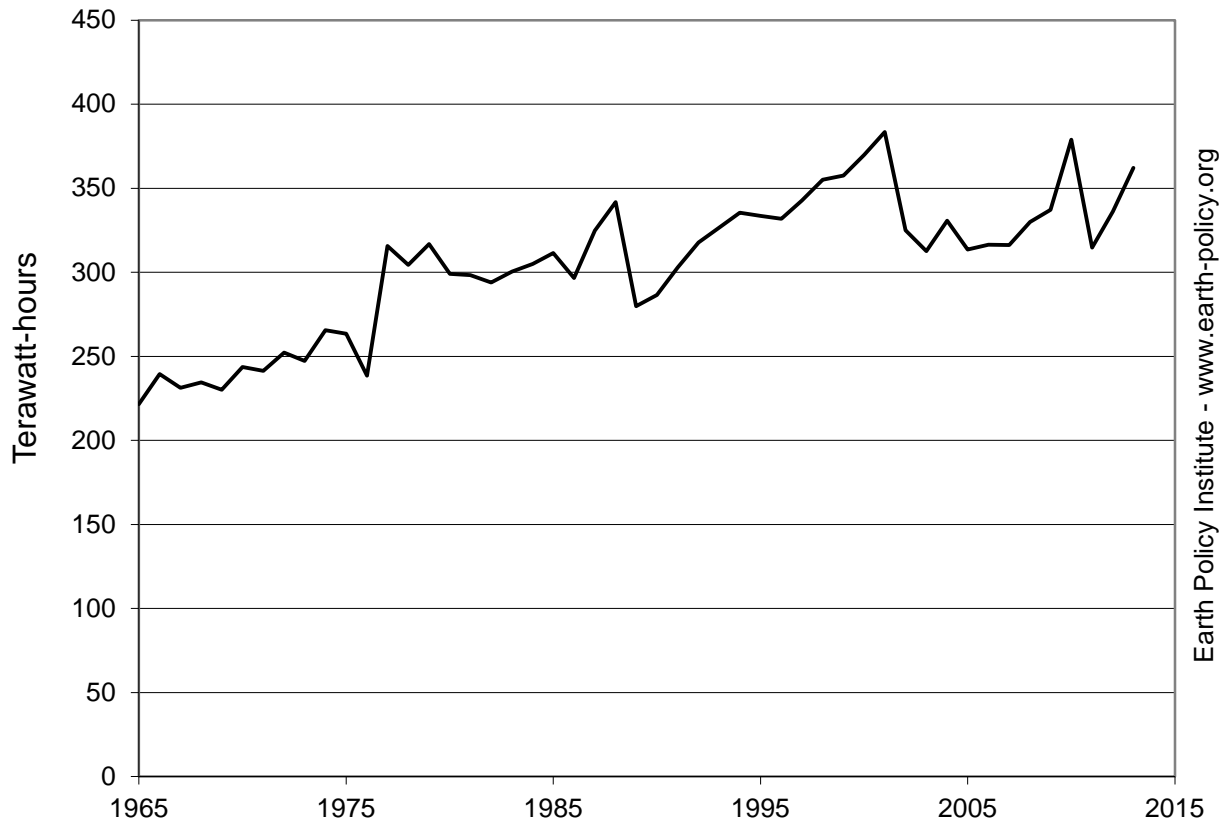
Source: EPI from EIA

Hydroelectric Generation in the European Union, 1965-2013

<u>Year</u>	<u>Generation</u> Terawatt-hours
1965	222
1966	239
1967	231
1968	235
1969	230
1970	244
1971	241
1972	252
1973	247
1974	266
1975	264
1976	239
1977	316
1978	304
1979	317
1980	299
1981	298
1982	294
1983	300
1984	305
1985	311
1986	297
1987	325
1988	342
1989	280
1990	286
1991	303
1992	318
1993	326
1994	335
1995	333
1996	332
1997	343
1998	355
1999	357
2000	370
2001	383
2002	325
2003	312
2004	331
2005	313
2006	316
2007	316
2008	330
2009	337
2010	379
2011	315
2012	336
2013	362

Source: Compiled by Earth Policy Institute from BP, *Statistical Review of World Energy June 2014* (London: 2014).

