

Transport, Electricity, and Communications

Snapshots

- The People's Republic of China (PRC) and India account for almost two-thirds of road networks in Asia and the Pacific region.
- Economies with high per capita incomes have the highest road densities and most motor vehicles per kilometer of road in the region.
- The region accounted for nearly 40% of the world's electricity production in 2009.
- Economies with high per capita income have high per capita electric power consumption.
- More than half of the region's economies have reached 80% electrification of households.
- The number of fixed broadband internet subscriptions continues to expand, but penetration remains low in developing members in Asia and the Pacific.

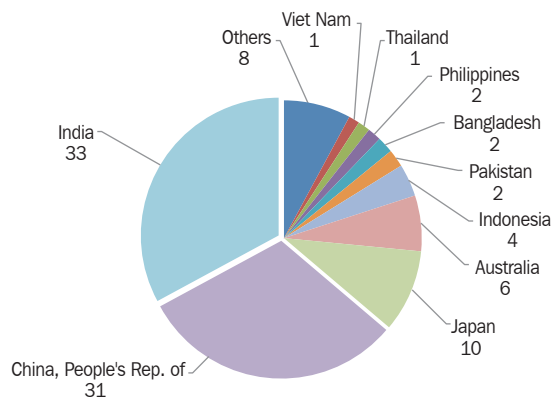
Key Trends

Asia's two most populous economies account for almost two-thirds of the region's road networks (Figure 5.1). The combined road networks, measured in kilometers, of the PRC and India cover 64% of the region's total road networks, based on the latest data available. Japan accounts for 10% of the region's road networks, and Australia for 6%. Bhutan had the greatest expansion of its road network, growing by 9.5% in 2003 (the latest year for which data are available) from 1990. Bhutan's road network is among the smallest in the region.

Economies with high per capita incomes generally have high road densities¹ and numbers of motor vehicles per kilometer of road² (Figures 5.2 and 5.3). The latest available data on road density show that Singapore has the highest road density in the region—much higher than in other ADB developed members. The PRC has the second longest road network in the region but it also has a comparatively low road density of 414 kilometers (km) of road per 1,000 square kilometers of land area. India, on the other hand, has the largest road network in the region and a high road density, at 1,382 km per 1,000 square kilometers of land area. Two other South Asian economies (Bangladesh and Sri Lanka) and three East Asian economies (Hong Kong, China; the Republic of Korea; and Taipei, China) also have high road densities.

In the number of motor vehicles per kilometer of road (or "vehicle density"), Hong Kong, China has the most, with Singapore a close second. The Republic of Korea and Taipei, China also have high vehicle densities, surpassing the other regional developed economies. Except for the Maldives, South Asian economies have the lowest motor vehicle densities.

Figure 5.1 Distribution of Road Networks in Asia and the Pacific, Latest Year (%)

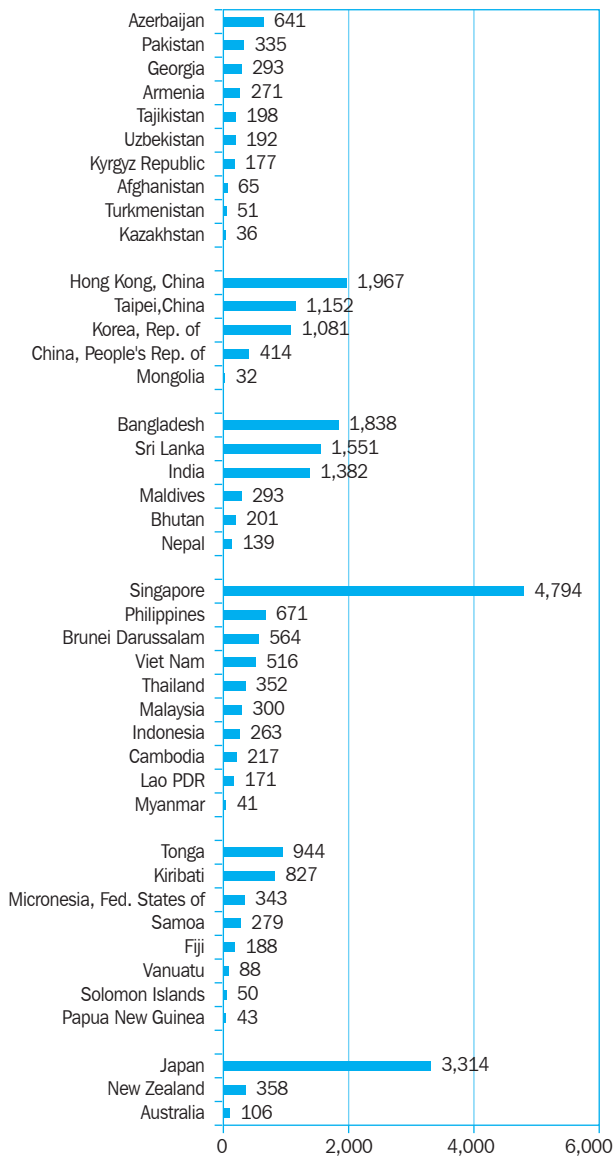


Source: Table 5.1.

1 "Road density" is measured as the total road network of a country in kilometers divided by its land area (expressed in 1,000 square kilometers).

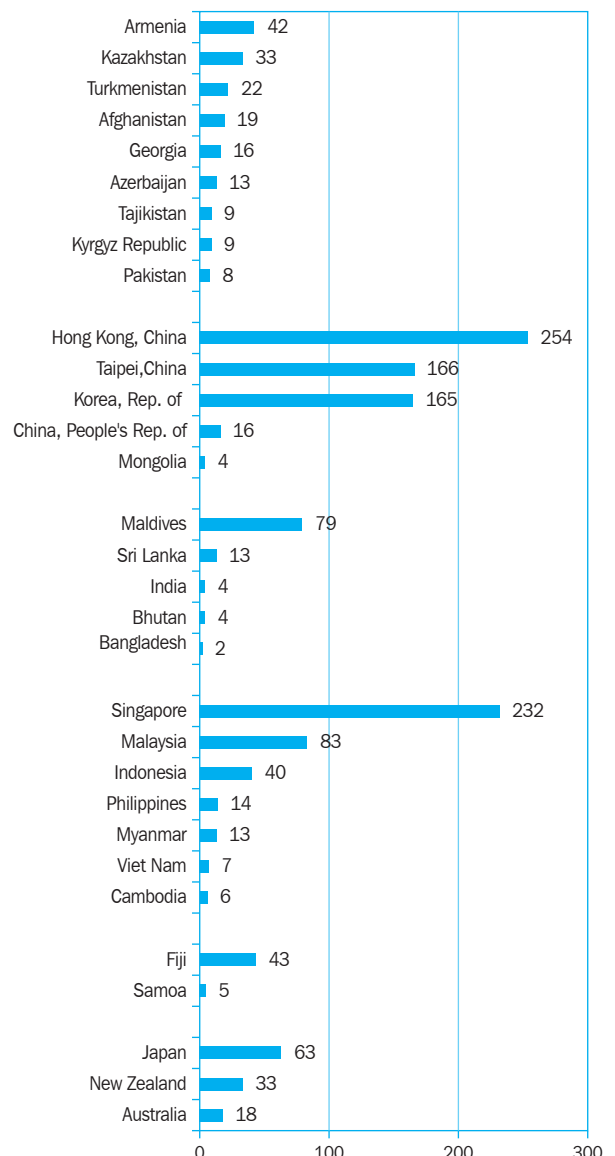
2 Motor vehicles include cars, buses, and freight vehicles but not two-wheelers.

