UNCTAD/SDTE/ECB/2005/1

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT
Geneva

INFORMATION ECONOMY REPORT 2005

CHAPTER 1

UNITED NATIONS
New York and Geneva, 2005

Chapter 1

ICT INDICATORS FOR DEVELOPMENT: TRENDS AND MEASUREMENT ISSUES

A. INTRODUCTION

The present chapter is concerned with information society indicators, in terms of available statistics and of improving data and indicators in developing countries. This is based on recognition of the increasing need for reliable data and indicators regarding ICT readiness, use and impact. Such data are crucial for formulating policies and strategies concerning ICT-driven or ICT-enabled growth, for social inclusion and cohesion, and for monitoring and evaluating ICT-related economic and social developments. They help companies take the right investment and business decisions and allow developing countries to benchmark their information economies against those of other countries, both developed and developing. Finally, they contribute to documenting the impact of the information society on the implementation of internationally agreed development goals (e.g. the Millennium Development Goals) and measuring progress in the use of ICTs to achieve those goals.

The focus on the development of ICT statistical data stems from recent advances in measuring the information society at the international and regional levels, the increasing demand by policymakers and the international community for quantitative assessment of the impact of ICT on development and growth, and the attention the subject has attracted in international forums such as the World Summit on the Information Society (WSIS), the UN ICT Task Force and the UN Statistical Commission. It also reflects UNCTAD's ongoing work in this field, at both the analytical and the capacity-building levels.

The chapter is divided into two main parts. In the first part, it presents the latest developments in the spread and use of information and communication technology, particularly in e-business, as well as trade in ICT goods, on the basis of available statistical data (section B). In the second part, it draws the reader's attention to the need to improve the availability of comparable statistical data on ICT use and impact in developing countries, and describes progress made in this regard, including by the secretariat of UNCTAD (section C). The chapter ends with some suggestions about how the development of comparable statistics in developing countries could be enhanced, for the purpose of monitoring and assessing the information society.

B. Global and regional trends in ICT uptake

ICTs continue to spread in all parts of the world, particularly in the developing world. As illustrated below, more people have access to the Internet and at a higher speed, more have computers, and many more have mobile phones. More enterprises use the Internet for streamlining their business processes, for reaching out to potential clients, and in general, for increasing their competitive advantage. The continued spread of ICTs increases opportunities for users to benefit from the potential of ICTs for economic and social development.

At the same time, many of the poorest countries continue to have very low ICT penetration rates, in particular those with a large rural population and relatively high-priced basic ICT infrastructure. In these countries, the incorporation of ICT policies into the broader national social and economic development agenda will be crucial for the development of their information societies. They are also the countries that have the greatest need for assistance in this process.

This part of the chapter will first discuss the latest trends in basic ICT infrastructure and access, for example with regard to the Internet, broadband, computers and mobile phones, from a developing country point of view (section 1). These indicators, based on time series data compiled by the ITU, are essential to the development of an information economy. Then figures on the actual use of ICTs by enterprises will be

presented, such as Internet and web use, and the types of activities that businesses carry out over the Internet, including e-commerce (section 2). The section will present data from selected developed and developing countries, drawing primarily from data provided by the Organisation for Economic Co-operation and Development (OECD), Eurostat and UNCTAD. Section 3 will focus on recent developments in the international trade of ICT goods, an important sector in the development of the information economy, and will use trade data from the UN Comtrade database. The classification of countries follows the *UNCTAD Handbook of Statistics* (2004) (see annex II).

1. Basic access to ICTs

Internet users

This section provides an overview of the number of Internet users in selected regions and countries, based on the latest available data. These data are based on estimates of all Internet users in a country, including those that use the Internet in public places, offices, Internet cafes, and so forth. In countries where no surveys on Internet users are carried out, estimates are typically made on the basis of the number of subscribers. The indicator does not provide information on the intensity of Internet use, which would be better estimated by looking at the number of subscribers. In a developing country context, however, subscriber figures could be understated since many users share subscriptions or use public localities to access the Internet.

Between 2003 and 2004, the total number of Internet users continued to grow substantially (table 1.1 and annex I). At the end of 2004, most Internet users lived in Asia, followed by Europe. The United States still accounts for the largest Internet population, with 185 million users, about twice as many as China (in second place). On the basis of higher growth rates, Europe has now overtaken North America in terms of the number of Internet users. Developing countries continue to catch up (see chart 1.1), with the highest growth rates in Africa. There has been a considerable surge in the number of Internet users in South-East Europe and the CIS countries, with a growth rate of more than 70 per cent. The current take-up of ICTs in this region is also reflected in some of the other indicators presented below.

Table 1.1

Internet users by region and level of development, 2000-2004

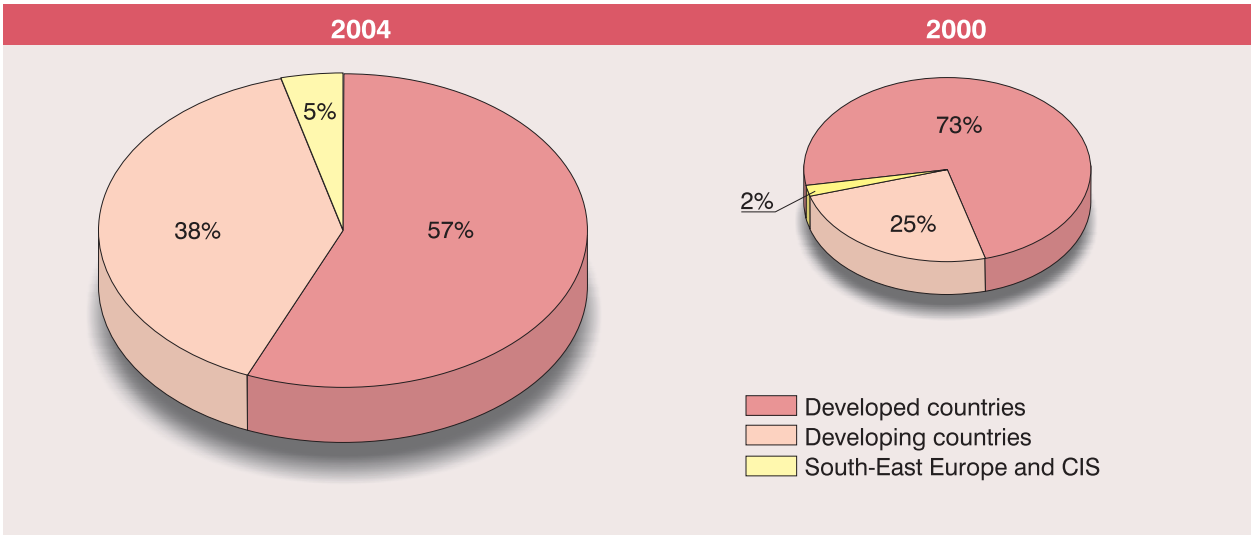
	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Region									
Africa	4 314 700	36.2	5 876 800	57.5	9 255 620	41.5	13 096 650	66.6	21 813 872
Asia	110 958 867	37.2	152 262 521	39.0	211 582 599	20.8	255 668 777	28.6	328 887 039
Europe	107 999 345	27.6	137 834 925	23.9	170 817 495	17.9	201 324 310	20.7	242 951 272
Latin America and Caribbean	19 352 400	49.4	28 918 492	45.9	42 191 573	20.9	50 995 059	18.7	60 534 062
North America	136 971 000	14.5	156 823 000	11.1	174 200 000	2.9	179 232 400	14.4	205 000 000
Oceania	8 182 800	16.7	9 545 400	31.4	12 544 450	8.3	13 581 400	21.1	16 445 726
Level of development									
Developed countries	285 429 829	20.7	344 585 162	16.7	402 012 514	7.8	433 307 644	15.8	501 756 193
Developing countries	96 367 167	42.9	137 712 413	48.8	204 925 742	25.3	256 845 766	29.6	332 998 292
South-East Europe and CIS	5 982 116	49.8	8 963 563	52.3	13 653 481	73.9	23 745 186	72.2	40 877 486
Total	387 799 112	26.7	491 291 138	26.2	620 191 737	15.1	713 898 596	22.7	875 631 972

Source: UNCTAD calculations based on ITU World Telecommunication Indicators database, 2005.

Note: For those countries that had not reported data for 2004 at the time of publication, the 2004 values were derived by averaging the growth of the previous four years.

Chart 1.1

Internet users by level of development, 2000-2004



Source: UNCTAD calculations based on the ITU World Telecommunication Indicators database, 2005.

At the regional level, Africa has very high growth rates (66 per cent), but many countries start from rather low levels (table 1.2). The highest growth in the number of Internet users has been in Eritrea, Sudan, Morocco, Congo, Libya, Lesotho and Nigeria. Egypt, with 3.9 million users, has caught up with South Africa (3.1 million users in 2002, no later data reported), and is now the country with the second largest number of Internet users in Africa.

In Asia, the top five countries together account for about 75 per cent of all Internet users in the region (China, Japan, India, Republic of Korea and Taiwan Province of China). China's growth has slowed down, from 35 per cent between 2002 and 2003 to 18 per cent between 2003 and 2004. The highest growth rates are in Myanmar, India, Turkey, Viet Nam and Pakistan. The almost doubling of the number of Internet users in India has contributed significantly to the increase in Asia during this period.

In Europe, more than 50 per cent of Internet users live in four countries (Germany, United Kingdom, Italy, and France). But the highest growth rates occur in Eastern European countries (such as Latvia, Ukraine and Bulgaria) and the Russian Federation. Western European countries usually have lower growth rates than the rest of Europe.

In the Americas, Brazil and Mexico, the two largest economies in the Latin American and Caribbean region, account for about 60 per cent of all Internet users there. But the highest growth rates are found in Central America and the Caribbean, a region that is catching up with South America.

While the absolute number of Internet users provides important information about the dimensions and growth of national and regional Internet markets, figures on Internet penetration (i.e. users per 100 inhabitants) are crucial for assessing relative access to the Internet, in particular in population-rich countries (see annex I). Worldwide, 14.3 per cent of the population had access to Internet at the end of 2004. The Republic of Korea has overtaken the United States and now ranks number three worldwide (after New Zealand and Sweden), with a penetration rate of 65.7 per cent. In China, the second largest Internet market in 2004 as far as number of users is concerned, penetration is growing by 16.4 per cent. However, with 7.2 per cent penetration, still only a small proportion of the Chinese population use the Internet.

The gap between developed and developing countries continues to be impressive, as shown in table 1.3, although developing countries are slowly catching up, because of their high growth rates. Only 3.1 per cent of Africans had access to the Internet in 2004, compared with 62.6 per cent of North Americans. The relatively low figure for Europe (EU 25) is largely due to the low penetration rates in some of the Eastern European countries, whereas the EU15 country average is 50 per cent (the exception being Greece, which has both low penetration and low growth rates) (Eurostat, 2005). At the same time, many of the

Table 1.2

Internet users by region, 2000-2004 (top 10 countries/territories)

sorted by decreasing order of 2003 values

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Egypt	450 000	33.3	600 000	216.7	1 900 000	57.9	3 000 000	30.0	3 900 000
Kenya	100 000	100.0	200 000	100.0	400 000	150.0	1 000 000	..	..
Morocco	200 000	100.0	400 000	75.0	700 000	42.9	1 000 000	250.0	3 500 000
Sudan	30 000	86.7	56 000	50.0	84 000	1 015.5	937 000	21.7	1 140 000
Zimbabwe	50 000	100.0	100 000	400.0	500 000	60.0	800 000	2.5	820 000
Nigeria	80 000	43.8	115 000	265.2	420 000	78.6	750 000	..	..
Tunisia	260 000	57.7	410 000	23.3	505 500	24.6	630 000	32.5	835 000
United Rep. of Tanzania	40 000	50.0	60 000	33.3	80 000	212.5	250 000	..	..
Côte d'Ivoire	40 000	75.0	70 000	28.6	90 000	166.7	240 000	..	..
Senegal	40 000	150.0	100 000	5.0	105 000	114.3	225 000	..	..
Africa total	**4 314 700**	**36.2**	**5 876 800**	**57.5**	**9 255 620**	**41.5**	**13 096 650**	**66.6**	**21 813 872**
China	22 500 000	49.8	33 700 000	75.4	59 100 000	34.5	79 500 000	18.2	94 000 000
Japan	38 000 000	28.7	48 900 000	17.0	57 200 000	7.7	61 600 000	21.8	75 000 000
Rep. of Korea	19 040 000	28.0	24 380 000	7.8	26 270 000	11.2	29 220 000	8.1	31 580 000
India	5 500 000	27.3	7 000 000	136.9	16 580 000	11.5	18 481 044	89.4	35 000 000
Taiwan Province of China	6 260 000	24.9	7 820 000	37.1	10 720 000	9.5	11 740 000	4.0	12 210 000
Malaysia	4 977 000	27.5	6 346 650	23.5	7 840 640	10.5	8 661 000	14.1	9 878 214
Indonesia	1 900 000	121.1	4 200 000	7.1	4 500 000	79.6	8 080 000	..	..
Thailand	2 300 000	53.7	3 536 019	35.7	4 800 000	25.6	6 030 000	15.6	6 970 000
Turkey	2 000 000	75.0	3 500 000	22.9	4 300 000	39.5	6 000 000	70.3	10 220 000
Iran (Islamic Rep. of)	625 000	60.8	1 005 000	215.2	3 168 000	51.5	4 800 000	..	..
Asia total	**110 893 867**	**37.2**	**152 185 521**	**38.9**	**211 402 599**	**20.8**	**255 448 777**	**28.7**	**328 887 039**
United Kingdom	15 800 000	25.3	19 800 000	26.3	25 000 000	37.6	34 400 000	9.3	37 600 000
Germany	24 800 000	4.8	26 000 000	7.7	28 000 000	17.9	33 000 000	25.0	41 263 000
Italy	13 200 000	18.2	15 600 000	27.6	19 900 000	15.0	22 880 000	26.2	28 870 000
France	8 460 000	85.0	15 653 000	19.6	18 716 000	17.0	21 900 000	14.2	25 000 000
Russian Federation	2 900 000	48.3	4 300 000	39.5	6 000 000	66.7	10 000 000	60.0	16 000 000
Spain	5 486 000	34.7	7 388 000	6.3	7 856 000	24.6	9 789 000	32.8	13 000 000
Poland	2 800 000	35.7	3 800 000	133.7	8 880 000	1.0	8 970 000	0.3	9 000 000
Netherlands	7 000 000	12.9	7 900 000	3.8	8 200 000	3.7	8 500 000	17.6	10 000 000
Sweden	4 048 000	13.6	4 600 000	11.4	5 125 000	10.3	5 655 000	20.2	6 800 000
Belgium	3 000 000	6.7	3 200 000	6.3	3 400 000	17.6	4 000 000	5.0	4 200 000
Europe total	**107 999 345**	**27.6**	**137 834 925**	**23.9**	**170 817 495**	**15.3**	**196 944 310**	**23.4**	**242 951 272**
Brazil	5 000 000	60.0	8 000 000	78.8	14 300 000	25.9	18 000 000	22.2	22 000 000
Mexico	5 058 000	46.5	7 410 124	45.3	10 764 715	13.5	12 218 830	14.9	14 036 475
Argentina	2 600 000	40.4	3 650 000	12.3	4 100 000	10.5	4 530 000	13.0	5 120 000
Chile	2 537 308	22.3	3 102 200	15.2	3 575 000	11.9	4 000 000	7.5	4 300 000
Peru	800 000	150.0	2 000 000	20.0	2 400 000	18.8	2 850 000	13.0	3 220 000
Colombia	878 000	31.4	1 154 000	73.3	2 000 113	36.6	2 732 201	31.2	3 585 688
Venezuela	820 022	40.5	1 152 502	10.6	1 274 429	51.8	1 934 791	19.5	2 312 683
Costa Rica	228 000	68.4	384 000	108.3	800 000	12.5	900 000	11.1	1 000 000

Table 1.2 *(continued)*

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Dominican Rep.	327 118	21.5	397 333	25.8	500 000	30.0	650 000	23.1	800 000
Ecuador	180 000	85.0	333 000	61.5	537 881	5.9	569 727	9.6	624 579
Latin America and Caribbean total	19 372 400	49.4	28 948 492	44.4	41 791 573	22.0	50 995 059	18.7	60 534 062
United States	124 000 000	15.2	142 823 000	11.3	159 000 000	1.7	161 632 400	14.5	185 000 000
Canada	12 971 000	7.9	14 000 000	8.6	15 200 000	15.8	17 600 000	13.6	20 000 000
North America total	136 971 000	14.5	156 823 000	11.1	174 200 000	2.9	179 232 400	14.4	205 000 000
Australia	6 600 000	16.7	7 700 000	36.4	10 500 000	7.6	11 300 000	15.0	13 000 000
New Zealand	1 515 000	16.3	1 762 000	8.3	1 908 000	10.6	2 110 000	51.7	3 200 000
New Caledonia	30 000	33.3	40 000	25.0	50 000	20.0	60 000	16.7	70 000
Fiji	12 000	25.0	15 000	233.3	50 000	10.0	55 000	..	..
French Polynesia	15 000	0.0	15 000	33.3	20 000	75.0	35 000	..	..
Micronesia	4 000	25.0	5 000	20.0	6 000	66.7	10 000	20.0	12 000
Vanuatu	4 000	37.5	5 500	27.3	7 000	7.1	7 500	0.0	7 500
Solomon Islands	2 000	0.0	2 000	10.0	2 200	13.6	2 500	..	..
Marshall Islands	0 800	12.5	0 900	38.9	1 250	12.0	1 400	..	..
Oceania total	8 182 800	16.7	9 545 400	31.4	12 544 450	8.3	13 581 400	20.6	16 383 400

Source: UNCTAD calculations based on ITU World Telecommunication Indicators database, 2005.

Table 1.3

Internet penetration by region and level of development, 2000-2004

	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Region									
Africa	0.7	33.3	0.9	54.2	1.4	38.5	1.9	63.1	3.1
Asia	3.1	35.5	4.2	37.3	5.7	19.4	6.8	27.1	8.7
Europe	14.7	27.6	18.8	23.9	23.3	17.9	27.5	20.7	33.2
Latin America and Caribbean	3.9	47.3	5.7	43.8	8.2	19.2	9.7	17.1	11.4
North America	43.5	13.4	49.3	10.0	54.2	1.9	55.3	13.3	62.6
Oceania	32.8	15.3	37.9	29.9	49.2	7.0	52.6	19.7	63.0
Level of development									
Developed countries	30.7	20.1	36.9	16.0	42.8	7.2	45.9	15.2	52.9
Developing countries	2.1	40.8	3.0	46.7	4.4	23.6	5.4	27.9	6.9
South-East Europe and CIS	1.8	50.2	2.7	52.7	4.2	74.4	7.2	72.6	12.5
Total	6.6	25.2	8.3	24.8	10.4	13.7	11.8	21.3	14.3

Source: UNCTAD calculations based on ITU World Telecommunication Indicators database, 2005.
Note: For those countries that had not reported data for 2004 at the time of publication, the 2004 values were derived by averaging the growth of the previous four years.

Eastern European countries have on average very high growth rates, and it is thus expected that they will catch up quickly with the rest of Europe.

Broadband

Broadband access to the Internet has become a regular feature in developed countries' enterprises. By speeding up all Internet-related business activities, such as transferring web pages and data files, handling customer requests or automating supply chain management, broadband enables companies to work more efficiently and respond quickly to customers' needs. For certain e-business solutions, broadband has thus become indispensable.[1] Broadband access also allows companies to have multipurpose telecommunications lines, which can be particularly attractive to SMEs. It also supports the outsourcing of certain applications, distance learning and telecommuting. In some industries, such as media and entertainment, which involve the exchange of large data files, broadband is particularly important.

In a number of countries, mostly developed countries, policymakers have recognized the role of broadband in the spread and use of ICTs, including its ability to accelerate the contribution of ICTs to economic growth, and are taking action to foster the development and effective use of broadband at the national level (OECD, 2004; European Commission, 2005).

Available data for 2003 cover 98 countries (and for 2004, 83 countries), but data for many developing countries, especially in Latin America, are missing. Nevertheless, a few important observations can be made.

First of all, the top five broadband countries, measured by number of subscribers in 2004, were the United States, Japan, the Republic of Korea, China

Table 1.4

Top 25 countries/territories in terms of broadband subscribers, 2001-2004

sorted by decreasing order of 2004 values

Country/territory	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
United States	12 792 812	55.4	19 881 549	26.3	25 110 000	50.9	37 890 646
Japan	3 835 000	145.0	9 397 426	58.7	14 917 165	25.1	18 660 000
China	339 510	1 480.8	5 367 000	96.0	10 519 000	61.0	16 935 000
Rep. Of Korea	7 806 000	33.3	10 405 486	7.4	11 178 000	4.7	11 700 000
Germany	2 100 000	52.6	3 205 000	42.3	4 560 000	51.4	6 905 159
France	601 500	179.8	1 682 992	112.1	3 569 381	89.2	6 754 035
United Kingdom	501 000	263.5	1 821 000	75.7	3 200 000	95.5	6 256 300
Canada	2 836 000	23.9	3 515 000	28.4	4 513 000	24.8	5 631 714
Italy	390 000	117.9	850 000	158.8	2 200 000	113.7	4 701 252
Taiwan, China	1 133 000	85.3	2 100 000	44.9	3 043 273	23.3	3 751 214
Spain	430 055	190.1	1 247 496	76.5	2 202 000	56.3	3 441 630
Netherlands	466 200	129.3	1 068 966	86.0	1 988 000	61.3	3 206 000
Brazil	331 000	120.8	731 000	64.0	1 199 000	88.2	2 256 000
Australia	122 800	110.2	258 100	132.6	600 400	157.9	1 548 300
Hong Kong, China	716 435	45.0	1 038 995	18.4	1 230 607	23.0	1 513 103
Sweden	356 500	100.9	716 085	35.1	967 464	34.7	1 302 861
Switzerland	140 000	225.2	455 220	72.2	783 874	53.3	1 202 000
Belgium	458 759	89.4	868 994	30.6	1 135 000	..	..
Israel	38 000	444.7	207 000	214.0	650 000	64.6	1 070 000
Denmark	223 276	97.3	440 492	63.0	718 000	41.2	1 013 500
Chile	59 975	214.2	188 454	257.8	674 305	35.4	913 172
Mexico	50 000	254.0	177 000	..	..	..	840 147
Austria	320 600	68.3	539 500	11.4	601 000	36.4	820 000
Finland	52 000	426.0	273 500	79.6	491 100	62.9	800 000
Portugal	96 324	169.4	259 491	93.9	503 119	31.6	661 948

Source: UNCTAD calculations based on ITU World Telecommunication Indicators database, 2005.

and Germany (see table 1.4). As far as penetration rates are concerned, the Republic of Korea is still the world leader (with 24.6 out of 100 inhabitants), followed by Hong Kong (China) and the Netherlands (see table 1.5). European countries have high penetration growth rates and are overtaking Canada, Japan and Taiwan Province of China. Eurostat data show wide variations in broadband uptake in households, led by Scandinavian countries (Iceland with 45 per cent, Denmark 36 per cent and Norway 30 per cent). At the other end of the range are countries such as Cyprus (2 per cent) and Ireland (3 per cent). This belies broadband uptake by EU enterprises (see section 2.a).

Table 1.5.

Broadband penetration, 2000-2004 (selected countries/territories)

Broadband subscribers per 100 inhabitants
sorted by decreasing order of 2004 values

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Republic of Korea	8.4	97.6	16.6	32.7	22.0	7.0	23.6	4.3	24.6
Hong Kong, China	6.7	59.1	10.7	43.3	15.3	17.1	17.9	21.6	21.7
Netherlands	1.6	82.3	2.9	128.1	6.7	85.0	12.3	60.5	19.8
Denmark	1.1	278.7	4.2	96.6	8.2	62.5	13.3	40.7	18.7
Iceland	0.8	358.8	3.7	130.6	8.5	65.0	14.0	32.2	18.5
Canada	4.6	98.9	9.2	22.7	11.2	27.1	14.3	23.5	17.6
Switzerland	0.6	224.5	1.9	224.3	6.3	71.8	10.8	53.0	16.6
Taiwan Province of China	1.0	407.1	5.1	84.3	9.3	44.3	13.5	22.8	16.6
Norway	0.5	291.1	2.0	130.6	4.5	92.3	8.7	88.1	16.3
Israel	..	..	0.6	433.6	3.3	207.8	10.0	61.5	16.2
Finland	0.4	150.5	1.0	424.5	5.3	79.0	9.4	62.4	15.3
Japan	0.7	330.4	3.0	144.6	7.4	58.5	11.7	24.9	14.6
Sweden	0.9	345.0	4.0	100.1	8.0	34.5	10.8	34.1	14.5
United States	2.5	78.3	4.5	53.9	6.9	25.1	8.6	49.5	12.8
Singapore	1.9	94.0	3.7	76.0	6.5	54.1	10.0	20.0	12.0
France	0.3	236.9	1.0	178.7	2.8	111.2	5.9	88.4	11.2
Belgium	1.2	270.0	4.4	89.0	8.4	30.3	10.9	..	..
United Kingdom	..	..	0.9	262.2	3.1	75.1	5.4	94.9	10.5
Austria	2.4	64.7	4.0	67.9	6.6	11.1	7.4	36.1	10.0
Macao, China	0.8	173.2	2.2	71.9	3.8	62.7	6.1	61.8	9.9
Luxembourg	..	..	0.3	362.6	1.3	165.9	3.4	183.9	9.6
Andorra	..	..	..	..	1.7	212.3	5.4	73.7	9.4
Estonia	..	..	1.3	166.4	3.4	75.1	5.9	41.0	8.4
Germany	0.3	749.2	2.5	52.5	3.9	42.1	5.5	51.3	8.4
Italy	0.2	237.4	0.7	117.6	1.5	158.5	3.8	113.4	8.1
Spain	0.2	423.0	1.0	186.6	3.0	74.3	5.2	54.5	8.1
Australia	0.4	59.1	0.6	107.8	1.3	130.1	3.0	155.1	7.8
Portugal	0.3	212.4	0.9	168.0	2.5	92.9	4.8	30.9	6.3
Chile	..	..	0.4	210.6	1.2	253.9	4.2	34.0	5.7
Malta	0.4	481.0	2.3	92.1	4.5	28.0	5.7	..	..
New Zealand	0.1	347.6	0.4	149.1	1.1	88.6	2.1	128.4	4.8
Dominica	..	..	0.2	82.5	0.4	727.2	3.4	22.4	4.1
Bahamas	..	..	..	..	6.3	- 44.8	3.5	15.4	4.0
Hungary	..	..	0.2	458.7	1.1	137.7	2.6	41.0	3.7
Ireland	..	..	..	..	0.3	287.1	1.0	216.8	3.3

Table 1.5. *(continued)*

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Slovenia	..	..	0.3	931.4	2.9	2.2	2.9	..	..
Lithuania	..	..	0.1	727.5	0.6	235.1	1.9	24.5	2.4
Latvia	..	..	0.1	211.0	0.4	96.4	0.8	152.9	2.1
Poland	..	..	0.0	914.6	0.3	59.3	0.5	319.3	2.1
Cyprus	..	..	0.3	132.2	0.7	68.6	1.2	31.7	1.6
El Salvador	..	..	..	..	..	..	0.3	380.1	1.4
Qatar	..	..	..	..	0.0	1 127.8	0.4	239.2	1.4
China	..	..	0.0	1 470.2	0.4	94.8	0.8	60.0	1.3
Argentina	..	..	0.2	34.0	0.3	102.1	0.6	110.0	1.3
Brazil	..	..	0.2	117.7	0.4	61.7	0.7	85.6	1.2
Belize	..	..	..	..	..	..	0.4	228.8	1.2
Malaysia	..	..	0.0	372.9	0.1	459.6	0.5	125.1	1.0
Slovak Republic	..	..	..	..	..	..	0.1	538.2	0.9
Kuwait	..	..	0.2	101.6	0.4	19.6	0.5	49.0	0.8
Czech Republic	..	..	0.1	147.0	0.1	126.9	0.3	118.3	0.7
Turkey	..	..	0.0	91.5	0.0	827.1	0.3	142.4	0.7
Costa Rica	..	..	..	..	0.0	3 920.7	0.4	84.3	0.7
Grenada	..	..	..	..	0.6	112.9	1.2	- 49.4	0.6
Panama	..	..	0.1	88.3	0.3	90.6	0.5	19.4	0.6
Peru	..	..	0.0	368.2	0.1	168.4	0.3	45.4	0.5
Greece	..	..	..	..	..	..	0.1	361.4	0.4
Romania	..	..	0.0	164.3	0.1	126.0	0.2	158.2	0.4
Trinidad & Tobago	..	..	..	..	0.0	476.6	0.1	347.5	0.4
Maldives	..	..	..	..	0.1	158.2	0.2	39.1	0.2
Mauritius	..	..	..	..	0.0	311.8	0.1	126.4	0.2
Morocco	..	..	..	..	0.0	33.0	0.0	2 259.9	0.2
Colombia	..	..	0.0	148.2	0.1	37.3	0.1	84.7	0.2
South Africa	..	..	..	..	0.0	655.3	0.0	193.6	0.1
Suriname	..	..	..	..	0.0	79.6	0.0	145.5	0.1
Nicaragua	..	..	0.0	41.7	0.0	86.1	0.1	11.3	0.1
Ecuador	..	..	..	..	..	..	0.1	65.6	0.1
Moldova	..	..	..	..	0.0	43.3	0.0	300.6	0.1
Gabon	..	..	..	..	..	..	0.0	1 051.9	0.0
Egypt	..	..	..	..	0.0	407.8	0.0	492.8	0.0
Armenia	..	..	..	..	0.0	25.5	0.0	9 936.7	0.0
Tunisia	..	..	..	..	..	..	0.0	8.4	0.0
India	..	..	0.0	62.2	0.0	67.7	0.0	64.9	0.0
Vanuatu	..	..	..	..	..	..	0.0	50.4	0.0
Sudan	..	..	..	..	..	..	0.0	37.4	0.0
Burkina Faso	..	..	..	..	0.0	180.8	0.0	2.9	0.0
Benin	..	..	..	..	..	..	0.0	195.1	0.0

Source: UNCTAD calculations based on ITU World Telecommunication Indicators database, 2005.

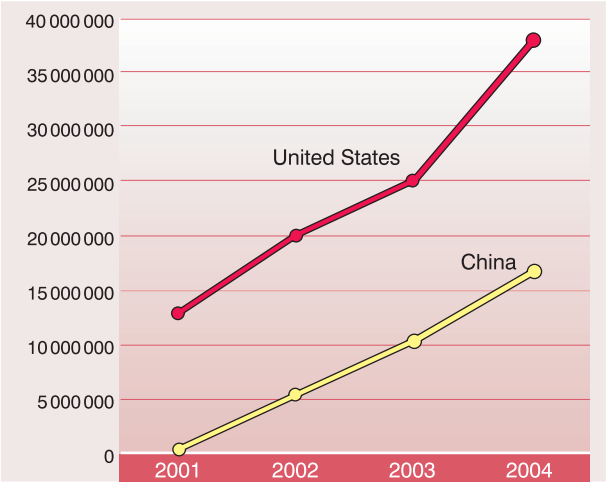
Second, China has experienced the most spectacular growth in the number of broadband subscribers: from close to zero (2001) to 17 million subscribers (2004) (see chart 1.2). This makes China the country with the second largest number of broadband subscribers, after the United States and Japan. Although broadband penetration in China has almost doubled compared with 2003, the country is still at the bottom of the list, with 1.3 subscribers per 100 inhabitants in 2004.

Third, with regard to developing country regions, only Asia has any significant broadband penetration. Even though subscriber growth rates in Africa and Latin America are very high, it will take years before they reach the subscriber levels of Asia, Europe or North America. Especially in Africa, the number of broadband subscribers in most countries is extremely small, and penetration rates are less than 1 per cent even in countries that are more advanced in ICT, such as South Africa, Mauritius, Egypt and Tunisia.

The digital divide in terms of broadband in many less developed countries could have serious implications for their enterprises as far as fully embracing ICTs is concerned. While previous research has demonstrated that dial-up access is sufficient for companies to start moving online, using e-mail and hosting a basic informational website, more advanced applications of ICTs, such as online ordering, customer acquisition and retention, finance and account management, product service and support, or logistics and inventory control, will benefit significantly from high-speed access (UNCTAD, 2004). These are also the areas where most ICT-related productivity gains will be achieved. For many SMEs in developing countries, which do not currently have such access, the leap towards a more integrated adoption of ICTs in business processes will thus heavily depend on improved access to the Internet, in terms of both quality and speed.

Chart 1.2

Broadband subscribers in China and the United States, 2001-2004



Source: Unctad calculations based on ITU World Telecommunications Indicators database, 2005

Computers

Even though the Internet is increasingly being accessed through a variety of devices, computers are still by far the most important gateway to the Internet. Computers are indispensable for the development of the information economy and in particular for the application of ICT in e-business processes. An in-depth presentation of the presence of computers in developing countries is limited by the available data. Estimates about the number of PCs in countries are usually based on shipments (i.e. computers sold) or, if this information is not available, imports, coupled with a realistic replacement rate.[2] The latter obviously differs among countries, with many developing countries having significantly lower rates. The number of PCs by country is shown in annex I, while table 1.6 shows the penetration of PCs by region and level of country development.

The following observations can be made about the spread of computers:

- There is continued growth in the number of computers worldwide. In 2003, the highest growth was in developing countries/some emerging economies (such as China, Brazil, the Russian Federation, Mexico, India, the Islamic Republic of Iran and Malaysia). When it comes to computer penetration, however, these countries rank very low; for example, China at 3.7 per cent, Brazil at 8.9 per cent and India at 0.9 per cent – similar to most low-income countries.

- Switzerland leads in terms of penetration, with 74.2 computers per 100 inhabitants in 2003, followed by Singapore and Sweden.

- There are huge gaps among countries: for example, in 2003 the Republic of Korea had 26.7 million PCs, compared with only 11.5 million PCs in the whole of Africa. Some African countries have very few computers; for example, Malawi reported 15,800 computers for 2003. Similarly, computer penetration rates are lowest for Africa (1.4 per cent), compared with 66.8 per cent for North America.

Table 1.6

Personal computer penetration by region and level of development, 2000-2004

	2000		% Change	2001		% Change	2002		% Change	2003		% Change	2004	
	Number PCs	Penetration	2000-2001	Number Pcs	Penetration	2001-2002	Number PCs	Penetration	2002-2003	Number PCs	Penetration	2003-2004	Number PCs	Penetration
Region														
Africa	7'047'760	0.9	9.6	7'891'751	1.0	18.1	9'521'025	1.2	17.7	11'448'713	1.4	13.4	13'257'266	1.6
Asia	113'912'800	3.2	16.1	133'909'400	3.7	15.6	156'638'500	4.3	17.9	186'937'850	5.1	17.2	221'653'614	6.0
Europe	131'642'887	18.3	11.5	146'719'000	20.4	12.5	165'020'000	23.0	12.1	185'009'308	25.7	19.8	221'567'577	30.8
Latin America and the Caribbean	24'475'500	4.9	19.6	29'712'000	5.8	14.7	34'567'409	6.7	17.2	41'099'436	7.8	13.9	47'486'964	8.9
North America	173'900'000	55.2	9.4	192'200'000	60.4	5.8	205'300'000	63.9	4.5	216'663'536	66.8	10.8	242'390'000	74.0
Oceania	10'794'615	35.7	9.0	11'929'721	38.9	9.1	13'189'200	42.4	6.7	14'255'760	45.2	11.9	16'156'861	50.6
Level of development														
Developed countries	343'569'000	37.0	10.5	381'564'000	40.9	7.9	413'988'000	44.1	7.7	448'292'647	47.5	16.0	522'785'289	55.1
Developing countries	105'800'075	2.3	17.6	126'243'872	2.7	19.0	152'361'634	3.2	20.3	185'914'170	3.8	13.1	213'243'868	4.3
South-East Europe and CIS	12'404'487	4.6	17.9	14'554'000	5.4	23.5	17'886'500	6.7	19.1	21'207'786	7.9	25.5	26'483'125	10.0
Total	461'773'562	7.9	11.7	522'361'872	8.8	10.5	584'236'134	9.7	10.9	655'414'603	10.8	15.0	762'512'282	12.4

Source: UNCTAD calculations based on ITU World Telecommunication Indicators database, 2005.
Note: For those countries that had not reported data for 2004 at the time of publication, the 2004 values were derived by averaging the growth of the previous four years.

- On the basis of 2003 values, the United States and Canada combined had more computers than all of Europe or all of Asia.

Overall, the computer penetration rates are very similar to the Internet penetration rates presented earlier. However, it is important to bear in mind that these figures do not represent the number of computer *users*. Computers are often shared and the rate of sharing in developing countries is higher than in developed countries. This is particularly the case at the household and individual user level, but even small enterprises in rural areas often access computers in local village community centres and similar public places. In the absence of better data on the use of computers, the above figures suggest that the gap in computer use penetration rates between developed and developing countries is smaller than the gap in Internet user penetration rates. This leaves further room for increasing Internet user penetration in developing countries, based on computer access, given the same number of computers.

Mobile phones

One of the most significant developments in the spread of ICTs during the past few years is the stunning growth of mobile phone access in all parts of the world, surpassing the number of fixed telephone lines in many countries. Given that an estimated 77 per cent of the world's population is able to access mobile networks, the number of cell phone subscribers worldwide continues to increase at a very rapid rate, with the most significant growth being in developing countries (see table 1.7) (World Bank, 2005) [3]. What is most significant, however, is that in 2003 developing countries overtook developed countries in terms of absolute numbers of cellular subscribers, mainly because of Asian developing countries (e.g. China and India). This makes mobile phones the only ICT indicator where developing countries have higher shares than developed countries (see chart 1.3).

In order to get a more realistic picture of the distribution of mobile phones among users, penetration rates, i.e. subscribers per 100 inhabitants, need to be taken into consideration. Although these are lower in the developing world, accounting for 17.8 per cent only when compared to the developed world with 77.5 per cent (table 1.8), the trend remains positive.

