UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific

Statistical Yearbook for Asia and the Pacific 2015

FACTS AND TRENDS AT THE OUTSET OF THE 2030 DEVELOPMENT AGENDA

Statistical Yearbook for Asia and the Pacific 2015

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PREFACE

I am pleased to present the *Statistical Yearbook for Asia and the Pacific 2015* - facts and trends at the outset of the 2030 Development Agenda, which provides a first snapshot overview of development trends aligned with the new 2030 Agenda for Sustainable Development. This information will help to ensure better, more informed decision-making and will directly support the efforts of governments, development partners, and the people of Asia and the Pacific to successfully implement the ambitious goals and targets of the 2030 Agenda.

The Yearbook quantifies the significant progress in poverty reduction made across the region over the past 15 years, as well as the development disparities that persist across the 17 new Sustainable Development Goals (SDGs). It reveals that there is an urgent need to improve data sources and strengthen national statistical institutions if the transformative aspirations of the 2030 Agenda are to be met in our region.

For each of the 17 SDGs, concise analyses of major achievements and challenges for the 58 ESCAP member States and the five Asia-Pacific subregions are provided, supported by the most up-to-date and comparable data for more than 300 indicators, including 40 indicators presented in the *Yearbook* for the first time. Indicators presented in the *Yearbook* have been selected based on their relevance to the SDGs, and the availability of data and statistics that follow international statistical standards. In identifying indicators for inclusion in the *Yearbook*, the set of indicators under consideration for global monitoring of the 2030 Development Agenda were also taken into account.

These analyses are presented as a series of headline messages, supported by data-driven facts, charts and text boxes. The *Yearbook* also presents data issues and challenges which are likely to affect follow-up and review of SDGs 1 through 16, and is accompanied by a series of products including: time series tables of indicators, country fact sheets, a database containing more than 800 indicators, and data visualization options.

This publication would not have been possible without the collaboration of a large number of individuals and international organizations, and we thank all of these key partners for their important contributions. Asia-Pacific leadership on sustainable development will only be possible when supported by the best, most relevant and most accessible statistics. The 2015 edition of the *Yearbook* is, therefore, a keystone element in ensuring the future we want for the people of our region.

Shamshad Akhtar

Under-Secretary-General of the United Nations and Executive Secretary of ESCAP

Team for the preparation of the Statistical Yearbook for Asia and the Pacific 2015

The primary responsibility for producing the *Statistical Yearbook* lies with the ESCAP Statistics Division, under the guidance of Margarita Guerrero, Director, Statistics Division. The production team includes:

Team leader

Rikke Munk Hansen
Chief, Economic and Environment Statistics Section, Statistics Division

Coordination

Aaron Beck

Statistics and data management

Coordinator: **Eric Hermouet**

Michael Argyrides, Krisana Boonpriroje, Bhagya Gangoda Gamachchige, Nongnuch Hiranyapaisansakul, Tommaso Marinello, Timo Meiendresch, Marisa Limawongpranee, Nixie Mabanag Abarquez, Panpaka Supakalin, Giulia Tomaselli, Sara Vojvodic and Tianyi Wang

Research

The Statistics Division staff provided inputs in the production process:

Aaron Beck (SDG 11), Daniel Clarke (SDGs 7, 14 and 15), Rikke Munk Hansen (SDG 7), Eric Hermouet (SDG 2), Marko Javorsek (SDG 12), Christopher Sean Lovell (SDGs 3 and 4), Zeynep Orhun (SDG 1), Teerapong Praphotjanaporn (SDGs 6 and 13), Christopher Ryan (SDGs 8, 9 and 10), Tanja Sejersen (SDG 16), Sharita Serrao (SDG 5) and Yanhong Zhang (SDG 17).

Editing and layout

Editor: **John Loftus**

Design and layout: **Warren Field**

Web design: **Krisana Boonpriroje, Suwat Chancharoensuk, Martin Dessart and Marko Javorsek**

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Expert contributors and peer reviewers

SDG 1	World Bank: Umar Serajuddin	SDG 2	CAPSA: Anshuman Varma FAO: Carlo Cafiero, Piero Conforti, Erdgin Mane and Mukesh Kumar Srivastava
SDG 3	ESCAP: Lucia Gonzalez-Lopez and Srinivas Tata UNICEF: Basil Rodriques and Kyoko Shimamoto	SDG 4	UNESCO: Aurélie Acoca and Roshan Bajracharya
SDG 5	ESCAP: Cai Cai and Jacqueline Paul	SDG 6	ESCAP: Aida Karazhanova
SDG 7	ESCAP: Hongpeng Liu and Jun Tian	SDG 8	ESCAP: Adam Heal and Vatcharin Sirimaneetham ILO: Phu Huynh
SDG 9	ESCAP: Soo Hyun Kim, Anne Seung-Yeon Kwak and Thanattaporn Rasamit	SDG 10	ESCAP: Vatcharin Sirimaneetham
SDG 11	ESCAP: Kyungkoo Kang, Nokeo Ratanavong and Donovan Storey	SDG 12	CSIRO: Heinz Schandl ESCAP: Soo Hyun Kim, Rusyan Jill Mamiit, Marc Proksch and Katinka Weinberger UNEP: Janet Salem
SDG 13	ESCAP: Nokeo Ratanavong and Hala Razian	SDG 14	
SDG 15		SDG 16	
SDG 17			

Table of contents

Electronic products

Country profiles

Country profiles of key development indicators for each of the 58 regional members and associate members of ESCAP.

The links to country profiles can be found at the Statistical Yearbook website: http://www.unescap.org/resources/statistical-yearbook-asia-and-pacific-2015.

Did you know?

111 key facts about the development trends and data issues in Asia and the Pacific.

Link to did you know booklet:
http://www.unescap.org/sites/default/files/Did_you_know_SYB2015.pdf.

Data tables and its metadata

Data tables and its metadata by SDG can be found at the Statistical Yearbook website:
http://www.unescap.org/resources/statistical-yearbook-asia-and-pacific-2015.

ESCAP Online Statistical Database

It provides a regional perspective on development issues in Asia and the Pacific. The database, covering the 58 regional ESCAP Member States and Associate Members, contains 900 data series on a wide range of topics on population, education, health, poverty and inequalities, gender, economy, environment and connectivity. The online database is updated twice a year.

Link to the ESCAP Statistical Database:
http://www.unescap.org/stat/data/statdb/DataExplorer.aspx.

Make your own chart and map

The data visualization area offers alternative ways for users to explore ESCAP Statistical Database through a choice of interactive tools to generate time-animated statistical charts and maps.

Link to the data visualization tool: http://www.unescap.org/stat/data/visual/sp/index.html.

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Statistical Yearbook for Asia and the Pacific 2015

Sustainable Development Goal 1
End poverty in all its forms everywhere

For decades poverty eradication has been a global development goal and for many countries a national policy priority. The adoption of the 2030 Agenda for Sustainable Development[1] by the United Nations General Assembly on 25 September 2015 has further raised the level of ambition and increased the scope for monitoring poverty around the world. As stated in the Preamble to the Agenda, "…eradicating poverty in all its forms and dimensions, including extreme poverty, is the greatest global challenge and an indispensable requirement for sustainable development."

Over the next 15 years, monitoring of poverty will be critical in delivering an ambitious international development agenda that aspires to a world without monetary poverty, and one where poverty in all its dimensions has been at least halved. The Asia-Pacific region will be fundamental in achieveing these targets, with more than 600 million people living in extreme poverty – more than half of the world's poor.

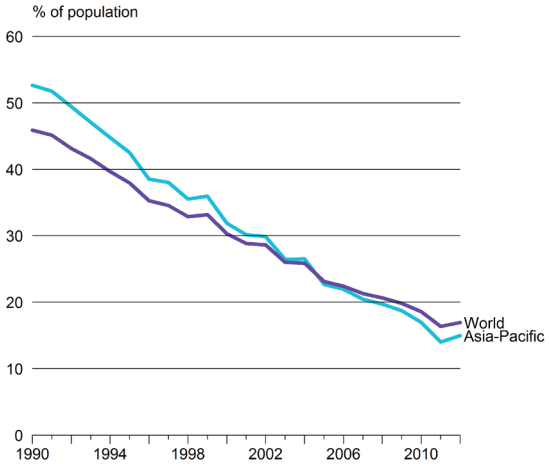
1.1 Poverty trends

Poverty can be reduced or made more severe as a result of a range of decisions or situations related to economic development, such as investment and job creation; distribution of wealth, through social protection schemes for example; access to services, such as education and health care; mitigation of the effects of climate change and disasters; and peace and security. How the root causes of poverty are understood also has a bearing on how phenomena, such as income poverty versus multidimensional poverty, are measured.

In Asia and the Pacific, while many countries have made enormous progress in reducing the number and percentage of people living in extreme poverty, millions of people are still unable to meet their basic needs.

As shown in figure 1, while more than 50 per cent of the population in Asia and the Pacific were living in extreme poverty in 1990 that proportion was reduced to 15 per cent in 2012, which is below the global average of nearly 17 per cent.

Figure 1
Percentage of population living in poverty (below $1.25 per day in 2005 purchasing power parity) in Asia and the Pacific, and the world, 1990-2012



Of the 1.2 billion people worldwide that have lifted themselves out of extreme poverty since 1990, 1.1 billion were living in Asia and the Pacific

The number of people worldwide living in extreme poverty (living on less than $1.25 per day in 2005 Purchasing Power Parity (PPP) fell from 2.4 billion in 1990 to approximately 1.2 billion in 2012. Over the same period, the number of people living on less than $2 per day (in 2005 PPP) fell from 3.6 billion people to 2.6 billion.

A large part of the progress in combating extreme poverty globally has been made in the Asian and Pacific region. More than 70 per cent of people in extreme poverty in 1990 were living in this region compared with 53 per cent in 2012. Furthermore, of the 1.2 billion who lifted themselves out of extreme poverty, 1.1 billion were from Asia and the Pacific.

China, the world's most populous country, was able to reduce the proportion of its population living in extreme poverty from 60 per cent to 6 per cent over a period of 22 years.

Figure 2 shows that progress in combating extreme poverty in the region has been dramatic. Countries of the population living in extreme poverty such as Pakistan (from 64.7 per cent to 12.7 per cent), Cambodia (from 44.5 per cent to 10.1 per cent), Azerbaijan (from 25 per cent to only 0.3 per cent) and Thailand (from 11.6 per cent to only 0.3 per cent), have all reported significant decreases in the percentage of their populations living in extreme poverty. Similarly, countries such as Bangladesh (from 70.2 per cent to 43.3 per cent), India (from 49.4 per cent to 23.6 per cent) and the Lao People's Democratic Republic (from 55.7 per cent to 30.3 per cent) have made substantial reductions, but with a higher percentage of their populations still remaining in extreme poverty.

1.2 Data and monitoring issues

International poverty lines exist but there are no agreed international standards for guiding poverty measurement at the national level

Under principle 9 of the 10 Fundamental Principles of Official Statistics,[2] it is stated that "the use by statistical agencies in each country of international concepts, classifications and methods promotes the consistency and efficiency of statistical systems at all official levels". Although international poverty lines exist, there are no agreed international standards on how to measure poverty at the national level.

In the absence of internationally agreed standards, it is understandable in the quality of the national data required to assess the level of poverty or its severity in a given country is prioritized over the international comparability of national poverty lines.[3] Furthermore, the 2030 Agenda for Sustainable Development, which calls for leaving no one behind, is concerned with producing statistics for all relevant subpopulations. As poverty measurement is essentially about wealth distribution, the more disaggregated are the data available about individuals and small groups within a population, the greater will be the value of the information that can be derived from analyses of poverty. Hence, measurement of subnational poverty, where disaggregation by geographical location (urban/rural) as well as by subpopulation is

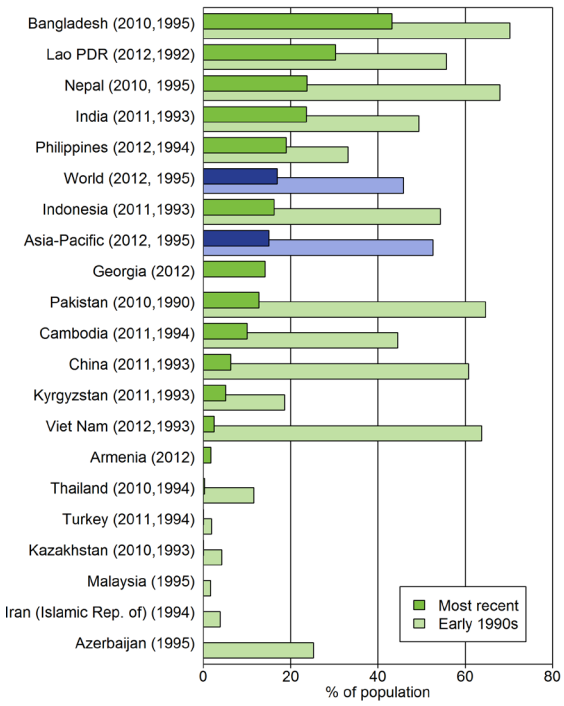


Figure 2
Percentage of population living in extreme poverty (below $1.25 per day, in 2005 purchasing power parity) in Asia and the Pacific, and the world, 1990 and most recent years

available, targeted poverty reduction policies become feasible. Such measurements and policy measures are of relevance in Asia and the Pacific, especially in view of the steadily falling overall poverty rates now occurring despite the existence of persistent pockets of poverty.

Table 1
Comparative assessment of income and consumption as welfare indicators

Income	Consumption
Definition	
- Household income consists of all receipts whether monetary or in kind (goods and services) that are received by the household or by individual members of the household at annual or more frequent intervals, but excludes windfall gains and other such irregular and typically one-time receipts. [a]	- Consumption covers all goods and services purchased and produced for one's own final use.[4]
Advantages	
- While income has multiple components that may be complex to measure, it is easier to standardize the concept of income across countries.	- Consumption is less volatile than income, as it is measured during a short reference period and tends to be more representative of a given household's welfare; - Recall of expenditures may be easier than that of income.
Disdvantages	
- Income is more volatile than consumption, especially in developing countries, where, for example a large part of the working age population may not be participating in the formal labour market.	- Consumption items are varied and it is difficult to develop standardized measures across countries.
- Income is prone to measurement errors due to underreporting, especially of such sources as income from self-employment, property income, owner-occupied housing.	- Households may underreport their expenditures, especially on luxury and illicit items.

a United Nations, Economic Commission for Europe, Canberra Group Handbook on Household Income Statistics, 2nd ed. (ECE/CES/11) (Geneva, 2011).

In large countries such as India, where currently there is no official national poverty line, reference to subnational poverty lines may be especially appropriate. Indeed, to that end those Indian states already having statistical capability conduct state-level censuses on those living below the poverty line.

The diversity in poverty measurement is partly a result of the various ways in which poverty is conceptualized.

The first step in providing poverty statistics is to determine a poverty measure or a welfare indicator. The traditional measures of poverty have been based on household income or consumption as welfare indicators obtained through household surveys.[4] In table 1, brief definitions are furnished, as well as the advantages and disadvantages of these two indicators of welfare.

A poverty line, on the other hand, can be relative or absolute. Relative poverty lines that are usually used in developed countries are based on a selected cut-off point in income distribution or consumption, such as the level below which one third of the population finds itself, or that proportion earning half of the median income.

Currently used international poverty lines focus on absolute poverty. The most common basis for constructing an absolute poverty line at the national level is the use of the basic needs approach. The prerequisite for this approach is to determine a basket of goods, including food items reflecting the diet and the context of the country or the region concerned. The food component of the poverty line is based on the cost of acquiring food that is sufficient to meet a food energy threshold; in this regard, FAO has suggested using as a threshold the daily intake for an adult: 2,100 calories. That cost can be computed based either on a bundle of food items with the lowest possible price or on the diet of households whose members' potential energy intake is nearest that of the threshold.

The non-food component of the poverty line can be computed by predetermining a bundle of non-food items, or by extending the food poverty line based on the average total expenditure of households whose food expenditures are equivalent to the food poverty line, or on non-food expenditures of households whose total expenditures are equivalent to the food poverty line. An alternative to this approach is to determine a multiplier to scale up the food poverty line.[5]

Multidimensional poverty indicators complement these monetary measures of poverty and take into account desired minimum levels of food needed to maintain nutrition and health. Hence for multidimensional poverty measurement, indicators such as infant mortality, life expectancy, education, food expenditures and housing conditions, are of value.

Since 2010, UNDP has been publishing the Multidimensional Poverty Index (MPI),[6] the components of which are deprivations in health, education and standard of living at the household and individual levels. MPI is constructed using the same data source across indicators for a given country; Demographic Health Surveys and Multiple Indicator Cluster Surveys are the most widely used since they are implemented internationally. MPI, which is available for 91 countries, does not include income as such information is available through household income and expenditure surveys or other data sources. Although MPI should be seen as a complementary measure to monetary poverty measures, how these measures relate to one another is still an area requiring further research.

The incidence of poverty in a given country can vary significantly based on the poverty measure and line chosen

Different measures the calculation of poverty affect of the incidence of poverty in a given country. It is important to note that the figures that follow are purely for illustration purposes as the indicators presented are not comparable.

India is a country with striking differences in the incidence of poverty based on the poverty line chosen. When MPI is used, more than half the population is considered to be living in multidimensional poverty, whereas, based on the national poverty line (2011) and the international poverty line, the monetary poverty headcount figures remain at 21.9 and 23.6 per cent respectively. Figures 3 and 4 illustrate a significant variation in the incidence

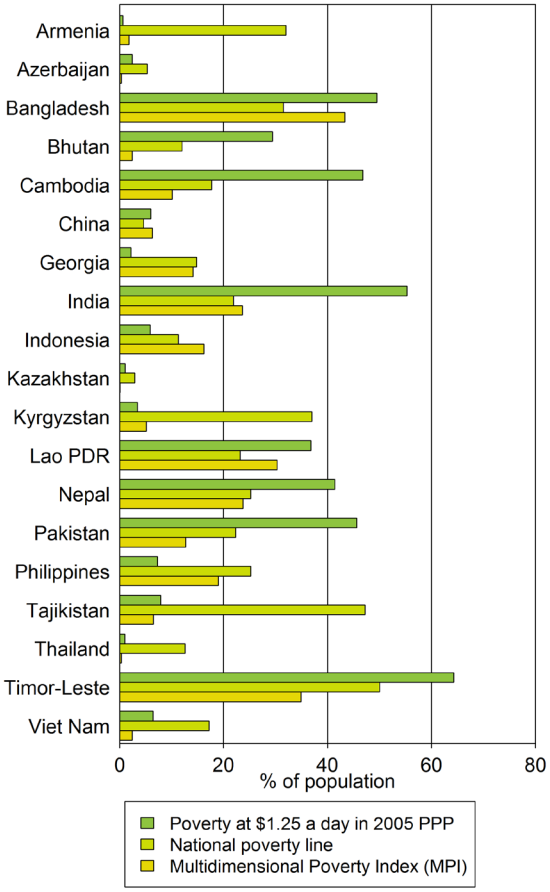


Figure 3
Poverty headcount based on the Multidimensional Poverty Index, national poverty line and international poverty line (below $1.25 per day in 2005 purchasing power parity)

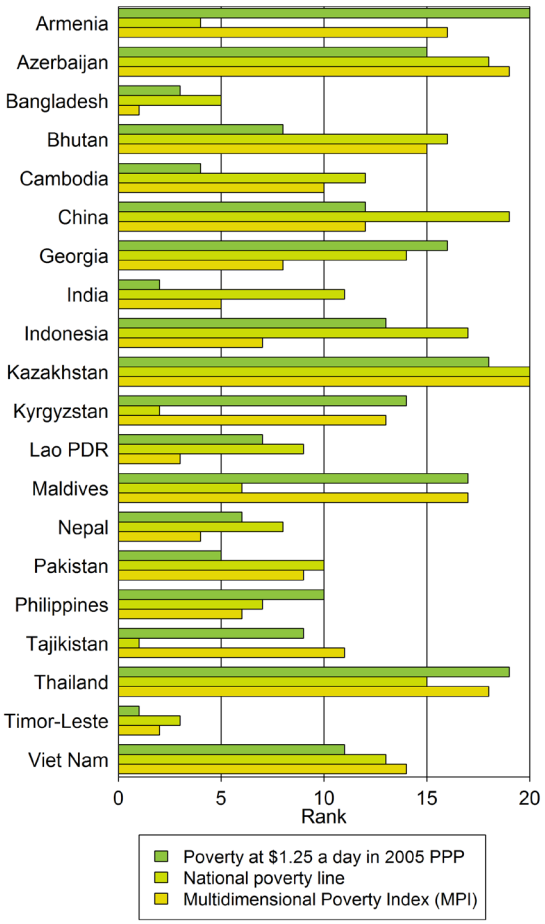


Figure 4
How countries rank based on three different methodologies: Multidimensional Poverty Index, national poverty line and international poverty line

Box 1

Updated international poverty line ($1.90 per person per day)

The international poverty line depends on purchasing power parity (PPP) conversion factors that are obtained through the periodic International Comparison Programme (ICP). ICP is an independent partnership of various statistical administrations in almost 200 countries, the global office for which is located in World Bank headquarters in Washington, D.C. In Asia and the Pacific, the Asian Development Bank manages the ICP; 23 economies in the region participated in the 2011 round of surveys.[a,b]

The first ever international poverty line was $1 per person per day in 1993 prices; the international poverty line was subsequently revised a number of times based on PPP updates. The results of the latest ICP (2011) were released in 2014 and hence provide a basis for revising the international poverty line.

The international poverty line in 2011 PPPs, equivalent to $1.25 in 2005 PPPs, is now computed at $1.90 per day. This poverty line is expected to be adopted at the next session of the United Nations Statistical Commission in March 2016 as the new international poverty line which will also be used for monitoring progress towards the achievement of target 1.1 of the Sustainable Development Goals: "By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day."

