

Power, Communications, and Transportation

An adequate and reliable supply of power is a vital ingredient for the economic development of African countries. This chapter provides data on the power, communications, and transportation sectors of the economy. Data are from the International Energy Agency's (IEA's) *Energy Statistics and Balances of Non-OECD Countries*, and from the United Nations Statistics Division's *Energy Statistics Yearbook*.

Telecommunications, computers, and the Internet are also essential ingredients of a modern economy. In this chapter, telephone main lines represent the supply side of the system, which in Africa is well short of demand. In fact, waiting time for telephone lines is longer in Africa than in any other world region. Because of the growing importance of computers for development, a new table on computers and

the Internet was added. Data on telecommunications are from the International Telecommunication Union's (ITU'S) World Telecommunication Indicators Database (www.itu.int). The data on Internet hosts are from the Internet Software Consortium (www.isc.com).

In addition to power and communications, countries must have a solid transportation sector to underpin expansion of their economies and ensure support to the activities of households, producers, and government. This chapter presents data on vehicle use, roads, and railway traffic. Data are from World Bank databases, the International World Road Federation's *World Road Statistics*, and Eurostat (europa.eu.int/comm/eurostat). The air transport data are from the International Civil Aviation Organization's (ICAO's) *Civil Aviation Statistics of the World* and ICAO staff estimates.

9-1. Electric power consumption per capita

	<i>kWh</i>											<i>Annual average</i>		
	1980	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	75-84	85-94	95-MR
SUB-SAHARAN AFRICA	423.8	430.8	419.5	430.4	434.6	434.8	438.2	434.4	431.3	449.9	457.1	403.4	436.7	438.8
excluding South Africa	131.2	122.8	117.7	119.4	120.4	115.7	107.2	110.7	112.1	121.2	124.4	125.8	125.1	116.4
excl. S.Africa & Nigeria	155.4	133.1	128.6	132.4	136.0	131.1	..	..	..	..	..	150.1	139.9	133.2
Angola	67.0	62.1	60.7	59.3	61.8	84.5	90.0	88.8	93.6	101.0	108.6	72.9	63.8	85.9
Benin	29.8	41.7	42.2	45.2	48.1	52.0	49.1	57.1	64.1	68.1	76.0	29.5	37.6	57.5
Botswana	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Burkina Faso	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Burundi	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cameroon	153.8	193.2	169.4	162.3	168.2	178.4	175.7	181.3	179.9	170.3	160.9	177.8	201.5	172.1
Cape Verde	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Central African Republic	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Chad	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Comoros	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Congo, Dem. Rep. of	142.5	65.8	46.7	46.6	44.5	43.4	42.8	44.4	50.3	46.6	43.2	134.9	96.1	45.2
Congo, Rep. of	77.1	121.4	114.7	114.4	114.8	92.6	71.4	44.6	75.4	75.1	82.3	75.2	133.9	83.8
Côte d'Ivoire	191.6	139.6	140.3	170.5	174.3	181.3	..	..	..	..	..	166.4	149.3	175.4
Djibouti	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Equatorial Guinea	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Eritrea	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ethiopia	16.2	20.1	20.8	21.7	22.3	22.2	22.2	21.4	22.1	22.0	25.3	16.3	18.4	22.4
Gabon	614.4	746.6	681.2	683.5	752.6	761.2	822.2	810.8	786.2	790.5	804.3	601.6	853.8	776.4
Gambia, The	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ghana	411.8	323.8	298.8	330.7	356.0	275.0	194.9	241.7	309.0	340.7	297.2	328.1	278.6	293.2
Guinea	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Guinea-Bissau	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kenya	92.5	121.3	123.2	125.1	128.1	126.2	127.4	118.0	105.9	116.8	120.3	90.1	112.9	121.0
Lesotho	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Liberia	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Madagascar	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Malawi	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mali	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mauritania	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mauritius	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mozambique	34.0	46.2	41.3	44.1	40.7	46.8	54.1	59.5	57.3	266.1	341.2	42.4	38.1	113.7
Namibia	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Niger	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Nigeria	66.1	95.3	88.8	84.8	79.1	75.1	70.5	69.2	68.5	69.5	68.2	60.3	85.5	73.1
Rwanda	..	..	..	..	..	..	..	..	..	..	..	..	..	..
São Tomé and Príncipe	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Senegal	96.4	101.0	107.1	106.5	108.1	114.6	119.0	114.5	120.6	132.7	135.1	92.7	99.8	118.9
Seychelles	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sierra Leone	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Somalia	..	..	..	..	..	..	..	..	..	..	..	..	..	..
South Africa	3,212.9	3,581.3	3,530.7	3,659.8	3,715.0	3,776.4	3,786.4	3,703.6	3,643.1	3,774.5	3,860.1	3,037.2	3,563.1	3,739.9
Sudan	34.1	46.9	48.5	47.8	48.5	45.5	44.3	66.1	65.5	67.0	74.2	35.9	48.0	57.4
Swaziland	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tanzania	36.8	51.4	50.7	55.0	60.0	55.9	59.5	54.9	56.8	58.5	62.1	35.4	46.9	57.8
Togo	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Uganda	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Zambia	1,015.7	726.7	717.8	698.8	678.3	631.4	578.6	585.7	559.7	537.0	583.0	1,058.2	811.5	606.6
Zimbabwe	973.2	751.9	788.8	814.7	858.8	871.9	850.2	882.1	843.6	810.0	831.4	939.3	853.3	845.3
NORTH AFRICA	342.7	642.3	660.9	670.3	683.9	714.1	750.8	786.3	835.8	868.5	899.5	331.4	574.3	776.1
Algeria	265.3	507.9	509.0	516.9	526.3	523.2	550.0	584.6	611.9	637.7	662.2	259.8	452.3	576.6
Egypt, Arab Rep.	379.9	726.3	742.7	762.0	781.2	819.9	860.3	914.9	978.4	1,024.2	1,072.5	377.8	660.6	901.7
Libya	1,004.3	1,823.1	1,908.3	1,812.7	1,834.9	2,024.0	2,150.5	2,271.6	2,334.0	2,300.0	2,250.3	917.5	1,538.9	2,122.2
Morocco	222.8	377.1	398.1	403.7	408.4	422.7	443.0	402.2	447.2	461.2	475.2	212.1	334.7	432.9
Tunisia	379.2	674.1	718.3	734.4	744.8	783.0	824.0	910.9	938.9	992.8	1,018.9	322.7	590.9	868.5
ALL AFRICA	404.9	478.2	473.2	483.4	489.3	495.7	507.7	512.3	520.6	541.8	553.9	386.5	467.7	513.1

