

Infrastructure

The People's Republic of China and India dominate both the **rail** and **road** networks in the region. There has been a sharp increase in the ownership of **personal computers** since 1990, but a sharp divide still exists between the top six economies with high ownership rates and the rest of the region. **Broadband internet** has so far achieved limited penetration outside the small group of high-income economies.

Introduction

This **infrastructure** theme covers transport statistics on road and rail networks, plus communications statistics on ownership of personal computers, on broadband subscribers, and on information and communications expenditures.

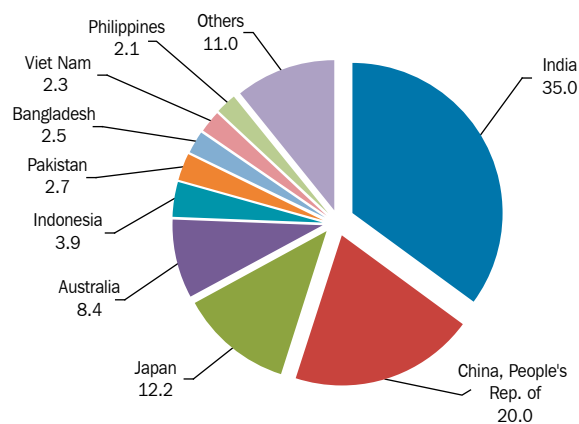
Additional indicators on the communications sector are also shown under Millennium Development Goal 8: Develop a global partnership for development.

Key Trends

Figures 5.1 and 5.2 present the distribution of rail and road networks in the Asia and Pacific region. The People's Republic of China (PRC) and India account for

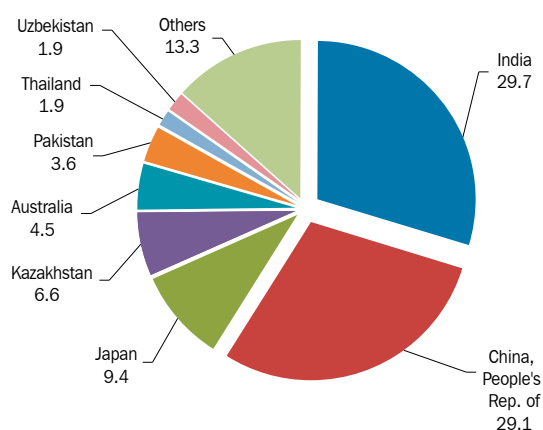
most of the rail and road networks of Asia. The PRC and India have similar-size rail networks but India has a much larger road network.

Figure 5.1 Percentage Breakdown of Road Networks in the Asia and Pacific Region, Latest Year



Source: Derived from Table 5.1.

Figure 5.2 Percentage Breakdown of Rail Networks in the Asia and Pacific Region, Latest Year



Source: Derived from Table 5.2.

Figure 5.3 shows road density. Road density tends to be correlated with population density: densely populated economies like Bangladesh; Hong Kong, China; and Singapore have high road densities while thinly populated economies like Kazakhstan and Mongolia have low road densities.

However there are exceptions. Economies such as Azerbaijan and Samoa that are not so densely populated also have rather high road densities.

