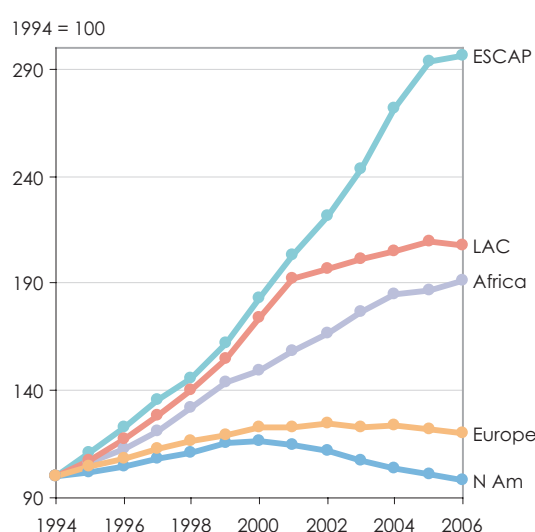


17. Information and communication technology

Information and communication technology has expanded significantly in Asia and the Pacific over the last decade.

The Asian and Pacific region experienced the fastest growth in the number of fixed telephone lines in the world, from 6 per 100 population in 1995 to 16 in 2006. The region has roughly the same per capita number of fixed telephone lines as Latin America and the Caribbean, but only a third of that of Europe.

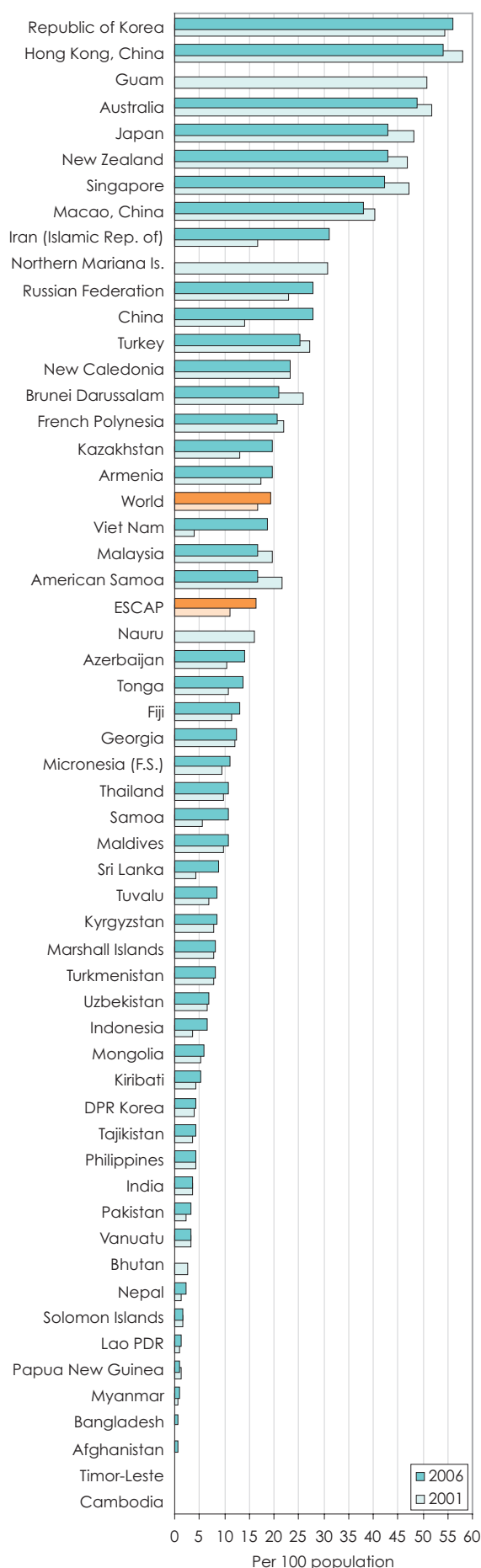
Figure 17.1 Fixed telephone lines per 100 population for major world regions, index of change, 1994-2006



High-income economies have twice as many fixed telephone lines per capita as middle-income economies, and over 11 times the number in low-income economies. The per capita number of fixed telephone lines, however, is decreasing in high-income and developed countries/areas. In Hong Kong, China, for example, this number went down from 59 in 2000 to 54 in 2006; in Australia, it fell from 53 to 49 during the same period. Japan experienced the largest decline, from 50 lines in 2000 to 43 by 2006. This trend can be explained by the explosion in the use of mobile phones since 2000, when just over half (54 per cent) of all people in high-income countries/areas in the region used a mobile phone. By 2006, that number had gone up to 85 per cent.

