World on the Edge - Transportation Data

World Bicycle and Passenger Car Production, 1950-2007
GRAPH: World Bicycle and Passenger Car Production, 1950-2007
Bicycle Trips as Share of Total Trips in Select Countries, 1974-2009
U.S. Vehicle Sales, 1931- 2009
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A full listing of data for the entire book is on-line at:
http://www.earth-policy.org/books/wote/wote_data

This is part of a supporting dataset for Lester R. Brown, **World On the Edge: How to Prevent Environmental and Economic Collapse** (New York: W.W. Norton & Company, 2010). For more information and a free download of the book, see Earth Policy Institute on-line at www.earth-policy.org.

World Bicycle and Passenger Car Production, 1950-2007

Year	Bicycles[1]	Passenger Cars[2]
	Million	
1950	11	8
1951	11	7
1952	12	6
1953	13	8
1954	14	8
1955	15	11
1956	16	9
1957	17	10
1958	18	9
1959	19	11
1960	20	13
1961	20	11
1962	20	14
1963	20	16
1964	21	17
1965	21	19
1966	22	19
1967	23	19
1968	24	22
1969	25	23
1970	36	22
1971	39	26
1972	46	28
1973	52	30
1974	52	26
1975	43	25
1976	47	29
1977	49	31
1978	51	31
1979	54	31
1980	62	29
1981	65	27
1982	69	27
1983	74	30
1984	76	31
1985	79	32
1986	84	33
1987	98	33
1988	105	34
1989	95	36
1990	91	36
1991	96	35
1992	99	35
1993	99	34
1994	102	36
1995	104	36
1996	97	37
1997	90	38
1998	87	38
1999	96	40
2000	107	41
2001	99	40
2002	111	41
2003	120	41
2004	127	42
2005	123	44
2006	126	47
2007	130	49

Notes: [1] Bicycle data include electric bicycles. [2] Car data do not include commercial vehicles.

Source: Compiled by Earth Policy Institute with bicycle data compiled by Gary Gardner for "Bicycle Production Reaches 30 Million Units," in Worldwatch Institute, *Vital Signs 2009* (Washington, DC: 2009), pp. 53-54; car production for 1950-1970 from Worldwatch Institute, *Signposts 2002*, CD-ROM (Washington, DC: 2004); car production for 1971-2007 from Ward's Automotive Group, *World Motor Vehicle Data 2008* (Southfield, MI: 2008), pp. 239–42.

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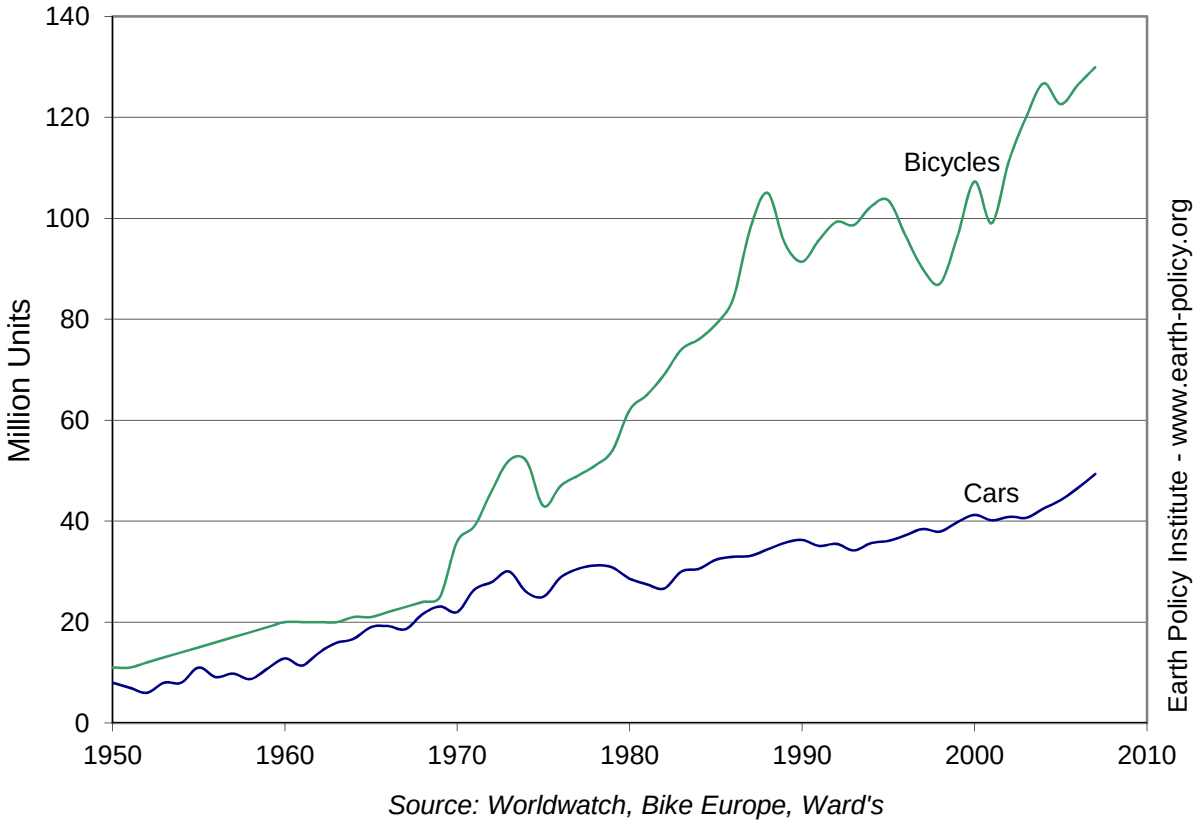
World Bicycle and Passenger Car Production, 1950-2007