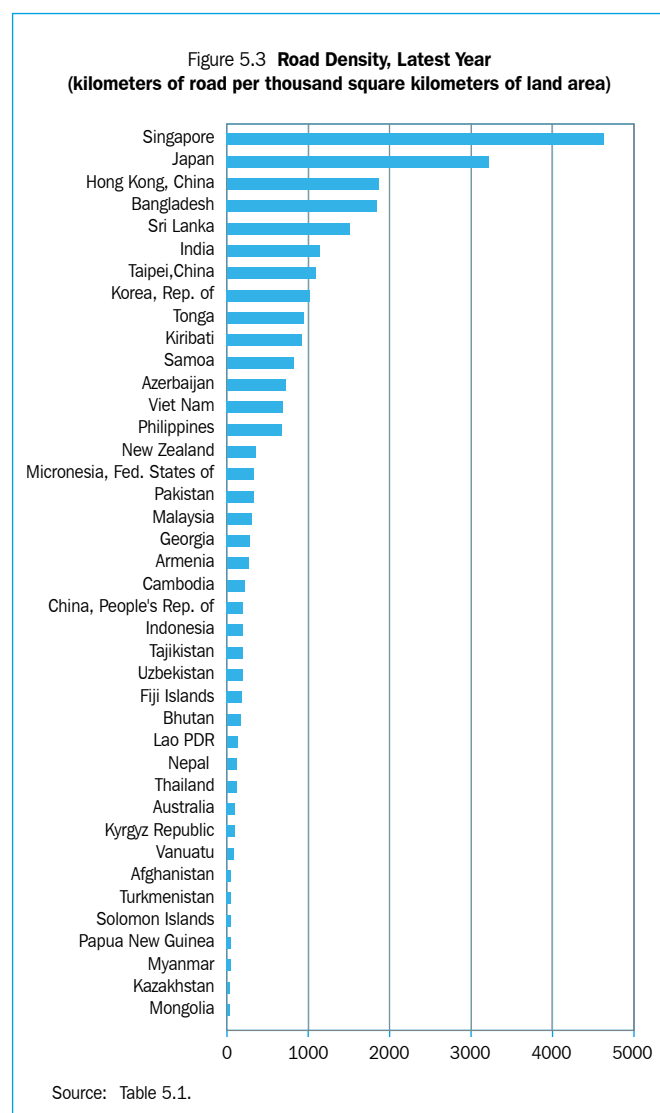
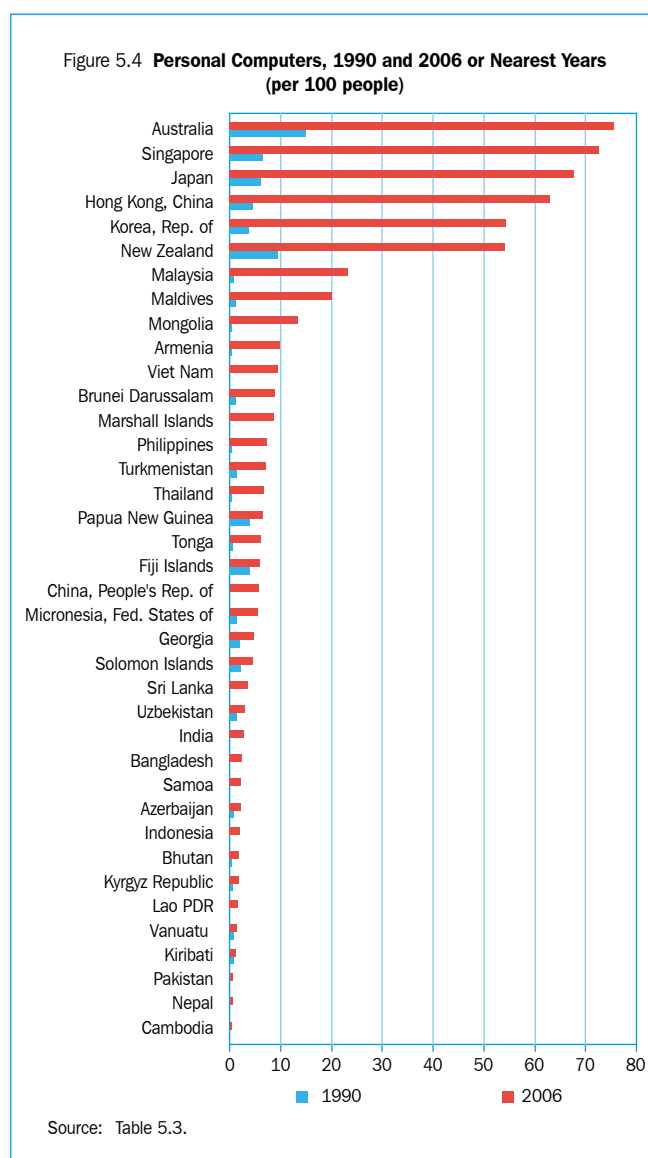


Figure 5.4 highlights both the marked increase in ownership of personal computers since 1990 and the large gaps that now exist between the richer and poorer economies of the region.