9-2. Energy production and use

	<i>Energy production (KT oil equivalent)</i>		<i>Commercial energy use (KT oil equivalent)</i>		<i>Electric power transmission and distribution losses (% of output)</i>	
	1980	2001	1980	2000	1980	2001
SUB-SAHARAN AFRICA	320,483	558,653	206,013	338,377	..	..
excluding South Africa	247,314	414,773	140,596	229,523	..	..
excl. S. Africa & Nigeria	98,835	204,887	87,750	139,047	..	..
Angola	11,301	43,560	4,688	8,075	25	15
Benin	1,212	1,491	1,363	2,012	..	70
Botswana	..	..	..	..	..	..
Burkina Faso	..	..	..	..	..	..
Burundi	..	..	..	..	..	..
Cameroon	6,707	12,517	3,708	6,368	7	26
Cape Verde	..	..	..	..	..	..
Central African Republic	..	..	..	..	..	..
Chad	..	..	..	..	..	..
Comoros	..	..	..	..	..	..
Congo, Dem. Rep. of	8,582	15,773	8,590	14,607	8	4
Congo, Rep. of	4,024	13,668	862	867	9	65
Côte d'Ivoire	2,419	6,083	3,662	6,617	7	..
Djibouti	..	..	..	..	..	..
Equatorial Guinea	..	..	..	..	..	..
Eritrea	..	..	..	..	..	..
Ethiopia	10,575	18,014	11,145	18,719	8	10
Gabon	9,441	13,894	1,397	1,538	1	18
Gambia, The	..	..	..	..	..	..
Ghana	3,305	5,995	4,063	7,888	5	15
Guinea	..	..	..	..	..	..
Guinea-Bissau	..	..	..	..	..	..
Kenya	7,891	12,644	9,791	15,492	16	21
Lesotho	..	..	..	..	..	..
Liberia	..	..	..	..	..	..
Madagascar	..	..	..	..	..	..
Malawi	..	..	..	..	..	..
Mali	..	..	..	..	..	..
Mauritania	..	..	..	..	..	..
Mauritius	..	..	..	..	..	..
Mozambique	7,413	7,560	8,074	7,177	39	3
Namibia	..	294	..	1,031	..	..
Niger	..	..	..	..	..	..
Nigeria	148,479	209,886	52,846	90,476	36	38
Rwanda	..	..	..	..	..	..
São Tomé and Príncipe	..	..	..	..	..	..
Senegal	1,046	1,765	1,919	3,085	10	19
Seychelles	..	..	..	..	..	..
Sierra Leone	..	..	..	..	..	..
Somalia	..	..	..	..	..	..
South Africa	73,169	143,880	65,417	108,854	8	8
Sudan	7,089	22,908	8,406	14,136	14	15
Swaziland	..	..	..	..	..	..
Tanzania	7,296	13,001	8,074	13,450	14	25
Togo	562	1,056	715	1,529	..	..
Uganda	..	..	..	..	..	..
Zambia	4,179	6,133	4,723	6,237	7	3
Zimbabwe	5,793	8,531	6,570	10,219	9	21
NORTH AFRICA	205,685	283,458	43,896	112,022	..	..
Algeria	67,103	143,778	12,185	29,135	11	16
Egypt, Arab Rep.	34,168	58,485	15,970	46,583	13	12
Libya	96,550	73,725	7,193	18,407	36	20
Morocco	877	584	4,778	9,972	10	7
Tunisia	6,987	6,886	3,770	7,925	12	11
ALL AFRICA	526,168	842,111	249,909	450,399	..	..

9-3. Telephone, radio, and television availability, 1996–03

	Telephones			Radios	Television	
	Main lines	Waiting list	Average cost of call	Mobile phones	sets	
	(per 1,000 people)	(thousands)	US\$ per three minutes	(per 1,000 people)	(per 1,000 people)	
SUB-SAHARAN AFRICA	15	192	..	37	198	69
excluding South Africa	8	190	..	18	188	62
excl. S. Africa & Nigeria	9	200	..	20	185	51
Angola	6	17	0.09	9	78	52
Benin	9	4	0.09	32	445	12
Botswana	87	13	0.02	241	150	44
Burkina Faso	5	1	0.10	8	433	79
Burundi	3	1	0.08	7	220	31
Cameroon	7	3	0.06	43	161	75
Cape Verde	160	4	0.04	98	181	101
Central African Republic	2	0	0.43	3	80	6
Chad	2	0	0.11	4	233	2
Comoros	13	4	0.14	0	174	4
Congo, Dem. Rep. of	0	..	..	11	385	2
Congo, Rep. of	7	..	..	67	109	13
Côte d'Ivoire	20	1	0.09	62	185	61
Djibouti	15	0	0.20	23	83	78
Equatorial Guinea	17	4	0.05	63	425	116
Eritrea	9	10	0.03	0	464	50
Ethiopia	5	2	0.02	1	189	6
Gabon	25	9	0.22	215	488	308
Gambia, The	28	8	0.03	73	394	15
Ghana	13	7	0.03	21	695	53
Guinea	3	0	0.08	12	52	47
Guinea-Bissau	9	4	0.15	0	178	36
Kenya	10	4	0.09	42	221	26
Lesotho	13	10	0.11	42	61	35
Liberia	2	1	..	1	274	25
Madagascar	4	0	0.07	10	216	25
Malawi	7	2	0.06	8	499	4
Mali	5	..	0.07	5	180	33
Mauritania	12	19	0.13	92	148	99
Mauritius	270	11	0.04	289	379	299
Mozambique	5	1	0.08	14	44	14
Namibia	65	1	0.03	80	134	269
Niger	2	..	0.10	1	122	10
Nigeria	6	0	0.11	13	200	103
Rwanda	3	1	0.09	14	85	0
São Tomé and Príncipe	41	4	0.17	13	318	93
Senegal	22	1	0.17	55	126	78
Seychelles	269	22	0.15	553	543	202
Sierra Leone	5	5	0.03	13	259	13
Somalia	10	..	..	3	60	14
South Africa	107	1	0.09	304	336	177
Sudan	21	14	0.03	6	461	386
Swaziland	34	15	0.04	61	162	34
Tanzania	5	0	0.12	19	406	45
Togo	10	6	0.10	35	263	123
Uganda	2	0	0.21	16	122	18
Zambia	8	1	0.09	13	179	51
Zimbabwe	25	14	0.01	30	362	56
NORTH AFRICA	84	44	..	81	282	188
Algeria	61	24	0.04	13	244	114
Egypt, Arab Rep.	8	1	0.09	13	179	229
Libya	25	14	0.01	30	362	137
Morocco	61	24	0.04	13	244	167
Tunisia	110	3	0.02	67	339	207
ALL AFRICA	26	268	..	45	213	89