Source: Worldwatch, Bike Europe, Ward's

Bicycle Trips as Share of Total Trips in Select Countries, 1974-2009

Year	United States	United Kingdom	France	Germany	Denmark	Netherlands
			Percent			
1974-1977	0.7	3	4	9	17	n/a
1981-1985	0.8	2	4	11	20	28
1989-1995	0.9	2	3	12	20	28
2000-2002	0.9	2	n/a	9	20	24
2008-2009	1.0	2	3	10	18	25

Note: Each datum is associated a single year within the range given, but which year varies by country. n/a indicates where data are unavailable.

Source: John Pucher and Ralph Buehler, "Walking and Cycling for Healthy Cities," *Built Environment*, vol. 36, no. 4 (December 2010), pp. 391-414.

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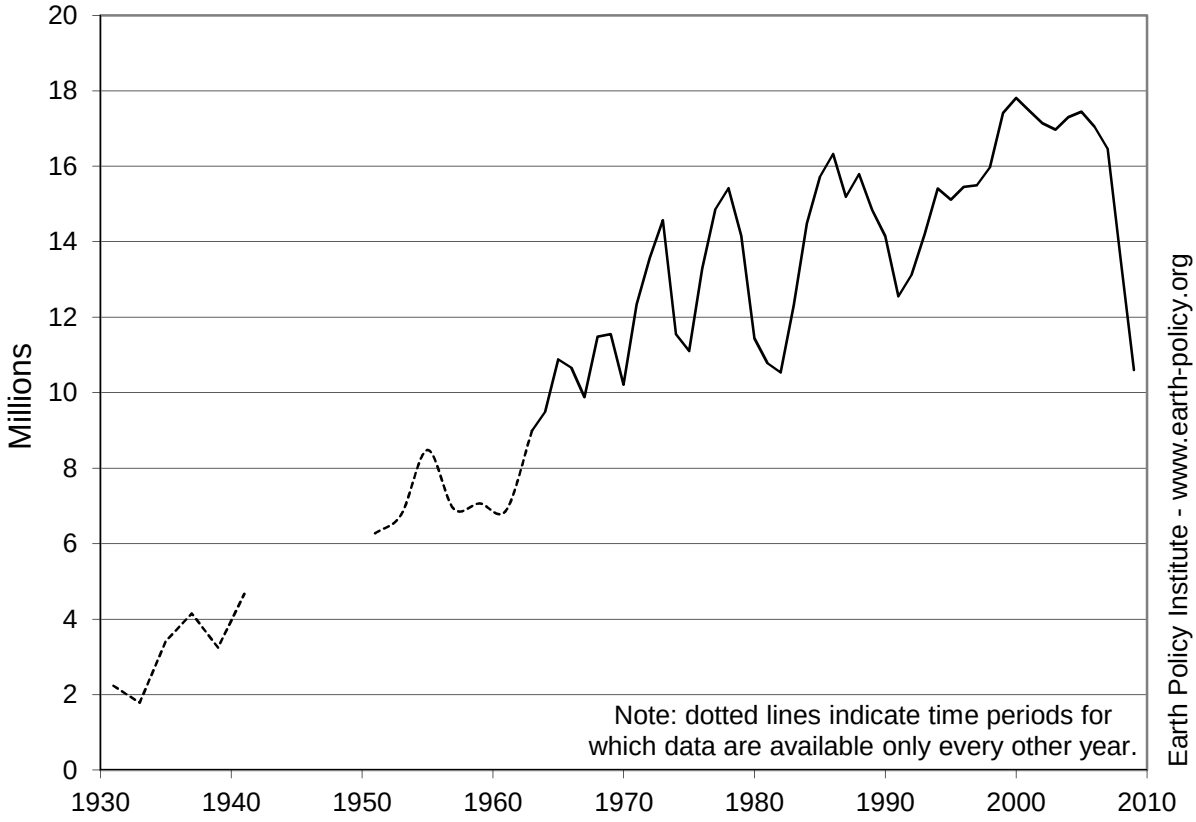
U.S. Vehicle Sales, 1931-2009