There is a sharp divide between the top six—Australia; Japan; Hong Kong, China; Republic of Korea; New Zealand; and Singapore—and all other economies. Among the five most populous economies, the PRC had the highest number of personal computers per 100 inhabitants in 2006, about twice the number recorded for India. Bangladesh and Indonesia came next, with Pakistan having one of the lowest ownership rates, only slightly higher than that of Cambodia, which has the lowest rate among all the economies.



Box 5.1 shows the extent of penetration of broadband internet in the Asia and Pacific region. Broadband is the most efficient way to access the internet. Box 5.1 shows that broadband has so far achieved limited penetration outside the small group of high-income economies. PRC, Malaysia, Philippines, and Viet Nam are in the middle group but have a long way to go before reaching double figures, which is the norm for the high-income economies.

Box 5.1 **Broadband Subscribers, 2007**
(per 100 people)

Less than 1			
Afghanistan	0.00	Armenia	0.07
Myanmar	0.00	Pakistan	0.08
Tajikistan	0.00	Solomon Islands	0.09
Azerbaijan	0.03	Indonesia	0.10
Cambodia	0.03	Mongolia	0.13
Uzbekistan	0.03	India	0.27
Vanuatu	0.03	Sri Lanka	0.33
Micronesia, Fed. States of	0.04	Tonga	0.78
Samoa	0.04	Fiji Islands	0.83
Kyrgyz Republic	0.05	Thailand	0.94
Lao PDR	0.06		
1–10			
Georgia	1.06	Brunei Darussalam	2.35
Philippines	1.10	Kazakhstan	2.47
Viet Nam	1.47	China, People's Rep. of	5.00
Maldives	1.57	Malaysia	5.15
More than 10			
New Zealand	16.13	Australia	23.28
Singapore	19.87	Hong Kong, China	26.09
Taipei, China	20.93	Korea, Rep. of	30.62
Japan	22.12		

Source: Table 5.3.

Data Issues and Comparability

Data on rail networks may not be strictly comparable, as the statistics are not compiled according to international standards. National road associations are the main suppliers of data on road networks. Secondary suppliers include the appropriate government agencies. The statistics may not be strictly comparable because of differences in definitions and data collection methods.

Data on broadband subscribers are collected by the International Telecommunication Union (ITU) using questionnaires sent to government telecommunications agencies. Annual reports of industry organizations are also used by ITU to cross check reported data and to fill in the gaps. These data are considered to be reliable. Data on personal computers are derived from data on shipments in the countries.

