

Technology: diffusion and creation

HDI rank	MDG Telephone mainlines ^a (per 1,000 people)		MDG Cellular subscribers ^a (per 1,000 people)		MDG Internet users (per 1,000 people)		Patents granted to residents (per million people)	Receipts of royalties and licence fees (US\$ per person)	Research and development (R&D) expenditures (% of GDP)	Researchers in R&D (per million people)	
	1990	2005	1990	2005	1990	2005	2000–05 ^b	2005	2000–05 ^b	1990–2005 ^b	
HIGH HUMAN DEVELOPMENT											
1	Iceland	512	653	39	1,024	0	869	0	0.0	3.0	6,807
2	Norway	503	460	46	1,028	7	735	103	78.4	1.7	4,587
3	Australia	456	564	11	906	6	698	31	25.0	1.7	3,759
4	Canada	550	566	21	514	4	520	35	107.6	1.9	3,597
5	Ireland	280	489	7	1,012	0	276	80	142.2	1.2	2,674
6	Sweden	683	717 ^c	54	935	6	764	166	367.7	3.7	5,416
7	Switzerland	587	689	19	921	6	498	77	..	2.6	3,601
8	Japan	441	460	7	742	(.)	668	857	138.0	3.1	5,287
9	Netherlands	464	466	5	970	3	739	110	236.8	1.8	2,482
10	France	495	586	5	789	1	430	155	97.1	2.2	3,213
11	Finland	535	404	52	997	4	534	214	230.0	3.5	7,832
12	United States	545	606 ^c	21	680	8	630 ^c	244	191.5	2.7	4,605
13	Spain	325	422	1	952	(.)	348	53	12.9	1.1	2,195
14	Denmark	566	619	29	1,010	1	527	19	..	2.6	5,016
15	Austria	418	450	10	991	1	486	92	21.3	2.3	2,968
16	United Kingdom	441	528	19	1,088	1	473	62	220.8	1.9	2,706
17	Belgium	393	461 ^c	4	903	(.)	458	51	106.5	1.9	3,065
18	Luxembourg	481	535	2	1,576	0	690	31	627.9	1.8	4,301
19	New Zealand	426	422	16	861	0	672	10	24.8	1.2	3,945
20	Italy	394	427	5	1,232	(.)	478	71	19.3	1.1	1,213
21	Hong Kong, China (SAR)	434	546	23	1,252	0	508	5	31.2 ^c	0.6	1,564
22	Germany	401	667	3	960	1	455	158	82.6	2.5	3,261
23	Israel	349	424	3	1,120	1	470 ^c	48	91.2	4.5	..
24	Greece	389	568	0	904	0	180	29	5.4	0.6	1,413
25	Singapore	346	425	17	1,010	0	571 ^c	96	125.8	2.3	4,999
26	Korea (Republic of)	310	492	2	794	(.)	684	1,113	38.2	2.6	3,187
27	Slovenia	211	408	0	879	0	545	113	8.2	1.6	2,543
28	Cyprus	424	554	5	949	0	430	7	18.1	0.4	630
29	Portugal	240	401	1	1,085	0	279	14	5.7	0.8	1,949
30	Brunei Darussalam	136	224	7	623	0	277 ^c	..	..	0.0	274
31	Barbados	281	500	0	765	0	594	..	5.8	..	..
32	Czech Republic	157	314	0	1,151	0	269	34	6.2	1.3	1,594
33	Kuwait	156	201	10	939	0	276	..	0.0	0.2	..
34	Malta	356	501	0	803	0	315	0	7.5	0.3	681
35	Qatar	197	253	8	882	0	269	..	..	..	..
36	Hungary	96	333	(.)	924	0	297	13	82.7	0.9	1,472
37	Poland	86	309	0	764	0	262	28	1.6	0.6	1,581
38	Argentina	93	227	(.)	570	0	177	4	1.4	0.4	720
39	United Arab Emirates	224	273	19	1,000	0	308	..	..	..	..
40	Chile	66	211	1	649	0	172	1	3.3	0.6	444
41	Bahrain	191	270	10	1,030	0	213	..	..	..	..
42	Slovakia	135	222	0	843	0	464	9	9.2 ^d	0.5	1,984
43	Lithuania	211	235	0	1,275	0	358	21	0.6	0.8	2,136
44	Estonia	204	328	0	1,074	0	513	56	4.0	0.9	2,523
45	Latvia	232	318	0	814	0	448	36	4.3	0.4	1,434
46	Uruguay	134	290	0	333	0	193	1	(.)	0.3	366
47	Croatia	172	425	(.)	672	0	327	4	16.1	1.1	1,296
48	Costa Rica	92	321	0	254	0	254	..	0.0	0.4	..
49	Bahamas	274	439 ^c	8	584 ^c	0	319	..	..	..	..
50	Seychelles	124	253	0	675	0	249	..	..	0.1	19
51	Cuba	32	75	0	12	0	17	3	..	0.6	..
52	Mexico	64	189	1	460	0	181	1	0.7	0.4	268
53	Bulgaria	250	321	0	807	0	206	10	0.7	0.5	1,263