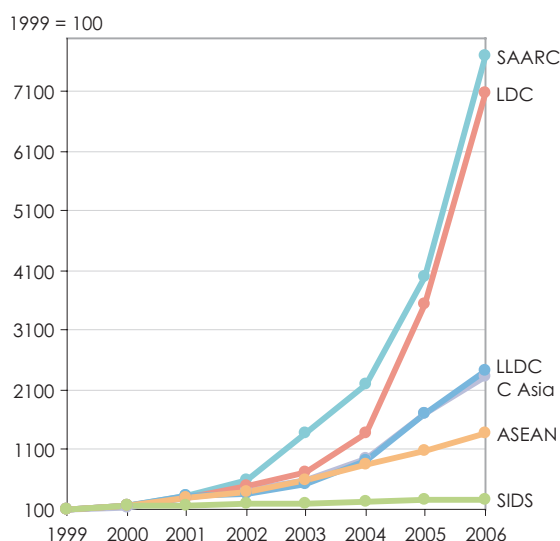
In the poorer parts of Asia and the Pacific, the rapid development of mobile phone networks seems to have stifled the expansion of fixed-line systems. In low-income countries and SAARC member countries — groups which, for a considerable part, overlap — the number of fixed telephone lines per

Figure 17.2 Fixed telephone lines per 100 population in Asia and the Pacific, 2001 and 2006



100 people was just 4.0 and 3.3, respectively, in 2006, in both cases lower than the year before. In least developed countries, the number did not even reach 1 in 2006. At the same time, with mobile phone use as a share of total phone use reaching 77, 75 and 80 per cent, respectively, in low-income countries, SAARC member countries and least developed countries, nowhere else in Asia and the Pacific is the share higher.

Figure 17.3 Mobile phone subscribers in selected Asian and Pacific country/area groupings, 1999-2006



In Cambodia, for example, 97 per cent of all phones are mobile (from 2006 data). The ease of adding mobile phone subscribers compared with wired subscribers has pushed the share of mobile phones to over 90 per cent in Afghanistan and Bangladesh, as shown in figure 17.5.

Three economies in the region have more than one mobile cellular telephone per person. Macao, China, had 137 mobile subscriptions per 100 population in 2006, while Hong Kong, China, had 131 and Singapore 109. Maldives along with the Russian Federation, Thailand and Macao, China, registered the most notable increases in the absolute number of mobile subscribers.

The increase in fixed lines concurrent with improvements in wireless technology has contributed to wider use of the Internet. Between 1999 and 2006, the number of Internet users in Asia and the Pacific increased five-fold, from 2 to 12 per 100 inhabitants, but this is still below the world average of 17 and far below the 69 in North America and 43 in Europe.

Income and access as well as use of the Internet are highly interlinked. In high-income economies in the region, there are, on average, 68 Internet users

Figure 17.4 Mobile phone subscribers per 100 population in Asia and the Pacific, 2001 and 2006

