

Table ERC.4 Energy from Renewable Sources

Source: International Energy Agency

	Renewable Energy Production				Renewable Energy Consumption						
	All Renewable Sources		All Renewable Sources		Fuels and Waste		Hydroelectric		Geothermal (1000 Metric TOE) (a)	Solar (1000 Metric TOE) (a)	Wind (1000 Metric TOE) (a)
	(1000 Metric TOE) (a)	Percent Change Since 1987	(1000 Metric TOE) (a)	% of Total Consumption from All Sources 1997	(1000 Metric TOE) (a)	Percent Change Since 1987	(1000 Metric TOE) (a)	Percent Change Since 1987			
	1997	1987	1997	1997	1997	1987	1997	1987	1997	1997	1997
WORLD	1,323,051	19	1,321,093	14	1,061,775	16	220,656	26	36,659	1,015	989
ASIA (EXCL. MIDDLE EAST)	623,784	18	625,537	21	569,937	15	43,653	46	11,926	16	5
Armenia	120	(4)	120	7	1	X	119	(5)	0	0	0
Azerbaijan	132	92	135	1	4	X	131	90	0	0	0
Bangladesh	16,093	14	16,093	66	16,031	14	62	39	0	0	0
Bhutan	X	X	X	X	X	X	X	X	X	X	X
Cambodia	X	X	X	X	X	X	X	X	X	X	X
China	225,117	12	225,117	20	208,262	8	16,855	96	0	0	0
Georgia	555	(28)	555	24	35	X	520	(32)	0	0	0
India	199,237	15	199,237	43	192,801	14	6,431	58	0	0	5
Indonesia	47,327	19	47,226	34	44,493	15	515	16	2,217	0	0
Japan	18,669	38	18,669	4	7,461	27	7,723	20	3,485	0	0
Kazakhstan	633	28	633	2	74	X	559	13	0	0	0
Korea, Dem People's Rep	1,019	10	2,898	12	1,019	10	1,878	(25)	0	0	0
Korea, Rep	1,917	317	1,892	1	1,634	X	242	(47)	0	16	0
Kyrgyzstan	969	135	969	35	4	X	965	134	0	0	0
Lao People's Dem Rep	0	X	0	X	X	X	X	X	X	X	X
Malaysia	2,690	14	2,673	6	2,390	22	283	(33)	0	0	0
Mongolia	0	X	0	X	X	X	X	X	X	X	X
Myanmar	10,412	18	10,412	80	10,270	18	142	62	0	0	0
Nepal	6,559	25	6,559	92	6,464	24	95	102	0	0	0
Pakistan	24,192	31	24,192	43	22,398	30	1,794	37	0	0	0
Philippines	16,149	17	16,149	42	9,403	(0)	522	16	6,224	0	0
Singapore	X	X	X	0	0	X	0	X	0	0	0
Sri Lanka	4,345	9	4,345	61	4,049	7	296	58	0	0	0
Tajikistan	1,189	(5)	1,189	35	0	X	1,189	(5)	0	0	0
Thailand	21,268	69	21,275	27	20,656	69	619	77	0	0	0
Turkmenistan	X	X	X	X	X	X	X	X	X	X	X
Uzbekistan	497	(15)	497	1	0	X	497	(15)	0	0	0
Viet Nam	23,790	34	23,790	61	22,398	27	1,392	1,069	0	0	0
EUROPE	139,258	56	139,247	5	76,996	154	57,645	1	3,691	236	630
Albania	523	(21)	523	50	60	(84)	464	61	0	0	0
Austria	5,479	7	5,578	20	2,483	13	3,095	(0)	0	0	0
Belarus	687	X	687	3	685	X	2	17	0	0	0
Belgium	578	147	578	1	549	178	26	(29)	1	1	1