Year	Total
	Millions
1931	2.2
1933	1.8
1935	3.4
1937	4.2
1939	3.2
1941	4.7
…	…
1951	6.3
1953	6.8
1955	8.5
1957	6.9
1959	7.1
1961	6.9
1963	9.0
1964	9.5
1965	10.9
1966	10.7
1967	9.9
1968	11.5
1969	11.6
1970	10.2
1971	12.3
1972	13.6
1973	14.6
1974	11.5
1975	11.1
1976	13.3
1977	14.9
1978	15.4
1979	14.2
1980	11.4
1981	10.8
1982	10.5
1983	12.3
1984	14.5
1985	15.7
1986	16.3
1987	15.2
1988	15.8
1989	14.8
1990	14.1
1991	12.6
1992	13.1
1993	14.2
1994	15.4
1995	15.1
1996	15.5
1997	15.5
1998	16.0
1999	17.4
2000	17.8
2001	17.5
2002	17.1
2003	17.0
2004	17.3
2005	17.4
2006	17.0
2007	16.5
2008	13.5
2009	10.6

Note: 1942-1950 data unavailable.

Source: Ward's Automotive Group, "U.S. Car and Truck Sales, 1931-2009," at http://wardsauto.com/keydata, updated 2010.

U.S. Vehicle Sales, 1931-2009



Source: EPI; Ward's

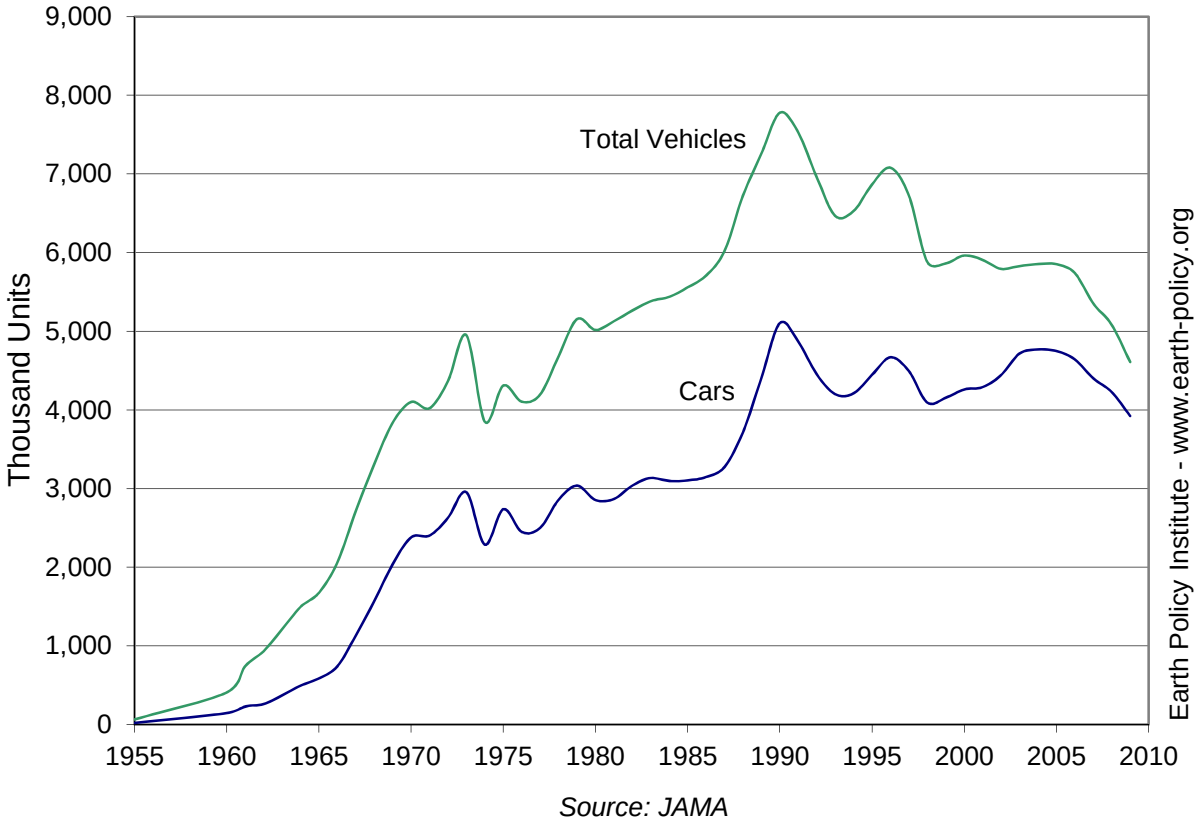
Passenger Car and Total Vehicle Sales in Japan, 1955-2009