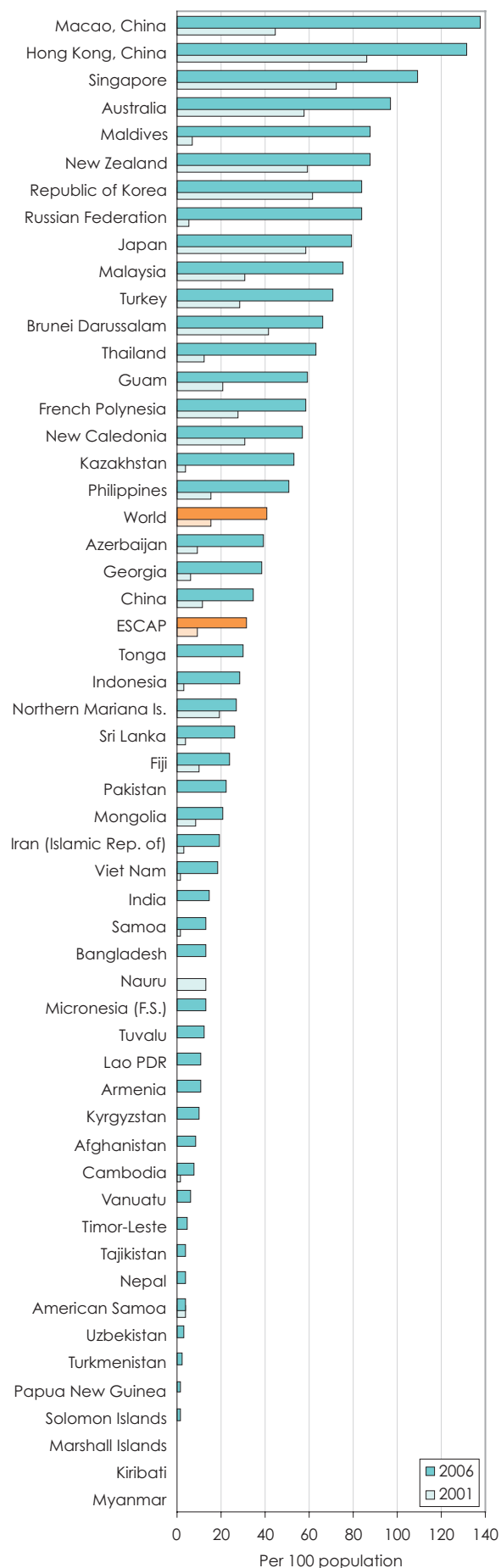
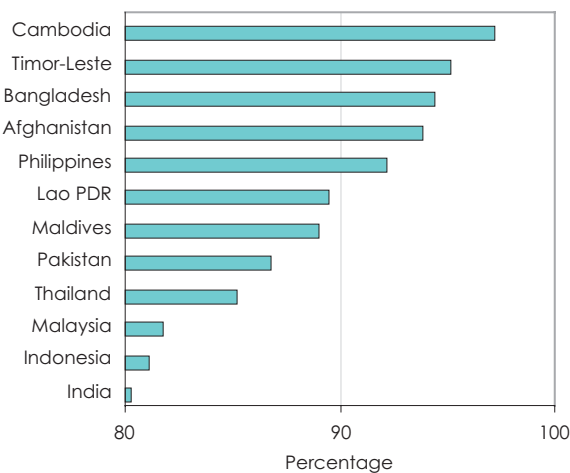


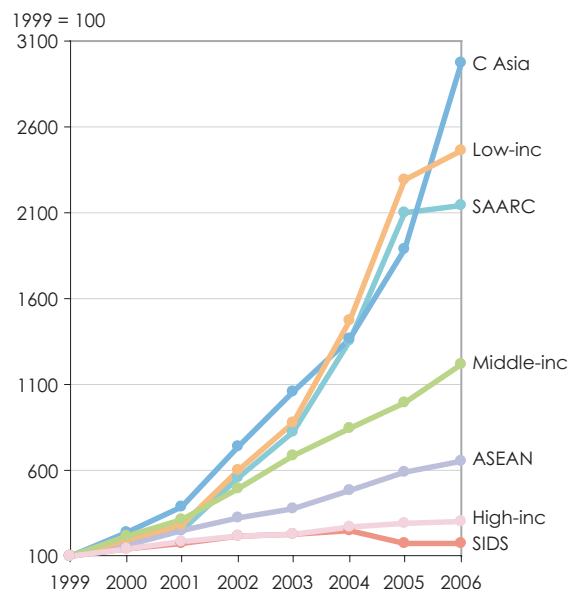
Figure 17.5 Countries with an over 80 per cent mobile phone share of total phone lines, 2006



per 100 inhabitants, compared with 11 in middle-income economies and about 5 in low-income economies.

Among the developing countries, small island developing States have high Internet penetration, 15 per 100 population, compared with 10 in ASEAN member countries and 5 in SAARC member countries. In Guam, there are 39 Internet users per 100 inhabitants, while New Caledonia has about 33.

Figure 17.6 Growth in number of Internet users in selected country/area groupings, 1999-2006

