



# 3.7

## Energy production and use

	Energy production		Energy use							Clean energy production			
	Total million metric tons of oil equivalent		Total million metric tons of oil equivalent		average annual % growth	Per capita kilograms of oil equivalent		% of total				% of total energy use	
	1990	2006	1990	2006	1990-2006	1990	2006	Fossil fuel		Combustible renewables and waste		1990	2006
Afghanistan	..	..	..	..	..	..	..	..	..	..	..	..	..
Albania	2.4	1.2	2.7	2.3	2.2	809	715	76.5	68.5	13.6	10.1	9.2	19.0
Algeria	104.4	173.2	23.9	36.7	2.5	946	1,100	99.9	99.7	0.1	0.2	0.1	0.1
Angola	28.7	79.2	6.3	10.3	3.2	597	620	30.2	33.9	68.8	63.9	1.0	2.2
Argentina	48.4	83.9	46.1	69.1	2.0	1,414	1,766	88.7	88.4	3.7	3.7	7.5	7.6
Armenia	0.1	0.8	7.9	2.6	-4.8	2,228	859	97.3	68.3	0.1	0.0	1.7	32.7
Australia	157.5	267.8	87.7	122.5	2.2	5,138	5,917	94.0	94.7	4.5	4.1	1.5	1.3
Austria	8.1	9.9	25.1	34.2	2.0	3,249	4,132	79.4	75.6	9.9	13.1	10.9	9.6
Azerbaijan	21.3	38.1	26.1	14.1	-3.3	3,643	1,659	..	97.9	0.0	0.0	0.2	1.5
Bangladesh	10.8	20.3	12.8	25.0	4.5	113	161	45.9	65.8	53.5	33.7	0.6	0.5
Belarus	3.3	3.9	42.3	28.6	-2.3	4,153	2,939	95.5	91.9	0.5	5.0	0.0	0.0
Belgium	13.6	15.5	49.7	61.0	1.4	4,988	5,782	75.6	72.5	2.6	5.9	22.4	20.0
Benin	1.8	1.7	1.7	2.8	3.0	324	321	5.8	37.1	93.2	61.1	0.0	0.0
Bolivia	4.9	14.3	2.8	5.8	4.2	416	625	69.1	83.1	27.2	13.8	3.6	3.2
Bosnia and Herzegovina	4.6	4.0	7.0	5.4	1.7	1,633	1,427	93.9	90.6	2.3	3.4	3.7	9.4
Botswana	0.9	1.1	1.3	2.0	2.6	931	1,054	66.3	69.2	33.1	23.2	0.1	0.0
Brazil	103.7	206.7	140.0	224.1	3.0	936	1,184	51.2	53.7	34.0	29.6	13.1	15.0
Bulgaria	9.6	11.1	28.8	20.7	-1.5	3,305	2,688	84.4	72.8	0.6	3.9	13.8	26.5
Burkina Faso	..	..	..	..	..	..	..	..	..	..	..	..	..
Burundi	..	..	..	..	..	..	..	..	..	..	..	..	..
Cambodia	..	3.6	..	5.0	3.6	..	351	..	28.4	..	71.3	..	0.1
Cameroon	11.0	10.3	5.0	7.1	2.3	411	390	19.5	16.3	75.9	79.2	4.5	4.5
Canada	273.7	411.7	209.5	269.7	1.7	7,539	8,262	74.7	75.0	3.9	4.7	21.4	20.9
Central African Republic	..	..	..	..	..	..	..	..	..	..	..	..	..
Chad	..	..	..	..	..	..	..	..	..	..	..	..	..
Chile	7.6	10.0	14.1	29.8	5.0	1,067	1,812	74.8	73.5	19.0	15.9	6.2	9.9