Hydroelectric Generation in the European Union, 1965-2013



Source: BP

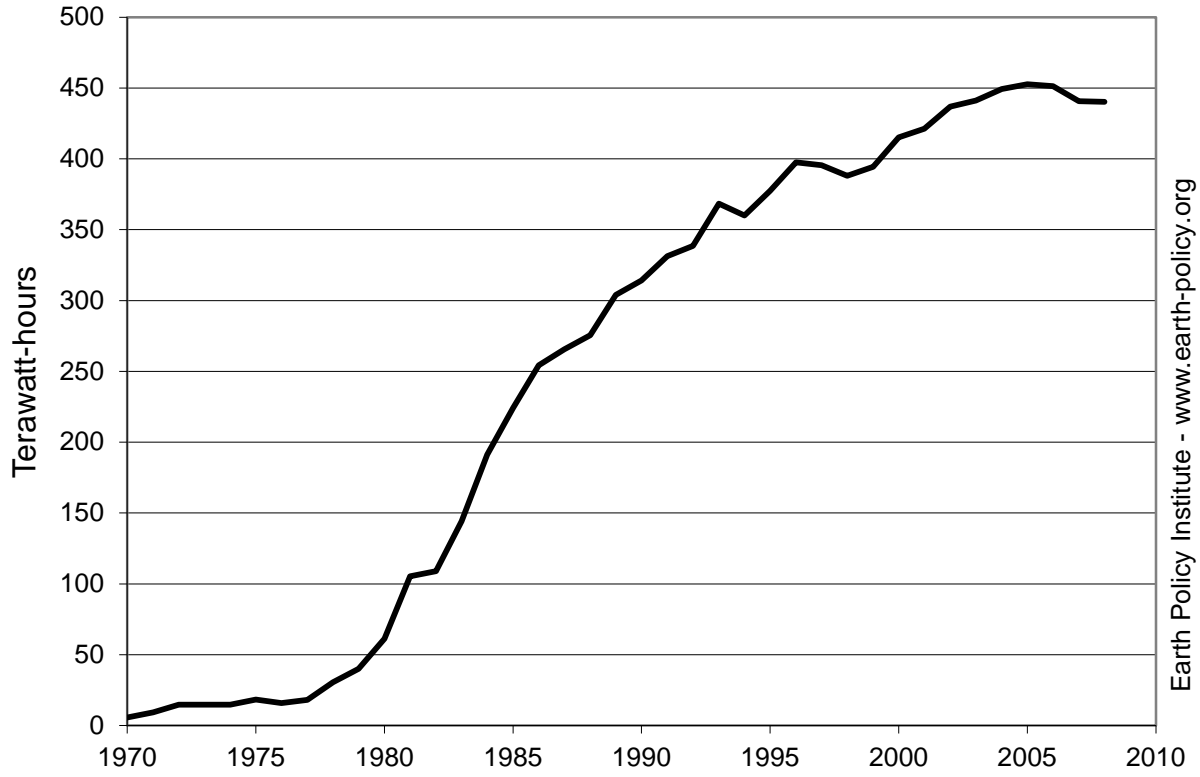
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Electricity Generation from Nuclear Power Plants in the European Union, 1965-2013

Year	Generation Terawatt-hours
1965	20
1966	26
1967	31
1968	35
1969	42
1970	43
1971	50
1972	64
1973	68
1974	80
1975	108
1976	128
1977	153
1978	173
1979	192
1980	225
1981	307
1982	337
1983	398
1984	504
1985	616
1986	670
1987	691
1988	748
1989	793
1990	790
1991	819
1992	827
1993	863
1994	859
1995	882
1996	927
1997	938
1998	930
1999	944
2000	946
2001	979
2002	991
2003	999
2004	1,012
2005	999
2006	991
2007	936
2008	939
2009	895
2010	917
2011	907
2012	883
2013	877

Source: BP, *Statistical Review of World Energy June 2014* (London: 2014).

