

**Energy,
Electricity
and
Nuclear Power
Estimates
for the Period
up to 2030**



IAEA

International Atomic Energy Agency

REFERENCE DATA SERIES No. 1

**ENERGY, ELECTRICITY
AND NUCLEAR POWER ESTIMATES
FOR THE PERIOD UP TO 2030**

July 2006 Edition

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INTRODUCTION

Reference Data Series No. 1 is an annual publication — currently in its twenty-sixth edition — containing estimates of energy, electricity and nuclear power trends up to the year 2030.

Nuclear data presented in Table 1 are based on actual statistical data collected by the IAEA's Power Reactor Information System (PRIS). Energy and electricity data for 2005, however, are estimated, since the latest available information from the Department of Economic and Social Affairs of the United Nations is for 2003. Population data originate from the World Population Prospects (2003 Revision), published by the Population Division of the UN Department of Economic and Social Affairs, and the 2005 values are estimates.

The future growth of energy, electricity and nuclear power up to the year 2030 is presented as low and high estimates in order to encompass the uncertainties associated with the future. These estimates should be viewed as very general growth trends whose validity must constantly be subjected to critical review.

The energy forecasts carried out in increasing numbers over the last years by international, national and private organizations are based on a multiplicity of different assumptions and different aggregating procedures, which make their comparison and synthesis very difficult. The basic differences refer to such fundamental input data as:

- World and regional scenarios of economic development;
- Correlation of economic growth and energy consumption;
- Assumptions on physical, economic and political constraints applying to energy production and consumption;
- Future prices of different energy sources.

The projections presented in this booklet are based on a compromise among:

- National projections supplied by each country for a recent OECD/NEA study;
- Indicators of development published by the World Bank in its World Development Indicators;
- Estimates of energy, electricity and nuclear power growth continuously carried out by the IAEA in the wake of recent global and regional projections made by other international organizations.

The nuclear generating capacity estimates presented in Table 3 are derived from a country by country 'bottom-up' approach. They are established by a group of experts participating each year in the IAEA's consultancy on Nuclear Capacity Projections and based upon a review of nuclear power projects and programmes in Member States.

The low and high estimates reflect contrasting but not extreme underlying assumptions on the different driving factors that have an impact on nuclear power deployment. These factors, and the ways they might evolve, vary from country to country. The estimates presented provide a plausible range of nuclear capacity growth by region and worldwide. They are not intended to be predictive nor to reflect the whole range of possible futures from the lowest to the highest feasible.

In the low estimates, the present barriers to nuclear power development are assumed to prevail in most countries during the coming three decades:

- Low economic and electricity demand growth rates in OECD countries;
- Public opposition to nuclear power, leading to policy decisions not to consider the nuclear option in spite of its competitive costs and potential contribution to reducing environmental impacts from electricity generation;
- Institutional and financing issues preventing the implementation of previously planned nuclear programmes, in particular in countries in transition and in developing countries;

- Inadequate mechanisms for nuclear technology transfer and nuclear project funding in developing countries.

The high estimates reflect a moderate revival of nuclear power development that could result in particular from a more comprehensive comparative assessment of the different options for electricity generation, integrating economic, social, health and environmental aspects. They are based upon a review of national nuclear power programmes, assessing their technical and economic feasibility. They assume that some policy measures would be taken to facilitate the implementation of these programmes, such as strengthening of international co-operation, enhanced technology adaptation and transfer, and establishment of innovative funding mechanisms. These estimates also take into account the global concern over climate change caused by the increasing concentration of greenhouse gases in the atmosphere, and the signing of the recent Kyoto Protocol.

The data on electricity produced by nuclear power plants is converted to joules based on the average efficiency of a nuclear power plant, i.e. 33 per cent; data on electricity generated by geothermal heat is converted to joules based on the average efficiency of a geothermal power plant, i.e. 10 per cent. The conversion to joules of electricity generated by hydropower or by the other non-thermal sources such as wind, tide, and solar is based on the energy content of the electricity generated (the equivalent of assuming a 100 per cent efficiency).

The total energy requirement has been calculated by summing the primary energy production, the net energy trade minus changes in international bunkers and domestic stocks.

The values shown in Table 9 refer to primary energy used for the generation of electricity. Owing to differences in conversion efficiencies, the percentage values are different from the shares of electricity generation presented in Tables 1 and 5.

Energy Units

1 MW(e) = 10^6 watts

1 GW(e) = 1000 MW(e) = 10^9 watts

1 GJ = 1 gigajoule = 10^9 joules

1 EJ = 1 exajoule = 10^{18} joules

1 EJ = 23.9 megatonnes of oil equivalent (MTOE)

1 TW·h = 1 terawatt-hour = 10^9 kW·h = 3.6×10^{-3} EJ

GROUPING OF COUNTRIES AND AREAS

The countries and geographical areas included in each grouping are listed below (IAEA Member States are denoted by an asterisk)

North America

Canada* United States of America*

Latin America

Anguilla Haiti*
Antigua and Barbuda Honduras*
Argentina* Jamaica*
Aruba Martinique
Bahamas Mexico*
Barbados Montserrat
Belize* Netherlands Antilles
Bermuda Nicaragua*
Bolivia* Panama*
Brazil* Paraguay*
Cayman Islands Peru*
Chile* Puerto Rico
Colombia* S.Georgia & S.Sandwich Islands
Costa Rica* Saint Kitts and Nevis
Cuba* Saint Lucia
Dominica Saint Pierre and Miquelon
Dominican Republic* Saint Vincent & the Grenadines
Ecuador* Suriname
El Salvador* Trinidad and Tobago
Grenada Turks and Caicos Islands
Guadeloupe Uruguay*
Guatemala* Venezuela*
Guyana

Western Europe

Andorra Liechtenstein*
Austria* Luxembourg*
Belgium* Malta*
Cyprus* Monaco*
Denmark* Netherlands*
Finland* Norway*
France* Portugal*
Germany* San Marino
Gibraltar Spain*
Greece* Svalbard and Jan Mayen Islands
Greenland Sweden*
Holy See* Switzerland*
Iceland* Turkey*
Ireland* United Kingdom*
Italy*

Eastern Europe

Albania*
Armenia*
Azerbaijan*
Belarus*
Bosnia and Herzegovina*
Bulgaria*
Croatia*
Czech Republic*
Estonia*
Georgia*
Hungary*
Kazakhstan*
Kyrgyzstan*
Latvia*
Lithuania*
Poland*
Republic of Moldova*
Romania*
Russian Federation*
Serbia and Montenegro*
Slovakia*
Slovenia*
Tajikistan*
The Fmr. Yug. Rep. of Macedonia*
Turkmenistan
Ukraine*
Uzbekistan*

Africa

Algeria*
Angola*
Benin*
Botswana*
Burkina Faso*
Burundi
Cameroon*
Cape Verde
Central African Republic*
Chad*
Comoros
Congo
Côte d'Ivoire*
Democratic Rep. of the Congo*
Djibouti
Egypt*
Equatorial Guinea
Eritrea*
Ethiopia*
Gabon*
Gambia
Ghana*
Guinea
Guinea-Bissau
Kenya*
Lesotho
Liberia*
Libyan Arab Jamahiriya*
Madagascar*
Malawi
Mali*
Mauritania*
Mauritius*
Mayotte
Morocco*
Mozambique
Namibia*
Niger*
Nigeria*
Reunion
Rwanda
Saint Helena
Sao Tome and Principe
Senegal*
Seychelles*
Sierra Leone*
Somalia
South Africa*
Sudan*
Swaziland
Togo*
Tunisia*
Uganda*
United Republic of Tanzania*
Western Sahara
Zambia*
Zimbabwe*

Middle East and South Asia

Afghanistan*	Kuwait*
Bahrain	Lebanon*
Bangladesh*	Nepal
Bhutan	Oman
British Indian Ocean Territory	Pakistan*
Cocos (Keeling) Islands	Qatar*
French Southern Territories	Saudi Arabia*
Heard Island & McDonald Islands	Sri Lanka*
India*	Syrian Arab Republic*
Iran, Islamic Republic of*	T.T.U.T.J. of T. Palestinian A.
Iraq*	United Arab Emirates*
Israel*	Yemen*
Jordan*	

South East Asia and the Pacific

Australia*	Northern Mariana Islands
Brunei Darussalam	Palau
Cook Islands	Papua New Guinea
Fiji	Pitcairn Islands
Indonesia*	Samoa
Kiribati	Singapore*
Malaysia*	Solomon Islands
Maldives	Thailand*
Marshall Islands*	Timor Leste
Micronesia (Fed. States of)	Tokelau
Myanmar*	Tuvalu
New Zealand*	US Minor Outlying Islands
Niue	Vanuatu
Norfolk Islands	Wallis and Futuna Islands

Far East

Cambodia	Macau, China
China*	Mongolia*
Dem. P.R. of Korea	Philippines*
Japan*	Taiwan, China
Korea, Republic of*	Vietnam*
Lao P.D.R.	