The increase in the value of the international poverty line "reflects the fact that the new PPPs yield a relatively lower purchasing power of that currency vis-à-vis those of most poor countries."[c] International poverty lines in both 2005 and 2011 PPPs are based on the average of national poverty lines of the 15 poorest countries. This fact should be taken as a caveat when assessing poverty in middle-income and high income economies, which would have higher average poverty lines.

Note: The following economies in Asia and the Pacific participated in the 2011 ICP round: Bangladesh; Bhutan; Brunei Darussalam; Cambodia; China; Fiji; India; Indonesia; Lao People's Democratic Republic; Malaysia; Maldives; Mongolia; Myanmar; Nepal; Pakistan; Philippines; Singapore; Sri Lanka; Thailand; and Viet Nam, as well as Hong Kong, China; Macau, China; and Taiwan Province of China.

a Francisco H.G. Ferreira and others, "Abstract", "A global count of the extreme poor in 2012: data issues, methodology and initial results", Policy Research Working Paper No. 7432 (Washington, D.C., World Bank Group, 2015). Available from http://documents.worldbank.org/curated/en/2015/10/25114899/global-count-extreme-poor-2012-data-issues-methodology-initial-results.

b Asian Development Bank, August 2014,. *2011 International Comparison Program in Asia and the Pacific: Purchasing power parities and real expenditures*. Available from http://www.adb.org/sites/default/files/publication/59715/2011-icp-ppps-real-expenditures.pdf

c World Bank, *A Measured Approach to Ending Poverty and Boosting Shared Prosperity: Concepts, Data, and the Twin Goals, Policy Research Report* (Washington, D.C., 2015).

of poverty within each country and in how countries rank vis-à-vis each other based on the methodological choices made.[7] For instance, Armenia appears to be the country with the lowest incidence of poverty based on MPI, whereas the national poverty line yields the fourth highest poverty headcount among the selected group of countries. Kazakhstan, on the other hand, is an exception where both the incidence of poverty based on the three different poverty lines and the ranking of the country vis-à-vis others varies only slightly.

Data availability on the incidence and severity of poverty is irregular in the Asia-Pacific region and the rest of the world, as the source data come from household surveys, most of which require external funding and are conducted at best at three-year intervals. The Living Standards Measurement Survey of the

Indicator	No. of countries with one data point			No. of countries with two or more data points		
	2000-2004	2005-2009	2010-2014	2000-2004	2005-2009	2010-2014
Headcount, national poverty line	11	10	9	7	14	13
Headcount, multidimensional poverty indicator		11	13			
Headcount, international poverty line ($1.25 per person per day)	13	8	9	12	15	8

Table 2
Availability of statistics on the incidence of poverty in Asia and the Pacific, based on 58 regional member states, 2000-2014

World Bank or similar household income and expenditure surveys are common examples of such data-collection programmes. The number of countries where one and two or more data points are available in the ESCAP online statistical database[8] for the period 2000-2014 are given in table 2.

Focusing on data availability based on national poverty lines, it should be noted that the availability of data points in the ESCAP online statistical database does not correspond one on one to the availability of an official national poverty line. The data points can however serve as a proxy indicator for how many countries in Asia and the Pacific have a national poverty line that is used and reported on internationally.

Beyond data availability, the quality of the national time series may be affected by changing concepts and modification of data collection instruments, which are not fully captured in table 2. In addition to irregular data collection, the lengthy processing of survey data undermines the timely availability of poverty statistics. An indication of the timeliness – a component of quality – of poverty statistics was presented in the results of the capacity screening survey[9] conducted by the ESCAP Statistics Division in 2013/14 as part of the Implementation Plan of the Regional Programme for Improvement of Economic Statistics in Asia and the Pacific. According to that survey, less than 10 per cent of 51 responding Asia-Pacific countries were able to process household income and expenditure survey results within three months of collection.

This brief overview outlines limitations of poverty measurement and the various indicators that are currently used for monitoring poverty. In assessing the progress that countries, regions and the world make towards the related targets of the Sustainable Development Goals, it will be necessary for producers and users of poverty statistics to develop and adopt integrated poverty measures to enable coherent interpretation of the status of poverty in all its dimensions.

Endnotes

1 General Assembly resolution 70/1.

2 General Assembly resolution 68/261.

3 It should be noted here that an added complication is the absence of national poverty lines in some countries. India and the United Kingdom of Great Britain and Northern Ireland are examples of countries that do not have official national poverty lines.

4 Jonathan Haughton and Shahidur R. Khandker, Handbook on Poverty and Inequality (Washington, D.C., World Bank, 2009).

5 Jean Olson Lanjouw, "Demystifying poverty lines" Series on Poverty Reduction (New York, UNDP, 1997).

6 United Nations Development Programme, Multidimensional Poverty Index. Available from http://hdr.undp.org/en/content/multidimensional-poverty-index-mpi (accessed 31 July 2015).

7 In the case of the international poverty line and headcount based on the Multidimensional Poverty Index, the methodologies enable international comparability. The ranking of the headcount based on national poverty lines is, however, just to illustrate the impact of the measure chosen; the ranking itself should not be taken as authoritative.

8 See http://www.unescap.org/stat/data/statdbDataExplorer.aspx.

9 United Nations, Economic and Social Commission for Asia and the Pacific, Report on the Region-wide Capacity Screening of Economic Statistics in Asia and the Pacific (updated in September 2014). Available from http://www.unescap.org/resources/report-region-wide-capacity-screening-economic-statistics-asia-and-pacific.

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Sustainable Development Goal 2
End hunger, achieve food security and improved nutrition and promote sustainable agriculture

Rapid economic growth and increased agricultural productivity over the past two decades has resulted in a drop by almost half in the proportion of undernourished people around the world. This is a significant achievement. However, extreme hunger and malnutrition remain a huge barrier to development in many countries: 795 million people were estimated to be chronically undernourished in 2014-2016. (Fig 1)

The adopted Sustainable Development Goals[1] are aimed at ending by 2030 all forms of hunger and malnutrition, making sure that all people – especially children and the more vulnerable – have access to sufficient and nutritious food all year round. Making those goals a reality will involve promoting sustainable agricultural practices: improving the livelihoods and capacities of small-scale farmers and allowing equal access to land, technology and markets. It also will require international cooperation to ensure investment in infrastructure and technology to improve agricultural productivity.

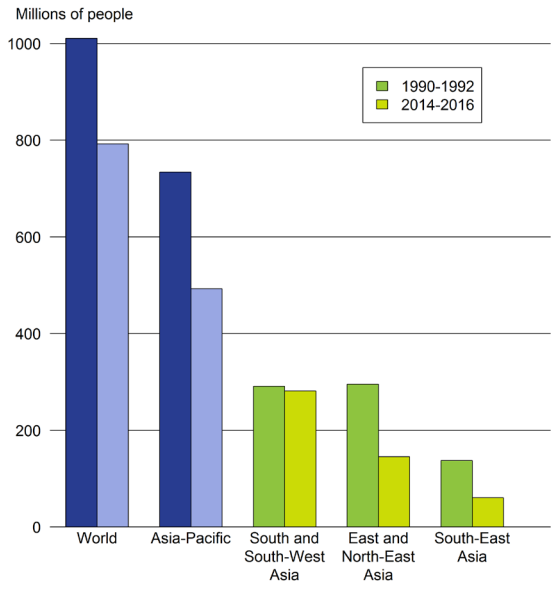


Figure 1
Population undernourished, Asia-Pacific and the world, 1990-1992 and 2014-2016

2.1 Hunger

Considerable progress has been made in reducing hunger in the Asia-Pacific region. However, an estimated 11.9 per cent of the population are still undernourished; Sustainable Development Goal 2 on eradicating hunger by 2030 therefore poses particular challenges in Asia and the Pacific, the most populous region of the world.

Nearly 795 million people are undernourished globally; an estimated 490 million of them are living in Asia and the Pacific

There has been notable progress in the fight against hunger since the early 1990s when more than 1 billion people worldwide, or 18.6 per cent of the global population, were

undernourished. The estimated proportion of the global population undernourished has fallen to less than 11 per cent of the global total in the period 2014-2016; despite a population increase of nearly 2 billion people globally over the last 25 years, 218 million fewer people now suffer from undernourishment than was the case in 1990.

The Asia-Pacific region has been the major contributor to the global improvement. In the period 1990-1992, nearly 1 in 4 people (23.8 per cent) in the region suffered from undernourishment compared with fewer than 1 in 8 (11.9 per cent) in the period 2014-2016. Although more than 1 billion people were added to the regional population over the period, 241 million fewer people now suffer from undernourishment – equivalent to more than the total global reduction due to increases in undernourishment in Africa.

However, regional improvements in tackling hunger vary across subregion and country. The proportion of the undernourished population in South and South-West Asia decreased from 22.9 per cent in the early 1990s to 14.9 per cent in the period 2014-2016, but due to large population increases in the subregion, the number of people affected by hunger has remained at nearly 300 million. The rate of decrease in South and South-West Asia has also been somewhat slower than in other affected regions. In East and North-East Asia, during the same time period the proportion of the population that was undernourished has more than halved (from 23.1 to 9.6 per cent). The same proportion has been cut by two thirds in South-East Asia (from 30.5 to 9.5 per cent). At the country level, the proportion of people affected by hunger in 2014-2016 has increased from the level that existed in the period from 1990-1992 in the Democratic People's Republic of Korea (from 23.3 to 41.6 per cent) and Tajikistan (from 28.1 to 33.2 per cent). Furthermore, only limited improvements have been made in some other countries: Afghanistan (a decline in the percentage of people affected by hunger, from 29.5 to 26.8 per cent); Mongolia (from 29.9 to 20.5 per cent); India (from 23.7 to 15.2 per cent); Pakistan (from 25.1 to 22 per cent); and Sri Lanka (from 30.6 to 22 per cent). Despite improvements in Timor-Leste, the proportion of undernourished is still 26.9 per cent, which is much lower than the 45.2 per cent so affected in the period 1990-1992. (Fig 2)

Malnutrition contributed to the stunting of 70 million children in Asia and the Pacific in 2013

Long-term insufficient intake of nutrients and frequent infections can cause stunting, or low height for age among children. Stunting generally occurs before age 2, and the effects are serious and largely irreversible: delayed motor development, impaired cognitive function and poor school performance, among others. The proportion of stunted children (under age 5) in Asia and the Pacific was at 19.6 per cent in 2013 compared with 27.9 per cent in 1990. Stunting remains a preoccupying issue, particularly in South

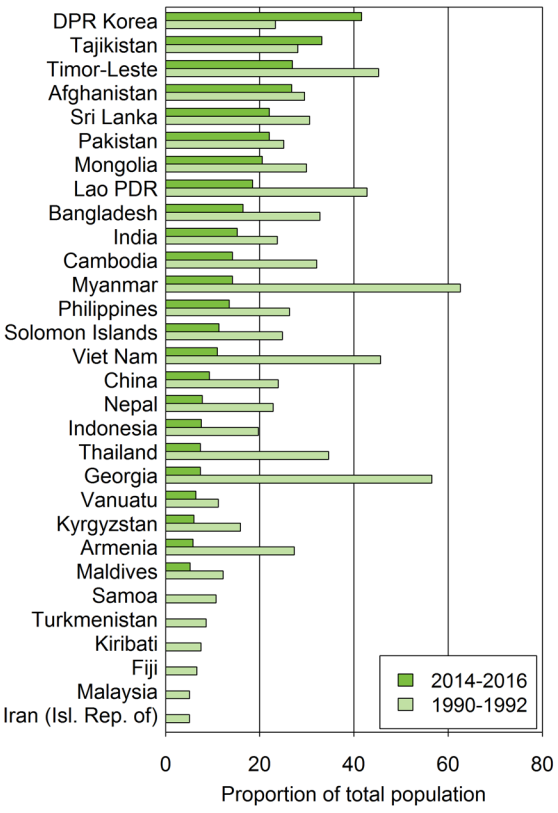
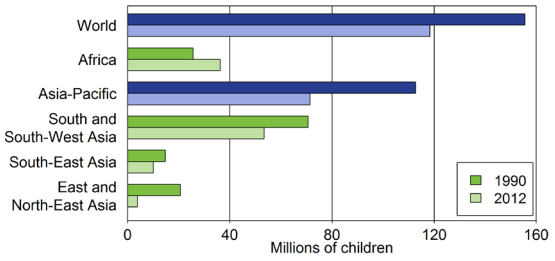


Figure 2
Proportion of population undernourished, 1990-1992 and 2014-2016

and South-West Asia where more than 1 in 4 children are affected (27.8 per cent in 2013 compared with 39.3 per cent in 1990). Stunting rates are high in a number of countries in the subregion, including India (47.9 per cent in 2006, the latest year for which data are available), Pakistan (45.0 per cent in 2013), Bangladesh (41.4 per cent in 2011) and Nepal (40.5 per cent in 2011). (Fig 3)

While progress has been made in South and South-West Asia, it has been slower there than in other subregions. The proportion of stunted children dropped by more than two thirds between 1990 and 2012 in East and North-East Asia (from 14.2 to 4.2 per cent). Modest progress has also been made in South-East Asia (from 39.3 to 27.8 per cent from 1990 to 2013), but the proportion of children that are stunted remains above 40 per cent in Cambodia, the Lao People's Democratic Republic and Timor-Leste.

Figure 3
Number of stunted children, selected regions and subregions, 1990 and 2012



In 2013, 70 million children in Asia and the Pacific were stunted, nearly double the 36 million stunted children in Africa.

2.2 Sustainable agriculture

The population of the Asia-Pacific region has grown by more than 1 billion people over the past 25 years. By 2030, nearly 500 million people are expected to be added to the population, thus magnifying the challenges to the fragile food security situation that exists in parts of the region. Increasing food production to satisfy food requirements is likely to exacerbate pressure on natural resources, such as land and water, and will require sustainable productivity gains.

Agricultural production in the Asia-Pacific region has nearly doubled since 1990

Agricultural production in Asia and the Pacific has been increasing steadily since 1990. Measured in terms of constant prices (average 2004-2006 United States dollars), the food produced in the region increased in value from $736 billion in 1990 to $1,351 billion in 2013, an 84 per cent increase. This is greater than the global average increase of 68 per cent over the same period, and growth in the region more

Box 1

The Global Hunger Index

The Global Hunger Index (GHI) provides a summary measure of the hunger and food security situation at national levels. The undernourishment indicator measures only food deprivation in terms of calories ingested. It does not capture malnutrition due to low intake of micronutrients, such as minerals and vitamins. GHI is calculated on the basis of three components; in addition to undernourishment, it also includes components on child undernutrition (wasting and stunting) and child mortality. GHI goes beyond availability of calories and addresses consideration of the quality of diet, in particular for children who are especially vulnerable to nutritional deficiencies. GHI also offers the following severity scale: values lower than 10 are considered "low"; between 10 and 20, "moderate"; between 20 and 35, "serious"; between 35 and 50, "alarming"; and above 50, "extremely alarming".

Based on the Global Hunger index in 2015, the food situation was considered as "alarming" in Timor-Leste (40.7) and Afghanistan (35.4), and "serious" in Pakistan (33.9), Tajikistan (30.3), India (29.0), DPR Korea (28.8), Bangladesh (27.3), Sri Lanka (25.5), Myanmar (23.5), Cambodia (22.6), Nepal (22.2), and Indonesia (22.1).

than the population during the same period, (by 31 per cent). (Fig 4)

During the period 1990-2013, the value of agricultural production was stable for high income economies, at about $1,200 billion. The largest percentage increases were in the middle-income countries where the value of agricultural production more than doubled for both lower middle-income countries, from $227.2 billion to $485.9 billion, and upper middle-income countries, from $293.3 billion to $722.7 billion.

From a subregional perspective, the value of agricultural production declined in North and Central Asia during the 1990s, from $87.8 billion in 1992 to $63.2 billion in 2000. However, this decline has been reversed since 2000, and the value reached $91.4 billion in 2013. For the Central Asian area, excluding the Russian Federation, agricultural production grew at an annual rate of 3.9 per cent during 2000-2013, which was faster than the regional average of 3.1 per cent and the fastest in the region as a whole.

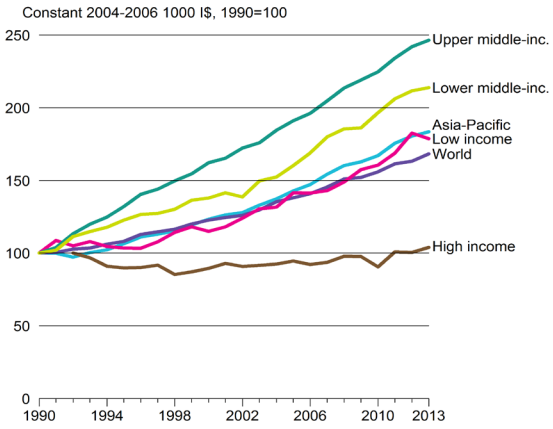


Figure 4
Index of agricultural production value, ESCAP and income groups

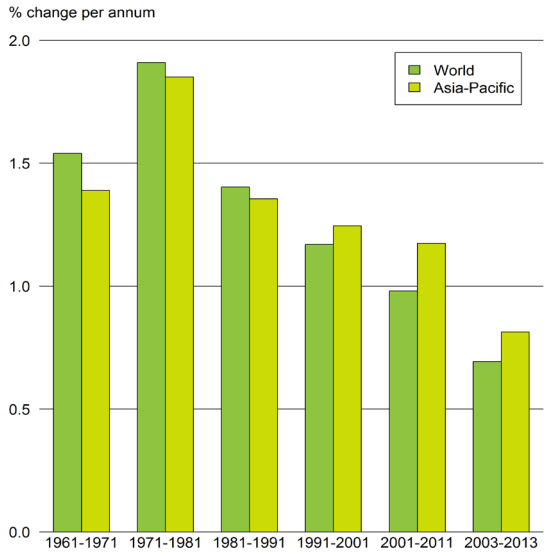


Figure 5
Average annual growth of irrigated areas in Asia-Pacific region and the world, 1961-2013

The Asia-Pacific region accounts for 70 per cent of the world's irrigated agricultural land and uses more than half the world's total chemical fertilizers

Increases in agricultural production can be attributed to the introduction of improved cereal varieties, higher use of agricultural inputs, such as fertilizers and pesticides, higher levels of mechanization and the development of land irrigation (Fig 5). For example, the average cereal yield in the world was 1,421 kg per hectare in 1961 and reached 3,861 kg in 2013, which was 2.7 times greater than previously. In the Asia-Pacific region, 16 countries achieved even higher growth in cereal yields over the same period, notably China (4.9 times), the Lao People's Democratic Republic (4.7) and Indonesia (3.3).

The Asia-Pacific region accounts for 70 per cent of the world's irrigated agricultural land. Irrigation can produce crop yields that are two to four times greater than is possible with rain-fed farming, and it currently provides 40 per cent of the world's food from approximately 20 per cent of all agricultural land.[2]

In the region, China and India each account for 30 per cent of the irrigated land. Since 1961, irrigated agricultural areas have doubled in size in the region to reach 228 million hectares. However, the rate of growth, after having peaked in the 1970s, seems to be slowing. From an average annual growth rate of 1.85 per cent between 1971 and 1981, the annual expansion of irrigated land slowed regularly to 0.8 per cent for the decade ending in 2013, an indication that much of the prime agricultural land suitable for irrigation has already been developed.[3]

The use of chemical fertilizers and pesticides has also greatly increased in Asia and the Pacific. From 2002 to 2013, the consumption of NPK[4] fertilizer increased by 28.8 per cent, from 72.2 million tons to 92.4 million tons. In 2013, the Asia-Pacific region used more than half of the world's total chemical fertilizers, largely due to consumption by China which uses 40 million tons of fertilizer annually, representing a quarter of all fertilizer used in the world and equivalent to the use of the countries in North America and Europe combined.

Average global consumption of NPK fertilizer was nearly 120 kg per hectare in 2013. Owing to important differences in farming systems (crops, land, climate, input affordability), the rates of fertilizer use to arable land range from extremely high levels, for example in Malaysia and New Zealand with respectively 1,726 and 1,578 kg per hectare to extremely low levels in some of the least developed countries for which data are available: Cambodia (14.2 kg/ha); Myanmar (16.8 kg/ha); and Afghanistan (5.1 kg/ha).

Another important indicator of agriculture intensification is the level of use of pesticides per unit of land. Expressed in tons of active ingredient per 1,000 hectares of arable land and permanent crop, selected data show a general upward trend over time and extreme variability across countries in the region, as can be seen in table 1.

Table 1
Pesticides use, tons of active ingredients per 1,000 hectares, selected countries and areas

Country/Area	1990	1995	2000	2005	2010
Armenia		0.05		0.44	0.55
Bangladesh	0.13	0.19	0.36	2.29	1.54
Bhutan	0.56	0.60	0.06	0.04	0.10
China	0.00	0.00	9.75	8.84	17.81
Cook Islands	0.17	0.20[1993]	0.33	1.00	1.33[2009]
French Polynesia				2.20	1.14
India	0.44	0.36	0.27[1999]	0.21	0.24
Iran (Islamic Republic of)	0.65	0.47	1.56	1.17	0.37[2009]
Japan			16.53	13.60	12.10
Kazakhstan		0.42	0.16	0.51	0.60
Kyrgyzstan	1.74[1992]		0.48	0.80	0.26[2007]
Lao People's Democratic Republic	0.02[1992]		0.00		0.02[2009]
Malaysia	1.22				7.23[2008]
Myanmar	0.02	0.03	0.07	0.13	0.75
New Caledonia					2.58
New Zealand		2.40	2.34		9.88[2007]
Republic of Korea	11.89	13.02	13.39	13.44	13.12[2009]
Sri Lanka	0.83	0.92			0.67
Thailand		1.18	1.07	3.03	4.11
Timor-Leste				0.00	0.01[2009]
Turkey	1.08	1.01	1.27	1.52	1.59

Source: Food and Agriculture Organization of the United Nations, FAOSTAT Agri-Environmental Indicators database. Available from http://faostat3.fao.org/home/E.

