

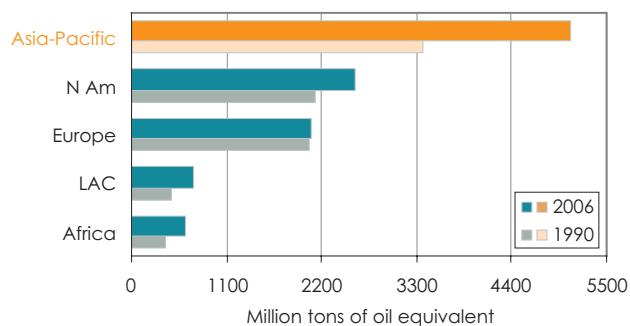
28 Energy supply and use

Despite volatile oil prices, most countries continue to increase their total consumption of primary energy. Only the small island countries and the least developed countries have managed to hold their energy use steady.

Comparable energy statistics are available only for periods up to 2006 – prior to the recent peak in energy prices. At that point, over 80 per cent of the region's total primary energy supply came from fossil fuels – the remainder coming predominantly from nuclear power, hydropower, and traditional fuels, such as wood and animal dung. Less than one-quarter of one per cent came from geothermal or other new and renewable energy sources. The countries that consumed fossil fuels the least generally had low access to electricity and made more use of traditional fuels.

Figure 28.1

Total primary energy supply, world regions, 1990 and 2006

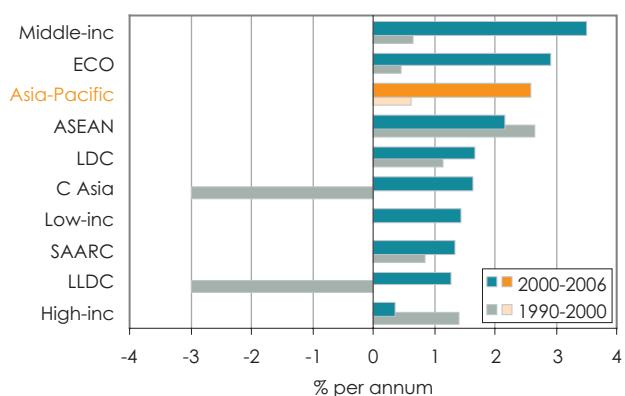


Since 1990, the region's total energy consumption has increased significantly, especially in China, India and other middle-income economies. This reflects rapid economic development that has been supported by a considerable expansion of electricity capacity.

For poorer countries, in particular LDCs, most energy is consumed in the residential sector. Of this some is supplied commercially, but a considerable amount comes from traditional

Figure 28.2

Average annual growth in per capita energy consumption, Asia and the Pacific, 1990-2000 and 2000-2006



biomass such as wood and animal waste. Other large energy consumers are industry, road transport and commercial and public services.

One of the most important considerations in energy use is the intensity of energy consumption – the amount of energy used to produce one unit of GDP – an important indicator of energy efficiency. Overall the Asia-Pacific region has been becoming more energy-efficient. During 1990-2006, average energy intensity decreased 1.6 per cent per annum. For some countries, particularly in Central Asia, this is probably because after independence they restructured their manufacturing base. In others, these figures cover a period of significant increase in economic output and do not necessarily reflect similar level of improvement in terms of energy efficiency. High-income economies did not improve to the same extent since they were more efficient to begin with.

At the global level, industry has generally become more energy efficient, particularly since 2001. The Asia-Pacific economies followed this trend, pushed by middle-income economies such as China and India. In other subregions and economies industrial energy consumption remained steady.

28. Energy supply and use

Figure 28.3

Apparent energy consumption (supply) per unit of GDP, global regions, 1990 and 2006

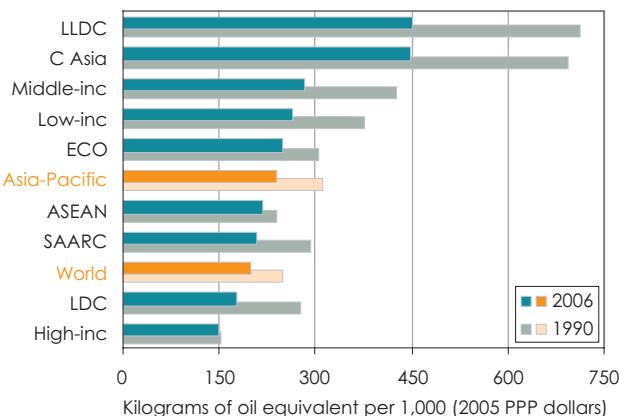
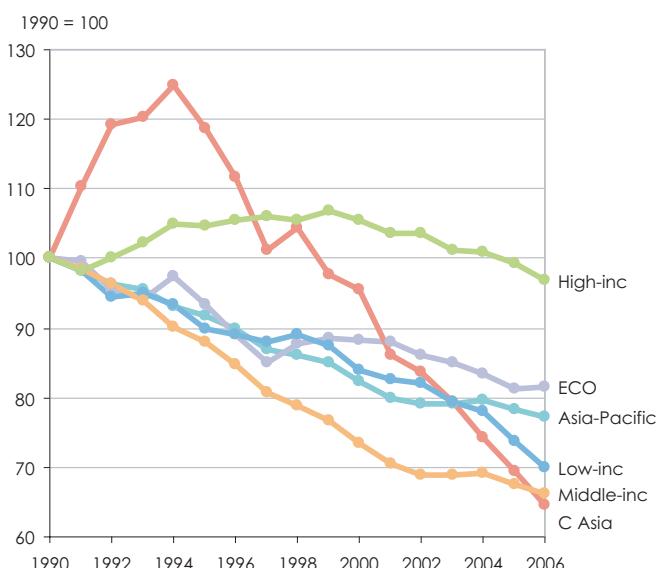