TABLE 1. NUCLEAR POWER REACTORS IN THE WORLD (end of 2005)

Group and Country	In Operation		Under Construction		Electricity Supplied by Nuclear Power Reactors in 2005	
	Number of Units	Total MW(e)	Number of Units	Total MW(e)	TW.h	Per cent of Total Electricity
North America						
Canada	18	12599			86.8	14.6
United States of America	104	99210			780.5	19.3
Latin America						
Argentina	2	935	1	692	6.4	6.9
Brazil	2	1901			9.9	2.5
Mexico	2	1310			10.8	5.0
Western Europe						
Belgium	7	5801			45.3	55.6
Finland	4	2676	1	1600	22.3	32.9
France	59	63363			430.9	78.5
Germany	17	20339			154.6	31.0
Netherlands	1	449			3.8	3.9
Spain	9	7588			54.7	19.6
Sweden	10	8910			69.5	44.9
Switzerland	5	3220			22.1	32.1
United Kingdom	23	11852			75.2	19.9
Eastern Europe						
Armenia	1	376			2.5	42.7
Bulgaria	4	2722			17.3	44.1
Czech Republic	6	3368	2	1906	23.3	30.5
Hungary	4	1755			13.0	37.2

TABLE 1. NUCLEAR POWER REACTORS IN THE WORLD (end of 2005) — continued

Group and Country	In Operation		Under Construction		Electricity Supplied by Nuclear Power Reactors in 2005	
	Number of Units	Total MW(e)	Number of Units	Total MW(e)	TW.h	Per cent of Total Electricity
Lithuania	1	1185			10.3	69.6
Romania	1	655	1	655	5.1	8.6
Russian Federation	31	21743	4	3775	137.3	15.8
Slovakia	6	2442			16.3	56.1
Slovenia	1	656			5.6	42.4
Ukraine	15	13107	2	1900	83.3	48.5
Africa						
South Africa	2	1800			12.2	5.5
Middle East and South Asia						
India	15	3040	8	3602	15.7	2.8
Iran, Islamic Republic of			1	915		
Pakistan	2	425	1	300	2.4	2.8
Far East						
China	9	6572	3	3000	50.3	2.0
Japan	56	47839	1	866	280.7	29.3
Korea, Republic of	20	16810			139.3	44.7
World Total (a)	443	369552	27	21811	2625.9	15.5

Notes:

(a) Including the following data in Taiwan, China:

- 6 units in operation with total capacity of 4904 MW(e); 2 units under construction with total capacity of 2600 MW(e);
- 38.4 TW.h of nuclear electricity generation, representing 20.3% of the total electricity generated.

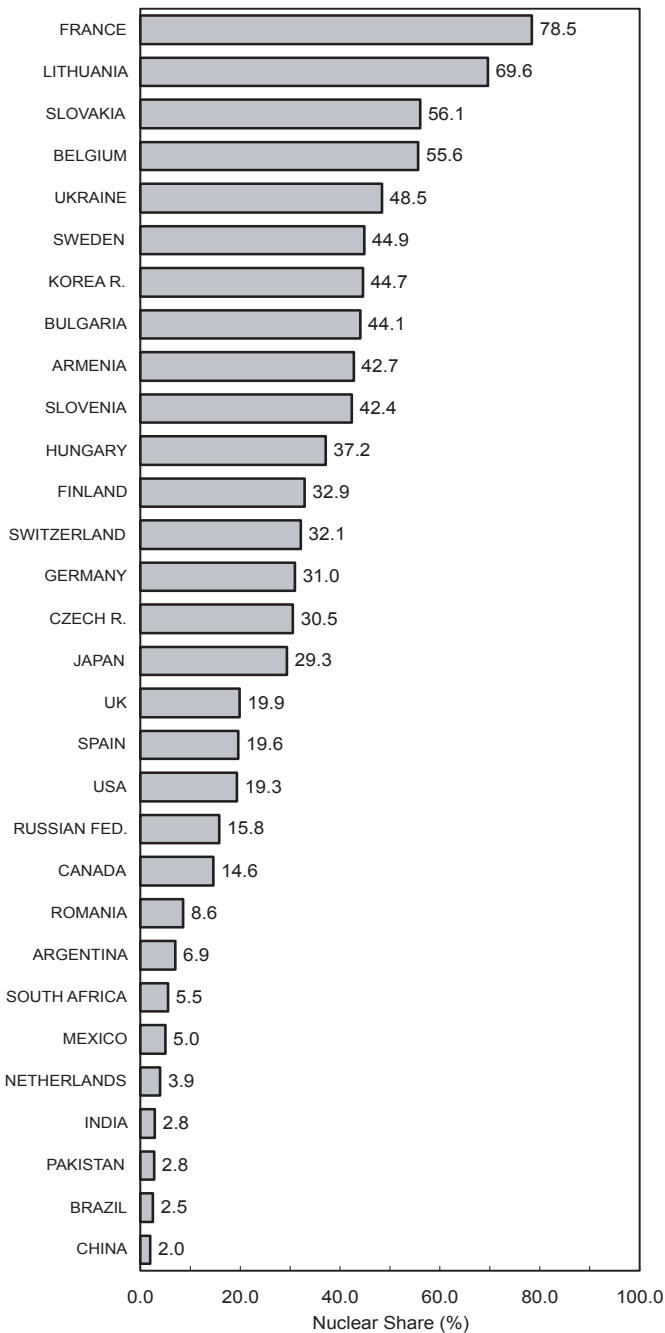


FIGURE 1. NUCLEAR SHARE OF TOTAL ELECTRICITY GENERATION IN 2005

TABLE 2. NUMBER OF COUNTRIES WITH NUCLEAR POWER REACTORS IN OPERATION OR UNDER CONSTRUCTION (end of 2005)

Country Group	Number of Countries in Group	Countries with Nuclear Power Reactors		Total (2)
		In Operation	Under Construction (1)	
North America	2	2		2
Latin America	45	3	1	3
Western Europe	29	9	1	9
Eastern Europe	27	10	4	10
Africa	57	1		1
Middle East and South Asia	25	2	3	3
South East Asia and the Pacific	27			
Far East	11	4	3	4
World Total	223	31	12	32

Notes:

(1) May include countries having reactors already in operation.

(2) Total number of countries in each group that have nuclear power reactors in operation, or under construction.

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TABLE 3. ESTIMATES OF TOTAL AND NUCLEAR ELECTRICAL GENERATING CAPACITY

Country Group	2005			2010 (a)			2020 (a)			2030 (a)		
	Total Elect.	Nuclear		Total Elect.	Nuclear		Total Elect.	Nuclear		Total Elect.	Nuclear	
	GW(e)	GW(e)	%	GW(e)	GW(e)	%	GW(e)	GW(e)	%	GW(e)	GW(e)	%
North America	1252	111.8	8.9	1289 1335	114 116	9 9	1400 1478	120 131	9 9	1546 1643	126 158	8.2 10
Latin America	276	4.1	1.5	305 339	4.1 4.3	1.4 1.3	385 526	6.3 7.3	1.6 1.4	485 802	6.0 18	1.2 2.2
Western Europe	751	124.2	16.5	782 818	122 124	16 15	864 953	91 129	10 14	964 1121	48 149	5 13
Eastern Europe	466	48.0	10.3	469 489	48 50	10 10	505 596	68 76	14 13	543 724	78 107	14 15
Africa	104	1.8	1.7	111 125	1.8 1.8	1.6 1.4	138 191	2.1 4.1	1.5 2.2	175 292	2.1 10.3	1.2 3.5
Middle East and South Asia	300	3.5	1.2	338 365	10 11	2.9 3.0	439 547	17 27	3.8 4.9	568 800	23 46	4.1 5.8
South East Asia and the Pacific	146			165 176			208 258	0.9	0.3	258 374	0.9 4.8	0.3 1.3
Far East	822	76.1	9.3	854 987	81 83	9 8	1003 1371	119 145	12 11	1169 1867	130 187	11 10
World Total	4117	369.6	9.0	4314 4633	381 390	9 8.4	4943 5920	423 520	8.6 8.8	5709 7622	414 679	7.3 8.9

Note:

(a) Nuclear capacity estimates take into account the scheduled decommissioning of the older units at the end of their lifetime.

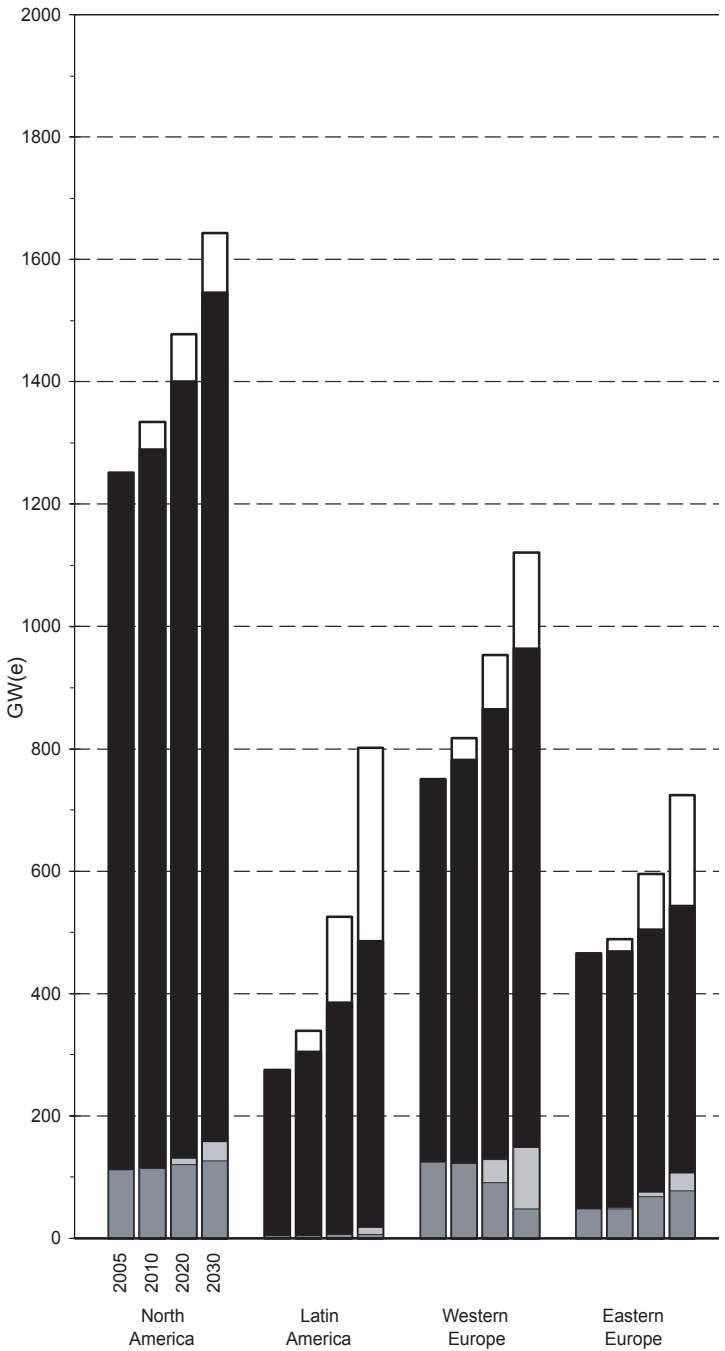
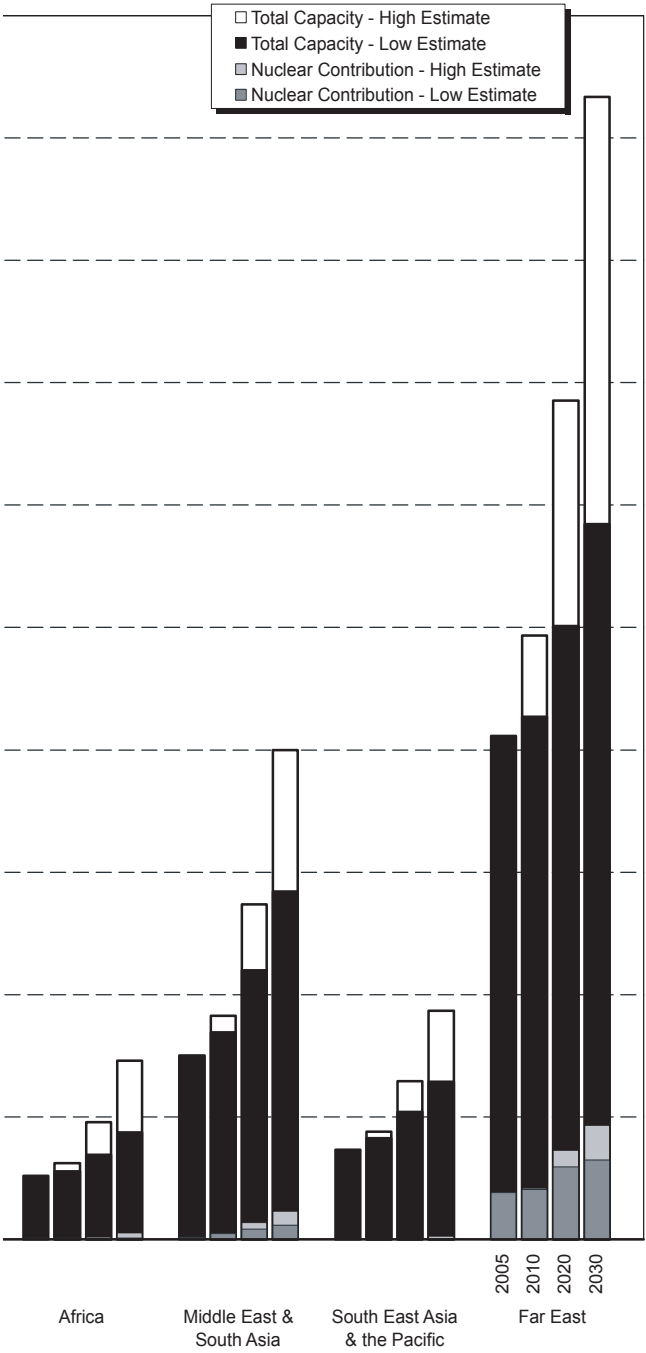