Electricity Generation from Nuclear Power Plants in the European Union, 1965-2013



Source: BP

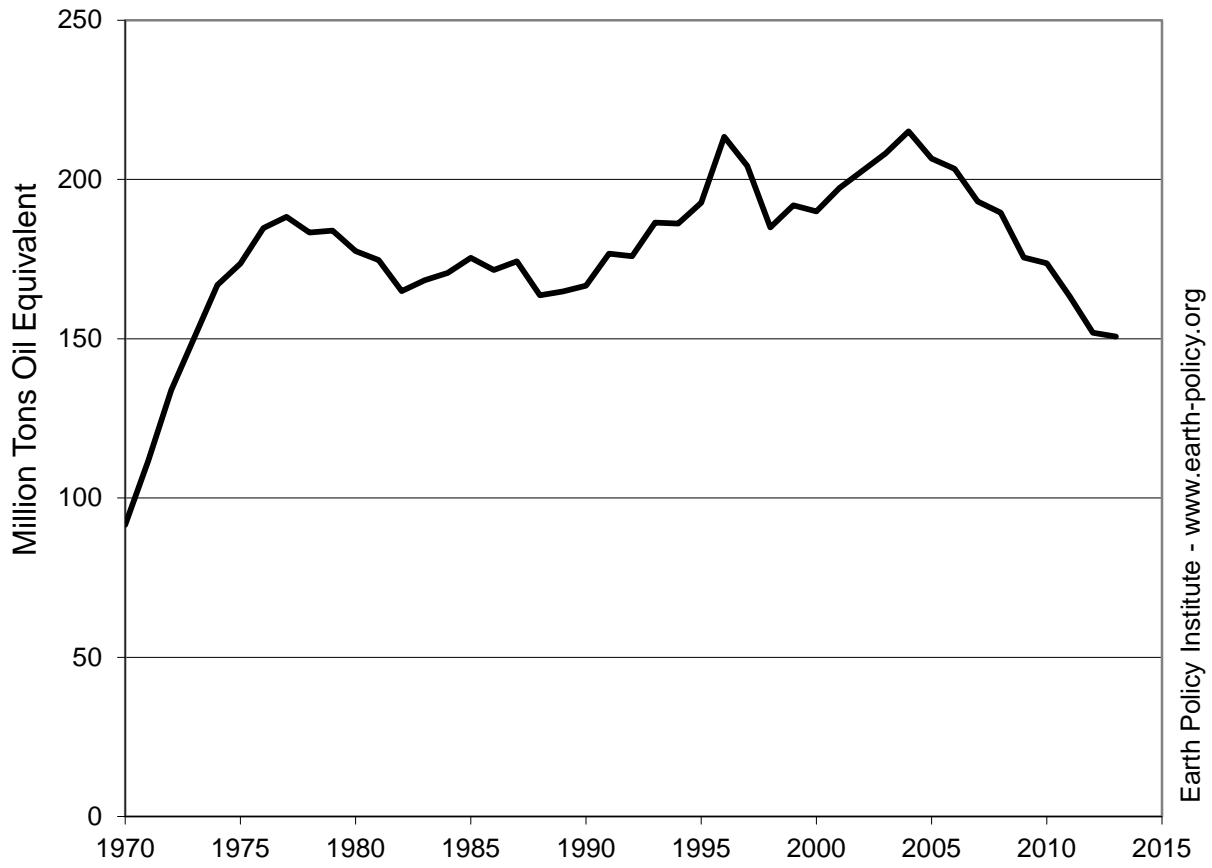
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Natural Gas Production in the European Union, 1970-2013

Year	Production
	Million Tons Oil Equivalent
1970	92
1971	112
1972	134
1973	150
1974	167
1975	174
1976	185
1977	188
1978	183
1979	184
1980	177
1981	175
1982	165
1983	168
1984	171
1985	175
1986	172
1987	174
1988	164
1989	165
1990	167
1991	177
1992	176
1993	186
1994	186
1995	193
1996	213
1997	204
1998	185
1999	192
2000	190
2001	197
2002	203
2003	208
2004	215
2005	207
2006	203
2007	193
2008	190
2009	175
2010	174
2011	163
2012	152
2013	151

Source: Compiled by Earth Policy Institute from BP, *Statistical Review of World Energy June 2014* (London: 2014).