Year	Passenger Cars	Total Vehicles[1]
	Thousand Units	
1955	20	65
1960	145	408
1961	229	743
1962	259	933
1963	371	1,211
1964	494	1,494
1965	586	1,675
1966	740	2,060
1967	1,131	2,715
1968	1,569	3,309
1969	2,037	3,835
1970	2,379	4,100
1971	2,403	4,021
1972	2,627	4,367
1973	2,953	4,949
1974	2,287	3,850
1975	2,738	4,309
1976	2,449	4,104
1977	2,500	4,194
1978	2,857	4,682
1979	3,037	5,154
1980	2,854	5,016
1981	2,867	5,127
1982	3,038	5,261
1983	3,136	5,382
1984	3,096	5,437
1985	3,104	5,557
1986	3,146	5,708
1987	3,275	6,018
1988	3,717	6,721
1989	4,404	7,257
1990	5,103	7,777
1991	4,868	7,525
1992	4,454	6,959
1993	4,199	6,467
1994	4,210	6,527
1995	4,444	6,865
1996	4,669	7,078
1997	4,492	6,725
1998	4,093	5,879
1999	4,154	5,861
2000	4,260	5,963
2001	4,290	5,906
2002	4,441	5,792
2003	4,716	5,828
2004	4,768	5,853
2005	4,748	5,852
2006	4,642	5,740
2007	4,400	5,354
2008	4,228	5,082
2009	3,924	4,609

[1] Total Vehicles include cars, trucks, and buses.

Source: Japan Automobile Manufacturers Association, Inc. (JAMA), *Motor Vehicle Statistics of Japan 2010* (Tokyo: 6 September 2010), p. 8.

Passenger Car and Total Vehicle Sales in Japan, 1955-2009



Source: JAMA

U.S. Vehicle Scrappage and Sales, 2000-2009

Year	Total Vehicles in Use	New Vehicle Sales	Total Scrappage
		Millions	
2000	213.3	17.8	
2001	216.7	17.5	14.1
2002	221.0	17.1	12.8
2003	226.1	17.0	11.9
2004	231.4	17.3	12.0
2005	237.7	17.4	11.1
2006	244.6	17.0	10.1
2007	248.7	16.5	12.4
2008	250.2	13.5	12.0
2009	248.5	10.6	12.4

Source: Compiled by Earth Policy Institute with total vehicles in use from Ward's Automotive Group, "Vehicles in Operation by Country," tables from Paul Zajac and Lisa Williamson, e-mails to Earth Policy Institute, 3 June 2009, 9 October 2009, and 24 September 2010; and with new vehicle sales from Ward's Automotive Group, "U.S. Car and Truck Sales, 1931-2009," at http://wardsauto.com/keydata, updated 2010.

This is part of a supporting dataset for Lester R. Brown, **World On the Edge: How to Prevent Environmental and Economic Collapse** (New York: W.W. Norton & Company, 2010). For more information and a free download of the book, see Earth Policy Institute on-line at www.earth-policy.org.

Vehicles in Operation in the United States, 2000-2009

Year	Cars	Commercial Vehicles	Total
		Million Vehicles	
2000	127.7	85.6	213.3
2001	128.7	88.0	216.7
2002	129.9	91.1	221.0
2003	130.8	95.3	226.1
2004	132.8	98.6	231.4
2005	132.9	104.8	237.7
2006	135.0	109.6	244.6
2007	135.2	113.5	248.7
2008	135.9	114.4	250.2
2009	132.4	116.0	248.5

Source: Compiled by Earth Policy Institute from Ward's Automotive Group, "Vehicles in Operation by Country," tables from Paul Zajac and Lisa Williamson, e-mails to Earth Policy Institute, 3 June 2009, 9 October 2009, and 24 September 2010.

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Vehicles in Operation in the World, 2000-2009

Year	Cars	Commercial Vehicles	Total
		Million Vehicles	
2000	549.3	201.6	750.8
2001	562.4	207.6	769.9
2002	576.6	211.3	787.9
2003	590.0	224.3	814.3
2004	603.8	234.3	838.1
2005	618.0	246.0	864.0
2006	630.5	256.6	887.1
2007	645.7	265.6	911.3
2008	667.6	273.1	940.8
2009	681.2	284.1	965.3

Source: Compiled by Earth Policy Institute from Ward's Automotive Group, "Vehicles in Operation by Country," tables from Paul Zajac and Lisa Williamson, e-mails to Earth Policy Institute, 3 June 2009, 9 October 2009, and 24 September 2010.

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Motor Gasoline Consumption, 2007

Country	Total Final Consumption
	Billion Gallons
United States	116.7
China	16.9
Japan	13.4
Mexico	9.7
Canada	9.3
Russia	8.9
Germany	6.4
United Kingdon	5.4
Iran	5.3
Saudi Arabia	4.6
Australia	4.3
Indonesia	4.3
Brazil	4.2
Italy	3.8
Venezuela	3.5
India	3.2
France	2.9
South Africa	2.6
Malaysia	2.5
South Korea	2.3
Taiwan*	2.2
Spain	2.1
Nigeria	1.9
Thailand	1.6
Iraq	1.2

*Note: Value for Taiwan is estimate based on petroleum

Source: Compiled by Earth Policy Institute from International Energy Agency, “Oil by Country/Region,” at www.iea.org/stats/prodresult.asp?PRODUCT=Oil, viewed 23 September 2010; Taiwan from Gerhard Metschies, “Pain at the Pump,” *Foreign Policy* , July/August 2007 and U.S. Department of Energy, Energy Information Administration, “Taiwan Energy Profile,” at www.eia.doe.gov/country/country_energy_data.cfm?fips=TW , updated 14 July 2010.