FIGURE 2. TOTAL AND NUCLEAR ELECTRICAL GENERATING CAPACITY



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TABLE 4. ESTIMATES OF TOTAL ELECTRICITY GENERATION AND CONTRIBUTION BY NUCLEAR POWER (*)

Country Group	2005				2010				2020				2030					
	Total Elect.		Nuclear		Total Elect.		Nuclear		Total Elect.		Nuclear		Total Elect.		Nuclear			
	TW.h	%	TW.h	%	TW.h	%	TW.h	%	TW.h	%	TW.h	%	TW.h	%	TW.h	%		
North America	4631	18.7	867.3	19.2	4743	19.2	912	17.9	5414	971	17.9	6057	1017	16.8	7430	1273	17.1	
Latin America	1116	2.4	27.0	2.6	1187	2.6	31	2.9	1613	47	2.9	2206	45	2.1	3442	136	4.0	
Western Europe	2995	29.3	878.4	28.3	3177	27.4	898	22.7	3464	683	19.7	3756	374	10.0	5535	1146	20.7	
Eastern Europe	1723	18.2	314.0	17.4	1797	17.1	314	22.2	2076	461	22.2	2358	545	23.1	3789	748	19.7	
Africa	510	2.4	12.2	2.5	570	2.4	14	2.3	740	17	2.3	931	18	1.9	1509	85	5.6	
Middle East and South Asia	1240	1.5	18.1	4.4	1346	4.3	59	5.8	1789	103	5.8	2313	150	6.5	3672	299	8.1	
South East Asia and the Pacific	630				717				915	6	0.5	1138	6	0.5	1510	31	2.1	
Far East	4087	12.4	508.7	13.0	4280	11.5	554	15.7	5231	820	15.7	6328	919	14.5	11303	1325	11.7	
World Total	16930	15.5	2625.9	16	17818	15	2782	15	21242	3102	15	25087	3074	12	38191	5043	13	
Low Estimate					19391		2842		27133	3803								
High Estimate																		

(*) The nuclear generation data presented in this table and the nuclear capacity data presented in Table 3 cannot be used to calculate average annual capacity factors for nuclear plants, as Table 3 presents year-end capacity and not the effective capacity average over the year.

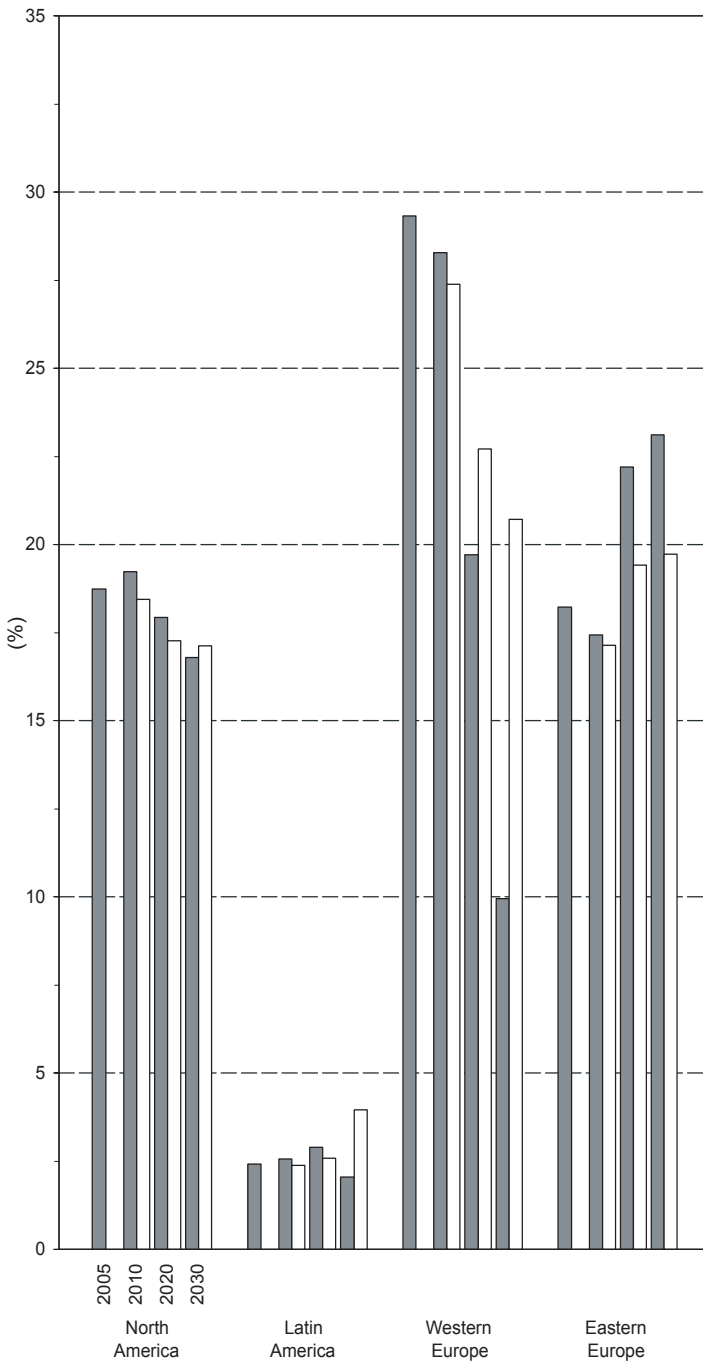
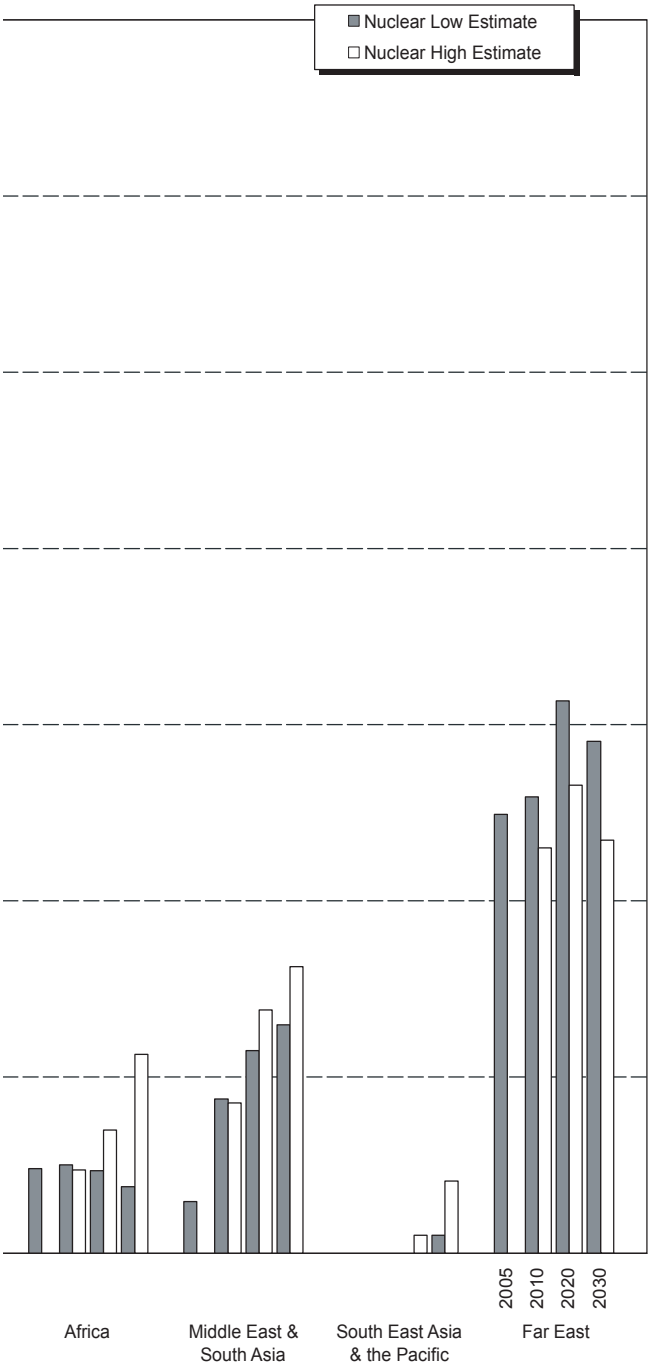