Figure 5.2 Road Density, Latest Year



Source: Table 5.1.

Figure 5.3 Motor Vehicles per Kilometer of Road, 2009



Source: Table 5.3.

Asia and the Pacific region accounted for nearly 40% of the world's electricity production in 2009. The top electricity producer was the PRC, generating 3,696 billion kilowatt-hours (kWh)—18% of the electricity produced in the region—in 2009. The PRC's production grew at an average of 11% annually from 2000 to 2009, the region's highest growth rate. The PRC has been generating the largest amount of electricity in the region since 2000.

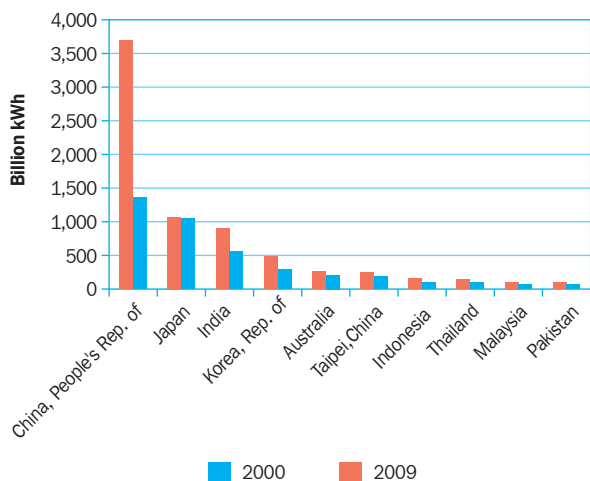
Figure 5.4 presents the top 10 producers of electricity in the region. Their output accounted for 35% of the world's electricity production in 2009.

Electricity is generated from power plants using inputs such as coal, oil, gas, nuclear energy, and renewable sources such as hydropower, geothermal, solar, wind, and tide and wave energy. A huge amount of electricity in the region is generated from power plants that use carbon fuels, particularly coal which is the most polluting carbon fuel. Almost 60% of electricity produced in the region in 2009 came from coal-fired power plants, only 15% was produced using renewable resources.

Figure 5.5 shows the distribution of electricity production by resources used by the top electricity

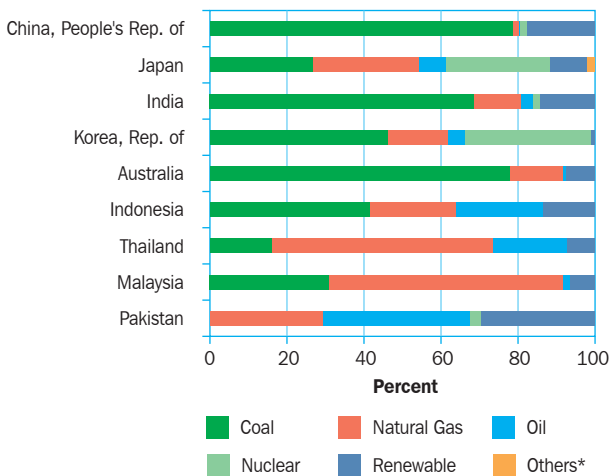
producers in the region. This excludes Taipei,China, because a breakdown of its electricity production by source was not available. All economies in the figure use coal to some extent for their electricity production, although Pakistan uses very little coal. All economies also use natural gas to produce electricity, but only five use nuclear energy: the PRC, India, Japan, the Republic of Korea, and Pakistan. The PRC is largely dependent on coal for its electricity needs. All economies use some renewable resources to generate a small share of their electricity, the Republic of Korea's share is very minimal.

Figure 5.4 Top 10 Electricity Producers, Asia and the Pacific, 2009



Source: World Development Indicators Online (World Bank 2012).

Figure 5.5 Sources of Electricity (Top Producers), 2009

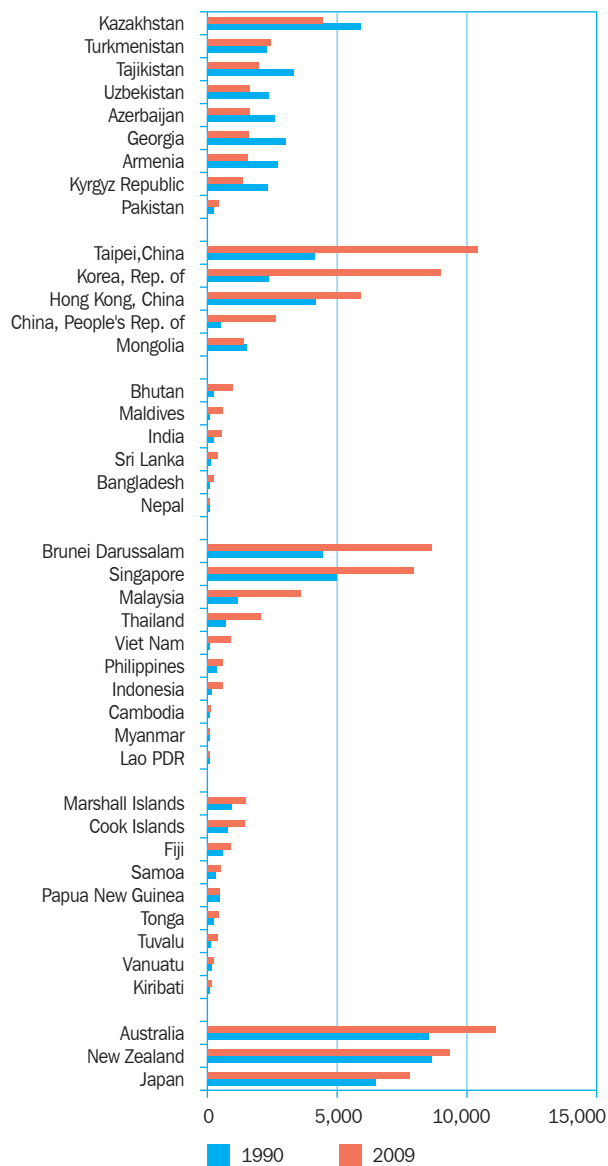


Note: * = Computed as residual and includes nuclear sources; combustible renewables and waste; and geothermal, solar, wind, and other sources.

Source: World Development Indicators Online (World Bank 2012).

Economies with high per capita income also have high per capita electric power consumption (Figure 5.6). Australia has the region's highest recorded annual per capita consumption, at 11,113 kWh per person, followed by Taipei,China. Despite the PRC's strong economic growth in recent years and increasing production of electricity, its per capita electric power consumption is only 11th in the region. Economies with low electric power consumption per capita are mostly found in the Pacific, South Asia, and the lower income economies in Southeast Asia.