Transport

Table 5.1 Road indicators

	Roads, Total Network (kilometers)		Road Density (kilometers of roads per thousand square kilometers of land area)		Paved Roads (percent of total roads)		Access to an All-Season Road (percent of rural population)
	1990	Latest Year	1990	Latest Year	1990	Latest Year	Latest Year
	Developing Member Countries						
Central and West Asia							
Afghanistan	21000	34782 (2004)	32.2	53.3 (2004)	13.3	23.7 (2004)	...
Armenia	7690	7515 (2005)	272.7	266.5 (2005)	99.2	90.0 (2005)	80.0 (2003)
Azerbaijan	52394	59141 (2004)	634.3	716.0 (2004)	...	49.4 (2004)	67.0 (2002)
Georgia	21600	20247 (2004)	310.8	291.4 (2004)	93.8	39.4 (2004)	82.0 (2003)
Kazakhstan	158342	91600 (2006)	58.7	33.9 (2006)	55.1	84.0 (2006)	...
Kyrgyz Republic	18890	18500 (2000)	98.5	96.5 (2000)	90.0	...	...
Pakistan	169202	258340 (2004)	219.5	335.1 (2004)	54.0	64.7 (2004)	77.0 (1998)
Tajikistan	29861	27767 (2000)	213.4	198.4 (2000)	71.6	...	74.0 (1999)
Turkmenistan	21300	24000 (2000)	45.3	51.1 (2000)	73.5	...	...
Uzbekistan	72500	81600 (2000)	175.0	197.0 (2000)	79.0	...	57.0 (2000)
East Asia							
China, People's Rep. of	1181033	1930544 (2005)	127.1	207.8 (2005)	...	81.6 (2005)	...
Hong Kong, China	1484	1955 (2005)	1499.0	1861.9 (2005)	100.0	100.0 (2005)	...
Korea, Rep. of	56715	100279 (2004)	574.4	1015.7 (2004)	71.5	76.8 (2005)	...
Mongolia	42418	49250 (2002)	27.1	31.4 (2002)	10.2	3.5 (2002)	36.0 (2003)
Taipei, China	20060	39286 (2006)	557.0	1091.0 (2006)	...	...	...
South Asia							
Bangladesh	188000	239226 (2003)	1444.3	1837.8 (2003)	7.2 (1991)	9.5 (2003)	37.0 (2000)
Bhutan	2336	8050 (2003)	49.7	171.3 (2003)	77.1	62.0 (2003)	...
India	2000000	3383344 (2002)	672.7	1138.0 (2002)	47.3 (1991)	47.4 (2002)	60.0 (2001)
Maldives	...	...	...	...	...	...	...
Nepal	6840	17280 (2004)	47.8	120.8 (2004)	37.5	56.9 (2004)	...
Sri Lanka	93000	97286 (2003)	1439.0	1505.3 (2003)	32.0 (1991)	81.0 (2003)	...
Southeast Asia							
Brunei Darussalam ^a	1010	3650 (2005)	191.7	692.6 (2005)	31.4	77.2 (2005)	...
Cambodia	35800	38257 (2004)	202.8	216.7 (2004)	7.5	6.3 (2004)	87.0 (1999)
Indonesia	288727	372929 (2004)	159.4	205.9 (2004)	45.1	55.3 (2004)	94.0 (2003)
Lao PDR	13971	31210 (2003)	60.5	135.2 (2003)	24.0	14.4 (2003)	59.0 (2003)
Malaysia	86115	98721 (2004)	262.1	300.5 (2004)	70.0	81.3 (2004)	...
Myanmar	25000	27966 (2000)	38.0	42.5 (2000)	10.9	...	...
Philippines	160558	200037 (2003)	538.5	670.9 (2003)	16.6 (1994)	9.9 (2003)	...
Singapore	2798	3234 (2005)	4176.1	4624.0 (2005)	97.1	100.0 (2005)	...
Thailand	72170	57403 (2000)	141.3	112.4 (2000)	55.3	...	...
Viet Nam	96100	222179 (2004)	295.2	682.6 (2004)	23.5	...	76.0 (2002)
The Pacific							
Cook Islands	...	...	...	...	...	...	...
Fiji Islands	3050	3440 (2000)	166.9	188.3 (2000)	44.5	...	...
Kiribati	...	670 (2000)	...	917.8 (2000)	...	...	...
Marshall Islands	...	...	...	...	...	...	...
Micronesia, Fed. States of	...	240 (2000)	...	342.9 (2000)	15.9	...	...
Nauru	...	...	...	...	...	...	...
Palau	...	...	...	...	...	...	...
Papua New Guinea	18500	19600 (2000)	40.9	43.3 (2000)	3.2	...	68.0 (1996)
Samoa	...	2337 (2001)	...	825.8 (2001)	42.0 (1995)	14.2 (2001)	...
Solomon Islands	1210	1391 (2000)	43.2	49.7 (2000)	2.1	...	...
Timor-Leste	...	...	...	...	...	...	...
Tonga	...	680 (2000)	...	944.4 (2000)	27.0 (1995)	...	...
Tuvalu	...	...	...	...	...	...	...
Vanuatu	...	1070 (2000)	...	87.8 (2000)	21.6	...	...
Developed Member Countries							
Australia	810264	812972 (2003)	105.5	105.8 (2003)	35.0	38.7 (1998)	...
Japan	1114697	1177278 (2002)	3058.2	3229.8 (2002)	69.2	77.7 (2002)	...
New Zealand	92674	93460 (2005)	345.8	348.7 (2005)	57.0	64.9 (2005)	...

a Brunei Darussalam is not a developing member country but an unclassified regional member country of ADB.