China	886.3	1,749.3	863.2	1,878.7	4.4	760	1,433	75.5	85.1	23.2	12.0	1.3	3.0
Hong Kong, China	0.0	0.0	10.7	18.2	3.1	1,872	2,653	99.5	96.7	0.5	0.3	0.0	0.0
Colombia	48.2	84.6	24.7	30.2	0.5	747	695	68.1	73.4	22.3	14.9	9.6	12.2
Congo, Dem. Rep.	12.0	17.8	11.9	17.5	2.4	314	289	12.0	4.6	84.0	92.4	4.1	3.9
Congo, Rep.	8.7	15.4	0.8	1.2	2.6	329	327	35.0	36.8	59.5	57.6	5.3	2.7
Costa Rica	1.0	2.3	2.0	4.6	5.0	658	1,040	48.3	48.6	36.6	15.5	14.4	35.8
Côte d'Ivoire	3.4	9.3	4.4	7.3	3.4	345	385	24.9	35.7	72.0	63.8	2.6	1.8
Croatia	5.1	4.1	9.1	9.0	1.3	1,905	2,017	86.7	84.7	3.4	4.1	3.6	5.8
Cuba	6.6	5.0	16.8	10.6	-1.6	1,587	944	65.1	88.0	34.9	11.9	0.0	0.1
Czech Republic	40.1	33.4	49.0	46.1	0.1	4,726	4,485	93.2	83.0	0.0	4.0	6.9	15.3
Denmark	10.1	29.6	17.9	20.9	0.4	3,486	3,850	89.9	87.3	6.4	12.9	0.3	2.6
Dominican Republic	1.0	1.5	4.1	7.8	4.4	567	816	75.1	80.4	24.2	18.0	0.7	1.5
Ecuador	16.5	29.8	6.1	11.2	3.8	597	851	79.5	88.2	13.5	5.2	7.0	5.5
Egypt, Arab Rep.	54.9	77.8	32.0	62.5	4.6	580	843	94.0	95.9	3.3	2.3	2.7	1.9
El Salvador	1.7	2.6	2.5	4.7	3.8	496	697	32.0	44.0	48.2	31.6	19.8	24.4
Eritrea	0.7	0.5	0.9	0.7	-2.2	277	150	19.7	27.0	80.3	73.0	0.0	0.0
Estonia	5.1	3.6	9.6	4.9	-2.8	6,122	3,638	..	88.7	2.0	10.7	0.0	0.2
Ethiopia	14.1	20.4	15.0	22.3	2.6	313	289	6.6	8.8	92.8	90.0	0.6	1.3
Finland	12.1	18.0	28.7	37.4	1.8	5,758	7,108	56.0	52.2	15.9	20.4	20.7	18.6
France	112.4	137.0	227.6	272.7	1.2	4,012	4,444	58.6	52.6	5.1	4.4	38.1	44.9
Gabon	14.6	12.1	1.2	1.8	2.2	1,354	1,391	35.4	39.2	59.8	56.3	4.9	4.4
Gambia, The	..	..	..	..	..	..	..	..	..	..	..	..	..
Georgia	1.8	1.2	12.3	3.3	-8.2	2,255	754	88.7	65.1	3.7	19.3	5.3	14.0
Germany	186.2	136.8	355.6	348.6	0.0	4,477	4,231	87.0	81.8	1.3	4.6	11.6	13.9
Ghana	4.4	6.5	5.3	9.5	3.6	343	413	19.0	31.7	73.1	63.3	9.2	5.1
Greece	9.2	10.0	22.2	31.1	2.5	2,188	2,792	94.8	93.1	4.0	3.3	0.9	2.5
Guatemala	3.4	5.4	4.5	8.2	4.1	503	628	28.8	44.5	67.9	51.5	3.4	4.0
Guinea	..	..	..	..	..	..	..	..	..	..	..	..	..
Guinea-Bissau	..	..	..	..	..	..	..	..	..	..	..	..	..
Haiti	1.3	2.0	1.6	2.6	3.3	223	272	20.9	23.3	76.5	75.8	2.5	0.9