Natural Gas Production in the European Union, 1970-2013



Source: BP

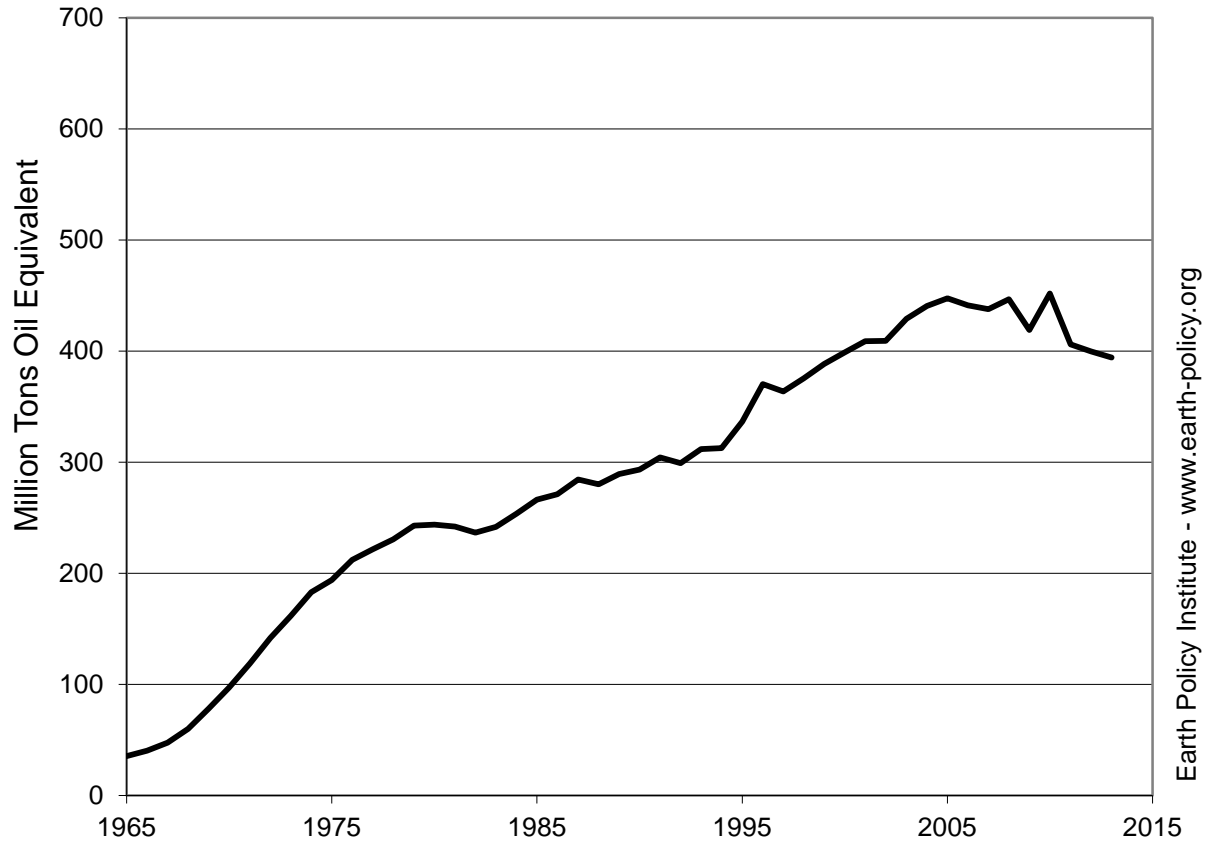
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Natural Gas Consumption in the European Union, 1965-2013

<u>Year</u>	<u>Consumption</u> Million Tons Oil Equivalent
1965	35
1966	40
1967	47
1968	60
1969	78
1970	97
1971	119
1972	142
1973	162
1974	183
1975	194
1976	212
1977	222
1978	231
1979	243
1980	244
1981	242
1982	237
1983	242
1984	254
1985	266
1986	271
1987	284
1988	280
1989	289
1990	293
1991	304
1992	299
1993	312
1994	313
1995	336
1996	370
1997	364
1998	375
1999	389
2000	399
2001	409
2002	409
2003	429
2004	441
2005	447
2006	441
2007	438
2008	447
2009	419
2010	452
2011	406
2012	400
2013	394

Source: Compiled by Earth Policy Institute from BP, *Statistical Review of World Energy June 2014* (London: 2014).