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The Real Price of Gasoline, 2007 Update

Cost	Lower Bound	Upper Bound	Lower Bound	Upper Bound
	Billion Nominal Dollars		Billion 2000 Dollars	
Climate Change	3.4	30.9	3.2	29.0
Supply and Protection Costs	78.2	158.4	73.5	148.9
2005 Energy Policy Act Subsidies	6.0	6.0	5.3	5.3
Depletion Allowance	0.8	1.0	0.8	1.0
Fuel Production Tax Credit	0.8	0.9	0.8	0.9
Expensing E&D Costs	0.2	0.3	0.2	0.3
Enhanced Oil Recovery Tax Credit	0.0	0.1	0.0	0.1
Foreign Tax Credit	1.1	3.4	1.2	3.6
Deferral of Foreign Income	0.2	0.3	0.2	0.3
Accelerated Depletion Allowance	1.0	4.5	1.0	4.7
Other Tax Credit	0.1	0.1	0.1	0.1
State and Local Taxes	4.9	5.1	5.2	5.4
Government Spending Subsidies	38.0	114.6	39.8	120.1
Air Pollution	29.3	542.4	30.7	568.5
Agricultural Crop Losses	2.1	4.2	2.2	4.4
Loss of Visibility	6.1	44.5	6.4	46.6
Damage to Buildings	1.2	9.6	1.3	10.1
Oil Spills	2.2	2.2	2.3	2.3
De-Icing and Runoff	2.0	5.2	2.1	5.4
Impervious Area Effect	4.2	29.4	4.4	30.8
Noise Pollution	6.0	12.0	6.3	12.6
Disposal of Cars	4.4	4.4	4.6	4.6
Social Cost of Sprawl	163.7	245.5	171.6	257.3
Barrier Effect of Motor Vehicles	11.7	23.4	12.3	24.5
Other Costs	191.4	474.1	200.6	496.9
Oil Costs (incl. supply protection, subsidies, government spending)	131.3	294.7	128.2	290.7
Gasoline Costs (climate change, health/environmental effects, social costs)	427.7	1,427.8	447.9	1,493.0
2006 Oil Consumption:	233 billion gallons			
2006 Gasoline Consumption:	104 billion gallons			
Total Costs per Gallon:	4.68	14.99	4.86	15.60
Average Indirect Costs per Gallon:	**$10.23 in 2000 dollars = $11.92 in 2006 dollars**			

Source: Compiled by Earth Policy Institute using International Center for Technology Assessment (ICTA), *The Real Price of Gasoline* , Report No. 3 (Washington, DC: 1998), p. 34; ICTA, *Gasoline Cost Externalities Associated with Global Climate Change: An Update to CTA's Real Price of Gasoline Report* (Washington, DC: September 2004); ICTA, *Gasoline Cost Externalities: Security and Protection Services: An Update to CTA's Real Price of Gasoline Report* (Washington, DC: January 2005); Terry Tamminen, *Lives Per Gallon: The True Cost of Our Oil Addiction* (Washington, DC: Island Press, 2006), p. 60; with price deflators from Bureau for Economic Analysis, "Table 3 - Price Indices for Gross Domestic Product and Gross Domestic Purchases," *GDP and Other Major Series, 1929-2007* (Washington, DC: August 2007); oil consumption from BP, *BP Statistical Review of World Energy* (London: June 2007); and gasoline consumption from Energy Information Administration, "Total Crude Oil and Petroleum Products," at tonto.eia.doe.gov/dnav/pet/pet_cons_psup_dc_nus_mbbl_a.htm, updated 26 November 2007.

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Retail Gasoline Prices by Country: Subsidies and Taxation, 2008

Subsidy Level	Country	Price of Gasoline
		U.S. Dollars / Gallon
Very High Subsidies		
	Venezuela	0.08
	Iran	0.38
	Libya	0.53
	Saudi Arabia	0.61
	Bahrain	0.79
	Turkmenistan	0.83
	Qatar	0.83
	Kuwait	0.91
Subsidies		
	Yemen	1.14
	Oman	1.17
	Algeria	1.29
	Trinidad and Tobago	1.36
	Brunei	1.44
	Burma (Myanmar)	1.63
	United Arab Emirates	1.70
	Egypt	1.85
	Indonesia	1.89
	Ecuador	1.93
	Angola	2.01
	Malaysia	2.01
Taxation		
	United States	2.12
	Nigeria	2.23
	Jordan	2.31
	Taiwan	2.42
	Sudan	2.46
	Panama	2.54
	Bolivia	2.57
	Belize	2.65
	Mexico	2.80
	Azerbaijan	2.80
	Jamaica	2.80
	Australia	2.80
	Lebanon	2.88
	Canada	2.88
	North Korea	2.88
	Liberia	2.91
	Argentina	2.95
	El Salvador	2.95
	Namibia	2.95
	Gambia	2.99
	Lesotho	2.99
	Vietnam	3.03
	Honduras	3.03
	Kyrgyzstan	3.03
	Republic of Congo	3.07
	Kazakhstan	3.14
	Pakistan	3.18
	Guyana	3.18