# Energy production and use

# 3.7

ENVIRONMENT

	Energy production					Energy use					Clean energy production			
	Total million metric tons of oil equivalent		Total million metric tons of oil equivalent		average annual % growth	Per capita kilograms of oil equivalent		% of total					% of total energy use	
	1990	2006	1990	2006	1990-2006	1990	2006	Fossil fuel		Combustible renewables and waste		1990	2006	
								1990	2006	1990	2006	1990	2006	
Honduras	1.7	2.0	2.4	4.3	3.2	494	621	31.1	53.3	62.0	41.5	8.1	5.1	
Hungary	14.3	10.3	28.6	27.6	0.1	2,753	2,740	82.4	80.3	1.3	4.3	12.9	13.2	
India	291.1	435.6	319.9	565.8	3.5	377	510	55.8	69.0	41.7	28.3	2.4	2.7	
Indonesia	170.0	307.7	102.8	179.1	3.4	577	803	54.7	67.1	43.8	29.2	1.5	3.7	
Iran, Islamic Rep.	179.8	309.3	68.8	170.9	5.5	1,265	2,438	98.2	98.6	1.0	0.5	0.8	0.9	
Iraq	104.9	101.1	19.1	32.0	3.2	1,029	1,123	98.7	99.4	0.1	0.1	1.2	0.1	
Ireland	3.5	1.6	10.3	15.5	3.2	2,943	3,628	85.3	91.8	1.0	1.4	0.6	1.3	
Israel	0.4	2.7	12.1	21.3	3.6	2,599	3,017	97.3	97.3	0.0	0.0	3.0	3.4	
Italy	25.3	27.4	148.1	184.2	1.6	2,611	3,125	93.5	90.7	0.6	2.6	3.8	4.6	
Jamaica	0.5	0.5	2.9	4.6	2.5	1,233	1,724	83.5	89.2	16.2	10.5	0.3	0.3	
Japan	75.2	101.1	443.9	527.6	1.1	3,593	4,129	84.7	81.6	1.1	1.3	14.2	17.1	
Jordan	0.2	0.3	3.5	7.2	4.1	1,103	1,294	98.3	98.0	0.1	0.0	1.7	1.4	
Kazakhstan	90.5	131.0	73.6	61.4	-2.3	4,505	4,012	97.0	98.7	0.2	0.1	0.9	1.1	
Kenya	9.0	14.3	11.2	17.9	2.9	479	491	19.5	20.6	75.9	73.6	4.4	5.9	
Korea, Dem. Rep.	28.9	22.2	33.2	21.7	-2.4	1,649	913	93.1	90.2	2.9	4.8	4.0	5.0	
Korea, Rep.	22.6	43.7	93.4	216.5	5.3	2,178	4,483	83.9	80.8	0.8	1.1	15.4	18.1	
Kuwait	50.4	150.6	8.0	25.3	8.0	3,762	9,729	99.9	100.0	0.1	0.0	0.0	0.0	
Kyrgyz Republic	2.5	1.5	7.6	2.8	-4.9	1,713	542	93.6	62.0	0.1	0.1	11.3	45.5	
Lao PDR	..	..	..	..	..	..	..	..	..	..	..	..	..	
Latvia	1.1	1.8	7.9	4.6	-3.0	2,941	2,017	81.8	64.2	8.4	25.9	4.9	5.1	
Lebanon	0.1	0.2	2.3	4.8	4.6	777	1,173	93.7	94.2	4.5	2.7	1.9	1.4	
Lesotho	..	..	..	..	..	..	..	..	..	..	..	..	..	
Liberia	..	..	..	..	..	..	..	..	..	..	..	..	..	
Libya	73.2	102.0	11.5	17.8	2.3	2,645	2,943	98.9	99.1	1.1	0.9	0.0	0.0	