Bosnia and Herzegovina	277	X	277	16	155	X	122	(53)	0	0	0
Bulgaria	396	(8)	385	2	240	14	146	(33)	0	0	0
Croatia	779	X	779	10	324	X	456	(9)	0	0	0
Czech Rep	686	X	686	2	540	X	146	(31)	0	0	0
Denmark	1,714	67	1,714	8	1,538	52	2	(31)	1	7	166
Estonia	625	X	592	11	592	X	0	X	0	0	0
Finland	6,923	39	6,923	21	5,869	48	1,053	(11)	0	0	1
France	16,022	X	16,098	7	10,564	X	5,351	(10)	116	16	2
Germany	5,569	(4)	5,569	2	3,816	(5)	1,493	(15)	0	3	258
Greece	1,415	92	1,415	6	952	90	334	40	4	123	3
Hungary	461	(5)	461	2	443	(5)	19	28	0	0	0
Iceland	1,481	20	1,481	64	1	X	448	32	1,032	0	0
Ireland	225	X	225	2	162	X	58	(0)	0	0	4
Italy	7,290	19	7,610	5	1,562	54	3,578	5	2,452	8	10
Latvia	1,557	X	1,335	30	1,081	X	254	(20)	0	0	0
Lithuania	543	X	544	6	519	X	25	(18)	0	0	0
Macedonia, FYR	277	X	280	10	190	X	77	X	13	0	0
Moldova, Rep	100	X	94	2	61	X	33	55	0	0	0
Netherlands	1,038	X	1,038	1	979	X	8	X	0	11	41
Norway	10,597	8	10,600	44	1,160	26	9,439	6	0	0	1
Poland	5,333	86	5,328	5	5,160	89	169	18	0	0	0
Portugal	2,317	26	2,317	11	1,126	7	1,127	43	45	16	3
Romania	4,893	X	4,880	11	3,374	X	1,506	56	0	0	0
Russian Federation	30,806	X	30,546	5	17,023	X	13,499	(3)	24	0	0
Slovakia	438	44	439	3	83	(40)	356	114	0	0	0
Slovenia	500	64	528	8	263	X	266	(13)	0	0	0
Spain	6,609	133	6,609	6	3,539	X	2,976	26	3	28	64
Sweden	14,271	22	14,271	27	8,313	51	5,936	(4)	0	4	18
Switzerland	4,353	15	4,361	17	1,414	72	2,928	(2)	0	19	0
Ukraine	1,093	32	1,093	1	246	X	848	3	0	0	0
United Kingdom	2,097	X	2,097	1	1,685	X	355	(0)	0	0	57
Yugoslavia	1,256	20	1,256	8	210	X	1,046	(0)	0	0	0
MIDDLE EAST & N. AFRICA	18,597	19	18,613	4	11,562	(0)	6,275	72	179	597	0
Afghanistan	0	X	0	X	X	X	X	X	X	X	X
Algeria	525	16	525	2	519	27	6	(85)	0	0	0
Egypt	2,286	30	2,268	6	1,238	22	1,031	38	0	0	0
Iran, Islamic Rep	1,420	4	1,420	1	786	21	634	(12)	0	0	0
Iraq	76	(69)	76	0	26	21	50	(78)	0	0	0
Israel	519	66	522	3	6	126	6	X	0	511	0
Jordan	4	48	5	0	3	42	2	16	0	0	0
Kuwait	X	X	4	0	4	(37)	0	X	0	0	0
Lebanon	207	31	208	4	125	16	77	48	0	6	0
Libyan Arab Jamahiriya	125	0	125	1	125	0	0	X	0	0	0
Morocco	592	56	592	6	415	35	177	150	0	0	0
Oman	X	X	X	0	0	X	0	X	0	0	0
Saudi Arabia	X	X	4	0	4	(54)	0	X	0	0	0
Syrian Arab Rep	868	366	868	6	5	56	863	373	0	0	0
Tunisia	1,176	19	1,176	17	1,172	20	4	(61)	0	0	0
Turkey	10,705	12	10,705	15	7,022	(11)	3,424	114	179	80	0
United Arab Emirates	X	X	17	0	17	X	0	X	0	0	0
Yemen	77	6	77	2	77	6	0	X	0	0	0