Syria	3.22
Guatemala	3.26
Swaziland	3.26
Thailand	3.29
Nicaragua	3.29
South Africa	3.29
Ukraine	3.33
Botswana	3.33
Russian Federation	3.37
Togo	3.37
Ghana	3.41
Philippines	3.44
Sierra Leone	3.44
Bhutan	3.44
Suriname	3.44
Laos	3.48
Ethiopia	3.48
Cambodia	3.56
Papua New Guinea	3.56
Chile	3.60
Tunisia	3.63
Niger	3.75
China	3.75
Barbados	3.79
Guinea	3.86
Tajikistan	3.90
Benin	3.90
Colombia	3.94
Dominican Republic	3.94
Afghanistan	3.97
Singapore	4.05
Armenia	4.09
India	4.13
New Zealand	4.13
Georgia	4.13
Kosovo	4.16
Romania	4.20
Tanzania	4.20
Antigua and Barbuda	4.20
Somalia	4.24
Latvia	4.24
Nepal	4.28
Bosnia and Herzegovina	4.28
Lithuania	4.28
Gabon	4.32
Cameroon	4.32
Fiji	4.35
Macedonia	4.35
Iceland	4.35
Haiti	4.39
Bangladesh	4.43
Paraguay	4.43
Uruguay	4.47
Slovenia	4.47
Estonia	4.47

Moldova	4.54
Kenya	4.54
Timor-Leste	4.62

Very High Taxation

Dem. Rep. of the Congo	4.66
Spain	4.66
Greece	4.66
Andorra	4.69
Costa Rica	4.69
Brazil	4.77
Montenegro	4.81
Croatia	4.81
Hungary	4.81
Cyprus, South	4.85
Grenada	4.85
Bulgaria	4.85
Morocco	4.88
Serbia	4.88
Zimbabwe	4.92
Mali	4.92
Uganda	4.92
Chad	4.92
Liechtenstein	4.92
Switzerland	4.92
Belarus	5.03
Cote d'Ivoire	5.03
Palestine (W. Bank and Gaza)	5.07
Uzbekistan	5.11
Senegal	5.11
Albania	5.15
Rwanda	5.19
Austria	5.19
Czech Republic	5.19
Israel	5.19
Burkina Faso	5.22
Mongolia	5.22
Sweden	5.22
Burundi	5.26
Luxembourg	5.30
Peru	5.38
Japan	5.38
Sri Lanka	5.41
Poland	5.41
Central African Republic	5.45
United Kingdom	5.45
Mauritania	5.64
Belgium	5.68
South Korea	5.72
France	5.75
Denmark	5.83
Madagascar	5.87
Germany	5.91
Ireland	5.91
Finland	5.94
Italy	5.94
Slovakia	5.94

French Polynesia (Tahiti)	5.98
South Sudan	6.02
Portugal	6.09
Norway	6.17
Monaco	6.21
Malta	6.28
Cuba	6.32
Netherlands	6.36
Zambia	6.44
Mozambique	6.47
Malawi	6.74
Guadeloupe	6.85
Cape Verde	6.97
Turkey	7.08
Hong Kong	7.38
Eritrea	9.58

Notes: 1 Gallon = 3.785 Liters. Three benchmarks determine the classification of retail prices into levels of subsidies and taxation. The price of crude on the world market distinguishes those countries with very high subsidies from those with subsidies. The United States' retail prices are assumed to be an adequate approximation for the "international minimum benchmark for a non-subsidized road transport policy." Spain marks the boundary between taxation and very high taxation; of the EU-15 countries that pay VAT, fuel taxes, and other country-specific fees, Spain had the lowest fuel prices at the time of the analysis in 2008. The four categories, with costs per liter, are the following:

1. Very High Gasoline Subsidies ($0.01-1.13/Gallon): these countries sell gasoline below the world market's price for crude oil ($1.14/Gallon).
2. Gasoline Subsidies ($1.14-2.11/Gallon): these countries sell gasoline above the price of crude but below the retail price in the United States.
3. Gasoline Taxation ($2.12-4.65/Gallon): these countries sell gasoline at retail prices between that of the United States and that of Spain.
4. Very High Gasoline Taxation ($4.66-9.58/Gallon): these countries sell gasoline at a retail price above that of Spain.

Source: Sebastian Ebert et al., *International Fuel Prices 2009* (Eschborn, Germany: GTZ Transport Policy Advisory Services, December 2009), p. 63, at www.gtz.de/en/themen/29957.htm.