Lithuania	4.9	3.5	16.2	8.5	-2.8	4,394	2,517	76.0	62.1	1.8	8.8	27.9	27.4	
Macedonia, FYR	1.5	1.5	2.7	2.8	-0.3	1,423	1,355	98.2	82.9	0.0	6.0	1.5	5.5	
Madagascar	..	..	..	..	..	..	..	..	..	..	..	..	..	
Malawi	..	..	..	..	..	..	..	..	..	..	..	..	..	
Malaysia	50.3	97.9	23.3	68.3	6.1	1,288	2,617	89.4	95.3	9.1	4.1	1.5	0.9	
Mali	..	..	..	..	..	..	..	..	..	..	..	..	..	
Mauritania	..	..	..	..	..	..	..	..	..	..	..	..	..	
Mauritius	..	..	..	..	..	..	..	..	..	..	..	..	..	
Mexico	193.4	256.0	123.0	177.4	2.2	1,478	1,702	88.3	89.1	6.0	4.6	5.8	6.4	
Moldova	0.1	0.1	9.9	3.4	-6.1	2,265	884	..	88.7	0.4	2.2	0.2	0.2	
Mongolia	2.7	3.0	3.4	2.8	-1.9	1,624	1,080	96.9	95.7	2.5	3.8	0.0	0.0	
Morocco	0.8	0.7	7.2	14.0	3.9	298	458	94.0	94.5	4.4	3.2	1.5	1.1	
Mozambique	5.6	10.7	6.0	8.8	2.7	441	420	6.2	6.9	93.2	81.6	0.4	14.4	
Myanmar	10.7	22.1	10.7	14.3	1.9	266	295	14.6	25.9	84.4	72.1	1.0	2.0	
Namibia	0.2	0.3	0.7	1.5	5.1	443	721	62.0	67.3	16.0	12.7	17.5	8.8	
Nepal	5.5	8.3	5.8	9.4	3.2	304	340	5.3	11.3	93.4	86.2	1.3	2.4	
Netherlands	60.5	60.8	67.1	80.1	1.2	4,489	4,901	96.0	92.9	1.4	3.3	1.4	1.5	
New Zealand	12.0	13.1	13.8	17.5	1.6	3,991	4,192	65.4	70.0	4.0	6.0	30.7	24.0	
Nicaragua	1.5	2.1	2.1	3.5	3.1	512	624	29.2	39.0	53.2	52.2	17.3	8.7	
Niger	..	..	..	..	..	..	..	..	..	..	..	..	..	
Nigeria	150.5	235.3	70.9	105.1	2.4	751	726	19.7	19.8	79.8	79.6	0.5	0.6	
Norway	119.1	222.9	21.4	26.1	1.9	5,050	5,598	52.8	54.9	4.8	5.1	48.6	39.6	
Oman	38.3	60.6	4.6	15.4	7.1	2,475	6,057	100.0	100.0	0.0	0.0	0.0	0.0	
Pakistan	34.4	61.3	43.4	79.3	3.7	402	499	53.3	60.9	43.2	34.9	3.5	4.2	
Panama	0.6	0.8	1.5	2.8	3.6	618	845	58.4	71.7	28.3	17.4	12.8	11.1	
Papua New Guinea	..	..	..	..	..	..	..	..	..	..	..	..	..	
Paraguay	4.6	6.7	3.1	4.0	1.5	731	660	21.6	30.5	72.3	52.0	75.8	116.5	
Peru	10.6	11.5	10.0	13.6	2.1	457	491	64.1	68.5	26.9	17.4	9.0	14.0	
Philippines	13.7	24.7	26.2	43.0	3.6	427	498	50.8	51.0	29.2	26.1	20.0	22.9	
Poland	99.4	77.9	99.9	97.7	-0.6	2,620	2,562	97.7	95.3	2.2	5.5	0.1	0.2	
Portugal	3.4	4.3	17.2	25.4	3.1	1,742	2,402	81.0	81.1	14.4	11.9	4.7	5.2	
Puerto Rico	..	..	..	..	..	..	..	..	..	..	..	..	..	