Table 1.7

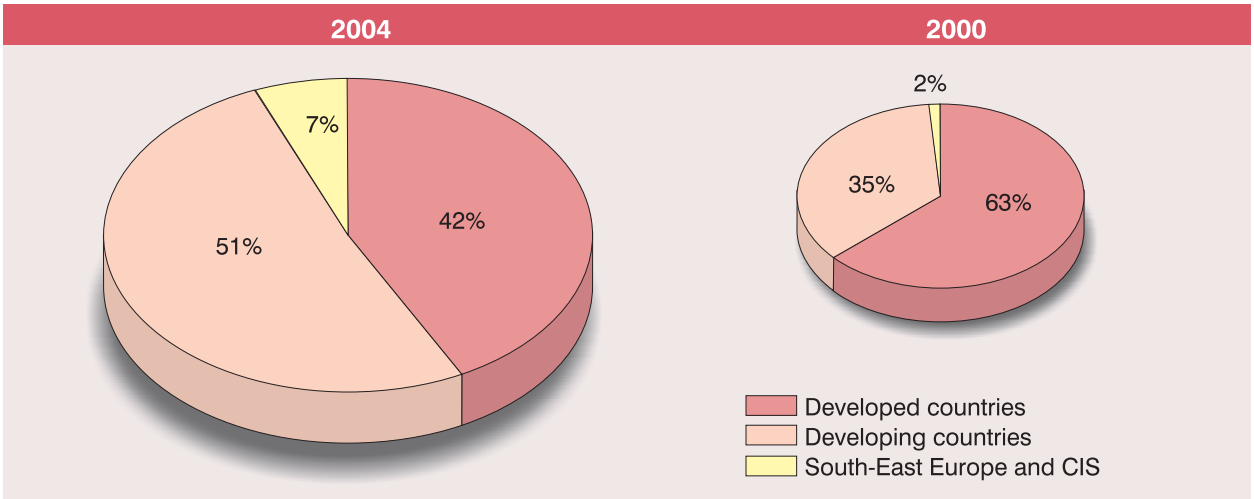
Mobile phone subscribers by region and level of development, 2000-2004

	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Region									
Africa	15'633'872	63.6	25'583'344	45.3	37'170'404	38.0	51'313'043	56.1	80'103'000
Asia	256'460'391	40.6	360'685'744	39.1	501'832'608	19.3	598'435'765	24.7	745'993'223
Europe	275'415'270	23.5	340'171'811	13.1	384'594'128	15.9	445'853'766	23.0	548'367'260
Latin America and Caribbean	61'463'003	34.7	82'777'855	20.2	99'474'308	24.7	124'042'755	39.5	173'001'627
North America	118'358'031	17.6	139'177'512	9.8	152'763'842	12.6	171'949'981	14.0	196'089'531
Oceania	10'213'768	32.9	13'573'551	12.0	15'203'646	13.0	17'179'776	15.1	19'778'880
Level of development									
Developed countries	464'565'999	18.9	552'325'810	9.0	602'046'769	10.0	662'394'988	11.8	740'630'471
Developing countries	261'776'686	47.8	386'979'017	41.9	548'974'336	23.5	677'854'370	32.0	894'932'102
South-East Europe and CIS	11'201'650	102.3	22'664'990	76.6	40'017'831	71.2	68'525'728	86.5	127'770'948
Total	737'544'335	30.4	961'969'817	23.8	1'191'038'936	18.3	1'408'775'086	25.2	1'763'333'520

Source: UNCTAD calculations based on ITU World Telecommunication Indicators database, 2005.
Note: For those countries that had not reported data for 2004 at the time of publication, the 2004 values were derived by averaging the growth of the previous four years.

Chart 1.3

Mobile phone subscribers by level of development, 2000-2004



Source: Unctad calculations based on ITU World Telecommunications Indicators database, 2005

An important consideration here, however, is that in developing countries a single mobile phone is frequently shared by several people, particularly in poor, rural communities, and people at all income levels are able to access mobile services either through owning a phone or using someone else's. In India, for example, drivers pedal rickshaws equipped with mobile phones by a national mobile phone company throughout the state of Rajasthan offering mobile phone services for a fee.[4] In other words, one subscriber could have many users, a fact which is not captured by the data provided here (see also box 1.1). That said, full penetration by mobile telephony is desired as much in developed as in developing countries.

Table 1.9 shows the mobile phone penetration rate in the top 10 countries in each region, next to the region average. Annex I contains the data on mobile phone

Table 1.8

Mobile phone penetration by region and level of development, 2000-2004

Mobile phone subscribers per 100 inhabitants (weighted averages)

	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Region									
Africa	2.0	60.1	3.2	42.1	4.5	35.1	6.1	52.9	9.4
Asia	7.0	38.9	9.8	37.4	13.4	17.8	15.8	23.2	19.5
Europe	37.5	23.5	46.4	13.1	52.4	15.9	60.8	23.0	74.7
Latin America and Caribbean	12.0	32.7	15.9	18.4	18.8	22.9	23.1	37.5	31.8
North America	37.6	16.4	43.8	8.7	47.6	11.5	53.0	13.0	59.9
Oceania	40.9	31.3	53.8	10.7	59.5	11.7	66.5	13.8	75.7
Level of development									
Developed countries	49.7	18.2	58.8	8.4	63.7	9.4	69.7	11.2	77.5
Developing countries	5.5	45.6	8.0	39.8	11.2	21.7	13.7	30.2	17.8
South-East Europe and CIS	3.3	102.8	6.8	77.0	12.0	71.7	20.5	86.9	38.4
Total	12.3	28.8	15.8	22.3	19.3	16.9	22.6	23.7	27.9

Source: UNCTAD calculations based on ITU World Telecommunication Indicators database, 2005.
Note: For those countries that had not reported data for 2004 at the time of publication, the 2004 values were derived by averaging the growth of the previous four years.

Table 1.9

Mobile phone penetration, regional country/territory performance, 2000-2004 (Top 10 countries)

sorted by decreasing order of 2003 values

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Réunion	39.5	45.8	57.6	14.4	65.9	13.4	74.7	..	..
Seychelles	32.0	41.2	45.2	18.3	53.4	11.3	59.5	2.2	60.8
South Africa	19.1	26.8	24.2	24.5	30.1	20.6	36.4	18.6	43.1
Botswana	12.2	54.4	18.8	34.5	25.3	17.5	29.7	5.7	31.4
Mauritius	15.1	50.5	22.7	26.7	28.8	-7.2	26.7	54.9	41.4
Morocco	8.2	100.5	16.4	27.8	20.9	16.8	24.4	23.0	30.1
Gabon	9.8	21.4	11.9	80.8	21.5	4.4	22.4	61.3	36.2
Mayotte	0.0	-	0.0	..	13.5	59.2	21.6	5.5	22.8
Tunisia	1.3	222.9	4.0	45.9	5.9	235.4	19.4	84.8	35.9
Mauritania	0.6	603.7	4.2	118.1	9.2	38.3	12.8	37.5	17.5
Africa total	2.0	60.1	3.2	42.1	4.5	35.1	6.1	52.9	9.4
Taiwan Province of China	80.2	21.2	97.2	11.4	108.3	5.4	114.0	-12.3	100.0
Hong Kong (China)	81.7	5.1	85.9	9.7	94.3	14.5	108.0	6.0	114.5
Israel	70.2	29.2	90.7	5.3	95.5	0.7	96.0	9.1	104.7
Singapore	68.4	5.9	72.4	9.9	79.6	7.2	85.0	5.3	89.5
Macao (China)	32.1	38.9	44.5	40.4	62.5	29.8	81.0	14.3	92.6
United Arab Emirates	44.0	24.5	54.7	18.2	64.7	13.7	74.0	14.5	84.7
Rep. of Korea	58.3	5.2	61.4	10.7	67.9	3.2	70.0	8.7	76.1
Japan	52.6	11.7	58.8	8.3	63.7	6.7	68.0	5.3	71.6
Bahrain	32.4	42.7	46.2	25.2	57.9	10.3	64.0	37.4	87.9
Kuwait	21.7	77.5	38.6	34.5	51.9	10.1	57.0	35.2	77.1
Asia Total	7.0	38.9	9.8	37.4	13.4	17.8	15.8	23.2	19.5
Luxembourg	69.2	34.6	93.1	14.0	106.1	12.6	119.4	..	..
Italy	73.7	19.8	88.3	6.3	93.9	8.4	103.3	5.9	109.4
Sweden	71.8	12.3	80.6	10.3	88.9	10.3	98.1	5.3	103.2
Iceland	76.5	13.1	86.5	4.8	90.6	6.6	96.8	2.8	99.4
Czech Republic	42.3	60.6	68.0	24.9	84.9	13.7	96.5	9.2	105.3
Portugal	66.5	16.1	77.2	6.9	82.5	16.8	96.4	6.1	102.3
United Kingdom	72.7	6.0	77.0	9.1	84.1	8.4	91.2	12.8	102.8
Finland	72.0	11.6	80.4	7.9	86.7	4.9	91.0	5.1	95.6
Norway	74.8	11.1	83.1	1.5	84.4	7.7	90.9	..	..
Greece	56.2	33.8	75.2	12.5	84.5	6.7	90.2	11.5	100.6
Europe total	37.5	23.5	46.4	13.1	52.4	15.9	60.8	23.0	74.7
Jamaica	14.2	71.3	24.4	118.9	53.3	27.7	60.6	35.7	82.2
Saint Vincent	2.1	213.0	6.5	31.0	8.5	519.7	52.9	-11.0	47.1
Barbados	10.6	86.0	19.8	82.5	36.1	43.7	51.9	21.6	63.1
Chile	22.4	53.1	34.2	25.1	42.8	19.4	49.4	25.7	62.1

Table 1.9 *(continued)*

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Grenada	4.6	40.9	6.4	11.1	7.1	428.1	37.6	11.7	42.1
Trinidad & Tobago	12.5	57.5	19.7	41.2	27.8	43.5	37.3	32.9	49.6
Bahamas	10.3	90.8	19.7	97.8	39.0	-6.1	36.7	60.0	58.7
Suriname	9.5	109.1	19.8	13.9	22.5	42.2	32.0	51.4	48.5
Paraguay	14.9	36.6	20.4	41.3	28.8	3.5	29.9	- 50.3	14.9
Mexico	14.2	54.1	21.9	17.4	25.8	14.4	29.5	24.3	36.6
Latin America and Caribbean total	12.0	32.7	15.9	18.4	18.8	22.9	23.1	37.5	31.8
United States	38.9	15.7	45.0	8.6	48.9	11.7	54.6	11.7	61.0
Canada	28.8	20.4	34.7	10.0	38.2	9.7	41.7	13.3	47.2
North America total	37.6	16.4	43.8	8.7	47.6	11.5	53.0	13.0	59.9
Australia	44.7	28.5	57.4	11.4	64.0	12.8	72.2	14.5	82.6
New Zealand	40.0	47.5	59.0	5.4	62.2	4.3	64.8	19.6	77.5
New Caledonia	23.3	33.1	31.0	15.3	35.7	18.7	42.4	18.4	50.2
Fiji	6.8	46.5	9.9	10.2	11.0	21.3	13.3	..	..
Samoa	1.4	-1.0	1.4	6.9	1.5	285.0	5.8	..	..
Micronesia	..	..	..	..	0.1	5752.7	5.4	111.8	11.5
Vanuatu	0.2	-6.6	0.2	1263.3	2.4	55.0	3.8	28.9	4.8
Marshall Islands	0.9	7.8	0.9	11.2	1.0	6.7	1.1	..	..
Kiribati	0.4	29.5	0.5	23.3	0.6	4.5	0.6	..	..
Solomon Islands	0.3	-18.3	0.2	0.5	0.2	38.8	0.3	..	..
Oceania total	40.9	31.3	53.8	10.7	59.5	11.7	66.5	13.8	75.7
World total	12.3	28.8	15.8	22.3	19.3	16.9	22.6	23.7	27.9

Source: UNCTAD calculations based on ITU World Telecommunication Indicators database, 2005.

subscribers and penetration for all countries. With regard to regional differences, Africa is catching up in general terms, but one fourth of subscribers are in South Africa. The top four countries (South Africa, Morocco, Nigeria and Egypt) account for 57 per cent of all subscribers in the region. Very high subscriber growth rates can be observed in many countries, such as Algeria, Nigeria, Ghana and Sudan, to name the larger ones. The small countries start from very low levels. However, if we look at penetration rates, even the highest rate, which is in South Africa (at 43 per cent, followed by Mauritius, Gabon, Tunisia and Botswana), is still low compared with some European countries, which have approximately one mobile phone per inhabitant (e.g. Italy, the Czech Republic, Sweden, the United Kingdom and Portugal). Tunisia has experienced a surge in mobile phone penetration, from only 6 per cent (2002) to 36 per cent (2004), mainly owing to the deregulation of the market and the subsequent fall in prices.[5] Other countries that have both high penetration growth and penetration rates above 10 per cent, are Algeria, Mauritania and Namibia.

In Asia, China is clearly the outstanding case in terms of absolute numbers, with about 45 per cent of all subscribers in the region. It is followed by Japan, India, the Republic of Korea, Turkey, the Philippines, Indonesia and Thailand. While Taiwan Province of China and Hong Kong (China) are the two economies with the highest penetration rates in the region, with more than one subscriber per inhabitant (reflecting double subscriptions), mainland China has a penetration rate of 25 per cent. Meanwhile, India and Pakistan, with a penetration rate of 4.4 per cent and

3.2 per cent respectively, are at the bottom level of penetration. Countries/territories with high mobile phone penetration growth between 2003 and 2004 include Kazakhstan, Palestine, Syria, Azerbaijan and Sri Lanka.

Brazil and Mexico account for about 60 per cent of all cellular subscribers in the Latin American and the Caribbean region, but their penetration rates, at 36.3 per cent and 36.6 per cent respectively, are not among the highest but are just about average for the region. The small States of the Caribbean have the highest penetration rates, together with Chile. Similarly, as with the number of Internet users, the countries in the Caribbean and Central America have the highest growth rates in the region as far as mobile phone penetration is concerned, in addition to their overall already higher penetration levels. Exceptions here are Cuba and Haiti, which are at the bottom of the list with almost 0 per cent (Cuba) and 4 per cent (Haiti).

With regard to other regions, it is worthwhile pointing out the dynamics of the countries of South-East Europe and the Commonwealth of Independent States, which have on average the highest growth rate for mobile subscribers. Mobile subscribers in the United States and Canada are growing in numbers but are still only at half the penetration rate of many European countries.

The substantial growth of mobile telephony in developing countries is largely explained by the fact that mobile phones are more widely accessible to users compared with fixed line telephony, for which waiting periods can be up to two years (ITU, 2003). Furthermore, mobile telephony has contributed to reducing the costs of telecommunications and facilitating the connection of rural areas. This continued growth can have significant implications for economic development in these countries. Apart from plenty of anecdotal evidence about how mobile phones have created business opportunities for the poor, there is an emerging literature examining the link between the use of mobile phones and economic growth in developing countries (Torero et al., 2002; Sridhar and Sridhar, 2004). According to a recent study by researchers at the London School of Economics, an increase of 10 mobile phones per 100 people in African developing countries would increase GDP growth by 0.6 per cent (Waverman et al., 2005).

It is argued that mobile telephony is the information and communication technology that has the most significant impact on development, particularly in developing and least developed countries. In these countries, mobile phones are used for more than simple communication, often as a business tool by means of which producers and buyers can shop around for prices and vendors can be paid.[6] The importance accorded to these economic benefits is reflected in the larger share of income that developing country users spend on telecommunications as compared with users in developed countries. African countries, and particularly sub-Saharan ones, are a good example of this (see box 1.1). The number of mobile phone subscribers in Africa increased from 15 million in 2000 to over 80 million in 2004, an increase of 433 per cent (table 1.7).

Box 1.1

Use of mobile phones by African businesses

A recent study surveyed the use of mobile phones among small businesses (under 50 employees) in rural and urban communities in Egypt and South Africa (Waverman et al., 2005). In those countries, tradesmen such as bricklayers and painters advertise themselves by giving a mobile phone number, taxi drivers are contacted by phone, and retailers avoid unnecessary travel by pre-shopping over the phone for supplies. The study found that the large majority of small businesses used mobiles (85 per cent in Egypt and 89 per cent in South Africa) and had overtaken fixed-line phones and other communication tools, despite the relatively higher price for mobile telephone calls. Nonetheless, it is significant that many of the businesses had no form of telephone access before the acquisition of a mobile phone, and in the South African sample, 85 per cent of the businesses depended solely on mobiles. Nearly a third of the businesses also indicated that their start-up was partly influenced by the availability of mobile phones, particularly in the service sector, and that higher spending was not detrimental to profitability. In fact, this spending was compensated for by greater efficiency, and a larger number of customers and turnover, all of which were indicated by the majority of the businesses surveyed.

2. ICT access and use in enterprises

In its *E-Commerce and Development Report 2004*, UNCTAD noted that the focus on measuring e-commerce transactions might divert attention from measuring other uses of ICTs in businesses and therefore provide only limited information on the adoption of ICTs by enterprises. Therefore, increasing attention is being paid to the measurement of e-business – or more broadly the use of ICTs in enterprises for a variety of business activities that go beyond e-commerce. Many of the efficiency gains related to the adoption of ICTs result from changes in business processes, such as logistics and inventory control, order fulfilment and tracking, and customer acquisition and retention. Also, the growing adoption of ICTs by businesses in developing countries can be analysed for its impact on development, and better data on ICT readiness, use and impact are needed in order to design, implement and evaluate ICT development policies.

In that context, the UNCTAD secretariat launched an annual data collection exercise, starting with the E-Commerce and Development Report 2004, to compile e-business statistics from developing countries. On the basis of the list of core ICT indicators agreed upon at the WSIS Thematic Meeting on "Measuring the Information Society" (see section C), an extended group of selected developing countries were surveyed in 2005 regarding their e-business statistics.[7] While the data are still very limited, they give an initial indication on the adoption of ICTs by enterprises in developing countries. OECD and Eurostat provide complementary data on developed countries. A table summarizing the information available from selected economies can be found in annex I, table 6.

Internet access and use

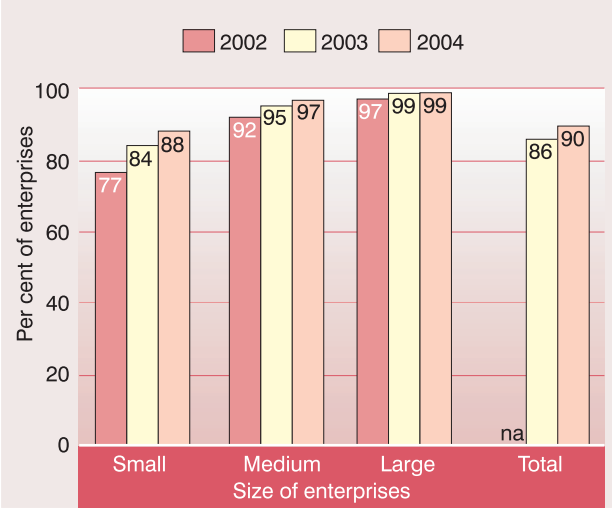
In developed countries, a very high proportion of enterprises are connected to the Internet. Eighty-nine per cent of enterprises in EU countries are connected. There are however significant differences between European countries; for example, Denmark and Finland report that 97 per cent of enterprises are connected to the Internet while Romania (a EU candidate country) reports 52 per cent. Some differences also persist between SMEs and large enterprises (see chart 1.4). As a group, OECD countries also show high proportions of Internet access by enterprises. Among non-European members, for example, Australia reported 88.6 per cent, New Zealand reported 84 per cent and Canada reported 82 per cent (2004).

It is harder to obtain comparable information on Internet access by enterprises in developing countries. The diversity of surveys conducted in developing countries affects the comparability between countries and prevents from drawing conclusions at the regional level, or for developing countries as a whole. Several developing countries report high percentages of Internet access by enterprises, on a par with developed countries, such as the Republic of Korea (94 per cent), Trinidad and Tobago (77 per cent) and Singapore (76 per cent). Others report very low proportions, such as Mauritius (5 per cent) and Thailand (9 per cent). The reference years for the data reported vary from 2001 to 2004, and the samples vary from economy-wide to focused on specific sectors, such as manufacturing. In some cases, samples are made up predominantly of small enterprises. There is virtually no information on Internet access by enterprises disaggregated by urban or rural areas, although it is likely that results for some countries have a strong bias towards urban areas, which tend to concentrate overall ICT infrastructure and commercial activities (data for Morocco's survey, for example, was disaggregated by major cities and towns).

Nonetheless, in the cases in which data are disaggregated according to the size of enterprises, it appears that also in developing countries access to Internet is more prevalent among larger businesses. Since small and medium-sized enterprises represent a significant share of developing economies, it is important to look at the weight they have in the overall picture of ICT

Chart 1.4

Proportion of EU 15 enterprises with access to the Internet by size,2002-2004



Source: Eurostat database, 2005.

Table 1.10

Proportion of businesses using the Internet in Thailand, 2003

	Number of Employees					
	1-15	16-25	26-30	31-50	51-200	200+
Number of enterprises in the survey	800'425	12'096	2'793	5'879	6'556	2'119
Proportion of businesses using the Internet (%)	7.2	45.6	52.6	59.4	73.3	90.1

Source: UNCTAD e-business database 2005.

uptake in these countries. In Thailand, for example, although the overall proportion of business access to Internet is merely 9 per cent in a survey with an overwhelming share of microenterprises, the proportion increases tenfold among large enterprises to 90 per cent, as shown in table 1.10.

Regarding modes of access to the Internet in enterprises, these are not always equally defined and there are significant differences among countries, depending on the availability of certain technologies. For example, in Europe the broadband roll-out is gathering speed and is overtaking ISDN.[8] Eurostat data show that the percentage of enterprises with Internet in the EU 15 that had broadband access grew from 46 per cent in 2003 to 61 per cent in 2004. For the EU 25, the percentage was of 58 per cent in 2004. Although the proportion of enterprises with broadband access increases with the size of the enterprise, recent growth in adoption has been stronger among SMEs (see chart 1.5).

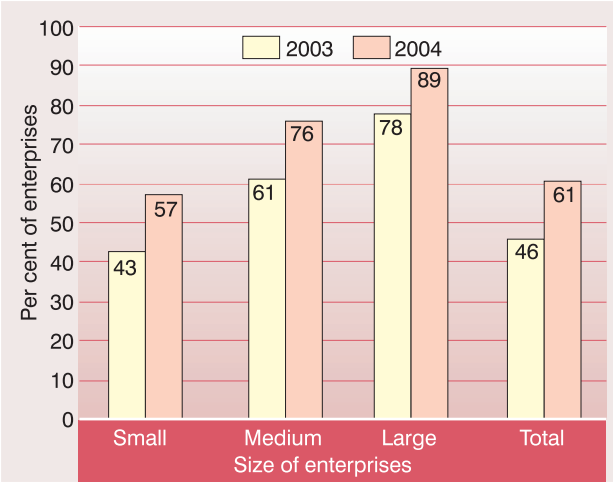
The data received from developing countries indicate that many businesses connect to the Internet through an analogue modem (87.8 per cent in Colombia and 74.5 per cent in Moldova) or with fixed line connections under 2 Mbps (76.7 per cent in Morocco). Notable exceptions are some Asian countries/territories: Hong Kong SAR reports that 31.9 per cent of businesses have fixed line connections over 3 Mbps rather than 2 Mbps; Macao SAR reports that 75 per cent of businesses connect through ADSL; and the Republic of Korea reports that 98 per cent of businesses connect through fixed line connections of 2 Mbps or more, including XDSL, dedicated lines and cable modem. Classifications for modes of access that were provided by countries, although not requested by the UNCTAD survey, include dedicated and leased lines, cable modem and wireless connections, including mobiles.

Regarding the proportion of businesses with a website (or a web presence over which the business has control with regard to content), 58 per cent of businesses in the European Union have them. Including EU candidate countries, the same differences that can be found with respect to Internet access can also be found in terms of websites; the largest proportion is found in Denmark, with 81 per cent, and the lowest is found in Romania, with 19 per cent (35 per cent of businesses that have Internet). Also, as in the case of Internet access, the prevalence of websites is higher the larger the enterprise: 53 per cent of small companies, 76 per cent of medium-sized companies and 89 per cent of large companies.

Among developing countries reporting data, proportions of businesses with Internet that have a website are generally lower, the lowest being Colombia with

Chart 1.5

Proportion of EU 15 entreprises with access to the Internet having broadband access, by size, 2003-2004



Source: Eurostat database, 2005.

12 per cent and the highest Trinidad and Tobago, with 57.6 per cent. Where disaggregated data are available, aside from the presence of websites according to size of companies, which follows a trend similar to that for more developed countries, the presence of websites can vary significantly among industrial classifications and can affect the weighted total. For example, Chile reported an overall proportion of 8.6 per cent, although approximately 73 per cent of utility companies (electricity, gas and water supply) had websites. In the Philippines, with a proportion of 10 per cent overall, it is the financial intermediation sector that reported the highest proportion of websites, with 26.4 per cent. Other sectors that reported higher or lower proportions of businesses with websites, ranging from 25 to 70 per cent, were real estate, renting and business activities (Chile, Colombia, Hong Kong SAR, Thailand), education (Russian Federation), heavy industry (Republic of Korea), and post and telecommunications (Romania).

E-commerce

E-commerce, understood as placing and receiving orders over the Internet and other networks,[9] continues to grow in most countries, although exact data on the value of e-commerce sales and purchases are not very common, in particular on a time-series basis.

In the United States, the largest global e-commerce market, e-commerce sales (including both Internet and other networks) continued to grow during 2003 (see table 1.11). E-commerce is most prominent in manufacturing shipments, followed by wholesale trade (accounting for 21.1 per cent and 13.1 per cent of total sales respectively). Online sales are less common in retail trade (B2C) or in services industries, with 1.7 per cent and 1 per cent of total sales respectively. However, with a growth rate significantly higher than for total retail trade, the share of e-commerce in total retail trade is also growing. The latest available figures (2005) indicate that its share has more than doubled since 2000.[10]

In Canada, Internet sales continued to increase substantially reaching $22.9 million (C$ 28.3 billion) in 2004, primarily on the basis of private sector sales (see table 1.12). Seventy-five per cent of Internet sales is B2B, up from 68 per cent in 2003, mainly between large firms, whereas small firms tend to sell more to households. As far as industries are concerned, one quarter of all Internet sales took place in the whole-

Table 1.11

E-commerce sales in the United States, 2000-2003 (million USD)

	2003	% change 2002-2003	2002	% change 2001-2002	2001	% change 2000-2001	2000
Manufacturing e-commerce							
E-commerce	842'666	12.1	751'985	3.7	725'149	-4.1	755'807
Total manufacturing	3'979'917	1.5	3'920'632	-1.3	3'970'500	-5.7	4'208'582
E-commerce share in total manufacturing	21.2	10.4	19.2	5.0	18.3	1.7	18.0
Wholesale trade e-commerce							
E-commerce	386'922	12.7	343'327	26.1	272'183	12.9	241'109
Total wholesale trade	2'946'473	4.3	2'824'417	4.3	2'708'666	-1.2	2'742'593
E-commerce share in total wholesale trade	13.1	8.0	12.2	21.0	10.0	14.3	8.8
Retail e-commerce							
E-commerce	55'731	24.7	44'706	30.5	34'263	21.7	28'152
Total retail	3'275'407	4.3	3'141'468	-0.5	3'156'754	3.2	3'059'173
E-commerce share in total retail	1.7	19.6	1.4	31.1	1.1	17.9	0.9
Selected services e-commerce							
E-commerce	49'945	21.3	41'185	10.5	37'261	-0.1	37'312
Total selected services	5'076'846	4.3	4'868'907	2.3	4'759'796	2.4	4'647'156
E-commerce share in total selected services	1.0	16.3	0.8	8.1	0.8	-2.5	0.8

Source: US Bureau of Census, 2005.

Table 1.12

Internet sales in Canada, 2000-2004 (million USD)

	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Private sector	4'496	14.2	5'134	70.7	8'762	68.0	14'716	45.5	21'419
Public sector	90	62.1	146	46.2	214	187.0	613	148.7	1'524
Total	4'586	15.1	5'280	70.0	8'976	70.8	15'329	49.7	22'944

Source: Statistics Canada, 2005.
FX rate: 1.00 C$ = 0.810174 US$, live mid-market rate as at 23.06.2005, XE.com.

sale trade sector, followed by transportation and warehousing (17 per cent).[11]

Other than for North America, available information on the value of e-commerce is fragmentary, although there appears to be clear growth. Eurostat data indicate that e-commerce sales over the Internet increased from 0.9 per cent in 2002 to 2.2 per cent in 2004.[12] The highest shares were reported by enterprises in Ireland (12.9 per cent), which has an important software sector, and Denmark (4.4 per cent). When online sales using other networks (in particular EDI) are added, the value increases from 6.2 per cent to 7.7 per cent over the same period (United Kingdom 12.5 per cent, Denmark 8.5 per cent and Ireland 8.3 per cent). Partial data also indicate that the percentage of enterprises' total turnover from e-commerce increased from 5.9 per cent in 2003 to 9.4 per cent in 2004. Compilations by the OECD suggest that online sales represent a small but growing share of total sales in most member countries, and that there is solid growth in B2C e-commerce (OECD, 2004). Because of the current difficulties in determining, collecting and comparing data on the value of e-commerce even in developed countries, these data are not currently included in the core list of indicators (see box 1.3) nor are they requested of countries in the UNCTAD survey.

In the case of developing countries, information on the value of e-commerce is virtually non-existent, as well as measures of the share of e-commerce in the turnover of enterprises. Only some developing countries covered by the UNCTAD survey were able to provide information on businesses receiving orders over the Internet (see annex I, table 6). However, as a general observation, countries reported fewer orders being received than placed, the main country receiving orders being Singapore (33.7 per cent), followed by Trinidad and Tobago (21.9 per cent) and Colombia (15.3 per cent).[13]

There is, however, more information from developed countries. In 2004, 15 per cent of enterprises in the EU 15 received orders over the Internet, as compared with 10 per cent in 2003. However, in 2004 the proportion for the 25 EU countries was 15 per cent. The proportion of enterprises selling online increases with the size of the company, since 29 per cent of large enterprises placed orders as compared with medium-sized enterprises (19 per cent) and small enterprises (12 per cent). Among non-European OECD countries, Japan reported in 2002 the largest percentage of businesses receiving orders over the Internet (18 per cent), although this refers only to enterprises with 100 or more employees, while Australia reported 13 per cent in the same year. Chart 1.6 illustrates the proportion of enterprises placing and receiving orders over the Internet in selected countries.

Regarding online purchases, 27 per cent of EU 25 enterprises reported having placed orders over the Internet in 2004, almost double that of online sales. The proportion was greater for large enterprises, 45 per cent of which reported online purchases. This is confirmed by data from selected OECD countries, which report a much larger proportion of businesses purchasing products and placing orders online than there were selling or receiving orders. The developing countries that reported the largest proportions of online purchases, of businesses with Internet were Singapore (45.5 per cent), Trinidad and Tobago (42.0 per cent) and the Republic of Korea (25.5 per cent).

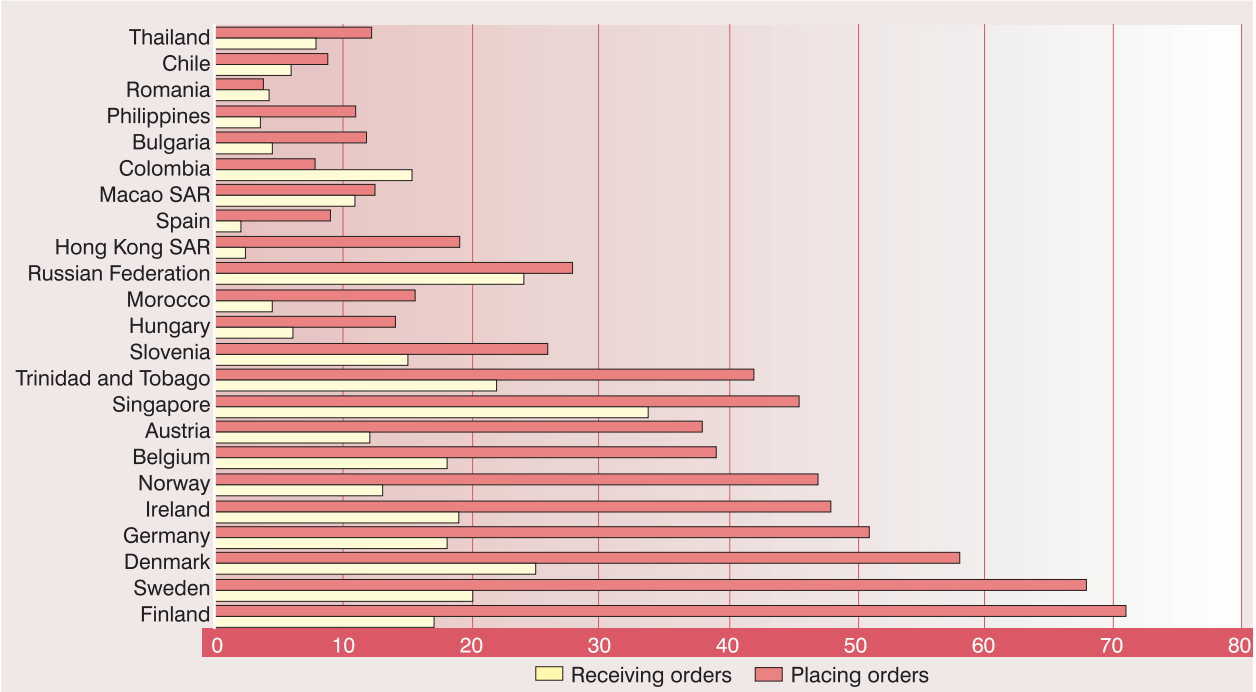
Other e-business

As regards other e-business, there is limited but growing information on the use of ICT by enterprises for internal business processes, and on the use of the Internet by type of activity. As may be expected, developed countries collect more advanced e-business data and more frequently, since they are also

Chart 1.6

Enterprises placing and receiving orders over the Internet, 2004 or latest available year (selected countries)

of enterprises using the Internet



Source: Eurostat database, 2005; UNCTAD e-business database, 2005.

more advanced users of ICTs. For example, business operations might be linked to online orders (see chart 1.7), or ICTs can be used as tools for management (see chart 1.8).

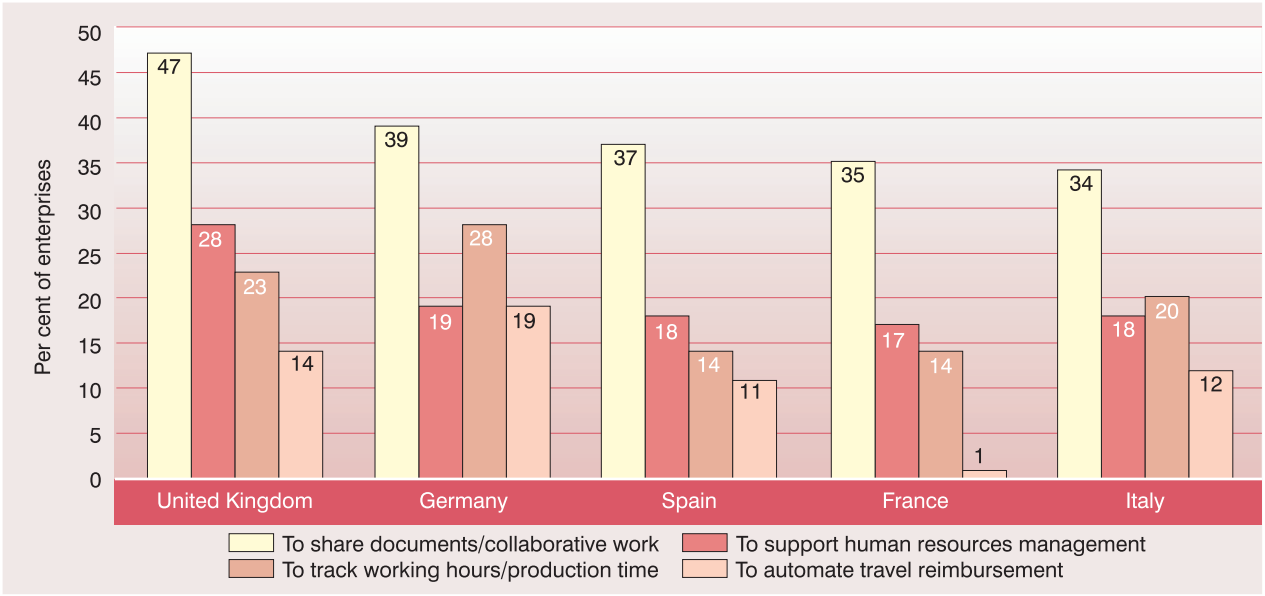
As far as the use of the Internet by enterprises is concerned, it is difficult to obtain comparable data from developing countries in this regard. Many countries do not collect data specifically on the use of the Internet, but among those that do, unsurprisingly, e-mail is the most common type of Internet activity, followed by information search (about goods and services, the market, government and public authorities) and other research (see table 6 in annex I). Also, response categories can vary from country to country. As can be seen in table 1.13, Thailand requests different information from enterprises as regards their use of the Internet, and more of the larger enterprises use the Internet for different types of activity.

The Internet is also used by enterprises for e-banking and other financial services. In the EU 25, 68 per cent of enterprises used the Internet for financial services in 2004. In the OECD countries, a selected number of countries had a very high proportion of firms that use the Internet for banking and financial services, from 45 per cent in Cyprus to 87 per cent in Slovenia. Bulgaria and Romania, reported 26 per cent and 23 per cent respectively. Almost none of the developing economies covered by the UNCTAD survey reported the use of the Internet for these purposes, with the exceptions of Hong Kong SAR (34.1 per cent) and Thailand (5.6 per cent).