Figure 5.6 Per Capita Electric Power Consumption (kWh), 1990 to Latest Years



kWh = kilowatt-hour.
Source: Table 5.6.

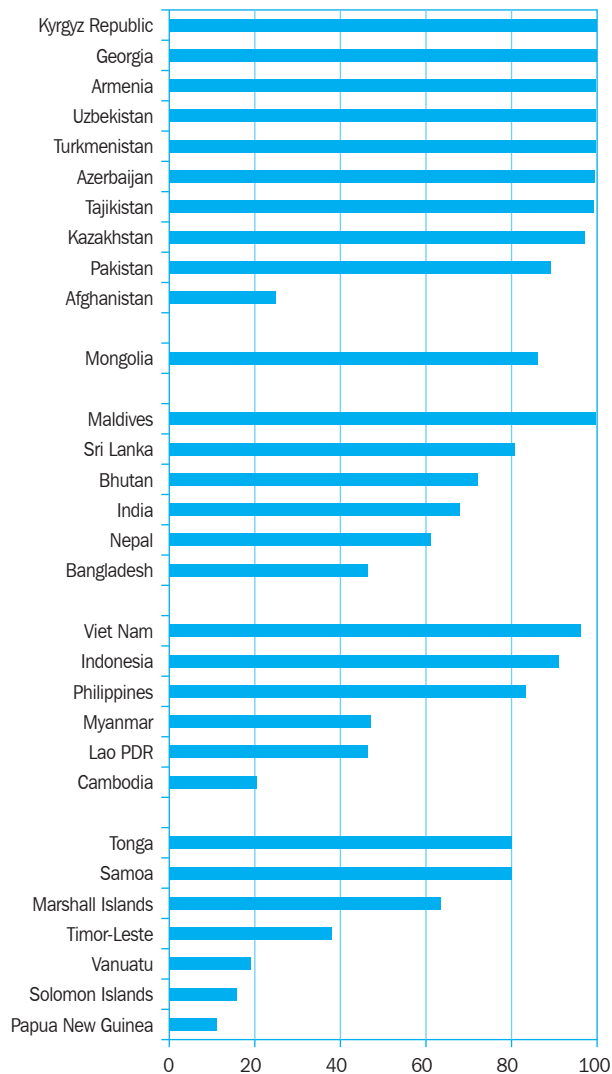
Contrary to the general trend of increasing per capita consumption in the region, Central and West Asian economies, except for Pakistan, decreased their per capita consumption from 1990 to the latest year for which data are available.

More than half of the region’s economies have achieved 80% electrification of households. Figure 5.7 shows household electrification rates—the percentage of households with an electricity connection in the latest year. Of the 30 economies presented, 17 have at least 80% of their households covered. A majority of the Central and West Asia economies are nearing a 100% electrification rate, while a majority of South Asian economies have rates above 60%. For Southeast Asia and

the Pacific, electrification varies widely, ranging from a very low 11% to a high of almost 100%, although some economies in the Pacific have electrification rates below 40%. Nine economies are still below the 50% household electrification rate.

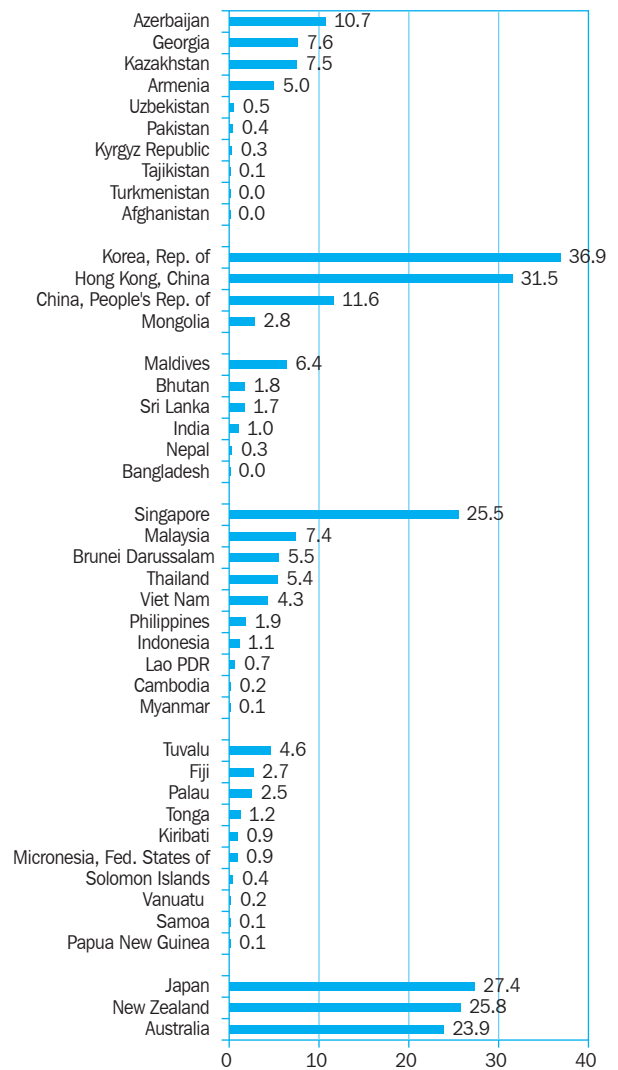
Fixed broadband internet subscription rates have expanded but penetration remains low in Asia and the Pacific (Figure 5.8). The region has experienced a surge in fixed broadband internet subscriptions during the last 11 years, led by the PRC, where subscription rates grew at an average annual rate of 80.4% from 2000 to 2011. Other economies with large increases are India and the Republic of Korea. Among developed economies, New Zealand enjoyed the biggest increase in broadband

Figure 5.7 **Electrification Rate, Latest Year**
(per capita kWh)



Source: Table 5.6.

Figure 5.8 **Fixed Broadband Subscription per 100 Inhabitants, 2011**



Source: International Telecommunication Union (ITU).

subscription, with an average annual increase of 50% from 2000 to 2011. Although most economies in the Pacific registered increased subscriptions during that same period, a majority of them still have low numbers of fixed broadband subscriptions.

Despite strong growth in fixed broadband subscriptions, “penetration levels”—the numbers of subscribers per 100 inhabitants—remain low in some economies. The region’s penetration level varies widely, ranging from a low of almost zero to a high of 36.9. As calculated by the International Telecommunication Union, the region’s average penetration level is 6.4. This is below the world’s penetration rate of 8.5 per 100 population but higher than in Africa (0.2) and the Middle East (2.1). Economies that have the region’s highest penetration rates are the higher income economies: Hong Kong, China; the Republic of Korea; and Singapore. Their rates are comparable to if not higher than those of the developed economies.

Data Issues and Comparability

Data for each year, or on the most current year for all types of road indicators, are scarce. Consequently, writers can describe but not draw the analytical results that may be needed to convince policy makers to adopt corrective measures. The most recent data are usually 2–3 years lagged. For example, for the road indicators network, the latest vehicles and safety data are for 2009. For many indicators, there is a 20-year lag before data are complete across most of the region. Some subregions, especially the Pacific, have incomplete or no data, as is the case for road indicators that estimate the number of accidents, injuries, and deaths. Given the size of the Pacific island countries, no data are expected for rail transport. Efforts of the national road agencies or institutions to hasten collecting and updating data are well recognized. However the problems in data organization, collection, methodology, and dissemination pose a continuing challenge to improve the quality of data so they include the entire Asia and the Pacific region, yield comparable data results, and are of good quality.