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Miles of High Speed Rail in Various Countries and the World, 2010

Country	In Operation	Under Construction	Planned	Total
Belgium	131	0	0	131
France	1,185	131	1,635	2,951
Germany	803	236	419	1,458
Italy	577	0	247	824
The Netherlands	75	0	0	75
Poland	0	0	445	445
Portugal	0	0	629	629
Rusia	0	406	406	813
Spain	1,285	1,104	1,064	3,453
Sweden	0	0	469	469
Switzerland	22	45	0	67
United Kingdom	71	0	128	198
Total Europe	**4,148**	**1,923**	**5,441**	**11,512**
China	2,549	3,846	1,813	8,209
Taiwan	216	0	0	216
India	0	0	309	309
Iran	0	0	297	297
Japan	1,584	318	364	2,266
Saudi Arabia	0	0	344	344
South Korea	258	0	0	258
Turkey	147	319	1,049	1,515
Total Asia	**4,753**	**4,483**	**4,177**	**13,413**
Morocco	0	125	300	425
Argentina	0	0	197	197
Brazil	0	0	319	319
USA	226	0	563	789
Total other countries	**226**	**125**	**1,379**	**1,730**
Total World	**9,128**	**6,531**	**10,996**	**26,654**

Note: The International Union of Railways (UIC) defines high-speed rail as having an average velocity of at least 155 mi/hour, with some exceptions.

Source: International Union of Railways, “Miles of High Speed Lines in the World,” at www.uic.org/spip.php?article573, updated 19 December 2010.

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Energy Savings from Plan B Efficiency Improvements, 2020

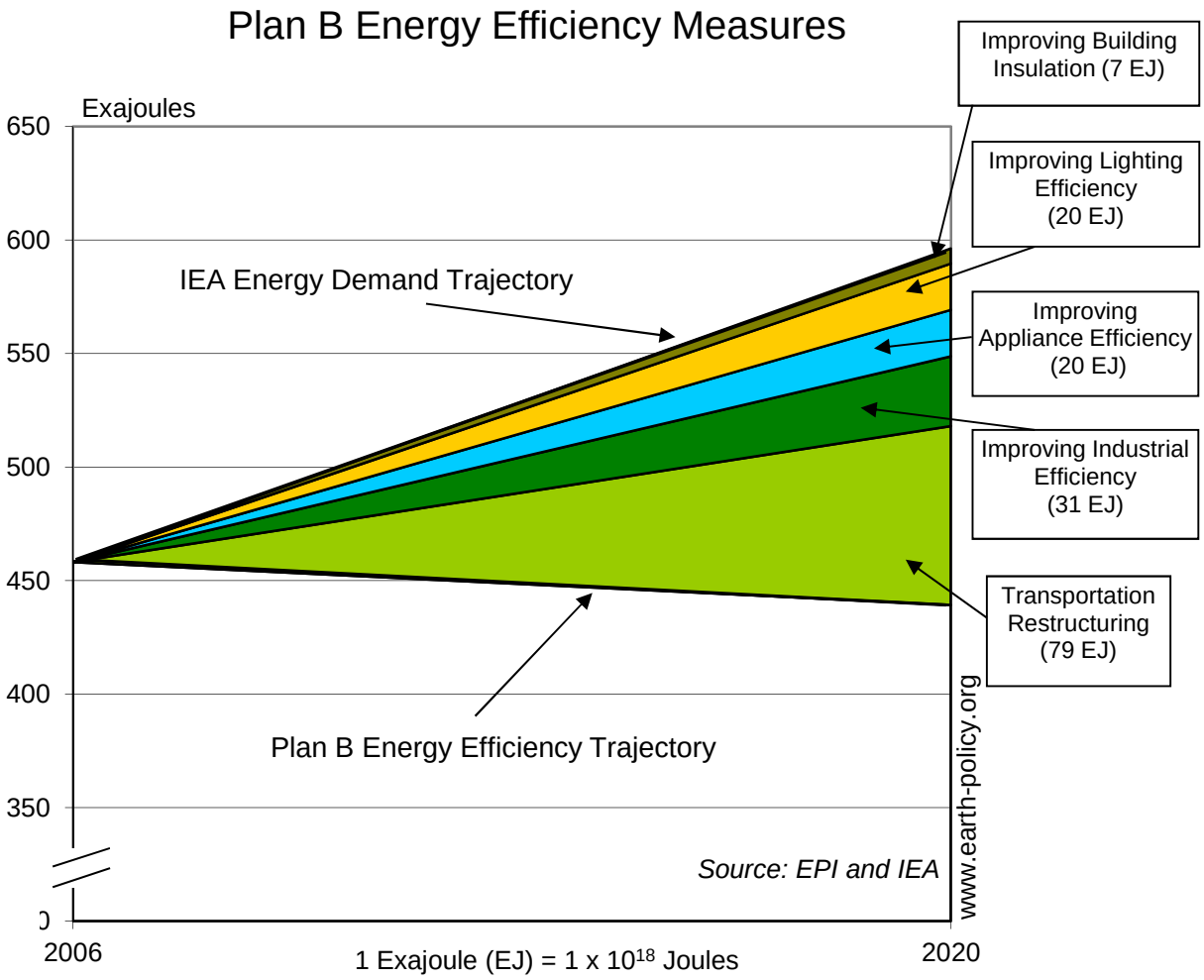
Sector	Energy Savings in 2020
	Petajoules
Lighting	20,434
Appliances	20,434
Buildings	6,611
Industry	30,794
Petrochemical	*11,805*
Steel	*5,374*
Cement	*3,615*
Other (motor systems, aluminum, paper)	*10,000*
Transport	78,655
Total	156,927