Figure 28.4

Index of apparent energy consumption (supply) per unit of GDP, Asia and the Pacific, 1990-2006

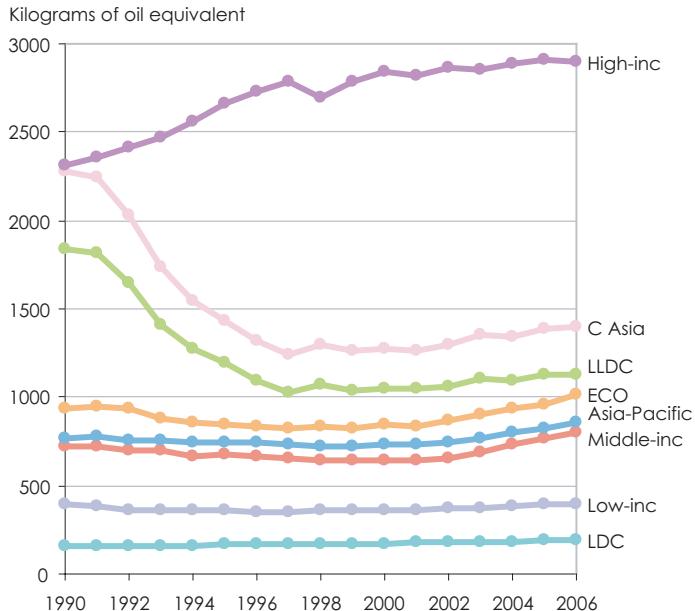


As well as increasing energy efficiency, countries also need to be concerned about per capita consumption. In recent years, the high-income economies actually increased their per capita consumption significantly. Middle-income and low-income economies also increased per capita consumption, though only slightly, and from a much lower base.

The high per capita energy consumption in high-income economies is an indication of generally wasteful lifestyles. Most of these countries have

Figure 28.5

Energy consumption per capita, Asia and the Pacific, 1990-2006



shifted their economic base to less energy-intensive industries but they have still increased overall consumption as a result of urban sprawl and generally inefficient usage. This has also increased emissions of greenhouse gases – an issue discussed further in chapter 26.

Consumption is lower in the developing countries and in the least developed countries because a high proportion of their populations lack access to modern energy services. More than 1.7 billion people in Asia and the Pacific rely for their basic energy needs on traditional biomass. Generally, this is less efficient than other energy sources, though efficiency can be increased using modern technologies, such as better cooking stoves.

The Asia-Pacific region has thus improved energy efficiency over the past 16 years, but some economies need to make greater efforts to reduce consumption of energy and the production of greenhouse gases. Other countries are developing rapidly and have the opportunity to do so in a manner that reduces their long-term dependence on imported fossil fuels. They are now in a position to choose types of infrastructure that will shape energy consumption patterns for decades to come. If they follow a sustainable energy path and consume energy wisely they will save millions of dollars that can be used for other development purposes.

Energy consumption per capita (kilograms of oil equivalent)

The amount of energy used per person. Energy use refers to 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. **Aggregates:** Averages are calculated using total population as weight. **Source:** International Energy Agency (online database, accessed in October 2008), and World Population Prospects: The 2006 Revision Population Database (online database, accessed in July 2008).

Growth rate of energy consumption per capita (% per annum)

The average annual growth rate in per capita energy consumption. **Aggregates:** Averages are calculated using aggregated data within each group of energy consumption per capita. **Source:** Calculated by ESCAP using data from energy consumption per capita.

Energy supply, apparent consumption per unit of GDP (2005 PPP) (kilograms of oil equivalent per 1,000 (2005 PPP dollars))

The use of energy per 1,000 units of GDP in 2005 constant international PPP dollars. Energy use refers to 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. **Aggregates:** Averages are calculated using GDP, PPP (constant 2005) as weight. **Source:** International Energy Agency (online database, accessed in November 2008), and World Bank, World Development Indicators (online database, accessed in July 2008).

Growth rate of energy supply, apparent consumption per unit of GDP (2005 PPP) (% per annum)

The average annual rate of change in apparent energy consumption per unit of GDP (2005 PPP), calculated as an arithmetic mean for a range-year period. **Aggregates:** Averages are calculated using aggregated data within each group of energy supply, apparent consumption per unit of GDP (2005 PPP). **Source:** Calculated by ESCAP using data from energy supply, apparent consumption per unit of GDP (2005 PPP).

Energy consumption, total (thousand tons of oil equivalent)

The sum of the consumption in the end-use sectors. Energy used for transformation and for own use of the energy-producing industries is excluded. Final consumption reflects for the most part deliveries to consumers. **Aggregates:** Sum of individual country values. **Source:** International Energy Agency (online database, accessed in November 2008).

Energy consumption by industry (% of total energy final consumption)

Consumption of energy in the following industry sectors: iron and steel (ISIC group 271 and class 2731); chemical and petrochemical (ISIC division 24); non-ferrous industry (ISIC group 272 and class 2732); non-metallic minerals (ISIC division 26); transport equipment (ISIC divisions 34 and 35); machinery (ISIC division 28, 29, 30, 31, and 32); mining and quarrying (ISIC divisions 13 and 14); food and tobacco (ISIC divisions 15 and 16); paper, pulp and print (ISIC divisions 21 and 22); wood and wood products (ISIC); construction (ISIC division 45); textile and leather (ISIC divisions 17, 18 and 19); any manufacturing industry not included above (ISIC divisions 25, 33, 36 and 37). Energy used for transport by industry is reported under transport. **Aggregates:** Averages are calculated as the sum of individual country values in each group divided by total energy final consumption of each group. **Source:** Calculated by ESCAP using data of energy consumption by industry sector values in thousand tons of oil equivalent from International Energy Agency (online database, accessed in September 2008).