Even in the EU, which has a strong e-government agenda, transacting with public authorities over the Internet is still not widespread, although enterprises do so more than individuals and the level of interactivity is growing slowly. In 2004, only 18 per cent of enterprises in the EU 25 with Internet access used it for full electronic case handling[14] with Governments. However, 51 per cent of enterprises with Internet access used the Internet to obtain information from public authorities, 46 per cent for obtaining forms and 32 per cent for returning filled-in forms. The countries covered by the UNCTAD survey have not provided much information on businesses using the Internet to transact with Government or public authorities, despite the increase in e-government initiatives. Notable, but not surprising exceptions are Bulgaria and Romania, which are EU candidate countries, and Andorra, which is not in the EU but is in

Chart 1.7

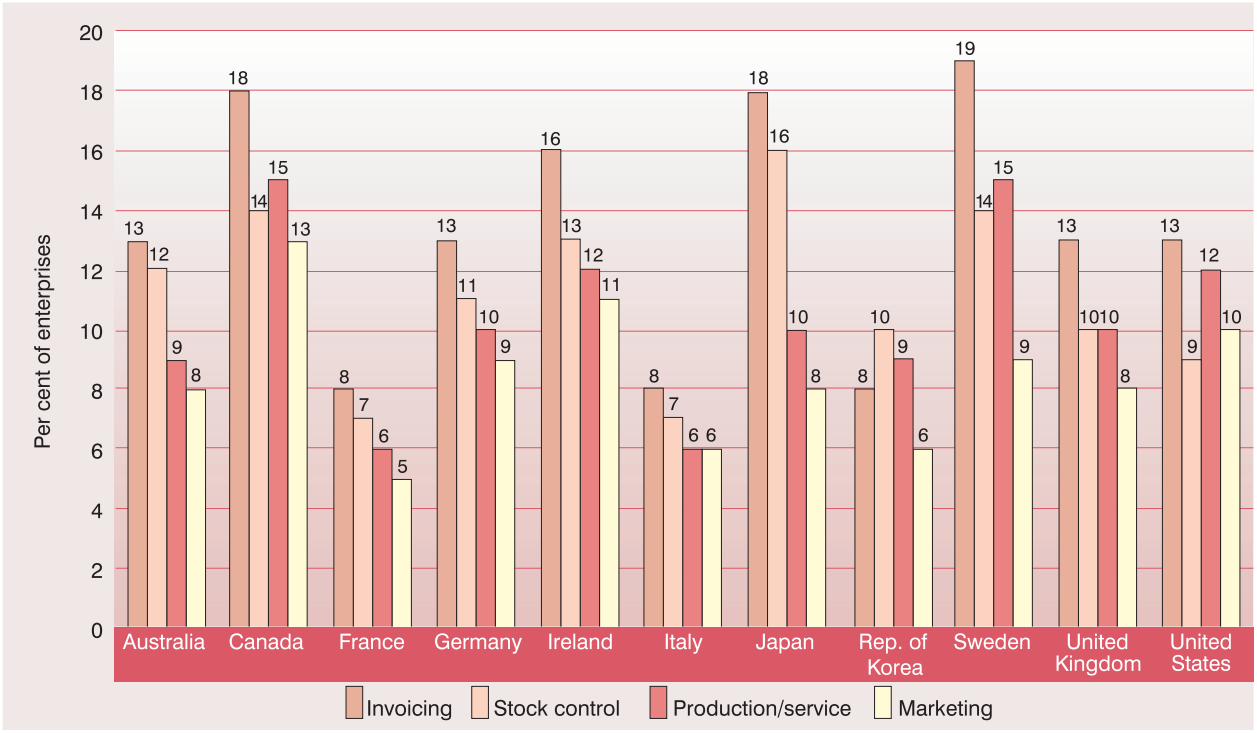
Proportion of enterprises carrying out e-business activities in selected European countries, 2003



Source: OECD, 2004.

Chart 1.8

Business processes linked to online orders in selected OECD countries, 2003



Source: OECD, 2004.

Table 1.13

Different uses of Internet by enterprises in Thailand by number of employees, 2003 *(percentages)*

Uses of Internet	total	1-15	16-25	26-30	31-50	51-200	200+
Information searches	7.7	6.1	38.9	44.6	50.9	64.0	82.2
Monitoring the market	3.6	2.6	19.5	25.6	29.4	38.1	53.8
E-mail	6.3	4.8	35.4	41.9	47.0	61.2	78.3
Communication other than e-mail	1.0	0.8	5.1	5.8	7.7	10.3	17.6
Advertising of own goods and services	1.5	1.0	10.2	11.5	14.5	23.6	38.8
Transactions or communication w/ trading partner	1.6	1.3	8.1	9.9	11.5	16.6	26.2
Banking and financial services	0.5	0.4	2.5	2.9	5.1	6.7	14.9
Other	0.5	0.5	1.0	1.5	2.1	2.2	2.5

Source: UNCTAD e-business database 2005.

the region. Other than these countries, Macao SAR reported that 9.4 per cent of enterprises use the Internet to transact with public authorities.

Other ICT use indicators

The proportion of businesses with an intranet is also a core indicator owing to the importance of such networks in e-business.[15] Intranets help an organization work more efficiently, particularly in terms of internal communication, coordination and sharing of knowledge. In 2004, 33 per cent of businesses (with more than 10 employees) in European countries used an intranet, with Belgium reporting the highest proportion (45 per cent). Bulgaria reported that 27.2 per cent of enterprises have an intranet, and Romania reported 16 per cent. Although many countries still do not collect information on the use of intranets by enter-

Chart 1.9

Proportion of Moroccan enterprises using intranets for different types of activity, by enterprise size, 2004

Source: UNCTAD e-business database 2005.

Table 1.14

Proportion of businesses with extranet and intranet, 2003 or latest available year (selected countries)

of businesses with Internet

Country	Businesses with an intranet	Businesses with an extranet
Singapore	84.7	36.1
Madagascar	57.0	..
Republic of Korea	37.4	..
Argentina	50.2	15.6
Morocco	33.3	
Bulgaria	44.0	5.5
Philippines	33.1	7.8
Trinidad & Tobago	24.2	..
Romania	31.0	9.5
Chile	22.7	7.2
Colombia	0.8	0.4

Source: UNCTAD e-business database 2005.

prises, among those covered by the UNCTAD survey the use of intranets is not far from European numbers and even surpasses them. The outperformer is Singapore, reporting that 64.3 per cent of enterprises use an intranet, followed by Madagascar with 38.2 per cent and the Republic of Korea with 35.2 per cent. At the lower end is Chile with 4.6 per cent, a result which is weighted downwards by retail trade enterprises (63 per cent of the sample), which have a low prevalence of intranets; as can be expected, enterprises in computer and related activities (less than 1 per cent of the sample), report 40 per cent of intranet prevalence. In Morocco, the national regulatory authority also collects data on the types of activities for which intranets are used by enterprises (see chart 1.9).

It should be noted that size also matters here. In the EU 25, 76 per cent of large enterprises have an intranet, as opposed to 27 per cent of small enterprises and 54 per cent of medium-sized enterprises. This may be due to several factors: for example, SMEs have fewer resources available for development and maintenance of an intranet, their size might not justify the use of an intranet, or there is less management awareness of the potential benefits of such a network. A certain basic infrastructure, such as a LAN, is also required. In this sense, there is a definite correspondence between the proportion of businesses with a LAN and those with an intranet, in which the former is always equal to or greater than the latter (see table 6 in annex I).

The use of an extranet is less common, perhaps a combination of security concerns related to allowing external users into parts of an enterprise's system, and the technical challenge of expanding the functionalities of the system to allow for external interaction.[16] Extranets also entail changes in business processes and structures, since resources are required for maintaining and following up on this additional avenue for interaction with clients, suppliers and the general public. Such an indicator provides information on the level of e-business sophistication and interactivity in countries. In particular, more in-depth analysis of this indicator could also help assess the relative importance of B2B extranets for enterprise productivity.

In 2004, only 12 per cent of businesses in European countries had extranets, with Belgium also reporting the highest proportion (23 per cent). Bulgaria and Romania reported 3.4 per cent and 4.9 per cent respectively. Among developing countries, this indicator is collected less frequently than that on intranets, and in those cases where data are available the proportion of businesses with extranets is also lower than the proportion of businesses with intranets. Singapore, which is more advanced in ICT uptake than most developing countries, reported the highest proportion with 27.4 per cent.

3. International trade in ICT goods

Another set of core indicators related to measuring the information economy concerns the ICT-producing sector and international trade in ICT goods and services (see section C.2). Currently, very little internationally comparable data are available on the ICT sector in developing countries. Similarly, comparable data on international trade in ICT services suffer from a lack of an internationally agreed upon definition of ICT trade in services.[17] By contrast, data on international trade in goods are collected at national borders by most countries and compiled in the UN Comtrade database. This section will thus provide an overview of trends in the international trade of ICT goods from a developing country perspective.

The data presented in this section are based on the classification of ICT goods developed by the OECD Working Party on Indicators for the Information Society (WPIIS) and are currently under consideration by the UN Statistical Commission for final

Chart 1.10

Evolution of ICT goods and total merchandise exports, 1996-2003 (1996 = 100)

Source: UN COMTRADE database.

approval. A detailed list (at the six-digit level of the Harmonized System) of all the items covered under this classification is provided in annex III.

Global trends in international trade of ICT goods

Since 1996, exports of ICT goods have doubled and have grown at a faster pace than merchandise exports. Between 1996 and 2003 merchandise exports increased by 60 per cent, while ICT goods exports increased by 100 per cent (see chart 1.10). In 2003, exports of ICT goods exceeded $ 1.1 trillion, accounting for 15 per cent of world merchandise exports. The value of international trade in ICT goods thus exceeded the combined value of international trade in agriculture, textiles and clothing.[18]

This growth has taken place despite a general stagnation in international merchandise trade at the turn of the millennium and following the crash of the NASDAQ stock market, which particularly impacted on trade in ICT goods. In 2001, trade in ICT goods plummeted by 11 per cent, a fall far greater than the decline in merchandise trade. ICT goods exports started to recover in 2002, and grew strongly again in 2003, as well as merchandise trade in general, with an average annual growth rate of 15 per cent.[19]

Trade in ICT goods continues to be highly concentrated: the top ten exporters account for 72 per cent of global ICT exports, and the top ten importers for slightly less (66 per cent of global ICT imports). Concentration is even higher in developing countries: the top ten developing country exporters amount for over 98 per cent of all developing countries' exports in ICT goods (the top ten importers amount for

Table 1.15

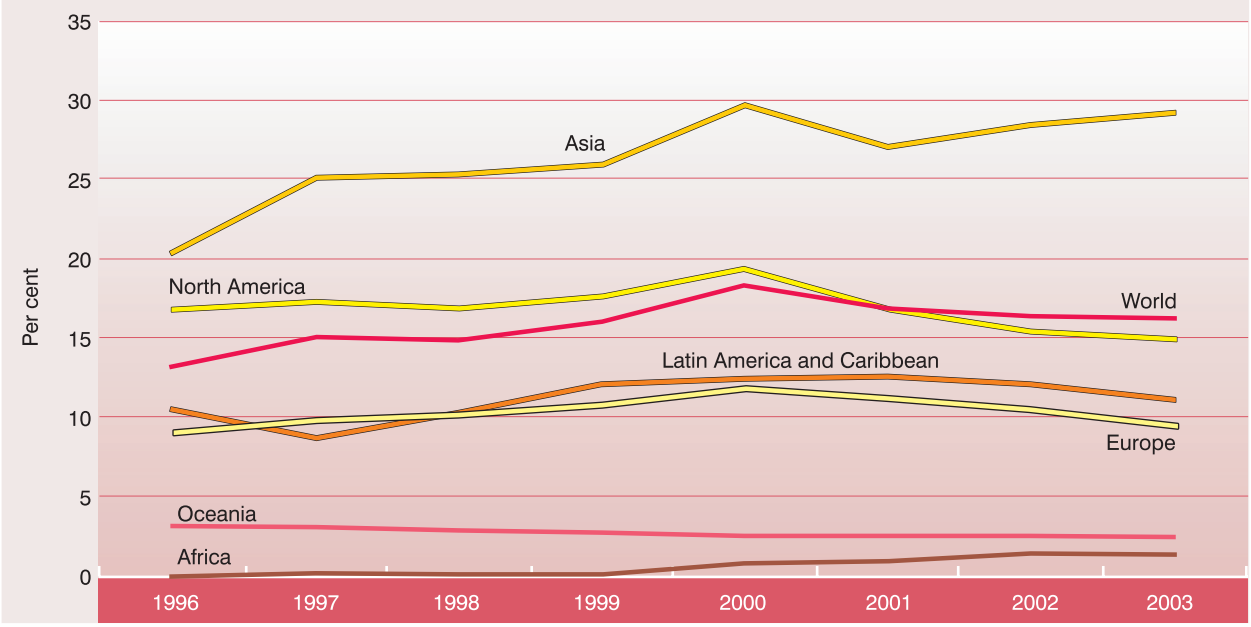
ICT goods exports by region and level of development, 2000-2003 (million USD)

	2000	2001	2002	2003	% change 2000-2001	% change 2001-2002	% change 2002-2003	% of world exports in ICT goods 2003
Level of development								
Developed countries	635'468	560'468	528'510	569'916	-12	-6	8	50.7
South-East Europe and CIS	1'790	2'223	2'391	2'360	24	8	-1	0.2
Developing countries	461'529	410'961	442'853	551'690	-11	8	25	49.1
Region								
Africa	797	800	1'386	1'661	0	73	20	0.1
North America	204'886	167'161	144'631	148'645	-18	-13	3	13.2
Latin America and Caribbean	42'944	42'066	40'139	40'253	-2	-5	0	3.6
Asia	549'203	469'306	501'451	621'265	-15	7	24	55.3
Europe	298'969	292'365	284'151	309'938	-2	-3	9	27.6
Oceania	1'988	1'954	1'996	2'204	-2	2	10	0.2
World ICT goods exports	1'098'787	973'651	973'754	1'123'967	-11.4	0.0	15.4	100.0
World merchandise exports	5'970'375	5'826'804	5'951'043	6'962'775	-2.5	2.1	14.5	–

Source: UNCTAD calculations based on UN COMTRADE database.

Chart 1.11

Share of ICT goods in total merchandise exports, 1996-2003



Source: UN COMTRADE database.

90 per cent of the developing countries' ICT goods imports). China alone takes 22 per cent of all developing countries' trade in ICT goods.

Major exporters

As table 1.15 shows, the growth in global ICT goods exports was particularly driven by increased exports from developing countries, which grew by 25 per cent in 2003. Developing countries now amount for almost 50 per cent of world exports in ICT goods.

Regionally, Africa and Asia experienced stronger growth rates, although Africa started from very low levels. Characterized by impressive growth and high initial levels of exports, the Asian region dominates the international market with a 55 per cent world market share, followed by Europe (27 per cent) and North America (13 per cent). Latin America and the Caribbean represent under 4 per cent of the world market, while neither Oceania nor Africa accounts for 1 per cent of world exports of ICT goods.

Asian exporters continue to be highly specialized in ICT trade (30 per cent of total merchandise trade) whereas since 2001 North America's relative exports in ICT goods have decreased, from 20 per cent to 15 per cent of total merchandise trade. For Europe and Latin America, ICT goods continue to represent about 10 per cent of their total merchandise exports. Finally, for Oceania and Africa, exports of ICT goods represent less than 5 per cent of total merchandise exports (see chart 1.11).

The recent growth in market share of developing countries has been driven by a small number of economies, namely China, Hong Kong SAR and the Republic of Korea. In three years, China has more than doubled its market share and, in 2003, became the second major exporter after the United States. The market share of Hong Kong SAR increased by 40 per cent during the same period, and in 2003 it became the fourth largest exporter of ICT goods (see table 1.16 and chart 1.12).

This growth in developing countries' market shares was also due to the fact that some of the largest developed country exporters (such as the United States, Japan, the United Kingdom, France, Ireland, Italy and Canada) had decreased their exports (in absolute values) since 2000.

Furthermore, lower production costs, economies of scale, an increased interest in investing in certain developing countries and perhaps a move towards ICT services rather than goods by developed countries prompted the reallocation of ICT goods production to developing countries. This development, coupled with a surge in local ICT productive sectors in some developing countries contributed to the increase in ICT goods exports from developing countries. Except for Germany, the ten major developed

Table 1.16

Major exporters of ICT goods, 2000-2003

	Exports (million $)				% change			World market share (%)
Exports	2000	2001	2002	2003	2000-2001	2001-2002	2002-2003	2003
United States	182'261	152'150	132'613	136'630	-17	-13	3	12.2
China	46'996	55'304	79'376	123'303	18	44	55	11.0
Japan	123'547	94'498	95'013	106'649	-24	1	12	9.5
Hong Kong SAR	55'312	54'431	63'494	78'056	-2	17	23	6.9
Singapore	77'344	64'693	65'863	72'670	-16	2	10	6.5
Germany	57'608	59'041	59'064	70'336	2	0	19	6.3
Rep. of Korea	61'516	46'786	55'018	66'541	-24	18	21	5.9
Taiwan PC	64'406	51'140	52'977	61'085	-21	4	15	5.4
Malaysia	55'572	47'981	50'966	53'126	-14	6	4	4.7
Netherlands	33'644	34'533	31'580	45'110	3	-9	43	4.0
United Kingdom	54'927	53'394	51'394	43'051	-3	-4	-16	3.8
Mexico	38'262	38'054	36'313	36'062	-1	-5	-1	3.2
France	35'149	29'920	27'240	28'152	-15	-9	3	2.5
Philippines	26'421	21'394	24'080	24'157	-19	13	0	2.1
Ireland	25'607	28'999	26'489	22'453	13	-9	-15	2.0
Thailand	20'360	17'428	-	20'844	-14	0	0	1.9
Italy	12'830	12'801	11'406	12'524	0	-11	10	1.1
Belgium	11'432	11'813	10'218	12'125	3	-14	19	1.1
Canada	22'625	15'011	12'018	12'015	-34	-20	0	1.1
Hungary	7'776	7'510	8'938	11'967	-3	19	34	1.1
Finland	11'555	9'413	9'789	11'085	-19	4	13	1.0
Sweden	14'705	9'352	10'250	10'754	-36	10	5	1.0
Spain	6'135	6'158	5'896	7'615	0	-4	29	0.7
Indonesia	7'843	6'500	6'680	6'274	-17	3	-6	0.6
Austria	4'883	5'189	5'721	6'080	6	10	6	0.5
Rest of the world	40'072	40'158	41'358	45'302	0	3	10	4.0
World exports	1'098'787	973'651	973'754	1'123'967	-11	0	15	100.0

Source: UN COMTRADE database.

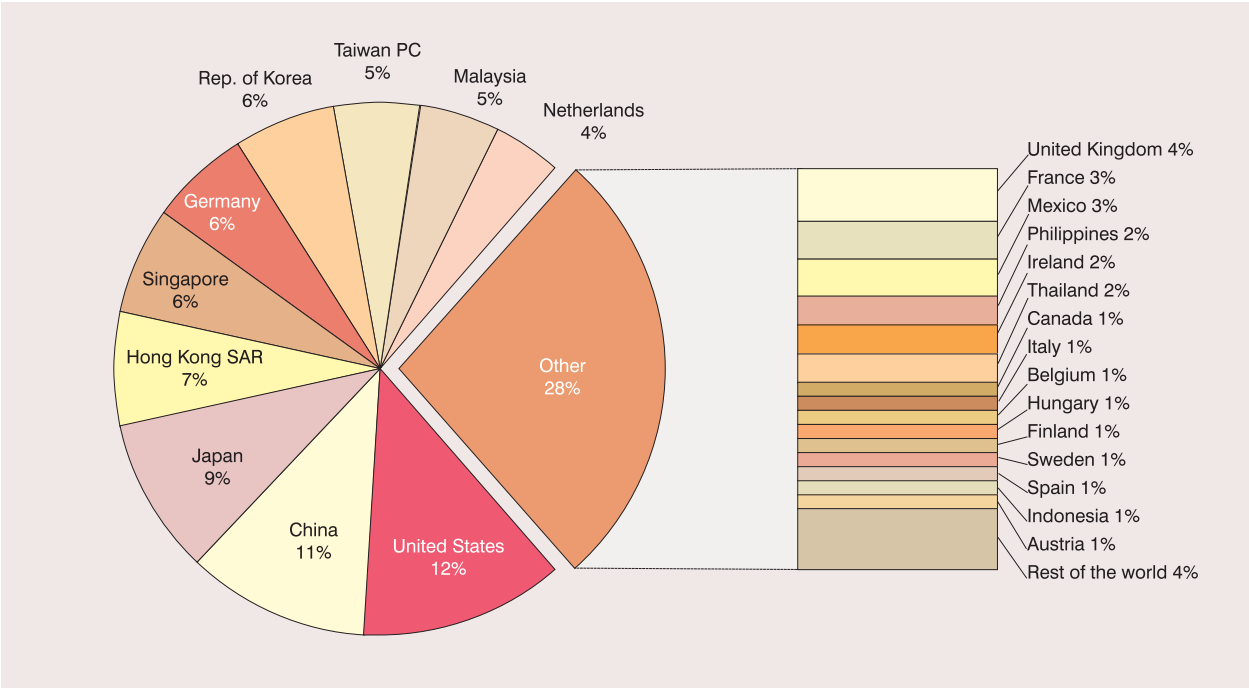
country exporters saw their market share in exports of ICT goods eroded during the period 2000–2003.

However, some of the previously leading developing countries also lost market share in exports of ICT goods. Malaysia and Singapore both lost 8 per cent and 6.5 per cent respectively of their market share in these three years.[20] This may be explained by a reallocation of ICT manufacturing businesses to lower-wage countries such as China. Other developing countries among the top 25 exporters – Mexico, the Philippines, Thailand and Indonesia – also experienced negative and/or sluggish growth rates and a loss in market share in global ICT goods exports (see table 1.16).

African and Latin American regions are scarcely represented in the list of 25 major exporters. The three major African exporters are Morocco, South Africa and Tunisia. Together they account for 94 per cent of Africa's ICT goods exports. Nevertheless, these figures need to be considered with caution as few African countries report data on trade in ICT goods, and export data from important African exporters such as Egypt are lacking. Mexico is by far the largest exporter of ICT goods in Latin America and the Caribbean, accounting for 90 per cent of all the Latin

Chart 1.12

Major exporters of ICT goods, 2003



Source: UN COMTRADE database

Tables 1.17a and 1.17b

WMS and RCA by country/territory, 2000-2003

Countries/territories with 2003 RCA >1

	RCA	RCA growth (%)
	2003	2000-2003
Philippines	4.13	10
Malaysia	3.14	2
Singapore	3.13	3
Taiwan PC	2.54	7
Rep. of Korea	2.13	10
Hong Kong SAR	2.12	42
Hungary	1.75	16
China	1.74	70
Costa Rica	1.65	-5
Thailand	1.61	0
Ireland	1.51	-19
Japan	1.40	0
Mexico	1.35	8
Finland	1.35	-5
Netherlands	1.25	15
United States	1.17	-8

Source: UNCTAD calculations based on UN COMTRADE database

Countries/territories with WMS>1, 2003 RCA >1 and positive growth rates

	Three year Av. WMS Index	WMS growth (%)	RCA	RCA growth (%)
	2001-2003	2000-2003	2003	2000-2003
China	1.37	156	1.74	70
Hong Kong SAR	1.11	38	2.12	42
Hungary	1.15	50	1.75	16
Netherlands	1.10	31	1.25	15
Rep. of Korea	1.03	6	2.13	10

American ICT goods exports, followed by Brazil (5.8 per cent) and Costa Rica (3.8 per cent).

A useful measure to assess the export performance in ICT goods of individual countries is the revealed comparative advantage (RCA) index, combined with world market share (WMS) data.[21] The following will thus take a closer look at the countries that have gained comparative advantage and world market share in ICT goods exports.

According to table 1.17a, only a few economies have a revealed comparative advantage in ICT goods

Table 1.18

ICT goods imports by region and level of development, 2000-2003 (million USD)

	2000	2001	2002	2003	% change 2000-2001	% change 2001-2002	% change 2002-2003	% of world imports in ICTgood 2003
Level of development								
Developed countries	705'549	620'235	594'663	657'457	-12	-4	11	58.5
South-East Europe and CIS	5'297	7'341	8'256	9'600	39	12	16	0.9
Developing countries	397'022	359'026	376'973	455'937	-10	5	21	40.6
Region								
Africa	6'041	6'124	7'142	8'766	1	17	23	0.8
North America	271'963	220'110	217'526	224'546	-19	-1	3	20.0
Latin America and Caribbean	58'484	58'132	49'705	50'139	-1	-14	1	4.5
Asia	405'825	357'807	379'099	462'462	-12	6	22	41.2
Europe	352'177	333'812	315'293	363'705	-5	-6	15	32.4
Oceania	13'379	10'616	11'126	13'376	-21	5	20	1.2
World total	1'107'868	986'601	979'892	1'122'993	-10.9	-0.7	14.6	100.0
World merchandise imports	6'220'711	6'012'925	6'110'719	7'222'408	-3.5	1.6	15.4	

Source: UNCTAD calculations based on UN COMTRADE database.

exports, demonstrated by an RCA index of > 1. They are mostly Asian developing economies (China, Hong Kong SAR, Malaysia, Philippines, Republic of Korea, Singapore, Taiwan Province of China and Thailand), some developed countries (Finland, Hungary, Ireland, Japan, Netherlands and the United States) and two Latin American countries (Costa Rica and Mexico). Most of them (except Costa Rica, Ireland, Finland and the United States) have increased their revealed comparative advantage in the last three years.

Table 1.17b highlights countries with high export performance in terms of both gaining world market shares and increasing their specialization in ICT trade (i.e. growing RCA indices). The five best performers (with WMS and RCA indices above one and positive growth rates) during the period 2000–2003 were China, Hong Kong SAR, Hungary, the Netherlands and the Republic of Korea.

Major importers

In 2003, developed countries imported nearly 50 per cent more ICT goods than developing countries (table 1.18). However, if we look at the trend during the last three years, developed countries' imports have fallen since 2000 and developing countries have higher import growth rates.

The three major importers are the United States, China and Hong Kong SAR. Despite a very low average growth in the last five years, the United States remains the major importer of ICT goods (accounting for 17 per cent of total reported imports) (see table 1.19 and chart 1.13). China and Hong Kong SAR experienced high import growth rates, although somewhat lower than their export growth rates. For instance, China had a 40 per cent growth in ICT goods imports in just one year (2002–2003), while its exports increased by 55 per cent in the same period. It has to be mentioned that 98 per cent of the goods imported by Hong Kong SAR are re-exported, and half of those go to China.

In 2001 and 2002, as in the case of exports, the value of ICT imports decreased in most countries. The only two countries, among the 25 major exporters, that have consistently increased their ICT goods imports since 2000 are China and Hungary. Overall, imports picked up strongly again in 2003. Among the major importers, Ireland is an exceptional case: since 2001 its imports have declined (in terms of total value), and in 2003 they dropped by 20 per cent, largely owing to

Table 1.19

Major importers of ICT goods, 2000-2003

	Imports (million $)				% change			World market share (%)
Exports	2000	2001	2002	2003	2000-2001	2001-2002	2002-2003	2003
United States	237'942	193'797	193'873	199'852	-19	0	3	17.8
China	47'479	53'192	68'724	96'536	12	29	40	8.6
HongKongSAR	64'403	61'552	69'082	82'686	-4	12	20	7.4
Germany	65'432	67'831	63'255	73'779	4	-7	17	6.6
Japan	66'871	58'207	55'092	61'220	-13	-5	11	5.5
UnitedKingdom	66'934	55'388	49'353	54'465	-17	-11	10	4.9
Singapore	59'769	47'950	48'144	53'153	-20	0	10	4.7
Netherlands	36'535	34'767	29'816	43'020	-5	-14	44	3.8
Rep.of Korea	39'085	30'334	32'288	37'543	-22	6	16	3.3
Malaysia	36'390	30'821	35'057	37'399	-15	14	7	3.3
Taiwan PC	43'410	31'353	33'756	34'698	-28	8	3	3.1
France	38'760	33'391	30'893	34'670	-14	-7	12	3.1
Mexico	36'308	36'568	34'394	33'980	1	-6	-1	3.0
Canada	34'021	26'313	23'653	24'694	-23	-10	4	2.2
Italy	23'511	21'508	20'879	24'018	-9	-3	15	2.1
Philippines	12'621	12'020	17'300	18'288	-5	44	6	1.6
Spain	14'238	13'276	13'080	16'345	-7	-1	25	1.5
Thailand	15'276	14'329	-	16'214	-6	0	0	1.4
Belgium	13'096	13'344	12'560	14'280	2	-6	14	1.3
Ireland	16'680	18'492	17'525	13'925	11	-5	-21	1.2
Australia	11'551	8'995	9'372	11'194	-22	4	19	1.0
Hungary	7'612	8'050	8'666	10'425	6	8	20	0.9
Sweden	10'982	9'073	8'632	10'093	-17	-5	17	0.9
Switzerland	9'225	8'180	7'504	8'269	-11	-8	10	0.7
Austria	7'057	6'906	6'945	8'043	-2	1	16	0.7
Rest of the world	92'680	90'964	90'047	104'204	-2	-1	16	9.3
World imports	1'107'868	986'601	979'892	1'122'993	-11	-1	15	100.0

Source: UNCTAD calculations based on UN COMTRADE database.

a 50 per cent drop in the exports of electronic components.

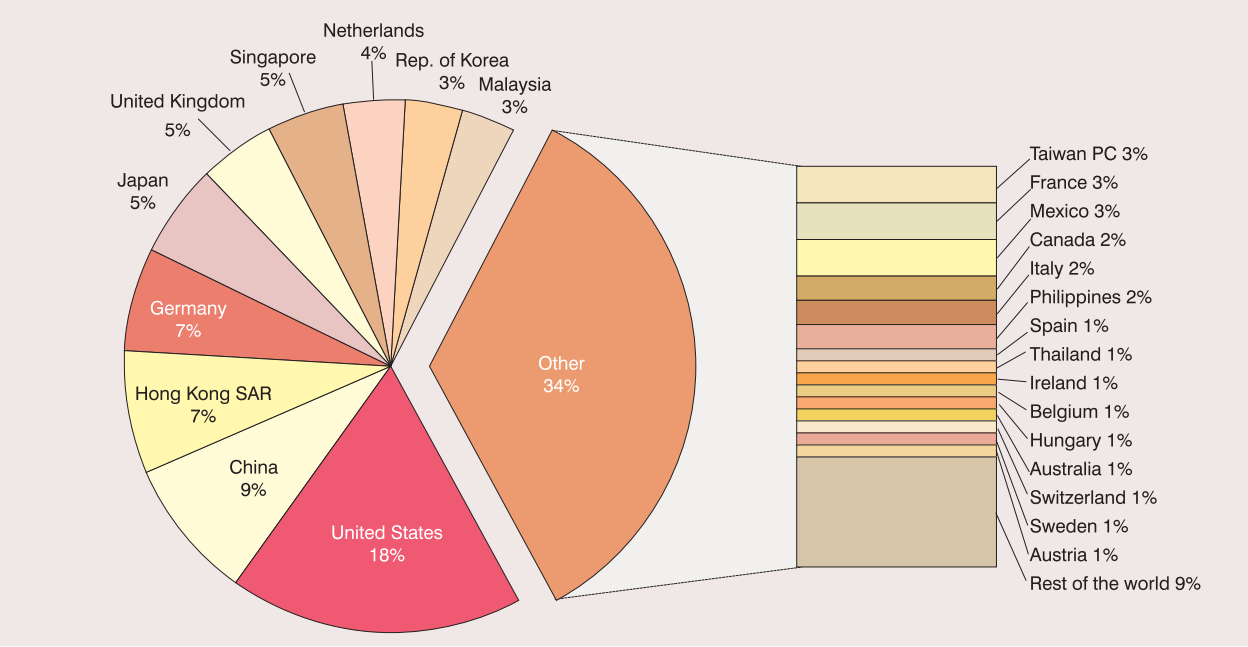
As far as developing regions are concerned, the three major African importers of ICT goods are South Africa (45 per cent of all African imports), Algeria (12 per cent) and Morocco (11 per cent). They are followed by Nigeria (9 per cent) and Tunisia (8 per cent), all of which experienced positive growth in 2003. As in the case of global imports, Africa's imports of ICT goods are less concentrated than its exports.

In Latin America, Mexico, Brazil and Costa Rica are the largest importers. Mexico's share in imports is more modest (68 per cent of all ICT goods imported by Latin American countries) compared with its exports (90 per cent).

A final look at the role of LDCs in international trade of ICT goods reveals that it is extremely small, accounting for only $13 million (2003) or 0.001 per cent of world ICT goods exports.[22] This ratio is much smaller than LDCs' share in overall world merchandise exports (0.22 per cent). On the other hand, imports of ICT goods are 100 times greater than their exports and, with a value of $1,277 million represent 0.1 per cent of world ICT goods imports.[23] This shows that, unlike major exporters in this field, most LDCs do not import ICT goods as inputs into other goods to be exported; rather, the final destination of such goods is

Chart 1.13

Major importers of ICT goods, 2003



Source: UN COMTRADE database

local use. However, LDCs share in ICT goods imports (0.1 per cent) is much smaller than LDCs' share in total merchandise imports (0.36 per cent).

Seven out of the 10 LDCs that reported export data in 2000 and 2003 have experienced a negative compound annual growth rate. The only exceptions were Cambodia, Togo and Senegal (60 per cent, 48 per cent and 27 per cent compound annual growth rate). On the other hand, of the 13 LDCs that reported import data for 2000 and 2003, all have increased their imports (except for Cambodia). On average, LDCs' imports of ICT goods have grown at a 19 per cent compound annual growth rate. Given the lack of data on trade in ICT goods from LDCs, a note of caution should be exercised regarding any interpretation of the data provided above.

Trade patterns by category of ICT product

The above trends refer to a large number of ICT products. Therefore, this section disaggregates trade trends by category of ICT good. Following the OECD classification, ICT goods fall into five groups:[24]

- Telecommunications equipment;
- Computer and related equipment;
- Electronic components;
- Audio and video equipment;
- Other ICT goods.

Charts 1.14 and 1.15 show that two thirds of trade in ICT goods is in electronic components (34 per cent) and computer and related equipment (32 per cent). Trade in telecommunications equipment represents only about 15 per cent and decreased in the last few years. Audio and video equipment now represents 12 per cent of world ICT goods trade, with a slight increase from three years ago. Furthermore, the general category of "Other ICT goods" represents 8 per cent of global exports.

However, the share of the five product groups differs in some regions. Regarding exports, African countries export mainly electronic components (52 per cent) but few computers (8 per cent); and Latin American countries export mainly computers (37 per cent) but relatively few electronic components (13 per cent). In terms of imports, African countries import mainly telecommunications equipment (37 per cent) and Latin American countries mainly electronic components (40 per cent) (tables 1.20 and 1.21).

Since 2000, and following the NASDAQ stock market crash, each of the five ICT goods categories has been performing very differently (chart 1.16). Exports in electronic equipment fell sharply in 2001 and recovered strongly in 2003, to almost their level at the start of the millennium. However, exports of telecommunications equipment, which dropped in 2001 and 2002, have not yet reached their 2000 levels.

Table 1.20 Exports of ICT goods by category of good, 2000-2003 (million USD)

	Telecommunications				Computer				Electronic components				Audio & video				Other ICT goods				All ICT goods			
	2000	2001	2002	2003	2000	2001	2002	2003	2000	2001	2002	2003	2000	2001	2002	2003	2000	2001	2002	2003	2000	2001	2002	2003
Level of development																								
Developed countries	124'872	109'964	96'774	93'618	188'660	172'046	154'178	164'425	205'500	166'133	162'520	179'093	49'432	46'869	48'480	56'333	67'003	65'456	66'557	76'447	635'468	560'468	528'510	569'916
SEE&CIS	342	537	501	585	211	171	153	177	621	527	847	611	125	167	194	334	491	820	697	654	1'790	2'223	2'391	2'360
Developing countries	43'525	47'364	49'086	59'455	160'452	145'723	153'787	191'476	186'422	147'599	161'511	206'824	60'201	58'810	65'540	79'255	10'929	11'465	12'930	14'680	461'529	410'961	442'853	551'690
Region																								
Africa	287	277	277	286	141	134	118	139	158	192	712	857	85	80	90	141	126	116	189	239	797	800	1'386	1'661
North America	34'440	25'596	20'190	18'670	59'985	50'858	40'697	41'951	79'341	61'209	56'165	59'582	7'902	7'375	6'733	6'759	23'218	22'124	20'846	21'683	204'886	167'161	144'631	148'645
LatinAmerican and the Caribbean	10'226	10'564	8'901	7'556	13'434	13'931	13'022	14'810	7'125	5'113	4'948	5'426	9'939	9'936	10'564	9'816	2'220	2'522	2'704	2'645	42'944	42'066	40'139	40'253
Asia	47'355	47'731	47'457	59'409	175'026	154'314	164'146	198'751	236'123	182'864	197'370	249'851	69'848	65'245	73'107	90'266	20'852	19'152	19'370	22'987	549'203	469'306	501'451	621'265
Europe	75'984	73'277	69'177	67'360	99'962	97'863	89'248	99'543	69'473	64'615	65'408	70'458	21'907	23'132	23'644	28'836	31'643	33'478	36'674	43'741	298'969	292'365	284'151	309'938
Oceania	448	421	359	378	775	840	886	884	324	266	276	352	77	78	76	104	364	349	400	486	1'988	1'954	1'996	2'204
World	168'740	157'865	146'361	153'659	349'323	317'940	308'118	356'078	392'543	314'259	324'878	386'528	109'758	105'846	114'214	135'921	78'423	77'741	80'184	91'781	1'098'787	973'651	973'754	1'123'967

Source: UNCTAD calculations based on UN COMTRADE database.