A total of 90 million hectares of agricultural land was lost in Asia and the Pacific between 2000 and 2013 – three times more than the global total of 30 million hectares

Agricultural land represents the total area used for agriculture in comparison to other uses. It includes arable land, permanent meadows and pastures, and permanent crops. A total of 90 million hectares of agricultural land was lost in Asia and the Pacific between 2000 and 2013, but this amount has been partly offset by increases in Africa, and Latin America and the Caribbean; and follows a phase of steady expansion of agricultural land from the early 1960s to 2000. (Fig 6)

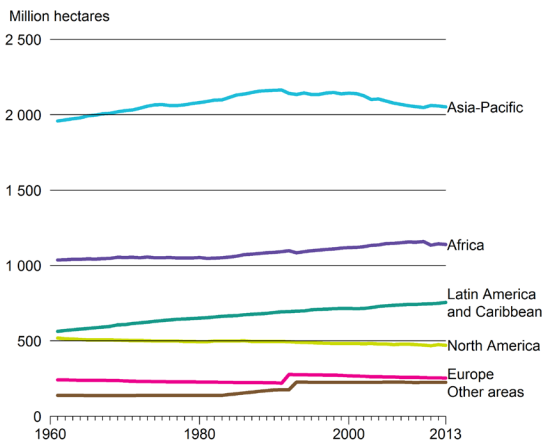


Figure 6
Agricultural land, major regions, 1960-2013

Similar trends can be observed for arable land, the portion of agricultural land that can be ploughed and used to grow crops and is therefore the most productive agricultural land. From 1993 to 2013, Asia and the Pacific lost 5.3 per cent or 35 million hectares of its arable

land due to land degradation and conversion to other uses, such as industrial parks and urban centres. For example, between 2001 and 2011, land for urban construction in China increased steadily to a total of 1.7 million hectares over the 10-year period, reaching a total area of 4.1 million hectares in 2011, an area equal in size to that of the Netherlands, and an increase of more than 70 per cent over the area at the beginning of the decade.[5]

As a result of these decreases, the area of arable land available to feed one person has fallen from a global average of 0.45 hectares in 1961, to 0.20 hectares in 2012. In the Asia-Pacific region, the arable land available to feed one person is even more limited; it was 0.15 hectares in 2012.

While increased productivity per unit of land has enabled increased food production, further increases will be necessary to cope with expected demographic growth and the effects of environmental pressure exacerbated by the impacts of climate change.

The water situation is considered critical in a number of countries in Asia and the Pacific

The availability of water is also a challenging issue for agriculture in Asia and the Pacific. Globally about 3,900 km^3 of water is withdrawn from rivers and aquifers annually for human use. Some 2,710 km^3 (70 per cent of the total) is for irrigation. The proportion of water withdrawn for agriculture is more than 90 per cent for 14 countries in the region, in particular in Central Asia. The rest of the water is being withdrawn for industrial and domestic use.

Furthermore, some parts of the region are facing the prospect of water scarcity. Withdrawal of more than 20 per cent of total internal renewable water resources represents substantial pressure on those resources; FAO considers any amount in excess of 40 per cent to be "critical".

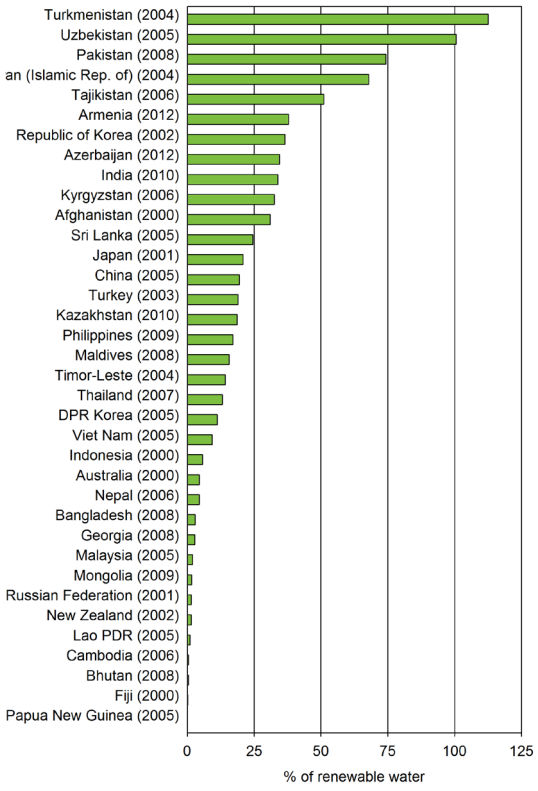


Figure 7
Water withdrawal as share of total internal renewable water, most recent values

In the region, six countries are already withdrawing more than the critical 40 per cent of their internal renewable water resources, and they cannot easily increase their withdrawal for irrigation. This is the case in particular for Turkmenistan and Uzbekistan, which are dependent on water flowing in from neighbouring countries,[6] as well as for Pakistan (63 per cent, 2008), Tajikistan (52.6 per cent, 2006), the Islamic Republic of Iran (50.9 per cent, 2004) and Kyrgyzstan (41.45 per cent, 2006). (Fig 7)

There has been a thirtyfold increase in the consumption of meat in China from 1983 to 2014

Land and water availability challenges in the region are compounded by changing food consumption patterns as a result of economic development. Worldwide meat consumption averaged 8.3 kg per capita in 1983. In 2014, it was estimated to have increased fourfold to 34 kg per capita. The increase is particularly notable in China where meat consumption,

which was 1.7 kg per capita per year in 1983, increased by 30 times to reach nearly 50 kg per capita per year in 2014.[7] (Fig 8)

Such increases in meat consumption exert tremendous pressure on land and water resources as larger amount of cereals are needed to serve as foodstuff for livestock. For example, FAO estimates that 5-7 kg of cereal are required to produce 1 kg of beef, whereas for the production of pork and poultry, the estimated conversion rates are 4 and 2 respectively.

The expansion of the livestock sector to satisfy the growth in meat consumption has had negative impacts on the environment. Total emissions from global livestock are 7.1 gigatons of carbon dioxide-equivalent per year, representing 14.5 per cent of all anthropogenic greenhouse gas emissions.[8]

Figure 8
Meat consumption, kilograms per capita, per year, 1983 and 2014

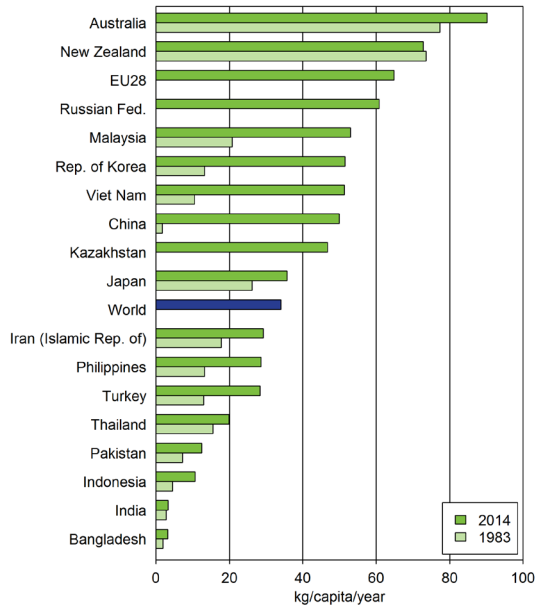
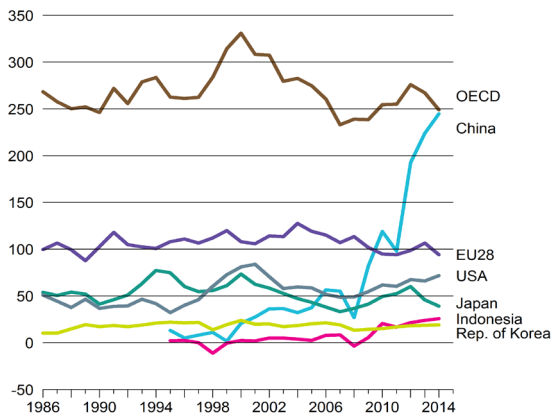


Figure 9
Agricultural subsidies, 1986-2013



Agricultural subsidies are increasing in some middle-income countries in the Asia-Pacific region

Subsidies to farmers in the developed world can have negative implications for agriculture in the developing world in a number of ways. By enabling farmers and agribusinesses to sell on the international market at prices below the cost of production, subsidies make it impossible for farmers in the developing world to compete. Agricultural subsidies can also encourage the production of excess supplies, which can lower global agricultural prices and consequently adversely affect the revenue of the agricultural sector in lower income countries.[9] (Fig 9)

Under the Doha Development Round of multilateral trade negotiations, countries committed themselves to work towards eliminating agricultural export subsidies and other measures with similar effect. Progress in this area would mark an important step in overall reductions in market-distorting support for agriculture. OECD compiles data on the scale of support provided to agricultural sectors in different countries. Statistics show that total agricultural support was equivalent to $249 billion for OECD countries in 2014, similar to the levels of the early 1990s but showing a decrease of nearly 25 per cent from the peak level in 2000. The decrease has been particularly marked for Japan, which saw its agricultural subsidies cut from $73.3 billion in 2000 to $39 billion in 2014.

A more recent phenomenon is a rapid increase in agricultural subsidies in some middle-income countries in the region. Since 2008, the level of agricultural subsidies increased ninefold in China, from $26.7 billion to $244.7 billion, a level similar to that of the entire OECD group of countries. The level of agricultural subsidies also dramatically increased in Indonesia, from $5.5 billion in 2009 to $25.7 billion in 2014.

Box 2

Research and development

The Asia-Pacific region is facing numerous challenges in ensuring the sustainability of its agricultural sector. In this context, strengthening research and development is crucial to ensure the realization of that goal. Only limited cross-country comparable data are available to measure research and development in the agricultural sector in Asia and the Pacific. A recent publication on Agricultural Science and Technology Indicators (ASTI) provides statistical information on that topic.[a] Based on International Food Policy Research Institute (IFPRI) estimates, total research and development spending for the agricultural sector represented $40.1 billion (2005 PPP dollars) in 2008, of which 79 per cent was from public spending and 21 per cent from private-sector research covering spending by seven agricultural input industries: seed/biotechnology, agricultural pesticides, fertilizer, farm machinery, animal health, nutrition, and breeding.

In terms of global public spending, for 2008 slightly more than half was spent in high income countries, while China accounted for 13 per cent and India 7 per cent of the total. The ASTI report notes that, following a decade of slowing growth in the 1990s, spending on global agricultural research and development increased by 22 per cent during the period 2000-2008, from $26.1 billion to $31.7 billion (in 2005 PPP dollars). Accelerated research and development spending by China and India accounted for close to half the global increase of $5.6 billion during the period 2000-2008. Similar trends seem to be confirmed from most recent data from the ASTI database, with a doubling of agricultural spending for Viet Nam between 2000 and 2010 and more than 25 per cent growth between 2000 and 2012 for Bangladesh and Nepal.

a Nienke Beintema and others, ASTI Global Assessment of Agricultural R&D Spending: Developing Countries Accelerate Investment (Washington, D.C., International Food Policy Research Institute, and Rome, Agricultural Science and Technology Indicators (ASTI) and Global Forum on Agricultural Research, 2012).

2.3 Data and monitoring issues

Challenges measuring hunger

The core indicator used to measure hunger is the prevalence of undernourishment; indeed FAO defines hunger as being synonymous with chronic undernourishment. The coverage of data required to calculate this indicator (produced by FAO) seems good; the average prevalence of undernourishment over three-year periods is available as time series from 1990 to 2015 for 42 countries in the Asia-Pacific region. Most of the countries with missing data are developed countries and small island developing economies in the Pacific for which undernourishment is not likely to be a priority issue. However, the data series are based on modelled data, relying only in part on survey data collected by or within countries, thus explaining the apparent near complete availability and timeliness of those data.

The prevalence of undernourishment is calculated over three stages: FAO first establishes per capita caloric intake at the national level using a country's food balance sheet;[10] it then estimates the variability of the distribution of per capita dietary energy consumption based on household consumption surveys. Finally FAO estimates the national minimum dietary energy requirement for different population age groups to further estimate the number and proportion of people below that minimum requirement.

A number of criticisms have been put forward regarding the methodology used to calculate the indicator.[11] While FAO is working on addressing some of the weaknesses in the methodology, it stresses the importance and relevance of the indicator in capturing the evolution of fundamental elements that drive long-term nutrition in a country. The prevalence of undernourishment is an important indicator of hunger. However, many other phenomena affecting the shorter-term food situation of a

country or of specific population groups also need to be measured. Seasonal variations, food price volatility, impact of natural disasters or irregular weather conditions on food production are just some of these phenomena which are not captured by the prevalence of undernourishment and for which additional measures can be used. For that purpose, it has been suggested to include an indicator on the prevalence of the population experiencing moderate or severe food insecurity, based on the Food Insecurity Experience Scale[12] in the global monitoring framework for the Sustainable Development Goals. The scale is designed as an experience-based metric of the severity of food insecurity, with data collected through surveys to measure people's access to adequate food.

Reliance on infrequent surveys to monitor stunting among children

Sustainable Development Goal 2 is aimed also at improving nutrition; in this regard, the prevalence of stunting among children under age 5 has been proposed as a measure of progress in that domain. This indicator, which has been presented in this chapter, is underpinned by reasonable coverage of data – sufficient to calculate regional aggregates satisfying the minimum availability requirement applied throughout the *Statistical Yearbook*.

The quality of the measurement, however, is affected by poor timeliness of the data inherent in the mode of data collection used for preparing the indicator, such as UNICEF Multiple Indicators Cluster Surveys and WHO Demographic and Health Surveys. Surveys are carried out only once every few years in certain countries, which can result in limited data availability for recent years. At the time of issuance of the present issue of the *Statistical Yearbook*, such data were available for only two countries in the region for 2013 and for only six countries for 2012.

Challenges in capturing the concept of sustainable agriculture in statistical terms

"Sustainable agriculture" is a nebulous concept without a clear definition and therefore difficult to measure.

In defining concepts and promoting international treaties, policies, strategies and programmes for achieving sustainable agriculture, FAO established five principles to characterize sustainable agriculture: (a) improving efficiency in the use of resources is crucial to sustainable agriculture; (b) sustainability requires direct action to conserve, protect and enhance natural resources; (c) agriculture that fails to protect and improve rural livelihoods, equity and social well-being is unsustainable; (d) enhanced resilience of people, communities and ecosystems is key to sustainable agriculture; (e) sustainable food and agriculture requires responsible and effective governance mechanisms.[13]

Indicators selected to analyse agricultural sustainability that are presented in this chapter relate mainly to the first principle proposed by FAO; the indicators are: (a) measuring production value; (b) use of agricultural inputs; and (c) efficiency (in terms of cereal yields, for example). While measures of agricultural production value are based on near complete coverage of data for countries in the region, the availability of data on the use of agricultural inputs is more limited. For example, data on the rate of pesticide use covers only selected countries – none in the North and Central Asian subregion, and the timeliness of data is also a problem with no country-comparable data being available since 2010. Similarly, some important factors supporting an increase in labour productivity, such as the mechanization of agriculture, could not be included in this chapter due to a lack of recent and country-comparable statistics.

The "volume of production per labour unit (measured in constant United States dollars), by classes of farming/pastoral/forestry enterprise size" has been suggested for inclusion in the global monitoring framework for the Sustainalble Development Goals. Such an indicator might assist in measuring progress on some of the principles proposed by FAO to define sustainable agriculture, but the indicator is of limited applicability in measuring progress on other principles, such as the conservation of natural resources, the resilience of communities and ecosystems, or the existence of an effective governance mechanism.

Endnotes

1 General Assembly resolution 70/1.

2 Food and Agriculture Organization of the United Nations (FAO), "Climate change, water and food security", FAO Water Reports, No. 36 (Rome, 2011). Available from http://www.fao.org/docrep/014/i2096e/i2096e00.htm.

3 FAO, The State of the World's Land and Water Resources for Food and Agriculture: Managing Systems at Risk (Rome, 2011). Available from http://www.fao.org/docrep/017/i1688e/i1688e.pdf.

4 Abbreviation for the nutrients this type of fertilizer contains: N, nitrogen; P, phosphate; and K, potash.

5 World Bank and the Development Research Center of the State Council, People's Republic of China, Urban China: Toward Efficient, Inclusive, and Sustainable Urbanization (Washington, D.C., 2014). Available from http://openknowledge.worldbank.org/handle/10986/18865.

6 FAO Aquastat database.

7 OECD-FAO Agricultural Outlook database.

8 P.J. Gerber and others, Tackling Climate Change through Livestock: A Global Assessment of Emissions and Mitigation Opportunities (Rome, 2013). Available from http://www.fao.org/3/i3437e.pdf.

9 See http://www.fao.org/english/newsroom/focus/2003/wto2.htm.

10 See http://www.fao.org/docrep/003/x9892e/x9892e00.htm.

11 Edoardo Masset, "A review of hunger indices and methods to monitor country commitment to fighting hunger", Food Policy, No. 36 Supplement. Available from http://www.ids.ac.uk/download.cfm?objectid=ECAAC400-C04B-11E1-9463005056AA4739.

12 See http://www.fao.org/economic/ess/ess-fs/voices/fiesscale/en/.

13 See http://www.fao.org/sustainability/en/.

UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific

Statistical Yearbook for Asia and the Pacific 2015

Sustainable Development Goal 3

Ensure healthy lives and promote well-being for all ages

Ensuring healthy lives and promoting well-being for all people at all ages is the focus of Sustainable Development Goal 3 of the 2030 Agenda for Sustainable Development.[1] Its nine targets address a broad and comprehensive range of priorities for sustainable protection of healthy lives, including the following: reducing maternal mortality; infant and under-5 mortality; communicable and non-communicable diseases; environmental causes of ill-health and death; substance use and abuse; and road traffic accidents; as well as ensuring access to sexual and reproductive health-care services; and achieving universal health coverage.

While the breadth of those commitments presents a formidable challenge, the statistical information readily available for the region and thus present here are limited only to the topics of: (a) communicable and non-communicable diseases; (b) health coverage, financial risk protection and access to health services; (c) behaviour and health; and (d) maternal and child health.

3.1 Communicable and non-communicable diseases

Non-communicable diseases include cardio-vascular diseases (myocardial infarction, stroke), cancer, chronic respiratory diseases and diabetes.[2] Communicable or infectious diseases, for which data are collected regionally and globally, include human immunodeficiency virus (HIV) infection and AIDS, malaria and tuberculosis.

The mortality rate for non-communicable diseases in Asia and the Pacific is between 1.3 and 22.1 times higher than that of communicable diseases

Across the Asia-Pacific region, more people aged 15-60 years die of non-communicable diseases than of communicable diseases and injuries.[3] The age-standardised[4] mortality rate associated with non-communicable diseases is between 1.3 and 22.1 times higher than that of communicable diseases, and between 4.0 and 9.8 times higher than that of injuries.

The mortality rate resulting from communicable diseases is similar to that of injuries for most countries across the Asia-Pacific region. In low income and lower-middle-income countries, such as Afghanistan, Bangladesh, India, Nepal, Pakistan, Papua New Guinea, Solomon Islands and Tajikistan, however, significantly more adults die of communicable diseases than do of injuries. (Fig 1)

Based on the data available, age-standardized mortality due to non-communicable diseases in high income and upper middle economies ranges from 244 deaths per 100,000 people in Japan to 1,025 in Turkmenistan. These rates are typically lower than the comparable mortality rates in low and lower-middle income economies; they range from 435.4 deaths per 100,000 people in Viet Nam to 847.5 in Armenia. The wide divergence in mortality rates attributable to non-communicable diseases in countries indicates that there are factors other than economic wealth, such as diet and lifestyle circumstances, that increase the risk of developing non-communicable diseases. (Fig 2)

2.3 million people in Asia and the Pacific contracted malaria in 2013, 400,000 fewer than the 2.7 million people in 2012

Malaria is transmitted by female *Anopheles* mosquitoes, typically found in tropical and subtropical areas, and is strongly associated with poverty,[5] the incidence of malaria being particularly high in low income countries in the region. In 2013, malaria affected almost 2.3 million people, or 59 of every 100,000 people living in Asia and the Paciic. In contrast, malaria has been eradicated in all but one of the region's high income countries, namely the Republic of Korea, where the incidence of malaria was 1 for every 100,000 people.[6]

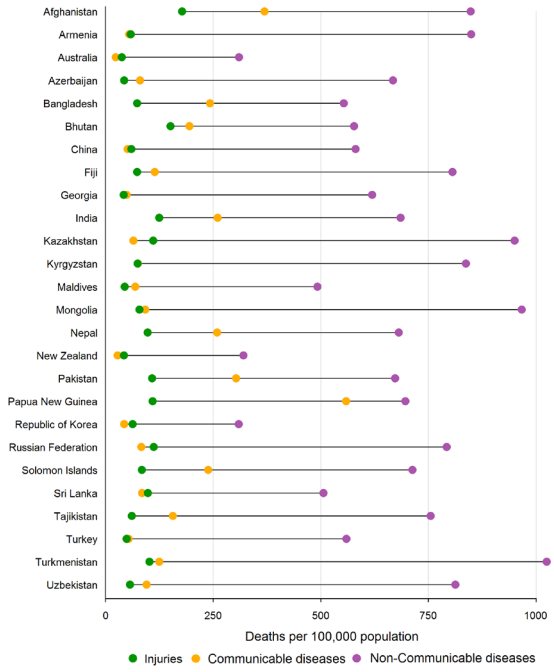


Figure 1
Age-standardised mortality rates, injuries, commnicable diseases and non-communicable diseases, 2012

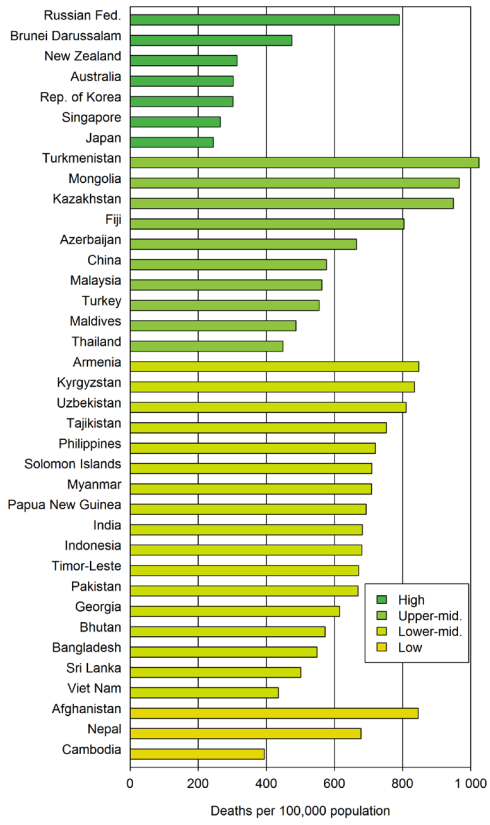


Figure 2
Age-standardised mortality rates for non-communicable diseases, 2012

Of every 10 new cases of malaria found in Asia and the Pacific during 2013, 4 were in India; 5 of every 10 cases were found in South and South-West Asia. However, since 2000, the number of new cases of malaria in South and South-West Asia fell from 166 per 100,000 people to 65 per 100,000 in 2013, and in India,

Box 1

Non-communicable diseases undermine the health and well-being of Pacific island populations

Similar to the region as a whole, and based on data available for 2012, non-communicable diseases (NCDs) were the primary cause of death in all of the five Pacific island countries with relevant data; the incidence of such diseases was highest in Fiji, Solomon Islands and Papua New Guinea where mortality rates were 804, 710 and 693 per 100,000 respectively.