Energy consumption by transport (% of total energy final consumption)

Consumption of energy in the transport sector, which covers all transport activity (in mobile engines) regardless of the economic sector to which it is contributing (ISIC divisions 60, 61 and 62) **Aggregates:** Averages are calculated as the sum of individual country values in each group divided by total energy final consumption of each group. **Source:** Calculated by ESCAP using data of energy consumption by transport values in thousand tons of oil equivalent (see chapter 19).

Energy consumption by households (% of total energy final consumption)

Consumption of energy by households, excluding fuels used for transport. **Aggregates:** Averages are calculated as the sum of individual country values in each group divided by total energy final consumption of each group. **Source:** Calculated by ESCAP using data of energy consumption by household values in thousand tons of oil equivalent from International Energy Agency (online database, accessed in October 2008).

Energy balance: primary production (million tons of oil equivalent)

Production of primary energy, including hard coal, lignite/brown coal, peat, crude oil, NGLs, natural gas, combustible renewables and waste, nuclear, hydro, geothermal, solar and the heat from heat pumps that is extracted from the ambient environment. **Aggregates:** Sum of individual country values. **Source:** International Energy Agency (online database, accessed in October 2008).

Energy balance: imports and exports (million tons of oil equivalent)

The amount of primary energy crossing the national territorial boundaries of the country, whether or not customs clearance has taken place. **Aggregates:** Sum of individual country values. **Source:** International Energy Agency (online database, accessed in October 2008).

Energy supply, total primary (million tons of oil equivalent)

Total primary energy supply, as per formula: (Production + imports – exports – international marine bunkers ± stock changes). **Aggregates:** Sum of individual country values. **Source:** International Energy Agency (online database, accessed on October 2008).

Gross electricity production (million kilowatt-hours)

Gross production of electricity, including the consumption by station auxiliaries and any losses in the transformers that are considered integral parts of the station. Included also is total electric energy produced by pumping installations without deduction of electric energy absorbed by pumping. Where reported, includes production from solar, tide, wave, wind, waste, wood and fuel cells. **Aggregates:** Sum of individual country values. **Source:** UNDATA Database, Energy Statistics (online database, accessed in June 2008).

Growth rate of gross electricity production (% per annum)

The average rate of change in electricity production, calculated as an arithmetic mean for a range-year period.

Aggregates: Averages are calculated using sum of individual country values within each group of gross electricity production. **Source:** Calculated by ESCAP using data from gross electricity production.

Household electricity consumption per capita (kilowatt-hours)

The annual electricity consumption by households per capita. **Aggregates:** Averages are calculated using total population as weight. **Source:** UNDATA Database, Energy Statistics (online database, accessed in July 2008), and World Population Prospects: The 2006 Revision Population Database (online database, accessed in July 2008).

Growth rate of household electricity consumption per capita (% per annum)

The average rate of change in household electricity consumption, calculated as an arithmetic mean for a range-year period.

Aggregates: Averages are calculated using aggregated data within each group of household electricity consumption per capita. **Source:** Calculated by ESCAP using data from household electricity consumption per capita.