Data for the indicator on the household electrification rate are lacking. Rather than having data for one starting and one ending year, data for each are posted over a range of years, with the result that the data are not comparable. This could indicate infrequent or irregular timing in the submission of data, making data inconsistent and limiting possibilities for analysis.

Similarly, data on the sources of electricity are noticeably incomplete. The Pacific island economies, which have limited resources for power generation, provide no data on the source of their electricity generated. The latest data for electricity sources are for 2009, showing at least a 2-year lag in reporting and processing data.

Data on telephone and internet subscriptions are updated according to the latest year, which is 2011, although there is a one-year lag for the timing and release of data. Frequency in the submission of data is also regular because most countries posted data for several years, except for a handful of Pacific Island countries. Most data come from questionnaires the International Telecommunications Union send to participating countries. Where data are incomplete, other information and reports are sourced from the ministries in charge of telecommunication and staff estimates.

References

- International Telecommunication Union website (http://www.itu.int/ITU-D/ict/statistics/at_glance/keytelecom.html), accessed on 23 July 2012.
- International Road Federation. 2011. World Road Statistics compilation 1963–2009. CD-ROM ordered 11 May 2012.
- World Bank. 2012. World Development Indicators (<http://data.worldbank.org/indicator>), accessed on 7 July 2012.

Table 5.1 Road Indicators: Network

Regional Member	Roads, Total Network (thousand kilometers)		Road Density (kilometers of road per thousand square kilometers of land area)		Paved Roads (% of total roads)		Access to an All- Season Road (% of rural population)
	1990	Latest Year	1990	Latest Year	1990	Latest Year	Latest Year
Developing Member Economies							
Central and West Asia							
Afghanistan	21.0	42.2 (2006)	...	64.6 (2006)	13.3	29.3 (2006)	...
Armenia	7.7	7.7 (2009)	270.0	270.5 (2009)	99.2	93.6 (2009)	...
Azerbaijan	52.4	52.9 (2006)	...	640.7 (2006)	93.9 (1994)	50.6 (2006)	67.0 (2002)
Georgia	21.6	20.3 (2007)	310.8	292.5 (2007)	93.8	94.1 (2007)	...
Kazakhstan	158.3	96.8 (2009)	...	35.9 (2009)	55.1	88.5 (2009)	...
Kyrgyz Republic	18.9	34.0 (2007)	...	177.3 (2007)	90.0	91.1 (2001)	75.6 (1998)
Pakistan	169.2	258.4 (2009)	219.5	335.1 (2009)	65.4 (2006)	...	61.3 (2004)
Tajikistan	29.9	27.8 (2000)	213.4	198.4 (2000)	71.6	82.7 (1995)	73.7 (2003)
Turkmenistan	21.3	24.0 (2000)	45.3	51.1 (2000)	73.5	81.2 (2001)	...
Uzbekistan	72.5	81.6 (2000)	170.4	191.8 (2000)	79.0	87.3 (2001)	57.0 (2000)
East Asia							
China, People's Rep. of	1181.0	3860.8 (2009)	...	413.9 (2009)	72.1	53.5 (2008)	...
Hong Kong, China	1.5	2.1 (2009)	1424.2	1967.4 (2009)	100.0	100.0 (2009)	...
Korea, Rep. of	56.7	105.0 (2009)	574.4	1081.2 (2009)	71.5	79.3 (2009)	...
Mongolia	42.4	49.3 (2002)	27.3	31.7 (2002)	10.2	3.5 (2002)	36.0 (2003)
Taipei, China	20.0	40.3 (2008)	553.9	1151.5 (2008)	...	...	...
South Asia							
Bangladesh	188.0	239.2 (2003)	1444.3	1837.8 (2003)	7.2	9.5 (2003)	37.0 (2000)
Bhutan	2.3	8.1 (2003)	...	200.9 (2003)	77.1	62.0 (2003)	47.0 (2003)
India	2000.0	4109.6 (2008)	672.7	1382.2 (2008)	47.3	49.5 (2008)	60.0 (2001)
Maldives	...	0.1 (2005)	...	293.3 (2005)	...	100.0 (2005)	...
Nepal	6.8	19.9 (2008)	...	138.6 (2008)	37.5	53.9 (2008)	17.2 (2003)
Sri Lanka	93.0	97.3 (2003)	1483.0	1551.4 (2003)	32.0 (1991)	81.0 (2003)	...
Southeast Asia							
Brunei Darussalam ^a	1.0	3.0 (2008)	...	564.0 (2008)	31.4	81.1 (2008)	...
Cambodia	35.8	38.3 (2004)	202.8	216.7 (2004)	7.5	6.3 (2004)	80.7 (2003)
Indonesia	288.7	476.3 (2009)	159.4	262.9 (2009)	45.1	56.9 (2009)	...
Lao PDR	14.0	39.6 (2009)	...	171.4 (2009)	24.0	13.7 (2009)	64.4 (2002)
Malaysia	54.0	39.6 (2009)	...	300.5 (2004)	70.0	82.8 (2006)	...
Myanmar	25.0	27.0 (2005)	38.3	41.3 (2005)	10.9	11.9 (2005)	...
Philippines	160.6	200.0 (2003)	538.5	670.9 (2003)	16.6 (1994)	9.9 (2003)	...
Singapore	2.8	3.4 (2009)	4176.1	4794.3 (2009)	97.1	100.0 (2009)	...
Thailand	72.2	180.1 (2006)	141.3	352.4 (2006)	55.3	98.5 (2000)	...
Viet Nam	96.1	160.1 (2007)	295.2	516.3 (2007)	23.5	47.6 (2007)	83.5 (2004)
The Pacific							
Cook Islands	...	...	...	...	...	...	...
Fiji	3.1	3.4 (2000)	166.9	188.3 (2000)	44.5	49.2 (2001)	...
Kiribati	...	0.7 (2000)	...	827.2 (2000)	...	...	...
Marshall Islands	...	...	...	...	...	...	...
Micronesia, Fed. States of	...	0.2 (2000)	...	342.9 (2000)	15.9	17.5 (2001)	...
Nauru	...	...	...	...	...	...	...
Palau	...	...	...	...	...	...	...
Papua New Guinea	18.5	19.6 (2000)	40.9	43.3 (2000)	3.2	3.5 (2001)	68.0 (1996)
Samoa	...	2.3 (2001)	...	279.2 (1998)	42.0 (1995)	14.2 (2001)	...
Solomon Islands	1.2	1.4 (2001)	43.2	49.7 (2000)	2.1	2.4 (2001)	...
Timor-Leste	...	...	...	...	...	...	89.5 (2001)
Tonga	...	0.7 (2000)	...	944.4 (2000)	27.0 (1995)	27.0 (2001)	...
Tuvalu	...	...	...	...	...	...	...
Vanuatu	...	1.1 (2000)	...	87.8 (2000)	21.6	23.9 (2001)	...
Developed Member Economies							
Australia	810.3	817.1 (2009)	105.5	106.4 (2009)	35.0	43.5 (2009)	...
Japan	1114.7	1207.9 (2009)	3057.3	3313.8 (2009)	69.2	80.1 (2009)	...
New Zealand	92.7	94.3 (2009)	352.0	358.1 (2009)	57.0	66.2 (2009)	...