NCDs have coincided with increases in health expenditure in Pacific island countries and territories. For instance, between 1995 and 2011 per capita government health expenditure almost doubled in Federal State of Micronesia, Kiribati and Papua New Guinea, from 215 to 419, from 138 to 204 and from 55 to 91 respectively; expenditure increased three times in Solomon Islands (from 73 to 246) and four times in Samoa (from 72 to 286).

One of the recognized risk factors for NCDs in the Pacific is an unhealthy diet high in fat, sugar and salt.[a] Since the 1960s, Pacific islanders' diets have gradually changed from what had been based on root crops, starchy foods, seafood and leafy greens to diets dominated by imported processed foods.[b] For example, in Fiji the value of imported processed foods increased from A$ 84 per capita in 2008 to A$ 405 in 2013. Similarly, in Solomon Islands, there was an almost fivefold increase in the value of such imported foods, from A$ 20 to A$ 95, between 2008 and 2013; in Vanuatu, the per capita importation of such items increased in value from A$ 12 to A$ 57 in the same time period.

There has also been an increase in the incidence of behavioural risk factors for poor health, including tobacco use, alcohol use and low levels of physical activity. For instance, among males aged 15 and above, the prevalence of tobacco smoking is 67 per cent in Kiribati, 52 per cent in Nauru and 43 per cent in Vanuatu, substantially higher than the average rate of 27 per cent for the Pacific subregion overall.

a W. Snowdon, M. Moodie, J. Schultz and B. Swinburn, Modelling of potential food policy interventions in Fiji and Tonga and their impacts on noncommunicable disease mortality, Food Policy, vol. 36, No. 5 (October 2011), p. 597-605.

b A.M. Thow, P. Heywood, J. Schultz, C. Quested, S. Jan and S. Colagiuri, *Trade and the nutrition transition: strengthening policy for health in the Pacific*, Ecology of Food Nutrition, vol. 50, No. 2 (January-February 2011), p. 18-42.

from 193 per 100,000 people to 69 over the same period. These incidences are far lower than those in Pacific island countries, where in 2013, the number of new cases of malaria per 100,000 people in Solomon Islands, Papua New Guinea and Vanuatu were 4,567, 3,831 and 940 respectively.

In contrast with South and South-West Asia, the cases of malaria per 100,000 people in South-East Asia increased between 2004 and 2010, but the number of cases has fallen over the last three years to 130, although at levels still higher than those in 2004. (Fig 3)

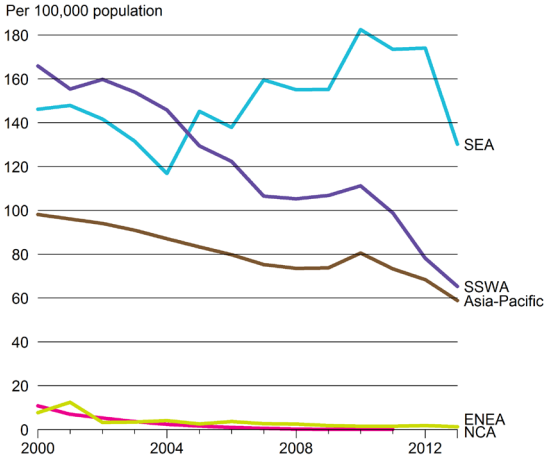


Figure 3
Malaria incidence rate in Asia and the Pacific, 2000-2013

The incidence of tuberculosis is more than 4 times higher in Asia-Pacific low income countries than in high income countries

Tuberculosis (TB) is a major health problem globally and in Asia and the Pacific. It causes ill-health among millions of people each year and ranks alongside AIDS as a leading cause of death worldwide.

SDG 3

In 2013, there were an estimated 5.8 million new TB cases in Asia and the Pacific, or 64 per cent of all new cases worldwide. India, China and Indonesia had the largest numbers of new cases, accounting for 23 per cent, 11 per cent and 6 per cent respectively of the global total.

TB prevalence, or the number of affected individuals, in Asia and the Pacific in 2013 was 182 per 100,000 people, which was 42 per cent lower than the rate in 2000. The incidence and prevalence of tuberculosis are typically higher in lower-income countries. Although the number of cases of tuberculosis per 100,000 people in low income countries fell between 2000 and 2013 from 569 to 410, a 28 per cent decrease, the prevalence in 2013 was still 5 times higher than the 77 cases per 100,000 in high income countries. (Fig 4a, 4b)

Although almost all people with TB can be cured given a timely diagnosis and correct treatment, globally there were an estimated 1.5 million deaths from TB in 2014, 0.6 million of which were in Asia and the Pacific. People infected with HIV are 29 times more vulnerable to TB, and one in four deaths from TB globally in 2014 was among people living with HIV. In addition, inadequate/incomplete treatment of TB can lead to multi-drug-resistant tuberculosis and extensively drug-resistant TB which are much more difficult to treat than normal TB and also involve higher financial costs for treatment.[7]

3.2 Mental health

A standard diagnostic and statistical manual[8] identifies 21 categories of mental "disorders" encompassing acute and chronic debilitating illnesses. Perhaps in part due to the diversity of those disorders and the difficulty involved in diagnosing them, there is a lack of comparable national-level data. Available data include those pertaining to suicide, depression and the governance and care of mental health.

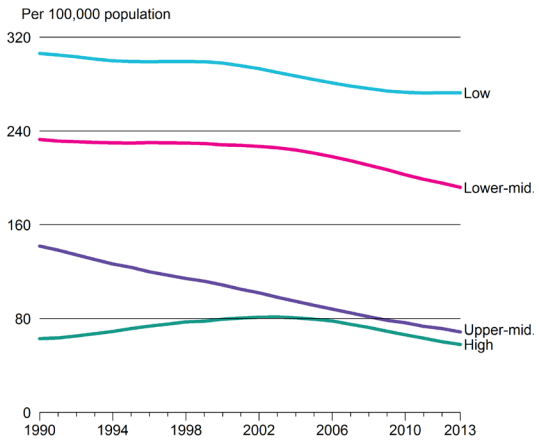


Figure 4a
Tuberculosis incidence rate, 1990-2013

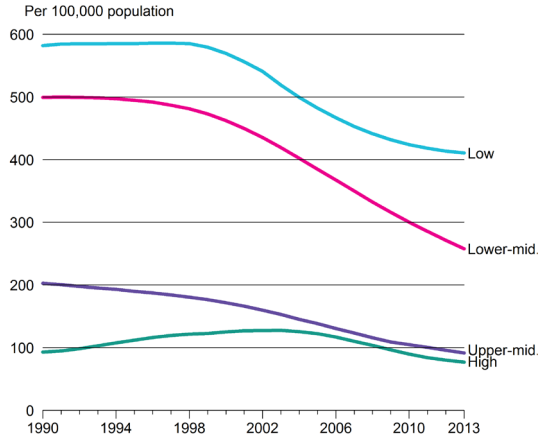


Figure 4b
Tuberculosis prevalence rate, 1990-2013

In 2012, 38 per cent of Asia-Pacific countries had rates of suicide among men that were double the rates of suicide among women.

Suicide is a major health challenge in all countries; in Asia and the Pacific, male suicide rates range from 2 per 100,000 people in Azerbaijan to 46 per 100,000 people in the Sri Lanka, while female suicide rates range from 0.9 per 100,000 in Armenia to 35 in the Democratic Republic of Korea. To put this situation into perspective, death rates from suicides ranged from 0.9 to 46 per 100,000 people, broadly comparable to death rates for TB, which ranged from 0.1 to 87 per 100,000 people.

Suicide rates are also, with few exceptions, higher for men than for women[9], and in 2012, 38 per cent of all countries in the region had male suicide rates that were at least double

Box 2

Mental health and happiness

One measure of mental health is happiness. According to the Sustainable Development Solutions Network, an initiative of the United Nations, as reported in its *World Happiness Report 2015*,[a] countries in the Asia-Pacific region range from being the ninth happiest in the world (New Zealand) to the 153rd happiest (Afghanistan), based on a total of 158 countries globally. The happiest countries in Asia and the Pacific, according to the report, tend to have high incomes; with a few exceptions, happiness increases as a country transitions from being a low- to a middle- and then a high income country. Furthermore, men in the Asia-Pacific region are reportedly marginally happier than women. For both sexes, the experiences of worry, sadness, depression and pain tend to increase with age, while experiences of anger and stress decline.

a Available from http://worldhappiness.report/wp-content/uploads/sites/2/2015/04/WHR15-Apr29-update.pdf.

female suicide rates. It has been reported that clinical depression, being one risk factor for suicide, likely affects between 4 and 7 per cent of the Asia-Pacific population.[10] (Fig 5)

3.3 Health coverage, financial risk protection and access to health services

Promoting and protecting health is essential to human welfare and sustained economic and social development, and timely access to health services through a mix of promotion, prevention, treatment and rehabilitation is critical.

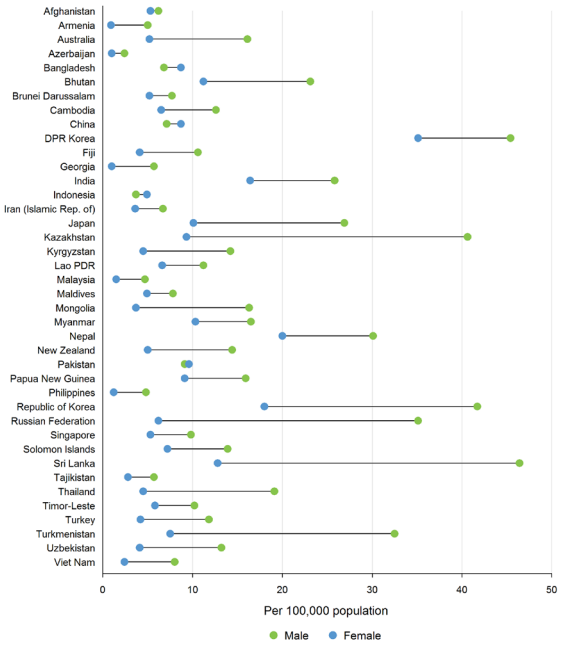
Statistics on health expenditure and the coverage of health services can guide the prioritization, formulation and implementation of measures undertaken by public and non-public sector stakeholders.

Per capita spending on health by governments in Asia and the Pacific in 2011 ranged from as high as 2,540 USD per person PPP in high income economies, to as low as 4 USD per person PPP in low income economies

One indication of a Government's prioritization of health and well-being is the allocation and expenditure of budgetary resources on health services. Spending per capita is typically higher in higher income economies; in 2011, such expenditures in USD per person 2005 PPP were highest in Australia (2,529), Japan (2,540) and New Zealand (2,524) and lowest in Afghanistan (8) and Myanmar (4). This difference in spending is in part responsible for the higher life expectancy of people living in higher-incomes economies, which ranged from 81 to 83 for Australia, Japan and New Zealand to between 59 and 65 in Afghanistan and Myanmar. (Fig 6)

Another measure of a country's commitment to health care is the proportion of GDP allocated to health services. This measure, unlike health spending per capita, is not determined by the size of the overall budget available; in 2013, 7.2 per cent of GDP in low income economies was allocated to health services, which was

Figure 5
Suicide rates in Asia and the Pacific, male and female, 2012



1.6 percentage points lower than the 8.8 per cent allocated in high income economies, , but higher than the 3.8 and 5.5 per cent allocated in lower- and upper middle-income countries, respectively.

3.4 Behaviour and health

Differences in behaviour affect health outcomes and well-being. Driving and travelling in motor vehicles, and the use and abuse of tobacco, alcohol and other drugs are among the behaviours that contribute most to increased morbidity and mortality risks.

Nearly three quarters of a million fatalities occurred on the roads of Asia and the Pacific in 2013

Road traffic injuries are the eighth leading cause of death globally and the leading cause of death among young people aged 15-29 years; thus, such accidents take a heavy toll on those entering their most productive years of life.[11]

In Asia and the Pacific, 733,541 people died on roads in 2013, which is equivalent to 17.2 fatalities per 100,000 people, a rate marginally lower than the global average of 17.4 per 100,000 people. Of the ten countries in 2013 with highest number of fatalities per 100,000 people, two were in Asia and the Pacific: in Thailand it was 36.2 per 100,000 population and in the Islamic Republic of Iran 32.1 per 100,000.

Road traffic fatality rates in high income countries, where safety measures may be better developed or more systematically applied, tend to be the lowest in the region, at around 11.5 per 100,000 people. Fatality rates in low income countries, where the volume of traffic may not be very large, are also relatively lower in the region, at about 16.5 per 100,000 people. The highest rates typically are recorded in middle-income countries; in 2013, the rates were 16 and 20 per 100,000 people in lower and upper middle-income countries respectively. In such countries, the volume of traffic may be greater than in low income countries, but safety measures may not be as well embedded as in high incomes countries. (Fig 7)

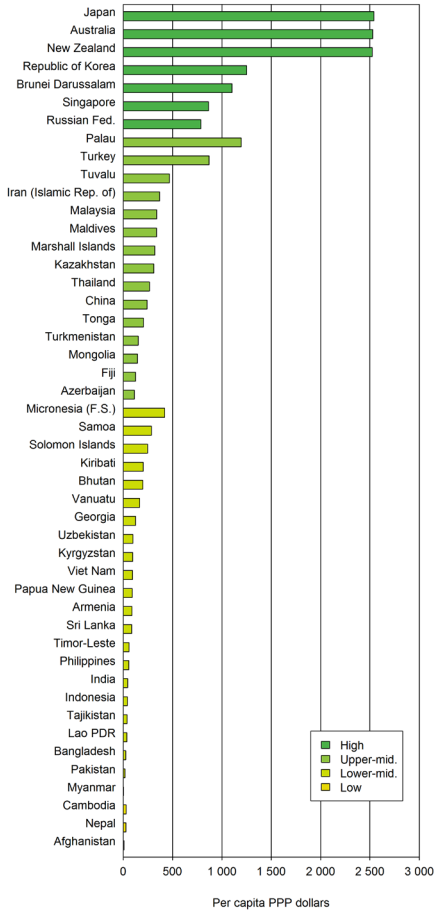


Figure 6
Government health expenditure per capita, 2011

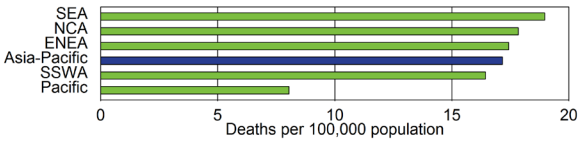


Figure 7
Road traffic deaths by subregion, 2013

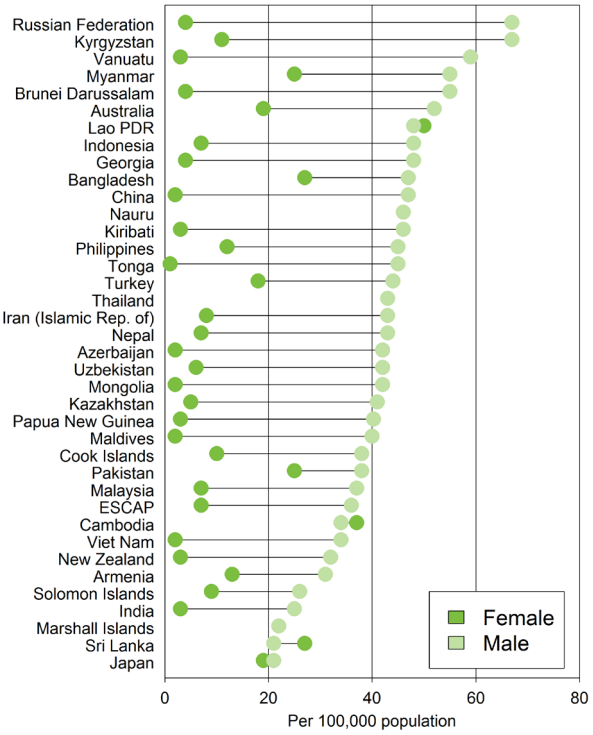
In Asia and the Pacific, 40 per cent of males and 5 per cent of females smoked tobacco in 2011

Tobacco use poses a significant threat to health. Yet, across the Asia-Pacific region, 40 per cent of males aged 15 years and older smoke tobacco compared with 5 per cent of females. A higher percentage of men smoke than women in every country in the region, except for Australia, Nauru and New Zealand. The male-to-female prevalence ratio for smoking

was highest in Malaysia (43:1) and lowest in Nauru (approximately 1:1).

These figures equated to 726 million tobacco users in Asia and the Pacific in 2011, 647 million men and 79 million women. China has the largest number of tobacco users: 268 million men and 11 million women; in India, the numbers are 111 million men and 17 million women. (Fig 8)

Figure 8
Prevalence of tobacco smoking for females and males aged 15 years and older, for selected countries in the Asia-Pacific region, 2011

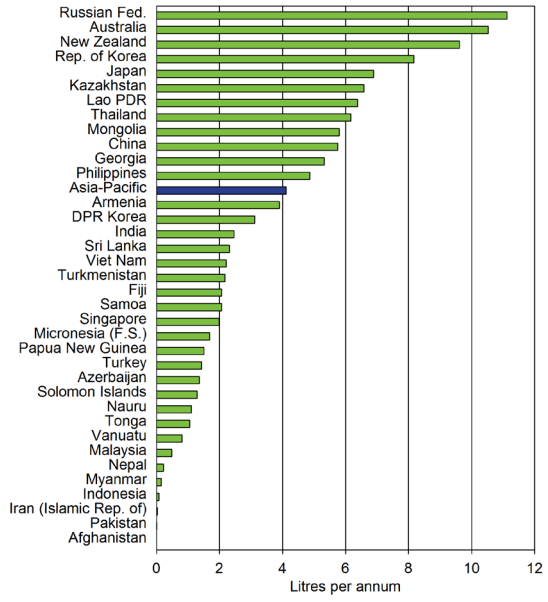


The average alcohol consumption in Asia and the Pacific increased by a third from 1990 to 2010

Alcohol consumption in Asia and the Pacific has increased from 3.0 litres to 4.1 litres per person per year between 1990 and 2010. This is still below the global average which increased from 4.7 litres to 5.0 litres per person per year over the same period. These figures exclude unrecorded consumption of such drinks as homemade alcohol, or alcohol produced illegally or sold outside normal government channels of control.

Alcohol consumption varies across Asia-Pacific subregions; in 2010, such consumption was highest in North and Central Asia, at 9.8 litres compared with 2.0 litres per person per year in South-East Asia and South and South-West Asia, which are the lowest rates among Asia-Pacific subregions. (Fig 9)

Figure 9
Recorded adult per capita consumption, 2010



Alcohol consumption also tends to be higher in high income countries; it was 9.0 litres per person per year in 2010 in high incomes countries compared with 1.2 litres per person per year in low income countries. It should be pointed out, however, that social factors, particularly cultural traditions and religion, have substantial impacts on alcohol consumption.

3.5 Maternal and child health

In both the Millennium Development Goals and the Sustainable Development Goals, improving maternal and child is objective. Major reductions in maternal and child mortality rates have been documented across the Asia-Pacific region. However, available data also indicate that sustained action and investment are required to reduce preventable damage to the health and well-being of women and young children.

SDG 3

Maternal, infant and child mortality rates in Asia and the Pacific are 16, 9 and 10 times higher respectively in low income economies than in high income economies

Maternal mortality

Across the Asia-Pacific region, the number of maternal deaths per 100,000 live births decreased by 61 per cent, from 1990 to 2013, from 323 to 127. Consequently, half of the 58 countries in the region had maternal mortality ratios lower than 100 deaths per 100,000 live births in that year; about 43 per cent had ratios below 70 per 100,000 (the target to be achieved for maternal deaths under Sustainable Development Goal 3).