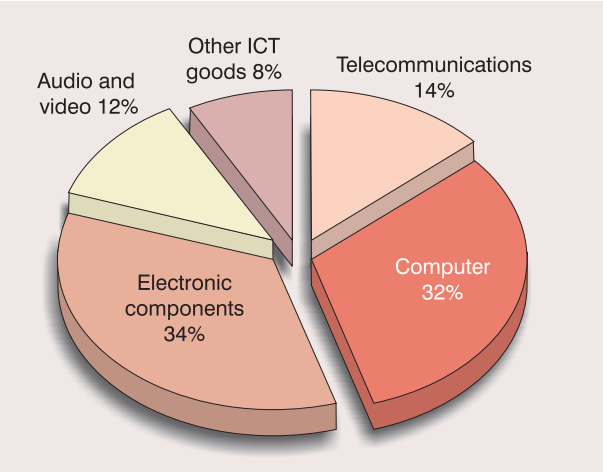
Table 1.21 Imports of ICT goods by category of good, 2000-2003 (million USD)

	Telecommunications				Computer				Electronic components				Audio & Video				Other ICT goods				All ICT goods			
	2000	2001	2002	2003	2000	2001	2002	2003	2000	2001	2002	2003	2000	2001	2002	2003	2000	2001	2002	2003	2000	2001	2002	2003
Level of development																								
Developed countries	117'058	104'694	92'101	100'965	271'467	240'057	231'324	254'335	181'985	140'980	128'643	140'171	81'423	79'712	87'605	100'076	53'616	54'793	54'990	61'909	705'549	620'235	594'663	657'457
SEE&CIS	1'892	2'569	2'735	2'992	1'047	1'532	1'796	2'065	823	970	1'375	1'705	395	723	908	1'068	1'141	1'546	1'442	1'770	5'297	7'341	8'256	9'600
Developing countries	45'866	45'906	38'381	43'898	84'192	80'864	83'425	98'282	213'718	182'825	202'774	251'453	28'347	26'881	29'854	34'707	24'900	22'549	22'539	27'597	397'022	359'026	376'973	455'937
Region																								
Africa	2'337	2'211	2'609	3'261	1'553	1'707	1'874	2'398	794	698	851	1'074	652	754	886	995	706	754	922	1'037	6'041	6'124	7'142	8'766
North America	43'577	36'316	34'822	37'769	99'932	82'760	83'369	84'844	72'037	46'566	39'994	38'301	36'192	34'040	38'724	41'356	20'224	20'428	20'617	22'277	271'963	220'110	217'526	224'546
LatinAmerican and the Caribbean	11'520	10'743	6'540	6'644	10'686	12'828	12'353	13'811	26'404	23'945	21'031	20'191	5'299	5'830	5'433	5'128	4'574	4'786	4'348	4'364	58'484	58'132	49'705	50'139
Asia	39'071	38'741	33'784	38'387	100'178	90'055	91'543	106'547	211'844	178'887	201'031	253'815	29'914	28'095	30'636	36'200	24'818	22'029	22'104	27'512	405'825	357'807	379'099	462'462
Europe	64'562	62'470	53'149	58'966	139'117	130'860	122'792	141'790	83'984	73'655	68'862	78'706	36'333	37'046	40'697	49'579	28'180	29'781	29'793	34'664	352'177	333'812	315'293	363'705
Oceania	3'748	2'688	2'312	2'828	5'240	4'243	4'614	5'293	1'462	1'022	1'023	1'243	1'774	1'551	1'991	2'592	1'154	1'111	1'186	1'421	13'379	10'616	11'126	13'376
World	164'815	153'169	133'216	147'855	356'706	322'453	316'546	354'682	396'525	324'775	332'791	393'329	110'165	107'316	118'367	135'851	79'657	78'888	78'971	91'276	1'107'868	986'601	979'892	1'122'993

Source: UNCTAD calculations based on UN COMTRADE database.

Chart 1.14

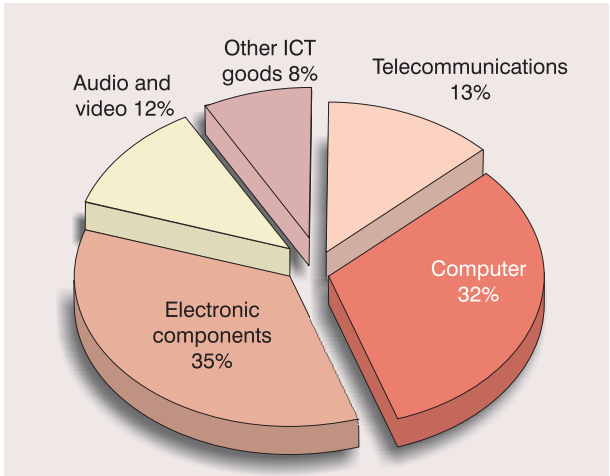
Exports of ICT goods by category of good, 2003



Source: UNCTAD calculations based on UN COMTRADE database.

Chart 1.15

Imports of ICT goods by category of good, 2003



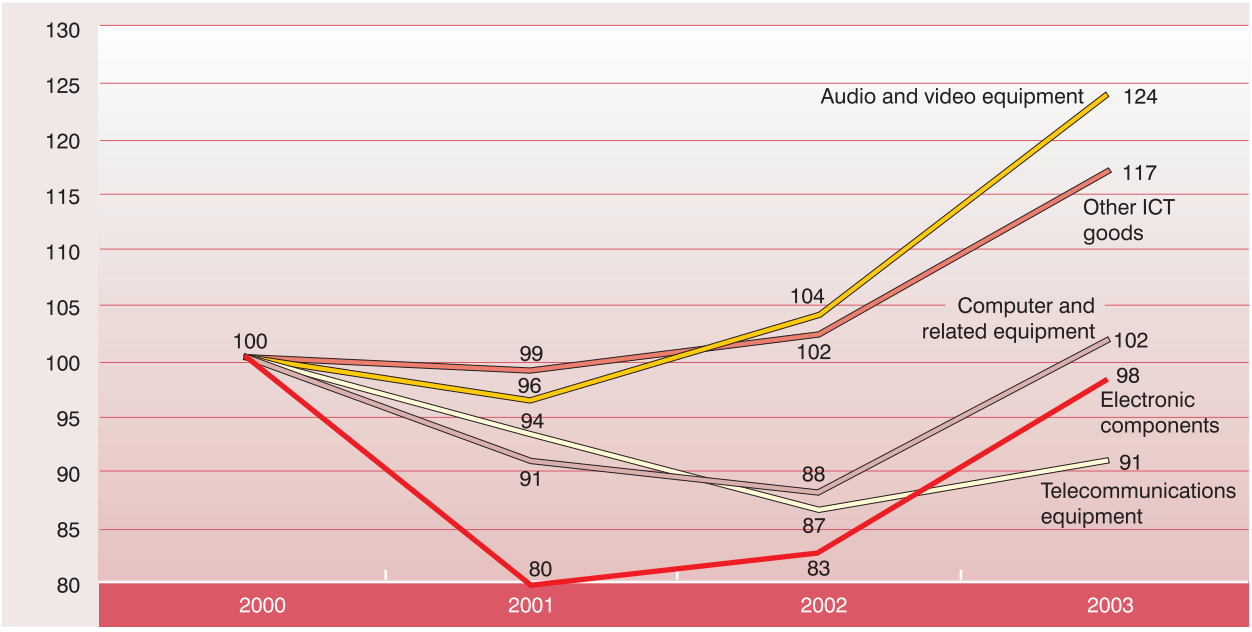
Source: UNCTAD calculations based on UN COMTRADE database.

Exports of audio and video equipment fell less in 2001, and have since grown by 25 per cent.

As far as the origin of exports is concerned, telecommunications equipment is mainly exported from developed countries, and particularly Europe, although their share of global telecommunications exports decreased from 74 per cent in 2000 to just over 60 per cent in 2003. In 2000, the United States was the main exporter of telecommunications equipment, with 14 per cent of the global share. However, between 2000 and 2003 it halved its exports of telecommunications equipment, while the Republic of Korea and China doubled them. Thus, by 2003, the largest exporters of telecommunications equipment were the Republic of Korea, the United States and China, accounting for about 10 per cent of the market each. They are followed closely by Germany and the United Kingdom (see table 1.22 and charts 1.17a to 1.17d).

Chart 1.16

Evolution of ICT goods exports by category, 2000-2003 (2000 =100)



Source: UNCTAD calculations based on UN COMTRADE database.

Table 1.22

Major exporters by category of ICT goods, 2003 (million USD)

Telecommunications		
	Value	%
Rep. of Korea	15'169	10
United States	14'871	10
China	14'558	9
Germany	13'407	9
United Kingdom	11'806	8
Finland	8'359	5
France	6'684	4
Hong Kong SAR	6'664	4
Mexico	6'133	4
Sweden	5'793	4
Rest of the world	50'216	33
Total telecom	153'659	100

Computers		
	Value	%
China	59'245	17
United States	39'196	11
Netherlands	25'205	7
Singapore	24'883	7
Japan	21'838	6
Hong Kong SAR	21'818	6
Taiwan, PC	19'220	5
Germany	17'807	5
Rep. of Korea	17'638	5
Malaysia	16'662	5
Rest of the world	92'567	26
Total computers	356'078	100

Electronic components		
	Value	%
United States	56'625	15
Japan	47'734	12
Singapore	38'645	10
Hong Kong SAR	31'808	8
Taiwan, PC	29'253	8
Rep. of Korea	25'660	7
Malaysia	25'288	7
China	22'879	6
Germany	18'477	5
Philippines	16'564	4
Rest of the world	73'596	19
Total electronic components	386'528	100

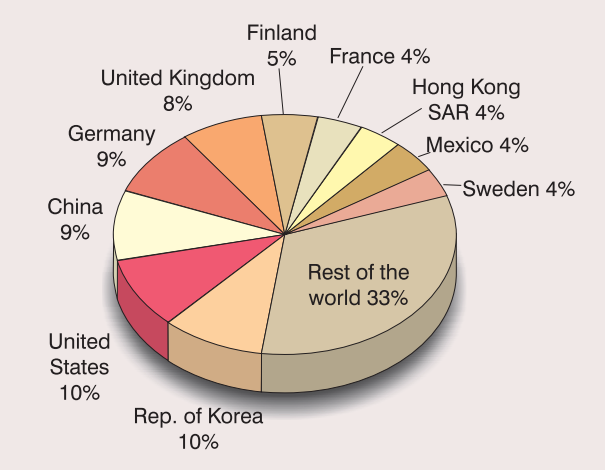
Audio & Video		
	Value	%
China	24'289	18
Japan	20'709	15
Hong Kong SAR	15'391	11
Mexico	9'518	7
Rep. of Korea	7'251	5
Malaysia	6'595	5
United States	6'328	5
Germany	5'589	4
Taiwan, PC	4'364	3
Singapore	3'710	3
Rest of the world	32'177	24
Total audio & video	135'921	100

Other ICT goods		
	Value	%
United States	19'610	21
Germany	15'055	16
Japan	10'682	12
United Kingdom	6'201	7
France	4'453	5
Netherlands	4'192	5
Taiwan, PC	3'164	3
Hong Kong SAR	2'376	3
Mexico	2'359	3
China	2'332	3
Rest of the world	21'356	23
Total other ITC goods	91'781	100

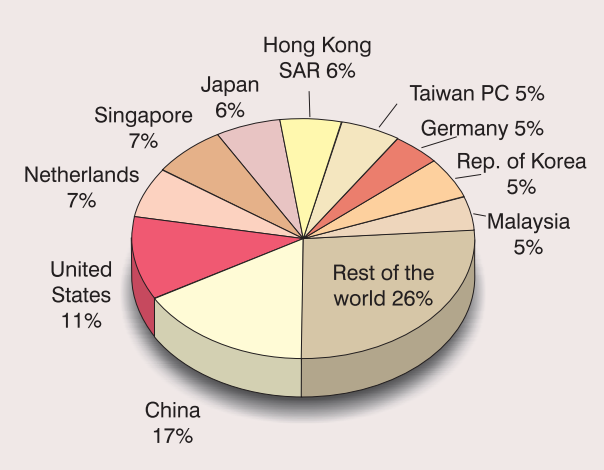
Source: UNCTAD calculations based on UN COMTRADE database

Chart 1.17 a, b, c, d
Major exporters by category of ICT goods, 2003 (million USD)

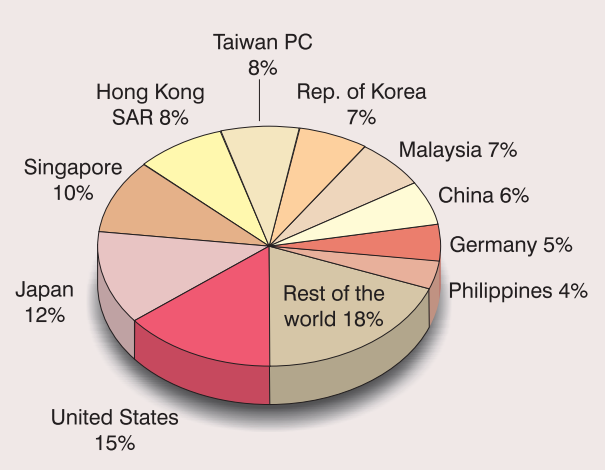
17a. Telecommunications equipment



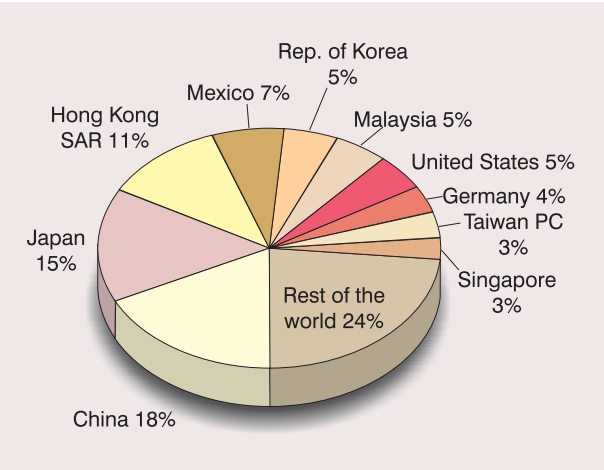
17b. Computers and related equipment



17c. Electronic components



17d. Audio and video equipment



Source: UNCTAD calculations based on UN COMTRADE database.

Developing countries have exported slightly more computers and related equipment than developed countries. At the country level, China dominates the computer export market. In only three years, China's share in the global market tripled to reach 17 per cent of world exports in computers by 2003. During the same period, the United States' exports of computers decreased by 30 per cent, and this resulted in a drop to second place (with 11 per cent of the market).

Developing countries also have higher shares than developed ones in exports of electronic components (54 per cent in 2003). Furthermore, while the United States and Japan have seen their exports of electronic components drop by 25 per cent and 13 per cent respectively, they continued to be the major exporters in 2003.

In 2003, almost 60 per cent of exports of audio and video equipment originated from developing countries. Between 2000 and 2003 China doubled its exports of audio and video equipment, and by 2003 had the largest share of the market (18 per cent). During the same period, exports from Japan stagnated and in 2003 Japan moved from the leading position to second place with 15 per cent of the market.

Table 1.23 and charts 1.18a to 1.18d show the major importers by category of ICT good in 2003. Developed countries account for about 70 per cent of

Table 1.23

Major importers by category of ICT goods, 2003 (million USD)3

Telecommunications		
	Value	%
United States	34'046	23
United Kingdom	10'392	7
Germany	8'900	6
Hong Kong SAR	7'785	5
China	7'320	5
France	5'018	3
Italy	4'937	3
Singapore	4'382	3
Netherlands	4'164	3
Spain	3'748	3
Rest of the world	57'164	39
World	147'855	100

Computers		
	Value	%
United States	76'149	21
Germany	28'495	8
Netherlands	24'379	7
Japan	23'194	7
United Kingdom	22'254	6
Hong Kong SAR	21'498	6
China	17'203	5
Singapore	13'247	4
France	12'674	4
Mexico	9'947	3
Rest of the world	105'642	30
World	354'682	100

Electronic components		
	Value	%
China	62'138	16
Hong Kong SAR	37'227	9
United States	33'955	9
Singapore	30'628	8
Malaysia	27'763	7
Rep. of Korea	24'699	6
Japan	22'601	6
Taiwan, PC	22'310	6
Germany	18'975	5
Mexico	15'218	4
Rest of the world	97'817	25
World	393'329	100

Audio & Video		
	Value	%
United States	37'551	28
Hong Kong SAR	13'923	10
Germany	10'138	7
United Kingdom	7'508	6
Japan	7'306	5
France	5'291	4
Netherlands	4'377	3
Italy	3'832	3
Canada	3'805	3
Singapore	3'487	3
Rest of the world	38'633	28
World	135'851	100

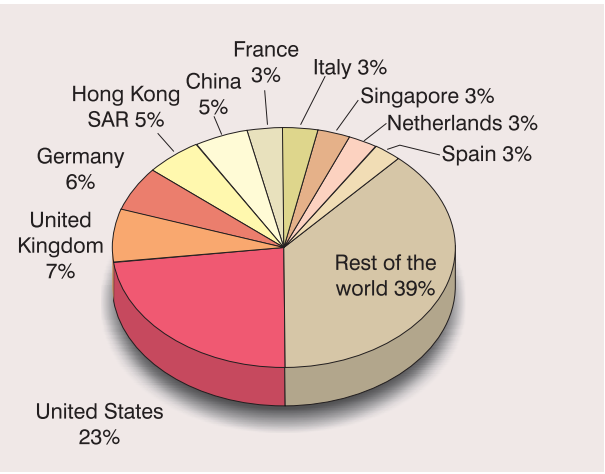
Other ICT goods		
	Value	%
United States	18'151	20
Germany	7'271	8
China	6'844	7
United Kingdom	5'320	6
Japan	4'684	5
France	4'175	5
Canada	4'125	5
Rep. of Korea	3'646	4
Taiwan, PC	3'359	4
Italy	3'028	3
Rest of the world	30'672	34
World	91'276	100

Source: UNCTAD calculations based on UN COMTRADE database.

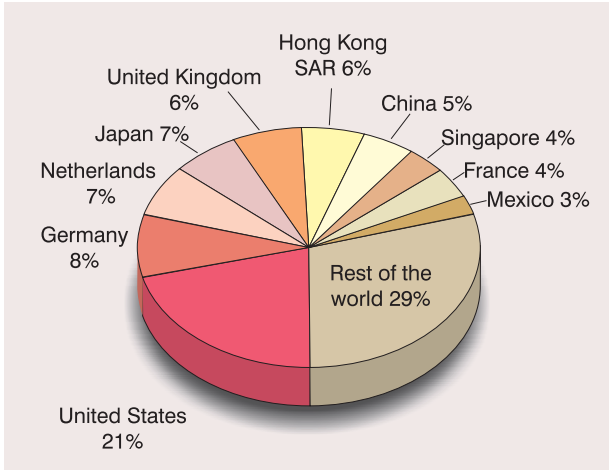
Chart 1.18 a, b, c, d

Major importers by category of ICT goods, 2003 (million USD)

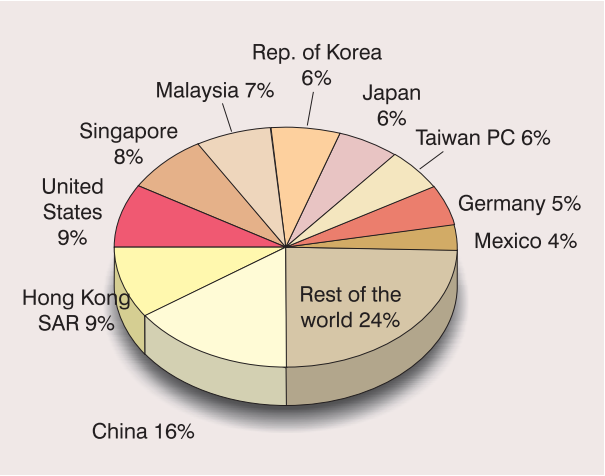
18a. Telecommunications equipment



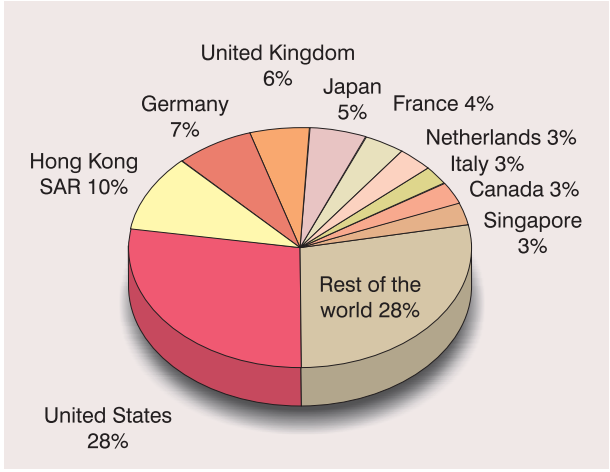
18b. Computers and related equipment



18c. Electronic components



18d. Audio and video equipment



Source: UNCTAD calculations based on UN COMTRADE database.

imports of telecommunications equipment and computer and related equipment. The United States alone imports one fifth of all telecommunications equipment and computers. The percentage of imports among developing regions and major importers did not undergo a significant change in the period 2000–2003. On the other hand, the subsector of electronic components has seen some changes, and developing countries now account for 64 per cent of imports (up from previous 54 per cent). This is largely due to China, which has more than doubled its imports of electronic components in these three years, and in 2003 imported 16 per cent of all electronic components. It is worth noting that China, together with Hong Kong SAR and Singapore, amount for half of the developing countries' imports of electronic components.

Directions of trade and South–South trade

When one looks at the direction of trade flows (exports) by development blocs (see table 1.24), the increasing significance of trade among, and between, southern (developing) and transition economies is striking. They experienced positive growth rates in the last three years in all ICT goods categories.

The most important trade flows in telecommunications equipment, computers and related equipment (35 per cent of all North–North trade), and other ICT goods are between developed countries, while trade in electronic components is largely between developing countries. Audio and video equipment is mostly exported to developed countries from developing countries.

Table 1.24

Direction of exports of ICT goods, 2003

	Value of exports (million USD), 2003					CAGR (%) 2000-2003					
Trade flow	Tele-communications equipment	Computers and related equipment	Electronic components	Audio & video equipment	Other ICT goods	Tele-communications equipment	Computers and related equipment	Electronic components	Audio & video equipment	Other ICT goods	Total ICT
North-North	64'720	127'701	76'084	45'808	52'872	-11	-5	-8	5	5	-5%
North-SEE & CIS	4'591	3'245	1'277	779	1'581	30	20	14	27	21	23%
North-South	24'306	33'476	101'731	9'744	21'992	-8	-4	-2	0	2	-2%
SEE & CIS-North	273	98	407	232	178	5	-18	-6	55	-10	0%
SEE & CIS-SEE & CIS	99	49	45	92	157	13	26	6	17	7	12%
SEE & CIS-South	213	30	159	9	319	81	41	19	29	37	40%
South-North	36'479	116'273	65'867	52'502	8'800	7	2	-7	8	9	1%
South-SEE & CIS	592	688	407	658	92	58	41	66	27	25	42%
South-South	22'384	74'516	140'550	26'095	5'787	19	15	11	12	13	13%

Source: UNCTAD calculations based on UN COMTRADE database.

South–South trade is particularly substantial in electronic components, which represent over 50 per cent of all South-South ICT goods exports. But trade in the other sectors is growing at a slightly higher rate, particularly in telecommunications equipment (with a 9 per cent annual average growth rate for 2000–2003). Trade among SEE and CIS economies is most significant in the "other ICT goods" categories, while trade of computer and related components has experienced the highest compound annual growth rate during this period (25 per cent).

C. Measuring ICT in developing countries

The previous part of this chapter clearly reflects the limited availability of internationally comparable data on ICTs, in particular on the use and impact of ICTs in developing countries. This severely restricts an empirical analysis of the trends and impact of ICTs in the context of the information economy. At the same time, as ICTs become key elements of national development strategies, policymakers have an increasing need for reliable data and indicators on the information society (UNCTAD, 2003a). Such data help formulate strategies for ICT-driven growth and monitor and evaluate economic and social developments related to ICTs; they also help companies take informed business and investment decisions. Being able to measure the information society is thus a precondition for:

- Fine-tuning and assessing ICT policies and strategies;
- Monitoring the digital divide;
- Evaluating and benchmarking information society developments; and
- Documenting the impact of the information society on the implementation of internationally agreed development goals and measuring progress in the use of ICTs to achieve those goals.

The lack of comparable data not only hampers the ability of policymakers and business people to take strategic decisions, but also makes it difficult to carry out meaningful macroeconomic analyses of the impact of ICTs on economic growth, trade, investment and employment. Current research is limited to the use of data on basic ICT infrastructure, such as the number of telephone lines, PCs or Internet hosts available in countries. However, cross-sectoral studies on the economic impact of ICTs would require statistical data such as firm-level data on investments in, and use of, ICTs; the enabling resources that have led to the effective use of ICTs; the performance of these enterprises; the cost of ICTs; productivity growth in the ICT-producing sector; changes in the patterns of occupations and skill requirements demanded of the

labour force; and general data on the shifts of employment patterns related to changes in production processes.

This section sheds further light on the process of improving data on the information society and particularly on the adoption of ICTs by enterprises. It first presents work currently undertaken at the global level and its link to the WSIS process. It then provides an overview of the status of the collection of official ICT business statistics in developing countries based on the results of a metadata survey carried out with all developing countries in the second half of 2004. A few country examples follow, demonstrating how ICT statistics have been successfully linked to national ICT policymaking.

1. Global e-measurement initiatives

The striking absence of comparable data on ICTs in developing countries, and the resulting difficulties in carrying out meaningful assessments of the information society and its impact on development, have prompted a number of stakeholders at national, regional and international levels to take action in this regard. At the national level, an increasing number of offices responsible for producing statistical data have started to incorporate basic questions on ICTs into their national data collections or have carried out new ICT-specific surveys. An assessment of the current availability of ICT data in developing countries will be provided below (section C.3).

At the regional and international levels, several organizations involved in ICT-related research and policymaking, including e-measurement, started to cooperate, recognizing that coordination of their work was indispensable for reaching global harmonization of ICT indicators. Today, the global "Partnership on Measuring ICT for Development" is widely recognized as playing a leading role in this process. Current partners include Eurostat, the ITU, OECD, UNCTAD, UNESCO Institute for Statistics, four UN Regional Commissions (ECA, ECLAC, ESCAP, ESCWA), the UN ICT Task Force and the World Bank. The Partnership provides an open framework for coordinating ongoing and future activities in the area of information society measurements, and for developing a coherent and structured approach to advancing the development of ICT indicators globally, and in particular in the developing countries. National statistics offices from statistically advanced countries are invited to contribute to the Partnership's activities and provide expertise and advice to NSOs from developing countries, as well as to transfer knowledge in areas such as methodologies and survey programmes.

The Partnership, which was officially launched on the occasion of UNCTAD XI, held in Brazil in June 2004, has three main objectives:

- To achieve a common set of core ICT indicators, to be harmonized and agreed upon internationally, which will constitute the basis for a database on ICT statistics;
- To enhance the capacities of NSOs in developing countries to develop their compilation of statistics on the information society on the basis of internationally agreed upon indicators;
- To develop a global database on ICT indicators and to make it available on the Internet.

Since its launch, the following activities have been carried out under the umbrella of the Partnership:

(a) A global stocktaking exercise to examine the current and future availability of official information society statistics and indicators in all countries (see section C.3).

(b) A series of regional workshops to identify priorities for action in the area of ICT indicators and agree on a common set of core indicators at the regional level. Workshops have taken place in Western Asia (Beirut, October 2004 and June 2005), Africa (Gaborone, October 2004, and Addis Ababa, June 2005), and Latin America and the Caribbean (Santiago de Chile, November 2004 and Santo Domingo, October 2005).

(c) The development of a core list of ICT indicators that could be collected by all countries (see section C.2.). The list covers four broad areas of measurement: basic ICT infrastructure and access, ICT access and use by households, ICT use by businesses and the ICT sector and trade in ICT goods. The list was adopted by delegates attending the WSIS Thematic Meeting in Geneva (see next item).

(d) A WSIS Thematic Meeting on "Measuring the Information Society", held in Geneva from 7 to 9 February 2005. The meeting agreed on a list of core ICT indicators that could be collected by all countries; made suggestions on how the production of ICT statistics in developing countries could be enhanced through effective capacity-building measures; and stressed the need to formalize the link

Box 1.2

Measuring the Information Society and the WSIS

The WSIS Plan of Action (para. 28), which was adopted by delegates at the Geneva Summit in December 2003, calls for action to develop comparable ICT indicators:

"A realistic international performance evaluation and benchmarking (both qualitative and quantitative), through comparable statistical indicators and research results, should be developed to follow up the implementation of the objectives, goals and targets in the Plan of Action, taking into account different national circumstances.

... All countries and regions should develop tools so as to provide statistical information on the Information Society, with basic indicators and analysis of its key dimensions. Priority should be given to setting up coherent and internationally comparable indicator systems, taking into account different levels of development."

During the Tunis phase of the Summit, further progress was made at both the political and the substantive level:

- The WSIS Thematic Meeting on Measuring the Information Society (Geneva, 7–9 February 2005) adopted a core set of ICT indicators that could be collected by all countries. The outcome of the meeting was reported to the WSIS PrepCom2 as a concrete input into the Tunis Phase of the Summit.

- Several regional WSIS conferences addressed the subject of ICT indicators: the WSIS Africa Regional Preparatory Conference (Accra, 31 January – 1 February 2005); the Pan-Arab regional conference WSIS-Phase II (Cairo, 8–10 May 2005); and the Regional Preparatory Ministerial Conference of Latin America and the Caribbean for WSIS II (Rio de Janeiro, 8–10 June 2005), together with its regional action plan, eLAC 2007.

The subject of ICT indicators thus became an accepted element of the WSIS process and its follow-up. At the time of finalizing this report, the draft text of the final Tunis document makes reference to the subject of indicators calling for a continuation of the work of the Partnership.

[1] The document, WSIS-II/PC-2/DOC/3-E, is available at http://www.itu.int/wsis/docs2/pc2/

between ICT and the development agenda, notably regarding measurement of the achievement of the internationally agreed development goals, including those contained in the Millennium Declaration.

In addition, a WSIS parallel event on measuring the information society will be held in Tunis on 15 November 2005. The event will bring together ICT policymakers, statistical offices and telecom regulators to discuss the need for internationally comparable data on ICT access, use and impact, share best practices in ICT measurement and examine some of the policy issues impeding effective measurement of the information society. Thematic sessions will be held on related policy issues such as measuring the impact of ICT on progress towards the achievement of international development goals.

As a result of the initiatives taken by the different stakeholders, discussions in international forums such as the WSIS started to pay increasing attention to the measurement of the information society (box 1.2). This was reinforced by pressure from the international development community for empirical evidence about the impact of ICTs on development, in particular on pro-poor growth, and the contribution of ICTs to the progress made towards the achievement of the MDGs.

2. Towards a core list of ICT indicators

As indicated in the previous section, comparable statistical indicators should contribute to the follow-up and implementation of the WSIS Geneva Plan of Action and to monitoring progress in bridging the digital divide. But most importantly, a list of core ICT indicators should help countries to carry out their collection of ICT data so that results are internationally comparable, to understand their development path into the information society, and to design ICT for development policies. Within the framework of the Partnership on Measuring ICT for Development,

Box 1.3

Core ICT business indicators

The core list of ICT indicators contains 12 business indicators:

Basic core

- Proportion of businesses using computers;
- Proportion of employees using computers;
- Proportion of businesses using the Internet;
- Proportion of employees using the Internet;
- Proportion of businesses with a website (or web presence where the business has control over the content)
- Proportion of businesses with an intranet;
- Proportion of businesses receiving orders over the Internet;
- Proportion of businesses placing orders over the Internet.

Extended core

- Proportion of businesses accessing the Internet by modes of access (response categories);
- Proportion of businesses with a local area network (LAN);
- Proportion of businesses with an extranet;
- Proportion of businesses using the Internet by type of activity (response categories).

These indicators cover basic, policy-relevant information on the use of ICTs in enterprises. They are well defined, reflecting an international consensus on measuring ICT in enterprises; they have been tested for several years and are easy to collect; and there are model questions available that can be used in national surveys. Most importantly, however, from a policy perspective, the core list contains basic use indicators, such as the kind of activities enterprises carry out over the Internet. Most developing countries that have collected ICT business indicators thus far have mainly asked questions about whether a company has computers, Internet access or a website. Little information has been collected about what companies actually do on the Internet. The core list provides useful guidance on the type of information that could be collected in this regard, and in a way that makes the results be comparable internationally.

much progress has been made during the past year in establishing such a core list; indeed, this has been one of the three key objectives of the Partnership.

Following a broad consultation process involving the Partners and NSOs, a proposal for a core list of indicators was prepared as an input to the WSIS Thematic Meeting on Measuring the Information Society, held in Geneva from 7 to 9 February 2005.[25] It contained four sets of indicators: basic ICT infrastructure indicators, ICT access and use by households and individuals, ICT use by enterprises, and the ICT sector (see table 1.25 and box 1.3). The list of core indicators was accepted as an agreed outcome of the meeting and is contained in annex IV of this chapter.

Table 1.25

Number of core indicators by classification

Set of indicators	Basic core	Extended core	Reference	Total
ICT infrastructure and access	10	2		12
ICT access and use by households and individuals	10	3	1	14
ICT use by businesses	8	4		12
ICT sector	4			4
Total	32	9	1	42

Source: Partnership on Measuring ICT for Development (2005a).

The selection of indicators reflects the key actors in the information society (individuals, households and enterprises). Most importantly, however, it reflects an emerging consensus on definitions, guidelines and methodologies regarding individual, household and business ICT indicators, based on the outcome of various national, regional and international initiatives. For example, most of the basic core ICT access indicators are compiled by the ITU; OECD and Eurostat have developed model household and business surveys.[26] Less progress has been made on other ICT-related indicators, such as government or health. The latter will thus be dealt with at a later stage.

Future work on the list of core ICT indicators can address issues such as characteristics of Internet users (gender, language, disability, indigenous status, resident status and geographical location), content language, community access, trade in ICT services, or ICT investment and information security data. Methodological issues regarding definitions of the Internet, intranets, extranets, LANs and websites, and the distinction between fixed and mobile broadband, are currently being added to the list.

The list of core indicators provides useful guidance for countries wishing to start collecting ICT indicators, and constitutes the basis for developing internationally comparable statistics on the information society. There is plenty of scope for further developing the core list, which can be amended or expanded with new policy-relevant statistical indicators as experience is gained. This work has continued throughout 2005 and will be presented at the WSIS Tunis parallel event organized by the Partnership.

Not all countries are at the same level of development or have well-developed statistical systems. Countries with little or no ICT infrastructure may not see the need to collect ICT indicators. Countries with growing investment in ICT may want to monitor this growth by starting to measure ICT; these countries may want only to collect the most basic information, while others, with higher levels of ICT investment, may want to go further. To give further guidance to the different collection efforts by countries, a distinction was made between "basic core" indicators (for countries in the initial stages of ICT data collection, and covering mainly basic access indicators), and "extended core" indicators (for countries with more advanced ICT data collection, with some basic use indicators added).

In addition, developing countries will always have to respond to national policy needs, which may be only partially covered by the core list, and might choose to supplement this core list with additional indicators. In particular, the discussions held in 2004 and 2005 in various forums point to a marked interest in developing ICT indicators related to education, government, health or agriculture. Unlike in the case of the indicators that are already in the core list, which have been well defined and repeatedly tested and for which there is a critical mass level of consensus, the development of ICT indicators in the areas mentioned before is an ongoing process that still requires further widespread consultation and consideration. The indicators have to be adequately defined so that they can be truly measurable and useful. ICT indicators in these additional areas will become readily available only at a later stage, most likely in the medium term.

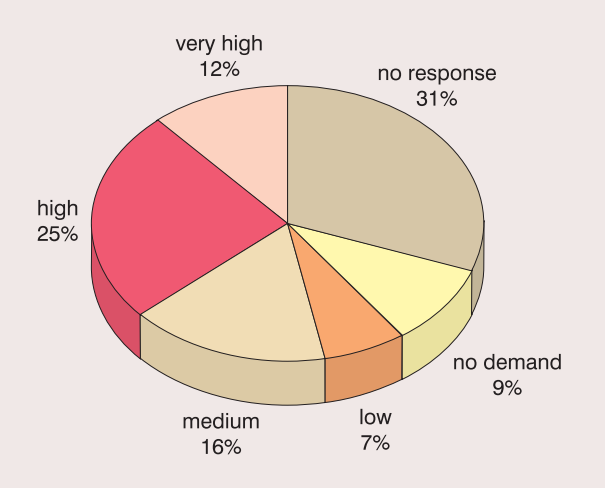
3. Status of ICT business indicators in developing countries

This chapter is primarily concerned with the use of ICTs by enterprises in developing countries. Therefore, efforts to enhance the availability of relevant data need to start with an assessment of current data collection concerning ICT business indicators. This section presents a summary of the results of a survey on the status of ICT indicators in developing countries, focusing on ICT business indicators.[27] They highlight differences among regions in the developing world and underline the best performers and the regions that are most active in the planning of future data collection, as well as the gaps in the availability of ICT-related statistics.[28] The questionnaire was sent to 179 countries in Africa, Asia-Pacific, Central Asia and Central and Eastern Europe, Latin America and the Caribbean, and Western Asia. Of those countries, 85 returned the questionnaire, a response rate of 47 per cent.

NSOs were asked to indicate, on the basis of their institution's perspective, the level of demand for collecting ICT business indicators (see chart 1.19). Excluding the countries that did not respond to this question, the median value of all replies is "high" demand, with 37 per cent (31 countries) answering either "very high" or "high". The NSOs in the 26 countries that did not respond to this question were probably unable to answer because the issue has not been addressed or discussed at the policy level.

Chart 1.19

Global level of demand of ICT business indicators



Source: Partnership on Measuring ICT for Development (2005 b).

The key part of the questionnaire was a list of 20 indicators concerning access to and use of ICTs in enterprises. Respondents were asked whether the individual indicators are currently available from official statistical sources, whether they intend to produce them in the next year or three years, or whether they are not planning to do so.

Table 1.26 shows the number of countries that collect each indicator across regions. OECD member countries are added as a comparison.[29] Table 1.27 shows the number of countries that already collect, plan to collect or do not plan to collect ICT business indicators (65 out of 179 respondents replied to this question), for both developing countries/CEE and OECD countries.

The results show that, overall, data and official statistics on ICT in enterprises are still limited in most developing countries. However, 65 countries (59 per cent of respondents) do collect some type of ICT business indicator. Most of these are indicators related to basic access to ICTs (such as presence of telephones, computers and the Internet). The information is frequently collected through manufacturing and services establishment surveys, which most NSOs already have in place. All regions, except Western Asia, also collect a limited number of more advanced ICT access and use indicators (such as presence of website, local network and modes of Internet access). This area of statistics is frequently surveyed through specific ICT business surveys.

Indicators referring to the type of Internet activities and e-commerce are collected by a small portion of NSOs across all regions (excluding Western Asia) (average of 12 countries). The least collected indicators are those on customer groups or destination of Internet sales (8 per cent), barriers to e-commerce (9 per cent) and geographical location of sales (6 per cent). These types of indicators are produced through more specific surveys aimed at collecting information about ICTs in particular. Therefore, it is mainly the countries that have specific "ICT in business" surveys that can provide information on these indicators. However, it was also noted that "ICT in business" surveys tend not to be carried out on a regular basis, unlike the other types of surveys. Indicators on barriers to ICTs are rarely collected through surveys that are not explicitly aimed at investigating ICT use in enterprises.

In the OECD countries, ICT data collection is considerably more advanced and the planning process largely completed (see low figures in "planning" column, table 1.27). Most countries have been collecting a large number of ICT-in-enterprise statistics for the past few years. This is largely the result of the work of the OECD Working Party on Indicators for the Information Society (WPIIS), a group that has met since 1997 and is composed of representatives from NSOs of OECD member countries.

Observations can also be made concerning the regional distribution of the responses. In Africa, Asia-Pacific and Central Asia, and CEE, each indicator is collected, although not by all countries. Asia-Pacific and Central Asia, and CEE, are the regions that have the highest number of countries collecting ICT business indicators. In these regions the level of demand for ICT-related business statistics is on average high, and NSOs respond effectively to this demand. In Latin America and the Caribbean, each indicator except "geographical location of sales" is collected, although not by all countries. In Western Asia, six indicators out of 20 ("basic access to ICT" indicators and indicator 12 on "services the Internet is used for") are collected; nevertheless, this is also the region where the highest percentage of countries plans to collect business indicators within one or three years.