Technology: diffusion and creation

HDI rank	MDG		MDG		MDG		Patents granted to residents (per million people) 2000–05 ^b	Receipts of royalties and licence fees (US\$ per person) 2005	Research and development (R&D) expenditures (% of GDP) 2000–05 ^b	Researchers in R&D (per million people) 1990–2005 ^b
	Telephone mainlines ^a (per 1,000 people)		Cellular subscribers ^a (per 1,000 people)		Internet users (per 1,000 people)					
	1990	2005	1990	2005	1990	2005				
54 Saint Kitts and Nevis	231	532 ^c	0	213 ^c	0	..	..	0.0	..	..
55 Tonga	46	..	0	161 ^c	0	29	..	..	..	45,454
56 Libyan Arab Jamahiriya	51	133 ^d	0	41 ^c	0	36 ^c	..	0.0 ^c	..	361
57 Antigua and Barbuda	252	467 ^c	0	663 ^c	0	350	..	0.0	..	..
58 Oman	57	103	1	519	0	111	..	..	..	..
59 Trinidad and Tobago	136	248	0	613	0	123 ^c	..	..	0.1	..
60 Romania	102	203	0	617	0	208 ^c	24	2.2	0.4	976
61 Saudi Arabia	75	164	1	575	0	70 ^c	(.)	0.0	..	..
62 Panama	90	136	0	418	0	64	..	0.0	0.3	97
63 Malaysia	89	172	5	771	0	435	..	1.1	0.7	299
64 Belarus	154	336	0	419	0	347	76	0.3	0.6	..
65 Mauritius	53	289	2	574	0	146 ^c	..	(.)	0.4	360
66 Bosnia and Herzegovina	..	248	0	408	0	206	3	..	..	..
67 Russian Federation	140	280	0	838	0	152	135	1.8	1.2	3,319
68 Albania	12	88 ^c	0	405 ^c	0	60	..	0.2	..	..
69 Macedonia (TFYR)	150	262	0	620	0	79	11	1.5	0.3	504
70 Brazil	63	230 ^c	(.)	462	0	195	1	0.5	1.0	344
MEDIUM HUMAN DEVELOPMENT										
71 Dominica	161	293 ^c	0	585 ^c	0	361	..	0.0	..	..
72 Saint Lucia	127	..	0	573 ^c	0	339 ^c	0	..	0.4 ^e	..
73 Kazakhstan	82	167 ^c	0	327	0	27 ^c	83	(.)	0.2	629
74 Venezuela (Bolivarian Republic of)	75	136	(.)	470	0	125	1	0.0	0.3	..