The reductions in maternal deaths per 100,000 live births between 1990 and 2013 have been greatest for lower-middle-income countries (from 481 per 100,000 to 174) and low income countries (from 845 per 100,000 to 267). However, the maternal mortality ratios in these countries remain significantly higher than the 17 deaths per 100,000 live births in 2013 in the high income countries. (Fig 10)

Infant mortality rate

Infant mortality rates in Asia and the Pacific have also decreased dramatically. The number of children estimated to have died within the first year of their birth decreased by 53 per cent in 2013, that is, from 64 per 1,000 live births in 1990 to 30 per 1,000 live births. However, children born in low income countries in 2013 were nearly nine times more likely to die before reaching the age of one year than those in high income countries, with estimated infant mortality rates of 48 per 1,000 live births and 6 per 1,000 respectively.

Under age-5 mortality

The number of children estimated to die before reaching 5 years of age decreased by 57 per cent, from 88 per 1,000 live births in 1990 to 38 per 1,000 live births in 2013. However, children born in low income countries in 2013 were nearly 10 times more likely to die before reaching 5 years of age than those in high income countries, where estimated under age-5 mortality rates were 64 per 1,000 live births and 7 respectively. (Fig 11)

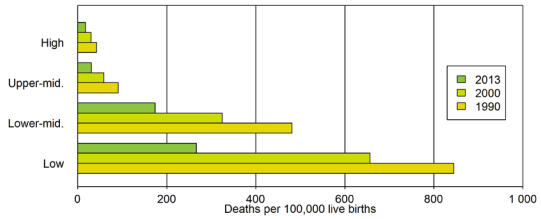


Figure 10
Maternal mortality rate, by country-income group

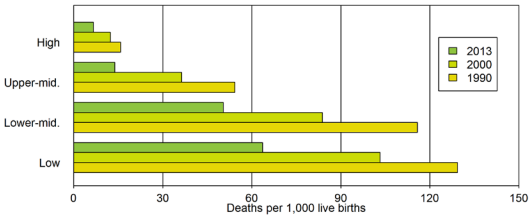


Figure 11
Under age-5 mortality rates, by country-income group

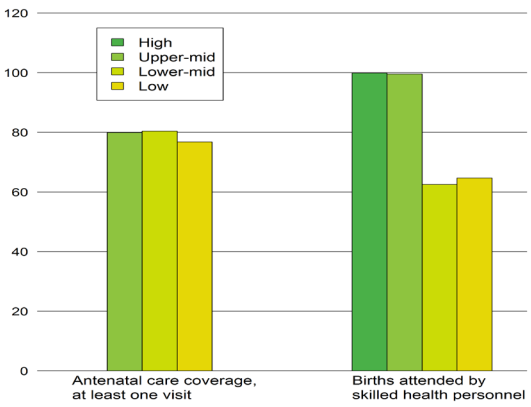
Maternal health-care services in Asia and the Pacific are improving

Data are often insufficient for making robust comparisons of the health-care services furnished to women by their income levels, but as can be seen in figure 12, women in higher-income countries, where maternal and infant mortality rates are the lowest, are more likely to have received antenatal care coverage and to have had skilled personnel present at the births of their children than are women in lower-income countries.

The percentage of women of reproductive age in Asia and the Pacific receiving antenatal care from skilled health personnel at least once during their pregnancy increased from 61 per cent in 1991 to 85 per cent in 2014. Data are insufficient to produce a similar figure for women receiving four or more such visits in 2014, but in previous years the percentage of women receiving four visits was typically between 33 and 35 percentage points lower than the percentage receiving just one visit.

Similar increases have been observed in the percentage of live births attended by a skilled health professional in Asia and the Pacific, which have increased from 57 per cent in 1990 to 75 per cent in 2014. (Fig 12)

Figure 12
Maternal health-care services, by country-income group, 2014



3.6 Data and monitoring issues

Large variations in the availability of data to monitor health and well-being in Asia and the Pacific

Non-communicable and communicable diseases

Annual estimates are made of the incidence and prevalence of TB for every country in the region from 2002 onwards, prior to which time observations for Timor-Leste only are missing. Data held by ESCAP on the incidence of malaria are less complete, but are sufficient to support the calculation of annual subregional aggregates, except for the Pacific, where no subregional aggregates have been calculated, and for North and Central Asia, where no aggregates were calculated for 2012 and 2013.

Non-communicable diseases, such as cardio-vascular diseases, cancer, diabetes and chronic respiratory diseases, also have a major impact on the health and well-being of people in Asia and the Pacific, but no data are presented on them in this chapter due to data and time constraints.

Mental health

Suicide rates in Asia and the Pacific are available for 40 of the 58 member States – but for 2012 only. Coverage is particularly low in the Pacific subregion where data are available for only 5 of 21 countries and territories.

Health coverage, financial risk protection and access to health services

Annual estimates of government expenditure and out-of-pocket expenditure on health are available for about 90 per cent of the countries in the region. Other issues related to financial risk protection, such as the number of people protected against catastrophic and impoverishing out-of-pocket health expenditure, are not readily available.

Behaviour and health

Analysis of road traffic deaths in Asia and the Pacific is based on data for 2010 and 2013 only. Coverage in these two years is sufficiently high to generate subregional estimates, but coverage is comparatively low in the Pacific subregion where observations for 8 of 21 countries are missing. Data on the victims of road traffic deaths, such as "pedestrian" and "cyclist", are more scarce but still sufficient to calculate subregional totals.

Data held by ESCAP data on the prevalence of smoking among males and females older than 15 years are available for 2011 only. Data on the prevalence of smoking among adolescents aged 13-15 years old in the region are available from 2000 to 2014, but coverage is sporadic and no subregional aggregates have been estimated. Coverage of data on alcohol consumption is greater than that for tobacco, and regional and subregional estimates have been calculated for every year from 1990 to 2010. There are, however, fewer observations from 2011 onwards.

Maternal and child health

Annual estimates of infant and under age 5 mortality rates in Asia and the Pacific are available for about 90 per cent of countries in the region. Maternal mortality data have improved dramatically as a result of the Millennium Development Goals, but are not available annually. Over the last 15 years, data

are presented for 2000, 2005, 2010 and 2013 only. Further disaggregation of maternal and child health data should include age, place of residence and socioeconomic status.

Maternal health-care services

Coverage of data obtained from household surveys on the provision of health-care services for pregnant women vary. The frequency of observations by country on women receiving at least one antenatal care visit from skilled health personnel are typically high enough to generate robust annual and subregional estimates. Coverage tends to decline for women receiving at least four visits, and it has not been possible to generate a regional aggregate for Asia and the Pacific after 2008. Of the three indicators that feature under maternal health-care services, the percentage of births attended by a skilled health professional is the most complete.

Civil registration and vital statistics are needed for better understanding of causes of death

Improving population health outcomes in the Asia-Pacific region requires a sound understanding of the causes of death, including why, where, when and how death occurs. Accurate data on both the numbers and locality of deaths and their causes are critical for addressing public safety risks in general and health risks in particular, as well as those risks faced by vulnerable groups in society.

Reliable data on mortality is necessary for informing policymaking, planning health programmes, setting priorities and increasing awareness. Accurate data are also critical for monitoring and evaluating the outcomes and impacts of programmes and interventions for addressing health concerns.

The most suitable source of information on cause of death is a well-functioning civil registration and vital statistics system that includes accurate information on cause of death as identified by physicians working in health facilities. This type of information is preferred as it is the only source of continuous nationally representative information on cause-specific mortality. However, only a few developing countries have been able to achieve full registration of vital events; many countries are therefore unable to produce reliable mortality estimates on the basis of vital statistics.

Data from the United Nations Statistics Division on the coverage and completeness of vital events registration indicate that death registration coverage in the Asia-Pacific region ranges from a low of 9 per cent in Tuvalu to 100 per cent in a few developed countries.[12] Even in developed countries with complete registration of deaths, however, the measurement of mortality is challenged by issues related to the classification of the causes of death. Globally, less than two fifths of countries have a complete civil registration system with accurate attribution of the cause of death, which is necessary for the measurement of specific mortality patterns.[13]

In order to improve data availability, timeliness and quality with respect to causes of death, national civil registration and vital statistics systems need to be strengthened.[14] Improving civil registration and vital statistics would produce multiple gains for countries. On one hand, civil registration and vital statistics systems provide timely and reliable data for informing policymaking, planning and programme development and implementation, as well as for monitoring development goals. On the other, the registration process can ensure that all individuals have the legal documentation to establish their civil status and ensuing rights. Compared with surveys, civil registration and vital statistics systems are cheaper to maintain in the long run and also enable the production of the disaggregated data demanded for attainment of the Sustainable Development Goals, in particular for living up to its principle of "leaving no one behind".

Endnotes

1 United Nations (2015), *General Assembly resolution 70/1*.

2 World Health Organization's statistical database. Available from http://www.who.int/gho/ncd/en/.

3 World Health Organization data for "injuries".

4 Age-standardised mortality rates (number of deaths per 100,000 population) are used in an attempt to estimate and remove the effect of variations in age composition of a population on mortality rates in order to enable comparisons of crude age-specific rates over time and between populations.

5 World Health Organization, *World Malaria Report 2012* (Geneva, WHO Global Malaria Programme, 2012).

6 For details, see http://www.who.int/malaria/en/.

7 2015, World Health Organization, *World Tuberculosis Report 2015.* Availalbe from http://www.who.int/tb/publications/global_report/en/.

8 American Psychiatric Association, *The Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. (Arlington, Virginia, United States, 2013). For more details, see http://www.dsm5.org/Pages/Default.aspx.

9 In Indonesia, Bangladesh and Pakistan, the suicide rates for females are higher than those for males.

10 For details, see http://www.washingtonpost.com/blogs/worldviews/files/2013/11/depression-rates.jpg.

11 World Health Organization, *Global Status Report on Road Safety 2013: Supporting a Decade of Action* (Geneva, WHO Department of Violence and Injury Prevention and Disability, 2013).

12 United Nations, Department of Economic and Social Affairs, "Coverage of birth and death registration" (using primary data only) (August 2012). Available from http://unstats.un.org/unsD/demographic/CRVS/CR_coverage.htm.

13 World Health Organization, *Trends in Maternal Mortality 1990–2013* (Geneva, 2014). Available from http://www.who.int/reproductivehealth/publications/monitoring/maternal-mortality-2013/en/.

14 W.J. Graham, S. Ahmed, C. Stanton, C.L. Abou-Zahr and O.M.R. Campbell, "Measuring maternal mortality: an overview of opportunities and options for developing countries", *BMC Medicine*, vol. 6, No. 12. Available from http://www.biomedcentral.com/content/pdf/1741-7015-6-12.pdf.

UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific

Statistical Yearbook for Asia and the Pacific 2015

Sustainable Development Goal 4

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

The new education agenda, also known as "Education 2030", is fully captured in Sustainable Development Goal 4 (Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all) and its corresponding targets. Further, the World Education Forum 2015 (WEF 2015) adopted the Incheon Declaration[1] which calls for "meaningful education and training opportunities for the large population of out-of-school children and adolescents, who require immediate, targeted and sustained action ensuring that all children are in school and are learning".

In adopting the 2030 Agenda for Sustainable Development, Governments globally committed to:

> *providing inclusive and equitable quality education at all levels – early childhood, primary, secondary, tertiary, technical and vocational training. All people, irrespective of sex, age, race, ethnicity, and persons with disabilities, migrants, indigenous peoples, children and youth, especially those in vulnerable situations, should have access to life-long learning opportunities that help them acquire the knowledge and skills needed to exploit opportunities and to participate fully in society. We will strive to provide children and youth with a nurturing environment for the full realization of their rights and capabilities, helping our countries to reap the demographic dividend, including through safe schools and cohesive communities and families.*[2]

4.1 Achieving equitable and good-quality basic education for all

Basic education is broader than just primary education. While the importance of universal primary education is emphasized in both the Millennium Development Goals and the UNESCO-led Education for All agendas, there is a growing consensus that equitable, inclusive access to and participation in "quality" learning should be ensured for all children, youth and adults, and that basic education encompasses higher degrees of educational attainment, such as that afforded in lower-secondary and eventually upper-secondary schools. As the typical average duration of schooling has increased in countries in the region, so has the importance of higher forms of schooling for all groups in society. Many countries in the region have already extended their compulsory education requirements, with only six countries in the region having a minimum required duration of schooling that is primary education

(equivalent to about six full years of schooling).[3] Recognition of the importance and relevance of secondary education has resulted in increased efforts in Asia and the Pacific to improve access to education across a wider range of ages.

The overall regional gross enrolment ratio for secondary education in Asia and the Pacific increased from 55.6 per cent in 2000 to 76.6 per cent in 2013

Notable improvements have been made in the region with regard to secondary education enrolment. The Asia and the Pacific gross enrolment ratio (GER) for secondary education increased from 55.6 per cent in 2000 to 76.6 per cent in 2013. One impact of these improvements is that the region's GER for secondary schools was slightly less than the global average for every year prior to 2007, but exceeded the global ratio each year thereafter.

However, disparities across income groups remained pronounced in 2013. With an estimated GER of 56.6 per cent, the region's low income countries lagged behind the gross enrolment ratio of 92.1 per cent in upper middle-income economies.

To achieve universal primary and secondary participation by 2030, many countries and areas in the region will need to dramatically increase enrolment rates for both primary and secondary schools, increase the years of compulsory schooling and address wide-ranging questions of equity and affordability of access.

Of every 20 children of primary school age in Asia and the Pacific, 1 is out of school

Participation in education has increased at all levels in the region. Consequently the percentage of out-of-school children of primary school age has also decreased, from 11.4 per cent in 2000 to 5.0 per cent in 2013. Based on analysis conducted by the UNESCO Institute for Statistics (UIS)[4], this equates to 17.3 million out-of-school children of primary school age in the region,[5] or 29 per cent of the global total. Despite long-term reduction in the rate of such children being out of school, the rate is higher than the 4.7 per cent recorded in 2010. UIS attributes this increase in part to an increase in the number of male out-of-school children in South and South-West Asia,[6] from 4.3 million in 2010 to 5.5 million in 2013, which equates to 32 per cent of the out-of-school children of primary school age in the region as a whole.

Recent increases in the number of male out-of-school children of primary school age are likely to have contributed towards gender parity in the region. In 2000, the rates for males and females were 8.4 per cent and 14.7 per cent respectively, while in 2013 the rate was 5.0 per cent for females, only marginally lower than the 5.1 per cent observed for males.

There are, however, disparities in the percentage of out-of-school children of primary school age among countries grouped by stage of economic development, decreasing from 10.6 per cent in low income economies in 2012 to 1.4 per cent in high income economies in 2013.

The children beginning their education now can expect to spend longer studying than was previously the case. In 2013, children could expect to spend 12.3 years (girls) and 12.4 years (boys) in school compared with 8.7 years (girls) and 9.7 years (boys) in 2000. Thus, not only has the duration of education increased in Asia and the Pacific but the disparity between girls and boys has also narrowed. Disparities remain, however, between countries at different stages of economic development. In 2012, children in low income economies could expect to spend approximately five fewer years of education than those in high income economies.

4.2 Youth and adult literacy

Literacy is a basic human right, guaranteed under the right to education enshrined in the Universal Declaration of Human Rights.[7] It is a fundamental tool to empower people and, through them, communities and countries. Through the Education for All movement,

the global adult literacy rate increased by 3.3 percentage points, from 81.9 per cent in 2000 to 85.2 per cent in 2013.

In Asia and the Pacific, 478 million adults cannot read and write, accounting for 3 of every 5 adult illiterates in the world

Of the 757 million adults around the world who could not read and write in 2013, three fifths of them – a total of 478 million adults – were living in Asia and the Pacific.

The South and South-West Asian subregion alone had 389 million adult illiterates in 2013, accounting for more than half (51 per cent) of the adult illiterates globally and more than four fifths (81 per cent) of the illiterates in Asia and the Pacific.

South and South-West Asia also had the lowest adult literacy rate in the region at 69 per cent in 2013, compared with literacy rates of 90 per cent or more in South-East Asia and the Pacific (93 per cent), East and North-East Asia (96 per cent) and North and Central Asia (100 per cent).

In addition to the subregional variations, literacy rates also vary by levels of economic development, ranging from 69 per cent in low income economies in 2013 to nearly universal literacy rates in high income economies for 2000, the most recent year with data.

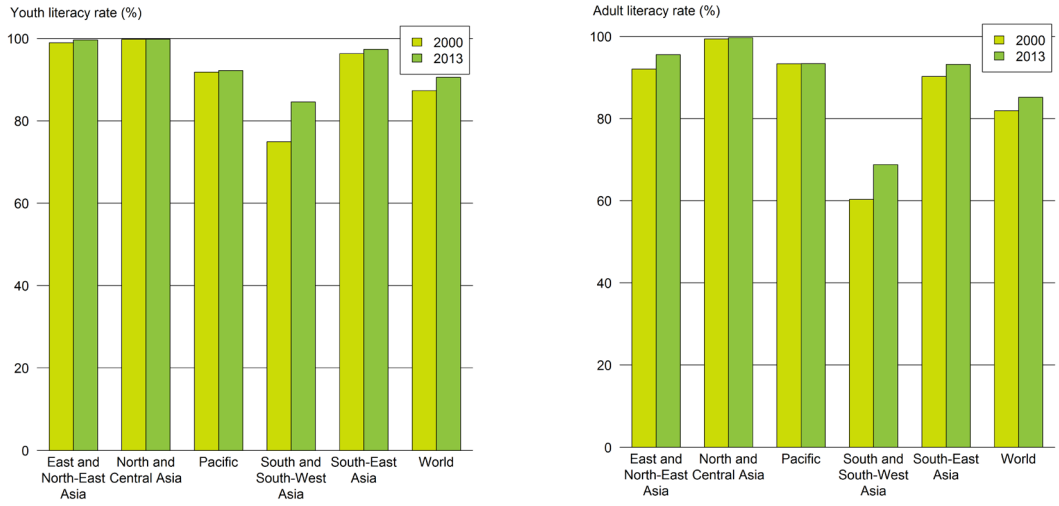
Another source of disparity in literacy rates is gender related. In 2013, 65 per cent of all adult illiterates living in the region were female. This disparity is greatest in East and North-East Asia where nearly three quarters (73 per cent) of adult illiterates are female. However, literacy rates are high in East and North-East Asia, and 93 per cent of adult females and 98 per cent of adult males can both read and write. (Fig 1)

The widest gender disparity in the proportions of the adult population that are literate is in the South and South-West Asian subregion where only three fifths (60 per cent) of adult females and a bit more than three quarters (78 per cent) of adult males were literate in 2013.

Of every 10 youths aged 15-24 years in Asia and the Pacific, 9 can both read and write

Literacy rates in Asia and the Pacific for those aged 15-24 (youths) are generally higher than for adults. In 2013, 91 per cent of female youths were literate compared with 80 per cent of female adults, and 94 per cent of male youths were literate compared with 90 per cent of male adults. The literacy rate for male youths is, therefore, 4 percentage points higher than for female youths, which is lower than the equivalent gender disparity for literacy in the adult population, which is 9 percentage points higher for males.

Figure 1
Youth and adult literacy rate, by sub-region, 2000 and 2013



There are other similar disparities in youth literacy rates across subregions and income groupings compared with those observed in the adult population.

Youth literacy rates were lowest in South and South-West Asia at 88 per cent for males and 81 per cent for females in 2013, and the disparity of 7.6 percentage points is the widest. By contrast, the other subregions have nearly achieved gender parity.

In 2013, youth literacy rates also increase with economic development, from 82 and 83 per cent for female and male youths respectively in low income economies to nearly universal literacy levels for both male and female youths in upper middle-income and high income economies.

4.3 Tertiary education

Owning to the socioeconomic progress achieved during past decades, many countries in Asia and the Pacific have called for highly skilled human resources who can further advance the development of the country against the backdrop of globalization and the knowledge economy. As a corollary, with growing participation and completion of basic and secondary education, the demand for tertiary education, whether studying in domestic or foreign institutions, has been increasing explosively in the region.

Between 2000 and 2013, the proportion of people in Asia and the Pacific enrolled in tertiary education more than doubled, from 14 to 30 per cent of those eligible

During the last decade, there has been explosive growth in tertiary education[8] in Asia and the Pacific[9] against a backdrop of growing participation and completion of basic and secondary education, as well as increasing demands for highly skilled individuals. Between 2000 and 2013, the proportion of people in Asia and the Pacific enrolled in tertiary education more than doubled, from 14 to 30 per cent of those of eligible official school age in the total population in a given academic year. Based on UIS estimates, that proportion equates to 101 million students enrolled in tertiary education in the region in 2013, more than half of total global enrolments and an increase of 62 million enrolments compared with that of 2000.

The proportion of people enrolled in tertiary education is typically higher in countries with higher levels of economic development, and in 2013 ranged from 15 per cent in low income economies to 74 per cent in high income economies. The fastest growth, however, has taken place in upper middle-income economies where rates more than trebled, from 11 per cent of those eligible in 2000 to 34 per cent in 2013.

In 2000, a higher proportion of eligible males than females from the region were enrolled in tertiary education. However, this gap has been narrowing, and in 2010 gender parity was achieved. In 2013, the gender parity index for the region was 1.03, indicating that tertiary enrolments were higher for females than males.

Box 1

Gender Parity Index

The gender parity index (GPI) is used to assess the degree of gender disparities at primary, secondary and tertiary levels for selected indicator. In this context, a GPI value of less than 1 shows that the indicator for boys is higher than the indicator for girls, and vice versa for a GPI value of more than 1. A GPI value of between 0.97 and 1.03 is generally considered to reflect gender parity.