... = Data not available at cutoff date.

a Brunei Darussalam is a regional member of ADB, but it is not classified as a developing member.

Sources: *World Road Statistics* (International Road Federation 1995 and 2011), World Development Indicators Online (World Bank 2012).

Transport

Table 5.2 Road Indicators: Vehicles

Regional Member	Total Motor Vehicles (thousands)		Motor Vehicles (per 1,000 people)		Motor Vehicles (per kilometer of road)	
	1990	2009	1990	2009	1990	2009
Developing Member Economies						
Central and West Asia						
Afghanistan	...	863.3	...	29	...	19 (2008)
Armenia	16.6	315.5 (2007)	5	105 (2007)	2	42 (2007)
Azerbaijan	373.8	912.7	52	104	11	13 (2007)
Georgia	331.4 (1998)	641.8	74 (1998)	151	16 (1998)	16 (2003)
Kazakhstan	1368.0	3162.4	82 (1998)	199	11 (1998)	33
Kyrgyz Republic	...	309.5 (2007)	...	59 (2007)	...	9 (2007)
Pakistan	553.7	2170.4	5	13	3	8
Tajikistan	17.9	257.3 (2007)	3	38 (2007)	1	9 (2008)
Turkmenistan	...	534.3 (2008)	...	106 (2008)	...	22 (2008)
Uzbekistan	...	...	...	...	...	...
East Asia						
China, People's Rep. of	12827.3 (2008)	62136.9	10 (1998)	47	10 (1998)	16
Hong Kong, China	375.4	520.8	64	74	253	254
Korea, Rep. of	3394.8	17325.2	79	355	60	165
Mongolia	67.8 (2008)	190.5 (2008)	29 (1998)	72 (2008)	1 (1998)	4 (2008)
Taipei, China	2937.7	6718.7	144	291	151	166 (2008)
South Asia						
Bangladesh	122.0 (1993)	426.0	1 (1993)	3	5 (1993)	2 (2008)
Bhutan	...	39.9	...	57	...	4 (2008)
India	3663.7	21200.1	5	18	3 (1993)	4 (2006)
Maldives	...	7.4	...	24	...	79 (2008)
Nepal	...	148.2 (2007)	...	5 (2007)	...	...
Sri Lanka	337.2	951.4	20	47	4	13 (2008)
Southeast Asia						
Brunei Darussalam ^a	120.3	270.9 (2007)	120	696 (2007)	90	...
Cambodia	4.7	284.6 (2005)	0	20 (2005)	0	6 (2005)
Indonesia	2806.1	18281.4	16	79	12	40
Lao PDR	35.6	121.8 (2007)	9	21 (2007)	3	...
Malaysia	2252.8	9604.6	...	350	46	83 (2008)
Myanmar	...	330.5	...	7	...	13 (2008)
Philippines	603.9	2990.7	9	33	3	14 (2008)
Singapore	396.1	778.3	147	156	142	232
Thailand	2578.8	8923.4 (2006)	46	...	49	...
Viet Nam	...	1146.3 (2007)	...	13 (2007)	...	7 (2008)
The Pacific						
Cook Islands	...	...	...	...	...	...
Fiji	...	150.7	...	177	...	43 (2008)
Kiribati	...	13.9 (2007)	...	144 (2007)	...	...
Marshall Islands	...	...	...	...	...	...
Micronesia, Fed. States of	...	4.0 (2007)	...	36 (2007)	...	...
Nauru	...	...	...	...	...	...
Palau	...	...	...	...	...	...
Papua New Guinea	...	56.1 (2007)	...	9 (2008)	...	...
Samoa	...	10.8 (2005)	59 (2005)	...	...	5 (2005)
Solomon Islands	...	...	...	...	...	...
Timor-Leste	...	...	...	...	...	...
Tonga	...	...	...	...	...	...
Tuvalu	...	...	...	...	...	...
Vanuatu	...	...	...	...	...	...
Developed Member Economies						
Australia	9051.9	15050.3	530	688	12 (1991)	18
Japan	57701.7	75176.4	467	589	52	63 (2008)
New Zealand	1800.3	3096.7	527	718	20	33

... = Data not available at cutoff date, 0 = Magnitude is less than half of unit employed.

a Brunei Darussalam is a regional member of ADB, but it is not classified as a developing member.

Source: World Road Statistics (International Road Federation 2011).

Table 5.3 Road Indicators: Safety

Regional Member	Number of Injury Accidents (per 100,000 population)			Number of Persons Killed in Road Accidents (per 100,000 population)		
	1990	2000	2009	1990	2000	2009
Developing Member Economies						
Central and West Asia						
Afghanistan	...	...	7.7	...	...	6.5 (2007)
Armenia	...	30.4	64.9	...	6.9	10.5
Azerbaijan	23.7	24.7	31.8	17.6	7.4	10.6
Georgia	...	36.2	128.7	...	10.6	17.4
Kazakhstan	34.6	76.0	78.9	11.9	13.8	18.2
Kyrgyz Republic	...	54.3	86.2 (2008)	...	12.4	18.9
Pakistan	12.5	6.5 (2002)	5.7	4.4	3.8 (1998)	3.1
Tajikistan	79.0	21.6	23.9	15.3	6.6	6.9
Turkmenistan	...	41.1 (2002)	...	...	10.9 (1998)	13.2 (2006)
Uzbekistan	...	...	...	...	...	...
East Asia						
China, People's Rep. of	...	48.9	17.9	...	7.4	5.1
Hong Kong, China	267.4	222.7	204.4	5.6	3.3	2.0
Korea, Rep. of	595.5	617.9	475.9	28.8	21.8	12.0
Mongolia	...	249.8	...	...	14.1	21.5 (2007)
Taipei, China	30.6	238.7	800.8	19.3	15.3	9.1
South Asia						
Bangladesh	1.4 (1993)	4.9	...	1.0 (1993)	2.9	2.0 (2006)
Bhutan	...	33.0	...	...	...	16.4 (2007)
India	33.8	38.5	42.1	6.5	7.8	10.9
Maldives	...	...	...	...	0.6 (2003)	2.7 (2003)
Nepal	...	...	...	...	...	3.4 (2007)
Sri Lanka	213.0	280.2	159.9 (2007)	11.0	11.1	11.2
Southeast Asia						
Brunei Darussalam ^a	...	...	709.5 (2006)	...	12.3	7.4 (2008)
Cambodia	2.7	23.2	27.8 (2003)	0.9	3.2	10.8 (2007)
Indonesia	...	...	27.4	...	4.6 (2003)	8.7
Lao PDR	22.4	82.1	86.9 (2006)	3.3	6.8	11.9
Malaysia	486.2	1088.9	1380.9 (2008)	22.4	26.2	24.6
Myanmar	...	10.2	10.9 (2003)	...	2.7	3.3
Philippines	...	18.7	4.4 (2008)	...	1.1	1.2 (2008)
Singapore	225.5	179.9	170.5	7.7	5.3	3.7
Thailand	72.5	120.0	175.0 (2006)	12.5	19.5	15.8
Viet Nam	...	28.6	14.3	...	9.6	13.2
The Pacific						
Cook Islands	...	...	...	...	...	...
Fiji	...	...	99.2 (2005)	...	9.5 (2004)	5.5
Kiribati	...	...	...	...	...	7.4 (2007)
Marshall Islands	...	...	...	...	...	...
Micronesia, Fed. States of	...	...	...	...	...	1.8 (2007)
Nauru	...	...	...	...	...	...
Palau	...	...	...	...	...	...
Papua New Guinea	...	...	...	...	...	3.7 (2007)
Samoa	...	...	...	...	...	11.2 (2007)
Solomon Islands	...	...	...	...	...	3.8 (2007)
Timor-Leste	...	...	...	...	...	...
Tonga	...	315.8 (2002)	329.0 (2003)	...	9.0 (2002)	7.8 (2007)
Tuvalu	...	...	...	...	...	...
Vanuatu	...	...	...	...	...	3.5 (2007)
Developed Member Economies						
Australia	129.4	...	6.2	13.7	9.5	6.8
Japan	520.8	734.6	577.5	9.1	7.2	4.5
New Zealand	385.0	203.0	257.8	21.9	12.0	8.9