Notes: Negative values are shown in parentheses. "0" is either zero or less than one-half the unit of measure. "(0)" indicates a value less than zero and greater than negative one-half.

a. TOE is Tons of oil equivalent. See the technical notes for more information on TOE.

Table ERC.4 Energy from Renewable Sources

Source: International Energy Agency

	Renewable Energy Production				Renewable Energy Consumption							
	All Renewable Sources		All Renewable Sources		Fuels and Waste		Hydroelectric		Geothermal	Solar	Wind	
	(1000 Metric TOE) (a)	Percent Change Since 1987	(1000 Metric TOE) (a)	% of Total Consumption from All Sources	(1000 Metric TOE) (a)	Percent Change Since 1987	(1000 Metric TOE) (a)	Percent Change Since 1987				
	1997	1987	1997	1997	1997	1987	1997	1987	1997	1997	1997	
SUB-SAHARAN AFRICA	X	X	X	X	X	X	X	X	X	X	X	X
Angola	5,264	28	5,264	77	5,178	28	87	44	0	0	0	0
Benin	1,830	26	1,830	84	1,830	26	0	X	0	0	0	0
Botswana	X	X	X	X	X	X	X	X	X	X	X	X
Burkina Faso	X	X	X	X	X	X	X	X	X	X	X	X
Burundi	X	X	X	X	X	X	X	X	X	X	X	X
Cameroon	4,893	31	4,893	85	4,627	31	266	26	0	0	0	0
Central African Rep	X	X	X	X	X	X	X	X	X	X	X	X
Chad	X	X	X	X	X	X	X	X	X	X	X	X
Congo	899	28	899	72	862	27	37	55	0	0	0	0
Congo, Dem Rep	12,993	37	12,993	89	12,488	38	506	12	0	0	0	0
Côte d'Ivoire	4,105	40	4,105	73	3,931	38	174	131	0	0	0	0
Equatorial Guinea	X	X	X	X	X	X	X	X	X	X	X	X
Eritrea	X	X	X	X	X	X	X	X	X	X	X	X
Ethiopia	16,316	27	16,316	95	16,126	27	101	62	89	0	0	0
Gabon	924	24	924	57	860	26	64	6	0	0	0	0
Gambia	X	X	X	X	X	X	X	X	X	X	X	X
Ghana	5,482	39	5,482	79	4,953	40	529	31	0	0	0	0
Guinea	X	X	X	X	X	X	X	X	X	X	X	X
Guinea-Bissau	X	X	X	X	X	X	X	X	X	X	X	X
Kenya	11,651	20	11,651	82	11,013	19	300	83	338	0	0	0
Lesotho	X	X	X	X	X	X	X	X	X	X	X	X
Liberia	X	X	X	X	X	X	X	X	X	X	X	X
Madagascar	X	X	X	X	X	X	X	X	X	X	X	X
Malawi	X	X	X	X	X	X	X	X	X	X	X	X
Mali	X	X	X	X	X	X	X	X	X	X	X	X
Mauritania	X	X	X	X	X	X	X	X	X	X	X	X
Mozambique	6,993	(1)	6,993	91	6,925	(1)	68	339	0	0	0	0
Namibia	X	X	X	X	X	X	X	X	X	X	X	X
Niger	X	X	X	X	X	X	X	X	X	X	X	X
Nigeria	69,270	32	69,270	78	68,789	32	481	70	0	0	0	0
Rwanda	X	X	X	X	X	X	X	X	X	X	X	X
Senegal	1,634	31	1,634	59	1,634	31	0	X	0	0	0	0
Sierra Leone	X	X	X	X	X	X	X	X	X	X	X	X
Somalia	X	X	X	X	X	X	X	X	X	X	X	X
South Africa	12,221	32	11,999	11	11,819	31	180	29	0	0	0	0
Sudan	9,622	15	9,622	84	9,532	15	90	16	0	0	0	0
Tanzania, United Rep	13,526	23	13,526	95	13,402	23	125	26	0	0	0	0
Togo	0	X	0	X	X	X	X	X	X	X	X	X
Uganda	0	X	0	X	X	X	X	X	X	X	X	X
Zambia	5,450	20	5,450	91	4,765	26	685	(8)	0	0	0	0
Zimbabwe	5,441	21	5,441	55	5,288	20	153	60	0	0	0	0
NORTH AMERICA	150,068	8	150,027	6	78,240	(5)	58,590	23	12,820	77	297	
Canada	40,581	12	40,581	17	10,377	16	30,196	11	0	0	5	
United States	109,487	6	109,446	5	67,863	(7)	28,395	39	12,820	77	292	
C. AMERICA & CARIBBEAN	35,432	21	35,432	18	25,641	16	3,815	46	5,968	0	7	
Belize	0	X	0	X	X	X	X	X	X	X	X	X
Costa Rica	1,157	14	1,157	43	269	(64)	413	60	468	0	7	
Cuba	5,552	39	5,552	39	5,544	39	8	112	0	0	0	
Dominican Rep	1,423	(0)	1,423	26	1,308	2	115	(21)	0	0	0	
El Salvador	2,649	34	2,649	65	1,926	43	103	30	620	0	0	
Guatemala	3,353	18	3,353	60	3,030	13	323	113	0	0	0	
Haiti	1,298	4	1,298	73	1,281	5	17	(38)	0	0	0	
Honduras	2,003	28	2,003	63	1,724	22	279	85	0	0	0	
Jamaica	595	133	595	15	585	138	10	(3)	0	0	0	
Mexico	15,033	15	15,033	11	8,059	4	2,273	44	4,701	0	0	
Nicaragua	1,529	23	1,529	59	1,314	32	35	(17)	180	0	0	
Panama	808	37	808	35	570	38	238	36	0	0	0	
Trinidad and Tobago	32	(37)	32	0	32	(37)	0	X	0	0	0	
SOUTH AMERICA	106,225	16	104,699	28	62,052	(3)	42,600	57	0	0	48	
Argentina	5,069	34	5,069	8	2,647	39	2,422	29	0	0	0	
Bolivia	1,074	44	1,074	25	876	34	198	117	0	0	0	
Brazil	65,972	7	64,448	37	40,448	(11)	24,000	50	0	0	0	
Chile	5,320	53	5,320	23	3,691	53	1,629	54	0	0	0	
Colombia	8,088	11	8,088	27	5,267	0	2,821	41	0	0	0	
Ecuador	1,720	21	1,720	20	1,137	10	583	48	0	0	0	
Guyana	X	X	X	X	X	X	X	X	X	X	X	X
Paraguay	6,960	90	6,957	166	2,619	27	4,339	172	0	0	0	
Peru	5,482	15	5,482	36	4,297	12	1,136	21	0	0	48	
Suriname	X	X	X	X	X	X	X	X	X	X	X	X
Uruguay	1,086	(14)	1,086	38	529	(17)	558	(11)	0	0	0	
Venezuela	5,456	71	5,456	9	541	(0)	4,915	85	0	0	0	
OCEANIA	11,098	32	11,098	9	5,924	41	3,437	12	1,646	89	1	
Australia	6,765	39	6,765	7	5,237	45	1,439	23	0	89	1	
Fiji	X	X	X	X	X	X	X	X	X	X	X	X
New Zealand	4,332	23	4,332	26	687	14	1,998	5	1,646	0	1	
Papua New Guinea	X	X	X	X	X	X	X	X	X	X	X	X
Solomon Islands	X	X	X	X	X	X	X	X	X	X	X	X
DEVELOPED	335,929	27	335,661	6	180,564	37	131,561	12	21,643	913	929	
DEVELOPING	924,052	19	924,291	25	821,322	15	87,792	58	15,016	102	60	