9-4. Personal computers and Internet use

	<i>Personal computers</i> <i>(per 1,000 people)</i>		<i>Internet hosts</i> <i>(per 10,000 people)</i>		<i>Internet users</i> <i>(thousands)</i>	
	2001	2002	1999	2000	2001	2003
SUB-SAHARAN AFRICA	10.25	11.90	2.32	3.10	4,491	2,957
excluding South Africa	5.43	7.02	0.15	0.32	1,601	2,957
excl. S. Africa & Nigeria	4.99	6.99	0.18	0.40	1,486	2,207
Angola	1.26	1.94	0.00	0.01	20	..
Benin	1.67	2.21	0.04	0.04	25	70
Botswana	38.67	40.70	5.79	13.99	50	..
Burkina Faso	1.46	1.59	0.19	0.19	19	48
Burundi	0.66	0.72	0.00	0.00	7	14
Cameroon	3.89	5.69	0.00	0.01	45	..
Cape Verde	68.65	79.73	0.02	0.05	12	20
Central African Republic	1.85	2.02	0.00	0.02	3	6
Chad	1.57	1.65	0.00	0.01	4	..
Comoros	5.50	5.51	0.57	0.72	3	5
Congo, Dem. Rep. of	..	..	0.00	0.00	6	..
Congo, Rep. of	3.86	3.94	0.00	0.01	1	15
Côte d'Ivoire	7.20	9.34	0.24	0.38	70	240
Djibouti	10.87	15.24	0.00	0.62	3	7
Equatorial Guinea	5.32	6.93	0.00	0.00	1	..
Eritrea	1.83	2.51	0.01	0.02	6	30
Ethiopia	1.15	1.48	0.01	0.01	25	75
Gabon	15.85	19.25	0.02	0.21	17	35
Gambia, The	12.72	13.85	0.02	0.11	18	..
Ghana	3.34	3.78	0.06	0.06	40	..
Guinea	4.22	5.48	0.00	0.00	15	40
Guinea-Bissau	..	..	0.11	0.10	4	19
Kenya	5.59	6.39	0.19	0.32	200	..
Lesotho	..	..	0.10	0.49	5	30
Liberia	..	..	0.00	0.00	1	..
Madagascar	2.58	4.40	0.12	0.36	35	71
Malawi	1.25	1.34	0.00	0.00	20	36
Mali	1.35	1.41	0.01	0.05	20	..
Mauritania	10.33	10.81	0.00	0.20	7	12
Mauritius	108.32	116.48	4.55	27.68	106	150
Mozambique	3.96	4.50	0.09	0.10	30	..
Namibia	54.74	70.93	10.87	18.16	45	65
Niger	0.53	0.60	0.03	0.12	12	..
Nigeria	6.84	7.10	0.00	0.01	115	750
Rwanda	..	..	0.00	0.47	20	..
São Tomé and Príncipe	..	..	17.32	45.00	9	15
Senegal	18.36	19.85	0.28	0.51	100	225
Seychelles	146.52	160.85	0.12	0.49	9	..
Sierra Leone	..	..	0.14	0.16	7	..
Somalia	..	..	0.00	0.00	1	..
South Africa	69.57	72.60	32.73	41.94	2,890	..
Sudan	3.62	6.15	0.00	0.00	56	300
Swaziland	15.69	24.22	6.28	7.07	14	27
Tanzania	3.57	4.18	0.05	0.16	60	250
Togo	25.26	30.78	0.18	0.35	150	210
Uganda	2.94	3.32	0.06	0.07	60	125
Zambia	7.09	7.48	0.49	0.88	25	68
Zimbabwe	17.38	51.57	1.14	2.50	100	..
NORTH AFRICA	13.98	17.35	0.19	0.47	1,630	4,790
Algeria	7.13	7.73	0.01	0.01	200	..
Egypt, Arab Rep.	15.49	16.64	0.28	0.85	600	3,000
Libya	..	23.40	0.00	0.02	20	160
Morocco	13.71	23.61	0.28	0.33	400	1,000
Tunisia	26.39	30.67	0.06	0.10	410	630
ALL AFRICA	10.94	12.93	1.95	2.64	6,121	7,747

9-5. Vehicle ownership

	Units per 1,000 people											Annual average		
	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	75-84	85-94	95-MR
SUB-SAHARAN AFRICA	..	21	23	23	24	22	23	23	..	..	..	..	..	23
excluding South Africa	..	9	14	14	15	14	15	15	..	..	..	..	..	15
excl. S.Africa & Nigeria	..	9	10	10	11	12	12	12	..	..	..	..	..	12
Angola	..	18	19	19	19	19	20	20	..	..	..	..	..	20
Benin	..	3	4	5	6	6	7	8	..	..	..	..	..	7
Botswana	27	18	23	28	32	35	62	48	51	59	68	27	..	58
Burkina Faso	..	4	4	5	5	5	5	6	..	..	..	..	..	5
Burundi	..	0	..	..	..	..	..	..	..	..	..	..	..	..
Cameroon	8	10	10	10	11	11	12	12	..	..	..	8	..	12
Cape Verde	..	9	9	9	9	10	10	10	..	..	..	..	..	10
Central African Republic	8	1	1	0	1	1	0	0	0	..	..	8	..	0
Chad	..	2	3	3	3	3	4	4	..	..	..	..	..	4
Comoros	..	13	15	17	18	23	24	28	..	..	..	..	..	26
Congo, Dem. Rep. of	..	22	25	28	28	29	30	31	..	..	..	..	..	30
Congo, Rep. of	..	18	19	19	20	19	20	20	..	..	..	..	..	20
Côte d'Ivoire	24	24	24	25	27	29	30	32	..	..	..	24	..	31
Djibouti	..	15	16	16	16	17	18	19	..	..	..	..	..	18
Equatorial Guinea	..	3	4	4	4	5	5	5	..	..	..	..	..	5
Eritrea	..	1	1	1	1	1	2	2	..	..	..	..	..	2
Ethiopia	2	1	1	1	1	1	1	1	1	1	..	2	1	1
Gabon	..	32	33	35	36	35	37	37	..	..	..	..	..	37
Gambia, The	..	13	13	13	13	15	15	15	..	..	..	..	..	15
Ghana	..	..	..	..	..	8	8	8	..	..	..	..	..	8
Guinea	..	4	4	5	5	5	5	5	..	..	..	..	..	5
Guinea-Bissau	..	7	7	7	8	10	10	12	..	..	..	..	..	11
Kenya	8	12	13	13	13	13	13	13	..	..	..	8	12	13
Lesotho	10	11	12	13	14	17	18	20	..	..	..	10	..	19
Liberia	1	14	14	14	14	15	14	15	..	..	..	1	..	14
Madagascar	..	6	5	5	5	7	7	8	..	..	..	..	..	8
Malawi	5	4	5	5	5	5	6	6	..	..	..	5	..	6
Mali	..	3	4	4	4	4	4	5	..	..	..	..	..	4
Mauritania	..	10	10	10	10	12	12	13	..	..	..	..	..	12
Mauritius	44	59	63	68	71	75	79	83	88	93	98	44	54	88
Mozambique	..	4	5	5	5	3	2	1	..	..	..	..	..	1
Namibia	..	71	83	73	78	81	81	84	..	..	..	..	..	83
Niger	6	6	6	6	6	6	6	6	..	..	..	6	5	6
Nigeria	4	..	30	29	29	22	25	24	..	..	..	4	..	24
Rwanda	2	2	3	3	3	5	5	5	..	..	..	2	1	5
São Tomé and Príncipe	..	36	37	37	38	40	40	41	..	..	..	..	..	41
Senegal	19	11	11	12	13	13	13	14	..	..	..	19	..	14
Seychelles	..	104	104	105	107	116	114	119	118	..	..	..	..	117
Sierra Leone	..	10	10	11	10	11	9	6	..	..	..	..	10	7
Somalia	..	2	2	2	2	1	1	1	..	..	..	..	..	1
South Africa	133	139	140	139	136	141	139	142	..	..	143	133	160	142
Sudan	..	9	9	10	10	11	11	12	..	..	..	..	..	11
Swaziland	52	66	71	68	65	62	66	68	67	70	..	52	63	68
Tanzania	3	5	4	5	5	5	5	5	..	..	..	3	..	5
Togo	..	24	25	26	26	26	28	28	..	..	..	..	1	28
Uganda	1	2	3	3	3	3	4	4	5	5	5	1	..	5
Zambia	..	14	16	18	20	22	24	26	..	..	..	..	..	25
Zimbabwe	..	..	..	..	32	32	31	30	..	..	..	..	..	31
NORTH AFRICA	..	33	34	34	35	46	49	49	..	..	..	..	38	49
Algeria	..	..	..	..	..	55	54	53	..	..	..	..	54	53
Egypt, Arab Rep.	..	29	29	29	28	29	29	30	..	..	..	..	26	30
Libya	..	..	..	..	..	165	240	241	..	..	..	..	..	240
Morocco	..	37	38	41	43	47	48	48	49	51	52	..	..	50
Tunisia	38	48	49	51	52	59	59	64	..	..	..	38	62	62
ALL AFRICA	..	23	25	25	25	27	28	28	..	..	..	..	..	28

