

ELECTRICITY ACCESS

In a continuing effort to improve our understanding of the electrification process, we have updated, for the third time, the database on electrification rates that we first built for the *WEO-2002*. The database has grown in content and quality – with more detailed data on urban and rural electrification but also with more precise data from industry, national surveys and international sources.

The latest available information has been incorporated to give the most accurate picture to date of electricity access in the world, by region and by country. Several major revisions have been made, notably for Brazil, India, Iraq, Ethiopia and Yemen. For India, better and more recent census data and rural surveys have revised the electrification rates upwards. In the case of Iraq, previous data reflected grid network coverage (around 90%), while a recent detailed study by the UNDP has revealed that only 15% of the population has reliable access to electricity. Conflicts have also been taken into account, for instance for Côte d'Ivoire where the negative impact of the civil war on electricity access has been incorporated into the database.

There is no single internationally accepted definition for electricity access. The definition used here covers electricity access at the household level; that is, the number of people who have electricity in their home. It is comprised of electricity sold commercially, both on-grid and off-grid. It also includes self-generated electricity for those countries where access to electricity has been assessed through surveys by national administrations. The data do not capture unauthorised connections. The main data sources are listed in the tables. The electrification rates shown in this annex indicate the number of people with electricity access as a percentage of total population. Rural and urban electrification rates have been collected for most countries, but only the regional averages are shown here.

Where country data appeared contradictory, out of date or unreliable, the IEA Secretariat made estimates based on cross-country comparisons, earlier surveys, data from other international organisations, annual statistical bulletins, publications and journals.¹ Population and urban/rural breakdown projections are taken from *World Population Prospects – The 2004 Revision*, published by the United Nations Population Division.

1. See *WEO* (2002) for approach and methodology.

Contents

The tables which follow show electricity access in 2005 for regional aggregates as well as for the following regions:

- Africa
- Developing Asia
- Latin America
- Middle East

Abbreviations

ADB – Asian Development Bank

ADIAC – Agence d'information d'Afrique centrale

AFREPREN – African Energy Policy Research Network

APEREC – Asia Pacific Energy Research Centre

AREED – African Rural Energy Enterprise Development

BPE – Bureau of Public Enterprises, Nigeria

CNHDE – Center for National Health Development in Ethiopia

DHS – Demographic and Health Surveys

DOE – US Department of Energy

ECLAC – Economic Commission for Latin America and the Caribbean

EEPCo – Ethiopian Electric Power Corporation

ESMAP – Energy Sector Management Assistance Programme

GNESD – Global Network on Energy for Sustainable Development

GPOBA – Global Partnership on Output-Based Aid

ILO – International Labour Organization

JICA – Japan International Cooperation Agency

JIRAMA – Jiro sy Rano Malagasy (national water and electricity company), Madagascar

MEMR – Ministry of Energy and Mineral Resources, Indonesia

NRECA – National Rural Electric Cooperative Association

OECD – Organisation for Economic Co-operation and Development

OLADE – Latin American Energy Association

OME – Observatoire Méditerranéen de l'Énergie

PLN – National Electric Company, Indonesia

SADC – South African Development Community

TERI – Tata Energy Research Institute, India

UNDP – United Nations Development Programme

USAID – The United States Agency for International Development

Table B1: Electricity Access in 2005: Regional Aggregates

	Population million	Urban population million	Population without electricity million	Population with electricity million	Electrification rate %	Urban electrification rate %	Rural electrification rate %
Africa	891	343	554	337	37.8	67.9	19.0
<i>North Africa</i>	153	82	7	146	95.5	98.7	91.8
<i>Sub-Saharan Africa</i>	738	261	547	191	25.9	58.3	8.0
Developing Asia	3 418	1 063	930	2 488	72.8	86.4	65.1
<i>China and East Asia</i>	1 951	772	224	1 728	88.5	94.9	84.0
<i>South Asia</i>	1 467	291	706	760	51.8	69.7	44.7
Latin America	449	338	45	404	90.0	98.0	65.6
Middle East	186	121	41	145	78.1	86.7	61.8
Developing countries	4 943	1 866	1 569	3 374	68.3	85.2	56.4
Transition economies and OECD	1 510	1 090	8	1 501	99.5	100.0	98.1
World	6 452	2 956	1 577	4 875	75.6	90.4	61.7