	Energy production		Energy use						Clean energy production				
	Total million metric tons of oil equivalent		Total million metric tons of oil equivalent		average annual % growth	Per capita kilograms of oil equivalent		% of total				% of total energy use	
	1990	2006	1990	2006	1990-2006	1990	2006	Fossil fuel		Combustible renewables and waste		1990	2006
Romania	40.8	28.0	62.5	40.1	-2.3	2,693	1,860	96.2	85.1	1.0	8.1	1.6	7.6
Russian Federation	1,280.3	1,220.0	878.9	676.2	-1.5	5,927	4,745	93.4	89.4	1.4	1.1	5.2	8.3
Rwanda	..	..	..	..	..	..	..	..	..	..	..	..	..
Saudi Arabia	370.8	570.7	61.3	146.1	4.7	3,744	6,170	100.0	100.0	0.0	0.0	0.0	0.0
Senegal	1.0	1.2	1.8	3.0	3.8	233	250	48.0	59.5	52.0	39.6	0.0	0.7
Serbia	13.4 <sup>a</sup>	10.6	19.5 <sup>a</sup>	17.1	..	2,569 <sup>a</sup>	2,303	90.7 <sup>a</sup>	90.2	6.0 <sup>a</sup>	4.7	4.2 <sup>a</sup>	5.5
Sierra Leone	..	..	..	..	..	..	..	..	..	..	..	..	..
Singapore	0.0	0.0	13.4	30.7	3.8	4,384	6,968	100.0	100.0	0.0	0.0	0.0	0.0
Slovak Republic	5.3	6.6	21.3	18.7	-0.1	4,035	3,465	81.6	70.9	0.8	2.6	15.5	27.5
Slovenia	2.9	3.3	5.6	7.3	2.2	2,792	3,618	70.6	69.2	4.8	6.5	26.2	24.2
Somalia	..	..	..	..	..	..	..	..	..	..	..	..	..
South Africa	114.5	158.7	91.2	129.8	2.1	2,592	2,739	86.2	87.1	11.4	10.5	2.5	2.7
Spain	34.6	31.4	91.2	144.6	3.3	2,349	3,277	77.7	82.8	4.5	3.6	17.9	13.8
Sri Lanka	4.2	5.5	5.5	9.4	3.7	322	472	24.1	41.4	71.0	54.3	4.9	4.2
Sudan	8.8	30.7	10.7	17.7	3.5	411	470	17.7	21.8	81.5	77.5	0.8	0.7
Swaziland	..	..	..	..	..	..	..	..	..	..	..	..	..
Sweden	29.7	32.8	47.6	51.3	0.5	5,557	5,650	37.8	34.9	11.6	18.4	50.5	44.5
Switzerland	9.7	12.1	24.8	28.2	0.7	3,695	3,770	61.5	56.1	3.7	7.2	35.5	35.9
Syrian Arab Republic	22.3	26.5	11.7	18.9	2.9	918	975	98.0	98.2	0.0	0.0	2.0	1.8
Tajikistan	2.0	1.5	5.6	3.6	-2.7	1,051	548	72.7	59.5	0.0	0.0	25.5	39.1
Tanzania	9.1	19.4	9.8	20.8	4.8	385	527	7.6	8.3	91.0	91.0	1.4	0.6
Thailand	26.5	56.2	43.9	103.4	5.2	809	1,630	65.5	82.3	33.4	16.6	1.0	0.7
Timor-Leste	..	..	..	..	..	..	..	..	..	..	..	..	..
Togo	1.1	2.0	1.3	2.4	4.6	328	375	17.3	13.4	80.6	84.5	0.6	0.3
Trinidad and Tobago	12.6	34.6	6.0	14.3	5.8	4,934	10,768	99.2	99.8	0.8	0.2	0.0	0.0
Tunisia	5.7	6.6	5.1	8.7	3.7	630	863	87.5	86.6	12.4	13.3	0.1	0.1
Turkey	25.8	26.3	52.9	94.0	3.5	943	1,288	81.9	89.1	13.6	5.5	4.6	5.5
Turkmenistan	74.9	61.6	19.6	17.3	1.1	5,352	3,524	..	100.0	0.0	0.0	0.3	0.0