... = Data not available at cutoff date.

a Brunei Darussalam is a regional member of ADB, but it is not classified as a developing member.

Source: *World Road Statistics* (International Road Federation 2011).

Transport

Table 5.4 Rail Indicators

Regional Member	Rail Lines (total route, kilometers)			Rail Network, Length per Land Area (kilometers per thousand square kilometers)		
	1990	2000	2010	1990	2000	2010
Developing Member Economies						
Central and West Asia						
Afghanistan	...	...	...	...	...	...
Armenia	845	711	826	29.7	29.6	29.0
Azerbaijan	...	2116	2079	...	25.6	25.2
Georgia	1583	1562	1566	22.8	22.5	22.5
Kazakhstan	14465	13545	14202	5.4	5.0	5.3
Kyrgyz Republic	...	...	417	...	...	2.2
Pakistan	8775	7791	7791	11.4	10.1	10.1
Tajikistan	...	...	621	...	...	4.4
Turkmenistan	...	2529	3115	...	...	6.6
Uzbekistan	...	3641 (2005)	4227	...	8.6	9.9
East Asia						
China, People's Rep. of	53378	58656	66239	5.7	6.3	7.1
Hong Kong, China	...	...	...	...	...	...
Korea, Rep. of	3091	3123	3379	31.3	31.6	34.8
Mongolia	1920	1810	1814	1.2	1.2	1.2
Taipei, China	1105	1190	1741	30.6	32.9	48.2
South Asia						
Bangladesh	2746	2768	2835	21.1	21.3	21.8
Bhutan	...	...	...	...	...	...
India	62367	62759	63974	21.0	21.1	21.5
Maldives	...	...	...	...	...	...
Nepal	...	...	...	...	...	...
Sri Lanka	1453	1449 (2004)	1463 (2008)	23.2	...	23.3 (2008)
Southeast Asia						
Brunei Darussalam ^a	...	...	...	...	...	...
Cambodia	600	601	650 (2005)	3.4	3.4	3.7 (2005)
Indonesia	...	3370	3370 (2008)	...	...	1.9 (2008)
Lao PDR	...	...	...	...	...	...
Malaysia	1668	1622	1665	5.1	4.9	5.1
Myanmar	3336	...	...	5.1	...	...
Philippines	479	491	479 (2008)	1.6	1.6	1.6 (2008)
Singapore	...	...	...	...	...	...
Thailand	3861	4103	4429	7.6	8.0	8.7
Viet Nam	2832	3142	2347	8.7	10.1	7.6
The Pacific						
Cook Islands	...	...	...	...	...	...
Fiji	...	...	...	...	...	...
Kiribati	...	...	...	...	...	...
Marshall Islands	...	...	...	...	...	...
Micronesia, Fed. States of	...	...	...	...	...	...
Nauru	...	...	...	...	...	...
Palau	...	...	...	...	...	...
Papua New Guinea	...	...	...	...	...	...
Samoa	...	...	...	...	...	...
Solomon Islands	...	...	...	...	...	...
Timor-Leste	...	...	...	...	...	...
Tonga	...	...	...	...	...	...
Tuvalu	...	...	...	...	...	...
Vanuatu	...	...	...	...	...	...
Developed Member Economies						
Australia	6612	9458 (1997)	8615	0.9	1.2 (1997)	1.1
Japan	20254	20134	20035	55.6	55.2	55.0
New Zealand	4029	3913	3913 (1999)	15.3	14.9	14.9 (1999)

... = Data not available at cutoff date.

a Brunei Darussalam is a regional member of ADB, but it is not classified as a developing member.

Sources: World Development Indicators Online (World Bank 2012); ADB staff estimates; for Taipei, China: Council for Economic Planning and Development.