Table B2: Electricity Access in 2005: Africa

	Electrification rate %	Population without electricity million	Population with electricity million	Sources
Angola	15.0	13.5	2.4	Empresa Nacional de Electricidade de Angola (2005), SADC (2005)
Benin	22.0	6.5	1.8	ESMAP, Société Béninoise d'Electricité et d'Eau (2004)
Botswana	38.5	1.1	0.7	Botswana Power Corporation Annual Report (2005), SADC (2005)
Burkina Faso	7.0	12.4	0.9	OECD (2003), ESMAP, Mbendi.co.za
Cameroon	47.0	8.7	7.7	ILO/International Institute for Labour Studies (2004), <i>Cameroon Tribune</i> (2003)
Congo	19.5	3.2	0.8	ADIAC
Dem. Rep. of Congo	5.8	53.8	3.3	GNESD (2004), SADC (2005)
Côte d'Ivoire	50.0	9.1	9.1	UNDP (2003)
Eritrea	20.2	3.5	0.9	Risoe - Energy for Development (2003)
Ethiopia	15.0	60.8	10.7	EEP/Co (2003), US Department of Commerce (2002), CNHDE (2004), Addis Ababa University
Gabon	47.9	0.7	0.7	ESMAP (2000)
Ghana	49.2	11.3	10.9	Energy Foundation of Ghana, Volta River Authority (2004)
Kenya	14.0	29.4	4.8	Kenya Power and Lighting Company (2004)
Lesotho	11.0	1.9	0.2	GNESD (2004)
Madagascar	15.0	15.2	2.7	GNESD (2004), JIRAMA (2004)
Malawi	7.0	11.8	0.9	AFREPREN (2001), SADC (2004)
Mauritius	93.6	0.1	1.2	AFREPREN (2002), SADC (2004)
Mozambique	6.3	18.6	1.3	SADC (2004)
Namibia	34.0	1.4	0.7	SADC (2005)
Nigeria	46.0	71.1	60.5	ESMAP (2005), Ministry of Power (2006), BPE (2006)

Table B2: Electricity Access in 2005: Africa (continued)

Senegal	33.0	7.8	3.8	GNESD (2004), Commission de Régulation du Secteur de l'Electricité du Sénégal (2004)
South Africa	70.0	14.0	32.6	SADC (2005)
Sudan	30.0	25.4	10.9	SADC (2005), Engineers Without Borders (2004)
Tanzania	11.0	34.2	4.2	SADC (2005), Heflo International
Togo	17.0	5.1	1.0	ESMAP (1998)
Uganda	8.9	24.6	2.4	AFREPREN (2001), Ugandan National Administration (2005)
Zambia	19.0	9.5	2.2	AFREPREN (2001), DHS (2001/2002)
Zimbabwe	34.0	8.7	4.5	SADC (2005), AFREPREN
Other Africa	7.6	83.6	6.9	IEA estimate
Sub-Saharan Africa	25.9	546.9	190.7	
Algeria	98.1	0.6	32.3	Ministry of Energy and Mining, Sonelgaz (2004), OME (2006)
Egypt	98.0	1.5	72.4	US Department of Commerce (2004), OME (2006)
Libya	97.0	0.2	5.7	OME (2006)
Morocco	85.1	4.5	25.8	Ministry of Energy and Mines, Office National de l'Electricité (Annual Report 2004)
Tunisia	98.9	0.1	10.0	ESI Africa, Institut National de la Statistique, OME (2006)
North Africa	95.5	6.9	146.1	
Africa	37.8	553.7	336.8	