Uganda	..	..	..	..	..	..	..	..	..	..	..	..	..
Ukraine	135.8	82.8	253.8	137.4	-3.5	4,891	2,937	91.9	82.2	0.1	0.4	8.2	17.9
United Arab Emirates	110.2	177.3	23.2	46.9	4.4	12,416	11,036	100.0	100.0	0.0	0.0	0.0	0.0
United Kingdom	208.0	186.6	212.3	231.1	0.5	3,708	3,814	90.9	89.2	0.3	1.7	8.3	8.9
United States	1,649.4	1,654.2	1,926.3	2,320.7	1.3	7,717	7,768	86.5	85.7	3.2	3.4	10.2	10.8
Uruguay	1.1	0.8	2.3	3.2	1.2	725	962	58.7	67.8	24.3	14.9	26.8	9.7
Uzbekistan	38.6	58.2	46.4	48.5	0.6	2,261	1,829	99.2	98.9	0.0	0.0	1.2	1.1
Venezuela, RB	148.9	195.5	43.9	62.2	1.6	2,224	2,302	91.5	88.2	1.2	0.9	7.2	11.0
Vietnam	24.7	71.9	24.3	52.3	5.1	367	621	20.4	49.8	77.7	46.4	1.9	3.9
West Bank and Gaza	..	..	..	..	..	..	..	..	..	..	..	..	..
Yemen, Rep.	9.4	18.7	2.6	7.1	6.4	208	326	97.0	98.9	3.0	1.1	0.0	0.0
Zambia	4.9	6.7	5.5	7.3	1.7	673	625	16.6	11.1	73.4	78.2	12.5	11.0
Zimbabwe	8.6	8.8	9.4	9.6	-0.2	895	724	45.3	29.2	50.4	63.3	4.0	5.0
<b>World</b>	<b>8,821.7 t</b>	<b>11,786.0 t</b>	<b>8,637.3 t</b>	<b>11,525.2 t</b>	<b>1.8 w</b>	<b>1,686 w</b>	<b>1,820 w</b>	<b>81.2 w</b>	<b>80.9 w</b>	<b>10.0 w</b>	<b>9.8 w</b>	<b>8.7 w</b>	<b>9.2 w</b>
<b>Low income</b>	451.2	734.4	400.2	575.5	2.4	482	478	44.5	43.1	52.9	53.8	2.8	3.2
<b>Middle income</b>	4,623.1	6,447.4	3,797.2	5,348.7	2.0	1,097	1,267	81.2	82.4	14.6	12.3	4.1	5.2
Lower middle income	2,272.0	3,782.9	1,973.3	3,468.8	3.3	716	1,019	74.4	81.0	22.7	15.2	3.0	3.9
Upper middle income	2,351.1	2,664.4	1,823.9	1,879.8	0.2	2,584	2,300	88.4	84.8	5.9	7.0	5.3	7.6
<b>Low &amp; middle income</b>	5,058.6	7,147.8	4,181.1	5,899.7	2.1	990	1,108	78.1	79.0	17.9	15.9	4.0	5.0
East Asia & Pacific	1,223.4	2,372.6	1,140.5	2,382.5	4.2	718	1,258	71.8	82.1	26.4	14.7	1.8	3.2
Europe & Central Asia	1,862.0	1,772.5	1,695.2	1,302.8	-1.5	3,887	2,930	93.2	89.1	1.6	2.2	5.0	8.1
Latin America & Carib.	608.6	926.1	457.6	685.9	2.4	1,054	1,240	71.4	73.0	19.5	15.9	9.1	11.0
Middle East & N. Africa	563.0	827.2	190.2	385.5	4.3	849	1,254	97.3	97.8	1.6	1.2	1.1	0.9
South Asia	348.8	535.6	390.8	694.8	3.5	350	468	54.0	66.8	43.5	30.4	2.5	2.8
Sub-Saharan Africa	475.6	762.2	313.3	467.6	2.5	685	670	41.8	41.1	56.1	56.3	2.2	2.6
<b>High income</b>	3,780.4	4,663.1	4,479.4	5,659.1	1.6	4,807	5,416	84.1	82.9	2.8	3.4	13.0	13.5
Euro area	477.4	463.1	1,075.7	1,268.9	1.2	3,567	3,936	80.0	76.4	3.2	4.9	16.4	18.3