Graduation from tertiary educational institutions is growing at more than 20 per cent per annum in Cambodia, the Lao People's Democratic Republic and Myanmar

Significant growth in the number of people graduating from tertiary educational institutions has been taking place in most countries throughout Asia and the Pacific. In absolute terms, China alone has seen the number of people graduating from tertiary educational institutions rise from 1.8 million in 2000 to 9.4 million in 2013, an average growth rate of 13.6 per cent per year over that period. Even higher growth rates have been recorded in other countries in the region, with the major ones being in South-East Asia where growth of 25.4 per cent per annum took place in the Lao People's Democratic Republic from 2000 to 2013, 25.3 per cent in Cambodia from 1999 to 2011 and 23.1 per cent in Myanmar from 2007 to 2012. Surprisingly, for some countries there has been a decline in the number of tertiary graduates, with Georgia experiencing a 1.7 per cent decline from 1999 to 2013, Azerbaijan a 1.1 per cent decline from 2008 to 2012 and Japan a 1.0 per cent decline from 1999 to 2012. It should be noted that the period covered in terms of growth differs from country to country depending upon the data available.

In Asia and the Pacific, more people (1 in 3) graduated with tertiary degrees in social sciences, business and law than in any other programme in 2013

Based on statistics for the 13 countries in the region where data are available, the distribution of tertiary graduates, according

Box 2

Between 2000 and 2013, the number of outbound internationally mobile students increased by 1 million

Students from the region are pursing their tertiary education abroad in increasing numbers. Between 2000 and 2013, the number of outbound internationally mobile students from Asia and the Pacific enrolled in tertiary educational institutions outside of their home country increased from 644 thousand 1.7 million students in 2013, an increase of 1.0 million students. China sent the largest number of students abroad in 2013 (712,157), followed by India (181,872), the Republic of Korea (116,942), Malaysia (56,260) and Viet Nam (53,546). These five countries account for about two thirds (66 per cent) of outbound students in Asia and the Pacific.

The number of outbound students in a country, expressed as a percentage of total tertiary enrolment in that country and referred to as the outbound mobility ratio, in 2013 was 8 per cent in Central Asia, 2 per cent in East Asia and 1 per cent each in the Pacific and in South and West Asia. It should be noted that, despite the increase in the number of outbound students during the last decade, these figures have remained almost constant since 2000, except in Central Asia.[a] This increase means that the growth in the number of students seeking outbound tertiary study abroad is roughly proportionate to the growth in enrolment in tertiary education domestically.

About 860,000 foreign students studied at tertiary educational institutions in Asia and the Pacific in 2012. This figure accounts for 22 per cent of inbound mobile students worldwide. The inbound mobility rates[b] were 1.6, 1.3 and 0.1 per cent in the UNESCO subregions of Central Asia, East Asia and the Pacific, and South and West Asia respectively in 2013.

a The outbound mobility ratio rose by 3.9 percentage points in the UNESCO Central Asian subregion between 2000 and 2013.

b The number of students from abroad studying in a given country is expressed as a percentage of total tertiary enrolment in that country.

to the International Standard Classification of Education (ISCED), varies widely. Some countries have a relatively large share of graduates at ISCED level 5, such as China (48 per cent), the Lao People's Democratic Republic (55 per cent) and Viet Nam (48 per cent). In other economies, students are more likely to attain a tertiary degree at ISCED levels 6 and 7, such as Macao, China (91 per cent), Mongolia (97 per cent) and the Philippines (87 per cent). Less than 2 per cent in the region are graduates at ISCED level 8.

Further analysis of the programmes of study of tertiary graduates over the five years from 2009 to 2013 reveals that approximately one in three graduates in Asia and the Pacific received degrees in social sciences, business and law programmes. This ratio remains reasonably constant across countries grouped from low- to high income economies. Nepal is the only low income country with data available for the reference period.

Agriculture is the least popular field of tertiary study, accounting for about 3 of every 100 graduates in the region.

4.4 Financing education

The global community has been advocating for countries, especially developing countries, to invest more in education to increase access and particiaption and also to improve the quality of education.

In the Incheon Declaration, Governments, the primary bearer for efficient, equitable and sustainable financing of education, reiterated the importance of well-targeted increases in their education expenditures. Public investment should help address the equitable distribution of resources across education subsectors and geographic locations, and support programmes for marginalized groups. An enhanced focus on innovative financing strategies that do not burden the poor but do support good-quality public education is needed; funding of education will need to be drawn from multiple sources.

The proportion of public expenditure made on education in Asia and the Pacific ranges from 6.7 per cent to 21.7 per cent

Figure 2 shows the largest proportion of public expenditure made on education by the 35 countries of Asia and the Pacific for which data are available over the five years from 2009 to 2013.

Figure 2
Education expenditure as a percentage of total government expenditure for selected countries, latest data available

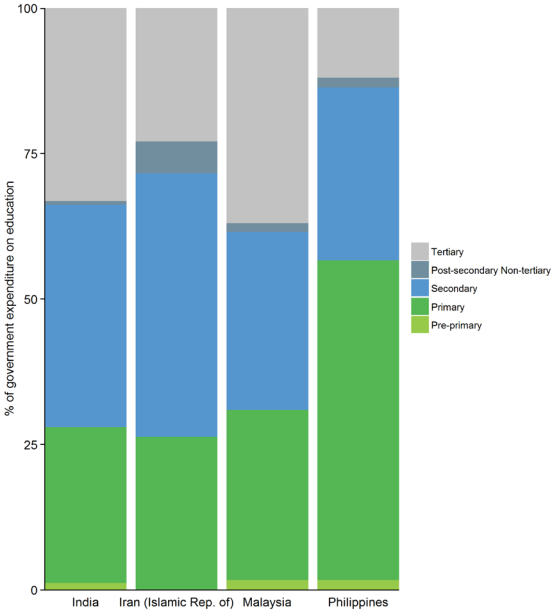


Figure 3
Education expenditure by level of education as percentage of government expenditure on education, latest data

Expenditure ranges from 6.7 per cent of total government expenditure in Georgia (2012), one of six countries in the region where less than 10 per cent of public expenditure is on education to 21.7 per cent in the Islamic Republic of Iran (2013), one of nine countries where more than 20 per cent of public expenditure is on education. (Fig 2)

Based on analysis by UIS, countries in the region allocate from less than 1 per cent to less than 10 per cent of their government expenditure on education - on pre-primary education, which has recently been promoted as one of the strongest factors in school success. Post-secondary and non-tertiary education, which is used in many countries for school-to-job transitions, receives less than 2 per cent of total education expenditures in three countries; Brunei Darussalam, India and Malaysia.

The largest shares of government funds in most countries go to primary and secondary education. For example, in 2012, Indonesia spent 16 and 25 percentage points more on primary compared to secondary and tertiary education. Out of 19 countries with available data between 2010 and 2014, only 4, Hong Kong, China; Singapore; Malaysia and India, reported spending more of their total government expenditure on tertiary education, with respectively 14, 13, 8 and 6 percetage points difference between the proportion spent on primary and tertiary.

Box 3

Teacher shortage to achieve universal primary and lower secodnary education

According to a projection produced by the UNESCO Institute for Stastistics on teacher demand globally and by UNESCO subregions, there will be an acute shortage of teachers at the primary level beyond 2015 if the world wants to achieve universal primary education. The Asia-Pacific region will be short by 213,000 primary teachers in 2015; by 2030, the gap will be 331,000. The teacher shortage at the lower-secondary level is even more severe. If the goal of universal lower-secondary education is to be achieved by 2015, the gap would be 1.3 million teachers in the Asia-Pacific region. If the goal of universal lower-secondary education is to be achieved by 2020, it will be necessary to recruit 1.4 million new teachers; if it is to be achieved by 2030, 1.3 million new teachers will be needed in the Asia-Pacific region.

Region	*Number of Primary teachers in 2011 (1000s)*	New Teaching post needed to achieve universal primary education (1000s)				*New Teaching post needed to achieve ULSE (1000s)*	New Teaching post needed to achieve universal lower-secondary education (1000s)			
		By 2015	By 2020	By 2025	By 2030		By 2015	By 2020	By 2025	By 2030
World	28,870	1,577	2,381	2,886	3,335	17,280	3,512	4,263	4,823	5,086
Central Asia	340	26	68	64	45	406	8	39	71	67
East Asia and Pacific	10,378	57	52	65	90	5,833	282	308	274	230
South and West Asia	5,000	130	187	187	196	2,460	991	1,065	1,081	1,040
Total in Asia-Pacific	**15,718**	**213**	**307**	**316**	**331**	**8,699**	**1,281**	**1,412**	**1,426**	**1,337**

Source: UNESCO Institute for Statistics, *A Teacher for Every Child: Projecting Global Teacher Needs from 2015 to 2030.* UIS Fact Sheet, No. 27 (October 2013).

In 2013, for every 29 pupils in low income economies in Asia and the Pacific there was 1 secondary school teacher; for high income economies, the number of pupils per teacher was 11

If graduates are the primary outputs of investing in education, teachers are the most important inputs. Every country should have a sufficient number of teahcers at each level of education, and they should receive sufficient training before they begin teaching. However, analysis by UIS has shown that in some countries in Asia and the Pacific not all teachers have been properly trained in pedagogical methods. Indeed, only 72 per cent of primary teachers were trained in 2012 in Kyrgystan. In Vanuatu, only 60 per cent of them were trained at the primary level. In Brunei Darussalam, the Lao People's Democraic Republic and Nepal only between 2 and 15 per cent of teachers at the primary level were not trained.

The number of pupils per teacher, the pupil-teacher ratio, in Asia and the Pacific in 2013 was, on average, 1 teacher for every 24 primary school pupils and 19 secondary school pupils. These ratios vary across the subregions and with the level of economic development consistent with other disparities observed in this chapter.

Pupil-teacher ratios in South and South-West Asia are the highest in the Asia-Pacific region for primary education (35:1) and secondary education (25:1). Similarly the number of pupils per teacher tends to decrease with the level of economic development: in primary schools, from 35:1 in low income economies to 18:1in high income economies; and in secondary schools, from 29:1 to 11:1 respectively.

4.5 Data and monitoring issues

Measuring inequalities in education will require better integration of data sources

The Education 2030 agenda is aimed at providing more inclusive basic educational opportunities by addressing marginalized groups and their current exclusion from the education system. This will increase the need for disaggregated data that will support analysis of inequalities in education.

Until now, gender gaps between boys and girls were typically based on administrative data, but by integrating these data with additional sources, such as an education module in household surveys, further aspects or indicators of inequality could be assessed, such as wealth quintiles, geographic location, subnational disparities and, in some cases, ethnic groups and disability. (Fig 4)

Since the Education for All goals were declared at the World Conference on Education for All, which was held in Jomtien, Thailand, in March 1990, and the World Education Forum, which met in Dakar in April 2000, many countries in the region have improved their educational monitoring and information systems. For the new Education 2030 agenda and for achievement of Sustainable Development Goal 4, it will be necessary for these systems not only to monitor access, participation and progress but also to be focused on monitoring equality and equity, by integrating much more disaggregated data and analysis of results of assessments of student learning. For monitoring education beyond 2015, it will be necessary to evaluate and ensure not only that every child has access to education, but that every child is also learning.

The new education goal under the framework of the Sustainable Development Goals involves a new literacy target (4.6): "By 2030, ensure

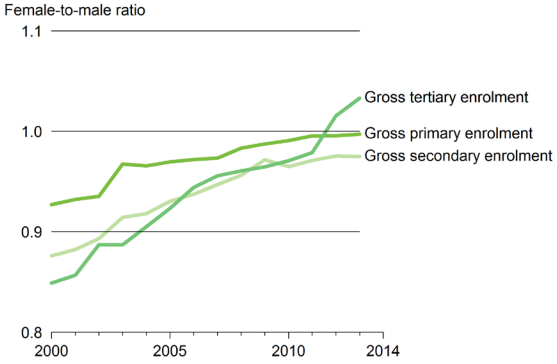


Figure 4
Gender parity index of the gross enrolment ratio, by level of education, ESCAP average, from 2000 to 2013

that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy". This new target requires data on the literacy and numeracy skill levels of youth and adults, which is more involved than providing data on just literacy rates. Such data should come from reliable tests of literacy and numeracy. Currently such skills or other indicators of the quality of education are lacking for many countries and territories in Asia and the Pacific.

More disaggregated data will be required to monitor SDG 4

The education data presented in the Statistical Yearbook cover a range of concepts relating to literacy, enrolment, gender balance, duration of studies, and financial and human resources in education, among others, and are often disaggregated by sex, age or level of instruction. While these data do not represent the status of data production in individual countries, they do give a good indication of the range of internationally comparable data available to the general public across a range of topics related to education.

Data availability is greatest for indicators relating to number of inbound and outbound students and enrolment, such as the enrolment rate, or the gender parity index in enrolment, where between two thirds and four fifths of countries in the region generally have had at least one data point during the past 10 years. For some indicators, relatively fewer countries show values for disaggregated series, such as the enrolment rate stratified by educational programme, and the series tend to show a greater number of missing years. Countries and areas in the Pacific subregion are more likely than those in other subregions to be missing entire series for education-related indicators.

Certain concepts are presented only for specific levels of education, such as the transition rate from primary to secondary, or do not present data disaggregated by sex, as is the case for attendance in secondary school technical programmes or the distribution of tertiary enrolment by area of study.

Endnotes

1 The Incheon Declaration: Education 2030 – towards inclusive and equitable quality education and lifelong learning for all, was adopted at the World Education Forum 2015, held in Incheon, Republic of Korea, from 19 to 22 May 2015. Available from http://en.unesco.org/world-education-forum-2015/incheon-declaration.

2 General Assembly resolution 70/1, para. 25.

3 UNESCO Institute for Statistics Data Centre.

4 See http://www.unescobkk.org/fileadmin/user_upload/library/edocuments/18_Nov_Fact_Sheet.pdf.

5 Reference to the UIS Asia-Pacific region (49 countries and Territories; the Russian Federation and Turkey are not included).

6 South and South West Asia, excluding Turkey.

7 General Assembly resolution 217 A (III), art. 26.

8 The International Standard Classification of Education, maintained by the UNESCO Institute for Statistics, categorizes tertiary education into four levels: level 5 (short-cycle tertiary education); level 6 (bachelor's or equivalent level); level 7 (master's or equivalent level); and level 8 (doctoral or equivalent level).

9 According to the UNESCO Institute for Statistics countries' grouping, the Asian and Pacific region consists of 49 countries and territories in 3 subregions: Central Asia; East Asia and the Pacific; and South and West Asia.

UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific

Statistical Yearbook for Asia and the Pacific

2015

Sustainable Development Goal 5

Achieve gender equality and empower all women and girls

Revised on 24 February 2016

Under Sustainable Development Goal 5 (Achieve gender equality and empower all women and girls) of the 2030 Agenda for Sustainable Development,[1] Governments globally recognized the following:

> *Realizing gender equality and the empowerment of women and girls will make a crucial contribution to progress across all the Goals and targets. The achievement of full human potential and of sustainable development is not possible if one half of humanity continues to be denied its full human rights and opportunities. Women and girls must enjoy equal access to quality education, economic resources and political participation as well as equal opportunities with men and boys for employment, leadership and decision-making at all levels. We will work for a significant increase in investments to close the gender gap and strengthen support for institutions in relation to gender equality and the empowerment of women at the global, regional and national levels. All forms of discrimination and violence against women and girls will be eliminated, including through the engagement of men and boys. The systematic mainstreaming of a gender perspective in the implementation of the Agenda is crucial.*[2]

Accordingly, the six targets through which Sustainable Development Goal 5 is to be realized address the eradication of all forms of discrimination; the elimination of all forms of violence against women and girls, including harmful practices; the recognition and redistribution of unpaid care and domestic work; the promotion of women's leadership at all levels of decision-making; and the provision of universal access to sexual and reproductive health and reproductive rights.

5.1 Economic empowerment of women

The economic empowerment of women includes such issues as equal opportunities for economic leadership, equal access to economic resources, ownership and control over land and other forms of property, financial services, inheritance and natural resources. Progress in these areas requires systematic consideration of gender issues in, for instance, job creation, employment, decent work, and ownership and control of economic resources.

Women in Asia and the Pacific are less likely to be employed than men

As shown in figure 1, gender parity in employment does not exist in most countries in Asia and the Pacific. Regardless of income category, in most countries in the region there are fewer employed women than employed men. However, according to the latest available figures, in the period following the adoption of the Beijing Declaration and Platform for Action,[3] substantial improvements in the employment sex ratio are seen in some high income countries and areas, such as Brunei Darussalam; Hong Kong, China; Macao, China; and Singapore, as well as in some middle- and low income countries, such as Malaysia, Maldives and Nepal. Overall, the employment sex ratio was at 83.9 employed females per 100 males in high income countries and areas in 2013, while it was about half that level in lower-middle-income countries. Large variations exist within middle-income countries, ranging from 20.3 employed females per 100 males in the Islamic Republic of Iran to 95.7 in Kazakhstan and even 100.5 in the Lao People's Democratic Republic in 2013.

Further evidence of the lower rates of employment among women relative to men can be observed in the employment-to-population ratios presented in figure 2. Smaller proportions of the female populations are employed compared with the male populations in each subregion. The difference is widest in South and South-West Asia, where in 2013 approximately 3 of every 10 females were employed compared with more than 7 of every 10 males.

Employed women and men in Asia and the Pacific are concentrated in different sectors, with women being more likely than men to be in low-paying, precarious jobs

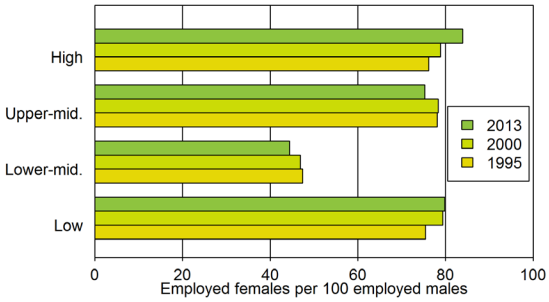


Figure 1
Employment sex ratio, by income category for countries/areas, for 1995, 2000 and 2013

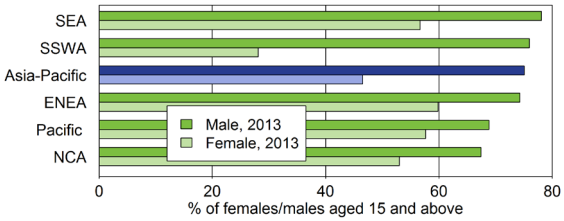


Figure 2
Proportion of the female and male working-age population that is employed, by subregion, 2013

In the region, not only are fewer women employed compared with men but women are also concentrated in certain sectors. Over the last two decades, particularly in low income and lower-middle-income countries, the agricultural sector has remained the primary source of employment in the region, for both women and men. Figures for 2013 show that the percentage of female employment (41.9 per cent) in this sector continued to exceed the percentage of male employment (32.2 per cent).

In high income countries, however, the proportion of employed females is shifting towards the services sector. Females working in such sectors as wholesale and retail trade; restaurants and hotels; transport; storage and communications; finance; insurance; real estate; business services; and community, social and personal services increased from 73.6 per cent of total female employment in 2003 to 80.7 for males in high income countries, in contrast only 59.1 per cent of total male employment was in the services sector in 2013. The industrial sector has a higher proportion of employed males across all income categories of countries as compared with females. This difference is found to be widest for upper middle-income and high income countries. (Fig 3)

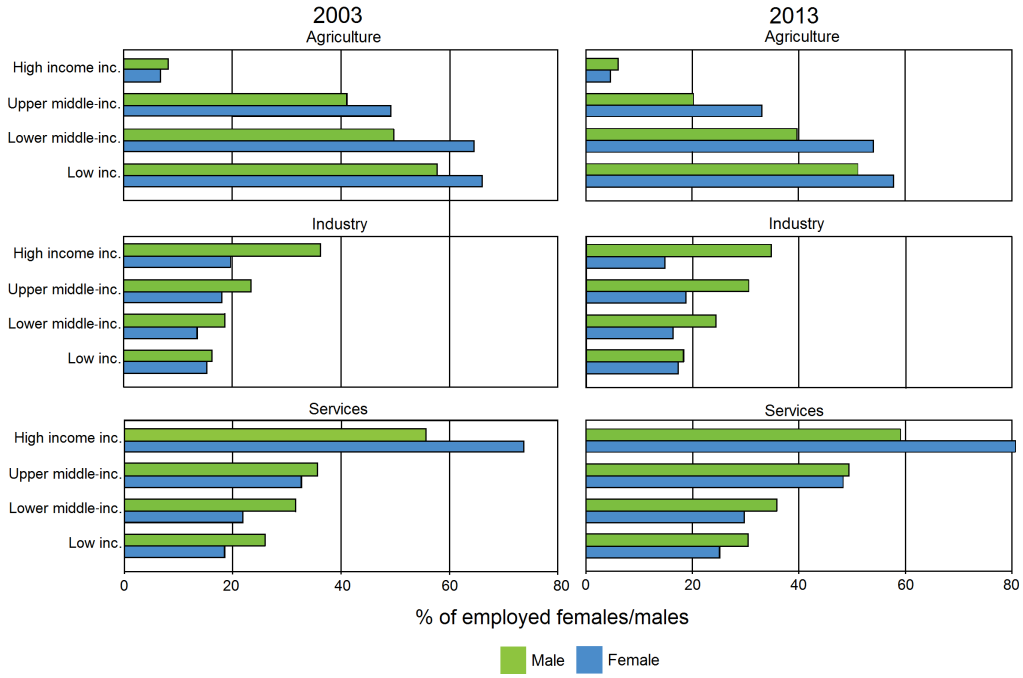


Figure 3
Percentage of females and males employed in the agricultural, industrial and services sectors, by country-income category for 2003 and 2013

Evidence also suggests that women in the Asia-Pacific region are overrepresented in vulnerable and low-paying jobs typified by low-status, low-skilled work and limited social protection. Women are more likely to be employed in positions that reflect traditional gender roles – in what have been labelled the "5Cs jobs": caring, cashiering, cleaning, catering and clerical work.