FIGURE 3. PERCENTAGE OF ELECTRICITY SUPPLIED BY NUCLEAR POWER



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TABLE 5. ESTIMATES OF TOTAL ENERGY REQUIREMENT (EJ), PERCENTAGE USED FOR ELECTRICITY GENERATION, AND PERCENTAGE SUPPLIED BY NUCLEAR ENERGY (*)

Country Group	2005			2010			2020			2030		
	Total Energy Consumption	% Used for Elect. Gen.	% Supplied by Nuclear	Total Energy Consumption	% Used for Elect. Gen.	% Supplied by Nuclear	Total Energy Consumption	% Used for Elect. Gen.	% Supplied by Nuclear	Total Energy Consumption	% Used for Elect. Gen.	% Supplied by Nuclear
North America	112.9	34.6	8.4	116	35	8.6	124	37	8.6	133	38	8.4
				122	35	8.3	140	37	8.2	159	39	8.7
Latin America	30.8	22.8	1.0	35	22	1.0	44	23	1.2	55	25	0.9
				37	23	0.9	56	24	1.1	83	27	1.8
Western Europe	70.7	36.5	13.6	73	37	13.4	77	37	9.6	82	36	5.0
				75	38	13.2	84	43	12.7	94	49	13
Eastern Europe	56.2	36.2	6.1	59	36	5.8	67	36	7.5	75	37	7.9
				62	36	5.8	79	39	7.0	98	46	8.3
Africa	29.7	15.5	0.4	32	16	0.5	40	17	0.5	47	18	0.4
				35	16	0.5	47	19	0.8	62	22	1.5
Middle East and South Asia	48.5	30.3	0.4	55	29	1.2	70	30	1.6	89	31	1.8
				59	31	1.2	85	33	2.1	121	36	2.7
South East/Asia and the Pacific	22.6	29.1		25	30		31	31		38	32	0.2
				27	29		39	29	0.2	53	30	0.6
Far East	102.1	35.9	5.4	112	34	5.4	137	35	6.5	164	35	6.1
				121	37	5.1	172	40	6.4	237	43	6.1
World Total	473.5	32.7	6.0	506	32	6.0	589	33	5.7	683	33	4.9
Low Estimate				537	33	5.8	700	35	5.9	907	38	6.1
High Estimate												

Note:

(*) Total energy requirement is estimated as production of primary energy plus net trade (import – export) minus international bunkers and stock changes.

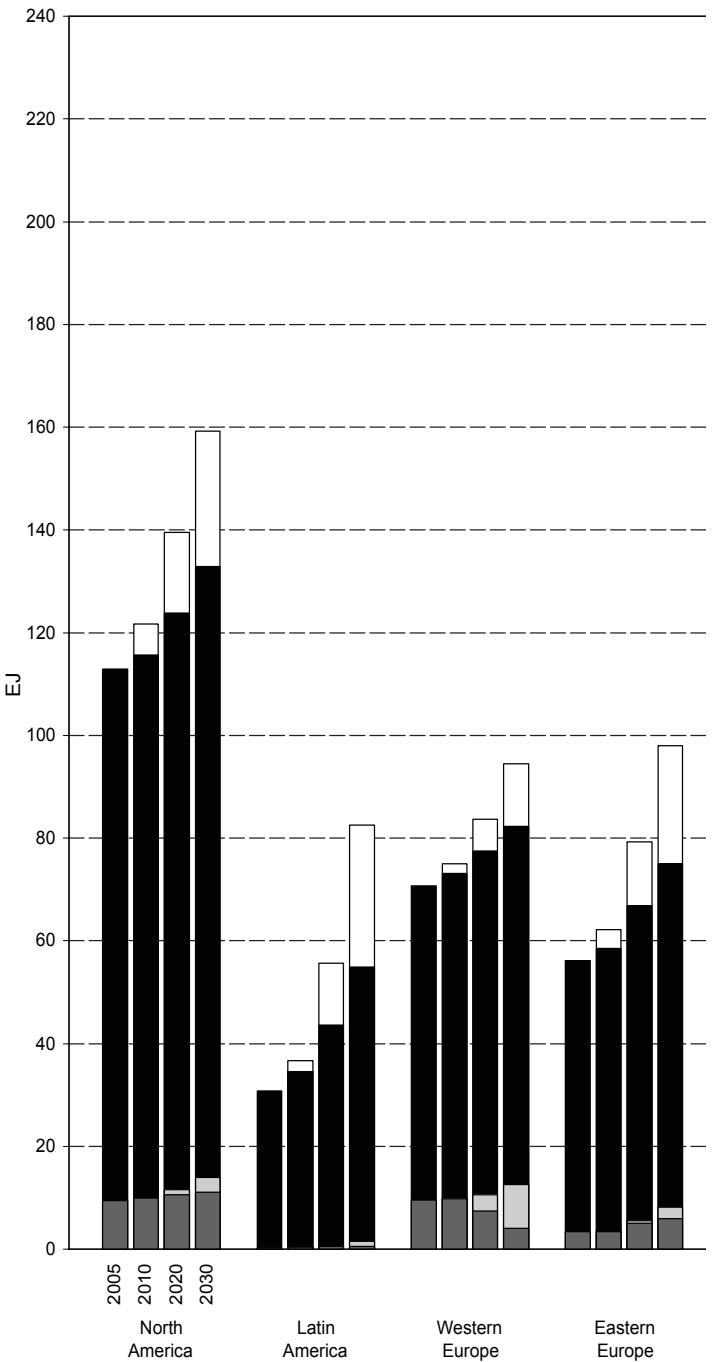
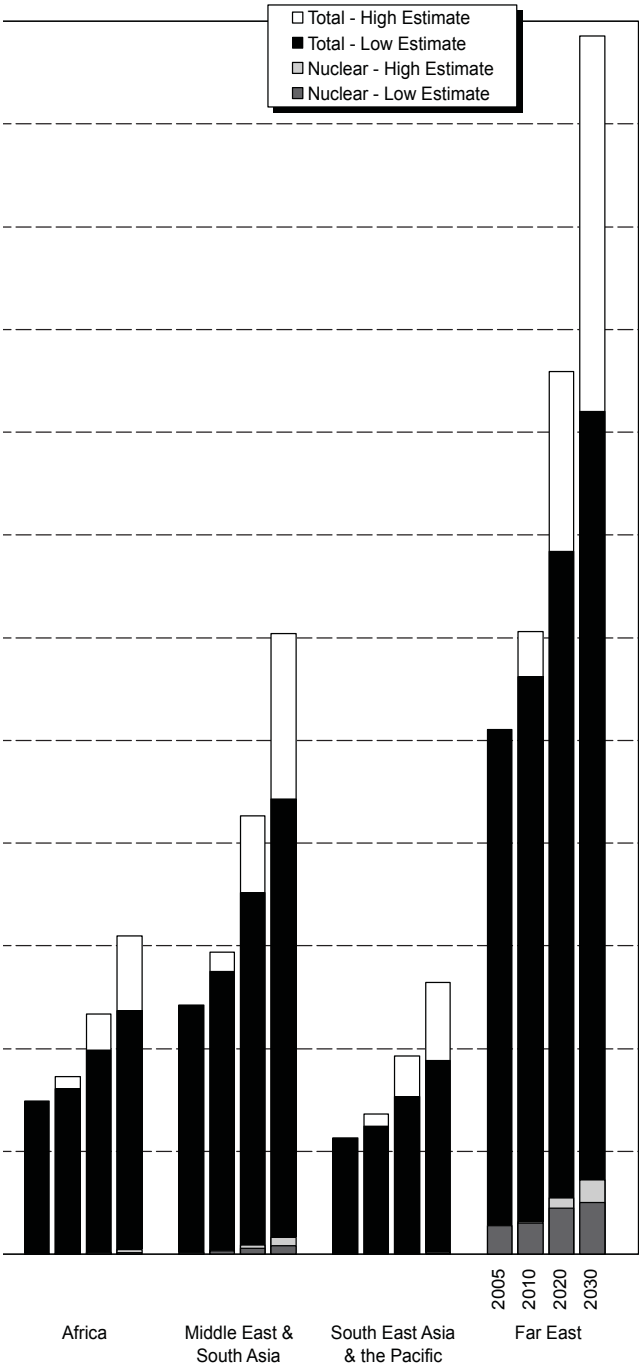


FIGURE 4. ESTIMATES OF TOTAL ENERGY REQUIREMENT



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TABLE 6. TOTAL ENERGY REQUIREMENT (EJ) BY FUEL TYPE IN 2005 (*)

Country Group	Solids (a)	Liquids	Gases	Biomass (b)	Hydro	Nuclear	Renewables (c)	Total
North America	44.95	24.84	27.49	3.24	2.36	9.46	0.56	112.91
Latin America	14.08	1.15	7.57	5.07	2.35	0.29	0.30	30.81
Western Europe	26.55	10.01	19.06	2.98	1.80	9.58	0.68	70.66
Eastern Europe	11.06	11.78	27.17	1.77	1.10	3.43	-0.15	56.15
Africa	5.43	5.90	2.73	15.16	0.34	0.13	0.02	29.71
Middle East and South Asia	18.67	11.62	11.66	5.77	0.57	0.20	0.02	48.51
South East Asia and the Pacific	9.57	4.27	5.45	2.84	0.24		0.22	22.59
Far East	29.38	52.27	8.88	3.60	1.97	5.55	0.50	102.15
World Total	159.69	121.83	110.02	40.43	10.73	28.65	2.15	473.49

Notes:

(*) Total energy requirement = production of primary energy plus net trade (import – export) minus international bunkers and stock changes.