Table B3: Electricity Access in 2005: Developing Asia

	Electrification rate %	Population without electricity million	Population with electricity million	Sources
China	99.4	8.5	1 302.1	Ministry of Science and Technology, DOE, National Renewable Energy Laboratory
Brunei	99.2	0.0	0.4	APERC
Cambodia	20.1	10.9	2.7	World Bank (2004), Ministry of Planning
Chinese Taipei	99.2	0.2	22.9	IEA estimate
DPR Korea	22.0	17.7	5.0	IEA estimate
Indonesia	54.0	101.2	118.8	PLN <i>Annual Report</i> (2005), MEMR (2002)
Malaysia	97.8	0.6	24.7	GNESD (2000)
Mongolia	64.6	1.0	1.8	Helio International (2000)
Myanmar	11.3	45.1	5.7	Myanmar Electric Power Enterprise (2003)
Philippines	80.5	16.2	66.8	National Electrification Administration (2005), GPOBA (2003), JICA (2006)
Singapore	100.0	0.0	4.3	GNESD (2000)
Thailand	99.0	0.6	64.1	AFREPREN/GNESD (2004), Electricity Generating Authority <i>Annual Report</i> (2004)
Vietnam	84.2	13.2	70.3	World Bank (2005), Electricity of Vietnam (2005)
Other Asia	82.0	8.3	37.9	IEA estimate
China and East Asia	88.5	223.5	1 727.5	
Afghanistan	7.0	27.0	2.0	World Bank, USAID (2005)
Bangladesh	32.0	96.2	45.3	GNESD (2000), Bangladesh Power Development Board, USAID (2005)
India	55.5	487.2	607.6	USAID (2005), TERI (2006), Ministry of Power (2004/2005), Census (2001)
Nepal	33.0	18.1	8.9	ADB (2004), USAID (2005)
Pakistan	54.0	71.1	83.5	Water and Power Development Authority (2005), USAID (2005)
Sri Lanka	66.0	6.7	13.0	GNESD (2001), USAID (2005)
South Asia	51.8	706.2	760.3	
Developing Asia	72.8	929.8	2 487.8	

Table B4: Electricity Access in 2005: Latin America

	Electrification rate %	Population without electricity million	Population with electricity million	Sources
Argentina	95.4	1.8	37.1	GNESD (2004), ECLAC (2002)
Bolivia	64.4	3.3	5.9	ECLAC (2003), OLADE (2002)
Brazil	96.5	6.5	179.7	ECLAC (2003)
Chile	98.6	0.2	16.1	APER, ECLAC (2003)
Colombia	86.1	6.3	39.2	ECLAC (2003)
Costa Rica	98.5	0.1	4.2	ECLAC (2002)
Cuba	95.8	0.5	10.9	OLADE (2002)
Dominican Republic	92.5	0.7	8.2	DHS (2002), OLADE (2002)
Ecuador	90.3	1.3	11.9	ECLAC (2002)
El Salvador	79.5	1.4	5.5	GNESD (2004), ECLAC (2004)
Guatemala	78.6	2.7	9.8	ESMAP (1998/1999), DHS, OLADE (2002)
Haiti	36.0	5.5	3.1	DHS (2000), Engineers Without Borders (2004)
Honduras	61.9	2.7	4.4	ECLAC (2003)
Jamaica	87.3	0.3	2.3	OLADE (2002)
Netherlands Antilles	99.6	0.0	0.2	IEA estimate
Nicaragua	69.3	1.7	3.8	ECLAC (2002), DHS (2001), Global Environment Facility (2001)
Panama	85.2	0.5	2.7	OLADE (2000)
Paraguay	85.8	0.9	5.2	OLADE (2002)
Peru	72.3	7.7	20.2	ECLAC (2004)
Trinidad and Tobago	99.1	0.0	1.3	OLADE (1997)
Uruguay	95.4	0.2	3.3	US Commercial Service (2005)
Venezuela	98.6	0.4	26.1	ECLAC (2003)
Other Latin America	87.3	0.4	2.9	IEA estimate
Latin America	90.0	44.9	404.3	

Table B5: Electricity Access in 2005: Middle East

	Electrification rate %	Population without electricity million	Population with electricity million	Sources
Bahrain	99.0	0.0	0.7	World Bank (2004)
Iran	97.3	1.8	66.6	Tavanir, World Energy Council, Sustainable Energy Watch (2005/2006)
Iraq	15.0	22.0	3.9	UNDP - Iraq Living Conditions Survey (2004)
Israel	96.6	0.2	6.7	Israel Electric Corporation <i>Annual Report</i> (2004), OME (2006)
Jordan	99.9	0.0	5.5	OME (2006), World Bank
Kuwait	100.0	0.0	2.5	IEA estimate
Lebanon	99.9	0.0	3.6	OME (2006)
Oman	95.5	0.1	2.5	IEA estimate
Qatar	70.5	0.2	0.6	IEA estimate
Saudi Arabia	96.7	0.8	23.6	Ministry of Water and Electricity (2005)
Syria	90.0	1.9	17.1	UNDP, OME (2006)
United Arab Emirates	91.9	0.4	4.1	IEA estimate based on World Bank
Yemen	36.2	13.2	7.5	Ministry of Electricity (2004), World Bank (2005), NRECA (2004)
Middle East	78.1	40.7	144.8	