9-6. Road-to-population ratio

	Road 1,000 km/1 million people											Annual average		
	1980	1985	1989	1990	1991	1992	1993	1994	1995	1996	1997	75-84	85-94	95-MR
SUB-SAHARAN AFRICA	3.3	3.0	..	2.5	..	..	2.5	2.4	2.9	2.4	..	3.3	2.6	2.6
excluding South Africa	3.1	2.8	..	2.2	..	..	2.5	2.4	2.5	2.4	..	3.1	2.5	2.4
excl. S.Africa & Nigeria	3.5	3.2	..	2.5	..	..	2.8	2.6	2.6	2.6	..	3.5	2.8	2.6
Angola	10.3	8.7	..	7.8	..	7.3	7.1	6.9	6.7	6.5	6.3	11.0	7.5	6.5
Benin	2.1	1.9	1.3	1.8	1.2	1.2	1.3	1.3	1.2	1.2	..	2.1	1.4	1.2
Botswana	9.1	7.6	..	7.0	..	..	13.1	12.6	12.2	12.0	..	11.7	10.5	12.1
Burkina Faso	1.1	1.1	..	..	..	1.4	1.1	1.1	1.3	1.2	..	1.7	1.2	1.2
Burundi	1.2	0.6	..	1.2	..	2.5	2.5	2.4	2.4	2.3	..	1.8	1.8	2.3
Cameroon	7.1	6.4	..	6.0	..	..	2.7	2.6	2.6	..	..	6.5	4.6	2.6
Cape Verde	..	..	..	..	..	..	3.0	3.0	2.9	2.8	..	..	3.0	2.8
Central African Republic	9.8	7.6	8.2	8.0	7.9	7.7	7.5	7.3	7.1	7.0	..	9.7	7.7	7.0
Chad	6.0	5.3	..	4.6	..	..	5.0	4.9	4.9	4.8	..	6.6	4.9	4.8
Comoros	..	..	..	..	..	..	1.8	1.8	1.8	1.8	..	2.3	1.8	1.8
Congo, Dem. Rep. of	5.2	4.5	..	..	3.8	3.6	3.6	3.6	3.5	3.4	..	5.3	3.8	3.5
Congo, Rep. of	4.7	4.1	..	..	4.9	4.8	4.6	4.5	4.4	4.2	..	5.1	4.6	4.3
Côte d'Ivoire	5.0	4.8	..	4.2	..	..	3.8	3.7	3.6	3.5	..	5.6	4.1	3.6
Djibouti	..	8.2	6.5	5.9	5.7	..	5.3	5.1	5.0	4.8	..	8.2	6.4	4.9
Equatorial Guinea	..	..	..	..	..	..	7.1	7.1	7.0	7.0	..	5.2	7.1	7.0
Eritrea	..	..	..	..	..	..	1.1	1.1	1.1	1.1	..	..	1.1	1.1
Ethiopia	1.0	0.9	0.4	0.5	0.5	..	0.5	0.5	0.5	0.5	..	0.9	0.6	0.5
Gabon	10.2	9.4	..	..	7.6	7.4	7.2	7.1	6.9	6.7	..	10.9	7.7	6.8
Gambia, The	3.4	4.1	..	2.6	..	..	2.4	2.4	2.4	2.3	..	3.0	2.9	2.4
Ghana	2.9	2.7	2.5	2.5	..	..	2.3	2.2	2.1	2.1	..	2.8	2.4	2.1
Guinea	5.4	5.8	..	..	..	2.6	0.0	4.7	4.6	4.5	..	4.2	3.3	4.6
Guinea-Bissau	..	..	..	..	..	..	3.8	3.7	3.7	3.6	..	4.7	3.8	3.6
Kenya	3.1	3.3	2.7	2.6	2.6	..	2.5	2.4	2.4	2.3	..	3.2	2.7	2.4
Lesotho	3.1	2.8	..	..	..	3.3	3.3	3.2	3.0	3.0	..	2.8	3.2	3.0
Liberia	2.9	2.4	..	2.4	..	..	3.8	3.8	3.8	3.8	..	3.9	3.3	3.8
Madagascar	5.7	4.9	1.3	..	2.9	2.8	4.0	3.9	3.7	3.6	..	4.8	3.7	3.7
Malawi	1.7	1.6	1.4	3.2	..	..	1.6	1.6	1.6	1.5	1.7	1.9	1.9	1.6
Mali	2.0	1.8	1.7	1.7	1.7	..	1.6	1.5	1.5	1.5	..	2.1	1.7	1.5
Mauritania	4.5	4.0	..	3.6	..	..	3.4	3.4	3.3	3.2	..	4.5	3.6	3.3
Mauritius	1.8	1.8	1.7	1.7	1.7	..	1.8	1.7	1.7	1.7	1.7	2.2	1.7	1.7
Mozambique	2.9	2.6	1.9	2.5	..	..	1.9	1.9	1.9	1.9	..	3.3	2.0	1.9
Namibia	..	..	..	27.5	..	..	39.9	39.4	38.4	37.5	36.5	..	35.6	37.5
Niger	2.8	2.8	..	1.5	..	..	1.6	1.1	1.1	1.1	..	2.4	2.1	1.1
Nigeria	1.5	1.3	..	1.2	..	..	1.6	1.6	1.7	1.7	..	1.5	1.4	1.7
Rwanda	2.1	2.0	1.8	1.9	..	..	1.8	2.7	2.6	2.6	..	1.7	2.0	2.6
São Tomé and Príncipe	..	..	..	..	..	..	2.4	2.3	2.3	2.4	..	..	2.4	2.4
Senegal	2.5	2.2	..	2.0	..	..	1.8	1.8	1.8	1.7	..	2.4	2.0	1.7
Seychelles	..	..	..	..	..	..	3.6	3.5	3.6	3.7	..	..	3.5	3.6
Sierra Leone	2.4	2.3	..	..	..	2.8	2.7	2.7	2.5	2.4	2.4	2.5	2.6	2.4
Somalia	2.6	3.2	..	3.0	..	..	2.8	2.9	3.0	2.9	..	3.3	3.0	3.0
South Africa	6.7	5.9	5.3	5.3	5.1	..	..	..	8.5	..	..	7.1	5.4	8.5
Sudan	0.5	0.4	..	0.4	..	..	0.4	0.4	0.4	0.4	..	0.7	0.4	0.4
Swaziland	5.8	5.1	3.8	3.6	3.5	3.6	3.3	3.3	4.1	4.1	..	5.1	3.8	4.1
Tanzania	2.5	3.8	..	..	2.1	2.1	3.1	3.1	3.0	2.9	..	2.5	2.8	2.9
Togo	2.8	2.4	..	2.2	2.1	2.1	2.0	2.0	1.9	1.9	..	2.8	2.2	1.9
Uganda	2.1	1.9	..	1.7	..	1.6	..	..	..	..	..	2.1	1.7	..
Zambia	6.3	5.6	5.0	4.8	4.7	4.5	4.4	4.4	7.5	7.4	7.2	6.4	4.9	7.4
Zimbabwe	11.8	9.0	..	..	..	8.4	8.3	1.7	1.6	1.6	..	11.8	6.9	1.6
NORTH AFRICA	2.1	2.0	1.6	..	1.9	1.6	2.5	..	..	..	..	2.1	1.8	..
Algeria	3.9	3.6	..	..	3.5	3.6	3.7	3.6	3.7	3.6	..	4.1	3.6	3.6
Egypt, Arab Rep.	0.7	0.7	0.9	0.9	0.9	0.9	0.8	..	..	..	..	0.7	0.8	..
Libya	..	..	..	..	..	..	17.2	17.2	17.2	5.1	..	..	17.2	11.1
Morocco	3.0	2.7	2.5	..	2.4	1.1	2.4	2.3	2.3	2.3	2.1	2.9	2.3	2.2
Tunisia	3.7	3.6	3.7	..	..	..	2.4	2.5	2.5	2.5	..	3.4	3.3	2.5
ALL AFRICA	3.1	2.9	..	2.3	..	..	2.5	2.6	3.0	2.5	..	3.1	2.6	2.7