(a) Solids do not include commercial wood.

(b) The column headed 'Biomass' includes commercial wood, combustible renewables, waste and other biomass products.

(c) The column headed 'Renewables' includes geothermal, wind, solar, tidal energy and net electricity trade.

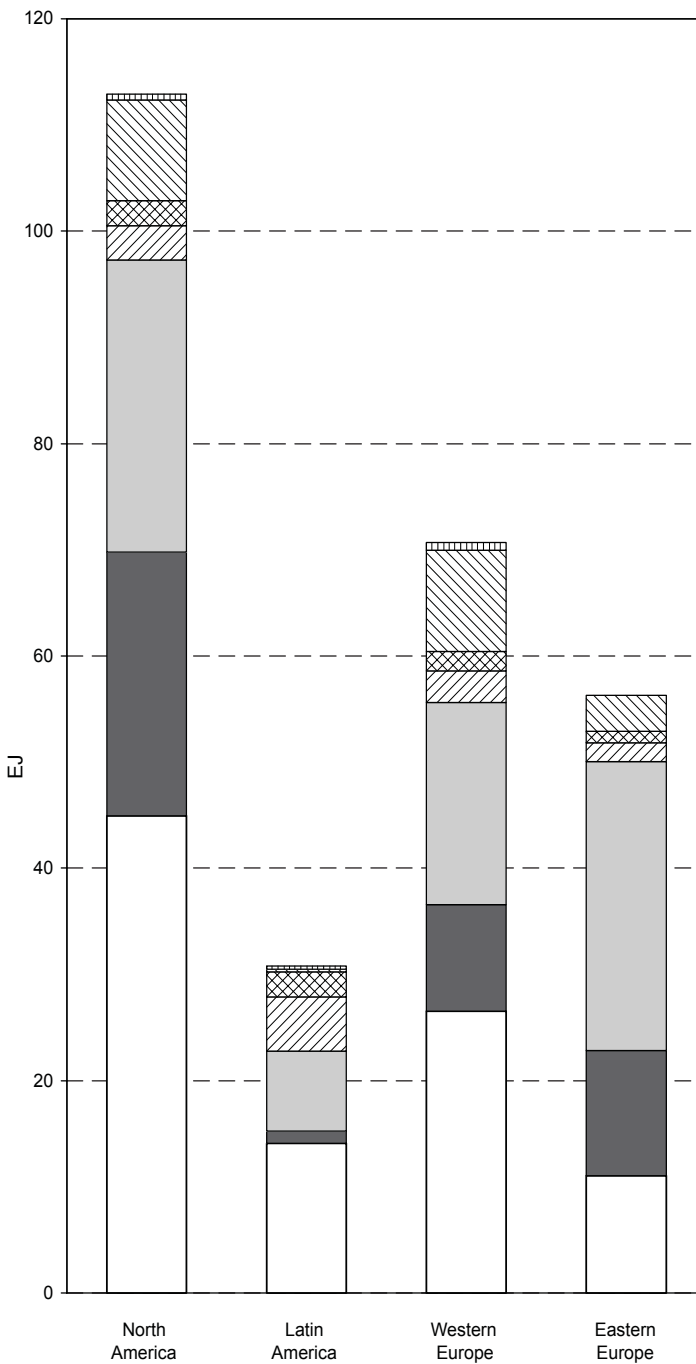
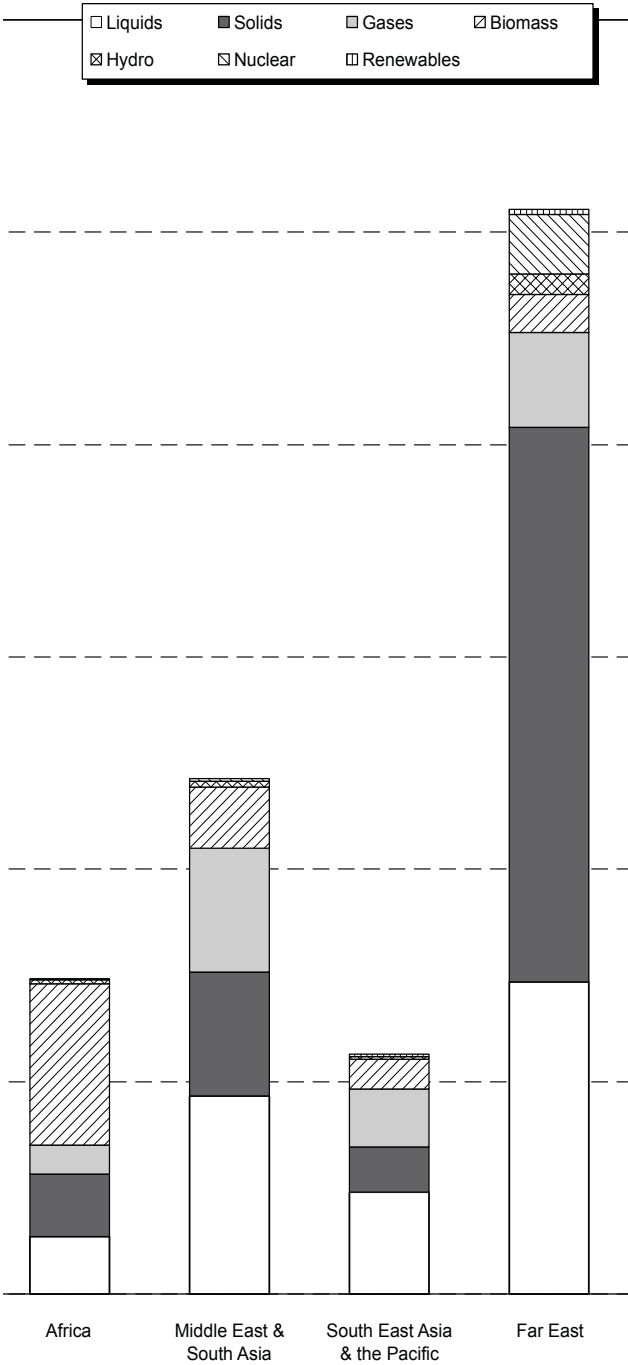


FIGURE 5. TOTAL ENERGY REQUIREMENT BY FUEL TYPE IN 2005



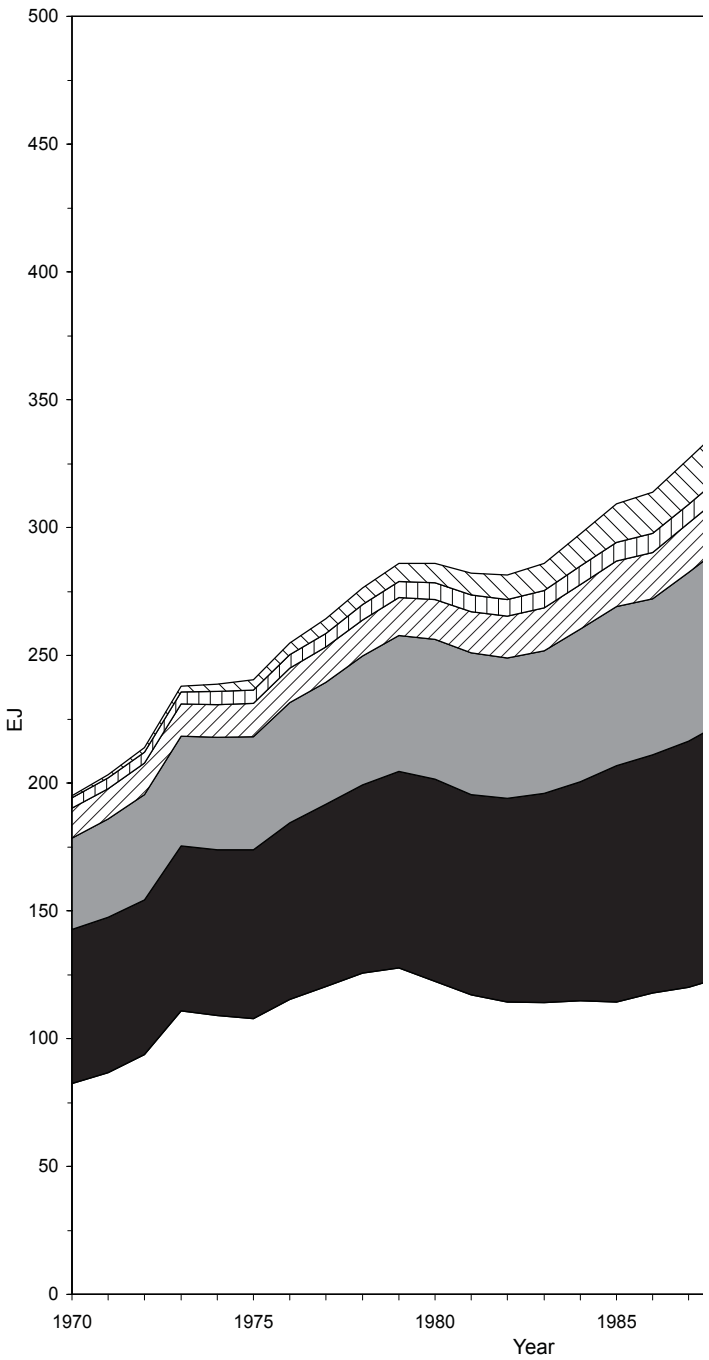
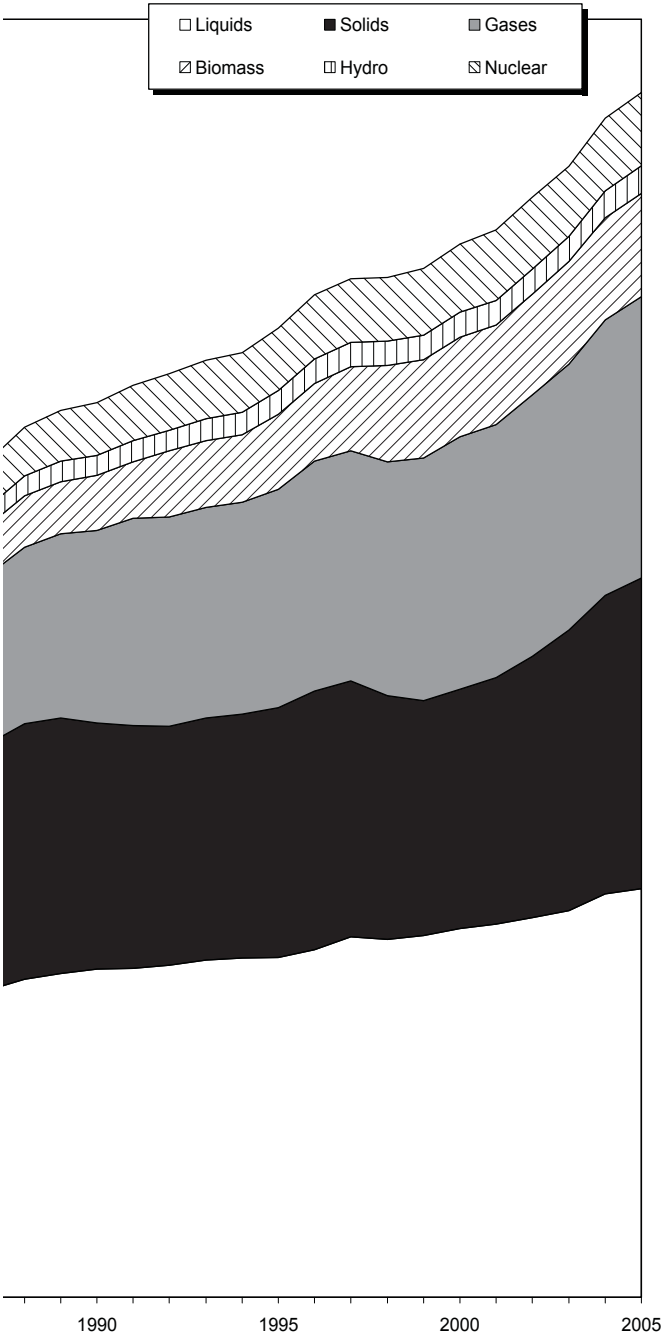