28.1 Energy use

	Energy consumption per capita				Growth rate		Energy supply, apparent consumption per unit of GDP				Growth rate	
	Kilograms of oil equivalent				% per annum		Kilograms of oil equivalent per 1,000 (2005 PPP dollars)				% per annum	
	1990	1995	2000	2006	90-06	00-06	1990	1995	2000	2006	90-06	00-06
East and North-East Asia	797	892	876	1 131	2.2	4.4	280	262	229	236	-1.1	0.5
China	577	648	614	910	2.9	6.8	689	469	328	318	-4.7	-0.5
DPR Korea	1 357	864	745	792	-3.3	1.0						
Hong Kong, China	1 259	1 604	1 798	1 620	1.6	-1.7	84	82	80	70	-1.1	-2.2
Japan	2 471	2 688	2 764	2 749	0.7	-0.1	139	145	145	133	-0.2	-1.4
Macao, China												
Mongolia	1 343	808	618	794	-3.2	4.3	696	640	490	386	-3.6	-3.9
Republic of Korea	1 521	2 384	2 782	3 019	4.4	1.4	205	222	230	201	-0.1	-2.3
South-East Asia	417	498	557	633	2.6	2.2	241	230	237	218	-0.6	-1.4
Brunei Darussalam	1 654	2 268	2 139	2 076	1.4	-0.5	142	161	159	152	0.4	-0.8
Cambodia												
Indonesia	433	479	560	587	1.9	0.8	277	243	269	240	-0.9	-1.9
Lao PDR												
Malaysia	803	1 130	1 325	1 582	4.3	3.0	192	206	212	215	0.7	0.3
Myanmar	234	245	244	268	0.8	1.5	786	654	479		-4.8	-4.9
Philippines	249	318	330	304	1.3	-1.3	176	205	211	163	-0.5	-4.2
Singapore	2 273	2 465	2 581	3 736	3.2	6.4	187	197	150	158	-1.1	0.8
Thailand	567	804	858	1 117	4.3	4.5	195	191	216	221	0.8	0.4
Timor-Leste												
Viet Nam	340	384	424	535	2.9	4.0	407	340	300	271	-2.5	-1.6
South and South-West Asia	328	353	368	417	1.5	2.1	256	254	239	209	-1.3	-2.2
Afghanistan												
Bangladesh	98	108	110	129	1.7	2.6	163	164	149	143	-0.8	-0.6
Bhutan												
India	294	301	306	329	0.7	1.2	313	296	265	213	-2.4	-3.5
Iran (Islamic Rep. of)	950	1 247	1 410	1 945	4.6	5.5	202	235	242	254	1.4	0.8
Maldives												
Nepal	302	309	332	337	0.7	0.3	433	390	372	352	-1.3	-1.0
Pakistan	326	354	359	407	1.4	2.1	240	239	240	218	-0.6	-1.6
Sri Lanka	310	315	391	451	2.4	2.4	165	137	146	130	-1.5	-1.9
Turkey	702	763	856	994	2.2	2.5	166	165	169	158	-0.3	-1.2
North and Central Asia	3 649	2 590	2 357	2 460	-2.4	0.7	497	572	509	384	-1.6	-4.6
Armenia	1 880	363	376	601	-6.9	8.1	759	303	293	182	-8.5	-7.6
Azerbaijan	2 199	1 185	848	947	-5.1	1.9	752	907	566	273	-6.1	-11.5
Georgia	1 637	446	490	566	-6.4	2.4	418	448	261	194	-4.7	-4.8
Kazakhstan	3 661	2 550	1 931	2 628	-2.1	5.3	635	734	525	421	-2.5	-3.6
Kyrgyzstan	1 591	402	373	430	-7.8	2.4	684	436	331	308	-4.9	-1.2
Russian Federation	4 266	3 128	2 883	3 014	-2.1	0.7	469	541	488	373	-1.4	-4.4
Tajikistan	933	505	402	497	-3.9	3.6	343	529	460	351	0.1	-4.4
Turkmenistan	3 441	2 133	2 073	2 117	-3.0	0.3						
Uzbekistan	1 704	1 428	1 519	1 351	-1.4	-1.9	1 125	1 274	1 248	860	-1.7	-6.0
Pacific	3 328	3 467	3 703	3 683	0.6	-0.1	211	195	190	171	-1.3	-1.7
Australia	3 437	3 546	3 761	3 786	0.6	0.1	211	193	187	172	-1.3	-1.4
American Samoa												
Cook Islands												
Fiji												
French Polynesia												
Guam												
Kiribati												
Marshall Islands												
Micronesia (F.S.)												
Nauru												
New Caledonia												
New Zealand	2 786	3 076	3 419	3 173	0.8	-1.2	212	209	211	170	-1.4	-3.6
Niue												
Northern Mariana Is.												
Palau												
Papua New Guinea												
Samoa												
Solomon Islands												
Tonga												
Tuvalu												
Vanuatu												
Asia and the Pacific	773	749	731	853	0.6	2.6	312	287	257	241	-1.6	-1.1
LLDC	1 834	1 199	1 047	1 129	-3.0	1.3	712	790	647	451	-2.8	-5.8
LDC	159	168	172	191	1.1	1.7	277	267	233	176	-2.8	-4.5
ASEAN	417	498	557	633	2.6	2.2	241	230	237	218	-0.6	-1.4
ECO	937	850	849	1 010	0.5	2.9	306	286	270	249	-1.3	-1.3
SAARC	278	287	294	318	0.8	1.4	292	278	253	209	-2.1	-3.1
Central Asia	2 274	1 435	1 270	1 400	-3.0	1.6	693	823	661	447	-2.7	-6.3
Pacific island dev. econ.												
Low-income	395	357	362	395	0.0	1.4	377	339	317	264	-2.2	-3.0
Middle-income	717	676	648	797	0.7	3.5	425	374	312	282	-2.5	-1.7
High-income	2 312	2 667	2 837	2 900	1.4	0.4	153	160	161	148	-0.2	-1.4
Other world regions												
Africa	487	470	481	505	0.2	0.8	298	314	296	272	-0.6	-1.4
Europe	2 459	2 281	2 342	2 488	0.1	1.0	192	175	155	144	-1.8	-1.3
Latin America & Carib.	792	835	873	930	1.0	1.1	152	148	148	143	-0.4	-0.5
North America	5 163	5 231	5 561	5 288	0.1	-0.8	245	237	213	186	-1.7	-2.2
Other countries/areas	1 446	1 549	1 583	1 751	1.2	1.7	218	240	249		0.5	-1.0
World	1 187	1 146	1 151	1 226	0.2	1.1	248	234	213	200	-1.3	-1.0