75 Colombia	69	168	0	479	0	104	(.)	0.2	0.2	109
76 Ukraine	135	256 ^c	0	366	0	97	52	0.5	1.2	..
77 Samoa	25	73 ^d	0	130	0	32	0	..	..	..
78 Thailand	24	110	1	430 ^c	0	110	1	0.3	0.3	287
79 Dominican Republic	48	101	(.)	407	0	169	..	0.0	..	..
80 Belize	92	114	0	319	0	130	..	..	..	..
81 China	6	269	(.)	302	0	85	16	0.1	1.4	708
82 Grenada	162	309 ^c	2	410 ^c	0	182	..	0.0	..	..
83 Armenia	158	192 ^c	0	106	0	53	39	..	0.3	..
84 Turkey	122	263	1	605	0	222	1	0.0 ^c	0.7	341
85 Suriname	91	180	0	518	0	71	..	..	..	..
86 Jordan	78	119 ^c	(.)	304 ^c	0	118 ^c	..	..	..	1,927
87 Peru	26	80	(.)	200	0	164	(.)	0.1	0.1	226
88 Lebanon	144	277	0	277	0	196	..	0.0 ^c	..	..
89 Ecuador	48	129	0	472	0	47	0	0.0 ^c	0.1	50
90 Philippines	10	41	0	419	0	54 ^c	(.)	0.1	0.1	48
91 Tunisia	37	125	(.)	566	0	95	..	1.4	0.6	1,013
92 Fiji	59	122 ^d	0	229	0	77	..	..	..	..
93 Saint Vincent and the Grenadines	120	189	0	593	0	84	0	..	0.2	..
94 Iran (Islamic Republic of)	40	278	0	106	0	103	8	..	0.7	1,279
95 Paraguay	27	54	0	320	0	34	..	33.2	0.1	79
96 Georgia	99	151 ^c	0	326	0	39 ^c	42	2.1	0.3	..
97 Guyana	22	147	0	375	0	213	..	47.9	..	..
98 Azerbaijan	87	130	0	267	0	81	..	(.)	0.3	..
99 Sri Lanka	7	63	(.)	171	0	14 ^c	3	..	0.1	128
100 Maldives	29	98	0	466	0	59 ^c	..	8.6	..	..
101 Jamaica	44	129	0	1,017	0	404 ^c	1	4.7	0.1	..
102 Cape Verde	23	141	0	161	0	49	..	0.2 ^d	..	127
103 El Salvador	24	141	0	350	0	93	..	0.4	0.1 ^e	47
104 Algeria	32	78	(.)	416	0	58	1	..	..	..
105 Viet Nam	1	191	0	115	0	129	(.)	..	0.2	115
106 Occupied Palestinian Territories	..	96	0	302	0	67	..	..	..	..