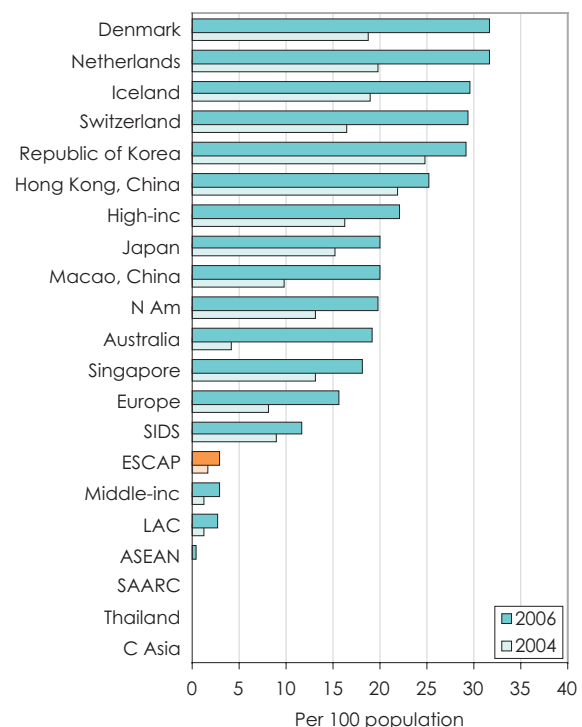


The number of Internet users has risen most rapidly in Central Asia, from almost none in 1995 to 6.3 in 2006. SAARC members and low-income

economies have also made progress, although their starting levels in 1999 were quite low. Despite some growth in the number of Internet users in least developed countries, they still have not attained a level of at least 1 user per 100 inhabitants.

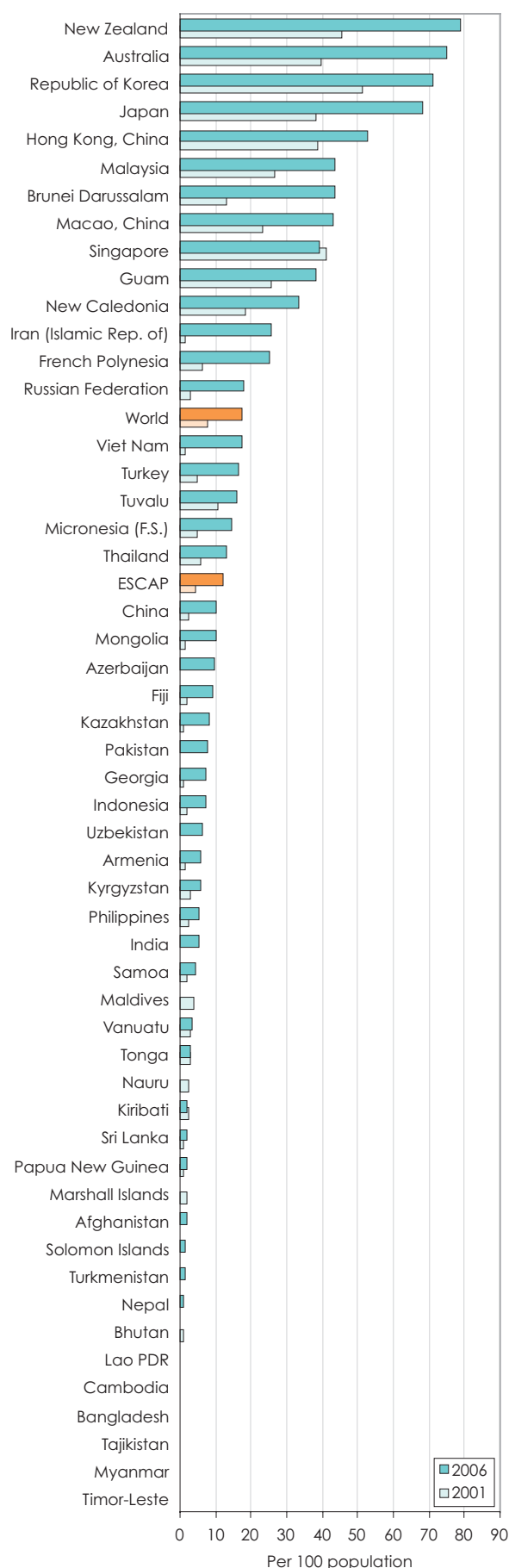
The increase in the number of Internet users has translated into additional demand for broadband connections. The number subscribers in the region is similar to that of Latin America and the Caribbean. In 2006, there were 3 broadband subscribers per 100 people in Asia and the Pacific, compared with 20 in North America and 16 in Europe.

Figure 17.7 Number of broadband users in selected country/area groupings, 2004 and 2006



The Republic of Korea, with 29 subscribers per 100 population, leads the region and ranks as the fifth country with the highest number of subscribers to broadband in the world, behind Denmark, the Netherlands, Iceland and Switzerland. Hong Kong, China, also has a high number of subscribers, at 25, while Australia, Japan and Macao, China, have 20 broadband subscribers per 100 population. The number of broadband subscribers in the rest of the Asian and the Pacific region is still low, with the exception of Singapore, which has 18 subscribers per 100 inhabitants, and New Zealand, which has 14.