Sources: World Development Indicators Online (World Bank 2008); IDA14 Result Measurement System (World Bank 2008); for Taipei, China: economy sources.

Table 5.2 Rail indicators

	Rail Lines (total route, kilometers)			Rail Network, Length per Land Area (kilometers per thousand square kilometers)		
	1990	1995	2005	1990	1995	2005
Developing Member Countries						
Central and West Asia						
Afghanistan	...	...	...	...	...	...
Armenia	845	845	711	30.0	30.0	25.2
Azerbaijan	...	...	2122	...	...	25.7
Georgia	1583	1575	1515	22.8	22.7	21.8
Kazakhstan	14465	13660 (1997)	14205 (2006)	5.4	5.1 (1997)	5.3 (2006)
Kyrgyz Republic	...	...	424	...	...	2.2
Pakistan	8775	8775	7791 (2006)	11.4	11.4	10.1 (2006)
Tajikistan	...	...	616	...	...	4.4
Turkmenistan	...	...	2529	...	...	5.4
Uzbekistan	...	3641 (1997)	4014	...	8.8 (1997)	9.7
East Asia						
China, People's Rep. of	53378	54616	62200	5.7	5.9	6.7
Hong Kong, China	...	...	...	...	...	...
Korea, Rep. of	3091	3101	3392	31.3	31.4	34.4
Mongolia	1920	1810 (1997)	1810	1.2	1.2 (1997)	1.2
Taipei, China	1062	1108	1118 (2006)	29.4	30.6	30.9 (2006)
South Asia						
Bangladesh	2746	2706	2855	21.1	20.8	21.9
Bhutan	...	...	...	...	...	...
India	62367	62660	63465	21.0	21.1	21.3
Maldives	...	...	...	...	...	...
Nepal	...	...	59	...	...	0.4
Sri Lanka	1453	1491	1200	22.5	23.1	18.6
Southeast Asia						
Brunei Darussalam ^a	...	...	...	...	...	...
Cambodia	600	600	650	3.4	3.4	3.7
Indonesia	...	5041	...	...	2.8	...
Lao PDR	...	...	...	...	...	...
Malaysia	1668	1668	1667	5.1	5.1	5.1
Myanmar	3336	...	...	5.1	...	...
Philippines	479	456	491 (2006)	1.6	1.5	1.6 (2006)
Singapore	...	...	...	...	...	...
Thailand	3861	4041	4044	7.6	7.9	7.9
Viet Nam	2832	2832	2671	8.7	8.7	8.2
The Pacific						
Cook Islands	...	...	...	...	...	...
Fiji Islands	...	...	597	...	...	32.7
Kiribati	...	...	...	...	...	...
Marshall Islands	...	...	...	...	...	...
Micronesia, Fed. States of	...	...	...	...	...	...
Nauru	...	...	...	...	...	...
Palau	...	...	...	...	...	...
Papua New Guinea	...	...	...	...	...	...
Samoa	...	...	...	...	...	...
Solomon Islands	...	...	...	...	...	...
Timor-Leste	...	...	...	...	...	...
Tonga	...	...	...	...	...	...
Tuvalu	...	...	...	...	...	...
Vanuatu	...	...	...	...	...	...
Developed Member Countries						
Australia	6612	9458	9528	0.9	1.2	1.2
Japan	20254	20134	20052	55.6	55.2	55.0
New Zealand	4029	3913	3913 (1999)	15.0	14.6	14.6 (1999)

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Sources: World Development Indicators Online (World Bank 2008); ADB staff estimates; for Taipei, China: Directorate-General of Budget, Accounting and Statistics.