FIGURE 6. BREAKDOWN OF WORLD TOTAL ENERGY REQUIREMENT DURING THE PERIOD 1970–2005



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TABLE 7. FUEL SHARES (%) OF TOTAL ENERGY REQUIREMENT IN 2005 (*)

Country Group	Solids (a)	Liquids	Gases	Biomass (b)	Hydro	Nuclear	Renewables (c)	Total
North America	39.81	22.00	24.35	2.87	2.09	8.38	0.50	100.00
Latin America	45.70	3.73	24.57	16.45	7.61	0.96	0.98	100.00
Western Europe	37.58	14.16	26.97	4.21	2.55	13.56	0.96	100.00
Eastern Europe	19.69	20.98	48.39	3.15	1.96	6.10	-0.27	100.00
Africa	18.27	19.85	9.19	51.02	1.14	0.45	0.07	100.00
Middle East and South Asia	38.49	23.94	24.04	11.90	1.18	0.41	0.03	100.00
South East Asia and the Pacific	42.39	18.89	24.12	12.56	1.07		0.97	100.00
Far East	28.76	51.17	8.70	3.52	1.93	5.43	0.49	100.00
World Total	33.73	25.73	23.24	8.54	2.27	6.05	0.45	100.00

Notes:

(*) Total energy requirement = production of primary energy plus net trade (import – export) minus international bunkers and stock changes.

(a) Solids do not include commercial wood.

(b) The column headed 'Biomass' includes commercial wood, combustible renewables, waste and other biomass products.

(c) The column headed 'Renewables' includes geothermal, wind, solar, tidal energy and net electricity trade.

TABLE 8. FUEL USE (EJ) FOR ELECTRICITY GENERATION BY FUEL TYPE IN 2005

Country Group	Thermal (a)	Hydro	Nuclear	Renewables (b)	Total
North America	27.71	2.36	9.46	0.56	40.09
Latin America	4.41	2.35	0.29	0.32	7.37
Western Europe	15.09	1.80	9.58	0.48	26.95
Eastern Europe	17.51	1.10	3.43	0.01	22.05
Africa	4.50	0.34	0.13	0.03	5.01
Middle East and South Asia	16.36	0.57	0.20	0.01	17.14
South East Asia and the Pacific	6.64	0.24		0.21	7.09
Far East	28.52	1.97	5.55	0.50	36.54
World Total	120.74	10.73	28.65	2.12	162.23

Notes:

(a) The column headed 'Thermal' is the total for solids, liquids, gases, biomass and waste.

(b) The column headed 'Renewables' includes geothermal, wind, solar and tidal energy.

TABLE 9. PERCENTAGE CONTRIBUTION OF EACH FUEL TYPE TO ELECTRICITY GENERATION IN 2005

Country Group	Thermal (a)	Hydro	Nuclear	Renewables (b)	Total
North America	66.48	14.14	18.73	0.65	100.00
Latin America	38.31	58.37	2.42	0.90	100.00
Western Europe	51.41	17.05	29.33	2.22	100.00
Eastern Europe	64.04	17.70	18.22	0.04	100.00
Africa	78.81	18.47	2.40	0.31	100.00
Middle East and South Asia	85.35	12.86	1.46	0.32	100.00
South East Asia and the Pacific	88.23	10.68		1.08	100.00
Far East	73.81	13.38	12.45	0.36	100.00
World Total	66.04	17.66	15.51	0.79	100.00

Notes:

(a) The column headed 'Thermal' is the total for solids, liquids, gases, biomass and waste.

(b) The column headed 'Renewables' includes geothermal, wind, solar and tidal energy.

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TABLE 10. ESTIMATES OF POPULATION GROWTH BY REGION (*)

Country Group	2005		2010		2020		2030	
	Million Inhabitants	Growth Rate (%/a) 1995 — 2005	Million Inhabitants	Growth Rate (%/a) 2005 — 2010	Million Inhabitants	Growth Rate (%/a) 2010 — 2020	Million Inhabitants	Growth Rate (%/a) 2020 — 2030
North America	332	1.04	348	0.94	379	0.87	407	0.71
Latin America	558	1.50	595	1.26	659	1.04	711	0.76
Western Europe	468	0.44	475	0.29	484	0.19	488	0.09
Eastern Europe	406	-0.17	402	-0.20	393	-0.22	380	-0.35
Africa	888	2.30	984	2.08	1188	1.90	1398	1.64
Middle East and South Asia	1674	1.87	1816	1.65	2091	1.42	2325	1.07
South East Asia and the Pacific	405	1.41	428	1.12	469	0.91	500	0.64
Far East	1719	0.86	1778	0.68	1872	0.52	1914	0.22
World Total	6450	1.44	6827	1.14	7535	0.99	8123	0.75

(*) Projection figures are the arithmetic average between low and high estimates.

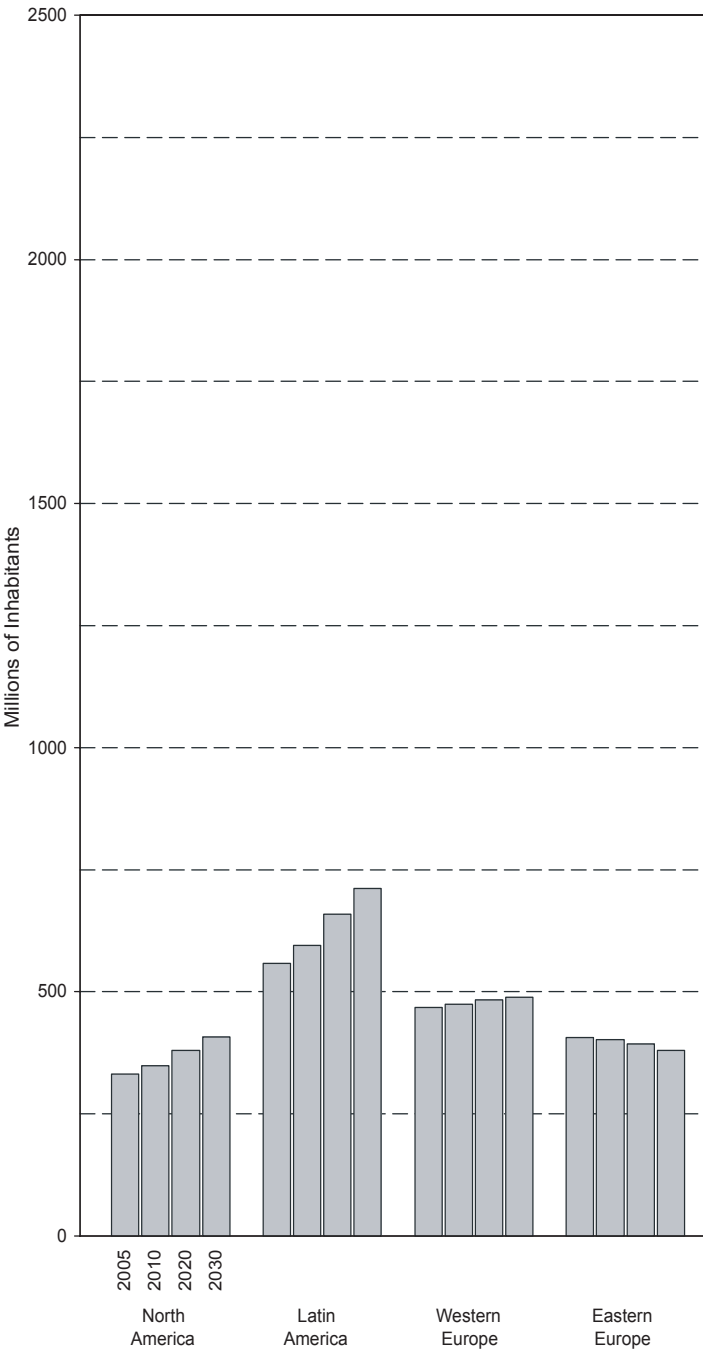
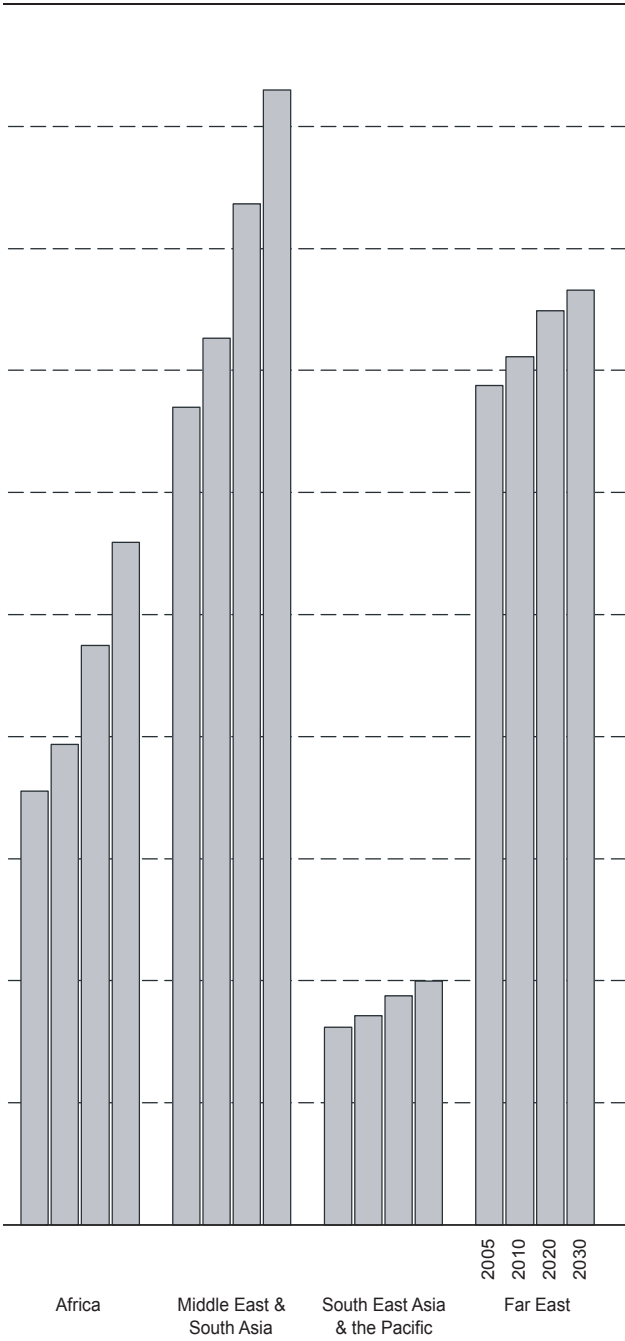