Table 1.26

Number of countries collecting each indicator by region

Indicator	Africa (12/53)	Asia-Pacific (11/53)	Central Asia and CEE (17/24)	Latin America and the Caribbean (18/36)	Western Asia (9/13)	Total developing/ CEE (65/179)	OECD (28/30)
Fixed telephone	9	9	10	8	4	40	1
Mobile devices	5	9	11	8	1	34	3
Computer	6	7	6	7	2	28	25
Number of computer	6	6	6	3	1	22	1
Internet	6	9	11	11	1	38	25
Type of Internet access	5	5	6	4	0	20	24
Local network	4	5	5	5	0	19	23
Website	7	5	5	9	0	26	25
ICT Investment	5	5	6	2	0	18	5
Share of PC	3	4	7	2	0	16	22
Share of Internet	1	3	5	2	0	11	22
Services the Internet is used for	2	5	4	4	1	16	22
Value of purchases	4	1	3	3	0	11	17
Value of sales	4	1	3	5	0	13	24
Customer group	2	1	2	2	0	7	20
ICT training	4	1	1	4	0	10	18
Barriers to PC	4	4	2	1	0	11	0
Barriers to Internet	3	4	3	1	0	11	1
Barriers to e-commerce	2	2	2	2	0	8	21
Geographical location	1	1	3	0	0	5	17

Source: Partnership on Measuring ICT for Development (2005 b).

In Africa, where 13 countries out of the 19 respondents are LDCs, few NSOs collect ICT indicators and many have no defined plans to collect most of them in the near future. However, since the indicated demand for this region is on average high, it can be assumed that the collection of ICT business statistics is on the agenda but will be implemented over a period longer than three years. These countries are likely to be in particular need of capacity building and training at the national level. In particular, NSOs in developing countries that have limited or no experience in data collection would benefit from technical assistance in the establishment of such collection (or in the inclusion of ICT statistics in existing mechanisms), as well as in collecting information society statistics more broadly. This will be further addressed in section D.

4. ICT policymaking and ICT measurement

This section will give examples of developing countries that are actively collecting data and statistics and have used such data for ICT policy design, evaluation, monitoring and benchmarking. Observations will then be made on what these examples show about the relationship between ICT data collection and policymaking, making the case for enhanced ICT statistics, particularly for business. The selection of countries was made based on the results of the global ICT

Table 1.27

Number of countries planning to collect each indicator

Indicator	Collecting		Planning to collect		No plan to collect	
	Non-OECD	OECD	Non-OECD	OECD	Non-OECD	OECD
Fixed telephone	40	1	9	0	16	27
Mobile devices	34	3	11	1	18	24
Computer	28	25	11	2	20	1
Number of computer	22	1	14	1	25	26
Internet	38	25	10	2	16	0
Type of Internet access	20	24	12	3	28	0
Local network	19	23	15	1	28	3
Website	26	25	13	2	25	0
ICT Investment	18	5	14	0	29	23
Share of PC	16	22	18	2	27	4
Share of Internet	11	22	21	2	29	4
Services the Internet is used for	16	22	19	3	27	2
Value of purchases	11	17	15	8	35	2
Value of sales	13	24	15	4	33	0
Customer group	7	20	15	5	37	3
ICT training	10	18	18	5	32	5
Barriers to PC	11	0	18	0	31	28
Barriers to Internet	11	1	19	1	31	26
Barriers to e-commerce	8	21	19	2	32	5
Geographical location	5	17	16	7	38	4

Source: Partnership on Measuring ICT for Development (2005 b).

statistics stocktaking and the availability of complementary background material.

The case of Trinidad and Tobago

The national ICT agenda of Trinidad and Tobago aims to make the country into a knowledge-based society by 2008 and is part of the country's overall development agenda to transform the country into a developed nation by the year 2020.[31] The national ICT plan is led by the Ministry of Public Administration and Information and seeks to "spur the next wave of social and economic development" through national ICT planning, of which one programme is focused on e-commerce/e-business development. Phase 2 of the plan (Research and Mapping Current Capabilities) explicitly contemplated the production of national statistics to support ICT planning, which was done with the 2003 National Survey of E-Commerce Usage and Awareness among Businesses.

The results of the above-mentioned survey served to provide a baseline snapshot of the situation of ICTs in the country at the start of the implementation of its ICT agenda.[32] The survey was conducted on the basis of a register of businesses listed by the Central Statistical Office.[33] Although several business sectors were represented, approximately half of the respondents were under the national classification of "Distribution, restaurants and bars".[34] At least half of the respondents were also microenterprises (under 10 employees). The results showed that although most businesses have computers and Internet access through the telephone (87 per cent), only the major industries have had the wherewithal to invest in the

switch to broadband, dedicated data lines and business automation. B2C is underdeveloped and websites lack functionality for online sales, since only a very small percentage of potential clients are currently using the Internet (only 9 per cent of regular Internet users). B2B and other applications of e-business are almost non-existent, most companies using the Internet for e-mail and basic web presence.[35] Employee use of ICTs in enterprises is also limited, since computers are shared and there are few work e-mail addresses.

In addition, it is interesting to note that Trinidad and Tobago has also used ICT indicators to conduct some benchmarking of its own, including with two of the countries highlighted in this section: Mauritius and Singapore (Ministry of Public Administration and Information of Trinidad and Tobago, 2003a). They were chosen among others because they were small island nations with a similar population, albeit with different income levels. The benchmarking was comprehensive and covered several aspects of the information society, from basic infrastructure to e-government. On e-business (referred to as economy and finance in the study), the benchmarking indicated that although national enterprises have been slow to adopt websites, for example, this seemed to be consistent with the other developing countries in the study (Costa Rica, Jamaica and Mauritius). Trinidad and Tobago also recognized low levels of B2B or B2C e-commerce applications, on a par with Mauritius. This was despite the apparent pervasiveness of e-payment systems (in this context, the study compared its survey results with the rankings of the Global Information Technology Report).

ICT data collection and the benchmarking study allowed Trinidad and Tobago to identify the building blocks for its ICT development (high GNP per capita for a country in this geographical region, strong use of fixed line and cellular telephone service, high quality of public schools, high availability of venture capital, adequate overall infrastructure quality) and the weaknesses on which work is needed (low general Internet use, mirrored by low availability of business and government online services; no definitive bandwidth policy; telecommunications sector characterized by poor access, bandwidth and affordability; a high incidence of IT brain drain). As Trinidad and Tobago's national ICT plan unfolds, the Ministry of Public Administration and Information Communications has recognized that ongoing measures to track development progress must be implemented, and regularly updated. This will require coordination between the competent ministry and the Central Statistical Office to conduct regular surveys, using the initial e-readiness study as reference. Certainly, a follow-up survey should be conducted in 2008, the target date for the Fast Forward Agenda.

The case of Singapore

The Infocomm Development Authority of Singapore (IDA) has been the competent authority for the development of Singapore's information economy since 1999, operating under the Ministry of Information, Communications and The Arts (MICA) for the implementation of the national ICT plan, "Connected Singapore". IDA has a comprehensive mandate to oversee everything from the development of Singapore's ICT industry to its e-government. Since 1996, the Government of Singapore has had a very clear policy thrust for the development of e-commerce.[36] In terms of e-business, IDA aims to create an environment conducive to its development, focused on the legal and policy framework, infrastructure and building businesses' capabilities.

The Singapore Department of Statistics (DOS) and IDA are the main government agencies responsible for the compilation of ICT-related statistics in Singapore.[37] The DOS compiles and publishes ICT-related data from existing nationwide and economy-wide business and household surveys, while data on e-commerce and ICT use in businesses are periodically collected as part of IDA's mandate.

The combined results of the multiple surveys thus far clearly show that Singapore is well advanced in the information economy. The last survey on ICT use by businesses showed that access to basic ICT infrastructure could be reaching saturation point at about 83 per cent penetration, but that there is dynamism in the adoption of new technologies (narrowband to broadband, wireless) and applications (web-based services), in particular those aimed at increasing productivity and business relationships (IDA, 2002a and 2003b). Regarding the use of ICT by employees, another survey indicated that about 13 per cent of working Singapore residents were telecommuters, and that the more frequently used broadband Internet applications used by these telecommuters for business purposes were e-mail (99 per cent), access to their enterprises' Virtual Private Networks (21 per cent), videoconferencing (16 per cent) and telephony (13 per cent) (IDA, 2002a).

It should be noted that Singapore has consistently used its ICT data collection exercises as opportunities to obtain inputs from individual and corporate stakeholders to guide future policy actions, including on barriers to e-commerce (cost of systems implementation, lack of awareness, security concerns), perceived benefits of ICT (enhanced productivity, flexibility, reduced costs) and opportunities for government-led action (skills development, financial grants for ICT implementation). For example, the 2002 survey on broadband and wireless use asked about the perceived benefits of telecommuting through broadband Internet, namely increased flexibility, reduction of travel time and cost, increased productivity with less distraction, better balance between "work and play", and extended employment opportunities for people with disabilities. Such perceptions play a determining role in the ongoing adoption of such practices by enterprises and the implementation of policy actions to encourage it.

In terms of benchmarking, Singapore's policy measures and data clearly show the country to be the leader in ICT uptake and use by most stakeholders, both in the Asian region and worldwide. Singapore is repeatedly at the top of the various ICT indices and rankings, which are used as leverage for the development of its ICT industry through foreign investments and public–private partnerships. In the case of Singapore there is a virtuous circle between positive benchmarking and advancing ICT policy objectives and actions, the Government feeling compelled to preserve its leading position (IDA, 2003c). In this sense, Singapore is proactively involved in regional efforts to develop the information economy, both to develop the regional market for ICT goods and services (see section C.3) and to become a regional hub for e-business. Benchmarking has highlighted Singapore's example for other developing countries that are developing their information economies, in particular with regard to policy formulation and follow-up, of which statistical data are an integral part for diagnosis, monitoring and evaluation.

Singapore's increasingly significant investments in developing its information economy will require continued and expanded ICT business data collection. For example, in the case of a large project to develop ICT-enabled integrated supply chains for high-tech manufacturing,[38] future collection of data on use of e-business applications will show progress in the adoption of such supply chains. ICT sector indicators should also be used to evaluate the impact of such a project, in particular regarding value added. Periodical data on Internet modes of access should indicate progress in the adoption of wireless, broadband and other technologies that have an impact on enterprise productivity, particularly in developing B2B e-commerce.

The building of stakeholder confidence and trust in e-commerce and e-business was a main goal of Singapore's policy to develop the adoption of e-commerce (IDA, 2001).[39] Indicators on ICT uptake and use, in particular Internet use by households, individuals and businesses, can serve to show the progress in adoption of, and thus of confidence in, e-commerce and e-business. Business ICT data should also serve to evaluate the effectiveness of extensive efforts by IDA in developing capabilities for e-businesses. Current data collected by Singapore reflect workforce proficiency in ICT, but not the frequency or intensity of such use, or the proportion of employees in an enterprise that will use ICTs on a regular basis.[40]

The case of Mauritius

Mauritius has had a strong national IT strategic plan in place since 1998, modelled on Singapore's ICT policy. The National Computer Board (NCB) and the Ministry of Information Technology and Telecommunications are the competent authorities in charge of its implementation, which includes the liberalization of telecommunications, the diffusion of ICT in the workforce and e-government. To support its mandate, the NCB has an ongoing project for data collection and analysis, mostly focused on the ICT sector. Chapter 5 of the *E-Commerce and Development Report 2003*, which dealt with business process outsourcing services for development, examined Mauritius' plan to become a "cyber island" and a regional ICT hub, including through the Ebene Cyber City project.[41]

A reduced survey in 2001 (300 businesses with more than 10 employees) indicated that 83 per cent of businesses had at least one computer and 75 per cent had Internet access (National Computer Board of Mauritius, 2001). However, this result is affected by the fact that it excluded microenterprises, nearly half of the sample was made up of services industries and more than half had a turnover of almost $700,000, which is not insignificant in Mauritius' economy. The Census of Economic Activities in 2002 (excluding agricultural enterprises) indicated a nationwide proportion of businesses' Internet access of only 4.9 per cent. Nonetheless, it is precisely on the high-use enterprise

sector that Mauritius is concentrating its ICT policies (including manufacturing, wholesale and retail trade, hotels and restaurants, transport, storage and communication, and banking and finance).

Owing to the size of the country, Mauritius' internal ICT market is very small and businesses must look to external markets for significant growth and economies of scale that would justify ICT investments. In May 2005 there were 78 ICT companies in Mauritius, employing approximately 3,500 people, with several projected new arrivals. This does not mean that attention is not being paid to the overall diffusion of ICTs in Mauritius, since broader diffusion of ICTs, including through e-government, would reduce the cost of connectivity.[42] Local diffusion is particularly important for the development of a local ICT workforce to benefit from ICT sector growth and to use ICTs to develop other service-based industries, such as tourism (see chapter 4 on e-tourism).

Since the IT household surveys (1998, 2000 and 2002) have enabled Mauritius to track progress in household access to and use of ICTs, it would seem obvious that the country should ensure that periodic ICT surveys are also carried out in the business sector. Mauritius has already taken a step in the right direction, the NCB having issued in 2004-2005 an invitation to tender for conducting an assessment of ICT indicators aimed at evaluating the use of ICTs in key economic sectors in Mauritius and serving as an input for the elaboration of specific ICT policies. The projected assessment includes an ICT use survey in businesses that will update the 2001 information and will measure (by sector) the computerization level, ICT use, investment and spending, infrastructure, human resource profile and the extent of e-commerce adoption. The assessment should also include a benchmarking exercise based on ITU's Digital Access Index, which is partly based on the core indicators discussed in this chapter (National Computer Board of Mauritius, 2002).[43]

The case of Colombia

Colombia's Connectivity Agenda is led by the Ministry of Communications and aims at the diffusion of ICTs as a catalyst for economic and social development. The Agenda is geared towards citizens, enterprises and public administration. In the case of enterprises, ICTs are to be encouraged to support growth and competitiveness, improve market access for the productive sector and promote job creation. For these purposes, ICT policy includes the development of electronic commerce, the promotion of the ICT sector and the use of e-business by SMEs (62 per cent of GDP and 31 per cent of exports).[44]

In 2001, Colombia's NSO conducted a survey-cum-model for the measurement of ICTs that was the result of an agreement with the Ministry of Communications; it aimed to provide a diagnosis of the status of the information society in Colombia that would be the basis for future work on ICT (including information gathering) (Departamento Administrativo Nacional de Estadística, 2003). Regarding the productive sector, the survey focused on manufacturing, trade, services and microenterprises. It yielded some interesting findings, such as that in terms of e-business, manufacturing makes extensive use of management software (83.1 per cent), but not of production software (19.6 per cent). In terms of e-commerce, in the trade sector there was extensive use of websites for marketing products (81.1 per cent), but not for order processing (10.3 per cent), online payments (1.1 per cent) or secure transactions (3.2 per cent). Also, there were low percentages of ICT-trained personnel in all sectors (from 2.1 per cent in microenterprises to 11 per cent in manufacturing).

In 2005, Colombia conducted a benchmarking exercise that took into consideration several international indices and rankings, and compared the country's performance with that of developed countries and countries in the region.[45] Despite the recognition that the indices were not comparable the one with the other or from one year to the other, the benchmarking served to identify desirable goals with respect to certain indicators, such as increasing broadband and Internet user rates, and to the policies that influence them, such as liberalization of the telecommunications sector. The benchmarking also identified positive developments, such as the increase in local websites and e-government services, which triggered an increase in Colombia's ranking in the e-government readiness index of the UN Department of Economic and Social Affairs (UNDESA).

Although Colombia's survey on ICT use was released at the end of 2003, the reference year is 2001 and the information is thus somewhat dated. In view of the Government's programme to promote ICTs among SMEs, expected developments in the spread of broadband and the elaboration of a strategy to develop a software industry,[46] the Connectivity Agenda will be well served by an updated survey on ICT use by businesses in the short to medium term.

At the same time, the survey should provide a more in-depth analysis of the reasons for any progress or deterioration in the indicators and assist the competent authority for the Connectivity Agenda in formulating the actions to address those findings.

Observations

Some observations can be made taking into account the experience of the above-mentioned countries, as well as others surveyed for this report.

- Since ICT data collection in developing countries, particularly data on business, is nascent, the data are being used mainly for diagnosis of the status of the information society/information economy of a country.

- There is an increased interest on the part of several developing countries in international benchmarking. Benchmarking can highlight exceptional cases such as Singapore, which incidentally takes advantage of benchmarking to attract ICT investments. Developing countries that are less digitally advanced can also draw lessons from such exceptions, particularly on the thoroughness of ICT policy planning and implementation, and on the use of updated data for regular assessment of progress in ICT uptake.

- As data from initial or one-time surveys age there is a growing interest in updating collections. There appears to be increased awareness of the need for periodic data collection for the monitoring and evaluation of policies, and cross-verification of international rankings. The WSIS and the MDGs have increased awareness and the political will of countries to develop their information society policies, including data collection to support those policies.

- Data collection still remains largely focused on infrastructure and household and individual access. The availability of business ICT indicators from developing countries could and should be increased, in a manner that can be comparable internationally. Just as household and individual indicators serve as measures of a country's progress in the information society, so business indicators will indicate a country's progress in the information economy.

- It is worthwhile further exploring the extent to which the collection, or lack thereof, of certain ICT business statistics is related to the level of demand in countries, and to what extent it is related to the level of resources available to NSOs. The type of data collected officially by countries may also respond to the real or perceived usefulness of such data to policymakers. For example, countries with explicit ICT-related development policies or with active ICT sectors would need more specific indicators for policy evaluation or benchmarking. Of course, the comparability of such indicators should also be considered in order to make them relevant to a benchmarking exercise.

- Coordination between national statistical offices and ICT-related competent national authorities (ministries of communication, education, finance, science and technology, trade, etc.) is essential to the ability to collect, disseminate, and meaningfully use ICT statistical data. This should include awareness creation and a transparent arrangement for information sharing, coordinated work for the inclusion of ICT questions in censuses, identification of samples, statistical capacity building and sharing of logistical resources. To this end, several countries have established high-level task forces or coordination bodies that monitor the implementation of ICT policies, for which indicators are needed. Coordination will also involve the private sector, which is determinant in ICT investments, business adoption of ICTs and the development of the ICT sector.

- Although a coordinating body with a strong mandate and sufficient resources can perform effective data collection, such as IDA in Singapore, it is important that NSOs and relevant sector ministries as the main source of official statistics in a country be the main players in both data collection and analysis. This ensures that data are mainstreamed as a policymaking tool.

D. The road ahead

Analysing trends in the spread of the information economy in developing countries is a challenging task. Data are scarce, not always comparable, and not yet at the level of detail necessary for measuring the impact of ICTs on economic development and growth. The overview of basic developments in ICT access and

use presented in the first part of this chapter showed that while rates of growth of basic access to ICTs are high in most developing countries, more advanced use of ICTs for business activities such as enhanced customer services or supply chain management is nascent. At the same time, the impressive growth in the numbers of cellular subscribers in many developing countries could generate additional business opportunities in some of the poorest countries.

While there are clear deficits of comparable ICT-related data, in particular data on the adoption of ICT by enterprises, there are also clear signs that an increasing number of developing countries pay attention to the development of ICT statistics, recognizing the need to monitor their information societies and take informed decisions concerning ICT policies for development. The country examples in the previous section demonstrated how ICT measurement can contribute effectively to improving the national ICT policy agenda.

In order to make further progress in this work the following suggestions for policy action are provided.

1. Policy commitment and coordination

The development of comparable data, and the creation of the necessary statistical tools, constitute a long-term process. Therefore, even countries with relatively less advanced information societies should start the process early in order to have some initial data in the medium term.

In many countries, there is still an important need for awareness building both at the political and technical level. In some cases, ICT-driven ministries are keen on having the data, while statistical offices are slow to react. In other cases, statistical offices are aware of ICT measurement issues but lack the resources and related political mandates to further develop the necessary programmes. Hence, there is a need to link the national policy agenda with the e-measurement agenda, and this requires effective cooperation between policymakers and national statistical systems.

As at the national level, it is essential to establish the link between ICT policymaking and ICT measurement in international forums dealing with the information society. Follow-up to and review of the WSIS process will require the continuous monitoring of the progress of information society developments, in particular in developing countries. This will require all countries to develop comparable statistical indicators, which will become a critical element of the implementation and evaluation of the Geneva Plan of Action.

2. Data collection and capacity-building

Coordination among different entities of national statistical systems involved in the collection and dissemination of statistical data is essential, owing to the cross-cutting nature of ICTs. The "statistical system" is stressed, as not all countries have a centralized statistical office, and statistics may be the responsibility of sector ministries, regulators or special agencies outside the NSO.

The list of core ICT indicators presented in section C.2 provides a basis for starting to collect a small number of ICT statistics, such as statistics on Internet use by businesses or web presence. Countries that lack resources to implement special ICT surveys should follow a pragmatic approach, for example by incorporating a few basic questions into existing surveys.

Building capacity in statistical offices of developing countries will be essential to improving the production of official information society statistics. National Governments, with the support of the international community, are called on to provide the necessary support to relevant statistical offices in designing and implementing ICT statistical compilation programmes. The Partnership on Measuring ICT for Development can play an important role in this regard. During the first phase of the Partnership, much emphasis has been put on establishing a list of core ICT indicators as a starting point for the collection of internationally comparable data on ICT. In the next phase, partners need to put more emphasis on the building of capacity in developing countries' statistical systems, which will include seeking the funds necessary for carrying out such activities.

Capacity-building for ICT statistics should be integrated with existing activities into statistical capacity-building and focus on sustainable systems. Capacity-building and technical assistance programmes should cover areas such as methodologies and definitions, survey implementation and data collection, data verification, database development and analysis.

More specifically, capacity-building activities should aim at:

- Developing specialized training courses on ICT statistics for practitioners from statistical offices in developing countries, including the preparation of guidebooks on core indicators, comprising best practices, model questionnaires and suggestions about methodologies and data collection measures for developing countries;

- Conducting training workshops for local staff involved in the collection of ICT indicators; and for policy-makers and regulators to raise awareness about the importance of indicators for monitoring ICT policies and carrying out impact analysis;

- Assisting NSOs in developing ICT data collection (e.g. defining frameworks, methodologies or survey measures), database development and dissemination;

- Building regional statistical networks for ICT indicators (including the establishment of technical working groups on ICT indicators at the regional level and conducting of technical workshops) to advance the development of information society indicators, to continue discussions on indicators, model questions and survey implementation at the regional level, and to ensure the harmonization of ICT data and statistics across countries in the region;

- Developing common approaches to the collection of ICT data and statistics and the harmonization of the work on ICT indicators at the global level, so as to increase comparability between countries and to develop a global database on ICT indicators.

Annex I

Statistical annex

Table 1. Internet users by country/territory, 2000–2004

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Afghanistan	..	..	..	..	1 000	1 900.0	20 000	25.0	25 000
Albania	3 500	185.7	10 000	20.0	12 000	150.0	30 000	..	..
Algeria	150 000	33.3	200 000	150.0	500 000	..	..	..	..
Andorra	7 000	..	..	..	..	..	10 049	..	..
Angola	15 000	33.3	20 000	105.0	41 000	..	..	..	..
Antigua & Barbuda	5 000	40.0	7 000	42.9	10 000	..	..	..	..
Argentina	2 600 000	40.4	3 650 000	12.3	4 100 000	10.5	4 530 000	13.0	5 120 000
Armenia	40 000	25.0	50 000	20.0	60 000	133.3	140 000	7.1	150 000
Aruba	14 000	71.4	24 000	..	..	..	..	..	..
Australia	6 600 000	16.7	7 700 000	36.4	10 500 000	7.6	11 300 000	15.0	13 000 000
Austria	2 700 000	16.7	3 150 000	6.0	3 340 000	11.7	3 730 000	4.6	3 900 000
Azerbaijan	12 000	108.3	25 000	1 100.0	300 000	16.7	350 000	..	..
Bahamas	13 130	28.9	16 923	254.5	60 000	40.0	84 000	10.7	93 000
Bahrain	40 000	150.0	100 000	22.8	122 794	22.2	150 000	1.8	152 721
Bangladesh	100 000	86.0	186 000	9.7	204 000	19.1	243 000	23.5	300 000
Barbados	10 000	50.0	15 000	100.0	30 000	233.3	100 000	..	..
Belarus	187 036	130.0	430 263	87.9	808 481	72.2	1 391 903	..	..
Belgium	3 000 000	6.7	3 200 000	6.3	3 400 000	17.6	4 000 000	5.0	4 200 000
Belize	15 000	20.0	18 000	66.7	30 000	..	..	..	..
Benin	15 000	66.7	25 000	100.0	50 000	40.0	70 000	42.9	100 000
Bermuda	27 000	11.1	30 000	..	..	..	..	..	..
Bhutan	2 250	122.2	5 000	100.0	10 000	50.0	15 000	33.3	20 000
Bolivia	120 000	50.0	180 000	50.0	270 000	14.8	310 000	12.9	350 000
Bosnia and Herzegovina	40 000	12.5	45 000	122.2	100 000	50.0	150 000	..	..
Botswana	25 000	100.0	50 000	20.0	60 000	0.0	60 000	0.0	60 000
Brazil	5 000 000	60.0	8 000 000	78.8	14 300 000	25.9	18 000 000	22.2	22 000 000
Brunei Darussalam	30 000	16.7	35 000	..	..	..	..	..	..
Bulgaria	430 000	40.7	605 000	4.1	630 000	145.3	1 545 143	..	..
Burkina Faso	9 000	111.1	19 000	31.6	25 000	92.0	48 000	10.8	53 200
Burundi	5 000	40.0	7 000	14.3	8 000	75.0	14 000	..	..
Cambodia	6 000	66.7	10 000	200.0	30 000	16.7	35 000	..	..
Cameroon	40 000	12.5	45 000	33.3	60 000	66.7	100 000	..	..
Canada	12 971 000	7.9	14 000 000	8.6	15 200 000	15.8	17 600 000	13.6	20 000 000
Cape Verde	8 000	50.0	12 000	33.3	16 000	25.0	20 000	25.0	25 000
Central African Rep.	2 000	50.0	3 000	66.7	5 000	20.0	6 000	50.0	9 000
Chad	3 000	33.3	4 000	275.0	15 000	100.0	30 000	..	..
Chile	2 537 308	22.3	3 102 200	15.2	3 575 000	11.9	4 000 000	7.5	4 300 000
China	22 500 000	49.8	33 700 000	75.4	59 100 000	34.5	79 500 000	18.2	94 000 000
Colombia	878 000	31.4	1 154 000	73.3	2 000 113	36.6	2 732 201	31.2	3 585 688
Comoros	1 500	66.7	2 500	28.0	3 200	56.3	5 000	..	..

Table 1 *(continued)*

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Congo	0 800	25.0	1 000	400.0	5 000	200.0	15 000	..	..
Costa Rica	228 000	68.4	384 000	108.3	800 000	12.5	900 000	11.1	1 000 000
Côte d'Ivoire	40 000	75.0	70 000	28.6	90 000	166.7	240 000	..	..
Croatia	299 380	73.0	518 000	52.3	789 000	28.5	1 014 000	..	..
Cuba	60 000	100.0	120 000	33.3	160 000	- 38.8	98 000	53.1	150 000
Cyprus	120 000	25.0	150 000	40.0	210 000	19.0	250 000	..	..
Czech Republic	1 000 000	50.0	1 500 000	73.3	2 600 000	19.2	3 100 000	54.8	4 800 000
DR Congo	3 000	100.0	6 000	733.3	50 000	..	..	..	..
Denmark	2 090 000	10.0	2 300 000	19.8	2 756 000	10.1	3 034 000	..	..
Djibouti	1 400	135.7	3 300	36.4	4 500	44.4	6 500	..	..
Dominica	6 000	50.0	9 000	38.9	12 500	..	..	..	..
Dominican Rep.	327 118	21.5	397 333	25.8	500 000	30.0	650 000	23.1	800 000
Ecuador	180 000	85.0	333 000	61.5	537 881	5.9	569 727	9.6	624 579
Egypt	450 000	33.3	600 000	216.7	1 900 000	57.9	3 000 000	30.0	3 900 000
El Salvador	70 000	114.3	150 000	100.0	300 000	83.3	550 000	6.8	587 475
Equatorial Guinea	0 700	28.6	0 900	100.0	1 800	..	..	..	..
Eritrea	5 000	20.0	6 000	50.0	9 000	5.6	9 500	426.3	50 000
Estonia	391 600	9.7	429 656	3.3	444 000	35.1	600 000	11.7	670 000
Ethiopia	10 000	150.0	25 000	100.0	50 000	50.0	75 000	..	..
Faeroe Islands	15 000	33.3	20 000	25.0	25 000	..	..	..	..
Fiji	12 000	25.0	15 000	233.3	50 000	10.0	55 000	..	..
Finland	1 927 000	16.0	2 235 320	18.7	2 654 000	- 3.5	2 560 000	2.3	2 620 000
France	8 460 000	85.0	15 653 000	19.6	18 716 000	17.0	21 900 000	14.2	25 000 000
French Guiana	16 000	25.0	20 000	25.0	25 000	..	..	..	..
French Polynesia	15 000	0.0	15 000	33.3	20 000	75.0	35 000	..	..
Gabon	15 000	13.3	17 000	47.1	25 000	40.0	35 000	14.3	40 000
Gambia	12 000	50.0	18 000	38.9	25 000	..	..	..	..
Georgia	23 000	102.2	46 500	58.1	73 500	59.2	117 020	50.1	175 600
Germany	24 800 000	4.8	26 000 000	7.7	28 000 000	17.9	33 000 000	25.0	41 263 000
Ghana	30 000	33.3	40 000	325.0	170 000	..	..	..	..
Greece	1 000 000	-8.5	915 347	62.3	1 485 281	15.7	1 718 435	13.8	1 955 000
Greenland	17 841	12.1	20 000	25.0	25 000	..	..	..	..
Grenada	4 113	26.4	5 200	188.5	15 000	26.7	19 000	- 57.9	8 000
Guadeloupe	25 000	60.0	40 000	25.0	50 000	..	..	..	..
Guam	25 007	60.0	40 000	25.0	50 000	..	..	..	..
Guatemala	80 000	150.0	200 000	100.0	400 000	..	..	..	..
Guernsey	20 000	25.0	25 000	20.0	30 000	10.0	33 000	..	..
Guinea	8 000	87.5	15 000	133.3	35 000	14.3	40 000	..	..
Guinea-Bissau	3 000	33.3	4 000	250.0	14 000	35.7	19 000	..	..
Guyana	50 000	100.0	100 000	25.0	125 000	12.0	140 000	3.6	145 000
Haiti	20 000	50.0	30 000	166.7	80 000	87.5	150 000	233.3	500 000
Honduras	55 000	63.6	90 000	87.3	168 560	10.1	185 510	19.8	222 273
Hong Kong (China)	1 855 200	40.2	2 601 300	12.2	2 918 800	10.1	3 212 800	8.3	3 479 700
Hungary	715 000	107.0	1 480 000	8.1	1 600 000	50.0	2 400 000	12.5	2 700 000
Iceland	168 000	2.4	172 000	8.5	186 600	4.5	195 000	..	..
India	5 500 000	27.3	7 000 000	136.9	16 580 000	11.5	18 481 044	89.4	35 000 000

Table 1 *(continued)*

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Indonesia	1 900 000	121.1	4 200 000	7.1	4 500 000	79.6	8 080 000	..	..
Iran (Islamic Rep. of)	625 000	60.8	1 005 000	215.2	3 168 000	51.5	4 800 000	..	..
Iraq	..	..	12 500	100.0	25 000	20.0	30 000	..	
Ireland	679 000	31.8	895 000	23.1	1 102 000	14.3	1 260 000	- 20.1	1 006 400
Israel	1 270 000	41.7	1 800 000	11.1	2 000 000	..	..	..	3 200 000
Italy	13 200 000	18.2	15 600 000	27.6	19 900 000	15.0	22 880 000	26.2	28 870 000
Jamaica	80 000	25.0	100 000	500.0	600 000	..	..	..	..
Japan	38 000 000	28.7	48 900 000	17.0	57 200 000	7.7	61 600 000	21.8	75 000 000
Jersey	8 000	..	..	..	..	..	..	..	..
Jordan	127 317	83.8	234 000	31.4	307 469	44.4	444 000	35.1	600 000
Kazakhstan	100 000	50.0	150 000	66.7	250 000	20.0	300 000	33.3	400 000
Kenya	100 000	100.0	200 000	100.0	400 000	150.0	1 000 000	..	..
Kiribati	1 500	33.3	2 000	0.0	2 000	..	..	..	..
Kuwait	150 000	33.3	200 000	25.0	250 000	126.8	567 000	5.8	600 000
Kyrgyzstan	51 600	191.9	150 600	0.9	152 000	31.6	200 000	..	..
Lao PDR	6 000	66.7	10 000	50.0	15 000	26.7	19 000	10.0	20 900
Latvia	150 000	13.3	170 000	82.4	310 000	201.9	936 000	- 13.5	810 000
Lebanon	300 000	-13.3	260 000	53.8	400 000	25.0	500 000	20.0	600 000
Lesotho	4 000	25.0	5 000	320.0	21 000	42.9	30 000	..	..
Liberia	0 500	100.0	1 000	..	..	..	..	..	..
Libyan AJ	10 000	100.0	20 000	525.0	125 000	28.0	160 000	..	..
Lithuania	225 000	11.1	250 000	100.0	500 000	39.1	695 700	..	..
Luxembourg	100 000	60.0	160 000	3.1	165 000	3.0	170 000	..	..
Macao (China)	60 000	68.3	101 000	13.9	115 000	4.3	120 000	25.0	150 000
Madagascar	30 000	16.7	35 000	57.1	55 000	28.2	70 500	..	..
Malawi	15 000	33.3	20 000	35.0	27 000	33.3	36 000	28.2	46 140
Malaysia	4 977 000	27.5	6 346 650	23.5	7 840 640	10.5	8 661 000	14.1	9 878 214
Maldives	6 000	66.7	10 000	50.0	15 000	..	..	..	..
Mali	15 000	33.3	20 000	25.0	25 000	40.0	35 000	42.9	50 000
Malta	51 000	94.1	99 000	21.2	120 000	58.3	190 000	..	..
Marshall Islands	0 800	12.5	0 900	38.9	1 250	12.0	1 400	..	..
Martinique	30 000	33.3	40 000	50.0	60 000	33.3	80 000	..	..
Mauritania	5 000	40.0	7 000	42.9	10 000	20.0	12 000	..	..
Mauritius	87 000	21.8	106 000	17.9	125 000	20.0	150 000	..	..
Mayotte	1 800	..	..	..	..	..	..	..	..
Mexico	5 058 000	46.5	7 410 124	45.3	10 764 715	13.5	12 218 830	14.9	14 036 475
Micronesia	4 000	25.0	5 000	20.0	6 000	66.7	10 000	20.0	12 000
Mongolia	30 000	33.3	40 000	25.0	50 000	185.6	142 800	..	..
Morocco	200 000	100.0	400 000	75.0	700 000	42.9	1 000 000	250.0	3 500 000
Mozambique	20 000	50.0	30 000	66.7	50 000	..	..	..	..
Myanmar	7 000	42.9	10 000	150.0	25 000	12.0	28 002	127.4	63 688
Namibia	30 000	50.0	45 000	11.1	50 000	30.0	65 000	15.4	75 000
Nepal	50 000	20.0	60 000	33.3	80 000	25.0	100 000	75.0	175 000
Netherlands	7 000 000	12.9	7 900 000	3.8	8 200 000	3.7	8 500 000	17.6	10 000 000
New Caledonia	30 000	33.3	40 000	25.0	50 000	20.0	60 000	16.7	70 000
New Zealand	1 515 000	16.3	1 762 000	8.3	1 908 000	10.6	2 110 000	51.7	3 200 000

Table 1 *(continued)*

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Nicaragua	50 000	50.0	75 000	20.0	90 000	11.1	100 000	25.0	125 000
Niger	4 000	200.0	12 000	25.0	15 000	..	..	..	..
Nigeria	80 000	43.8	115 000	265.2	420 000	78.6	750 000	..	..
Norway	1 950 000	-32.3	1 319 400	6.0	1 398 600	13.2	1 583 300	..	..
Oman	90 000	33.3	120 000	50.0	180 000	..	..	..	..
Pakistan	300 000	66.7	500 000	100.0	1 000 000	20.0	1 200 000	66.7	2 000 000
Palestine	35 000	71.4	60 000	75.0	105 000	38.1	145 000	10.3	160 000
Panama	90 000	87.4	168 690	10.2	185 875	39.9	260 000	15.4	300 000
Papua New Guinea	45 000	11.1	50 000	50.0	75 000	..	..	..	..
Paraguay	40 000	50.0	60 000	66.7	100 000	20.0	120 000	25.0	150 000
Peru	800 000	150.0	2 000 000	20.0	2 400 000	18.8	2 850 000	13.0	3 220 000
Philippines	1 540 000	29.9	2 000 000	75.0	3 500 000	..	..	..	..
Poland	2 800 000	35.7	3 800 000	133.7	8 880 000	1.0	8 970 000	0.3	9 000 000
Portugal	1 680 200	10.7	1 860 400	21.9	2 267 200	17.9	2 674 000	10.4	2 951 000
Puerto Rico	400 000	50.0	600 000	12.8	677 000	..	..	..	..
Qatar	30 000	33.3	40 000	75.0	70 000	101.1	140 760	17.2	165 000
Rep. of Korea	19 040 000	28.0	24 380 000	7.8	26 270 000	11.2	29 220 000	8.1	31 580 000
Rep. of Moldova	52 600	14.1	60 000	150.0	150 000	92.0	288 000	41.0	406 000
Réunion	100 000	20.0	120 000	25.0	150 000	20.0	180 000	..	..
Romania	800 000	25.0	1 000 000	120.0	2 200 000	81.8	4 000 000	..	..
Russian Fed.	2 900 000	48.3	4 300 000	39.5	6 000 000	66.7	10 000 000	60.0	16 000 000
Rwanda	5 000	300.0	20 000	25.0	25 000	..	..	..	..
S. Tome & Principe	6 500	38.5	9 000	22.2	11 000	36.4	15 000	..	..
Samoa	1 000	200.0	3 000	33.3	4 000	..	..	..	..
Saudi Arabia	460 000	120.9	1 016 208	39.6	1 418 880	5.7	1 500 000	..	..
Senegal	40 000	150.0	100 000	5.0	105 000	114.3	225 000	..	..
Serbia and Montenegro	400 000	50.0	600 000	6.7	640 000	32.3	847 000	41.7	1 200 000
Seychelles	6 000	50.0	9 000	30.4	11 736	..	..	..	..
Sierra Leone	5 000	40.0	7 000	14.3	8 000	..	..	..	..
Singapore	1 300 000	30.8	1 700 000	23.5	2 100 000	1.7	2 135 034	13.4	2 421 782
Slovakia	507 029	32.9	674 039	28.0	862 833	59.5	1 375 809	65.4	2 276 000
Slovenia	300 000	100.0	600 000	25.0	750 000	6.7	800 000	18.8	950 000
Solomon Islands	2 000	0.0	2 000	10.0	2 200	13.6	2 500	..	..
Somalia	0 500	100.0	1 000	1 400.0	15 000	500.0	90 000	122.2	200 000
South Africa	2 400 000	20.4	2 890 000	7.3	3 100 000	..	..	..	..
Spain	5 486 000	34.7	7 388 000	6.3	7 856 000	24.6	9 789 000	32.8	13 000 000
Sri Lanka	121 500	23.5	150 000	33.3	200 000	25.0	250 000	12.0	280 000
Saint Kitts and Nevis	2 700	33.3	3 600	177.8	10 000	..	..	..	..
Saint Lucia	8 000	62.5	13 000	..	..	..	..	..	..
Saint Vincent	3 500	57.1	5 500	27.3	7 000	0.0	7 000	14.3	8 000
Sudan	30 000	86.7	56 000	50.0	84 000	1 015.5	937 000	21.7	1 140 000
Suriname	11 709	24.0	14 520	37.7	20 000	15.0	23 000	30.4	30 000
Swaziland	10 000	40.0	14 000	42.9	20 000	35.0	27 000	..	..
Sweden	4 048 000	13.6	4 600 000	11.4	5 125 000	10.3	5 655 000	20.2	6 800 000
Switzerland	2 096 000	6.1	2 224 000	14.9	2 556 000	14.1	2 916 000	61.2	4 700 000
Syrian Arab Rep.	30 000	100.0	60 000	508.3	365 000	67.1	610 000	31.1	800 000
Taiwan PC	6 260 000	24.9	7 820 000	37.1	10 720 000	9.5	11 740 000	4.0	12 210 000

Table 1 *(continued)*

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Tajikistan	3 000	6.7	3 200	9.4	3 500	17.7	4 120	..	..
TFYR Macedonia	50 000	40.0	70 000	42.9	100 000	26.0	126 000	..	..
Thailand	2 300 000	53.7	3 536 019	35.7	4 800 000	25.6	6 030 000	15.6	6 970 000
Togo	100 000	50.0	150 000	33.3	200 000	5.0	210 000	..	..
Tonga	2 400	16.7	2 800	3.6	2 900	..	..	..	..
Trinidad & Tobago	100 000	20.0	120 000	15.0	138 000	..	..	..	..
Tunisia	260 000	57.7	410 000	23.3	505 500	24.6	630 000	32.5	835 000
Turkey	2 000 000	75.0	3 500 000	22.9	4 300 000	39.5	6 000 000	70.3	10 220 000
Turkmenistan	6 000	33.3	8 000	..	..	..	20 000	..	..
Uganda	40 000	50.0	60 000	66.7	100 000	25.0	125 000	60.0	200 000
Ukraine	350 000	71.4	600 000	50.0	900 000	177.8	2 500 000	..	..
United Arab Emirates	765 000	27.6	976 000	20.4	1 175 516	16.8	1 373 217	0.8	1 384 837
United Kingdom	15 800 000	25.3	19 800 000	26.3	25 000 000	37.6	34 400 000	9.3	37 600 000
United States	124 000 000	15.2	142 823 000	11.3	159 000 000	1.7	161 632 400	14.5	185 000 000
UR of Tanzania	40 000	50.0	60 000	33.3	80 000	212.5	250 000	..	..
Uruguay	370 000	8.1	400 000	..	..	..	530 000	28.3	680 000
US Virgin Islands	15 000	33.3	20 000	50.0	30 000	..	..	..	..
Uzbekistan	120 000	25.0	150 000	83.3	275 000	78.9	492 000	..	..
Vanuatu	4 000	37.5	5 500	27.3	7 000	7.1	7 500	0.0	7 500
Venezuela	820 022	40.5	1 152 502	10.6	1 274 429	51.8	1 934 791	19.5	2 312 683
Viet Nam	200 000	404.8	1 009 544	48.6	1 500 000	133.3	3 500 000	67.7	5 870 000
Yemen	15 000	13.3	17 000	488.2	100 000	20.0	120 000	50.0	180 000
Zambia	20 000	25.0	25 000	109.7	52 420	30.0	68 150	..	..
Zimbabwe	50 000	100.0	100 000	400.0	500 000	60.0	800 000	2.5	820 000

Source: UNCTAD calculations based on ITU World Telecommunication Indicators Database, 2005.