Natural Gas Consumption in the European Union, 1965-2013



Source: BP

Earth Policy Institute - www.earth-policy.org

Countries with Bike-Sharing Programs, 2015

Country	Number of Programs	Bike Fleet
China	274	858,000
France	39	43,030
Spain	127	27,670
United States	48	23,210
Germany	44	17,250
Italy	137	14,960
United Kingdom	13	12,330
Taiwan	6	11,380
South Korea	6	8,700
Mexico	3	7,490
Canada	7	7,190
Belgium	3	5,690
Poland	13	5,580
Netherlands	3	5,080
Austria	9	3,310
Russia	3	2,770
Sweden	3	2,710
Japan	11	2,650
Australia	2	2,600
Israel	1	2,000
Ireland	4	1,940
Norway	4	1,760
Brazil	11	1,660
Switzerland	27	1,630
Argentina	2	1,340
Hungary	4	1,210
Romania	4	1,140
Denmark	6	1,040
Chile	5	1,000
Portugal	6	920
Luxembourg	3	900
Turkey	5	900
Greece	12	740
Thailand	1	500
Cyprus	2	490
Iran	1	480
United Arab Emirates	4	430
Ecuador	1	430
Lithuania	1	300
Slovenia	1	300
Croatia	3	200
Kazakhstan	1	200
Latvia	2	200
Colombia	1	160
India	3	120
Georgia	1	120
Singapore	2	100
Azerbaijan	1	100
Indonesia	1	90
Uruguay	1	80
Albania	1	80
Serbia	1	50
Bulgaria	1	40
Czech Republic	1	20
Monaco	1	10
New Zealand	1	10

Source: Earth Policy Institute research, based on: communication with bike share program operators; media reports; Peter Midgley, Urban Transport Advisor, email to Janet Larsen, Earth Policy Institute, March 2013; Russell Meddin and Paul DeMaio, *The Bike-sharing World Map*, at bike-sharing.blogspot.com; Yang Tang, Haixiao Pan, and Kathy, Qiayin Lu, "The Evolution and Lessons from China Mainland Bike-sharing Systems," paper for the Transportation Research Board 92nd Annual Meeting, 15 November 2012, 22 pp.; and Susan A. Shaheen, Stacey Guzman, and Hua Zhang, "Bikesharing Across the Globe," in John Pucher and Ralph Buehler, eds., *City Cycling* (Cambridge, MA: MIT Press, 2012), pp. 183-210.

New Passenger Car Registrations and Bicycle Sales in Europe, 1997-2014

Year	Vehicle Registrations	Bicycle Sales
	Thousand	
1997	13,005	n.a.
1998	13,941	n.a.
1999	14,633	n.a.
2000	14,319	18,945
2001	14,402	17,745
2002	14,008	17,840
2003	13,843	20,206
2004	14,127	20,322
2005	14,112	20,912
2006	14,367	21,033
2007	14,364	21,344
2008	14,332	20,206
2009	14,158	19,582
2010	13,373	20,461
2011	13,148	20,039
2012	12,052	19,719
2013	11,873	19,780
2014	12,542	n.a.

Note: Vehicle registrations for 1997-2007 are for EU15. Vehicle registrations for 2008-2012 are for EU27.

Data for Cyprus and Malta not available.

EU15 = Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, UK.

EU25 = EU15 + the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia.

EU27 = EU25 + Bulgaria, Romania.

Source: Compiled by Earth Policy Institute from European Automobile Manufacturers' Association, at <http://www.acea.be/statistics/tag/category/by-country-registrations>, accessed 19 March 2015; and from Association of the European Bicycle Industry (COLIBI) and Association of the European Two-Wheeler Parts' and Accessories' Industry (COLIPED), *European Bicycle Market 2014 Edition* (Brussels: 2014).