FIGURE 7. POPULATION ESTIMATES



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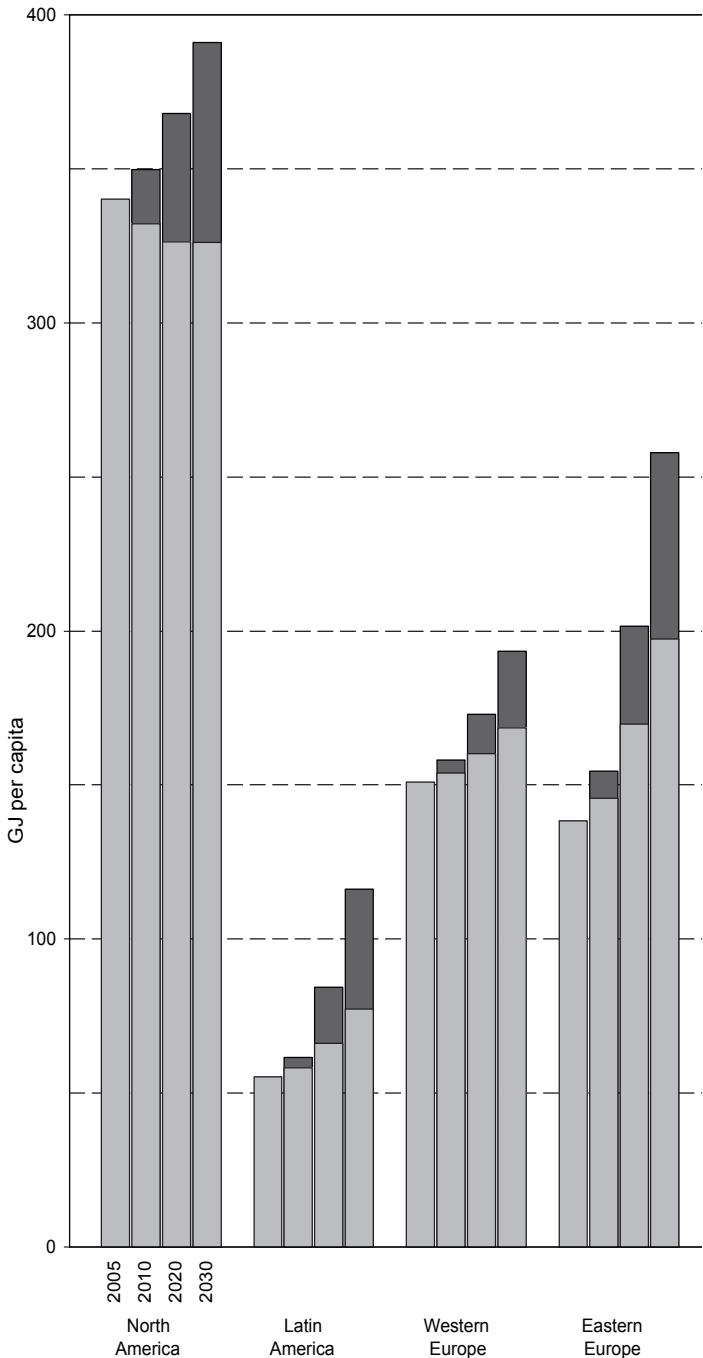
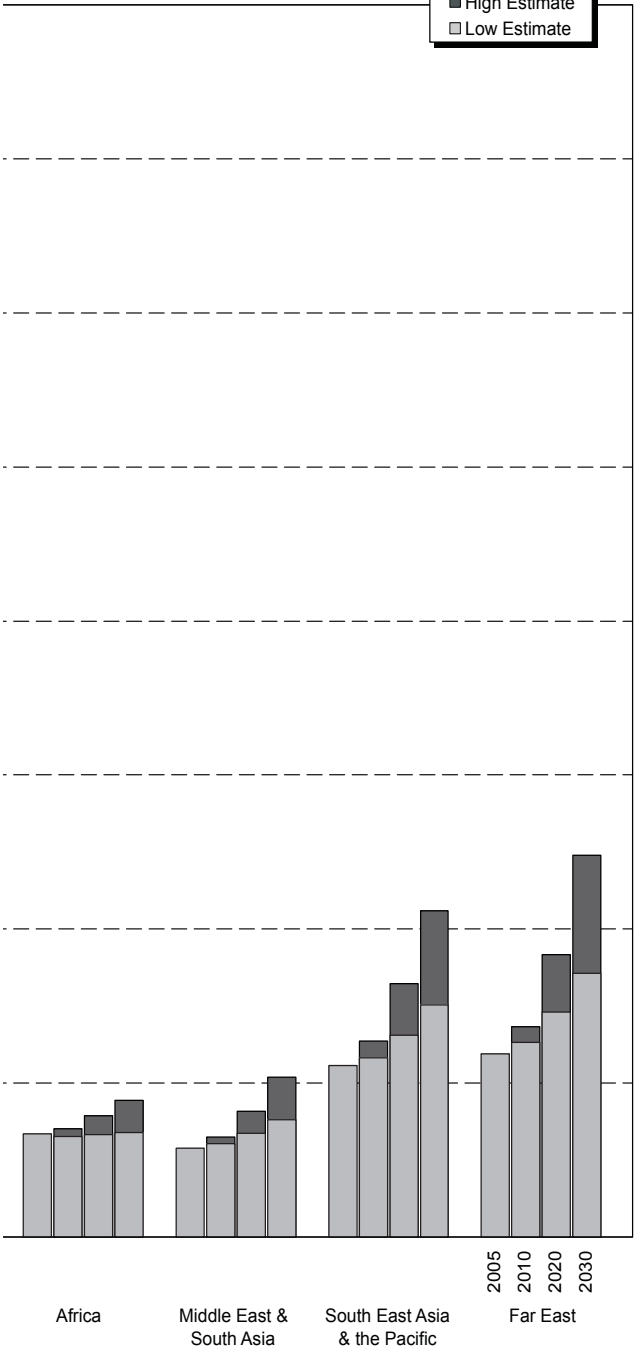
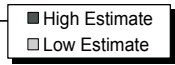