Figure 17.8 Internet users per 100 population in Asia and the Pacific, 2001 and 2006



Number of fixed telephone mainlines (per 100 population): A main line is a fixed telephone line connecting the subscriber's terminal equipment to the public switched network. Synonymous with Direct Exchange Line (DEL), and may or may not be the same as an access line or a subscriber. *Aggregates:* Averages are calculated using total population as weight. *Source:* International Telecommunication Union, ICT Statistics Database, (online database, accessed in August 2007).

Number of cellular subscribers (per 100 population): The number of portable telephones, digital or analogue, subscribing to a public mobile telephone service and that provide access to Public Switched Telephone Network (PSTN) using cellular technology. *Aggregates:* Averages are calculated using total population as weight. *Source:* International Telecommunication Union, ICT Statistics Database, (online database, accessed in August 2007).

Mobile phones as a share of total phone lines (per 100 population): The share of total mobile phones in total of fixed and mobiles phones. *Aggregates:* Averages are calculated using total population as weight. *Source:* Calculated by ESCAP using data from International Telecommunication Union, ICT Statistics Database, (online database, accessed in August 2007).

Number of internet users (per 100 population): The number of internet users divided by the total population, expressed per 100 population. The estimation method varies by country or area. The number of actual users is often derived from the number of subscribers indicated by Internet service providers. Dedicated and regular surveys are also used as sources. *Aggregates:* Averages are calculated using total population as weight. *Source:* International Telecommunication Union, ICT Statistics Database, (online database, accessed in August 2007).

Number of broadband internet subscribers (per 100 population): The number of subscribers who access the public Internet at speeds equal to, or greater than, 256 kilobits per second, in one or both directions. The qualifying lowest speed may vary by country. Excludes subscribers with access to data communications via mobile cellular networks. *Aggregates:* Averages are calculated using total population as weight. *Source:* International Telecommunication Union, ICT Statistics Database, (online database, accessed in August 2007).