9-7. Paved primary roads

	Percentage of roads									Percentage in good condition
	1994	1995	1996	1997	1998	1999	2000	2001	2002	1989
SUB-SAHARAN AFRICA	18.0	16.2	16.0	16.3	16.3	14.8	16.2	15.6	12.8	39
excluding South Africa	18.0	16.0	15.7	16.0	16.0	13.6	12.1	15.6	12.4	39
excl. S. Africa & Nigeria	17.1	15.8	15.3	15.7	15.0	13.5	12.1	15.6	12.4	41
Angola	25.0	25.0	25.0	25.0	25.0	10.4	..	10.4	..	..
Benin	20.0	20.0	20.0	20.0	20.0	20.0	..	..	..	13
Botswana	22.2	48.0	52.0	54.0	56.0	55.0	..	..	..	94
Burkina Faso	18.7	16.0	16.0	16.0	16.0	16.0	..	..	..	70
Burundi	..	..	..	..	71.0	71.0	..	..	..	75
Cameroon	12.1	12.5	12.5	12.5	12.5	12.5	..	..	..	25
Cape Verde	78.0	78.0	78.0	78.0	78.0	78.0	..	..	..	14
Central African Republic	2.1	2.1	2.1	2.4	2.7	..	..	..	..	30
Chad	0.8	0.8	0.8	0.8	0.8	0.8	..	..	..	..
Comoros	75.0	76.5	..	..	76.5	76.5	..	..	..	43
Congo, Dem. Rep. of	..	..	..	..	..	..	..	..	..	20
Congo, Rep. of	9.7	9.7	9.7	9.7	9.7	9.7	..	..	..	50
Côte d'Ivoire	9.4	9.6	9.7	9.7	9.7	9.7	..	..	..	75
Djibouti	12.6	12.6	12.6	12.6	12.6	12.6	..	..	..	51
Equatorial Guinea	..	..	..	..	..	..	..	..	..	27
Eritrea	21.0	21.4	21.8	21.8	21.8	21.8	..	..	..	..
Ethiopia	15.0	15.5	15.3	15.3	14.0	13.3	12.0	12.0	12.0	47
Gabon	8.2	8.2	9.9	9.9	9.9	9.9	9.9	..	..	30
Gambia, The	34.6	35.3	35.4	35.4	35.4	35.4	..	..	..	22
Ghana	24.4	24.9	24.1	..	..	29.6	..	18.4	..	28
Guinea	16.1	16.4	16.5	16.5	16.5	16.5	..	..	..	50
Guinea-Bissau	9.8	10.2	10.3	10.3	10.3	10.3	..	..	..	39
Kenya	13.6	13.8	12.1	12.1	12.1	12.1	12.1	..	..	32
Lesotho	15.0	17.9	17.9	16.8	17.3	18.3	..	..	..	53
Liberia	6.0	6.1	6.2	6.2	6.2	6.2	..	..	..	85
Madagascar	18.7	11.5	11.6	..	..	11.6	..	..	..	56
Malawi	18.0	20.0	20.0	19.0	..	18.5	..	..	..	56
Mali	11.8	12.0	12.1	12.1	12.1	12.1	..	..	..	70
Mauritania	11.1	11.2	11.3	11.3	11.3	11.3	..	..	..	58
Mauritius	93.0	93.0	95.0	95.0	96.0	96.0	97.0	98.0	98.0	95
Mozambique	18.2	18.6	18.7	18.7	18.7	18.7	..	..	..	19
Namibia	7.9	7.9	11.4	13.2	13.5	13.6	..	12.9	12.8	..
Niger	7.9	7.9	7.9	7.9	7.9	7.9	..	..	..	67
Nigeria	21.3	18.8	18.8	30.9	30.9	30.9	..	..	..	34
Rwanda	9.7	9.9	9.1	..	..	8.3	..	..	..	41
São Tomé and Príncipe	66.7	68.0	68.1	68.1	68.1	68.1	..	..	..	..
Senegal	28.4	28.5	29.3	29.3	29.3	29.3	29.3	..	..	28
Seychelles	61.5	62.8	80.3	84.5	..	..	..	..	..	..
Sierra Leone	11.0	8.0	8.0	8.0	8.0	7.9	..	..	8.0	62
Somalia	11.8	11.8	11.8	11.8	11.8	11.8	..	..	..	52
South Africa	..	41.5	19.7	19.7	19.7	20.3	20.3	..	20.9	..
Sudan	35.4	36.2	36.3	36.3	36.3	36.3	..	..	..	27
Swaziland	28.2	..	..	..	..	..	..	..	..	35
Tanzania	4.2	4.2	4.2	4.2	4.2	4.2	..	..	..	39
Togo	31.6	31.6	31.6	31.6	31.6	31.6	..	..	..	75
Uganda	..	..	..	..	..	6.7	..	..	..	10
Zambia	18.0	..	..	..	..	..	..	22.0	..	40
Zimbabwe	54.9	48.0	47.4	47.4	47.4	47.4	..	..	..	70
NORTH AFRICA	68.0	68.9	73.5	73.5	66.3	63.8	60.6	60.9	56.4	..
Algeria	68.0	68.9	68.9	68.9	68.9	68.9	..	..	..	..
Egypt, Arab Rep.	75.0	78.0	78.1	78.1	78.1	78.1	..	..	..	..
Libya	56.0	57.1	..	..	..	57.2	..	..	..	..
Morocco	50.2	50.2	50.2	52.3	52.3	56.3	56.4	56.4	56.4	..
Tunisia	77.4	78.8	78.9	78.9	63.7	63.8	64.8	65.4	..	..
ALL AFRICA	18.5	18.6	17.9	17.8	18.0	18.3	24.8	20.2	16.8	39