Table 2. Internet penetration, by country/territory, 2000–2004

Internet users per 100 inhabitants
sorted by decreasing order of 2003 values

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Iceland	59.8	0.2	59.9	8.2	64.8	4.1	67.5	..	..
Sweden	45.6	13.2	51.6	11.0	57.3	9.9	63.0	19.8	75.5
Rep. of Korea	41.4	24.4	51.5	7.0	55.1	10.8	61.1	7.5	65.7
United Kingdom	26.4	25.0	33.0	28.2	42.3	39.9	59.2	6.9	63.3
Guernsey	31.9	39.5	44.5	20.4	53.6	10.3	59.1	..	..
Australia	34.5	15.1	39.7	34.5	53.4	6.4	56.8	14.8	65.3
Denmark	39.2	9.4	42.9	19.6	51.3	9.6	56.2	..	..
United States	44.1	13.6	50.1	10.2	55.2	0.7	55.6	12.1	62.3
Canada	42.1	6.9	45.0	7.6	48.4	14.5	55.4	13.7	63.0
New Zealand	39.3	15.5	45.4	6.6	48.4	8.7	52.6	55.7	82.0
Netherlands	43.8	12.1	49.1	3.1	50.6	3.1	52.2	18.1	61.6
Taiwan Province of China	28.1	24.2	34.9	36.4	47.6	9.1	51.9	3.3	53.6
Singapore	32.4	27.2	41.2	22.3	50.4	1.0	50.9	10.3	56.1
Finland	37.2	15.6	43.0	18.6	51.0	- 3.8	49.1	2.4	50.2
Japan	29.9	28.4	38.4	16.9	44.9	7.5	48.3	21.6	58.7
Malta	13.1	93.1	25.3	19.8	30.3	56.8	47.5	..	..
Hong Kong (China)	27.8	39.2	38.7	11.1	43.0	9.7	47.2	3.7	48.9
Austria	33.7	16.3	39.2	5.9	41.5	11.3	46.2	4.0	48.0
Estonia	27.2	10.3	30.0	9.3	32.8	35.4	44.4	15.3	51.2
Italy	23.0	17.0	26.9	30.5	35.1	18.6	41.6	20.9	50.3
Latvia	6.2	16.1	7.2	84.7	13.3	203.5	40.4	- 12.2	35.4
Slovenia	15.1	99.3	30.1	24.9	37.6	6.5	40.1	19.7	48.0
Germany	30.1	4.7	31.5	7.6	33.9	17.9	40.0	6.1	42.4
Switzerland	29.1	5.5	30.7	14.3	35.1	13.5	39.9	64.6	65.6
Belgium	29.2	6.2	31.0	5.8	32.8	17.6	38.6	5.3	40.6
Israel*	20.3	36.5	27.7	9.0	30.1	27.4	38.4	21.4	46.6
Luxembourg	22.8	59.6	36.4	1.6	37.0	1.8	37.7	..	..
Barbados	3.7	51.4	5.6	100.0	11.2	231.1	37.1	..	..
France	14.4	83.3	26.4	18.9	31.4	16.4	36.6	13.2	41.4
Norway	43.3	- 32.6	29.2	5.1	30.7	12.6	34.6	..	..
Malaysia	21.4	24.3	26.6	20.3	32.0	7.5	34.4	15.4	39.7
United Arab Emirates	23.6	18.6	28.0	11.8	31.3	8.6	34.0	- 6.3	31.9
Cyprus	17.7	23.2	21.8	34.9	29.4	14.7	33.7	..	..
Ireland	17.9	30.2	23.3	20.2	28.0	13.1	31.7	- 20.5	25.2
Czech Republic	9.7	51.5	14.7	74.1	25.6	20.3	30.8	52.4	46.9
Macao (China)	13.6	69.9	23.1	12.6	26.0	2.9	26.8	20.0	32.1
Bahamas	4.3	27.9	5.5	249.1	19.2	38.0	26.5	10.8	29.3
Chile	16.7	20.4	20.1	18.4	23.8	10.3	26.3	6.2	27.9
New Caledonia	14.0	30.0	18.2	22.5	22.3	17.5	26.2	15.2	30.2
Portugal	16.8	7.1	18.0	21.7	21.9	17.3	25.7	14.1	29.3
Réunion	14.3	14.7	16.4	23.2	20.2	17.9	23.8	..	..
Hungary	7.1	108.5	14.8	6.8	15.8	50.1	23.7	15.8	27.5
Poland	7.2	36.1	9.8	134.7	23.0	1.0	23.2	0.5	23.4

Table 2 *(continued)*

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Croatia	6.7	76.1	11.8	52.5	18.0	28.8	23.2	..	..
Spain	13.7	33.6	18.3	5.5	19.3	18.8	22.9	37.9	31.6
Kuwait	6.9	27.5	8.8	20.5	10.6	115.3	22.8	1.3	23.1
Bahrain	6.3	144.4	15.4	18.8	18.3	18.0	21.6	- 4.3	20.7
Costa Rica	5.7	63.2	9.3	111.8	19.7	9.5	21.6	9.1	23.5
Slovakia	9.4	33.0	12.5	28.0	16.0	34.8	21.6	95.2	42.1
Martinique	7.8	32.1	10.3	49.5	15.4	32.5	20.4	..	..
Lithuania	6.1	11.5	6.8	111.8	14.4	39.9	20.1	..	..
Qatar	4.9	28.6	6.3	65.1	10.4	91.6	19.9	33.8	26.7
Bulgaria	5.3	41.5	7.5	8.0	8.1	144.6	19.8	..	..
Romania	3.6	25.0	4.5	124.4	10.1	82.7	18.5	..	..
Grenada	4.4	18.2	5.2	173.1	14.2	19.0	16.9	- 54.0	7.8
Uruguay	10.9	5.5	11.5	2.6	11.8	39.0	16.4	27.9	21.0
Greece	9.5	- 9.5	8.6	57.0	13.5	11.1	15.0	18.7	17.8
Lebanon	9.1	- 14.3	7.8	50.0	11.7	22.1	14.3	18.3	16.9
Belarus	1.9	126.3	4.3	90.7	8.2	72.0	14.1	..	..
French Polynesia	6.3	- 1.6	6.2	30.6	8.1	72.8	14.0	..	..
Mauritius	7.3	20.5	8.8	17.0	10.3	19.3	12.3	..	..
Argentina	7.3	38.9	10.1	11.2	11.2	6.8	12.0	10.1	13.2
Mexico	5.1	47.1	7.5	42.7	10.7	11.8	12.0	11.9	13.4
Andorra	9.0	..	..	..	..	..	11.9	..	..
Peru	3.1	148.4	7.7	16.9	9.0	15.4	10.4	12.4	11.7
Brazil	2.9	62.1	4.7	74.5	8.2	24.4	10.2	19.4	12.2
S. Tome & Principe	4.4	36.4	6.0	21.7	7.3	35.2	9.9	..	..
Thailand	3.8	52.6	5.8	34.5	7.8	22.6	9.6	14.9	11.0
Micronesia	3.7	27.0	4.7	19.1	5.6	65.5	9.3	16.6	10.8
Turkey	3.1	64.5	5.1	21.6	6.2	36.9	8.5	66.4	14.1
Panama	3.2	81.3	5.8	25.9	7.3	14.2	8.3	13.4	9.5
El Salvador	1.1	109.1	2.3	100.0	4.6	80.2	8.3	7.1	8.9
Jordan	2.5	80.0	4.5	28.9	5.8	39.8	8.1	31.8	10.7
Rep. of Moldova	1.4	21.4	1.7	141.2	4.1	94.6	8.0	19.3	9.5
Serbia and Montenegro	3.8	47.4	5.6	7.1	6.0	31.2	7.9	45.0	11.4
Venezuela	3.4	38.2	4.7	8.5	5.1	47.6	7.5	17.4	8.8
Dominican Rep.	3.8	21.1	4.6	32.6	6.1	22.8	7.5	21.5	9.1
Iran (Islamic Rep. of)	1.0	60.0	1.6	200.0	4.8	50.8	7.2	..	..
Russian Fed.	2.0	45.0	2.9	41.4	4.1	66.6	6.8	62.5	11.1
Zimbabwe	0.4	125.0	0.9	377.8	4.3	58.1	6.8	- 6.8	6.3
Fiji	1.5	20.0	1.8	238.9	6.1	9.2	6.7	..	..
Saudi Arabia	2.2	113.6	4.7	38.3	6.5	2.5	6.7	..	..
Tunisia	2.7	55.6	4.2	23.8	5.2	22.7	6.4	31.7	8.4
Colombia	2.1	28.6	2.7	70.4	4.6	35.7	6.2	27.9	8.0
China	1.7	52.9	2.6	76.9	4.6	33.7	6.2	16.4	7.2
TFYR Macedonia	2.5	36.0	3.4	41.2	4.8	26.0	6.1	..	..
Mongolia	1.3	30.8	1.7	23.5	2.1	176.7	5.8	..	..
Ukraine	0.7	71.4	1.2	58.3	1.9	176.3	5.3	..	..
Egypt	0.7	28.6	0.9	211.1	2.8	56.1	4.4	27.5	5.6

Table 2 *(continued)*

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Suriname	2.7	22.2	3.3	27.3	4.2	4.0	4.4	56.3	6.8
Cape Verde	1.8	50.0	2.7	33.3	3.6	21.1	4.4	21.6	5.3
Ecuador	1.4	85.7	2.6	65.4	4.3	1.2	4.4	8.7	4.7
Philippines	2.0	27.0	2.6	72.2	4.4	- 2.0	4.3	35.0	5.8
Viet Nam	0.3	300.0	1.2	50.0	1.8	138.9	4.3	65.6	7.1
Azerbaijan	0.2	50.0	0.3	1 133.3	3.7	14.3	4.2	..	..
Togo	2.2	45.5	3.2	28.1	4.1	2.4	4.2	..	..
Palestine	1.1	63.6	1.8	66.7	3.0	33.7	4.0	8.2	4.3
Kyrgyzstan	1.1	172.7	3.0	0.0	3.0	32.3	4.0	..	..
Bosnia	1.1	9.1	1.2	116.7	2.6	50.4	3.9	..	..
Indonesia	0.9	122.2	2.0	5.0	2.1	79.0	3.8	..	..
Bolivia	1.5	46.7	2.2	45.5	3.2	15.3	3.7	5.7	3.9
Armenia	1.1	18.2	1.3	23.1	1.6	130.0	3.7	33.4	4.9
Vanuatu	2.1	33.3	2.8	25.0	3.5	3.1	3.6	- 4.2	3.5
Syrian Arab Rep.	0.2	100.0	0.4	425.0	2.1	65.7	3.5	26.1	4.4
Botswana	1.5	100.0	3.0	16.7	3.5	- 2.6	3.4	- 2.1	3.3
Namibia	1.7	47.1	2.5	8.0	2.7	25.2	3.4	10.4	3.7
Morocco	0.7	100.0	1.4	71.4	2.4	38.3	3.3	239.5	11.3
Kenya	0.3	93.9	0.6	98.4	1.3	148.0	3.2	..	..
Libyan AJ	0.2	100.0	0.4	475.0	2.3	25.7	2.9	..	..
Sudan	0.1	100.0	0.2	50.0	0.3	836.7	2.8	17.4	3.3
Honduras	0.9	55.6	1.4	78.6	2.5	9.2	2.7	16.5	3.2
Gabon	1.2	8.3	1.3	46.2	1.9	37.9	2.6	13.0	3.0
Marshall Islands	1.6	6.2	1.7	41.2	2.4	7.9	2.6	..	..
Swaziland	1.0	40.0	1.4	35.7	1.9	36.3	2.6	..	..
Georgia	0.5	80.0	0.9	66.7	1.5	59.3	2.4	44.8	3.5
Senegal	0.4	150.0	1.0	0.0	1.0	117.0	2.2	..	..
Bhutan	0.3	133.3	0.7	100.0	1.4	45.7	2.0	- 57.8	0.9
Paraguay	0.7	57.1	1.1	54.5	1.7	18.8	2.0	23.3	2.5
Uzbekistan	0.5	20.0	0.6	83.3	1.1	74.5	1.9	..	..
Kazakhstan	0.6	50.0	0.9	77.8	1.6	18.1	1.9	37.6	2.6
Nicaragua	1.0	45.5	1.4	20.1	1.7	5.2	1.8	22.5	2.2
Haiti	0.2	100.0	0.4	150.0	1.0	80.0	1.8	229.4	5.9
India	0.5	40.0	0.7	128.6	1.6	9.4	1.8	85.1	3.2
Guinea-Bissau	0.2	50.0	0.3	266.7	1.1	34.5	1.5	..	..
Côte d'Ivoire	0.3	33.3	0.4	25.0	0.5	188.0	1.4	..	..
Lesotho	0.2	0.0	0.2	400.0	1.0	38.0	1.4	..	..
Sri Lanka	0.7	14.3	0.8	37.5	1.1	18.2	1.3	11.5	1.5
Benin	0.2	100.0	0.4	75.0	0.7	42.9	1.0	45.0	1.5
Albania	0.1	200.0	0.3	33.3	0.4	145.0	1.0	..	..
Djibouti	0.2	150.0	0.5	40.0	0.7	38.6	1.0	..	..
Cuba	0.5	120.0	1.1	27.3	1.4	- 37.9	0.9	51.7	1.3
Pakistan	0.2	100.0	0.4	75.0	0.7	14.3	0.8	58.8	1.3
Somalia	0.0	..	0.0	..	0.2	275.0	0.8	122.7	1.7
UR of Tanzania	0.1	100.0	0.2	0.0	0.2	255.0	0.7	..	..
Comoros	0.2	50.0	0.3	33.3	0.4	57.5	0.6	..	..

Table 2 *(continued)*

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Cameroon	0.3	7.4	0.3	31.0	0.4	63.2	0.6	..	..
Nigeria	0.1	0.0	0.1	200.0	0.3	103.3	0.6	..	..
Zambia	0.2	0.0	0.2	150.0	0.5	20.0	0.6	..	..
Guinea	0.1	100.0	0.2	150.0	0.5	4.0	0.5	..	..
Solomon Islands	0.5	0.0	0.5	0.0	0.5	4.0	0.5	..	..
Uganda	0.2	50.0	0.3	33.3	0.4	22.5	0.5	53.1	0.8
Mauritania	0.2	50.0	0.3	33.3	0.4	10.0	0.4	..	..
Congo	0.0	..	0.0	..	0.2	115.0	0.4	..	..
Madagascar	0.2	0.0	0.2	50.0	0.3	43.3	0.4	..	..
Turkmenistan	0.1	100.0	0.2	..	..	..	0.4	..	..
Burkina Faso	0.1	100.0	0.2	0.0	0.2	95.0	0.4	2.6	0.4
Chad	0.0	25.0	0.1	280.0	0.2	94.7	0.4	..	..
Malawi	0.1	100.0	0.2	50.0	0.3	13.3	0.3	8.8	0.4
Lao PDR	0.1	100.0	0.2	50.0	0.3	10.0	0.3	9.1	0.4
Mali	0.1	100.0	0.2	0.0	0.2	60.0	0.3	40.6	0.5
Cambodia	0.0	..	0.1	100.0	0.2	25.0	0.3	..	..
Eritrea	0.1	100.0	0.2	0.0	0.2	15.0	0.2	404.3	1.2
Burundi	0.1	0.0	0.1	0.0	0.1	100.0	0.2	..	..
Bangladesh	0.1	0.0	0.1	100.0	0.2	- 10.0	0.2	11.1	0.2
Central African Rep.	0.1	0.0	0.1	0.0	0.1	40.0	0.1	64.3	0.2
Ethiopia	0.0	..	0.0	..	0.1	10.0	0.1	..	..
Afghanistan	0.0	..	..	..	0.0	..	0.1	0.0	0.1
Tajikistan	0.0	..	0.1	0.0	0.1	0.0	0.1	..	..
Myanmar	0.0	..	0.0	..	0.1	0.0	0.1	140.0	0.1

* UNCTAD estimate for 2003

Source: UNCTAD calculations based on ITU World Telecommunication Indicators Database, 2005.

Table 3. Number of personal computers, by country/territory, 2000–2004

sorted by decreasing order of 2002 values

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
United States	161 000 000	10.6	178 000 000	6.7	190 000 000	5.3	200 000 000	10.0	220 000 000
Japan	40 000 000	14.0	45 600 000	6.8	48 700 000	..	..	..	69 200 000
Germany	27 640 000	13.3	31 317 000	13.7	35 600 000	12.4	40 000 000	15.8	46 300 000
China	20 600 000	21.4	25 000 000	42.0	35 500 000	..	..	..	52 990 000
United Kingdom	20 190 000	9.0	22 000 000	9.0	23 972 000	..	..	..	35 890 000
Rep. of Korea	18 615 000	20.8	22 495 000	4.5	23 502 000	3.2	24 248 000	8.1	26 201 000
France	17 920 000	8.8	19 500 000	6.2	20 700 000	20.8	25 000 000	17.6	29 410 000
Canada	12 900 000	10.1	14 200 000	7.7	15 300 000	..	..	..	22 390 000
Italy	10 300 000	9.7	11 300 000	15.3	13 025 000	..	15 480 000	..	18 150 000
Brazil	8 500 000	27.1	10 800 000	20.4	13 000 000	..	..	..	19 350 000
Russian Fed.	9 300 000	18.3	11 000 000	18.2	13 000 000	..	..	..	19 010 000
Australia	9 000 000	11.1	10 000 000	11.0	11 100 000	8.1	12 000 000	14.3	13 720 000
Taiwan PC	7 063 200	15.5	8 160 900	16.7	9 521 000	11.9	10 655 000	..	..
Mexico	5 700 000	21.1	6 900 000	21.1	8 353 000	19.7	10 000 000	12.1	11 210 000
Spain	5 800 000	17.2	6 800 000	17.2	7 972 000	..	..	..	..
Netherlands	6 300 000	9.5	6 900 000	9.5	7 557 000	..	..	..	11 110 000
India	4 600 000	30.4	6 000 000	25.0	7 500 000	..	..	..	13 030 000
Sweden	4 500 000	11.1	5 000 000	11.1	5 556 000	..	..	..	..
Switzerland	4 700 000	5.1	4 940 000	4.5	5 160 000	5.2	5 430 000	12.4	6 105 000
Iran (Islamic Rep. of)	4 000 000	12.5	4 500 000	8.9	4 900 000	22.4	6 000 000	..	..
Poland	2 670 000	23.6	3 300 000	23.6	4 079 000	34.3	5 480 000	..	..
Malaysia	2 200 000	36.4	3 000 000	20.0	3 600 000	16.7	4 200 000	..	..
South Africa	2 900 000	6.9	3 100 000	6.5	3 300 000	..	..	..	..
Hong Kong (China)	2 360 000	10.2	2 600 000	25.9	3 273 000	15.4	3 777 000	10.9	4 187 000
Denmark	2 700 000	7.4	2 900 000	6.9	3 100 000	..	..	..	..
Austria	2 261 000	20.6	2 727 000	10.5	3 013 000	6.2	3 200 000	6.9	3 419 600
Saudi Arabia	1 300 000	37.5	1 787 500	68.0	3 003 000	..	..	..	..
Argentina	2 560 000	13.3	2 900 000	3.4	3 000 000	..	..	..	..
Turkey	2 500 000	8.0	2 700 000	11.1	3 000 000	..	..	..	..
Belgium	2 300 000	4.3	2 400 000	16.7	2 800 000	17.9	3 300 000	9.9	3 627 000
Singapore	1 941 000	8.2	2 100 000	23.3	2 590 000	..	..	..	..
Indonesia	2 100 000	9.5	2 300 000	9.5	2 519 000	..	..	..	..
Thailand	1 714 000	16.9	2 003 000	22.9	2 461 000	..	..	..	..
Norway	2 200 000	4.5	2 300 000	4.6	2 405 000	..	..	..	..
Finland	2 050 000	7.3	2 200 000	4.5	2 300 000	..	..	..	..
Philippines	1 480 000	14.9	1 700 000	29.4	2 200 000	..	..	..	..
Colombia	1 500 000	20.0	1 800 000	18.5	2 133 000	..	..	..	..
Czech Republic	1 250 000	20.0	1 500 000	20.0	1 800 000	..	..	..	..
Romania	713 000	12.2	800 000	125.0	1 800 000	16.7	2 100 000	..	..
Chile	1 420 000	15.5	1 640 000	9.5	1 795 814	11.4	2 000 000	6.9	2 137 934
Ireland	1 360 000	10.3	1 500 000	10.3	1 654 000	..	..	..	..
New Zealand	1 380 000	8.7	1 500 000	8.7	1 630 000	..	..	..	..
Israel	1 590 000	0.6	1 600 000	0.6	1 610 000	..	..	..	5 037 000
Venezuela	1 100 000	18.2	1 300 000	18.2	1 536 000	..	..	..	..
Portugal	1 050 000	15.2	1 210 000	15.2	1 394 000	0.3	1 398 240	..	..
Peru	1 050 000	19.0	1 250 000	- 8.1	1 149 300	53.0	1 758 000	..	..

Table 3 *(continued)*

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Egypt	800 000	25.0	1 000 000	12.0	1 120 000	78.6	2 000 000	15.0	2 300 000
Hungary	870 000	9.2	950 000	15.8	1 100 000	..	..	..	..
Slovakia	740 000	8.1	800 000	26.3	1 010 000	25.7	1 270 000	25.4	1 593 000
Ukraine	890 000	3.4	920 000	3.4	951 000	18.1	1 123 220	..	..
Greece	750 000	14.7	860 000	4.7	900 000	..	..	..	..
Nigeria	750 000	6.7	800 000	6.6	853 000	0.8	860 000	..	..
Costa Rica	600 000	16.7	700 000	16.7	817 000	11.4	910 000	..	..
Viet Nam	600 000	16.7	700 000	14.3	800 000	..	..	..	..
Croatia	498 987	24.3	620 000	22.6	760 000	..	..	..	..
Slovenia	548 000	0.4	550 000	9.1	600 000	8.3	650 000	..	..
Zimbabwe	195 000	2.6	200 000	200.0	600 000	3.3	620 000	61.3	1 000 000
Morocco	350 000	14.3	400 000	25.0	500 000	20.0	600 000	3.3	620 000
Bangladesh	200 000	25.0	250 000	80.0	450 000	133.3	1 050 000	57.1	1 650 000
United Arab Emirates	400 000	5.0	420 000	7.1	450 000	..	..	..	..
Bulgaria	361 400	5.1	380 000	6.6	405 000	..	..	..	..
Ecuador	275 000	9.1	300 000	34.2	402 652	..	..	..	..
Latvia	340 000	5.9	360 000	11.1	400 000	9.0	436 000	14.9	501 000
Lithuania	240 000	8.3	260 000	46.2	380 000	..	..	..	..
Tunisia	219 100	16.5	255 245	31.4	335 325	19.4	400 372	17.9	472 132
Syrian Arab Rep.	250 000	8.0	270 000	22.2	330 000	51.5	500 000	20.0	600 000
Papua New Guinea	280 000	7.1	300 000	7.0	321 000	..	..	..	..
Lebanon	175 000	42.9	250 000	20.0	300 000	16.7	350 000	14.3	400 000
Serbia and Montenegro	240 000	4.2	250 000	16.0	290 000	..	..	..	..
Estonia	220 000	13.6	250 000	14.0	285 000	108.8	595 000	..	..
Kuwait	250 000	8.8	272 000	4.8	285 000	40.4	400 000	12.5	450 000
Luxembourg	200 000	15.0	230 000	15.2	265 000	5.7	280 000	..	..
Cuba	135 000	63.0	220 000	13.6	250 000	8.0	270 000	11.1	300 000
Myanmar	100 000	50.0	150 000	66.7	250 000	20.0	300 000	8.3	325 000
Sri Lanka	135 000	29.6	175 000	42.9	250 000	30.0	325 000	63.0	529 650
Algeria	200 000	10.0	220 000	10.0	242 000	9.5	265 000	..	..
Kenya	150 000	16.7	175 000	16.6	204 000	47.1	300 000	..	..
Iraq	..	..	..	..	200 000	..	..	..	..
Jordan	150 000	13.3	170 000	17.6	200 000	22.5	245 000	..	..
Paraguay	70 000	114.3	150 000	33.3	200 000	..	..	..	..
Senegal	160 000	12.5	180 000	11.1	200 000	10.0	220 000	..	..
Sudan	100 000	15.0	115 000	73.9	200 000	..	..	..	..
Cyprus	150 000	13.3	170 000	13.5	193 000	..	..	..	..
Bolivia	140 000	21.4	170 000	11.8	190 000	..	..	..	..
Mauritius	120 000	8.3	130 000	38.5	180 000	..	..	..	..
Guatemala	130 000	15.4	150 000	15.3	173 000	..	..	..	..
El Salvador	120 000	16.7	140 000	16.4	163 000	35.0	220 000	..	..
Georgia	112 000	27.7	143 000	9.1	156 000	10.3	172 000	11.6	192 000
Côte d'Ivoire	90 000	30.8	117 700	30.8	154 000	..	..	..	..
Nicaragua	120 000	8.3	130 000	15.4	150 000	..	..	..	..
Togo	100 000	20.0	120 000	25.0	150 000	6.7	160 000	..	..
Yemen	35 000	5.7	37 000	291.9	145 000	37.9	200 000	50.0	300 000
UR of Tanzania	100 000	20.0	120 000	20.0	144 000	38.9	200 000	..	..
Jamaica	120 000	8.3	130 000	8.5	141 000	..	..	..	..

Table 3 *(continued)*

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Namibia	75 000	37.1	102 806	29.4	133 000	43.7	191 100	15.1	220 000
Iceland	110 000	9.1	120 000	8.3	130 000	3.1	134 000	..	..
Libyan AJ	..	..	..	..	130 000	..	..	..	..
Palestine	..	..	..	..	125 000	14.4	143 000	18.2	169 000
Panama	105 000	4.8	110 000	4.5	115 000	4.3	120 000	8.3	130 000
Guadeloupe	90 000	11.1	100 000	11.0	111 000	..	..	..	..
Qatar	90 000	11.1	100 000	10.0	110 000	..	..	..	..
Bahrain	95 000	5.3	100 000	7.0	107 000	..	..	..	..
Trinidad & Tobago	80 000	12.5	90 000	15.0	103 500	..	..	..	..
Malta	80 000	12.5	90 000	12.2	101 000	..	..	..	..
Ethiopia	60 000	25.0	75 000	33.3	100 000	50.0	150 000	..	..
Oman	80 000	6.3	85 000	11.8	95 000	..	..	..	..
TFYR Macedonia	..	..	72 000	30.6	94 000	25.5	118 000	18.6	140 000
Macao (China)	70 000	14.3	80 000	15.0	92 000	27.2	117 000	11.1	130 000
Honduras	70 000	14.3	80 000	13.8	91 000	9.9	100 000	..	..
Cameroon	50 000	20.0	60 000	50.0	90 000	33.3	120 000	..	..
Nepal	70 000	14.3	80 000	6.3	85 000	17.8	100 172	..	..
Ghana	60 000	16.7	70 000	17.1	82 000	..	..	..	..
Mozambique	60 000	16.7	70 000	17.1	82 000	..	..	..	..
Uganda	60 000	16.7	70 000	17.1	82 000	25.0	102 500	17.6	120 500
Zambia	70 000	7.1	75 000	6.7	80 000	18.8	95 000	..	..
Martinique	65 000	10.8	72 000	8.3	78 000	2.6	80 000	..	..
Rep. of Moldova	63 500	10.2	70 000	10.0	77 000	..	..	..	112 200
Botswana	60 000	8.3	65 000	7.7	70 000	..	..	..	..
French Polynesia	75 115	- 11.8	66 221	5.7	70 000	..	..	..	..
Madagascar	35 000	14.3	40 000	75.0	70 000	14.3	80 000	..	..
Mongolia	32 000	31.3	42 000	64.3	69 000	175.4	190 000	..	..
Kyrgyzstan	25 600	150.0	64 000	0.8	64 500	16.3	75 000	..	..
Armenia	25 000	40.0	35 000	71.4	60 000	..	..	..	200 000
Réunion	35 000	22.9	43 000	23.3	53 000	..	..	..	..
Guinea	29 000	10.3	32 000	31.3	42 000	2.4	43 000	..	..
Fiji	36 000	5.6	38 000	5.3	40 000	5.0	42 000	..	..
Albania	25 000	20.0	30 000	20.0	36 000	..	..	..	..
Belize	30 000	10.0	33 000	6.1	35 000	..	..	..	..
Cape Verde	25 000	20.0	30 000	16.7	35 000	..	..	..	..
Bermuda	30 000	6.7	32 000	6.3	34 000	..	..	..	..
French Guiana	25 000	8.0	27 000	7.4	29 000	..	..	..	..
Mauritania	25 000	8.0	27 000	7.4	29 000	20.7	35 000	..	..
Barbados	22 000	13.6	25 000	12.0	28 000	..	..	..	..
Angola	15 000	13.3	17 000	58.8	27 000	..	..	..	..
Brunei Darussalam	23 000	8.7	25 000	8.0	27 000	..	..	..	..
Cambodia	15 000	33.3	20 000	35.0	27 000	18.5	32 000	..	..
Gabon	12 000	66.7	20 000	25.0	25 000	20.0	30 000	66.7	50 000
Swaziland	12 000	33.3	16 000	56.3	25 000	20.0	30 000	..	..
Guyana	22 000	4.5	23 000	4.3	24 000	8.3	26 000	3.8	27 000
Saint Lucia	22 000	4.5	23 000	4.3	24 000	..	..	..	..
Maldives	10 000	50.0	15 000	33.3	20 000	..	..	..	..
Burkina Faso	15 000	13.3	17 000	11.8	19 000	36.8	26 000	10.0	28 600

Table 3 *(continued)*

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Gambia	15 000	13.3	17 000	11.8	19 000	..	..	..	..
Lao PDR	14 000	14.3	16 000	12.5	18 000	11.1	20 000	10.0	22 000
Solomon Islands	16 000	6.3	17 000	5.9	18 000	..	..	..	..
Benin	10 000	10.0	11 000	36.4	15 000	72.2	25 825	16.2	30 000
Mali	13 000	7.7	14 000	7.1	15 000	66.7	25 000	..	..
Somalia	..	..	..	..	15 000	66.7	25 000	100.0	50 000
Grenada	12 000	8.3	13 000	7.7	14 000	..	..	..	..
Malawi	12 000	8.3	13 000	7.7	14 000	12.9	15 800	24.7	19 710
Saint Vincent	12 000	8.3	13 000	7.7	14 000	..	..	..	..
Chad	11 000	9.1	12 000	8.3	13 000	..	..	..	..
Congo	11 000	9.1	12 000	8.3	13 000	15.4	15 000	..	..
Seychelles	11 000	9.1	12 000	8.3	13 000	..	..	..	..
Bhutan	5 000	40.0	7 000	42.9	10 000	0.0	10 000	10.0	11 000
Djibouti	6 500	7.7	7 000	42.9	10 000	45.0	14 500	..	..
Eritrea	6 160	13.6	7 000	42.9	10 000	20.0	12 000	25.0	15 000
Saint Kitts and Nevis	7 000	14.3	8 000	12.5	9 000	..	..	..	..
Central African Rep.	6 000	16.7	7 000	14.3	8 000	25.0	10 000	10.0	11 000
Dominica	5 500	9.1	6 000	16.7	7 000	..	..	..	..
Niger	5 000	20.0	6 000	16.7	7 000	..	..	..	..
Burundi	4 000	12.5	4 500	11.1	5 000	160.0	13 000	..	..
Comoros	3 000	33.3	4 000	5.0	4 200	9.5	4 600	..	..
Equatorial Guinea	2 000	25.0	2 500	40.0	3 500	..	..	..	..
Marshall Islands	2 000	25.0	2 500	20.0	3 000	..	..	..	..
Vanuatu	2 400	8.3	2 600	15.4	3 000	0.0	3 000	0.0	3 000
Tonga	1 300	7.7	1 400	42.9	2 000	..	..	..	..
Samoa	1 000	10.0	1 100	9.1	1 200	..	..	..	..
Kiribati	0 800	12.5	0 900	11.1	1 000	..	..	..	..
Uruguay	350 000	5.7	370 000	..	..	..	410 000	4.9	430 000

Source: UNCTAD calculations based on ITU World Telecommunication Indicators Database, 2005.