a. Includes Kosovo and Montenegro.

## About the data

In developing economies growth in energy use is closely related to growth in the modern sectors—industry, motorized transport, and urban areas—but energy use also reflects climatic, geographic, and economic factors (such as the relative price of energy). Energy use has been growing rapidly in low- and middle-income economies, but high-income economies still use almost five times as much energy on a per capita basis.

Energy data are compiled by the International Energy Agency (IEA). IEA data for economies that are not members of the Organisation for Economic Co-operation and Development (OECD) are based on national energy data adjusted to conform to annual questionnaires completed by OECD member governments.

Total energy use refers to the use of primary energy before transformation to other end-use fuels (such as electricity and refined petroleum products). It includes energy from combustible renewables and waste—solid biomass and animal products, gas and liquid from biomass, and industrial and municipal waste. Biomass is any plant matter used directly as fuel or converted into fuel, heat, or electricity. Data for combustible renewables and waste are often based on small surveys or other incomplete information and thus give only a broad impression of developments and are not strictly comparable across countries. The IEA reports include country notes that explain some of these differences (see *Data sources*). All forms of energy—primary energy and primary electricity—are converted into oil equivalents. A notional thermal efficiency of 33 percent is

assumed for converting nuclear electricity into oil equivalents and 100 percent efficiency for converting hydroelectric power.

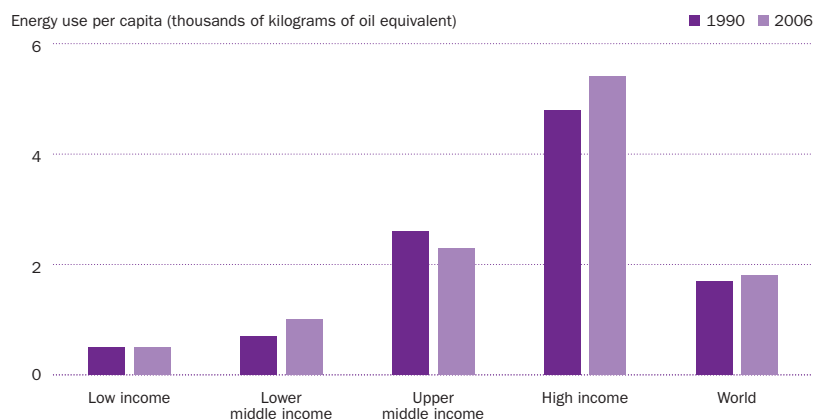
The IEA makes these estimates in consultation with national statistical offices, oil companies, electric utilities, and national energy experts. The IEA occasionally revises its time series to reflect political changes, and energy statistics undergo continual changes in coverage or methodology as more detailed energy accounts become available. Breaks in series are therefore unavoidable.

## Definitions

- **Energy production** refers to forms of primary energy—petroleum (crude oil, natural gas liquids, and oil from nonconventional sources), natural gas, solid fuels (coal, lignite, and other derived fuels), and combustible renewables and waste—and primary electricity, all converted into oil equivalents (see *About the data*).
- **Energy use** refers to the use of primary energy before transformation to other end-use fuels, which is equal to indigenous production plus imports and stock changes, minus exports and fuels supplied to ships and aircraft engaged in international transport (see *About the data*).
- **Fossil fuel** comprises coal, oil, petroleum, and natural gas products.
- **Combustible renewables and waste** comprise solid biomass, liquid biomass, biogas, industrial waste, and municipal waste.
- **Clean energy production** is noncarbohydrate energy that does not produce carbon dioxide when generated. It includes hydropower and nuclear, geothermal, and solar power, among others.

**A person in a high-income economy uses an average of more than 11 times as much energy as a person in a low-income economy**

3.7a



Source: Table 3.7.

## Data sources

Data on energy production and use are from IEA electronic files and are published in IEA's annual publications, *Energy Statistics and Balances of Non-OECD Countries*, *Energy Statistics of OECD Countries*, and *Energy Balances of OECD Countries*.