Summary:

Projected increase in energy demand from 2006 to 2020	138,156
Total energy savings from efficiency improvements in 2020	156,927
Net change in energy demand from 2006 to 2020	-18,771

Source: Earth Policy Institute, 2009. Data sources include International Energy Agency (IEA), *World Energy Outlook 2008* (Paris: 2008), pp. 506-07; IEA, *Light's Labour's Lost: Policies for Energy-efficient Lighting* (Paris: 2006), pp. 25, 29; Florian Bressand, et al., *Curbing Global Energy Demand Growth: The Energy Productivity Opportunity* (Washington, DC: McKinsey Global Institute, May 2007), p. 33, 106; Claude Mandil et al., *Tracking Industrial Energy Efficiency and CO_2 Emissions* (Paris: IEA, 2007), pp. 22-25, 39, 59–61, 140.

This is part of a supporting dataset for Lester R. Brown, **World On the Edge: How to Prevent Environmental and Economic Collapse** (New York: W.W. Norton & Company, 2010). For more information and a free download of the book, see Earth Policy Institute on-line at www.earth-policy.org.


Plan B Energy Efficiency Measures
Exajoules
650
600
550
500
450
400
350
0
2006
2020
IEA Energy Demand Trajectory
Plan B Energy Efficiency Trajectory
Improving Building Insulation (7 EJ)
Improving Lighting Efficiency (20 EJ)
Improving Appliance Efficiency (20 EJ)
Improving Industrial Efficiency (31 EJ)
Transportation Restructuring (79 EJ)
Source: EPI and IEA
www.earth-policy.org
1 Exajoule (EJ) = 1 x 10^18 Joules

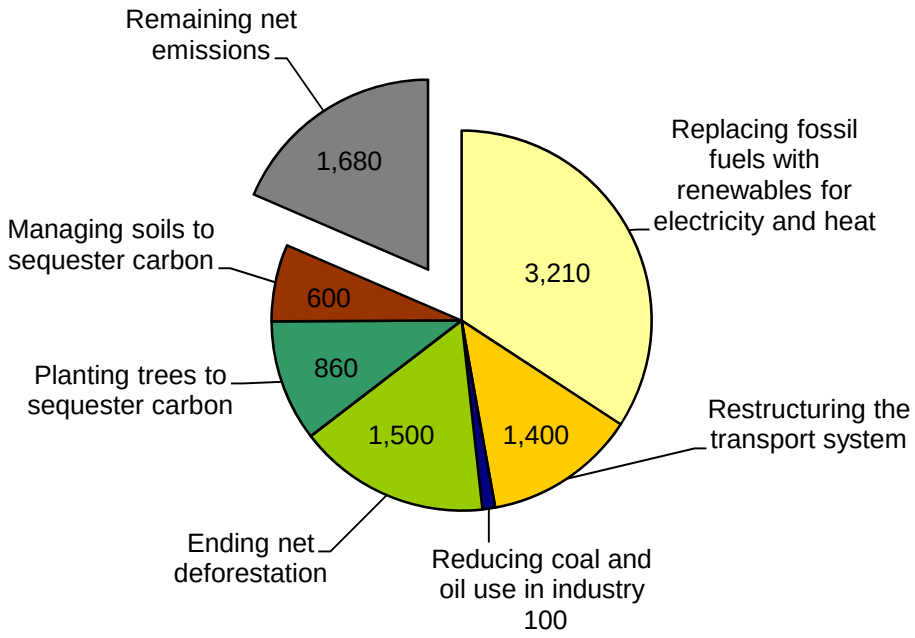
Plan B Carbon Dioxide Emissions Reductions and Sequestration in 2020

Action	Amount
	Million Tons of Carbon
Energy Restructuring	
Replacing fossil fuels with renewables for electricity and heat	3,210
Restructuring the transport system	1,400
Reducing coal and oil use in industry	100
Biological Carbon Sequestration	
Ending net deforestation	1,500
Planting trees to sequester carbon	860
Managing soils to sequester carbon	600
Total Carbon Dioxide Reductions in 2020	**7,670**
Carbon Dioxide Emissions in 2006	9,350
Percent Reduction from 2006 Baseline	**82.0**

Source: Calculated by Earth Policy Institute using International Energy Agency (IEA), *World Energy Outlook 2008* (Paris: 2008), p. 507; IEA, *Tracking Industrial Energy Efficiency and CO2 Emissions* (Paris: 2007); Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2007: Mitigation of Climate Change. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge, U.K.: Cambridge University Press, 2007), pp. 543, 559; and Rattan Lal, "Soil Carbon Sequestration Impacts on Global Climate Change and Food Security," *Science* , vol. 304 (11 June 2004), pp. 1,623–27.

Plan B Carbon Dioxide Emissions Reduction Goals for 2020

(Million Tons of Carbon)



Baseline Emissions (2006) = 9,350 Million Tons of Carbon

Source: EPI