Notes: Negative values are shown in parentheses. "0" is either zero or less than one-half the unit of measure. "(0)" indicates a value less than zero and greater than negative one-half.

a. TOE is Tons of oil equivalent. See the technical notes for more information on TOE.

Table ERC.4 Energy from Renewable Sources

Source: International Energy Agency (IEA), Energy Balances of Organisation for Economic Co-operation and Development (OECD) Countries, 1960–1997, on diskette (OECD, Paris, 1999), and Energy Balances of Non-OECD Countries, 1971–1997, on diskette (OECD, Paris, 1999).

Data for OECD and Economic Commission for Europe countries were compiled from information provided in questionnaires filled out by each country. Data from other large- and medium-sized energy consumers come mostly from individual country information. Data for the remaining countries were gathered from a variety of international organizations.

Renewable energy production and renewable energy consumption from all renewable sources show the total energy produced and consumed, respectively, from renewable energy sources. The totals include hydroelectric power, wind, solar, wave and tidal, geothermal, and combustible renewables and waste. Consumption in this table is equal to total primary energy supply (TPES), as in Data Table ERC.2. Please see the notes to that data table for more information on TPES.

Renewable sources as a percent of total consumption from all sources is the percentage of each country's total energy consumption supplied from renewables and waste.

Fuels and waste comprise solid biomass and animal products, gas/liquids from biomass, industrial waste, and municipal waste. Biomass is any plant matter used directly as fuel or converted into a fuel. This includes wood, wood or crop waste, ethanol, animal wastes, and sulfur lyes (lignin in black liquor from paper production). These data are often estimated on small sample surveys or other incomplete information.

Hydroelectric refers to the energy content of the electricity produced in hydroelectric power plants excluding output from pumped storage plants (in which electricity is produced from pumping water uphill during times of low demand for use in times of high demand).

Energy from geothermal and solar sources is counted for both heat and electricity. Geothermal electricity production efficiency is assumed to be 10 percent of the total energy contained in the heat used to drive the electrical generators.

Wind refers to the use of wind energy for electrical production.