28. Energy supply and use

28.2 Energy use by sector

	Total final consumption			Industry			Transport			Residential use		
	Thousand tons of oil equivalent			% of total energy final consumption								
	1990	2000	2006	1990	2000	2006	1990	2000	2006	1990	2000	2006
East and North-East Asia	1 071 034	1 292 214	1 731 129	36.1	34.6	39.5	12.5	15.9	14.8	32.3	27.7	23.7
China	663 060	780 279	1 201 846	36.3	37.5	43.8	5.6	9.5	10.5	44.2	37.6	28.3
DPR Korea	27 330	17 095	18 788	71.3	66.9	68.9	5.7	3.3	1.8	0.7	0.2	0.1
Hong Kong, China	7 180	11 976	11 554	21.7	15.0	8.3	46.9	54.5	53.6	10.3	9.6	10.7
Japan	305 299	351 183	351 787	34.4	29.4	29.0	25.0	26.9	25.9	12.4	13.8	13.8
Macao, China												
Mongolia	2 975	1 526	2 069	38.7	30.9	30.8	17.7	22.7	23.3	20.5	26.9	26.9
Republic of Korea	65 190	130 154	145 085	29.5	29.0	28.0	22.8	23.1	22.2	19.9	11.6	12.9
South-East Asia	178 911	286 106	353 442	20.9	25.3	27.1	19.8	24.5	24.1	46.6	36.8	33.3
Brunei Darussalam	425	713	793	22.7	19.6	13.5	53.3	48.1	53.6	10.6	9.4	8.1
Cambodia		3 684	4 525		0.8	1.4		8.3	9.3		90.7	86.2
Indonesia	79 164	118 624	134 267	21.1	25.6	25.8	13.9	18.4	18.8	52.5	43.9	42.0
Lao PDR												
Malaysia	14 531	30 848	41 303	36.5	36.1	40.8	37.8	39.1	36.8	13.6	10.0	9.5
Myanmar	9 407	11 201	12 947	4.2	7.8	8.3	4.8	10.5	10.1	89.8	80.0	76.4
Philippines	15 238	25 113	26 266	25.7	29.2	33.6	17.4	33.4	31.7	29.1	21.4	22.4
Singapore	6 856	10 367	16 369	9.0	10.0	7.5	47.5	47.2	35.8	4.1	5.1	3.8
Thailand	30 775	52 026	70 863	28.1	32.4	32.9	35.5	33.4	30.3	25.7	16.1	14.1
Timor-Leste												
Viet Nam	22 515	33 529	46 108	7.6	13.9	20.9	6.3	11.2	15.0	83.4	70.0	58.7
South and South-West Asia	405 986	554 627	692 308	26.1	25.7	26.7	14.2	15.0	15.3	46.0	43.0	40.3
Afghanistan												
Bangladesh	11 064	15 363	20 104	8.8	12.3	15.0	5.7	7.3	9.0	69.6	60.5	58.6
Bhutan												
India	252 945	320 373	378 488	27.8	27.2	28.8	11.2	10.5	10.3	48.6	45.1	42.1
Iran (Islamic Rep. of)	53 842	93 232	136 700	27.4	22.2	21.5	25.1	27.0	27.4	23.2	31.9	32.1
Maldives												
Nepal	5 778	8 097	9 327	1.8	4.7	4.5	2.2	4.0	3.7	94.6	88.9	89.1
Pakistan	36 802	51 870	65 582	21.9	21.8	27.1	13.5	17.3	15.3	54.5	51.6	48.3
Sri Lanka	5 303	7 325	8 654	14.8	19.5	20.9	15.4	25.3	22.3	63.3	46.5	48.0
Turkey	40 252	58 366	73 453	27.1	33.8	31.9	23.4	21.0	20.4	36.1	30.1	27.1
North and Central Asia	785 514	515 497	536 631	32.4	30.3	29.6	17.8	17.3	20.5	11.4	31.2	25.8
Armenia	6 663	1 158	1 808	27.4	34.4	39.8	18.7	23.3	12.8	24.8	13.8	9.0
Azerbaijan	15 859	6 902	7 958	42.9	21.7	20.5	9.9	12.4	27.5	12.3	34.5	45.5
Georgia	8 938	2 313	2 509	41.6	16.2	10.1	17.2	16.2	23.8	24.2	52.3	45.0
Kazakhstan	60 522	28 881	40 254	44.4	47.3	39.8	10.5	11.9	9.9	6.9	6.9	6.9
Kyrgyzstan	6 993	1 845	2 263	36.0	25.0	29.8	16.3	11.7	17.0	1.2	11.0	12.4
Russian Federation	634 015	425 031	431 733	33.1	30.8	30.3	19.7	18.6	22.5	13.1	32.9	26.6
Tajikistan	4 947	2 482	3 300	20.0	18.6	17.3	11.3	28.8	40.9	2.3	11.3	8.3
Turkmenistan	12 622	9 333	10 370	2.7	1.9	2.4	7.4	7.4	9.3	0.7	1.1	1.4
Uzbekistan	34 955	37 551	36 437	5.4	21.2	21.8	5.9	10.4	9.2	0.9	39.8	41.0
Pacific	67 499	85 153	90 861	32.8	31.5	32.5	38.5	38.6	38.8	12.8	12.3	12.4
Australia	57 997	71 978	77 727	33.1	33.0	33.6	38.9	39.0	37.9	12.9	12.6	12.6
American Samoa												
Cook Islands												
Fiji												
French Polynesia												
Guam												
Kiribati												
Marshall Islands												
Micronesia (F.S.)												
Nauru												
New Caledonia												
New Zealand	9 502	13 176	13 133	30.8	22.8	26.0	36.0	36.3	43.8	11.8	10.5	11.3
Niue												
Northern Mariana Is.												
Palau												
Papua New Guinea												
Samoa												
Solomon Islands												
Tonga												
Tuvalu												
Vanuatu												
Asia and the Pacific	2 508 944	2 733 598	3 404 370	32.2	30.9	33.9	15.7	17.6	17.4	28.5	32.0	28.1
LLDC	151 314	97 776	113 786	28.1	26.1	25.4	9.6	11.0	11.7	6.8	28.3	27.3
LDC	26 249	38 346	46 903	5.6	8.3	9.8	4.6	7.6	8.3	82.3	75.1	72.3
ASEAN	178 911	286 106	353 442	20.9	25.3	27.1	19.8	24.5	24.1	46.6	36.8	33.3
ECO	266 794	290 462	376 316	27.4	26.2	25.9	15.2	19.4	19.9	18.6	32.4	31.2
SAARC	311 892	403 029	482 155	25.7	25.3	27.4	11.2	11.4	11.0	51.2	47.5	44.6
Central Asia	151 499	90 466	104 899	29.7	27.6	26.7	10.2	11.5	12.4	4.2	23.5	22.3
Pacific island dev. econ.												
Low-income	159 791	182 719	219 380	22.6	21.6	24.7	8.1	11.5	12.0	38.2	51.7	49.3
Middle-income	1 896 704	1 961 332	2 568 541	32.8	32.4	36.0	13.5	14.9	15.4	31.2	35.9	29.9
High-income	452 449	589 548	616 449	32.8	29.0	28.3	27.4	28.7	27.8	13.4	12.9	13.1
Other world regions												
Africa	292 829	375 851	451 030	20.6	18.0	17.8	13.5	15.0	15.2	53.0	53.7	53.9
Europe	1 405 827	1 358 519	1 460 709	32.2	26.6	25.1	22.9	27.1	27.7	23.2	24.7	23.9
Latin America & Carib.	349 987	454 984	524 398	33.2	32.6	32.5	30.9	32.8	34.0	19.8	17.8	17.0
North America	1 465 299	1 754 906	1 773 671	22.5	22.0	19.0	37.2	37.6	39.8	2.0	1.8	1.7
Other countries/areas	149 967	223 539	287 305	29.6	31.3	25.6	36.8	32.6	32.8	10.4	11.6	11.8
World	6 172 853	6 901 397	7 901 482	29.3	27.2	27.6	23.7	25.9	25.9	21.2	22.4	21.5