Table 4. Mobile phone subscribers by country/territory, 2000–2004

(alphabetical order)

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Afghanistan	..	..	..	..	25 000	700.0	200 000	200.0	600 000
Albania	29 791	1 218.0	392 650	116.7	851 000	29.3	1 100 000	..	..
Algeria	86 000	16.3	100 000	300.0	400 000	260.4	1 441 400	224.9	4 682 690
Andorra	23 543	25.0	29 429	11.4	32 790	58.3	51 893	..	..
Argentina	6 049 963	15.3	6 974 939	- 5.9	6 566 740	19.4	7 842 233	72.3	13 512 383
Armenia	17 486	45.9	25 504	182.1	71 949	59.0	114 379	77.8	203 309
Australia	8 562 000	30.0	11 132 000	13.0	12 575 000	14.1	14 347 000	14.7	16 449 000
Austria	6 117 000	6.9	6 541 000	3.0	6 736 000	5.3	7 094 502	12.6	7 989 955
Azerbaijan	420 400	73.6	730 000	19.2	870 000	21.5	1 057 000	68.7	1 782 900
Bahamas	31 524	92.1	60 555	101.1	121 759	- 4.5	116 267	60.0	186 007
Bahrain	205 727	46.2	300 829	29.3	388 990	13.9	443 109	46.6	649 764
Bangladesh	279 000	86.4	520 000	106.7	1 075 000	27.0	1 365 000	217.0	4 327 516
Barbados	28 467	86.6	53 111	83.0	97 193	44.0	140 000	22.1	171 000
Belarus	49 353	180.3	138 329	234.4	462 630	141.7	1 118 000	..	..
Belgium	5 629 000	36.7	7 697 000	5.7	8 135 512	5.8	8 605 834	6.1	9 131 705
Belize	16 812	132.9	39 155	32.1	51 729	16.8	60 403	61.8	97 755
Benin	55 476	125.3	125 000	75.0	218 770	8.0	236 175	..	..
Bhutan	..	..	..	..	..	..	7 998	122.6	17 800
Bolivia	582 620	33.9	779 917	31.5	1 025 451	24.7	1 278 844	40.8	1 800 789
Bosnia	93 386	376.2	444 711	68.4	748 780	40.2	1 050 000	..	..
Botswana	200 000	58.0	316 000	37.7	435 000	20.2	522 840	7.8	563 782
Brazil	23 188 171	24.0	28 745 769	21.3	34 880 964	32.9	46 373 266	41.5	65 605 000
Bulgaria	738 000	110.0	1 550 000	67.6	2 597 548	34.8	3 500 869	35.1	4 729 731
Burkina Faso	25 245	201.0	76 000	48.7	113 000	100.9	227 000	75.3	398 000
Burundi	16 320	88.0	30 687	69.5	52 000	23.1	64 000	..	..
Cambodia	130 547	71.2	223 458	70.1	380 000	31.2	498 388	..	..
Cameroon	103 279	304.0	417 295	68.1	701 507	53.5	1 077 000	42.7	1 536 594
Canada	8 880 000	21.7	10 803 000	11.1	11 997 000	10.3	13 228 000	13.3	14 984 396
Cape Verde	19 729	59.7	31 507	36.3	42 949	24.2	53 342	23.3	65 780
Central African Rep.	4 967	121.5	11 000	14.5	12 600	217.5	40 000	50.0	60 000
Chad	5 500	300.0	22 000	55.5	34 200	90.1	65 000	..	..
Chile	3 401 525	55.0	5 271 565	22.3	6 445 698	16.7	7 520 280	27.2	9 566 581
China	85 260 000	69.9	144 820 000	42.2	206 005 000	31.0	269 953 000	24.0	334 824 000
Colombia	2 256 801	44.7	3 265 261	40.8	4 596 594	34.6	6 186 206	68.1	10 400 578
Comoros	..	..	..	..	..	..	2 000	..	..
Congo	70 000	114.3	150 000	47.9	221 800	48.8	330 000	34.0	442 200
Costa Rica	205 275	51.7	311 329	47.7	459 757	64.5	756 235	20.5	911 539
Côte d'Ivoire	472 952	54.0	728 545	41.0	1 027 058	24.7	1 280 696	19.6	1 531 846
Croatia	1 033 000	69.9	1 755 000	33.3	2 340 000	9.1	2 553 000	..	..
Cuba	6 536	31.3	8 579	108.1	17 851	98.1	35 356	114.4	75 797
Cyprus	218 324	44.0	314 355	32.9	417 933	32.0	551 752	16.1	640 515
Czech Republic	4 346 009	59.9	6 947 151	23.9	8 610 177	12.8	9 708 683	10.9	10 771 270
DR Congo	15 000	900.0	150 000	273.3	560 000	78.6	1 000 000	..	..
Denmark	3 363 552	17.7	3 960 165	13.1	4 477 752	6.5	4 767 277	8.4	5 165 546

Table 4 *(continued)*

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Djibouti	0 230	1 204.3	3 000	400.0	15 000	53.3	23 000	..	..
Dominican Rep.	705 431	80.0	1 270 082	33.9	1 700 609	24.8	2 122 543	19.4	2 534 063
Ecuador	482 213	78.2	859 152	81.7	1 560 861	53.6	2 398 161	89.5	4 544 174
Egypt	1 359 900	105.4	2 793 800	60.9	4 494 700	29.0	5 797 530	31.8	7 643 060
El Salvador	743 628	15.4	857 782	3.6	888 818	29.4	1 149 790	59.4	1 832 579
Equatorial Guinea	5 000	200.0	15 000	113.3	32 000	29.7	41 500	33.7	55 500
Estonia	557 000	16.9	651 200	35.3	881 000	19.2	1 050 241	19.6	1 255 731
Ethiopia	17 757	54.9	27 500	83.2	50 369	94.2	97 827	82.0	178 000
Faeroe Islands	16 971	44.3	24 487	25.4	30 709	25.8	38 640	..	..
Fiji	55 057	47.0	80 933	11.1	89 900	22.2	109 882	..	..
Finland	3 728 625	12.0	4 175 587	8.2	4 516 772	5.1	4 747 126	5.1	4 988 000
France	29 052 360	27.3	36 997 400	4.3	38 585 300	8.0	41 683 100	6.9	44 551 800
Gabon	120 000	25.0	150 000	86.2	279 289	7.4	300 000	63.1	489 367
Georgia	194 741	54.7	301 327	67.1	503 619	41.2	711 224	18.2	840 600
Germany	48 202 000	16.4	56 126 000	5.3	59 128 000	9.6	64 800 000	10.1	71 316 000
Ghana	130 045	49.0	193 773	131.9	449 435	78.0	799 873	111.9	1 695 000
Greece	5 932 403	34.2	7 963 742	17.0	9 314 260	11.0	10 337 000	6.8	11 044 232
Grenada	4 300	49.2	6 414	17.8	7 553	459.9	42 293	2.4	43 313
Guatemala	856 831	33.8	1 146 441	37.6	1 577 085	29.0	2 034 776	55.7	3 168 256
Guernsey	21 885	44.1	31 539	16.0	36 580	13.5	41 530	5.5	43 824
Guinea	42 112	32.2	55 670	63.1	90 772	22.8	111 500	..	..
Guinea-Bissau	..	..	..	..	..	..	1 275	..	..
Haiti	55 000	66.4	91 500	53.0	140 000	128.6	320 000	25.0	400 000
Honduras	155 271	53.0	237 629	37.4	326 508	16.2	379 362	86.4	707 201
Hong Kong (China)	5 447 346	6.0	5 776 360	10.7	6 395 725	14.9	7 349 202	10.9	8 148 685
Hungary	3 076 279	61.5	4 967 430	38.2	6 862 766	15.8	7 944 586	9.9	8 727 188
Iceland	214 896	15.5	248 131	5.2	260 938	7.2	279 670	4.2	291 372
India	3 577 095	79.8	6 431 520	97.3	12 687 637	106.1	26 154 405	80.8	47 300 000
Indonesia	3 669 327	77.7	6 520 947	79.4	11 700 000	60.7	18 800 000	59.6	30 000 000
Iran (Islamic Rep. of)	962 595	116.8	2 087 353	4.8	2 186 958	54.4	3 376 526	27.3	4 300 000
Iraq	..	..	..	..	20 000	300.0	80 000	617.5	574 000
Ireland	2 461 000	20.7	2 970 000	1.0	3 000 000	16.7	3 500 000	8.0	3 780 000
Israel	4 400 000	34.1	5 900 000	7.4	6 334 000	2.6	6 500 000	10.6	7 187 500
Italy	42 246 000	21.3	51 246 000	3.4	53 003 000	7.1	56 770 000	10.5	62 750 000
Jamaica	366 952	73.0	635 000	120.5	1 400 000	14.3	1 600 000	37.5	2 200 000
Japan	66 784 374	12.0	74 819 158	8.4	81 118 324	6.8	86 654 962	5.6	91 473 940
Jordan	388 949	122.7	866 000	40.8	1 219 597	8.7	1 325 313	20.3	1 594 513
Kazakhstan	197 300	195.0	582 000	76.5	1 027 000	29.6	1 330 730	107.3	2 758 940
Kenya	127 404	370.9	600 000	97.9	1 187 122	34.0	1 590 785	60.1	2 546 157
Kiribati	0 300	31.7	0 395	25.3	0 495	6.3	0 526	..	..
Kuwait	476 000	84.4	877 920	39.8	1 227 000	15.7	1 420 000	40.8	2 000 000
Kyrgyzstan	9 000	200.0	27 000	96.6	53 084	160.5	138 279	117.0	300 000
Lao PDR	12 681	133.0	29 545	86.7	55 160	103.5	112 275	81.9	204 191
Latvia	401 272	63.7	656 835	39.6	917 196	33.0	1 219 550	26.0	1 536 712
Lebanon	743 000	3.2	766 754	1.1	775 104	5.8	820 000	8.3	888 000
Lesotho	21 600	163.9	57 000	69.9	96 843	4.8	101 474	56.7	159 000

Table 4 *(continued)*

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Libyan AJ	40 000	25.0	50 000	40.0	70 000	81.4	127 000	..	..
Lithuania	524 000	94.3	1 017 999	61.6	1 645 568	31.9	2 169 866	57.7	3 421 538
Luxembourg	303 274	34.9	409 064	15.6	473 000	14.0	539 000	..	..
Macao (China)	141 052	37.9	194 475	42.0	276 138	31.8	364 031	18.8	432 450
Madagascar	63 094	133.8	147 500	10.5	163 010	74.0	283 666	17.7	333 888
Malawi	49 000	13.7	55 730	54.4	86 047	57.0	135 114	64.4	222 135
Malaysia	5 121 748	44.2	7 385 240	25.3	9 253 387	20.2	11 124 112	31.4	14 611 902
Mali	10 398	336.0	45 340	16.1	52 639	365.3	244 930	63.3	400 000
Malta	114 444	109.2	239 416	15.6	276 859	4.7	289 992	..	..
Marshall Islands	0 447	9.4	0 489	12.9	0 552	8.3	0 598	..	..
Mauritania	15 300	622.0	110 463	123.8	247 238	41.9	350 870	48.9	522 400
Mauritius	180 000	51.3	272 416	27.8	348 137	- 6.3	326 033	56.4	510 000
Mayotte	..	..	..	..	21 700	65.9	36 000	5.6	38 000
Mexico	14 077 880	54.6	21 757 559	19.2	25 928 266	16.1	30 097 700	27.8	38 451 135
Micronesia	..	..	..	..	0 100	5 769.0	5 869	117.8	12 782
Mongolia	154 600	26.1	195 000	10.8	216 000	47.7	319 000	..	..
Morocco	2 342 000	103.7	4 771 739	29.9	6 198 670	18.7	7 359 870	26.9	9 336 878
Mozambique	51 065	198.9	152 652	66.9	254 759	71.0	435 757	62.5	708 000
Myanmar	13 397	69.2	22 671	111.6	47 982	38.6	66 517	38.3	92 007
Namibia	82 000	30.0	106 600	40.7	150 000	49.1	223 671	27.9	286 095
Nepal	10 226	69.0	17 286	26.6	21 881	130.2	50 367	255.6	179 126
Netherlands	10 755 000	14.8	12 352 000	- 2.4	12 060 000	3.6	12 500 000	18.6	14 821 000
New Caledonia	49 948	36.0	67 917	17.8	80 000	21.4	97 113	19.9	116 443
New Zealand	1 542 000	48.4	2 288 000	7.0	2 449 000	6.1	2 599 000	16.5	3 027 000
Nicaragua	90 294	82.2	164 509	44.2	237 248	96.7	466 706	58.3	738 624
Niger	2 056	3.4	2 126	683.1	16 648	360.0	76 580	93.6	148 276
Nigeria	30 000	1 233.3	400 000	302.0	1 607 931	95.9	3 149 473	190.4	9 147 209
Norway	3 367 763	11.8	3 766 431	3.8	3 911 136	6.4	4 163 381	..	..
Oman	164 348	97.5	324 540	43.2	464 896	27.7	593 450	35.6	805 000
Pakistan	349 460	132.4	812 000	52.5	1 238 602	111.9	2 624 799	91.3	5 020 000
Palestine	175 941	70.5	300 000	6.7	320 000	50.0	480 000	103.0	974 345
Panama	410 401	15.8	475 141	10.7	525 845	31.7	692 406	23.6	855 852
Paraguay	820 810	40.1	1 150 000	45.0	1 667 018	6.2	1 770 345	- 0.1	1 767 824
Peru	1 273 857	40.8	1 793 284	28.6	2 306 944	27.0	2 930 343	39.7	4 092 558
Philippines	6 454 359	88.4	12 159 163	25.0	15 201 000	48.1	22 509 560	46.3	32 935 875
Poland	6 747 000	48.3	10 004 661	38.9	13 898 471	25.2	17 401 222	32.7	23 096 065
Portugal	6 664 951	19.7	7 977 537	6.9	8 528 900	17.6	10 030 000	2.7	10 300 000
Qatar	120 856	47.2	177 929	49.9	266 703	41.2	376 535	30.2	490 333
Rep. of Korea	26 816 398	8.3	29 045 596	11.4	32 342 493	3.9	33 591 758	8.9	36 586 052
Rep. of Moldova	139 000	61.9	225 000	50.3	338 225	40.7	475 942	65.4	787 000
Réunion	276 100	52.5	421 100	16.3	489 800	15.4	565 000	..	..
Romania	2 499 000	53.9	3 845 116	32.9	5 110 591	37.8	7 039 898	45.1	10 215 388
Russia	3 263 200	137.5	7 750 499	127.2	17 608 756	107.3	36 500 000	103.9	74 420 000
Rwanda	39 000	66.7	65 000	70.4	110 762	21.0	134 000	11.9	150 000
S. Tome & Principe	..	..	..	..	1 980	143.4	4 819	..	..
Samoa	2 500	0.0	2 500	8.0	2 700	288.9	10 500	..	..

Table 4 *(continued)*

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Saudi Arabia	1 375 881	83.8	2 528 640	98.0	5 007 965	44.5	7 238 224	26.8	9 175 764
Senegal	250 251	20.6	301 811	51.0	455 645	26.4	575 917	78.5	1 028 061
Serbia and Montenegro	1 303 609	53.3	1 997 809	37.7	2 750 397	32.1	3 634 613	30.1	4 729 629
Seychelles	25 961	41.3	36 683	21.9	44 731	10.1	49 229	0.0	49 230
Singapore	2 747 400	8.9	2 991 600	11.8	3 344 800	4.0	3 477 100	11.0	3 860 600
Slovakia	1 109 888	93.5	2 147 331	36.1	2 923 383	25.8	3 678 774	16.2	4 275 164
Slovenia	1 215 601	20.9	1 470 085	13.4	1 667 234	4.3	1 739 146	..	..
Solomon Islands	1 151	- 16.0	0 967	3.3	0 999	48.9	1 488	..	..
South Africa	8 339 000	29.4	10 787 000	27.0	13 702 000	23.0	16 860 000	15.7	19 500 000
Spain	24 265 059	22.2	29 655 729	13.1	33 530 997	11.0	37 219 839	..	..
Sri Lanka	430 202	55.2	667 662	39.5	931 580	49.6	1 393 403	58.7	2 211 158
St. Vincent	2 361	217.3	7 492	33.2	9 982	530.2	62 911	- 9.5	56 950
Sudan	23 000	351.5	103 846	83.7	190 778	176.4	527 233	98.9	1 048 558
Suriname	41 048	111.9	87 000	24.6	108 363	55.5	168 522	26.3	212 819
Swaziland	33 000	66.7	55 000	23.6	68 000	25.0	85 000	32.9	113 000
Sweden	6 372 300	12.6	7 177 000	10.8	7 949 000	10.7	8 801 000	5.7	9 302 000
Switzerland	4 638 519	13.7	5 275 791	8.7	5 736 303	7.9	6 189 000	1.4	6 275 000
Syrian Arab Rep.	30 000	566.7	200 000	100.0	400 000	196.3	1 185 000	97.9	2 345 000
Taiwan PC	17 873 829	21.9	21 786 384	12.0	24 390 520	5.8	25 799 839	- 11.8	22 760 144
Tajikistan	1 160	40.5	1 630	709.8	13 200	260.7	47 617	..	..
TFYR Macedonia	115 748	92.9	223 275	63.6	365 346	112.4	776 000	..	..
Thailand	3 056 000	147.1	7 550 000	113.5	16 117 000	54.3	24 864 019	12.6	28 000 000
Togo	50 000	90.0	95 000	78.9	170 000	29.4	220 000	..	..
Trinidad & Tobago	161 860	58.2	256 106	41.3	361 911	34.3	485 871	33.3	647 870
Tunisia	119 165	226.6	389 208	47.6	574 334	233.9	1 917 530	85.8	3 562 970
Turkey	16 133 405	21.3	19 572 897	19.2	23 323 118	19.6	27 887 535	24.5	34 707 549
Turkmenistan	7 500	9.0	8 173	0.0	8 173	12.4	9 187	..	..
Uganda	126 913	123.4	283 520	38.7	393 310	97.3	776 169	50.1	1 165 035
Ukraine	818 524	171.8	2 224 600	66.0	3 692 700	76.0	6 498 423	111.4	13 735 000
United Arab Emirates	1 428 115	33.7	1 909 303	27.2	2 428 071	22.4	2 972 331	23.9	3 683 117
United Kingdom	43 452 000	6.5	46 283 000	7.3	49 677 000	6.7	52 984 000	15.3	61 100 000
United States	109 478 031	17.3	128 374 512	9.7	140 766 842	12.8	158 721 981	14.1	181 105 135
UR of Tanzania	180 200	136.9	426 964	78.0	760 000	36.9	1 040 640	57.6	1 640 000
Uzbekistan	53 128	141.0	128 012	46.0	186 900	71.7	320 815	69.6	544 100
Vanuatu	0 365	- 4.1	0 350	1 300.0	4 900	59.2	7 800	34.7	10 504
Venezuela	5 447 172	18.8	6 472 584	- 0.1	6 463 561	8.5	7 015 735	20.0	8 420 980
Viet Nam	788 559	58.7	1 251 195	52.0	1 902 388	44.1	2 742 000	80.9	4 960 000
Yemen	32 000	375.0	152 000	170.4	411 083	70.3	700 000	53.1	1 072 000
Zambia	98 853	22.6	121 200	14.8	139 092	73.3	241 000	24.5	300 000
Zimbabwe	309 000	6.4	328 669	3.1	338 779	7.3	363 365	9.4	397 500

Source: UNCTAD calculations based on ITU World Telecommunication Indicators Database, 2005.

Table 5. Mobile phone penetration, by country/territory 2000–2004

Mobile phone subscribers per 100 inhabitants
(alphabetical order)

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Afghanistan	..	..	..	..	0.1	829.2	1.0	141.7	2.4
Albania	1.0	1 220.9	12.7	117.2	27.6	29.6	35.8	..	..
Algeria	0.3	14.6	0.3	294.2	1.3	255.1	4.5	219.0	14.5
Andorra	30.2	22.1	36.9	8.5	40.0	54.1	61.6	..	..
Argentina	16.9	14.1	19.3	- 7.8	17.8	16.6	20.7	67.8	34.8
Armenia	0.5	45.9	0.7	182.2	1.9	59.0	3.0	..	..
Australia	44.7	28.5	57.4	11.4	64.0	12.8	72.2	14.5	82.6
Austria	76.4	6.7	81.4	2.7	83.6	5.1	87.9	12.0	98.4
Azerbaijan	5.4	70.4	9.1	17.0	10.7	19.7	12.8	65.1	21.1
Bahamas	10.3	90.8	19.7	97.8	39.0	- 6.0	36.7	60.0	58.7
Bahrain	32.4	42.7	46.2	25.2	57.9	10.3	63.8	37.7	87.9
Bangladesh	0.2	83.6	0.4	103.7	0.8	25.1	1.0	186.1	2.9
Barbados	10.6	86.0	19.8	82.5	36.1	43.7	51.9	21.6	63.1
Belarus	0.5	181.4	1.4	235.8	4.7	142.5	11.3	..	..
Belgium	54.8	36.1	74.7	5.2	78.6	5.6	83.0	6.4	88.3
Belize	7.0	117.4	15.2	23.3	18.8	9.0	20.5	83.0	37.5
Benin	0.9	118.1	1.9	69.4	3.2	4.5	3.4	..	..
Bhutan	..	..	..	..	..	..	1.1	- 29.4	0.8
Bolivia	7.1	32.8	9.4	30.4	12.3	23.7	15.2	36.1	20.7
Bosnia	2.5	374.1	11.7	67.6	19.6	39.6	27.4	..	..
Botswana	12.2	54.4	18.8	34.5	25.3	17.5	29.7	5.7	31.4
Brazil	13.7	22.5	16.7	19.9	20.1	31.1	26.3	38.2	36.3
Bulgaria	9.1	111.1	19.1	74.2	33.3	34.8	44.9	34.6	60.4
Burkina Faso	0.2	193.7	0.7	45.1	0.9	95.8	1.9	60.5	3.0
Burundi	0.2	84.3	0.4	66.4	0.7	20.8	0.9	..	..
Cambodia	1.0	66.9	1.7	65.8	2.8	27.7	3.5	..	..
Cameroon	0.7	295.4	2.7	63.7	4.4	49.4	6.6	42.4	9.4
Canada	28.8	20.4	34.7	10.0	38.2	9.1	41.7	13.3	47.2
Cape Verde	4.5	56.9	7.1	33.9	9.5	22.0	11.6	19.9	13.9
Central African Rep.	0.1	111.7	0.3	9.5	0.3	204.6	1.0	57.7	1.5
Chad	0.1	289.5	0.3	51.4	0.4	85.1	0.8	..	..
Chile	22.4	53.1	34.2	25.1	42.8	15.3	49.4	25.7	62.1
China	6.6	67.6	11.0	45.4	16.0	30.3	20.9	22.0	25.5
Colombia	5.3	43.1	7.6	39.2	10.6	33.1	14.1	63.9	23.2
Comoros	..	..	..	..	..	..	0.3	..	..
Congo	2.4	102.7	4.8	39.4	6.7	40.3	9.4	22.8	11.6
Costa Rica	5.1	48.3	7.6	46.6	11.1	63.3	18.1	18.4	21.5
Côte d'Ivoire	3.2	39.3	4.5	39.8	6.2	23.6	7.7	17.8	9.1
Croatia	23.1	73.7	40.1	33.3	53.5	9.1	58.4	..	..
Cuba	0.1	30.8	0.1	107.4	0.2	95.8	0.3	116.1	0.7
Cyprus	32.2	41.8	45.6	28.2	58.4	27.3	74.4	6.7	79.4
Czech Republic	42.3	60.6	67.9	24.9	84.9	13.6	96.5	9.2	105.3
DR Congo	0.0	883.5	0.3	272.5	1.1	78.2	1.9	..	..

Table 5 *(continued)*

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Denmark	63.1	17.2	74.0	12.7	83.3	6.0	88.3	8.8	96.1
Djibouti	0.0	1 180.0	0.5	390.9	2.3	50.6	3.4	..	..
Dominican Rep.	8.2	77.6	14.6	41.0	20.7	18.4	24.5	17.8	28.8
Ecuador	3.8	74.9	6.7	88.5	12.6	45.6	18.3	88.1	34.4
Egypt	2.1	102.0	4.3	54.3	6.7	26.5	8.4	29.3	10.9
El Salvador	11.8	13.1	13.4	2.7	13.8	25.8	17.3	60.0	27.7
Equatorial Guinea	1.1	189.1	3.2	98.5	6.3	20.6	7.6	43.3	11.0
Eritrea	..	..	..	..	..	..	..	..	0.5
Estonia	38.7	17.7	45.5	42.8	65.0	19.6	77.7	23.5	96.0
Ethiopia	0.0	50.4	0.0	77.8	0.1	88.6	0.1	77.3	0.3
Faeroe Islands	37.7	44.1	54.3	18.4	64.4	18.9	76.5	..	..
Fiji	6.8	46.5	9.9	10.2	11.0	21.3	13.3	..	..
Finland	72.0	11.6	80.4	7.9	86.7	4.9	91.0	5.1	95.6
France	49.3	26.4	62.3	3.8	64.7	7.6	69.6	5.9	73.7
Gabon	9.8	21.4	11.9	80.8	21.5	4.4	22.4	61.3	36.2
Georgia	3.9	56.0	6.1	68.5	10.2	42.4	14.5	14.0	16.6
Germany	58.6	16.2	68.1	5.2	71.6	9.6	78.5	10.1	86.4
Ghana	0.6	43.9	0.9	124.0	2.1	71.9	3.6	122.5	7.9
Greece	56.2	33.8	75.2	12.5	84.5	6.7	90.2	11.5	100.6
Grenada	4.6	40.9	6.4	11.1	7.1	428.1	37.6	11.8	42.1
Guatemala	7.5	30.3	9.8	34.0	13.1	25.7	16.5	51.4	25.0
Guinea	0.6	30.7	0.7	61.2	1.2	21.5	1.4	..	..
Guinea-Bissau	..	..	..	..	..	..	0.1	..	..
Haiti	0.7	63.8	1.1	52.5	1.7	127.8	3.8	23.3	4.7
Honduras	2.5	46.9	3.6	34.1	4.9	14.5	5.6	81.0	10.1
Hong Kong (China)	81.7	5.1	85.9	9.7	94.2	14.5	107.9	6.1	114.5
Hungary	30.7	62.0	49.8	35.7	67.6	16.2	78.5	13.0	88.8
Iceland	76.5	13.1	86.5	4.8	90.6	6.8	96.8	2.8	99.4
India	0.4	77.2	0.6	94.5	1.2	103.2	2.5	76.6	4.4
Indonesia	1.8	75.2	3.1	76.9	5.5	58.5	8.7	54.2	13.5
Iran (Islamic Rep. of)	1.5	113.7	3.2	3.5	3.3	52.2	5.1	21.0	6.2
Iraq	..	..	..	..	0.1	289.2	0.3	591.5	2.2
Ireland	65.0	19.0	77.4	- 1.4	76.3	15.3	88.0	7.5	94.5
Israel	70.2	29.2	90.7	5.3	95.5	0.6	96.1	9.0	104.7
Italy	73.7	19.8	88.3	6.3	93.9	10.1	103.3	5.9	109.4
Jamaica	14.2	71.3	24.4	118.9	53.3	13.6	60.6	35.7	82.2
Japan	52.6	11.7	58.8	8.3	63.7	6.7	67.9	5.4	71.6
Jordan	7.7	116.5	16.7	36.9	22.9	5.7	24.2	17.4	28.4
Kazakhstan	1.2	197.3	3.6	77.9	6.4	30.6	8.4	113.2	17.9
Kenya	0.4	361.5	1.9	96.6	3.8	33.1	5.0	56.5	7.9
Kiribati	0.4	29.5	0.5	23.3	0.6	4.5	0.6	..	..
Kuwait	21.7	77.5	38.6	34.5	51.9	10.1	57.2	34.8	77.1
Kyrgyzstan	0.2	193.6	0.5	92.4	1.0	163.9	2.8	109.5	5.8
Lao PDR	0.2	127.1	0.5	81.9	1.0	98.6	2.0	78.3	3.5
Latvia	16.6	68.8	27.9	41.0	39.4	33.5	52.6	27.8	67.2
Lebanon	22.6	1.2	22.9	- 0.8	22.7	3.2	23.4	6.8	25.0

Table 5 *(continued)*

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Lesotho	1.0	163.0	2.6	69.4	4.5	4.4	4.7	89.2	8.8
Libya AJ	0.7	25.6	0.9	40.6	1.3	82.2	2.3	..	..
Lithuania	14.2	94.9	27.7	71.8	47.5	32.2	62.8	58.1	99.3
Luxembourg	69.2	34.6	93.1	14.0	106.1	12.6	119.4	..	..
Macao (China)	32.1	38.9	44.5	40.4	62.5	29.8	81.2	14.1	92.6
Madagascar	0.4	127.6	1.0	7.6	1.0	69.4	1.7	7.7	1.9
Malawi	0.5	13.2	0.5	53.6	0.8	56.3	1.3	39.7	1.8
Malaysia	22.0	40.4	30.9	22.1	37.7	17.1	44.2	32.9	58.7
Mali	0.1	328.8	0.4	13.6	0.5	355.3	2.3	59.7	3.6
Malta	29.3	108.1	61.1	14.5	69.9	3.7	72.5	..	..
Marshall Islands	0.9	7.8	0.9	11.2	1.0	6.7	1.1	..	..
Mauritania	0.6	603.7	4.2	118.1	9.2	38.3	12.7	37.5	17.5
Mauritius	15.1	50.5	22.7	26.7	28.8	- 7.2	26.7	54.9	41.4
Mayotte	..	..	..	..	13.5	59.2	21.6	5.5	22.8
Mexico	14.2	54.1	21.9	17.4	25.8	14.4	29.5	24.3	36.6
Micronesia	..	..	..	..	0.1	5 752.7	5.4	111.8	11.5
Mongolia	6.5	24.7	8.1	9.5	8.9	46.0	13.0	..	..
Morocco	8.2	100.5	16.4	27.8	20.9	16.8	24.4	23.0	30.1
Mozambique	0.3	189.5	0.9	63.0	1.4	61.7	2.3	63.8	3.7
Myanmar	0.0	67.1	0.0	109.0	0.1	27.6	0.1	36.0	0.2
Namibia	4.6	26.7	5.8	37.1	8.0	45.3	11.6	22.4	14.2
Nepal	0.0	65.6	0.1	24.0	0.1	125.6	0.2	229.1	0.7
Netherlands	67.3	14.0	76.7	- 2.9	74.5	3.1	76.8	19.0	91.3
New Caledonia	23.3	33.1	31.0	15.3	35.7	18.7	42.4	18.4	50.2
New Zealand	40.0	47.5	59.0	5.4	62.2	4.3	64.8	19.6	77.5
Nicaragua	1.8	77.6	3.2	44.2	4.6	86.8	8.5	55.1	13.2
Niger	0.0	- 1.2	0.0	648.4	0.1	339.6	0.6	91.0	1.2
Nigeria	0.0	1 198.4	0.3	291.4	1.3	90.7	2.6	181.9	7.2
Norway	74.8	11.1	83.1	1.5	84.4	7.7	90.9	..	..
Oman	6.8	91.4	13.1	39.9	18.3	24.6	22.8	20.2	27.4
Pakistan	0.3	126.7	0.6	48.8	0.8	106.8	1.8	81.8	3.2
Palestine	5.6	62.8	9.1	1.8	9.3	43.2	13.3	99.3	26.4
Panama	14.5	13.4	16.4	6.7	17.5	27.0	22.2	21.4	27.0
Paraguay	14.9	36.6	20.4	41.3	28.8	3.5	29.9	- 1.6	29.4
Peru	5.0	38.5	6.9	25.5	8.6	24.0	10.7	38.9	14.9
Philippines	8.4	84.2	15.5	23.0	19.1	45.2	27.8	43.5	39.9
Poland	17.5	48.3	25.9	39.0	36.0	25.3	45.1	32.9	59.9
Portugal	66.5	16.1	77.2	6.9	82.5	16.8	96.4	6.1	102.3
Qatar	19.9	40.0	27.9	42.5	39.7	34.2	53.3	48.6	79.2
Rep. of Korea	58.3	5.2	61.4	10.7	67.9	3.4	70.2	8.4	76.1
Réunion	39.5	45.8	57.6	14.4	65.9	13.4	74.7	..	..
Rep. of Moldova	3.8	62.3	6.2	50.8	9.3	41.2	13.2	39.9	18.5
Romania	11.1	54.1	17.2	36.6	23.5	38.5	32.5	41.2	45.9
Russian Fed.	2.2	137.8	5.3	127.5	12.0	107.5	24.9	107.0	51.6
Rwanda	0.5	62.1	0.8	65.8	1.4	17.7	1.6	10.9	1.8
S. Tome & Principe	..	..	..	..	1.3	141.8	3.2	..	..

Table 5 *(continued)*

Country/territory	2000	% change 2000-2001	2001	% change 2001-2002	2002	% change 2002-2003	2003	% change 2003-2004	2004
Samoa	1.4	- 1.0	1.4	6.9	1.5	285.0	5.8	..	..
Saudi Arabia	6.6	79.1	11.8	93.0	22.8	40.8	32.1	14.7	36.8
Senegal	2.6	17.2	3.1	46.9	4.5	23.0	5.6	78.8	9.9
Serbia and Montenegro	12.3	52.7	18.7	37.2	25.7	31.7	33.8	33.1	45.0
Seychelles	32.0	41.2	45.2	18.3	53.4	11.3	59.5	2.2	60.8
Singapore	68.4	5.9	72.4	9.9	79.6	4.1	82.9	8.0	89.5
Slovakia	20.5	94.3	39.9	36.2	54.4	6.1	57.7	37.1	79.1
Slovenia	61.1	20.6	73.7	13.4	83.5	4.3	87.1	..	..
Solomon Islands	0.3	- 18.3	0.2	0.5	0.2	38.8	0.3	..	..
South Africa	19.1	26.8	24.2	24.5	30.1	20.6	36.4	18.6	43.1
Spain	60.5	21.3	73.4	12.4	82.4	5.8	87.2	..	..
Sri Lanka	2.3	53.0	3.6	37.9	4.9	47.9	7.3	57.8	11.5
Saint Vincent	2.1	213.0	6.5	31.0	8.5	519.7	52.9	- 11.0	47.1
Sudan	0.1	339.1	0.3	78.7	0.6	172.1	1.6	92.4	3.0
Suriname	9.5	109.1	19.8	13.9	22.5	42.2	32.0	51.3	48.5
Swaziland	3.3	64.7	5.4	22.2	6.6	23.5	8.1	28.1	10.4
Sweden	71.8	12.3	80.5	10.3	88.9	10.3	98.0	5.3	103.2
Switzerland	64.3	13.2	72.8	8.2	78.8	7.4	84.6	3.6	87.6
Syrian Arab Rep.	0.2	545.5	1.2	95.2	2.3	189.2	6.8	90.6	12.9
Taiwan PC	80.2	21.2	97.2	11.4	108.3	5.4	114.1	- 12.4	100.0
Tajikistan	0.0	38.6	0.0	689.2	0.2	251.5	0.7	..	..
TFYR Macedonia	5.7	91.0	10.9	62.0	17.7	110.3	37.2	..	..
Thailand	5.0	144.5	12.3	111.3	26.0	51.4	39.4	11.9	44.1
Togo	1.1	85.2	2.0	74.4	3.5	26.1	4.4	..	..
Trinidad & Tobago	12.5	57.5	19.7	41.2	27.8	34.1	37.3	32.9	49.6
Tunisia	1.2	222.9	4.0	45.9	5.9	230.6	19.4	84.8	35.9
Turkey	24.7	15.6	28.6	17.5	33.6	17.5	39.4	21.7	48.0
Turkmenistan	0.2	0.5	0.2	- 0.3	0.2	12.0	0.2	..	..
Uganda	0.6	115.6	1.2	33.9	1.6	90.4	3.0	43.8	4.4
Ukraine	1.6	184.5	4.6	66.7	7.7	77.4	13.7	108.9	28.5
United Arab Emirates	44.0	24.5	54.7	18.2	64.7	13.7	73.6	15.1	84.7
United Kingdom	72.7	6.0	77.0	9.1	84.1	8.4	91.2	12.8	102.8
United States	38.9	15.7	45.0	8.6	48.9	11.7	54.6	11.7	61.0
UR of Tanzania	0.6	130.3	1.3	73.6	2.2	33.7	3.0	47.5	4.4
Uruguay	12.3	25.7	15.5	24.5	19.3	- 20.0	15.4	20.2	18.5
Uzbekistan	0.2	137.9	0.5	44.2	0.7	69.5	1.3	63.7	2.1
Vanuatu	0.2	- 6.6	0.2	1 263.3	2.4	55.0	3.8	28.9	4.8
Venezuela	22.5	16.2	26.2	- 2.1	25.6	6.5	27.3	17.8	32.2
Viet Nam	1.0	56.1	1.5	51.8	2.3	43.9	3.4	78.4	6.0
Yemen	0.2	362.1	0.8	161.7	2.1	64.8	3.5	48.8	5.2
Zambia	1.0	19.2	1.1	11.6	1.3	68.2	2.2	27.9	2.8
Zimbabwe	2.7	5.2	2.9	6.2	3.0	2.2	3.1	0.0	3.1

Source: UNCTAD calculations based on ITU World Telecommunication Indicators Database, 2005.

Table 6. E-business statistics of selected countries/territories, 2004 or latest available year

Percentage of businesses

Country/ Territory	Andorra	Argentina[8]	Bulgaria	Chile	Colombia	Hong Kong (China)	Kazakhstan	Macao (China)	Madagascar	Mauritius[9]	Morocco	Philippines	Republic of Korea	Rep. of Moldova	Romania	Russian Federation	Singapore	Thailand	Trinidad & Tobago	Ukraine
Reference year	2004	2003	2003	2003	2001	2004	2004	2003	2004	2002	2004	2002	2003	2003	2003	2003	2003	2004	2003	2003
Businesses using computers	73.1	..	83.5	24.7	16.8	58.4	64.4	33.0	80.2	7.4	100.0	84.8	95.6	10.6	84.2	84.6	83.1	20.6	86.2	100.0
Employees using computers	..	..	16.0	..	30.6	..	..	..	..	7.9	36.0	..	..	9.2	14.3	30.5	..	19.3	..	..
Businesses using the Internet	63.0	68.0	61.8	20.3	8.9	50.4	37.3	64.0	67.0	4.9	90.0	58.6	94.0	51.6	51.4	43.4	75.9	9.0	77.3	28.0
Employees using the Internet	..	..	8.8	..	9.0	..	..	..	..	..	19.0	..	..	..	7.2	7.8	..	8.2	..	..
Businesses with Internet that have a website[1]	76.2	67.7	40.3	42.6	12.0	29.4	16.9	12.5	50.1	24.5	42.2	17.1	41.4	..	35.3	31.0	..	32.2	57.6	..
Businesses with an intranet[2]	..	50.2	44.0	22.7	0.8	..	..	..	57.0	..	33.3	33.1	37.4	..	31.0	..	84.7	..	24.2	..
Businesses receiving orders over the Internet[3]	42.9	..	4.4	5.9	15.3	2.4	30.0	10.9	..	..	4.4	3.4	7.2	..	4.1	24.1	33.7	7.8	21.9	..
Businesses placing orders over the Internet[4]	31.7	..	11.8	8.7	7.7	19.0	29.5	12.5	..	..	15.6	10.8	25.5	..	3.6	27.9	45.5	12.2	42.0	..
Businesses accessing the Internet by modes of access.[5]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Analogue modem	27.0	..	56.5	28.9	87.8	16.1	..	19.0	..	..	21.1	..	..	74.5	75.6	68.9	47.0	87.8	71.0	..
ISDN	..	..	11.0	10.2	17.9	..	..	..	..	..	2.9	..	..	..	9.3	..	17.7	4.4	..	..
Fixed line connection under 2 Mbps	71.4	..	4.9	42.4	..	31.9	..	6.0	..	..	76.7	..	..	4.2	4.1	..	..	14.4	..	..
Fixed line connection of 2 Mbps or more	..	..	1.8	76.4		52.4	..	..	..	..	2.2	..	98.0	..	1.7	..	5.8	..	..	..
Other	..	..	See notes	..	See notes	7.5	..	75.0	..	..	5.6	..	1.9	..	8.0	31.1	..	3.3	See notes	..
Businesses with a local area network (LAN)	64.6	..	46.3	22.7	..	..	55.2	..	..	..	76.7	88.4	64.6	18.4	54.9	45.8	84.7	..	..	36.1
Businesses with an extranet[6]	..	15.6	5.5	7.2	0.4	..	..	..	..	..	..	7.8	..	3.7	9.5	15.4	36.1	..	..	..
Businesses using the Internet by type of activity:[7]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Internet e-mail	90.0	72.1	..	91.1	79.9	96.2	87.9	65.6	99.6	..	..	..	..	..	..	93.8	..	70.0	97.7	..
Getting information about goods or services	70.0	68.2	..	..	..	93.8	61.7	54.7	..	..	..	..	..	..	61.8	56.6	..	..	..	..