FIGURE 8. TOTAL ENERGY REQUIREMENT PER CAPITA



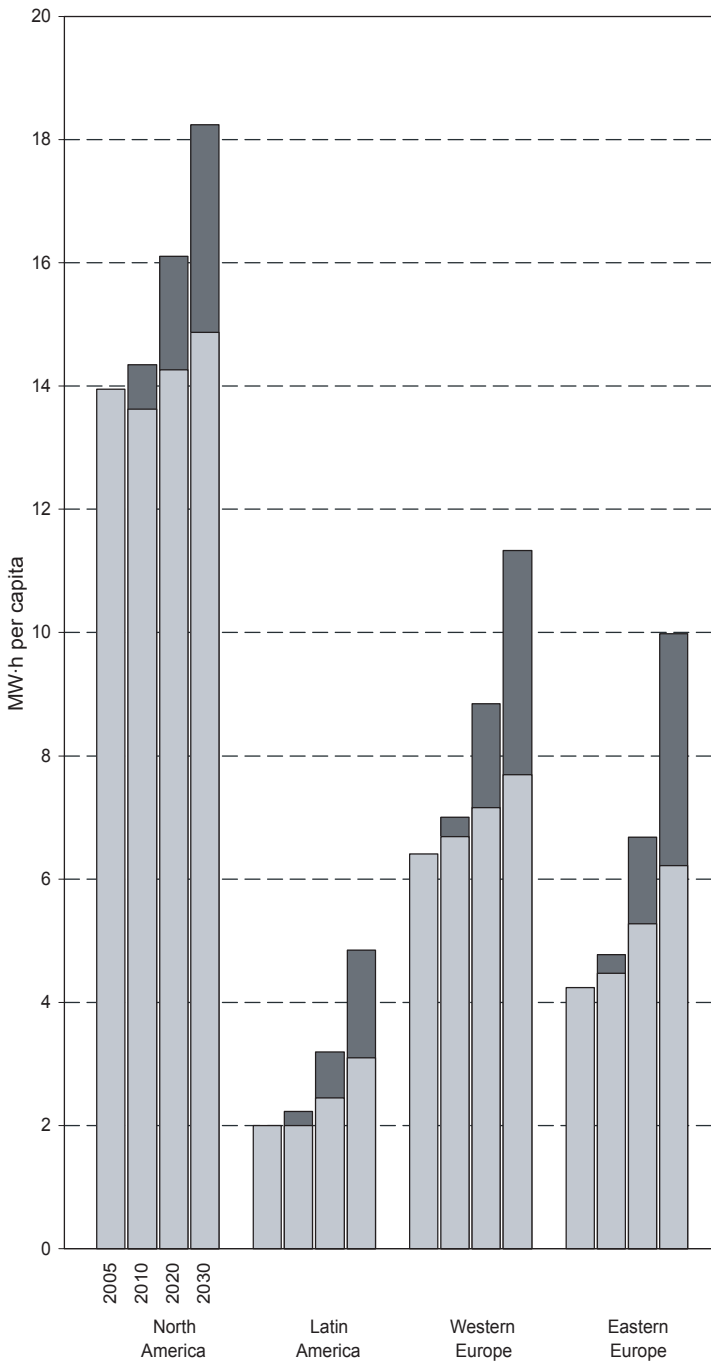


FIGURE 9. TOTAL ELECTRICITY REQUIREMENT PER CAPITA

■ High Estimate
□ Low Estimate



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TABLE 12. AVERAGE ANNUAL GROWTH RATES DURING THE PERIOD 1995–2005 (%)

Country Group	Population	Total Energy Requirement	Total Electricity Requirement	Nuclear Energy Consumption	Nuclear Capacity
North America	1.0	1.2	1.8	1.3	-0.4
Latin America	1.5	2.3	3.6	4.1	3.7
Western Europe	0.4	1.2	2.0	1.1	0.1
Eastern Europe	-0.2	0.4	0.8	3.0	0.7
Africa	2.3	4.9	3.9	0.8	0
Middle East and South Asia	1.9	4.3	4.7	10.1	6.4
South East Asia and the Pacific	1.4	3.3	4.1	—	—
Far East	0.9	3.4	6.0	2.5	3.1
World Average	1.3	2.2	3.0	1.7	0.7

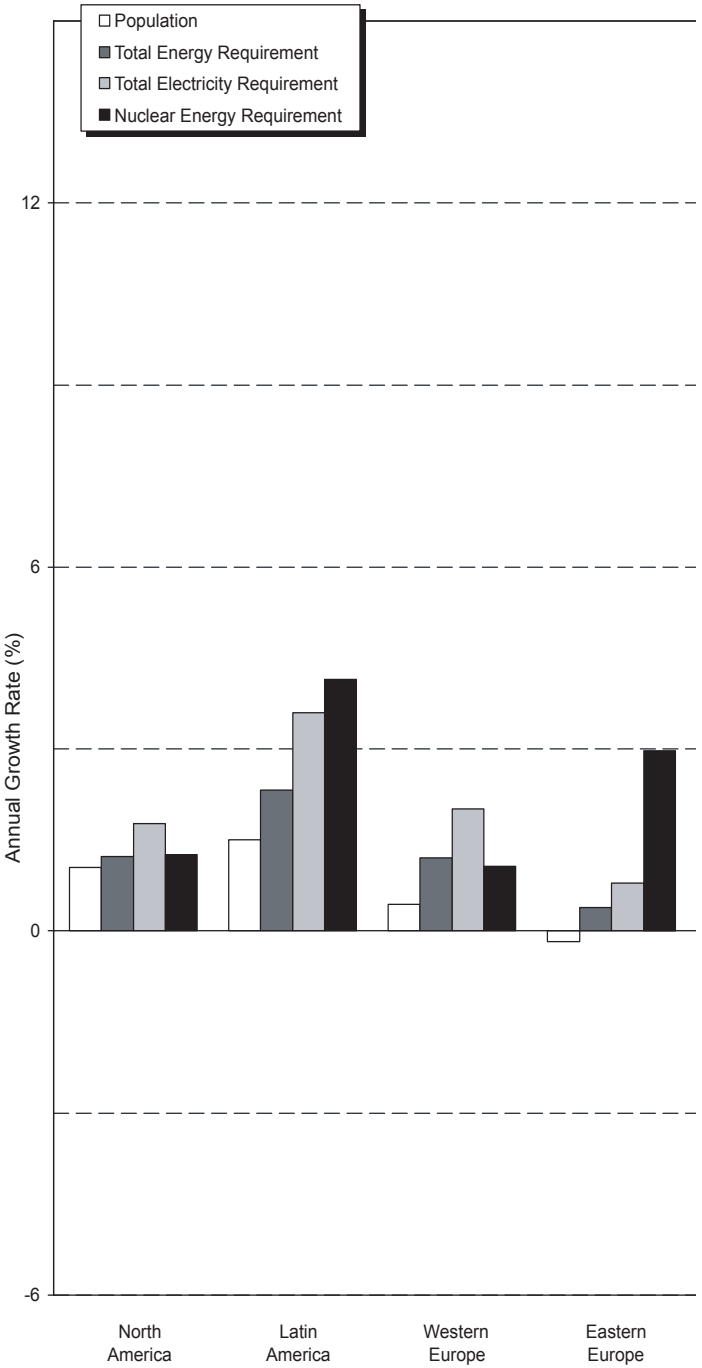
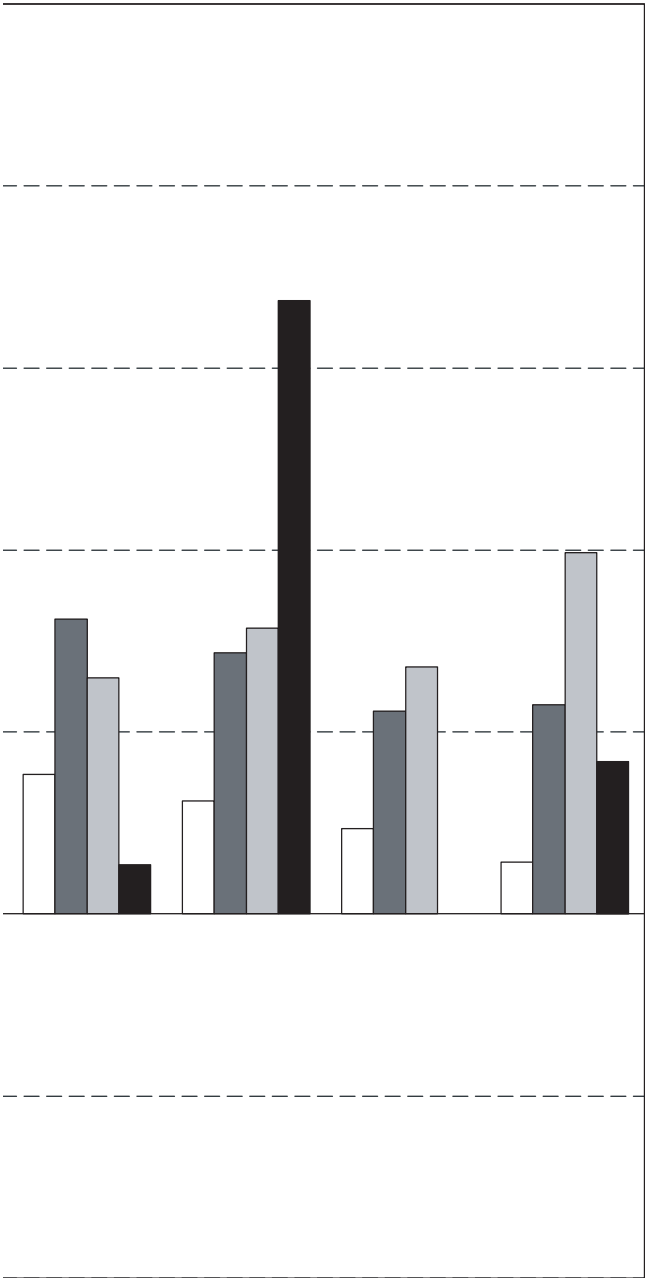


FIGURE 10. AVERAGE ANNUAL GROWTH RATES DURING THE PERIOD 1995–2005



Africa

Middle East &
South Asia

South East Asia
& the Pacific

Far East

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TABLE 13. ESTIMATES OF AVERAGE ANNUAL GROWTH RATES DURING THE PERIOD 2005—2030 (%)

Country Group	Population	Total Energy Requirement	Total Electricity Consumption	Nuclear Energy Production	Nuclear Capacity
North America	0.8	0.7 — 1.4	1.1 — 1.9	0.6 — 1.5	0.5 — 1.4
Latin America	1.0	2.3 — 4.0	2.8 — 4.6	2.1 — 6.7	1.5 — 6.0
Western Europe	0.2	0.6 — 1.2	0.9 — 2.5	-3.4 — 1.1	-3.7 — 0.7
Eastern Europe	-0.3	1.2 — 2.2	1.3 — 3.2	2.2 — 3.5	1.9 — 3.2
Africa	1.8	1.9 — 3.0	2.4 — 4.4	1.5 — 8.1	0.7 — 7.2
Middle East and South Asia	1.3	2.4 — 3.7	2.5 — 4.4	8.8 — 11.9	7.9 — 10.9
South East Asia and the Pacific	0.8	2.1 — 3.5	2.4 — 3.6		
Far East	0.4	1.9 — 3.4	1.8 — 4.2	2.4 — 3.9	2.1 — 3.7
World Average	0.9	1.5 — 2.6	1.6 — 3.3	0.6 — 2.6	0.5 — 2.5

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