28.3 Energy balances

	Primary production			Imports			Exports			Energy supply		
	Million tons of oil equivalent											
	1990	2000	2006	1990	2000	2006	1990	2000	2006	1990	2000	2006
East and North-East Asia	918.0	1 094.8	1 774.6	27.2	119.8	241.3	-45.3	-71.1	-81.0	1 447.9	1 860.0	2 665.4
China	886.3	1 074.0	1 749.3	7.7	96.9	212.1	-42.7	-69.0	-76.2	863.2	1 105.9	1 878.7
DPR Korea	28.9	18.8	22.2	4.6	1.3	1.0	-0.3	-0.2	-1.6	33.2	19.8	21.7
Hong Kong, China	0.0	0.0	0.0	14.1	21.2	27.6	-2.1	-1.9	-2.3	10.7	15.9	18.2
Japan										443.9	526.6	527.6
Macao, China										3.4	2.4	2.8
Mongolia	2.7	1.9	3.0	0.9	0.5	0.7	-0.2	0.0	-0.9	93.4	189.4	216.5
Republic of Korea												
South-East Asia	311.5	467.1	606.0	115.6	196.3	266.1	-168.0	-243.6	-348.7	246.4	398.6	498.8
Brunei Darussalam	15.6	19.7	21.8	0.0	0.0	0.0	-13.8	-17.3	-19.1	1.8	2.5	2.8
Cambodia		3.2	3.6		0.8	1.4					4.0	5.0
Indonesia	170.0	235.6	307.7	9.7	24.0	33.4	-76.3	-108.0	-161.2	102.8	151.4	179.1
Lao PDR												
Malaysia	50.3	80.4	97.9	9.5	16.2	23.7	-36.4	-44.9	-52.8	23.3	51.3	68.3
Myanmar	10.7	15.4	22.1	0.0	1.4	0.9	0.0	-4.4	-8.7	10.7	12.6	14.3
Philippines	13.7	20.9	24.7	13.3	23.5	20.4	-0.7	-1.9	-1.9	26.2	42.4	43.0
Singapore										13.4	22.2	30.7
Thailand	26.5	43.9	56.2	18.8	38.9	57.2	-0.8	-6.9	-10.3	43.9	75.0	103.4
Timor-Leste												
Viet Nam	24.7	48.1	71.9	3.0	8.9	12.2	-3.1	-18.6	-31.1	24.3	37.2	52.3
South and South-West Asia	525.7	679.2	840.5	55.9	131.5	213.7	-121.4	-136.1	-189.0	509.3	754.4	953.8
Afghanistan												
Bangladesh	10.8	15.2	20.3	2.3	3.5	4.8	-0.1	-0.1	-0.1	12.8	18.7	25.0
Bhutan												
India	291.1	364.3	435.6	34.5	100.3	168.6	-2.8	-8.8	-33.8	319.9	459.8	565.8
Iran (Islamic Rep. of)	179.8	240.9	309.3	7.4	4.8	15.6	-117.9	-126.3	-153.6	68.8	118.8	170.9
Maldives												
Nepal	5.5	7.1	8.3	0.3	1.0	1.1	0.0	0.0	0.0	5.8	8.2	9.4
Pakistan	34.4	47.1	61.3	9.5	18.0	19.5	-0.3	-0.8	-1.4	43.4	64.0	79.3
Sri Lanka	4.2	4.5	5.5	1.9	3.9	4.2	-0.2	-0.1	0.0	5.5	8.1	9.4
Turkey										52.9	76.9	94.0
North and Central Asia	1 512.1	1 171.0	1 513.9	214.0	49.1	55.5	-655.6	-472.3	-726.8	1 078.0	743.5	829.8
Armenia	0.1	0.6	0.8	7.8	1.5	1.8	-0.1	-0.1	-0.1	7.9	2.1	2.6
Azerbaijan	21.3	19.0	38.1	17.1	0.4	4.0	-12.4	-7.8	-28.2	26.1	11.6	14.1
Georgia	1.8	1.3	1.2	11.8	1.7	2.2	-1.3	-0.1	-0.1	12.3	2.9	3.3
Kazakhstan	90.5	80.0	131.0	32.2	8.2	18.5	-49.0	-46.3	-87.7	73.6	42.2	61.4
Kyrgyzstan	2.5	1.4	1.5	6.6	1.2	1.6	-1.5	-0.3	-0.3	7.6	2.4	2.8
Russian Federation	1 280.3	966.5	1 220.0	118.8	31.5	22.8	-527.7	-378.7	-554.0	878.9	614.6	676.2
Tajikistan	2.0	1.3	1.5	4.3	1.9	2.5	-0.7	-0.4	-0.4	5.6	2.8	3.6
Turkmenistan	74.9	46.0	61.6	3.0	0.1	0.1	-58.2	-31.5	-44.4	19.6	14.5	17.3
Uzbekistan	38.6	54.9	58.2	12.5	2.5	1.9	-4.7	-7.1	-11.6	46.4	50.4	48.5
Pacific										101.4	128.6	140.0
Australia										87.7	110.6	122.5
American Samoa												
Cook Islands												
Fiji												
French Polynesia												
Guam												
Kiribati												
Marshall Islands												
Micronesia (F.S.)												
Nauru												
New Caledonia										13.8	18.1	17.5
New Zealand												
Niue												
Northern Mariana Is.												
Palau												
Papua New Guinea												
Samoa												
Solomon Islands												
Tonga												
Tuvalu												
Vanuatu												
Asia and the Pacific	3 267.3	3 412.0	4 734.9	412.8	496.8	776.7	-990.4	-923.1	-1 345.5	3 382.9	3 885.1	5 087.9
LLDC	238.2	212.2	304.0	84.6	17.4	32.2	-126.8	-93.5	-173.7	196.0	136.5	162.5
LDC										29.3	43.4	53.7
ASEAN	311.5	467.1	606.0	115.6	196.3	266.1	-168.0	-243.6	-348.7	246.4	398.6	498.8
ECO	444.0	490.6	662.5	92.6	37.2	63.8	-244.8	-220.5	-327.7	344.1	383.6	491.9
SAARC	345.9	438.3	531.2	48.5	126.8	198.1	-3.5	-9.8	-35.4	387.5	558.7	689.0
Central Asia	231.8	204.5	293.9	95.2	17.6	32.7	-128.0	-93.6	-172.8	199.1	128.9	153.6
Pacific island dev. econ.												
Low-income	158.1	212.6	271.1	43.1	40.6	46.9	-11.0	-31.8	-55.2	189.8	220.0	261.9
Middle-income	3 093.5	3 179.7	4 442.0	294.3	352.3	585.3	-926.6	-830.4	-1 205.2	2 528.5	2 779.7	3 890.3
High-income	15.7	19.7	21.8	75.5	103.9	144.5	-52.8	-60.9	-85.1	664.6	885.4	935.7
Other world regions												
Africa	688.4	890.8	1 110.5	47.0	81.1	102.6	-341.4	-461.7	-591.3	392.7	507.4	614.3
Europe	230.7	149.6	159.4	336.5	148.8	185.2	-85.3	-27.8	-48.7	2 049.8	1 968.5	2 084.5
Latin America & Carib.	427.5	621.0	704.3	103.4	151.8	163.8	-172.9	-305.3	-333.0	469.3	610.3	708.0
North America										2 135.8	2 554.6	2 590.4
Other countries/areas	765.5	1 090.6	1 244.3	84.2	138.5	190.2	-622.1	-848.4	-942.6	215.6	362.4	471.8
World	5 379.4	6 164.0	7 953.4	983.9	1 017.0	1 418.5	-2 212.0	-2 566.3	-3 261.0	8 646.0	9 888.3	11 557.0