The latest data show that 22.7 per cent of employed women are contributing family workers, while only 8.1 per cent of employed men have the same status of employment. As reflected in figure 4, in 2013, low and middle-income countries have a concentration of contributing family workers, with the percentage being higher among females.

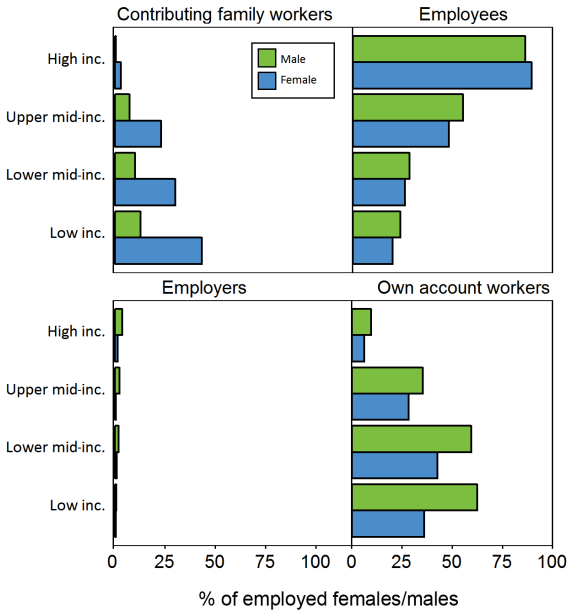


Figure 4
Female and male employment, by status and country-income category, 2013

As observed in the case of contributing family workers, the proportion of both employed males and females that are own account workers also decreases as levels of economic development increase. However, in contrast to contributing family workers, a greater proportion of employed males are own account workers compared with females, except for those in low income countries.

Persisting stereotypes, differences in access to education and vocational training for women and men, the structure of the labour market, as well as gender-based discrimination at entry and in work are among the causes that lead to women's overrepresentation in vulnerable and low paying employment in the region.[4]

Females continue to earn less than males

Connected to persistent gender gaps in employment and occupational segregation is the gender wage gap that exists across the

Asia-Pacific region. The size of the gender wage gap varies within subregions and within country-income categories. For instance, in countries such as Azerbaijan (2010), Georgia (2010) and Nepal (2008), females earn about 40 per cent less than males, while in the Philippines (2011) and Turkey (2010) females earn more than males. (Fig 5)

In addition to gender discriminatory practices in recruitment, promotions and skills development, gender imbalances in access to education as well as women's interrupted work life and part-time work due to competing domestic and care responsibilities are critical factors that contribute to the wage gap.

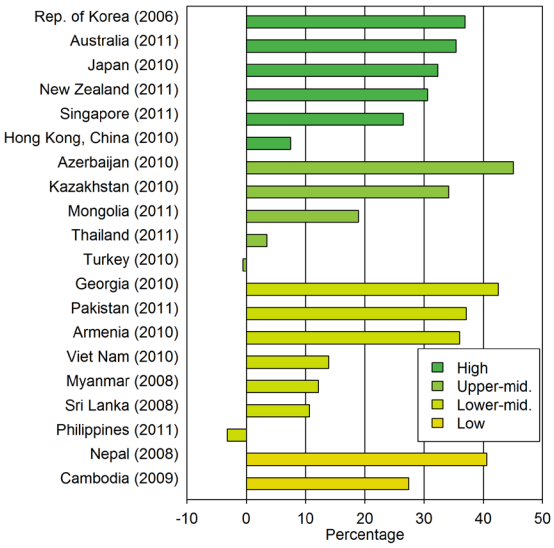


Figure 5
Gender wage gap in selected countries and areas, by country/area-income category, latest year

Women are less likely than men to own and to be able to access productive resources

Beyond employment, productive resources, such as land and capital, are critical means through which women and men can generate livelihoods. Sex-based inequalities are, however, evident in the ownership of productive assets, as they are in the area of employment and decent work.

As indicated in table 1, substantially fewer women than men are agricultural holders.[5] For instance, less than 10 per cent of agricultural holders were women in such countries as Bangladesh (4.6 per cent in 2008), Fiji (3.6 per cent in 2009), the Islamic Republic of Iran (5.9 per cent in 2002) and Nepal (8.1 per cent in 2002). Armenia, Georgia, Niue, Samoa and Thailand were at the higher end of female agricultural holders, ranging from 23 per cent to almost 30 per cent of the total agricultural holders.

In terms of access to property other than land, especially immovable property, 2014 data show that in some countries in the region, such as Armenia, Australia, Bhutan, Mongolia and the Russian Federation, there is no sex-based discrimination. However, discrimination against female ownership of property other

Table 1
Distribution of agricultural holders

Country/territory	Year	Total	Percentage female
American Samoa	2008	5 840	19.4
Armenia	2007	NA	29.7
Bangladesh	2008	28 695 763	4.6
Fiji	2009	65 033	3.6
Georgia	2004	728 950	29.1
Guam	2007	104	12.5
India	2010-2011	137 516 000	12.8
Indonesia	1993	20 331 746	8.8
Iran (Islamic Republic of)	2002	84 679	5.9
Kyrgyzstan	2002	244 404	12.4
Lao People's Democratic Republic	1999	667 900	9.1
Malaysia	2005	526 265	18.0
Myanmar	2003	3 464 769	15.0
Nepal	2002	3 364 139	8.1
Niue	2009	488	23.2
Northern Mariana Islands	2007	256	11.7
Philippines	2002	4 768 317	10.8
Samoa	2009	24 640	22.9
Sri Lanka	2002	1 748 341	16.3
Thailand	2003	5 787 774	27.4
Viet Nam	2001	61 017	8.8

than land is documented in a number of other countries across all subregions and income categories, such as in Afghanistan, Bangladesh, Cambodia, China, Fiji, Georgia, Kazakhstan, Kyrgyzstan, India, the Islamic Republic of Iran, the Lao People's Democratic Republic, Malaysia, Myanmar, Nepal, Pakistan, Papua New Guinea, the Philippines, the Republic of Korea, Sri Lanka, Tajikistan, Timor-Leste, Uzbekistan and Viet Nam.

Table 2
Inheritance legislation in selected countries and areas in Asia and the Pacific

Country/Area	Widows and widowers	Daughters and sons
Armenia		
Cambodia		
Democratic People's Republic of Korea		
Kazakhstan		
Mongolia		
Nepal		
Russian Federation		
Australia		
Japan		
Republic of Korea		
New Zealand		
Turkey		
Azerbaijan		
Hong Kong, China		
Uzbekistan		
Bhutan		
China		
Fiji		
Georgia		
India		
Indonesia		
Kyrgyzstan		
Lao People's Democratic Republic		
Papua New Guinea		
Philippines		
Singapore		
Sri Lanka		
Tajikistan		
Thailand		
Timor-Leste		
Turkmenistan		
Viet Nam		
Myanmar		
Bangladesh		
Iran (Islamic Republic of)		
Malaysia		
Pakistan		
Afghanistan		

The law guarantees the same inheritance rights to both sexes

The law guarantees the same inheritance rights to both sexes, but there are some customary, traditional or religious practices that discriminate against sexes

The law does not guarantee the same inheritance rights to both sexes, or females have no inheritance rights at all.

Economic-related discrimination against women is further demonstrated in relation to access to bank loans. With the exception of East and North-East Asia, in other subregions women do not enjoy universal access to such credit. Some countries where women continue to encounter difficulties in accessing bank loans – somewhat mirroring the countries where women's ownership of property other than land is restricted – include Afghanistan, Azerbaijan, Bangladesh, Fiji, India, Indonesia, the Islamic Republic of Iran, Kyrgyzstan, Myanmar, Nepal, Papua New Guinea, the Philippines, Thailand, Timor-Leste and Uzbekistan.

Another impediment encountered by women is discriminatory inheritance legislation. As indicated in table 2, in such countries as Afghanistan, Bangladesh, the Islamic Republic of Iran, Malaysia and Pakistan, for example, the law does not guarantee the same inheritance rights to widows as to widowers, and to daughters as to sons, with, in some instances, widows and daughters having no inheritance rights at all. In other countries, including Fiji, Georgia, India, Indonesia, Kyrgyzstan, the Lao People's Democratic Republic, Papua New Guinea, the Philippines, Singapore, Sri Lanka, Tajikistan, Thailand, Timor-Leste, Turkmenistan and Viet Nam, customary, traditional or religious practices discriminate against widows and daughters despite laws guaranteeing them the same inheritance rights as males.

Promoting women's economic participation requires action in a range of areas, including, for example, the following: (a) the revision, adoption and enforcement of legislation that mandates equality of rights and opportunities for women and men; (b) an increase in the allocation of resources for women's economic empowerment and decent work; (c) implementation of measures that encourage "balance" between working life and family life, including generous subsidies for and provision of childcare; (d) targeted consideration of, and action on, the needs and interests of particular groups of women workers, such as domestic workers, migrant workers, informal sector workers and

Box 1

The Unpaid Care Economy is Staffed by Women

Women's reproductive labour – the unpaid and often invisible care economy – enables the productive labour of others: men and women. Data from European Union household and time-use surveys, for instance, have been used to estimate that the market value of women's unpaid work could range from one quarter to one third of a country's gross domestic product.[a] Yet, in shouldering the larger share of domestic and care responsibilities, women suffer from "time poverty".

When both paid and unpaid work, such as domestic work and caring for children, are taken into account, in most countries, women work longer hours than men. In developing countries, women spend on average three hours more per day than men on unpaid work, and in developed countries, two hours more. Women spend 2 hours less per day than men on average on paid work in developing countries and 1.5 hours less than men in developed countries.[b]

The significance of women's reproductive labour for the functioning of all countries and their economic productivity has been recognized in target 5.4 of the 2030 Agenda for Sustainable Development, with Governments globally committing to "[r]ecognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate".

Thus, in the pursuit of sustainable development, recognizing, respecting and redistributing unpaid domestic and care work is a global, and threrefore also regional priority.

a Gianna Giannelli, Lucia Mangiavacchi and Luca Piccoli, "GDP and the value of family caretaking: how much does Europe care?" Institute for the Study of Labor (IZA), Discussion Paper Series No. 5046 (July 2010). See abstract and section 4.3 of the publication, available from http://ftp.iza.org/dp5046.pdf .

b United Nations, Department for Economic and Social Affairs, The World's Women 2015: At a Glance (New York, 2015), p. 6. Available from http://unstats.un.org/unsd/gender/docs/WW2015%20at%20a%20Glance.pdf.

rural workers; and (e) investment in time-use studies that increase understanding of women's and men's productive and reproductive labour and can inform decision-making.

5.2 Women's political leadership

In addition to addressing women's participation and leadership in economic life, gender equality and women's empowerment require women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political and public life. Women's participation in political leadership and decision-making would empower women to influence various social, economic and political conditions that affect their daily lives. Given the lack of data "at all levels" of political participation, as well as across all areas of political and public life, mainly the issue of women's representation in national parliaments is discussed in this section.

Women continue to be underrepresented in national parliaments

In the majority of countries in the region, women continue to hold a minority of seats in national (lower house) parliaments, less than the critical mass of 30 per cent which by international consensus is considered significant to ensure meaningful change. Between 1997 and 2014, there was, however, a significant increase in the percentage of seats held by women in national (lower house) parliaments in low income countries, such as Cambodia (14.5 percentage points) and Nepal (26.5 percentage points); middle-income countries, such as

Uzbekistan (16 percentage points), the Philippines (16.5 percentage points) and Kyrgyzstan (21.9 percentage points); and in high income countries, such as Singapore (22.8 percentage points). The latest data also show marked variability in the number of seats held by women in national (lower house) parliaments in, for example, lower-middle-income countries, ranging from 2 per cent in Solomon Islands and 10.7 per cent in Armenia to 27.3 per cent in the Philippines and 38.5 per cent in Timor-Leste.

The proportion of seats held by women in the national parliament of a country does not appear to be related to its economic development. For instance, 2014 data indicate that in high income countries, such as Japan and the Republic of Korea, only 8.1 per cent and 15.7 per cent of seats respectively were held by women in national (lower house) parliaments; low income countries, such as Afghanistan and Nepal, were closer to reaching the critical mass, with 27.7 per cent and 29.9 per cent of seats respectively held by women in their national (lower house) parliaments.

Notably, the country with the highest representation of women (38.5 per cent of seats in 2014) in the national (lower house) parliament, Timor-Leste, requires, through its electoral law, that one in every three candidates on political lists must be a woman;[6] New Zealand,[7] the first country in the world to grant women the right to vote, accounts for the second highest such representation, with 33.9 per cent of seats held by women in their national (lower house) parliament. (Fig 6)

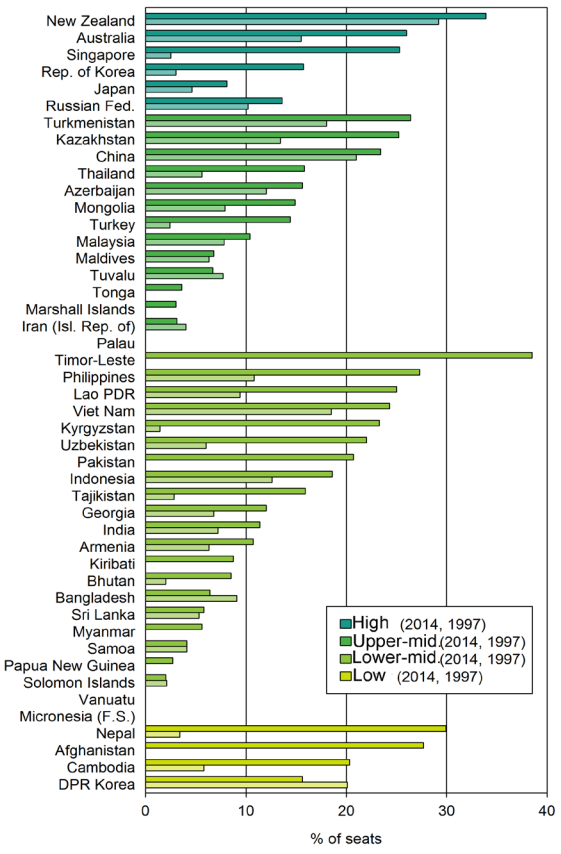


Figure 6
Proportion of seats held by women in national (lower house) parliaments in 1997 and 2014, for selected countries, by country-income category

5.3 Access to sexual and reproductive health services

Women in the reproductive years of their lives face particular health risks, especially related to pregnancy and childbirth. The overall health of women during their reproductive years can have an impact on their contributions to a country's economy, society and their families for the rest of their lives. The availability of and access to contraception is a critical issue for consideration as it enables women and men to have control over the timing and number of desired children by preventing unintended pregnancies and the risks associated with too many pregnancies and those at very close intervals.

Full and free access to contraception has yet to be achieved for all women in Asia and the Pacific

Full and free access to contraception has yet to be achieved for all women in Asia and the Pacific. As indicated in figure 7, data spanning the period 2004-2014 show that, in countries such as Afghanistan, Kiribati, Kyrgyzstan, Maldives, Pakistan, Papua New Guinea, Samoa, Tajikistan, Timor-Leste and Tuvalu, less than half the women of reproductive age (15-49 years old) or their sexual partners use some method of contraception. In some other countries and areas in the region, almost three quarters or more women of reproductive age or

their partners use a method of contraception; those countries included China, the Republic of Korea, Thailand, Turkey and Viet Nam.

There is also evidence of varied use of modern methods of contraception, such as female and male sterilization, oral hormonal pills, intrauterine devices (IUDs), implants (including Norplant®), male and female condoms and emergency contraception to name a few, among women of reproductive age and their sexual partners during the same time period. In such countries as Bhutan, Indonesia, the Republic of Korea, the Russian Federation and Viet Nam, more than half of women of reproductive age or their partners report using a modern method of contraception, compared with less than a third of women of reproductive age or their partners in such low and middle-income countries as Afghanistan, Armenia, Kiribati, Pakistan, Tajikistan, Timor-Leste and Tonga.

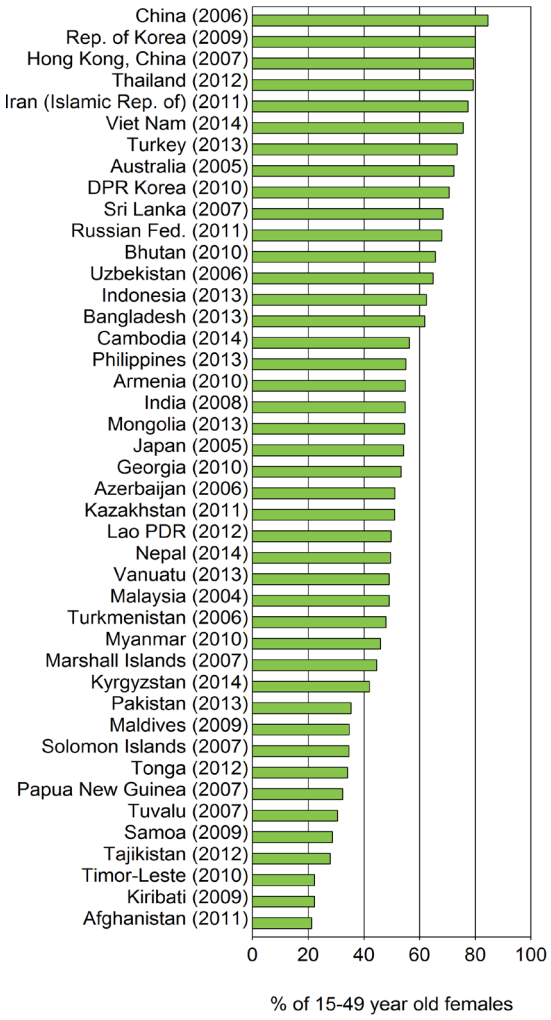


Figure 7
The proportion of women aged 15-49 years or their partner using a method of contraception, selected countries and areas in the Asia-Pacific region, 2004-2014

5.4 Data and monitoring issues

Estimation of regional and sub-regional level aggregates and the analyses of time-series trends for issues covered in this chapter were restricted by a lack of data, including sex-disaggregated data, as well as data that reflect specific gender issues. With the exception of some indicators reflecting women's economic empowerment such as employment-sex ratio, employment to population ratio, employment by sector, and status in employment, data for most other indicators discussed in this chapter are available only for few countries in the region. For such indicators as gender wage gap, distribution of agricultural holders, contraceptive prevalence, and child marriage not only are data available for a limited number of countries, but data are available for random years, thereby limiting cross-country comparability.

Gender-responsive statistics require different perspectives, priorities and needs of women and men to be reflected in all statistical themes, as well as in all statistical processes, including the development of definitions and classifications, data collection, compilation, analyses and dissemination. Not only was detailed discussion in some domains hampered by the non-availability of data for an adequate number of countries in the region, but also by the lack of comparable data due to possible variations in concepts, definitions and data collection methods used across countries. In this regard, two areas that need urgent attention in terms of improving data availability and comparability across the region are violence against women and women's unpaid care and domestic work.

Significant data gaps on violence against women

Violence experienced by women takes many diverse forms in different cultural contexts, which makes comparability of statistics on violence against women across time, within

Box 2

Violence aganst women and girls: A Regional Pandemic

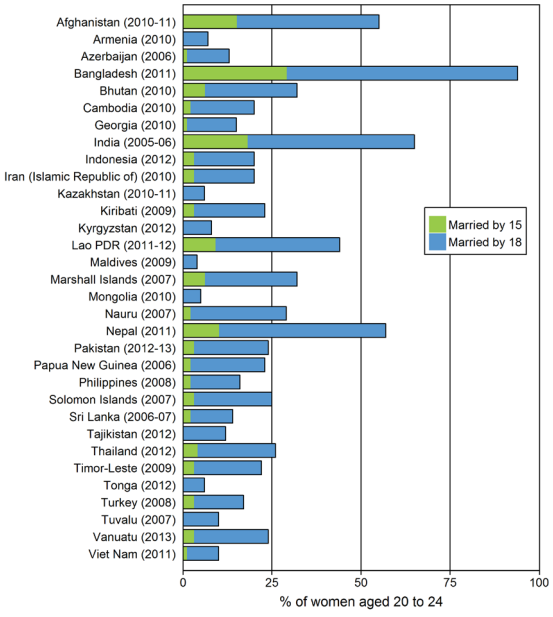
A fundamental barrier to gender equality, women's empowerment and sustainable development is violence against women and girls. Such violence is manifested in multiple forms – sexual, physical, domestic, economic, psychological and harmful practices – and results in disability or death. It impairs the development of individuals, families and communities.

At an economic level, violence against women and girls has been costed in relation to national GDP. In Fiji, for instance, estimates show that the cost of domestic violence was equivalent to about 7 per cent of GDP in 2002.[a] Australia estimates that violence against women and children incurred a financial cost of A$ 13.6 billion in 2008/09.[b]

Reporting on the regional pandemic that is violence against women is limited due to such factors as stigma, shame, restricted access to justice and limited service provision. Impunity in the violation of women's and girls' human rights is, however, evident in the absence or limited amount of legislative protection against, for example, sexual harassment, domestic violence and/or rape in some countries in the region, including Afghanistan, Armenia, Kyrgyzstan, Indonesia, the Islamic Republic of Iran, the Lao People's Democratic Republic, Malaysia, Myanmar, the Russian Federation, Tajikistan, Thailand, Turkmenistan and Uzbekistan.