17.1 Fixed and mobile phones

	Number of fixed telephone mainlines				Number of cellular subscribers			Mobile phone as share of total phone lines		
	Per 100 population				Per 100 population			Per 100 population		
	1995	2000	2005	2006	2000	2005	2006	2000	2005	2006
East and North-East Asia										
China	3.3	11.4	26.6	27.8	6.7	29.9	34.8	37.1	52.9	55.6
DPR Korea	2.4	2.3	4.4	4.4						
Hong Kong, China	53.3	58.9	53.9	54.1	81.7	123.5	131.5	58.1	69.6	70.8
Macao, China	36.9	40.9	37.9	38.1	32.7	115.8	137.4	44.4	75.3	78.3
Mongolia	3.5	5.0	5.9	5.9	6.5	21.1	21.1	56.8	78.1	78.1
Republic of Korea	41.8	56.2	55.9	56.0	58.3	79.4	83.8	50.9	58.7	59.9
South-East Asia										
Brunei Darussalam	24.0	24.3	22.4	21.0	28.6	62.3	66.5	54.1	73.5	76.0
Cambodia	0.1	0.2	0.2	0.2	1.0	7.6	7.9	80.9	97.0	97.2
Indonesia	1.7	3.2	5.7	6.6	1.8	21.1	28.3	35.5	78.6	81.1
Lao PDR	0.4	0.8	1.3	1.3	0.2	10.8	10.8	23.7	89.4	89.4
Malaysia	16.6	19.9	16.8	16.8	22.0	75.2	75.5	52.5	81.7	81.8
Myanmar	0.4	0.5	0.9	0.9	0.0	0.2	0.4	4.7	20.3	29.8
Philippines	2.1	4.0	4.0	4.3	8.4	41.3	50.8	67.8	91.2	92.2
Singapore	40.5	48.4	42.4	42.3	68.4	100.8	109.3	58.5	70.4	72.1
Thailand	6.0	9.1	11.0	10.9	5.0	48.5	63.0	35.3	81.6	85.2
Timor-Leste			0.3	0.3		3.5	4.9		93.5	95.2
Viet Nam	1.1	3.2	18.8	18.8	1.0	11.4	18.2	23.7	37.7	49.5
South and South-West Asia										
Afghanistan	0.1	0.1	0.3	0.5		4.0	8.1		92.3	93.9
Bangladesh	0.3	0.4	0.8	0.8	0.2	6.4	13.3	36.2	89.4	94.4
Bhutan	0.9	2.2	4.0			4.7			53.6	72.3
India	1.3	3.2	4.6	3.6	0.4	8.2	14.8	9.9	64.2	80.3
Iran (Islamic Rep. of)	8.6	14.9	27.3	31.2	1.5	10.4	19.4	9.2	27.6	38.3
Maldives	5.7	9.1		10.9	2.8		87.9	23.8	86.2	89.0
Nepal	0.4	1.2	1.8	2.2	0.1	0.8	3.8	3.7	31.9	63.6
Pakistan	1.7	2.2	3.4	3.3	0.2	8.3	22.0	9.1	71.0	86.8
Sri Lanka	1.2	4.2	6.0	9.0	2.3	16.2	25.9	35.9	73.0	74.2
Turkey	21.0	27.0	25.9	25.4	23.6	59.6	71.0	46.7	69.7	73.7
North and Central Asia										
Armenia	18.1	17.3	19.7	19.7	0.6	10.5	10.5	3.2	34.9	34.9
Azerbaijan	8.2	9.8	13.0	14.0	5.2	26.7	39.2	34.4	67.2	73.7
Georgia	11.0	10.8	12.7	12.5	4.1	26.3	38.4	27.7	67.3	75.5
Kazakhstan	12.4	12.2	18.3	19.8	1.3	36.4	52.9	9.7	66.6	72.8
Kyrgyzstan	7.9	7.7	8.4	8.4	0.2	10.3	10.3	2.3	55.2	55.2
Russian Federation	16.9	21.9	27.9	27.9	2.2	83.6	83.6	9.2	75.0	75.0