28.4 Electricity production and household consumption

	Gross electricity production						Household electricity consumption per capita					
	Total			Growth rate			Total			Growth rate		
	Million kilowatt-hours		% per annum	Kilowatt-hours		% per annum	1990		1995	2000	2005	90-05
	1990	1995	2000	2005	90-05	00-05	1990	1995	2000	2005	90-05	00-05
East and North-East Asia	1 683 809	2 270 525	2 736 662	4 055 971	6.0	8.2	194	268	321	453	5.8	7.1
China	621 200	1 007 726	1 355 600	2 497 441	9.7	13.0	42	83	132	215	11.5	10.3
DPR Korea	53 500	36 000	19 400	22 913	-5.5	3.4						
Hong Kong, China	28 960	27 916	31 329	38 451	1.9	4.2	927	1 211	1 344	1 410	2.8	1.0
Japan	857 273	989 880	1 060 846	1 102 330	1.7	0.8	1 496	1 886	2 030	2 612	3.8	5.2
Macao, China	790	1 272	1 571	2 027	6.5	5.2	1 534	986	1 186	1 051	-2.5	-2.4
Mongolia	3 348	2 629	2 930	3 419	0.1	3.1	166	138	124	236	2.4	13.8
Republic of Korea	118 738	205 102	264 986	389 390	8.2	8.0	414	629	665	1 063	6.5	9.8
South-East Asia	174 082	273 655	386 181	508 940	7.4	5.7	72	119	180	231	8.1	5.1
Brunei Darussalam	1 237	1 966	2 842	3 264	6.7	2.8	1 720	2 051	2 420	2 996	3.8	4.4
Cambodia	164	277	466	764	10.8	10.4					7	8
Indonesia	48 897	68 399	99 511	127 362	6.6	5.1	49	86	144	182	9.2	4.8
Lao PDR	870	1 044	3 871	3 513	9.8	-1.9					62	88
Malaysia	25 263	46 656	69 210	87 300	8.6	4.8	225	340	487	632	7.1	5.4
Myanmar	2 478	4 056	5 118	6 015	6.1	3.3	16	24	28	30	4.6	1.5
Philippines	24 658	30 875	45 327	56 549	5.7	4.5	97	119	169	190	4.6	2.3
Singapore	15 618	22 057	31 665	38 213	6.1	3.8	778	969	1 425	1 560	4.7	1.8
Thailand	46 175	83 660	101 577	132 197	7.3	5.4	149	254	321	407	6.9	4.8
Timor-Leste	300	300	300	300	0.0	0.0						
Viet Nam	8 722	14 665	26 594	53 463	12.8	15.0	14	67	139	229	20.6	10.5
South and South-West Asia	458 401	662 623	899 504	1 170 392	6.4	5.4	59	79	105	133	5.6	5.0
Afghanistan	1 128	625	480	960	-1.1	14.9	22	10	5	6	-8.4	4.4
Bangladesh	8 057	11 689	15 771	22 643	7.1	7.5	12	21	39	58	11.3	8.1
Bhutan	1 564	1 630	1 810	2 050	1.8	2.5	44	24	54	69	3.1	5.2
India	289 439	418 043	560 842	697 351	6.0	4.5	37	54	72	91	6.2	4.7
Iran (Islamic Rep. of)	59 102	84 969	121 314	180 390	7.7	8.3		376	473	637	3.6	6.1
Maldives	24	57	104	160	13.5	9.0	70	105	161	220	8.0	6.4
Nepal	731	1 000	1 659	2 415	8.3	7.8	12	14	22	27	5.3	4.0
Pakistan	37 660	53 555	65 760	93 699	6.3	7.3	83	122	149	194	5.8	5.5
Sri Lanka	3 150	4 800	6 844	8 769	7.1	5.1	30	57	93	128	10.1	6.7
Turkey	57 546	86 255	124 920	161 955	7.1	5.3	158	231	350	424	6.8	3.9
North and Central Asia	1 041 816	1 048 373	1 151 515	-0.4	1.9		699	799	666	1.4	-3.6	
Armenia	5 561	5 958	6 317	-2.3	1.2		199	506	571	13.8	2.5	
Azerbaijan	17 045	18 699	22 872	1.0	4.1		367	1 216	1 467	13.0	3.8	
Georgia	8 154	7 424	7 267	-2.8	-0.4		916	564	662	1.8	3.2	
Kazakhstan	66 659	51 635	67 916	-1.3	5.6		426	395	322	-2.5	-4.0	