9-8. Rail goods traffic-to-\$PPP GDP ratio

	Ton-km per million of \$PPP GDP										Annual average			
	1980	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	75-84	85-94	95-MR
SUB-SAHARAN AFRICA	..	..	..	..	..	..	..	..	..	..	..	..	..	..
excluding South Africa	..	..	..	..	..	..	..	..	..	..	..	..	..	..
excl. S.Africa & Nigeria	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Angola	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Benin	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Botswana	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Burkina Faso	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Burundi	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cameroon	54,331	32,433	35,268	30,332	38,633	39,400	27,557	36,737	..	23,315	..	53,734	37,549	31,752
Cape Verde	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Central African Republic	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Chad	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Comoros	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Congo, Dem. Rep. of	61,667	..	..	..	4,577	..	..	..	11,296	10,121	..	53,250	33,073	10,709
Congo, Rep. of	..	264,256	162,307	120,890	106,803	..	..	..	..	..	..	324,606	247,629	..
Côte d'Ivoire	62,581	15,390	14,788	9,108	9,542	15,599	..	21,993	..	..	..	50,006	21,687	18,796
Djibouti	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Equatorial Guinea	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Eritrea	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ethiopia	..	1,941	..	..	..	..	..	..	..	..	..	7,471	3,518	..
Gabon	9,721	..	55,278	62,236	59,510	76,626	..	66,510	..	221,003	..	18,784	52,036	121,380
Gambia, The	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ghana	11,214	..	..	..	..	..	..	..	..	..	..	8,463	6,857	..
Guinea	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Guinea-Bissau	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kenya	244,531	78,287	62,732	52,335	51,545	..	..	46,195	..	37,292	..	194,666	89,227	41,744
Lesotho	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Liberia	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Madagascar	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Malawi	116,102	18,902	14,755	12,122	12,134	12,931	11,748	9,249	12,285	12,814	14,193	84,418	22,426	12,203
Mali	45,401	55,697	51,016	..	..	..	..	36,360	..	29,342	..	44,780	58,347	32,851
Mauritania	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mauritius	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mozambique	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Namibia	..	164,836	148,666	146,011	131,836	134,083	..	..	..	..	..	..	167,582	134,083
Niger	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Nigeria	21,154	..	637	..	..	..	..	5,057	..	523	..	28,450	5,751	2,790
Rwanda	..	..	..	..	..	..	..	..	..	..	..	..	..	..
São Tomé and Príncipe	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Senegal	75,870	56,188	53,234	45,034	40,482	..	..	38,371	..	33,086	..	63,762	61,951	35,729
Seychelles	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sierra Leone	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Somalia	..	..	..	..	..	..	..	..	..	..	..	..	..	..
South Africa	596,833	322,424	307,400	304,246	296,233	287,144	..	..	..	..	..	480,105	344,265	287,144
Sudan	160,868	23,073	..	..	..	39,572	..	35,807	..	31,793	..	96,450	35,861	35,724
Swaziland	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tanzania	..	83,706	78,939	102,906	87,482	102,106	86,660	75,074	61,510	72,993	..	..	84,580	79,668
Togo	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Uganda	..	10,219	8,208	8,527	12,095	12,107	..	4,511	4,605	7,465	..	10,598	9,254	7,172
Zambia	389,374	166,943	158,422	156,228	102,521	70,170	78,617	66,607	65,906	75,919	..	332,536	200,202	71,444
Zimbabwe	725,682	218,011	242,741	227,954	160,994	172,383	163,375	149,422	..	..	..	537,619	283,162	161,727
NORTH AFRICA	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Algeria	44,527	23,483	21,080	19,345	18,869	..	..	..	..	12,924	..	38,601	25,767	12,924
Egypt, Arab Rep.	43,751	25,040	21,708	24,997	27,133	..	23,014	21,498	20,571	16,416	..	37,459	26,215	20,375
Libya	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Morocco	129,978	59,200	68,281	58,964	55,799	58,359	..	53,705	49,993	49,056	..	115,377	75,545	52,778
Tunisia	121,683	55,669	55,167	51,874	54,672	54,926	..	47,385	45,218	42,346	..	98,703	68,892	47,469
ALL AFRICA	..	..	..	..	..	..	..	..	..	..	..	..	..	..