Communications

Table 5.3 Computer and broadband indicators

	Personal Computers (per 100 people)		Broadband Subscribers (per 100 people)				
	1990	2006	2003	2004	2005	2006	2007
Developing Member Countries							
Central and West Asia							
Afghanistan	...	0.32	...	0.00	0.00	0.00	0.00
Armenia	0.29 (1997)	9.85 (2005)	0.00	0.03	0.07	0.07	0.07
Azerbaijan	0.71 (2001)	2.31 (2005)	0.01	0.01	0.03	0.03	0.03
Georgia	2.09 (1999)	4.70 (2005)	0.03	0.04	0.05	0.61	1.06
Kazakhstan	...	...	0.01	0.01	0.02	0.21	2.47
Kyrgyz Republic	0.52 (2000)	1.90 (2005)	0.00	0.04	0.05	0.05	0.05
Pakistan	0.14	0.52 (2005)	...	0.01	0.00	0.02	0.08
Tajikistan	...	1.30 (2005)	0.00	0.00	0.00	0.00	0.00
Turkmenistan	1.53 (2001)	7.20 (2005)	...	...	...	...	...
Uzbekistan	1.60 (2003)	3.08	0.01	0.02	0.03	0.03	0.03
East Asia							
China, People's Rep. of	0.04	5.60	0.86	1.91	2.84	3.85	5.00
Hong Kong, China	4.56	62.97	18.58	21.95	23.41	24.51	26.09
Korea, Rep. of	3.72	54.44	23.36	24.79	25.24	29.27	30.62
Mongolia	0.33 (1995)	13.44	0.02	0.03	0.07	0.13	0.13
Taipei, China	...	67.60	13.46	16.53	19.06	19.76	20.93
South Asia							
Bangladesh	0.02 (1997)	2.42	...	...	...	...	...
Bhutan	0.47 (1998)	1.95 (2007)	...	...	...	...	...
India	0.03	2.76	0.01	0.02	0.12	0.21	0.27
Maldives	1.21 (1995)	20.08	0.18	0.24	1.08	1.57	1.57
Nepal	0.05 (1993)	0.49 (2005)	...	...	...	...	...
Sri Lanka	0.02	3.54 (2005)	0.02	0.11	0.11	0.11	0.33
Southeast Asia							
Brunei Darussalam ^a	1.10 (1992)	8.82 (2005)	1.10	1.75	2.17	2.35	2.35
Cambodia	0.04 (1995)	0.36 (2007)	0.00	0.01	0.01	0.03	0.03
Indonesia	0.11	2.00	0.03	0.04	0.05	0.09	0.10
Lao PDR	0.10 (1996)	1.69 (2005)	0.00	0.00	0.01	0.01	0.06
Malaysia	0.83	23.41	0.44	0.99	1.95	3.49	5.15
Myanmar	...	0.88	...	...	0.00	0.00	0.00
Philippines	0.34	7.46	0.07	0.11	0.15	0.15	1.10
Singapore	6.56	72.61	10.11	13.03	15.30	18.26	19.87
Thailand	0.42	6.86 (2005)	0.07	0.12	0.16	0.16	0.94
Viet Nam	0.01 (1992)	9.51	0.01	0.06	0.25	0.61	1.47
The Pacific							
Cook Islands	...	...	...	...	...	...	...
Fiji Islands	4.05 (1998)	5.90 (2005)	...	...	0.83	0.83	0.83
Kiribati	0.70 (1998)	1.10 (2004)	...	...	...	...	...
Marshall Islands	0.01	8.77 (2004)	...	...	...	...	...
Micronesia, Fed. States of	1.30 (2001)	5.41 (2005)	0.01	0.02	0.04	0.04	0.04
Nauru	...	...	...	...	...	...	...
Palau	...	...	...	...	...	...	...
Papua New Guinea	3.92 (1998)	6.64 (2005)	...	...	...	...	...
Samoa	0.06 (1995)	2.34	0.00	0.02	0.04	0.04	0.04
Solomon Islands	2.35 (1997)	4.60 (2005)	...	0.04	0.09	0.09	0.09
Timor-Leste	...	...	...	...	...	...	...
Tonga	0.61 (1997)	5.99 (2005)	0.02	0.33	0.64	0.62	0.78
Tuvalu	...	8.00 (2005)	...	0.48	1.43	2.34	...
Vanuatu	0.73 (1997)	1.38 (2005)	0.01	0.01	0.03	0.03	0.03
Developed Member Countries							
Australia	14.98	75.69 (2005)	2.60	5.08	10.00	19.15	23.28
Japan	5.99	67.61 (2005)	11.69	15.30	18.19	20.62	22.12
New Zealand	9.53 (1991)	54.15	2.10	4.81	8.22	14.18	16.13