Kyrgyzstan	12 349	15 959	16 415	2.1	0.6		416	475	567	2.8	3.6	
Russian Federation	860 027	877 766	953 115	-0.4	1.7		845	955	757	1.1	-4.5	
Tajikistan	14 768	14 247	17 086	0.1	3.7		349	527	478	5.5	-1.9	
Turkmenistan	9 800	9 845	12 820	-0.2	5.4		251	272	277	0.1	0.4	
Uzbekistan	47 453	46 840	47 707	-0.4	0.4		295	292	269	-0.5	-1.7	
Pacific	192 748	214 617	254 443	303 241	3.1	3.6	1 882	1 899	2 028	2 319	1.4	2.7
Australia	155 077	173 384	207 757	251 120	3.3	3.9	2 284	2 333	2 548	3 000	1.8	3.3
American Samoa	100	137	169	189	4.3	2.3	509	646	701	749	2.6	1.3
Cook Islands	16	16	25	30	4.3	3.7						
Fiji	467	544	688	823	3.8	3.6	98	124	173	226	5.7	5.4
French Polynesia	291	349	407	493	3.6	3.9		1 647	1 850	0.8	2.3	
Guam	1 370	1 694	1 941	1 897	2.2	-0.5	2 614	3 187	3 478	2 996	0.9	-2.9
Kiribati	7	7	10	10	2.4	0.0				109	-0.5	-1.4
Marshall Islands	55	78	88	101	4.1	2.8						
Micronesia (F.S.)												
Nauru	29	32	33	32	0.7	-0.6						
New Caledonia	1 147	1 415	1 645	1 700	2.7	0.7						
New Zealand	32 266	35 387	39 223	42 956	1.9	1.8	2 880	2 900	2 941	3 078	0.4	0.9
Niue	3	3	3	3	0.0	0.0		1 598	1 838	1.2	2.8	
Northern Mariana Is.	1				9.7	1.4						
Palau		120	125	128	0.4	0.5				1 491	0.3	0.8
Papua New Guinea	1 790	1 287	2 100	3 500	4.6	10.8	30	23	98	185	12.8	13.4
Samoa	50	65	91	111	5.5	4.1			225	256	0.8	2.6
Solomon Islands	30	35	62	67	5.5	1.6	22				-0.2	0.0
Tonga	24	30	35	36	2.7	0.6						
Tuvalu												
Vanuatu	25	34	41	45	4.0	1.9				209	-0.4	-1.2
Asia and the Pacific	2 509 040	4 463 236	5 325 163	7 190 059	7.3	6.2	163	213	255	315	4.5	4.3
LLDC	7 641	180 563	173 933	203 490	24.5	3.2		206	273	271	1.8	-0.1
LDC	15 128	20 519	29 483	39 053	6.5	5.8	14	20	32	44	7.8	6.5
ASEAN	174 082	273 655	386 181	508 640	7.4	5.7	72	119	180	231	8.1	5.1
ECO	155 436	393 478	469 699	621 820	9.7	5.8		226	294	351	3.8	3.6
SAARC	341 753	491 399	653 270	828 047	6.1	4.9	39	56	75	96	6.3	5.1
Central Asia		181 789	170 607	198 400	-0.6	3.1		383	478	490	2.6	0.5
Pacific island dev. econ.	5 405	5 846	7 463	9 165	3.6	4.2	169	176	235	296	3.8	4.7
Low-income	115 130	198 803	218 327	291 160	2.7	5.9	53	77	104	136	6.5	5.5
Middle-income	1 181 394	2 804 260	3 462 863	5 026 993	5.3	7.7	93	134	177	218	5.8	4.2
High-income	1 212 768	1 460 422	1 644 212	1 871 841	2.9	2.6	1 325	1 628	1 754	2 245	3.6	5.1
Other world regions												
Africa	318 966	369 260	435 317	557 659	3.8	5.1	91	105	122	147	3.2	3.7
Europe	4 847 032	3 225 488	3 501 349	3 808 060	-1.6	1.7		1 326	1 430	1 559	1.4	1.7
Latin America & Carib.	629 994	798 203	1 004 234	1 171 307	4.2	3.1	305	371	413	437	2.4	1.1
North America	3 662 180	4 119 056	4 658 969	4 915 542	2.0	1.1	3 714	3 919	4 217	4 547	1.4	1.5
Other countries/areas	284 619	397 813	532 293	692 327	6.1	5.4		1 518	1 804	2.5	3.5	
World	12 251 831	13 373 056	15 457 326	18 334 954	2.7	3.5	490	534	585	653	1.9	2.2