9-9. Rail load-to-locomotive ratio

	Million rail ton-km/locomotive											Annual average		
	1980	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	75-84	85-94	95-MR
SUB-SAHARAN AFRICA	..	..	..	..	17.8	15.9	..	18.0	..	..	..	14.3	15.8	..
excluding South Africa	..	..	..	..	..	..	..	..	..	..	..	..	..	..
excl. S.Africa & Nigeria	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Angola	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Benin	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Botswana	..	..	..	..	..	..	..	..	..	..	19.9	..	..	19.9
Burkina Faso	..	..	..	..	..	..	..	..	..	18.0	24.9	..	..	21.4
Burundi	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cameroon	10.9	6.5	9.0	10.1	8.9	9.6	8.6	12.4	13.3	10.0	14.2	9.8	9.2	12.5
Cape Verde	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Central African Republic	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Chad	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Comoros	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Congo, Dem. Rep. of	11.7	10.9	..	11.2	..	..	..	1.0	..	..	1.7	12.0	9.7	1.7
Congo, Rep. of	..	..	..	..	14.8	9.4	..	5.8	..	..	3.0	11.3	9.7	3.0
Côte d'Ivoire	12.8	..	..	8.0	6.7	6.8	4.5	4.5	5.7	..	17.4	12.3	8.4	11.5
Djibouti	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Equatorial Guinea	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Eritrea	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ethiopia	..	..	6.1	..	2.3	..	..	..	..	..	..	..	4.2	..
Gabon	2.1	7.4	6.1	..	..	4.8	5.2	5.3	7.6	..	30.8	4.2	6.0	19.2
Gambia, The	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ghana	..	..	..	3.3	..	..	..	..	..	..	..	..	2.4	..
Guinea	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Guinea-Bissau	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kenya	6.9	..	9.2	8.8	9.0	..	..	..	..	..	..	9.2	8.7	..
Lesotho	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Liberia	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Madagascar	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Malawi	..	1.4	1.4	1.4	1.5	1.1	1.0	0.9	1.1	..	..	3.5	1.5	1.1
Mali	..	6.7	7.8	7.8	7.8	7.9	..	..	..	..	11.2	6.6	8.6	11.2
Mauritania	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mauritius	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mozambique	..	..	..	..	..	..	..	..	..	..	5.9	..	..	5.9
Namibia	..	..	..	27.7	21.4	22.3	19.9	20.3	21.6	..	..	..	22.3	21.6
Niger	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Nigeria	3.8	..	..	..	..	0.3	..	0.0	..	..	..	5.0	1.6	..
Rwanda	..	..	..	..	..	..	..	..	..	..	..	..	..	..
São Tomé and Príncipe	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Senegal	13.3	18.4	16.7	20.9	18.0	16.4	14.6	16.1	..	..	..	14.3	17.6	..
Seychelles	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sierra Leone	..	..	..	..	..	..	..	..	..	10.8	15.4	..	..	13.1
Somalia	..	..	..	..	..	..	..	..	..	..	..	..	..	..
South Africa	..	19.9	23.2	25.4	23.6	22.6	25.8	26.4	26.9	..	..	18.2	22.6	26.9
Sudan	8.0	..	..	..	4.5	..	..	..	11.1	14.2	12.3	7.0	4.7	12.5
Swaziland	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tanzania	..	..	8.4	..	11.7	11.4	13.9	12.2	14.9	..	17.4	7.7	10.9	16.1
Togo	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Uganda	..	2.1	1.9	3.1	2.7	2.0	2.3	3.5	4.1	..	8.3	..	2.1	6.2
Zambia	16.1	23.0	22.7	7.5	15.4	14.6	15.1	9.9	6.8	..	7.2	17.2	16.8	7.0
Zimbabwe	21.7	19.3	..	13.6	14.0	16.0	17.5	27.9	27.5	..	..	20.7	18.8	27.5
NORTH AFRICA	9.0	..	..	9.2	9.9	8.8	9.5	9.6	..	..	9.5	9.0	9.4	9.5
Algeria	9.8	15.6	13.3	12.2	12.5	10.7	11.1	10.8	..	..	7.7	10.9	12.5	7.7
Egypt, Arab Rep.	3.9	..	..	3.7	6.1	3.6	4.9	4.9	..	..	5.1	3.7	4.4	5.1
Libya	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Morocco	19.5	24.2	18.7	20.4	17.3	19.6	17.4	19.2	19.8	..	22.3	19.1	19.5	21.0
Tunisia	13.9	10.8	10.5	9.3	9.3	10.3	14.0	12.7	13.4	..	13.5	12.7	10.7	13.4
ALL AFRICA	..	..	..	14.7	14.0	12.6	15.1	14.1	..	..	..	11.8	13.5	..

9-10. Air transport

	<i>Aircraft departures (thousands)</i>		<i>Passengers carried (thousands)</i>		<i>Air freight (million tons per km)</i>	
	2002	2003	2002	2003	2002	2003
SUB-SAHARAN AFRICA	328	348	16,821	18,174	..	..
excluding South Africa	206	201	8,654	8,693	..	..
excl. S. Africa & Nigeria	195	192	8,142	8,172	..	..
Angola	4	5	190	198	51.3	56.5
Benin	..	..	..	..	..	..
Botswana	7	8	179	183	0.3	0.3
Burkina Faso	1	1	53	55	0.0	0.0
Burundi	..	..	..	..	..	..
Cameroon	10	10	322	315	20.8	20.3
Cape Verde	9	9	237	253	0.4	0.4
Central African Republic	..	..	..	..	..	..
Chad	..	..	..	..	..	..
Comoros	..	..	..	..	..	..
Congo, Dem. Rep. of	..	..	..	..	..	..
Congo, Rep. of	5	5	47	52	0.0	0.0
Côte d'Ivoire	..	..	..	..	..	..
Djibouti	..	..	..	..	..	..
Equatorial Guinea	..	..	..	..	..	..
Eritrea	..	..	..	..	..	..
Ethiopia	28	27	1,103	1,147	83.5	93.5
Gabon	8	8	366	386	49.3	54.3
Gambia, The	..	..	..	..	..	..
Ghana	4	3	256	241	18.9	16.6
Guinea	..	..	..	..	..	..
Guinea-Bissau	..	..	..	..	..	..
Kenya	26	27	1,600	1,678	118.4	141.5
Lesotho	..	..	..	..	..	..
Liberia	..	..	..	..	..	..
Madagascar	9	9	391	404	8.7	9.6
Malawi	5	5	105	109	1.2	1.2
Mali	..	..	..	..	..	..
Mauritania	2	2	106	116	0.1	0.1
Mauritius	13	15	1,006	1,035	182.3	194.5
Mozambique	8	8	282	281	7.1	6.6
Namibia	5	6	222	266	21.1	45.7
Niger	..	..	..	..	..	..
Nigeria	11	9	512	520	8.7	10.0
Rwanda	..	..	..	..	..	..
São Tomé and Príncipe	1	1	35	36	0.1	0.1
Senegal	7	2	231	130	0.0	0.0
Seychelles	22	19	518	413	28.2	21.3
Sierra Leone	0	0	14	14	6.1	6.7
Somalia	..	..	..	..	..	..
South Africa	122	147	8,167	9,481	782.5	891.3
Sudan	8	8	409	421	32.8	36.3
Swaziland	..	..	..	..	..	..
Tanzania	4	6	135	150	2.3	1.8
Togo	..	..	..	..	..	..
Uganda	0	0	41	40	21.3	23.4
Zambia	5	5	47	51	0.0	0.0
Zimbabwe	5	4	251	201	25.8	18.5
NORTH AFRICA	150	146	13,024	12,376	..	..
Algeria	46	44	3,002	3,293	17.9	19.1
Egypt, Arab Rep.	42	42	4,527	4,172	249.2	228.5
Libya	6	6	559	627	0.2	0.3
Morocco	38	35	3,146	2,565	51.3	50.7
Tunisia	19	19	1,789	1,720	19.2	19.2
ALL AFRICA	478	495	29,844	30,550	..	..