New Passenger Car Registrations in Europe, 1997-2014

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
	Thousand																	
Austria	275	296	314	309	294	279	300	311	308	309	298	294	319	329	356	336	319	303
Belgium	396	452	490	515	489	468	459	485	480	526	525	536	476	547	572	487	486	483
Bulgaria	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	32	41	44	25	16	19	21	21	21
Czech Republic	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	153	144	152	157	174	183	168	170	174	174	165	192
Denmark	152	163	144	113	96	112	96	121	147	154	159	150	112	154	170	171	182	189
Estonia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	16	16	20	25	31	25	10	10	17	19	20	21
Finland	105	126	136	135	109	117	147	142	148	146	125	140	88	107	121	111	103	106
France	1,713	1,944	2,148	2,134	2,255	2,145	2,009	2,014	2,068	2,001	2,065	2,050	2,302	2,252	2,204	1,899	1,790	1,796
Germany	3,528	3,736	3,802	3,378	3,342	3,253	3,237	3,267	3,319	3,468	3,148	3,090	3,807	2,916	3,174	3,083	2,952	3,037
Greece	160	180	262	290	280	268	257	290	270	268	280	267	220	142	98	58	59	71
Hungary	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	208	207	199	188	172	153	60	43	45	53	56	67
Ireland	137	146	174	231	165	156	145	154	172	178	186	152	57	88	90	80	74	96
Italy	2,404	2,379	2,338	2,423	2,413	2,280	2,247	2,265	2,237	2,326	2,493	2,162	2,159	1,962	1,750	1,403	1,305	1,360
Latvia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	9	11	17	26	33	20	5	6	11	11	11	12
Lithuania	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	8	9	10	14	22	22	8	8	13	12	12	14
Luxembourg	31	36	40	42	43	43	44	48	49	51	51	52	47	50	50	50	47	50
Netherlands	478	543	611	598	530	511	489	484	465	484	506	500	387	483	556	502	417	388
Poland	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	358	318	236	239	293	320	320	333	298	271	289	325
Portugal	214	248	273	258	255	226	190	198	206	195	202	213	161	223	153	95	106	143
Romania	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	256	316	271	130	106	95	72	58	70
Slovakia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	60	57	57	59	60	70	75	64	68	69	66	72
Slovenia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	60	62	59	60	69	72	58	61	60	50	52	54
Spain	1,016	1,193	1,406	1,381	1,426	1,332	1,382	1,517	1,529	1,635	1,615	1,161	953	982	808	700	723	855
Sweden	225	253	295	291	247	255	261	264	274	283	307	254	213	290	305	280	270	304
United Kingdom	2,171	2,247	2,198	2,222	2,459	2,564	2,579	2,567	2,440	2,345	2,404	2,132	1,995	2,031	1,941	2,045	2,265	2,476
Iceland	10	14	15	14	7	7	10	12	18	17	16	9	2	3	5	8	7	10
Norway	128	118	101	97	92	89	90	116	110	109	129	111	99	128	138	138	142	144
Switzerland	297	273	317	317	317	295	270	269	265	269	285	289	266	292	317	326	306	300

Notes: Data for Romania refers to sales. Data for Cyprus and Malta not available. "n.a." indicates data not available.

Source: Compiled by Earth Policy Institute from European Automobile Manufacturers' Association, at www.acea.be/statistics/tag/category/by-country-registrations, accessed 19 March 2015.