Tajikistan	4.5	3.6	4.3	4.3	0.0	4.1	4.1	0.5	48.6	48.6
Turkmenistan	7.1	8.2	8.2	8.2	0.2	2.2	2.2	2.0	20.9	20.9
Uzbekistan	6.8	6.7	6.7	6.7	0.2	2.7	2.7	3.1	28.6	28.6
Pacific										
American Samoa	19.0	17.9	16.7	16.7	3.5	3.6	3.6	16.3	17.5	17.5
Cook Islands										
Fiji	8.4	10.7	13.3	13.3	6.8	24.2	24.2	38.9	64.6	64.6
French Polynesia	22.4	22.6	20.8	20.7	16.8	46.8	58.5	42.6	69.2	73.9
Guam	48.2	48.0	50.9		17.6	59.4	59.4	26.8	55.1	
Kiribati	2.6	4.0	5.1	5.1	0.4	0.7	0.7	8.1	11.8	11.8
Marshall Islands	6.6	7.8	8.3	8.3	0.9		1.1	9.1	11.8	11.8
Micronesia (F.S.)	7.5	9.0	11.2	11.2		12.7	12.7		53.2	53.2
Nauru	14.1	15.7	16.0		10.5	13.0		40.0	45.5	
New Caledonia	22.8	23.8	23.3	23.3	23.3	56.7	56.7	49.5	70.8	70.8
Niue										
Northern Mariana Is.	26.3	30.3			4.3	27.3	27.3	12.5	100.0	
Palau									43.3	53.2
Papua New Guinea	1.0	1.3	1.1	1.1	0.2	1.3	1.3	11.7	54.1	54.1
Samoa	4.6	4.9	10.9	10.9	1.4	13.4	13.4	22.7	55.2	55.2
Solomon Islands	1.8	1.8	1.6	1.6	0.3	1.3	1.3	13.5	44.8	44.8
Tonga	6.8	9.8	13.7	13.7	0.2	29.8	29.8	2.0	68.6	68.6
Tuvalu	5.5	7.0	8.5	8.5		12.4	12.4		59.1	59.1
Vanuatu	2.5	3.5	3.2	3.2	0.2	5.9	5.9	5.7	64.5	64.5
ESCAP Developed Economies										
Australia	49.3	52.5	50.2	48.8	44.7	91.4	97.0	46.0	64.5	66.5
Japan	49.6	48.8	45.3	43.0	52.6	75.3	79.3	51.9	62.4	64.8
New Zealand	46.8	47.5	42.9	42.9	40.0	87.6	87.6	45.7	67.1	67.1
ESCAP	6.1	10.1	16.1	16.2	6.5	25.5	31.5	26.7	61.6	69.2
LLDC	5.3	5.2	6.3	6.6	0.9	9.3	13.3	7.4	54.0	62.3
LDC	0.3	0.5	0.8	0.9	0.2	4.7	9.3	26.0	72.2	80.0
SIDS	16.1	19.3	16.0	15.4	24.1	36.0	39.5	28.4	63.1	64.4
ASEAN	2.9	4.8	8.3	8.6	4.3	26.7	33.8	37.7	70.2	74.5
SAARC	1.2	2.7	3.9	3.3	0.3	7.9	15.3	12.6	67.5	82.2
Central Asia	9.0	8.8	10.7	11.1	1.3	14.7	20.1	9.4	46.5	48.9
Low-income	1.3	2.7	4.6	4.0	0.4	7.7	14.5	12.9	63.3	77.2
Middle-income	5.3	11.6	22.5	23.5	6.3	34.5	40.2	35.1	60.1	62.9
High-income	47.6	51.0	48.2	46.7	54.0	80.1	84.6	51.3	62.3	64.4
Africa	1.7	2.4	3.0	3.1	1.9	15.2	20.9	32.2	82.7	86.7
Latin America & Carib.	9.0	14.7	17.7	17.5	12.2	43.5	54.2	44.0	69.8	74.0
North America	59.9	68.3	59.3	57.8	37.9	69.7	75.0	35.6	53.9	56.3
Europe	39.1	46.0	45.7	45.0	47.4	91.8	101.4	44.2	67.1	69.6
Other Asia-Pacific	11.1	20.7	22.1	22.5	26.1	43.9	51.2	27.0	61.7	64.0
World	12.2	16.1	19.5	19.4	12.2	34.4	40.9	43.1	63.8	67.9