a Brunei Darussalam is not a developing member country but an unclassified regional member country of ADB.

Sources: International Telecommunication Union through the World Development Indicators Online (World Bank 2008), ITU World Communication/ICT Indicators Database (ITU 2008).

Table 5.4 Expenditures on information and communications technology

	Information and Communications Technology Expenditures					
	(per capita US dollars)			(percent of GDP)		
	2000	2003	2006	2000	2003	2006
Developing Member Countries						
Central and West Asia						
Afghanistan	...	...	...	...	...	...
Armenia	...	...	...	...	...	...
Azerbaijan	...	...	...	...	...	...
Georgia	...	...	...	...	...	...
Kazakhstan	...	...	...	...	...	...
Kyrgyz Republic	...	...	...	...	...	...
Pakistan	34.9	39.9	55.2	6.5	7.1	6.9
Tajikistan	...	...	...	...	...	...
Turkmenistan	...	...	...	...	...	...
Uzbekistan	...	...	...	...	...	...
East Asia						
China, People's Rep. of	35.1	58.5	108.5	3.7	4.6	5.4
Hong Kong, China	1782.1	1868.4	2427.6	7.0	8.0	8.8
Korea, Rep. of	744.7	847.4	1213.8	6.8	6.7	6.6
Mongolia	...	...	...	...	...	...
Taipei, China	...	...	...	...	...	...
South Asia						
Bangladesh	6.8	8.8	10.9	2.0	2.5	2.7
Bhutan	...	...	...	...	...	...
India	16.3	24.1	49.8	3.6	4.3	6.1
Maldives	...	...	...	...	...	...
Nepal	...	...	...	...	...	...
Sri Lanka	42.2	53.2	72.7	5.0	5.6	5.4
Southeast Asia						
Brunei Darussalam ^a	...	...	...	...	...	...
Cambodia	...	...	...	...	...	...
Indonesia	20.2	32.2	50.7	2.5	2.9	3.1
Lao PDR	...	...	...	...	...	...
Malaysia	290.0	294.1	388.2	7.5	7.0	6.7
Myanmar	...	...	...	...	...	...
Philippines	44.8	58.4	91.1	4.5	6.0	6.7
Singapore	2238.8	2131.2	2743.0	9.7	9.7	9.3
Thailand	71.5	85.1	128.9	3.5	3.7	4.0
Viet Nam	...	65.7	109.9	...	13.4	15.1
The Pacific						
Cook Islands	...	...	...	...	...	...
Fiji Islands	...	...	...	...	...	...
Kiribati	...	...	...	...	...	...
Marshall Islands	...	...	...	...	...	...
Micronesia, Fed. States of	...	...	...	...	...	...
Nauru	...	...	...	...	...	...
Palau	...	...	...	...	...	...
Papua New Guinea	...	...	...	...	...	...
Samoa	...	...	...	...	...	...
Solomon Islands	...	...	...	...	...	...
Timor-Leste	...	...	...	...	...	...
Tonga	...	...	...	...	...	...
Tuvalu	...	...	...	...	...	...
Vanuatu	...	...	...	...	...	...
Developed Member Countries						
Australia	1390.3	1721.1	2412.7	6.7	6.3	6.4
Japan	3160.5	2522.4	2687.9	8.6	7.6	7.9
New Zealand	1534.4	1987.6	2635.4	11.2	9.9	10.6

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Source: World Development Indicators Online (World Bank 2008).