Electricity

Table 5.5 Electricity Production and Sources

Regional Member	Total Electricity		Sources of Electricity (% of total)									
	Production (billion kWh)		Coal		Natural Gas		Oil		Hydropower		Others ^a	
	1990	2009	1990	2009	1990	2009	1990	2009	1990	2009	1990	2009
Developing Member Economies												
Central and West Asia												
Afghanistan	1.1	0.6 (2011)	...	...	...	...	...	...	...	...	...	...
Armenia	10.4	5.7	-	-	16.4	20.3	68.6	-	15.0	35.6	-	44.0
Azerbaijan	23.2	18.9	-	-	0.0	85.1	97.0	2.6	3.0	12.2	-	-
Georgia	13.7	8.6	-	-	15.6	12.9	29.2	0.5	55.2	86.6	-	-
Kazakhstan	87.4	78.7	71.1	74.9	10.5	13.1	10.0	3.2	8.4	8.7	-	-
Kyrgyz Republic	15.7	11.1	13.1	2.8	23.5	8.0	-	-	63.5	89.3	-	-
Pakistan	37.7	95.4	0.1	0.1	33.6	29.4	20.6	38.0	44.9	29.4	0.8	3.0
Tajikistan	18.1	16.1	-	-	9.1	2.0	-	-	90.9	98.0	-	-
Turkmenistan	14.6	16.0	-	-	95.2	100.0	-	-	4.8	0.0	-	-
Uzbekistan	56.3	49.9	7.4	4.1	76.4	75.1	4.4	2.1	11.8	18.7	-	-
East Asia												
China, People's Rep. of	621.2	3695.9	71.3	78.8	0.4	1.4	7.9	0.4	20.4	16.7	-	2.7
Hong Kong, China	28.9	38.7	98.2	70.8	-	28.9	1.8	0.4	-	-	-	-
Korea, Rep. of	105.4	478.0 (2010)	16.8	44.1 (2010)	9.1	20.2 (2010)	17.9	3.2 (2010)	6.0	0.8 (2010)	50.2	31.7 (2010)
Mongolia	3.5	4.2	92.4	96.4	-	-	7.6	3.6	-	-	-	-
Taipei, China	51.0	252.2 (2011)	...	...	...	...	...	...	...	...	...	...
South Asia												
Bangladesh	7.7	37.9	-	1.7	84.3	89.4	4.3	4.8	11.4	4.1	-	-
Bhutan	1.6	6.9	...	...	...	...	...	...	...	...	...	...
India	289.4	899.4	66.2	68.6	3.4	12.4	3.5	2.9	24.8	11.9	2.1	4.3
Maldives	0.0	0.2 (2010)	...	...	...	...	...	...	...	...	...	...
Nepal	0.9	3.1	-	-	-	-	0.1	0.4	99.9	99.6	-	-
Sri Lanka	3.2	9.9	-	-	-	-	0.2	60.3	99.8	39.5	-	0.2
Southeast Asia												
Brunei Darussalam ^b	1.2	3.6	-	-	99.1	99.0	0.9	1.0	-	-	-	-
Cambodia	0.2 (1995)	1.2	-	-	-	-	100.0	95.6	...	3.9	...	0.5
Indonesia	32.7	155.5	29.9	41.8	2.2	22.1	46.9	22.8	17.5	7.3	-	6.0
Lao PDR	0.8	8.6 (2010)	...	...	...	...	...	...	...	...	...	...
Malaysia	23.0	105.1	12.3	30.9	20.4	60.7	50.0	2.0	17.3	6.3	-	-
Myanmar	2.5	5.9	1.6	-	39.3	19.6	10.9	8.9	48.1	71.5	-	-
Philippines	26.3	61.9	7.3	26.6	-	32.1	47.2	8.7	23.0	15.8	-	16.8
Singapore	15.7	41.8	-	-	-	81.0	100.0	18.8	-	-	-	0.2
Thailand	44.2	148.4	25.0	19.9	40.2	70.7	23.5	0.5	11.3	4.8	-	4.0
Viet Nam	8.7	83.2	23.1	18.0	0.1	43.4	15.0	2.5	61.8	36.0	-	-
The Pacific												
Cook Islands	0.0	0.0 (2010)	...	...	...	...	...	...	...	...	...	...
Fiji	0.4	0.8 (2010)	...	...	...	...	...	...	...	...	...	...
Kiribati	0.0	0.0 (2010)	...	...	...	...	...	...	...	...	...	...
Marshall Islands	0.0	0.1 (2006)	...	...	...	...	...	...	...	...	...	...
Micronesia, Fed. States of	0.1 (1995)	0.1 (2011)	...	...	...	...	...	...	...	...	...	...
Nauru	0.0	0.0 (2007)	...	...	...	...	...	...	...	...	...	...
Palau	0.2 (1992)	0.2	...	...	...	...	...	...	...	...	...	...
Papua New Guinea	1.8	3.0 (2008)	...	...	...	...	...	...	...	...	...	...
Samoa	0.1	0.1	...	...	...	...	...	...	...	...	...	...
Solomon Islands	0.0	0.1 (2011)	...	...	...	...	...	...	...	...	...	...
Timor-Leste	0.1 (2006)	0.1 (2011)	...	...	...	...	...	...	...	...	...	...
Tonga	0.0	0.1 (2011)	...	...	...	...	...	...	...	...	...	...
Tuvalu	...	...	...	...	...	...	...	...	...	...	...	...
Vanuatu	0.0	0.1 (2011)	...	...	...	...	...	...	...	...	...	...
Developed Member Economies												
Australia	154.3	256.2 (2010)	78.7	75.8 (2010)	9.3	16.2 (2010)	2.3	0.7 (2010)	9.2	4.9 (2010)	-	2.4 (2010)
Japan	835.5	1071.3 (2010)	14.0	26.9 (2010)	20.0	27.5 (2010)	18.5	7.0 (2010)	10.7	6.9 (2010)	24.2	31.6 (2010)
New Zealand	32.3	44.8 (2010)	2.1	4.6 (2010)	17.7	22.0 (2010)	0.0	0.0 (2010)	71.9	55.1 (2010)	-	18.3 (2010)

... = Data not available at cutoff date, 0.0 = Magnitude is less than half of unit employed, - = Magnitude equals zero, kWh = kilowatt-hour.

a Computed as residual and includes nuclear sources; combustible renewables and waste; and geothermal, solar, wind, and other sources.

b Brunei Darussalam is a regional member of ADB, but it is not classified as a developing member.

Sources: World Development Indicators Online (World Bank 2012); Country sources for Afghanistan; Bhutan; the Cook Islands; Fiji; Kiribati; the Lao PDR; the Maldives; the Marshall Islands; the Fed. States of Micronesia; Nauru; Palau; Papua New Guinea; Samoa; Solomon Islands; Taipei, China; Timor-Leste; Tonga; Tuvalu; and Vanuatu.

Electricity

Table 5.6 **Electric Power Consumption and Electrification**

Regional Member	Electric Power Consumption (per capita kWh)		Household Electrification Rate (% of households)	
	1990	2009	Earliest Year	Latest Year
Developing Member Economies				
Central and West Asia				
Afghanistan	20 (2001)	64 (2011)	...	25.0 (2005)
Armenia	2718	1550	98.9 (2000)	99.8 (2005)
Azerbaijan	2584	1620	97.0 (1999)	99.5 (2006)
Georgia	3039	1585	...	99.9 (2002)
Kazakhstan	5905	4448	99.9 (1995)	97.0 (1999)
Kyrgyz Republic	2331	1386	99.8 (1997)	100.0 (2002)
Pakistan	267	449	59.6 (1990)	89.2 (2006)
Tajikistan	3346	1985	97.0 (1999)	99.3 (2003)
Turkmenistan	2293	2446	...	99.6 (2000)
Uzbekistan	2383	1636	99.6 (1996)	99.7 (2002)
East Asia				
China, People's Rep. of	511	2631	...	...
Hong Kong, China	4178	5925	...	...
Korea, Rep. of	2373	8980	...	...
Mongolia	1540	1411	67.3 (2000)	86.2 (2005)
Taipei, China	4159	10431 (2011)	...	...
South Asia				
Bangladesh	49	252	17.8 (1993)	46.5 (2007)
Bhutan	254	977 (2005)	41.1 (2003)	72.0 (2007)
India	268	571	50.9 (1992)	67.9 (2005)
Maldives	113	613 (2010)	83.8 (2000)	99.8 (2009)
Nepal	35	91	17.9 (1996)	61.2 (2006)
Sri Lanka	151	408	...	80.7 (2002)
Southeast Asia				
Brunei Darussalam ^a	4438	8662	...	...
Cambodia	11 (1995)	131	16.6 (2000)	20.5 (2005)
Indonesia	160	590	48.9 (1991)	91.1 (2007)
Lao PDR	64	103 (1997)	...	46.3 (2002)
Malaysia	1171	3614	...	...
Myanmar	46	104	...	47.0 (2002)
Philippines	363	593	71.3 (1998)	83.3 (2008)
Singapore	4983	7949	...	...
Thailand	703	2045	...	...
Viet Nam	98	918	78.4 (1997)	96.1 (2005)
The Pacific				
Cook Islands	775	1429 (2010)	...	...
Fiji	607	901 (2010)	...	...
Kiribati	109	171 (2010)	...	...
Marshall Islands	961	1502 (2006)	...	63.4 (1999)
Micronesia, Fed. States of	...	...	...	...
Nauru	...	...	...	...
Palau	...	...	...	...
Papua New Guinea	485	470 (2008)	...	11.0 (1996)
Samoa	312	529 (2011)	78.8 (1991)	80.0 (1994)
Solomon Islands	102	113 (2011)	...	15.7 (1999)
Timor-Leste	0	0	27.0 (2002)	38.0 (2009)
Tonga	250	430 (2011)	...	80.0 (1994)
Tuvalu	124	406 (2006)	...	...
Vanuatu	177	249 (2011)	18.0 (1994)	19.1 (1999)
Developed Member Economies				
Australia	8527	11113	...	...
Japan	6486	7819	...	...
New Zealand	8664	9346	...	...