HDI rank	MDG		MDG		MDG		Patents granted to residents (per million people) 2000–05 ^b	Receipts of royalties and licence fees (US\$ per person) 2005	Research and development (R&D) expenditures (% of GDP) 2000–05 ^b	Researchers in R&D (per million people) 1990–2005 ^b	
	Telephone mainlines ^a (per 1,000 people)		Cellular subscribers ^a (per 1,000 people)		Internet users (per 1,000 people)						
	1990	2005	1990	2005	1990	2005					
107	Indonesia	6	58	(.)	213	0	73	..	1.2	0.1	207
108	Syrian Arab Republic	39	152	0	155	0	58	2	..	..	29
109	Turkmenistan	60	80 ^d	0	11 ^c	0	8 ^c	..	..	..	..
110	Nicaragua	12	43	0	217	0	27	1	0.0	0.0	73
111	Moldova	106	221	0	259	0	96 ^c	67	0.4	0.8 ^e	..
112	Egypt	29	140	(.)	184	0	68	1	1.9	0.2	493
113	Uzbekistan	68	67 ^d	0	28	0	34 ^c	10	..	..	1,754
114	Mongolia	32	61	0	218	0	105	44	..	0.3	..
115	Honduras	18	69	0	178	0	36	1	0.0	0.0	..
116	Kyrgyzstan	71	85	0	105	0	54	17	0.4	0.2	..
117	Bolivia	27	70	0	264	0	52	..	0.2	0.3	120
118	Guatemala	21	99	(.)	358	0	79	(.)	(.) ^c	..	..
119	Gabon	22	28	0	470	0	48	..	..	..	..
120	Vanuatu	17	33 ^c	(.)	60	0	38	..	..	..	..
121	South Africa	94	101	(.)	724	0	109	..	0.9	0.8	307
122	Tajikistan	45	39 ^d	0	41	0	1 ^c	2	0.2	..	660
123	Sao Tome and Principe	19	46 ^c	0	77	0	131 ^c	..	..	..	..
124	Botswana	18	75	0	466	0	34	..	0.3	..	..
125	Namibia	38	64 ^c	0	244	0	37 ^c	..	0.0 ^d	..	..
126	Morocco	17	44	(.)	411	0	152	1	0.4	0.6	..
127	Equatorial Guinea	4	20	0	192	0	14	..	..	..	..
128	India	6	45	0	82	0	55	1	(.) ^d	0.8	119
129	Solomon Islands	15	16	0	13	0	8	..	..	..	..
130	Lao People's Democratic Republic	2	13	0	108	0	4	..	..	..	..
131	Cambodia	(.)	3 ^d	0	75	0	3 ^c	..	(.)	..	..
132	Myanmar	2	9	0	4	0	2	..	0.0 ^d	0.1	17
133	Bhutan	3	51	0	59	0	39	..	..	..	..
134	Comoros	8	28	0	27	0	33	..	..	..	..
135	Ghana	3	15	0	129	0	18	..	0.0	..	..
136	Pakistan	8	34	(.)	82	0	67	0	0.1	0.2	75
137	Mauritania	3	13	0	243	0	7	..	..	..	..
138	Lesotho	8	27	0	137	0	24 ^c	..	9.1	0.0	..
139	Congo	6	4 ^c	0	123	0	13	..	..	..	30
140	Bangladesh	2	8	0	63	0	3	..	(.)	0.6	51
141	Swaziland	18	31	0	177	0	32 ^c	..	(.)	..	..
142	Nepal	3	17	0	9	0	4	..	..	0.7	59
143	Madagascar	3	4	0	27	0	5	(.)	(.)	0.1	15
144	Cameroon	3	6 ^c	0	138	0	15	..	(.) ^d	..	..
145	Papua New Guinea	7	11 ^c	0	4	0	23	..	..	..	..
146	Haiti	7	17 ^c	0	48 ^c	0	70	..	0.0	..	..
147	Sudan	2	18	0	50	0	77	..	0.0	0.3	..
148	Kenya	7	8	0	135	0	32	..	0.5	..	..
149	Djibouti	10	14	0	56	0	13	..	..	..	..
150	Timor-Leste	..	..	..	..	..	..	..	..	..	..
151	Zimbabwe	12	25	0	54	0	77	0	..	..	..
152	Togo	3	10	0	72	0	49	..	0.0 ^c	..	102
153	Yemen	10	39 ^c	0	95	0	9 ^c	..	..	..	..
154	Uganda	2	3	0	53	0	17	..	0.3	0.8	..
155	Gambia	7	29	0	163	0	33 ^c	..	..	..	..
LOW HUMAN DEVELOPMENT											
156	Senegal	6	23	0	148	0	46	..	0.0 ^c	..	..
157	Eritrea	..	9	0	9	0	16	..	..	..	..
158	Nigeria	3	9	0	141	0	38	..	..	..	..
159	Tanzania (United Republic of)	3	4 ^c	0	52 ^c	0	9 ^c	..	0.0	..	..