17.2 Internet

	Number of internet users						Number of broadband internet subscribers					
	Per 100 population						Per 100 population					
	1999	2000	2003	2004	2005	2006	1999	2000	2003	2004	2005	2006
East and North-East Asia												
China	0.7	1.8	6.1	7.2	8.4	10.4			0.9	1.9	2.8	3.9
DPR Korea												
Hong Kong, China	21.2	27.8	47.2	50.3	50.1	53.0	1.3	6.7	18.6	22.0	23.6	25.2
Macao, China	9.3	13.9	26.8	32.2	37.0	43.2		0.9	6.2	9.7	14.8	19.9
Mongolia	0.5	1.3	5.8	7.6	10.1	10.1			0.0	0.0	0.1	0.1
Republic of Korea	23.8	41.4	61.1	65.7	68.4	71.1	0.6	8.4	23.4	24.8	25.2	29.3
South-East Asia												
Brunei Darussalam	7.8	9.0	19.9	30.1	36.1	43.4			1.1	1.8	2.2	2.7
Cambodia	0.0	0.1	0.3	0.3	0.3	0.3				0.0	0.0	0.0
Indonesia	0.4	0.9	3.8	5.0	7.2	7.2			0.0	0.0	0.1	0.1
Lao PDR	0.0	0.1	0.3	0.4	0.4	0.4						
Malaysia	12.8	21.4	34.5	38.6	42.4	43.8			0.4	1.0	2.0	3.5
Myanmar			0.0	0.0	0.1	0.2						
Philippines	1.5	2.0	4.9	5.3	5.5	5.5			0.1	0.1	0.2	0.2
Singapore	24.1	32.4	51.2	57.9	39.8	39.2	0.8	1.9	10.1	13.0	15.3	18.2
Thailand	2.1	3.7	9.6	11.0	11.3	13.1			0.1	0.1	0.2	0.2
Timor-Leste					0.1	0.1						
Viet Nam	0.1	0.3	3.8	7.6	12.7	17.2			0.0	0.1	0.3	0.6
South and South-West Asia												
Afghanistan			0.1	0.1	1.0	1.7						
Bangladesh	0.0	0.1	0.2	0.2	0.3	0.3						
Bhutan	0.1	0.3	2.0	2.6	3.1							
India	0.3	0.5	1.7	3.2	5.4	5.4			0.0	0.0	0.1	0.2
Iran (Islamic Rep. of)	0.4	1.0	7.2	9.5	10.9	25.5			0.0	0.0	0.0	0.7
Maldives	1.1	2.2	5.9	5.8					0.2	0.2		1.6
Nepal	0.2	0.2	0.4	0.5	0.8	0.9						
Pakistan	0.1	0.2	5.4	6.6	6.8	7.6				0.0	0.0	0.0
Sri Lanka	0.4	0.7	1.5	1.4	1.7	2.1			0.0	0.1	0.1	0.1
Turkey	2.2	3.7	8.4	14.2	15.3	16.6			0.3	0.8	2.2	3.7
North and Central Asia												
Armenia	1.0	1.3	4.6	5.0	5.3	5.8				0.0	0.1	0.1
Azerbaijan	0.1	0.2	4.2	4.9	8.1	9.8			0.0	0.0	0.0	0.0
Georgia	0.4	0.5	2.6	3.9	6.1	7.5			0.0	0.0	0.1	0.6
Kazakhstan	0.5	0.7	2.0	2.7	4.1	8.4			0.0	0.0	0.0	0.2
Kyrgyzstan	0.2	1.1	4.0	5.2	5.3	5.6				0.0	0.1	0.1
Russian Federation	1.0	2.0	8.3	12.9	15.2	18.0			0.2	0.5	1.1	2.0
Tajikistan	0.0	0.1	0.1	0.1	0.3	0.3						
Turkmenistan	0.1	0.1	0.4	0.7	1.0	1.3						
Uzbekistan	0.0	0.5	1.9	2.6	3.3	6.3			0.0	0.0	0.0	0.0
Pacific												
American Samoa												
Cook Islands												
Fiji	0.9	1.5	6.7	7.2	8.3	9.4					0.8	0.8
French Polynesia	3.4	6.3	14.0	17.8	21.5	25.0			0.4	1.7	4.3	7.0
Guam	8.5	16.2	34.0	36.4	38.5	38.5			1.1	1.1	1.1	
Kiribati	1.2	1.8	2.3	2.2	2.2	2.2						
Marshall Islands	1.0	1.6	2.6	3.5								
Micronesia (F.S.)	2.8	3.7	9.3	10.8	12.6	14.4			0.0	0.0	0.0	0.0
Nauru			2.6	2.6	2.6							
New Caledonia	5.7	14.0	26.2	30.2	32.1	33.2			0.7	2.2	4.1	4.1
Niue												
Northern Mariana Is.												
Palau												
Papua New Guinea	0.7	0.9	1.4	1.5	1.8	1.8						
Samoa	0.3	0.6	2.8	3.1	3.4	4.5				0.0	0.0	0.0
Solomon Islands	0.5	0.5	0.5	0.6	0.8	1.6				0.0	0.1	0.1
Tonga	1.0	2.4	3.0	3.0	3.0	3.0			0.0	0.3	0.6	0.6
Tuvalu		5.3	15.0	15.5	16.2	16.2				0.1	0.3	0.3
Vanuatu	0.5	2.1	3.6	3.5	3.5	3.5			0.0	0.0	0.0	0.0
ESCAP Developed Economies												
Australia	29.6	34.5	56.8	65.3	70.4	75.1			2.6	4.2	8.9	19.2
Japan	21.4	29.9	48.3	62.2	66.6	68.3	0.2	0.7	11.7	15.3	17.5	20.1
New Zealand	29.0	39.3	53.5	58.9	68.4	78.8		0.1	2.1	4.8	8.2	14.2
ESCAP	1.9	3.1	7.0	8.9	10.6	11.9				1.7	2.2	2.9
LLDC	0.2	0.4	1.4	1.8	2.6	4.0				0.0	0.0	0.1
LDC	0.1	0.1	0.2	0.2	0.4	0.5						
SIDS	8.7	11.9	19.3	21.6	15.1	15.0				9.1	10.0	11.8
ASEAN	1.6	2.6	5.9	7.5	9.3	10.2			0.2	0.2	0.3	0.5
SAARC	0.2	0.5	1.9	3.1	4.9	5.0				0.0		0.2
Central Asia	0.2	0.5	2.2	2.9	4.0	6.3			0.0	0.0	0.0	0.1
Low-income	0.2	0.4	1.9	3.3	5.1	5.4						
Middle-income	0.9	2.0	6.4	8.0	9.4	11.4			0.6	1.3	2.0	2.8
High-income	22.7	33.0	51.9	62.5	66.1	68.4		2.8	13.4	16.3	18.3	22.0
Africa	0.4	0.6	1.8	2.6	3.7	4.7						
Latin America & Carib.	2.0	3.9	9.9	11.7	15.2	18.2			0.5	1.2	1.8	2.7
North America	36.5	43.9	55.6	62.9	66.5	69.0	1.1	2.7	10.0	13.1	16.5	19.7
Europe	12.9	18.2	32.3	35.7	39.2	43.1		0.4	4.9	8.2	11.8	15.6
Other Asia-Pacific	6.8	9.2	13.6	14.6	16.2	19.3			5.4	6.8	6.2	7.1
World	4.7	6.5	11.5	13.7	15.6	17.4	0.1	0.4	1.7	2.5	3.3	4.3