... = Data not available at cutoff date, 0 = Magnitude is less than half of unit employed, kWh = kilowatt-hour.

a Brunei Darussalam is a regional member of ADB, but it is not classified as a developing member.

Sources: World Development Indicators Online (World Bank 2012); Demographic and Health Surveys Online (ICF Macro 2011); Results Measurement System Online (International Development Association 2012); PRISM website (www.spc.int/prism/country/mh/stats/Utility/Lighting.pdf); Country sources for Afghanistan; Bhutan; the Cook Islands; Fiji; Kiribati; the Lao PDR; the Maldives; the Marshall Islands; the Fed. States of Micronesia; Nauru; Palau; Papua New Guinea; Samoa; Solomon Islands; Taipei, China; Timor-Leste; Tonga; Tuvalu; and Vanuatu.

Table 5.7 Telephone and Internet Subscriptions

Regional Member	Fixed Telephone Lines (thousands)		Mobile Cellular Telephone (thousands)		Fixed Broadband Internet (thousands)	
	2000	2011	2000	2011	2000	2011
Developing Member Economies						
Central and West Asia						
Afghanistan	29.0	13.5	0.0	17558.3	0.2 (2004)	1.5 (2010)
Armenia	533.4	577.5	17.5	3210.8	0.0 (2001)	154.5
Azerbaijan	801.2	1683.9	420.4	10120.1	1.0 (2002)	998.3
Georgia	508.8	1342.4	194.7	4430.6	0.4 (2001)	329.2
Kazakhstan	1834.2	4237.3	197.3	23102.7	1.0 (2003)	1215.7
Kyrgyz Republic	376.1	480.0	9.0	5653.0	0.0 (2002)	16.0
Pakistan	3053.5	5721.7	306.5	108894.5	14.6 (2005)	737.8
Tajikistan	218.5	380.0	1.2	6324.0	0.0 (2003)	5.0
Turkmenistan	364.4	547.0	7.5	3511.0	0.1 (2008)	1.1
Uzbekistan	1655.0	1927.7	53.1	25441.8	2.8 (2003)	147.8
East Asia						
China, People's Rep. of	144830.0	285120.0	85260.0	986253.0	22.7	156487.0
Hong Kong, China	3925.8	4348.5	5447.3	14930.9	444.5	2246.1
Korea, Rep. of	25863.0	29469.0	26816.4	52506.8	3870.0	17859.0
Mongolia	117.5	187.6	154.6	2942.3	0.0 (2001)	79.3
Taipei, China	12642.2	12678.7	17873.8	28861.8	229.0	5888.5
South Asia						
Bangladesh	491.3	1600.0	279.0	85000.0	43.7 (2007)	65.0
Bhutan	14.1	27.5	0.0	484.2	2.1 (2008)	13.1
India	32436.0	32685.0	3577.1	893862.5	50.0 (2001)	12830.0
Maldives	24.4	24.1	7.6	530.4	0.2 (2002)	20.4
Nepal	266.9	845.5	10.2	13354.5	1.0 (2006)	94.7
Sri Lanka	767.4	3608.4	430.2	18319.4	0.3 (2001)	359.0
Southeast Asia						
Brunei Darussalam ^a	80.5	79.8	95.0	443.2	1.9 (2001)	22.4
Cambodia	30.9	530.0	130.5	10000.0	0.1 (2002)	22.0
Indonesia	6662.6	38617.0	3669.3	236799.5	4.0	2736.4
Lao PDR	40.9	107.6	12.7	5480.9	0.0 (2003)	41.7
Malaysia	4628.0	4242.9	5121.7	36661.3	4.0 (2001)	2147.8
Myanmar	271.4	521.1	13.4	1243.6	0.2 (2005)	29.3
Philippines	3061.4	6782.1	6454.4	87256.4	10.0 (2001)	1791.0
Singapore	1946.0	2016.9	2747.4	7755.2	69.0	1323.4
Thailand	5591.1	6720.2	3056.0	78667.9	1.6 (2001)	3738.2
Viet Nam	2542.7	10175.0	788.6	127318.0	1.1 (2001)	3838.2
The Pacific						
Cook Islands	...	...	...	...	...	...
Fiji	86.4	129.9	55.1	727.0	7.0 (2001)	23.3
Kiribati	3.4	8.5	0.3	13.8	0.0	0.9
Marshall Islands	4.0	4.4 (2010)	0.4	3.8 (2010)	0.0	0.0 (2008)
Micronesia, Fed. States of	9.6	8.5 (2010)	0.0	27.5 (2010)	0.0 (2003)	1.0 (2010)
Nauru	...	...	...	...	...	...
Palau	6.9 (2002)	6.9	0.0	15.4	0.1 (2004)	0.5
Papua New Guinea	64.8	130.0	8.6	2400.0	3.0 (2008)	7.5
Samoa	8.5	35.3 (2010)	2.5	167.4 (2010)	0.0 (2004)	0.2 (2010)
Solomon Islands	7.7	8.4	1.2	274.9	0.2 (2004)	2.4
Timor-Leste	2.0 (2003)	3.1	0.0	614.2	0.0 (2003)	0.6
Tonga	9.7	30.0	0.2	55.0	0.0 (2002)	1.3
Tuvalu	0.7	1.5	0.0	2.1	0.1 (2004)	0.5
Vanuatu	6.6	5.0 (2010)	0.4	285.3 (2010)	0.0 (2003)	0.5 (2010)
Developed Member Economies						
Australia	10050.0	10540.0	8562.0	24490.0	122.8 (2001)	5410.0
Japan	61957.0	64585.0	66784.4	129868.4	854.7	34615.9
New Zealand	1831.0	1880.0	1542.0	4820.0	4.7	1138.0

... = Data not available at cutoff date, 0.0 = Magnitude is less than half of unit employed.

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Sources: International Telecommunication Union World Telecommunication/ICT Indicators Database (International Telecommunication Union 2012); Country source for Taipei, China.