Technology: diffusion and creation

HDI rank	MDG		MDG		MDG		Patents granted to residents (per million people) 2000–05 ^b	Receipts of royalties and licence fees (US\$ per person) 2005	Research and development (R&D) expenditures (% of GDP) 2000–05 ^b	Researchers in R&D (per million people) 1990–2005 ^b
	Telephone mainlines ^a (per 1,000 people)		Cellular subscribers ^a (per 1,000 people)		Internet users (per 1,000 people)					
	1990	2005	1990	2005	1990	2005				
160 Guinea	2	3 ^c	0	20	0	5	..	0.0 ^c	..	..
161 Rwanda	1	3 ^c	0	32	0	6	..	0.0	..	..
162 Angola	7	6	0	69	0	11	..	3.1	..	..
163 Benin	3	9	0	89	0	50	..	0.0 ^c	..	..
164 Malawi	3	8	0	33	0	4	0	..	..	..
165 Zambia	8	8	0	81	0	20 ^c	..	..	0.0 ^e	51
166 Côte d'Ivoire	6	14 ^c	0	121	0	11	..	(.) ^c	..	..
167 Burundi	1	4 ^c	0	20	0	5	..	0.0	..	..
168 Congo (Democratic Republic of the)	1	(.)	0	48	0	2	..	..	..	..
169 Ethiopia	2	9	0	6	0	2	..	(.)	..	..
170 Chad	1	1 ^c	0	22	0	4	..	..	..	..
171 Central African Republic	2	2	0	25	0	3	..	..	..	47
172 Mozambique	4	4 ^c	0	62	0	7 ^c	..	0.1	0.6	..
173 Mali	1	6	0	64	0	4	..	(.) ^c	..	..
174 Niger	1	2	0	21	0	2	..	..	..	..
175 Guinea-Bissau	6	7 ^d	0	42	0	20	..	..	..	..
176 Burkina Faso	2	7	0	43	0	5	..	..	0.2 ^e	17
177 Sierra Leone	3	..	0	22 ^d	0	2 ^c	..	0.2 ^c	..	..
Developing countries	21	132	(.)	229	(.)	86	..	..	1.0	..
Least developed countries	3	9	0	48	0	12	..	0.2	..	..
Arab States	34	106	(.)	284	0	88	..	0.9	..	..
East Asia and the Pacific	18	223	(.)	301	(.)	106	..	1.7	1.6	722
Latin America and the Caribbean	61	..	(.)	439	0	156	..	1.1	0.6	256
South Asia	7	51	(.)	81	0	52	..	(.)	0.7	119
Sub-Saharan Africa	10	17	(.)	130	0	26	..	0.3	..	..
Central and Eastern Europe and the CIS	125	277	(.)	629	0	185	73	4.1	1.0	2,423
OECD	390	441	10	785	3	445	239	104.2	2.4	3,096
High-income OECD	462	..	12	828	3	524	299	130.4	2.4	3,807
High human development	308	394	7	743	2	365	189	75.8	2.4	3,035
Medium human development	16	135	(.)	209	0	73	..	0.3	0.8	..
Low human development	3	7	0	74	0	17	..	0.2	..	..
High income	450	500	12	831	3	525	286	125.3	2.4	3,781
Middle income	40	211	(.)	379	0	115	..	1.0	0.8	725
Low income	6	37	(.)	77	0	45	..	(.)	0.7	..
World	98	180	2	341	1	136	..	21.6	2.3	..

NOTES

- a. Telephone mainlines and cellular subscribers combined form an indicator for MDG 8; see *Index to Millennium Development Goal Indicators in the indicator tables*.
- b. Data refer to the most recent year available during the period specified.
- c. Data refer to 2004.
- d. Data refer to 2003.
- e. Data refer to year other than specified.

SOURCES

Columns 1–6, 9 and 10: World Bank 2007b; aggregates calculated for HDRO by the World Bank.

Column 7: calculated on the basis of data on patents from WIPO 2007 and data on population from UN 2007e.

Column 8: calculated on the basis of data on royalties and license fees from World Bank 2007b and data on population from UN 2007e; aggregates calculated for HDRO by the World Bank.