Table 6 *(continued)*

Country/ Territory	Andorra	Argentina[8]	Bulgaria	Chile	Colombia	Hong Kong (China)	Kazakhstan	Macao (China)	Madagascar	Mauritius[9]	Morocco	Philippines	Republic of Korea	Rep. of Moldova	Romania	Russian Federation	Singapore	Thailand	Trinidad & Tobago	Ukraine
Reference year	2004	2003	2003	2003	2001	2004	2004	2003	2004	2002	2004	2002	2003	2003	2003	2003	2003	2004	2003	2003
Getting information from government organizations/ public authorities	..	..	59.1	..	..	58.5	..	..	..	..	..	..	..	..	56.1	..	..	..	..	..
Other information searches and research	..	..	..	..	..	..	86.1	..	64.2	..	..	..	..	..	..	..	..	85.6	83.7	..
Internet banking or accessing other financial services	62.0	..	41.7	..	..	34.1	..	..	..	..	..	..	..	..	43.4	..	..	5.6	..	..
Transacting with government organizations/ public authorities	25.0	..	61.0	..	..	..	..	9.4	..	..	..	..	..	..	12.6	..	..	..	..	..
Providing customer services	34.0	21.0	..	..	..	17.3	45.0	23.4	..	..	..	..	..	..	..	5.1	..	..	36.2	..
Delivering products online	22.0	..	..	..	..	21.8	..	..	..	..	..	..	..	..	..	5.7	..	..	..	..
Other	20.0	..	..	..	..	48.8	92.0	3.1	16.4	..	..	..	..	..	..	..	..	See notes	See notes	..

Notes:

1 Or web presence where the business has control over the content.

2 Morocco: Intranet is used for administration 12.4 per cent; internal messaging 4.4 per cent; events information 3.3 per cent; production management 3.6 per cent; resource management 2 per cent; sales management 2 per cent; document exchange 2 per cent; human resource management 0.5 per cent; and information management 0.4 per cent.

3 Philippines: Receiving orders is based on proportion of enterprises with online sales/revenue.

4 Philippines: Placing orders is based on proportion of enterprises with online purchases.
Russian Federation: Placing orders over all global information networks, including the Internet.

5 Bulgaria: Other broadband connection, e.g. cable etc. 25.6 per cent; wireless, e.g. satellite, mobiles, 8.9 per cent.
Colombia: Wireless 0.6 per cent and XDSL 0.8 per cent.
Hong Kong (China): Fixed line connection is measured at 3Mbps or under and over 3Mbps; other mode of access refers to mobile network.
Macao (China): Fixed line connection was reported indistinctly of speed; other modes of access refers to XDSL.
Republic of Moldova: Fixed line connection was reported irrespective of speed.
Morocco: Other modes of access refer to mobile phone.
Republic of Korea: Fixed line connection of 2Mbps or more includes xDSL, dedicated line and cable modem; no explanation given for other modes of access.
Russian Federation: Other modes of access refer to dedicated communication lines.
Trinidad and Tobago: Other modes of access include leased lines 4.7 per cent; both dial-up and leased lines 4.7 per cent; and wireless 4.7 per cent.

6 Russian Federation: Refers to global information networks other than the Internet.

7 Hong Kong (China): Getting information on goods and services includes other information searches and research; getting information from Government includes transacting with Government.
Macao (China): Getting information on goods and services refers to getting information in general; providing customer services includes purchases and sales.
Russian Federation: E-mail refers not only to Internet e-mail; providing customer services refers to after-sales services.
Thailand: Also reported monitoring the market 40 per cent; communication other than e-mail 11.1 per cent; advertising of own goods and services 16.7 per cent; transactions or communications with trading partners 17.8 per cent; other 5.6 per cent.

8 Argentina survey on manufacturing sector only.

9 Mauritius census/survey conducted only in microenterprises (1–9 employees).

Source: UNCTAD e-business database (2005).

Annex II

Distribution of countries

The distribution of countries by regional groups and type of development is based on UNCTAD's distribution of countries as set out in the *UNCTAD Handbook of Statistics,* 2004.

Level of Development / Region	Developed economies	Developing economies	South-East Europe and Commonwealth of Independent States
North America	Canada, USA (includes Puerto Rico and Guam)		
Latin America and the Caribbean, other America		Anguilla, Antigua and Barbuda, Argentina, Aruba, Bahamas, Barbados, Belize, Bolivia, Br. Virgin Isds, Brazil, Cayman Isds, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Rep., Ecuador, El Salvador, Falkland Isds (Malvinas), French Guiana, Grenada, Guadeloupe, Guatemala, Guyana, Haiti, Honduras, Jamaica, Martinique, Mexico, Montserrat, Neth. Antilles, Nicaragua, Panama, Paraguay, Peru, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Turks and Caicos Isds, Uruguay, US Virgin Isds, Venezuela	
Africa		Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Rep., Chad, Comoros, Congo, Côte d'Ivoire, Dem. 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, Réunion, Rwanda, Saint Helena, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Togo, Tunisia, Uganda, United Rep. of Tanzania, Zambia, Zimbabwe	
Asia	Israel, Japan	Afghanistan, Bahrain, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China, Dem. People's Rep. of Korea, Hong Kong SAR, India, Indonesia, Islamic Rep. of Iran, Iraq, Jordan, Kuwait, Lao People's Dem. Rep., Lebanon, Macao SAR, Malaysia, Maldives, Mongolia, Myanmar, Nepal, Palestinian Territory, Oman, Pakistan, Philippines, Qatar, Rep. of Korea, Saudi Arabia, Singapore, Sri Lanka, Syrian Arab Rep., Thailand, Timor-Leste, Turkey, United Arab Emirates, Viet Nam, Yemen	Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan
Europe	Andorra, Austria, Belgium, Belgium-Luxembourg, Cyprus, Czech Rep., Denmark, Estonia, Faeroe Isds, Finland, France, Germany, Gibraltar, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom		Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Rep. of Moldova, Romania, Russian Federation, Serbia and Montenegro, TFYR of Macedonia, Ukraine
Oceania	Australia, New Zealand	Cook Isds, Fiji, French Polynesia, FS Micronesia, Kiribati, Marshall Isds, N. Mariana Isds, Nauru, New Caledonia, Niue, Palau, Papua New Guinea, Samoa, Solomon Isds, Tokelau, Tonga, Tuvalu, Vanuatu, Wallis and Futuna Isds	

Source: UNCTAD Handbook of Statistics, 2004

Annex III

Classification of ICT goods

ICT goods classification, based on HS 1996, proposed by OECD

Telecommunications equipment

851711	Line telephone sets with cordless handsets
851719	Other telephone sets, video phones
851721	Facsimile machines
851722	Teleprinters
851730	Telephonic or telegraphic switching apparatus
851750	Other apparatus, for carrier-current line systems or for digital line systems
851780	Other electrical apparatus for line telephony or line telegraphy
851790	Parts for other electrical apparatus for line telephony or line telegraphy
852020	Telephone answering machines
852510	Transmission apparatus for radiotelephony, radiotelegraphy, radiobroadcasting or television not incorporating reception apparatus
852520	Transmission apparatus for radiotelephony, radiotelegraphy, radiobroadcasting or television incorporating reception apparatus
852530	Television cameras
852610	Radar apparatus
852790	Reception apparatus for radiotelephony, radiotelegraphy or radiobroadcasting, whether or not combined, in the same housing, with sound recording or reproducing apparatus or a clock, n.e.s
852910	Aerials and aerial reflectors of all kinds; parts suitable for use therewith
853110	Burglar or fire alarms and similar apparatus (2)
854420	Co-axial cable and other co-axial electric conductors
854470	Optical fibre cables

Computer and related equipment

847110	Analogue or hybrid automatic data processing machines
847130	Portable digital automatic data processing machines, weighing not more than 10 kg, consisting of at least a central processing unit, a keyboard and a display
847141	Digital automatic data processing machines comprising in the same housing at least a central processing unit and an input and output unit, whether or not combined
847149	Other digital automatic data processing machines, presented in the form of systems
847150	Digital processing units other than those of subheadings 8471.41 and 8471.49, whether or not containing in the same housing one or two of the following types of unit: storage units, input units, output units
847160	Automatic data processing machines, input or output units, whether or not containing storage units in the same housing
847170	Automatic data processing machines, storage units
847180	Other units of automatic data processing machines
847190	Magnetic or optical readers, machines for transcribing data onto data media in coded form and machines for processing such data, not elsewhere specified or included
847330	Parts and accessories of the machines of heading No. 84.71

Electronic components

850431	Electrical transformers having a power handling capacity not exceeding 1 kVA (2)
850450	Inductors (2)
850490	Parts of: electrical transformers, static converters (for example, rectifiers) and inductors (2)
852330	Cards incorporating a magnetic stripe, unrecorded (2)
852460	Cards incorporating a magnetic stripe, recorded (2)
852990	Parts suitable for use solely or principally with the apparatus of headings Nos. 85.25 to 85.28 except aerials and aerials reflectors
853221	Capacitors, fixed, tantalum having a reactive power handling capacity of less than 0.5 kvar
853224	Capacitors, fixed, ceramic dielectric, multilayer having a reactive power handling capacity of less than 0.5 kvar
853230	Variable or adjustable (pre-set) capacitors
853310	Fixed carbon resistors, composition or film types
853321	Electrical resistors, fixed, (including rheostats and potentiometers), other than heating resistors, for a power handling capacity <= 20 W
853329	Electrical resistors, fixed, (including rheostats and potentiometers), other than heating resistors, n.e.s..
853331	Wirewound variable resistors, for a power handling capacity <= 20 W
853339	Wirewound variable resistors, for a power handling capacity <= 20 W
853340	Other variable resistors, including rheostats and potentiometers
853390	Parts for electrical resistors (including rheostats and potentiometers), other than heating resistors
853400	Printed circuits
854011	Cathode-ray television picture tubes, including video monitor tubes, colour
854012	Cathode-ray television picture tubes, including video monitor tubes, black and white or other monochrome
854020	Television camera tubes; image converters and intensifiers; other photo-cathode tubes
854040	Data/graphic display tubes, colour, with a phosphor dot screen pitch smaller than 0.4 mm
854050	Data/graphic display tubes, black and white or other monochrome
854060	Other cathode-ray tubes
854071	Microwave tubes, magnetrons, excluding grid-controlled tubes
854072	Microwave tubes klystrons, excluding grid-controlled tubes
854079	Microwave tubes, other, excluding grid-controlled tubes
854081	Receiver or amplifier valves and tubes
854089	Valve and tubes, n.e.s.
854091	Parts of cathode-ray tubes
854099	Parts of thermionic or photo-cathode, valve and tubes, other than cathode-ray tubes
854110	Diodes, other than photosensitive or light emitting diodes
854121	Transistors, other than photosensitive, dissipation rate < 1 W
854129	Transistors, other than photosensitive transistors, n.e.s.
854130	Thyristors, diacs and triacs, other than photosensitive devices
854140	Photosensitive semiconductor devices, including photovoltaic cells whether or not assembled in modules or made up into panels; light emitting diodes
854150	Other semiconductor devices
854160	Mounted piezo-electric crystals
854190	Parts for semiconductor devices
854212	Cards incorporating electronic integrated circuits ("smart" cards)
854213	Metal oxide semiconductors (MOS technology)
854214	Circuits obtained by bipolar technology
854219	Integrated circuits monolitihic non-digital
854230	Other monolithic integrated circuits
854240	Hybrid integrated circuits
854250	Electronic microassemblies
854290	Parts for electronic integrated circuits and microassemblies

Audio and video equipment

851810	Microphones and stands therefor
851821	Single loudspeakers, mounted in their enclosures
851822	Multiple loudspeakers, mounted in the same enclosure
851829	Other loudspeakers, n.e.s
851830	Headphones and earphones, whether or not combined with a microphone, and sets consisting of a microphone and one or more loudspeakers
851840	Audio-frequency electric amplifiers
851850	Electric sound amplifier sets
851890	Parts of microphones, loudspeakers, headphones, earphones, combined microphone/loudspeaker sets, audio-frequency electric amplifiers and electric sound amplifier sets
851910	Coin- or disc-operated record-players
851921	Record-players, without loudspeaker
851929	Record-players, n.e.s.
851931	Turntables with automatic record changing mechanism
851939	Turntables, n.e.s.
851940	Transcribing machines
851992	Pocket-size cassette-players
851993	Other sound reproducing apparatus, cassette-type
851999	Sound reproducing apparatus, not incorporating a sound recording device, n.e.s.
852010	Dictating machines not capable of operating without an external source of power
852032	Other magnetic tape recorders incorporating sound reproducing apparatus, digital audio type
852033	Other magnetic tape recorders incorporating sound reproducing apparatus, cassette-type
852039	Other magnetic tape recorders incorporating sound reproducing apparatus
852090	Magnetic tape recorders and other sound recording apparatus, whether or not incorporating a sound reproducing device, n.e.s.
852110	Video recording or reproducing apparatus, whether or not incorporating a video tuner magnetic tape type
852190	Video recording or reproducing apparatus, whether or not incorporating a video tuner other type
852210	Parts and accessories suitable for use solely or principally with the apparatus of headings Nos. 85.19 to 85.21 pick-up cartridges
852290	Parts and accessories suitable for use solely or principally with the apparatus of headings Nos. 85.19 to 85.21 other
852311	Magnetic tapes, unrecorded, width <= 4 mm (1/6 in.) (2)
852312	Magnetic tapes, unrecorded, width > 4 mm (1/6 in.) but <= 6.5 mm (1/4 in.) (2)
852313	Magnetic tapes, unrecorded, width > 6.5 mm (1/4 in.) (2)
852320	Magnetic discs, unrecorded (2)
852390	Other prepared unrecorded media for sound recording or similar recording of other phenomena, other than products of Chapter 37
852540	Still image video cameras and other video camera recorders, digital cameras
852712	Pocket-size radio cassette-players capable of operating without an external source of power
852713	Radio-broadcast receivers, capable of operating without an external source of power, combined with sound recording or reproducing apparatus
852719	Other radio-broadcast receivers, capable of operating without an external source of power, not combined with sound recording or reproducing apparatus
852721	Radio-broadcast receivers with sound recording or reproducing apparatus, for motor vehicles, requiring external source of power
852729	Other radio-broadcast receivers for motor vehicles, not combined with sound recording or reproducing apparatus
852731	Other radio-broadcast receivers, including apparatus capable of receiving also radio-telephony or radiotelegraphy, combined with sound recording or reproducing apparatus
852732	Other radio-broadcast receivers, including apparatus capable of receiving also radio-telephony or radiotelegraphy, not combined with sound recording or reproducing apparatus but combined with a clock
852739	Other radio-broadcast receivers, including apparatus capable of receiving radio-telephony or radiotelegraphy, n.e.s.
852812	Reception apparatus for television, whether or not incorporating radio-broadcast receivers or sound or video recording or reproducing apparatus, colour

852813	Reception apparatus for television, whether or not incorporating radio-broadcast receivers or sound or video recording or reproducing apparatus, black and white or other monochrome
852821	Video monitors, colour
852822	Video monitors, black and white or other monochrome
852830	Video projectors

Other ICT goods

846911	Word-processing machines
847010	Electronic calculators capable of operation without an external source of electric power and pocket-size data recording, reproducing and displaying machines with calculating functions
847021	Other electronic calculating machines incorporating a printing device
847029	Other electronic calculating machines
847040	Accounting machines
847050	Cash registers
847310	Parts and accessories (other than covers, carrying cases and the like) suitable for use solely or principally with machines of heading No. 84.69
847321	Parts and accessories of the electronic calculating machines of subheading No. 8470.10, 8470.21 or 8470.29
847350	Parts and accessories equally suitable for use with machines of two or more of the headings Nos. 84.69 to 84.72
852691	Radio navigational aid apparatus
852692	Radio remote control apparatus
901041	Apparatus for the projection or drawing of circuit patterns on sensitised semiconductor materials – direct write-on-wafer apparatus
901042	Apparatus for the projection or drawing of circuit patterns on sensitised semiconductor materials – step and repeat aligners
901049	Apparatus for the projection or drawing of circuit patterns on sensitised semiconductor materials other
901410	Direction finding compasses
901420	Instruments and appliances for aeronautical or space navigation (other than compasses)
901480	Other navigational instruments and appliances
901490	Parts and accessories of direction finding compasses, other navigational instruments and appliances
901540	Photogrammetrical surveying instruments and appliances
901580	Other surveying instruments and appliances
901811	Electro-cardiographs
901812	Ultrasonic scanning apparatus
901813	Magnetic resonance imaging apparatus
901814	Scintigraphic apparatus
901819	Other electro-diagnostic apparatus (including apparatus for functional exploratory examination or for checking physiological parameters)
902212	Computed tomography apparatus
902213	Other apparatus based on the use of X-rays, for dental uses
902214	Other apparatus based on the use of X-rays, for medical, surgical or veterinary uses
902219	Other apparatus based on the use of X-rays, for other uses
902410	Machines and appliances for testing the hardness, strength, compressibility, elasticity or other mechanical properties of materials, metals
902480	Other machines and appliances for testing the hardness, strength, compressibility, elasticity or other mechanical properties of materials
902490	Parts and accessories for machines and appliances for testing the hardness, strength, compressibility, elasticity or other mechanical properties of materials
902620	Instruments and apparatus for measuring or checking the pressure of liquids or gases, excluding instruments and apparatus of heading Nos. 9014, 9015, 9028 or 9032
902710	Instruments and apparatus for physical or chemical analysis, gas or smoke analysis apparatus
902730	Spectrometers, spectrophotometers and spectrographs using optical radiations (UV, visible, IR)
902740	Instruments and apparatus for measuring or checking quantities of heat, sound or light, exposure meters
902750	Other instruments and apparatus using optical radiations (UV, visible, IR)

902780	Other instruments and apparatus for physical or chemical analysis
902810	Gas meters
902820	Liquid meters
902830	Electricity meters
902890	Parts for gas, liquid or electricity supply or production meters, including calibrating meters therefor
902910	Revolution counters, production counters, taximeters, mileometers, pedometers and the like
902920	Speed indicators and tachometers; stroboscopes
902990	Parts and accessories for revolution counters, production counters, taximeters, mileometers, pedometers and the like; speed indicators and tachometers, other than those of heading No. 90.14 or 90.15; stroboscopes
903010	Instruments and apparatus for measuring or detecting ionising radiations
903020	Cathode-ray oscilloscopes and cathode-ray oscillographs
903031	Multimeters without a recording device
903039	Other instruments and apparatus for measuring or checking voltage, current, etc. without a recording device
903040	Other instruments and apparatus, specially designed for telecommunications (for example, cross-talk meters, gain measuring instruments, distortion factor meters, psophometers)
903082	Other instruments for measuring or checking semiconductor wafers or devices
903083	Other instruments for measuring or checking semiconductor wafers or devices with a recording device
903110	Measuring or checking instruments, appliances and machines n.e.s, machines for balancing mechanical parts
903120	Measuring or checking instruments, appliances and machines n.e.s, test benches
903130	Measuring or checking instruments, appliances and machines n.e.s, profile projectors
903141	Other optical instruments and appliances, for inspecting semiconductor wafers or devices or for inspecting photomasks or reticles used in manufacturing semiconductor devices
903180	Other measuring or checking instruments, appliances and machines, n.e.s.
903190	Parts and accessories for measuring or checking instruments, appliances and machines, n.e.s.
903210	Thermostats
903220	Manostats
903289	Other automatic regulating or controlling instruments and apparatus, n.e.s.
903290	Parts and accessories for automatic regulating or controlling instruments and apparatus

Notes

1. Titles are according to the 2002 Harmonized System. Some have been changed slightly in the interests of clarity and space.
2. Industry of origin not in the OECD ICT sector.
3. HS 1996 and HS 2002 codes differ.

Annex IV

Core list of ICT indicators

Agreed at the WSIS Thematic Meeting on Measuring the Information Society (Geneva, 7–9 February 2005)

Core indicators on infrastructure and access

Basic core	
A-1	Fixed telephone lines per 100 inhabitants
A-2	Mobile cellular subscribers per 100 inhabitants
A-3	Computers per 100 inhabitants
A-4	Internet subscribers per 100 inhabitants
A-5	Broadband Internet subscribers per 100 inhabitants
A-6	International Internet bandwidth per inhabitant
A-7	Percentage of population covered by mobile cellular telephony
A-8	Internet access tariffs (20 hours per month), in US$, and as a percentage of per capita income
A-9	Mobile cellular tariffs (100 minutes of use per month), in US$, and as a percentage of per capita income
A-10	Percentage of localities with public Internet access centres (PIACs) by number of inhabitants (rural/urban)
Extended core	
A-11	Radio sets per 100 inhabitants
A-12	Television sets per 100 inhabitants

Core indicators on access and use of ICTs by households and individuals

Basic core	
HH-1	Proportion of households with a radio
HH-2	Proportion of households with a TV
HH-3	Proportion of households with a fixed line telephone
HH-4	Proportion of households with a mobile cellular telephone
HH-5	Proportion of households with a computer
HH-6	Proportion of individuals that used a computer (from any location) in the last 12 months
HH-7	Proportion of households with Internet access at home
HH-8	Proportion of individuals that used the Internet (from any location) in the last 12 months
HH-9	Location of individual use of the Internet in the last 12 months *Response categories:* • At home • At work • Place of education • At another person's home • Community Internet access facility (specific denomination depends on national practices) • Commercial Internet access facility (specific denomination depends on national practices) • Others

HH-10	Internet activities undertaken by individuals in the last 12 months: *Response categories:* • Getting information ❑ About goods or services ❑ Related to health or health services ❑ From government organisations/public authorities via websites or e-mail ❑ Other information or general Web browsing • Communicating • Purchasing or ordering goods or services • Internet banking • Formal education or training activities • Dealing with government organisations/public authorities • Leisure activities ❑ Playing/downloading video or computer games ❑ Downloading movies, music or software ❑ Reading/downloading electronic books, newspapers or magazines ❑ Other leisure activities
Extended core	
HH-11	Proportion of individuals with use of a mobile telephone
HH-12	Proportion of households with access to the Internet by type of access • Response categories should allow an aggregation to narrowband and broadband, where broadband excludes slower speed technologies, such as dial-up modem, ISDN and most 2G mobile phone access. Broadband will usually have an advertised download speed of at least 256 Kbps.
HH-13	Frequency of individual access to the Internet in the last 12 months (from any location) *Response categories:* • At least once a day • At least once a week but not every day • At least once a month but not every week • Less than once a month
Reference indicator	
HH-R1	Proportion of households with electricity*

* Electricity is not specifically an ICT commodity, but is an important prerequisite for developing countries to use ICTs therefore it is not included in the core list, but it is a reference indicator, just like the number of households, population, GDP etc.

Core indicators on use of ICTs by businesses

Basic core	
B-1	Proportion of businesses using computers
B-2	Proportion of employees using computers
B-3	Proportion of businesses using the Internet
B-4	Proportion of employees using the Internet
B-5	Proportion of businesses with a web presence
B-6	Proportion of businesses with an intranet
B-7	Proportion of businesses receiving orders over the Internet
B-8	Proportion of businesses placing orders over the Internet

Extended core	
B-9	Proportion of businesses using the Internet by type of access • Response categories should allow an aggregation to narrowband and broadband, where broadband excludes slower speed technologies, such as dial-up modem, Integrated Services Digital Network (ISDN) and most second generation (2G) mobile phone access. Broadband will usually have an advertised download speed of at least 256 kbps.
B-10	Proportion of businesses with a Local Area Network (LAN)
B-11	Proportion of businesses with an extranet
B-12	Proportion of businesses using the Internet by type of activity *Response categories*: Proportion of businesses using the Internet by type of activity • Sending and receiving email • Getting information ❑ About goods or services ❑ From government organisations/public authorities via websites or email ❑ Other information searches or research activities • Performing Internet banking or accessing other financial services • Dealing (interacting) with government organisations/public authorities • Providing customer services • Delivering products online

Core indicators on the ICT sector and trade in ICT goods

ICT sector and trade basic core	
ICT-1	Proportion of total business sector workforce involved in the ICT sector
ICT-2	Value added in the ICT sector (as a percentage of total business sector value added)
ICT-3	ICT goods imports as percentage of total imports
ICT-4	ICT goods exports as percentage of total exports

References

Departamento Administrativo Nacional de Estadística (DANE) (2003). *Modelo de la medición de las tecnologías de la información y las comunicaciones –TIC, Resumen ejecutivo,* http://www.dane.gov.co/inf_est/tics/Diciembre2003/resumen_ ejecutivo.pdf.

European Commission (2005). eEurope 2005 Action Plan.

Eurostat (2005). *Statistics in focus : Industry, trade and services - population and social conditions - science and technology*, 18/2005.

Infocomm Development Authority of Singapore (IDA) (2001). *Summary of findings and follow-up to industry consultation: A framework on building trust and confidence in electronic commerce,* http://www.ida.gov.sg/idaweb/doc/download/I888/Rel_of_findg_Trust_&_Confidence_in_EC_(final).pdf.

Infocomm Development Authority of Singapore (IDA) (2002a). *Survey on Broadband and Wireless Usage in Singapore 2002, Summary Report*, http://www.ida.gov.sg/idaweb/doc/download/I2389/Survey_on_BB_and_wireless_usage_in_Spore_2002.pdf.

Infocomm Development Authority of Singapore (IDA) (2002b). *Survey on Infocomm Literacy for 2002, Executive Summary,* http://www.ida.gov.sg/idaweb/doc/download/I2533/Survey_on_InfocommLiteracy_for_2002.pdf.

Infocomm Development Authority of Singapore (IDA) (2003a). *Annual Survey on Infocomm Manpower for 2003, Executive Summary,* http://www.ida.gov.sg/idaweb/doc/download/I3015/2003_MPExecSummaryFinalv1_1.pdf.

Infocomm Development Authority of Singapore (IDA) (2003b). *Annual Survey on Infocomm Usage in Businesses for 2003, Executive Summary,* http://www.ida.gov.sg/idaweb/doc/download/I3018/Annual_Survey_on_Infocomm_Usage_in_Businesses_for_2003_Executive_Summary_.pdf.

Infocomm Development Authority of Singapore (IDA) (2003c). *Singapore: A snapshot of the Infocomm sector,* http://www.ida.gov.sg/idaweb/doc/download/I2235/Snapshot.pdf.

ITU (2001). *The e-city: Singapore Internet case study,* http://www.itu.int/ITU-D/ict/cs/singapore/material/Singapore.pdf.

ITU (2003). *World Telecommunications Development Report.*

ITU (2004). *The fifth pillar: Republic of Mauritius ICT case study,* http://www.itu.int/ITU-D/ict/cs/mauritius/material/CS_MUS.pdf.

Ministry of Public Administration and Information of Trinidad and Tobago (2003a). *National ICT Benchmarking Study: Trinidad and Tobago versus Selected Comparator Countries,* http://www.nict.gov.tt/downloads/National_ICT_Benchmarking_Study-Full_Report.pdf.

Ministry of Public Administration and Information of Trinidad and Tobago (2003b). *National ICT Strategy Development: Draft E-readiness Assessment - Examining Trinidad and Tobago's Current State of ICT Development*, http://www.nict.gov.tt/downloads/National_e-Readiness_Assessment-FullReport.pdf.

National Computer Board of Mauritius (2001). *ICT Usage Survey 2001: A survey on the ICT adoption of businesses in Mauritius,* http://ncb.intnet.mu/ncb/downloads/Downloads/Reports%20and%20surveys/ictusagesurvey2001.pdf.

National Computer Board of Mauritius (2002). *Information and Communications Technology (ICT) Outlook: ICT Indicators For Mauritius.* Request for proposal for assessment (tender), http://ncb.intnet.mu/ncb/downloads/Downloads/Reports%20and%20surveys/ICT%20Outlook2002.pdf.

OECD (2004). *Information Technology Outlook*, 2004.

OECD (2005). *Methodologies and Model Questions: Business Core ICT Use Indicators.* Paper presented at the WSIS Thematic Meeting held from 7 to 9 February 2005 in Geneva.

Partnership on Measuring ICT for Development (2005a). Core ICT indicators.

Partnership on Measuring ICT for Development (2005b). Measuring ICT: the global status of ICT indicators.

Sridhar KS and V Sridhar (2004). Telecommunications infrastructure and economic growth: Evidence from developing countries. Working paper, National Institute of Public Finance and Policy, New Delhi.

Torero M, S Chowdhury and V Galdo (2002). Telecommunications infrastructure and economic growth: A cross-country analysis. Mimeo.

UNCTAD (2003a). Information society measurements: The case of e-business. Background paper for Expert Meeting on Measuring Electronic Commerce as an Instrument for the Development of the Digital Economy, Geneva, 8–10 September 2003.

UNCTAD (2002), *E-Commerce and Development Report 2002*.

UNCTAD (2003b), *E-Commerce and Development Report 2003*.

UNCTAD (2004), *E-Commerce and Development Report 2004*.

UNCTAD (2005). Stocktaking of ICT business indicators. Paper prepared for the WSIS Thematic Meeting on Measuring the Information Society, Geneva, 7–9 February 2005.

Waverman L, Meschi M and M Fuss (2005). The impact of telecoms on economic growth in developing countries, in Vodaphone Policy Paper Series, Number 2, March 2005, pp. 10–23, http://www.vodafone.com/assets/files/en/GPP%20SIM%20paper.pdf.

World Bank (2005). *Financing Information and Communication Infrastructure Needs in the Developing World: Public and Private Roles*, draft prepared for the WSIS Task Force on Financing ICT, February 2005.

World Trade Organization (2004). *International Trade Statistics 2004*.

Notes

1. According to the ITU definition, broadband refers to connections with a speed of at least 256 Kbps covering both fixed and wireless access. See http://www.itu.int/ITU-D/ict/material/Top50_e-WTIM-2005-8June.doc

2. Shipment data generally include laptops. However, they do not include mobile devices.

3. There are some comparability issues related to the reporting of mobile subscribers. These arise primarily from the fact that in some countries, inactive prepaid subscribers or prepaid double subscribers are included. This may occur in countries with a relatively large number of prepaid subscribers (mainly in Asia).

4. Shyam Telecom as reported at http://news.bbc.co.uk/2/hi/technology/3256516.stm.

5. See chapter 7 of UNCTAD (2004).

6. *Economist,* The real digital divide, 12 March 2005. The article describes Coca-Cola vendors in a market in Zambia being paid by mobile phone.

7. In 2004, 23 countries were surveyed, and this resulted in limited comparable data for 10 countries. In 2005, 39 countries were surveyed, the survey resulting in limited comparable data for 19 countries.

8. Broadband refers to speeds equal to, or greater than, 256 Kbps. ADSL broadband will carry over 512 Kbps, while SDSL can carry from 256 Kbps to 2 Mbps. ISDN can carry up to 128 Kbps (two high-speed lines capable of running at 64 Kbps each), which can be sufficient for most home users and small enterprises. For comparison, a standard analog modem's speed is 56 Kbps.

9. For a definition of e-commerce, see OECD (2004).

10. This information is available in the website of the US Bureau of Census. See http://www.census.gov/eos/www/ebusiness614.htm.

11. This information is available in the website of Statistics Canada. See http://www.statcan.ca/Daily/English/050420/d050420b.htm.

12. Data available only for Denmark, Germany, Greece, Spain, Italy, Luxembourg, Portugal, Finland, the United Kingdom and Norway as at 16 June 2005. See http://epp.eurostat.cec.eu.int/.

13. Singapore and Trinidad and Tobago data are from 2003. Colombia data are from 2001.

14. Full electronic case handling: public service dealt with entirely via the website, including decision and delivery.

15. An intranet is a network using the same protocol as the Internet and allowing communication within an organization. It is typically set up behind a firewall to control access.

16. An extranet is a private, secure extension of the intranet running on Internet protocol that allows external users to access some parts of an organization's intranet.

17. A draft classification of trade in ICT services is currently under discussion in the OECD Working Party on Indicators for the Information Society (WPIIS). For further information, see OECD (2004).

18. In 2003, exports of ICT goods amounted to $1126 billion, while exports of agriculture ($674 billion), textiles ($169 billion) and clothing ($226 billion) amounted to $1069 billion (WTO, 2004).

19. It is worth noting that the above figures are based on current prices and, as ICT goods have experienced declining prices, do not fully reflect the changes in terms-of-trade volume.

20. Both Malaysia and Singapore experienced in 2001 a fall in their level of ICT goods exports and, while during 2002 and 2003 exports of ICT goods grew again, they have not reached their 2000 levels.

21. A detailed description of these indicators and their calculation is provided in chapter nine of the *E-Commerce and Development Report 2002* (UNCTAD, 2002). The revealed comparative advantage (RCA) index, defined as a country's share of world exports of ICT goods divided by its share of total world trade, measures the relative export performance of a country in the ICT manufacturing industry. Countries with RCA indices above one and positive RCA growth rates are those most competitive in exporting ICT goods. On the other hand, the study of the world market shares in ICT goods of individual countries over time highlights which are the countries that are gaining ground in the international ICT mar-

ket. As in the case of the RCA index, a WMS index above one and a positive WMS growth rate shows that a country is expanding its market share in the global ICT goods market.

22. Data cover only the 15 LDCs that reported their exports of ICT goods for 2003.

23. Data cover only the 18 LDCs that reported their imports of ICT goods for 2003.

24. A detailed list of the ICT goods covered under each category is provided in annex III.

25. A number of regional meetings on ICT statistics were held in the second part of 2004 for Western Asia (Beirut, October 2004), Africa (Gaborone, October 2004), and Latin America and the Caribbean (Santiago, November 2004). There was also an ICT statistics meeting in Wellington, New Zealand (December 2004) for some of the Asia-Pacific countries. Each of these meetings resulted in a regional core list of ICT indicators. These lists, together with the results of the stocktaking inventory and the experience of the Partners working with NSOs in both developed and developing countries, were used as an input into the finalization of an initial core list of ICT indicators.

26. The model surveys can be downloaded from the OECD website on "Measuring the Information Economy" at http://www.oecd.org/document/22/0,2340,en_2649_34449_34508886_1_1_1_1,00.html.

27. Within the framework of the Partnership on "Measuring ICT for Development", a global stocktaking exercise was carried out to measure the availability of official information society statistics. In July 2004, a metadata questionnaire on ICT statistics was sent by ECA, ECLAC, ESCAP, ESCWA and UNCTAD/ECE to NSOs of all developing countries and a number of Central and Eastern European countries. The questionnaire aimed to provide an overview of the types of surveys that NSOs have in place to collect data and statistics on ICTs and the actual indicators collected. It consisted of four sections covering general aspects of ICT statistics and surveys, household statistics, business statistics and other areas of ICT statistics. In the business statistics section, NSOs were asked to respond to questions about which indicators they already collect, which they are planning to collect in the next year or three years and those which they do not plan to collect at this stage. They were also asked to indicate the type of collections used to gather this information and the level of demand for ICT business indicators in their countries.

28. For a complete presentation of the results, see UNCTAD (2005).

29. While the stocktaking survey was carried out only in non-OECD countries, OECD members, in a separate exercise, were asked to provide information on the list of 20 household and business indicators.

30. For further information on WPIIS, see http://www.oecd.org/document/22/0,2340,en_2649_37441_34508886_1_1_1_37441,00.html.

31. See http://www.fastforward.tt, http://vision2020.info.tt/about/, and http://nict.gov.tt/.

32. The survey also fed into an e-Readiness Assessment (Ministry of Public Administration and Informatio of Trinidad and Tobago, 2003b) that was an integral part of Trinidad & Tobago's National ICT Strategy development.

33. 2003 National Survey of E-Commerce Usage and Awareness among Businesses.

34. The corresponding International Standard Industrial Classification (ISIC) tabulation category is H (Hotels and Restaurants).

35. See http://nict.gov.tt/plan/documents/Chapter_Four.pdf.

36. Its 1998 E-Commerce Master Plan had a target of 50 per cent of businesses conducting e-commerce by the year 2003 (ITU, 2001). IDA reported achieving 42 per cent (IDA, 2003b).

37. Singapore has a decentralized statistical system, and official statistics are collected and compiled by the DOS as well as by other research and statistical units, government departments and statutory boards.

38. The "Collaborative High-Tech Manufacturing Plan" was launched in 2004. See http://www.ida.gov.sg/idaweb/ebusiness/infopage.jsp?infopagecategory=&infopageid=I2852&versionid=1.

39. A consultation sought feedback from the industry and public as to the level of trust in e-commerce in order to raise the level of such activities. See IDA (2001).

40. Singapore also periodically collects more in-depth information on ICT "manpower", i.e. employees that work with ICTs, by occupational groups and by sector (ICT-related or end-user), and ICT literacy or savvy among the workforce. See http://www.ida.gov.sg/idaweb/manpower/ and IDA (2002b, 2003a).

41. See http://www.e-cybercity.mu/bpml.asp. See also the ITU case study on Mauritius (ITU, 2004).

42. "L'Etat mènera le progrès des Tics", article in the *Express* newspaper of Mauritius, 5 April 2005, http://www.lexpress.mu/display_search_result.php?news_id=39181.

43. The tender background document includes a detailed description of the comprehensive set of indicators to be collected and their rationale.

44. See http://www.agenda.gov.co/.

45. http://www.agenda.gov.co/documents/files/ComparativoIndices.PDF.

46. Presentation by Colombia's Minister of Communications, April 2005, available at http://www.agenda.gov.co/.