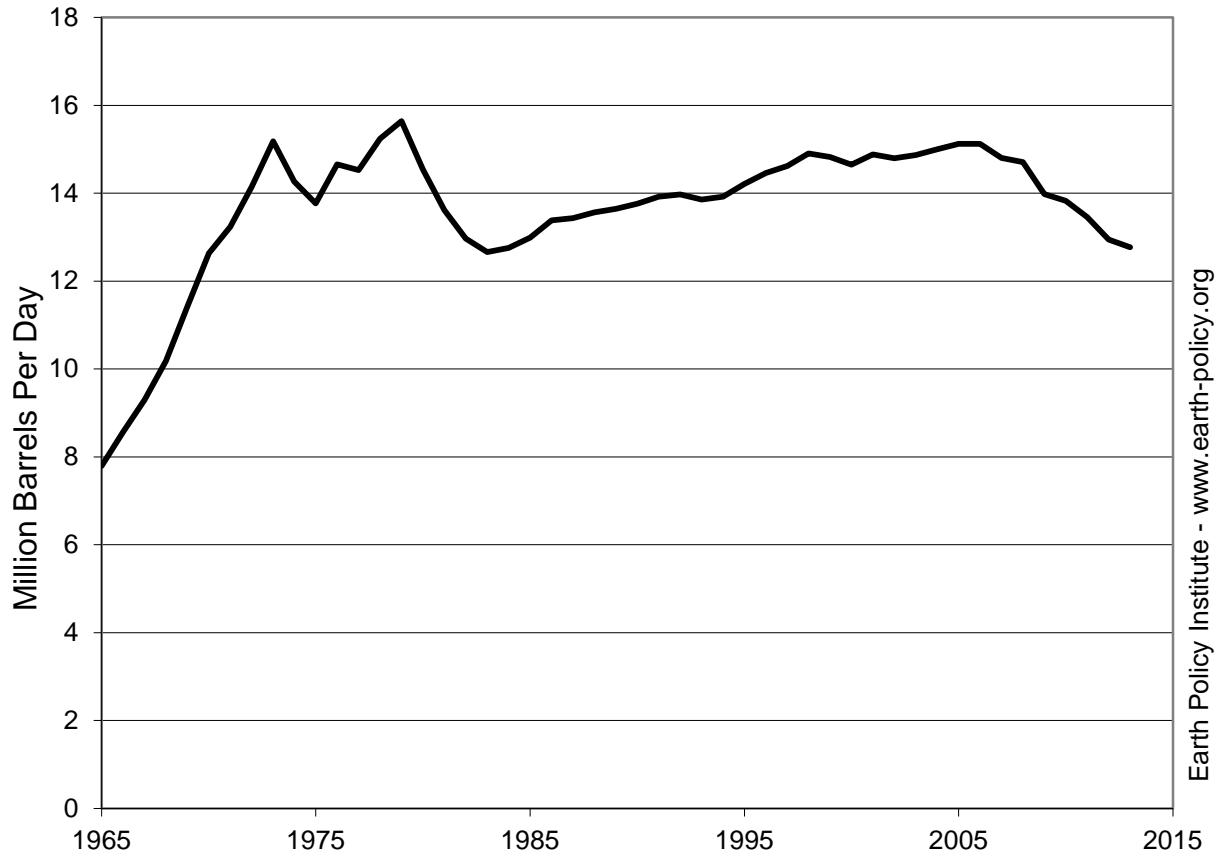
Oil Consumption in the European Union, 1965-2013

Year	Consumption*
	Million Barrels Per Day
1965	7.8
1966	8.6
1967	9.3
1968	10.2
1969	11.4
1970	12.6
1971	13.2
1972	14.1
1973	15.2
1974	14.3
1975	13.8
1976	14.7
1977	14.5
1978	15.2
1979	15.6
1980	14.5
1981	13.6
1982	13.0
1983	12.7
1984	12.8
1985	13.0
1986	13.4
1987	13.4
1988	13.6
1989	13.6
1990	13.8
1991	13.9
1992	14.0
1993	13.9
1994	13.9
1995	14.2
1996	14.5
1997	14.6
1998	14.9
1999	14.8
2000	14.6
2001	14.9
2002	14.8
2003	14.9
2004	15.0
2005	15.1
2006	15.1
2007	14.8
2008	14.7
2009	14.0
2010	13.8
2011	13.5
2012	12.9
2013	12.8

* Includes ethanol and biodiesel.

Source: BP, *Statistical Review of World Energy June 2014* (London: 2014).