Technical notes

Tables

Table 9-1. Electric power consumption per capita.

This table refers to per capita electricity consumption, which means the production of power plants and combined heat and power plants, less distribution losses, and own use by heat and power plants (IEA and UN *Energy Statistics Yearbook*).

Table 9-2. Energy production and use. This table presents three indicators. *Energy production* refers to commercial forms of primary energy—petroleum (crude oil, natural gas liquids, and oil from nonconventional sources), natural gas, solid fuels, and primary electricity—all converted into oil equivalent (IEA and UN *Energy Statistics Yearbook*). *Commercial energy use* is indigenous production plus imports and stock changes, minus exports and international marine bunkers (IEA and UN *Energy Statistics Yearbook*). *Electric power transmission and distribution losses* include losses in transmission between sources of supply and points of distribution and in the distribution to consumers, including pilferage. Production less transmission and distribution losses, own use, and transformation losses is equal to end-use electricity consumption (IEA and UN *Energy Statistics Yearbook*).

Table 9-3. Telephone, radio, and television availability, 1996–2003. This table presents data for six communication indicators. Telephone main lines (ITU) refer to telephone lines connecting a customer's equipment to the public switched telephone network, where a main line is normally identified by a unique number. Main lines are presented for every 1,000 people (Table 1.2). *Waiting list* shows the number of applications (in thousands) for a connection to a main line that have been held up by a lack of technical capacity (ITU). *Average cost of call* is the average cost of a three-minute call within the same

exchange area using the subscriber's equipment (that is, not from a public phone) (ITU). *Mobile phones* refer to users of portable telephones who subscribe to an automatic public mobile telephone service using cellular technology that provides access to the public switched telephone network, per 1,000 people (Table 1.2) (ITU). *Radios* are the estimated number of radio receivers in use for broadcast to the general public, per 1,000 people (Table 1.2) (UNESCO *Statistical Yearbook*). *Television sets* are the estimated number of television sets in use, per 1,000 people (Table 1.2) (ITU).

Table 9-4. Personal computers and Internet use.

Personal computers are self-contained computers designed to be used by a single individual. *Internet hosts* are computers with active Internet Protocol (IP) addresses connected to the Internet. All hosts without a country code identification are assumed to be located in the United States. *Internet users* are people with access to the worldwide network. The data on personal computers and Internet users are from the ITU. They are reported in the ITU's *World Telecommunication Development Report* (2003), and the *World Telecommunication Indicators Database* (2003b). The data on Internet hosts are from the Internet Software Consortium (www.isc.org).

Table 9-5. Vehicle ownership. Vehicles (International Road Federation) include all forms of road transportation, except buses. They are expressed as the number of vehicles per 1,000 people (Table 1.2).

Table 9-6. Road-to-population ratio. This table presents the ratio of 1,000 kilometers of paved or unpaved road (International Road Federation) per 1 million people (Table 1.2).

Table 9-7. Paved primary roads. This table presents paved primary roads, that is, those that have been sealed with asphalt or similar road-bonding material

(International Road Federation) as a ratio to total roads and then shows the percentage that is in good condition (World Bank data).

Table 9-8. Rail goods traffic-to-\$PPP GDP ratio. This is a measure of the tonnage of goods times kilometers traveled per million dollars of GDP measured in purchasing power parity (PPP) terms (World Bank data).

Table 9-9. Rail load-to-locomotive ratio. This is the volume of rail-transported goods (measured in millions of metric tons per kilometers traveled) per single locomotive (World Bank data).

Table 9-10. Air transport. *Aircraft departures* are the number of domestic and international takeoffs of air carriers registered in the country. *Passengers carried* include both domestic and international aircraft passengers of air carriers registered in the country. *Air freight* is the sum of the metric tons of freight, express, and diplomatic bags carried on each flight stage (the operation of an aircraft from takeoff to its next landing) multiplied by the stage distance for air carriers registered in the country. The air transport data are from the International Civil Aviation Organization’s (ICAO’s) *Civil Aviation Statistics of the World* and ICAO staff estimates.

Methodology used for regional aggregations and period averages in chapter 9

<i>Table</i>	<i>Aggregations ^a</i>				<i>Period averages ^b</i>
	<i>(1)</i>	<i>(6)</i>	<i>(7)</i>	<i>(8)</i>	<i>(1)</i>
9-1		x			x
9-2					
Columns 1-4	x				
Columns 5-6				x	
9-3					
Columns 1-2, 4-6		x			
Column 3				x	
9-4					
Columns 1-2		x			
Column 3	x				
9-5		x	x		x
9-6		x	x		x
9-7					
Columns 1-8				x	
Column 9		x			
9-8				x	x
9-9		x	x		x
9-10	x				

Note: Regional aggregations are shown in the rows for Sub-Saharan Africa, North Africa, and All Africa. Period averages are shown in the last three columns. This table shows only the methodologies used in this chapter.

a. Regional aggregations: (1) simple total; (2) simple total of the first indicator divided by the simple total of the second indicator (same country coverage); (3) simple total of the gap-filled indicator; (4) simple total of the gap-filled main indicator divided by the simple total of the gap-filled secondary indicator; (5) simple total of the first gap-filled main indicator less the simple total of the second gap-filled main indicator, all divided by the simple total of the secondary indicator; (6) weighted total (by population); (7) median; (8) no aggregation; (9) simple arithmetic mean.

b. Period averages: (1) arithmetic mean (using the same series as shown in the table; i.e., ratio if the rest of the table is shown as ratio, level if the rest of the table is shown as level, growth rate if the rest is shown as growth rate); (2) least-squares growth rate (using main indicator); (3) least-squares growth rate (using main indicator in constant terms, with the rest of the table in current terms).