Oil Consumption in the European Union, 1965-2013



Source: BP

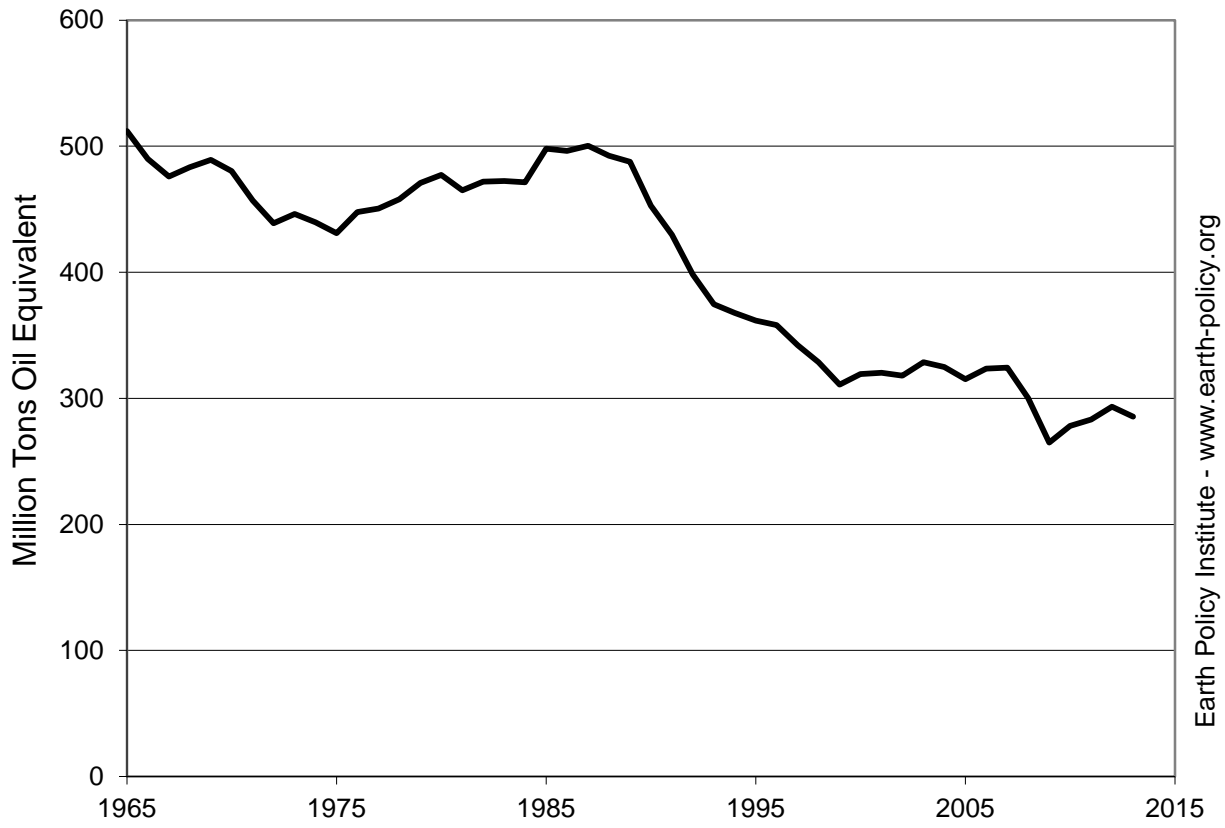
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Coal Consumption in the European Union, 1965-2013

Year	Consumption	
	Quadrillion Btu	Million Tons Oil Equivalent
1965	20.3	512
1966	19.4	490
1967	18.9	476
1968	19.2	483
1969	19.4	489
1970	19.1	480
1971	18.1	457
1972	17.4	439
1973	17.7	446
1974	17.4	440
1975	17.1	431
1976	17.8	448
1977	17.9	450
1978	18.2	458
1979	18.7	471
1980	18.9	477
1981	18.5	465
1982	18.7	472
1983	18.7	472
1984	18.7	471
1985	19.8	498
1986	19.7	496
1987	19.9	500
1988	19.5	492
1989	19.4	488
1990	18.0	453
1991	17.1	430
1992	15.8	398
1993	14.9	375
1994	14.6	368
1995	14.3	362
1996	14.2	358
1997	13.6	342
1998	13.0	329
1999	12.3	311
2000	12.7	319
2001	12.7	320
2002	12.6	318
2003	13.0	329
2004	12.9	325
2005	12.5	315
2006	12.8	324
2007	12.9	324
2008	11.9	300
2009	10.5	265
2010	11.0	278
2011	11.2	283
2012	11.6	293
2013	11.3	285

Source: Compiled by Earth Policy Institute from BP, *Statistical Review of World Energy June 2014* (London: 2014); million tons oil equivalent converted to BTU using conversion factor from International Energy Agency, "Unit Converter," at www.iea.org/stats/unit.asp.

Coal Consumption in the European Union, 1965-2013



Source: BP

Earth Policy Institute - www.earth-policy.org