Figure

Percentage of women aged 20-24 years who were first married or in union before ages 15 and 18 for selected countries in the Asia-Pacific regaion, 2005-2013



Besides the call for the elimination of all forms of violence against women and girls, the new global development agenda also recognizes the need to eliminate harmful practices. Child, early and forced marriages are specific types of harmful practices that persist in the Asia-Pacific region. As indicated in the figure, country-level data,[c] spanning the period 2005-2013, indicate relatively higher rates of marriage or union before the age of 18 years among women and girls in South and South-West Asia as compared with other subregions. In Bangladesh, for example, 65 per cent of women/girls were married before they reached 18 years of age, with approximately one third being married before reaching 15 years of age. In countries as diverse as Bhutan, Cambodia, Indonesia, Kiribati, Marshall Islands, Pakistan, Papua New Guinea, Solomon Islands, Thailand, Timor-Leste and Vanuatu, between a quarter and a fifth of women had been married when they still were children.

a Aleta Moriarty, "The Pacific islands cannot afford the human and economic cost of violence against women". World Bank News, 25 November 2012. Available from http://www.worldbank.org/en/news/opinion/2012/11/25/the-human-and-economic-cost-the-pacific-cannot-afford. See also http://www.endvawnow.org/en/articles/301-consequences-and-costs-.html.

b Australia, Department of Social Services, "Economic cost of violence against women and their children" (March 2009). Available from http://www.dss.gov.au/our-responsibilities/women/publications-articles/reducing- violence/national-plan-to-reduce-violence-against-women-and-their-children/economic-cost-of-violence-against-women-and-their-children?HTML.

c UNICEF global databases, 2014. Based on Demographic and Health Surveys, multiple indicator cluster surveys and other national household surveys.

and across countries, and regions, challenging. Data on violence against women are typically compiled from police and court records, as well as records from the health sector and non-governmental organizations. Such sources could be incomplete and unreliable as they are usually based on voluntary reporting by victims who may be reluctant to report incidents of violence, particularly domestic violence. According to international statistical standards, therefore, the use of population-based stand-alone surveys, or a well-designed module within another closely related survey is recommended for collecting accurate and reliable data on violence against women.[8] However, national statistical systems are often unable to integrate such special surveys/modules into their regular programme of work due to resource implications in questionnaire development, sample design and enumerator training, as well as the need to address ethical concerns related to the protection of respondents and the confidentiality of information.

Need for developing standard measures on unpaid care and domestic work

Recognizing and valuing unpaid care and the domestic work of women is an important priority of the 2030 Agenda for Sustainable Development. Information on women's unpaid work is most often not captured by conventional surveys, such as labour force surveys, which therefore need to be complemented by specialized surveys, such as time-use surveys. Women's "time poverty" has important implications for women's education, engagement in paid work and personal care. Not only are there limited time-use data available for Asia-Pacific countries but where such data are available, they have been inadequately used for increasing understanding and analysing gender equality and women's empowerment issues. Time-use surveys are typically not integrated into work programmes of national official systems, and even the few countries that have conducted such surveys have done so only once or at irregular intervals. At the same time, international standards and classifications for time-use data collection need further refinement and harmonization. The lack of adequate and comparable data on time use in the region has limited the possibility for extensive discussion and analyses on women's unpaid work in this chapter.

Endnotes

1 See A/RES/70/1: General Assembly resolution 70/1. Available from http://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/70/1).

2 Ibid., para. 20.

3 *Report of the Fourth World Conference on Women, Beijing, 4-15 September 1995* (United Nations publication, Sales No. E.96.IV.13), chap. I, resolution 1, annexes I and II.

4 United Nations, Department of Economic and Social Affairs, *The World's Women 2010: Trends and Statistics* (Sales No. E.10.XVII.11).

5 For the definition of this term and other related details, see *World Programme for the Census of Agriculture 2010*, paras. 3.36-3.52. Available from http://www.fao.org/docrep/009/a0135e/A0135E04.htm.

6 Inter-Parliamentary Union, "Timor-Leste: National Parliament". Available from http://www.ipu.org/parline/reports/2369.htm.

7 Inter-Parliamentary Union, "Women in politics: women's suffrage". Available from http://www.ipu.org/wmn-e/suffrage.htm.

8 United Nations, Department of Economic and Social Affairs, *The World's Women 2010: Trends and Statistics* (Sales No. E.10.XVII.11).

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Sustainable management of water and sanitation, and the availability of clean, accessible water for all are essential components for constructing the kind of world in which people would want to live. Failure to ensure the availability of safe drinking water and basic levels of sanitation would hinder any efforts to ensure healthy lives and promote well-being.

Among the challenges for countries in the Asian and Pacific region are the need to manage their water resources sustainably in order to ensure food and energy security, and to avoid regional conflicts that could arise when water scarcity occurs.

6.1 Universal access to safe drinking water

Although countries in the Asian and Pacific region have made substantial progress in improving access to drinking water, the challenges remain stark. Ill-conceived, outdated or non-existent water supply-and-capture infrastructure exacerbates water shortages. Furthermore, the increased incidence of extreme weather due to climate change greatly affects the availability of water. Periods of drought and flood require that governments, municipalities and water providers must now and into the future think differently about how to supply clean and safe water, while safeguarding the environment from the adverse effects of climate change.

Approximately 277 million people in Asia and the Pacific did not have access to safe drinking water[1] in 2015 despite the significant progress made since 1990

The Asian and Pacific region achieved the portion of target 7.C of the Millennium Development Goals on halving the proportion of people without access to safe drinking water, and did so before the 2015 deadline. With a starting point of 73 per cent of the population in the region having such access in 1990, Asia and the Pacific met that portion of the target in 2006 when 87 per cent of people had access to safe drinking water; progress has continued apace with 94 per cent having access in 2015. However, 277 million people in Asia and the Pacific still lacked access to safe drinking water sources in 2015; 138 million of them living in South and South-West Asia.

However, there are large differences between countries in their levels of access to safe drinking water. Of the 55 Asia-Pacific countries with available information, 8 had universal access to safe drinking water since 1990, and 6 achieved 100 per cent coverage by 2015. However, there were six countries where at least a quarter of their populations still did not have access to safe drinking water in 2015.

While access to safe drinking water is nearly universal in the urban settings of Asia and the Pacific, 1 in every 10 rural residents still lives without access to safe drinking water

Between 1990 and 2015, the proportion of urban populations in Asia and the Pacific with access to safe drinking water remained high, increasing from 94 per cent to 97 per cent. Access to safe drinking water in the rural areas has accelerated from 63 per cent to 91 per cent during the same period. In 2015, however, 213 million rural residents in the region still did not have access to safe drinking water; they account for three quarters of those living without access to safe drinking water in the region. Lack of access to safe drinking water is particularly acute for rural residents in some countries in the region. As of 2015, only 33 per cent of the rural population in Papua New Guinea had access to improved water sources. Similar situations were also found in Afghanistan (47 per cent), Kiribati (51 per cent), Mongolia (59 per cent) and Timor-Leste (61 per cent). (Fig 1, 2)

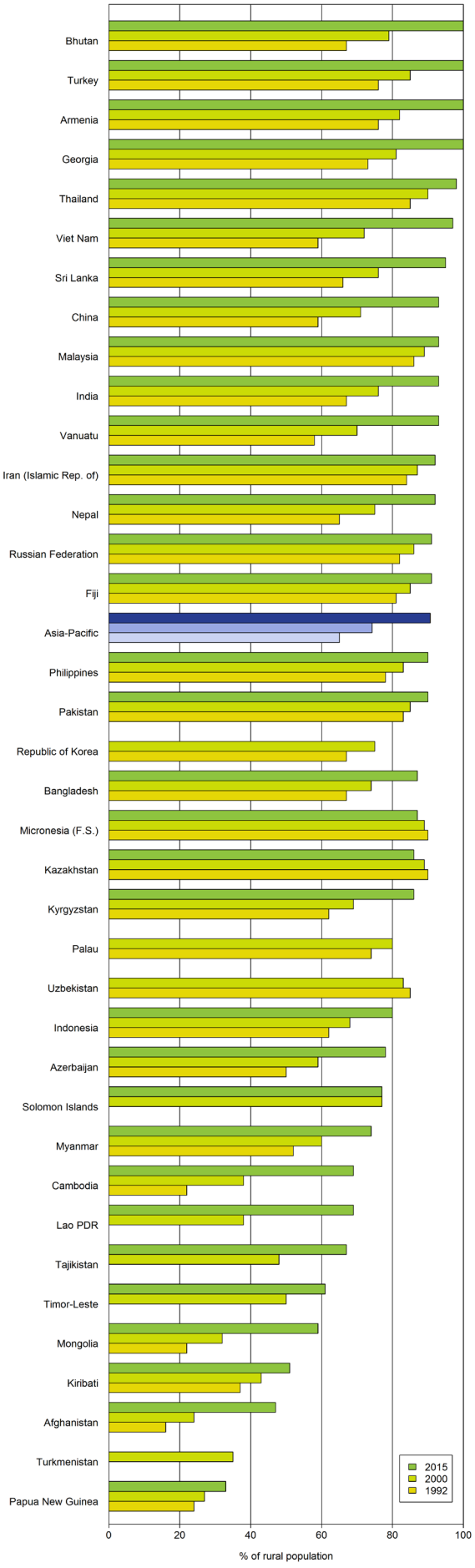


Figure 1
Access to improved water sources in rural areas, Asia and the Pacific, early 1990s, 2000, and latest years

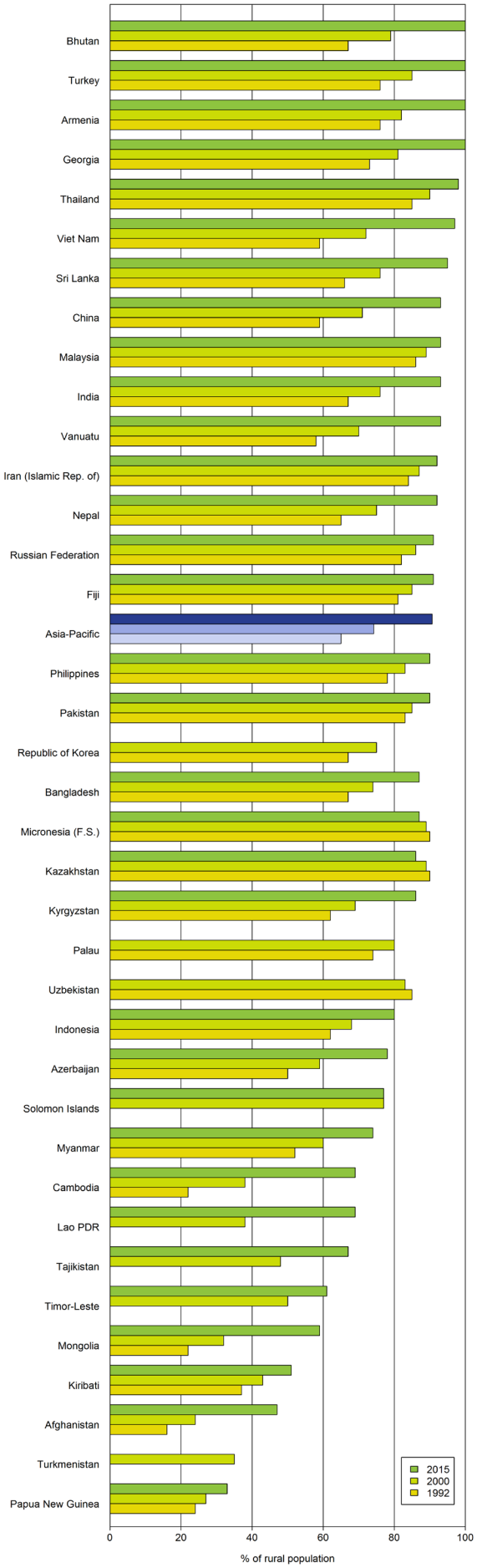
6.2 Access to basic sanitation for all

Sanitation is central to human and environmental health and is essential for sustainable development and dignity, and it ensures economic and social development opportunities. Poor sanitation and wastewater management leads to contamination of fresh water sources and is a major cause of disease and death while also being detrimental to the health of ecosystems.

The percentage of the population with access to basic[2] sanitation in Asia and the Pacific has increased from 44 per cent in 1990 to 65 per cent in 2015, although there are significant differences between subregions

An estimated 1.4 billion people in Asia and the Pacific have gained access to basic sanitation

Figure 2
Access to improved water sources in urban areas, Asia and the Pacific, early 1990s, 2000, and latest years

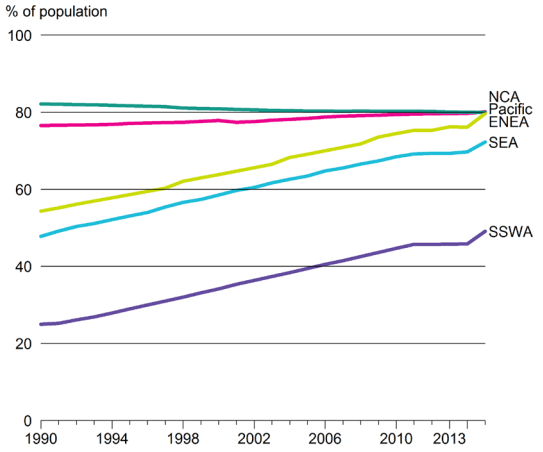


since 1990. Nevertheless, improvements among Asia-Pacific subregions vary in terms of both speed of progress and attainment levels.

The East and North-East Asian, North and Central Asian, and Pacific subregions have the highest basic sanitation coverage (about 80 per cent in 2015). In comparison, East and North-East Asia made the greatest progress, from coverage of 54.3 per cent in 1990 to 79.6 per cent in 2015, while the relative improvement has been slower in North and Central Asia, from 76.5 per cent in 1990 to 80.1 per cent in 2015. In the Pacific, overall coverage has declined from 82.1 per cent in 1990 to 79.9 per cent in 2015. Access to basic sanitation is a particular concern in Papua New Guinea and Solomon Islands where less than a third of the countries' populations had access to improved sanitation in 2015, with limited or no progress over the levels recorded in 1990, that is, from 20 per cent in 1990 to 19 per cent in 2015, and from 26 per cent in 2000 to 30 per cent in 2015 respectively.

South-East Asia has made notable progress in increasing access to improved sanitation, from less than 50 per cent coverage in 1990 to 72.3 per cent in 2015. In South and South-West Asia, on the other hand, about half the population in 2015 still lacked access to basic sanitation, which was still an impressive reduction from the 75 per cent of the population who lacked access in 1990. (Fig 3)

Figure 3 (right)
Trends in sanitation coverage in Asian and the Pacific subregions, 1990-2015



About half the population in Asia and the Pacific living in rural areas do not have access to basic sanitation

Of the 1.5 billion people in the Asia-Pacific region who did not have access to basic sanitation in 2015, 1.1 billion resided in rural areas – equivalent to about half the total rural population in the region. Only seven countries and territories in the region had achieved universal access to improved sanitation in their rural areas in 2015, while in many countries less than half their rural population had such access. (Fig 4)

Overall access to basic sanitation in rural areas has improved from a low of 3 of every 10 rural dwellers in 1990 to 5 of every 10 in 2015. Progress has been comparatively slow in urban environments, increasing from 7 of every 10 urban dwellers to 8 of every 10 over the same time period.

In some countries in the region, the urban-rural difference in sanitation coverage is large and widening. This situation may be due to (1) progress being made more rapidly in urban areas compared with rural areas such as in the case of Cambodia where the urban-rural gap increased from 21 percentage points in 1993 to 57 percentage points in 2015, (2) slow or no progress in rural areas such as in the case of Timor-Leste where the urban-rural gap increased from 18 percentage points in 1995 to 42 percentage points in 2015, or (3) a significant decrease in sanitation coverage in rural areas, such as in the case of Georgia where the access to improved sanitation in rural areas decreased from 99 per cent in 1990 to 76 per cent in 2015, whereas in urban areas it decreased from 97 per cent to 95 per cent in the same period.

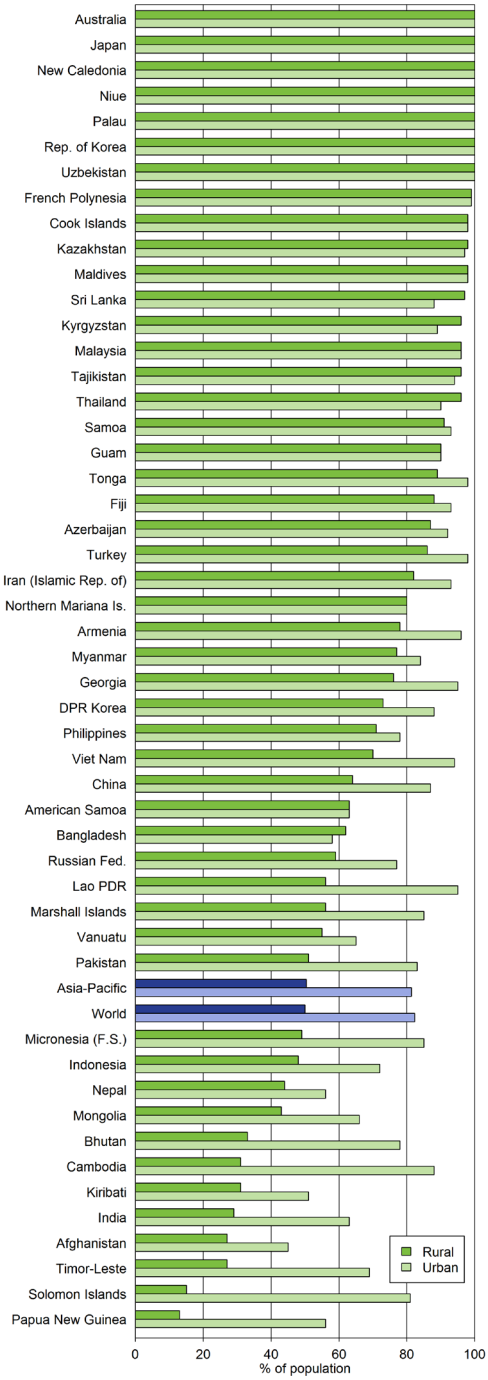


Figure 4
Proportion of rural/urban population with access to improved sanitation, Asia and the Pacific, 2015

6.3 Sustainable water consumption and management

Water is an engine of economic growth which provides and expands water services in industry, agriculture and other sectors, and, if managed well, provides more job opportunities. More efficient use of water services reduces public expenditures, considerably influences the production of goods and services, the means of transportation and the production of energy, and can significantly enhance energy efficiency.

Some countries in Asia and the Pacific are facing acute water scarcity problems

China and India extracted more freshwater from various sources than the rest of the countries in the region combined, however, their freshwater withdrawal per capita rates are not among the highest in the region. Their large total withdrawal can partly be attributed to the large size of their populations and high demand for water to conduct their expanding economic activity. The proportion of freshwater withdrawal[3] has been increasing in China (by almost 2 percentage points, from 17.6 per cent in 1990 to 19.5 per cent in 2005) and in India (by more than 7 percentage points, from 26.2 per cent in 1990 to 33.9 per cent in 2010). This is due to the fact that the amount of water used by these countries has been growing, yet renewable water resources have remained limited and relatively static over time.

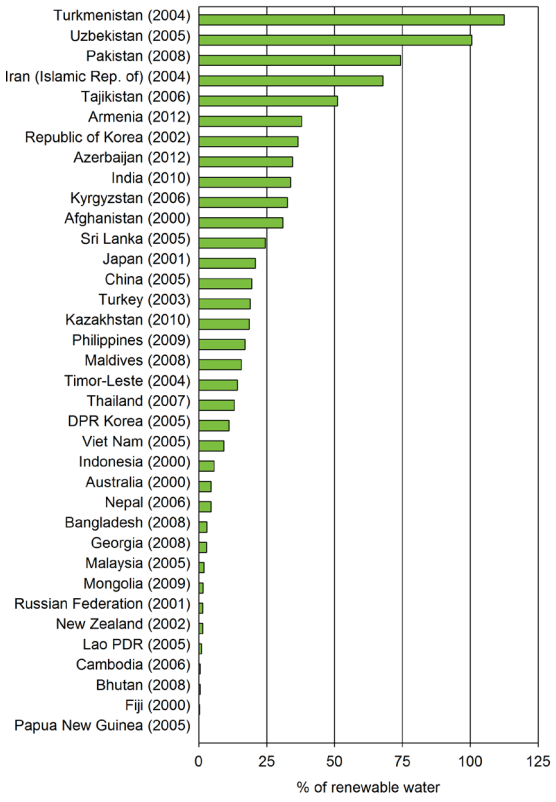


Figure 5
Proportion of freshwater withdrawal, Asia and the Pacific, latest years

Conversely, the amount of freshwater withdrawal in Japan has declined constantly, from 91.4 billion m^3 in 1992 to 81.2 billion m^3 in 2009. There have also been overall reductions in freshwater withdrawals in the majority of North and Central Asian countries.

Some countries' freshwater withdrawal exceeded half of their total renewable water availability. The withdrawal rates were 51.1 per cent in Tajikistan in 2006; 67.9 per cent in the Islamic Republic of Iran in 2004; and 74.4 per cent in Pakistan in 2008. Turkmenistan and Uzbekistan have constantly faced chronic water shortages and have extracted more water than their available national renewable water resources.[4] Turkmenistan used 112.5 per cent of their available freshwater in 2004, and Uzbekistan used 100.6 per cent in 2005. Such acute water scarcity is caused by a number of factors, including lack of surface-water flow and extremely low precipitation, as well as water-intensive irrigation and agricultural practices. (Fig 5)

6.4 Untreated wastewater

Rapid economic development and demographic growth in the Asian and Pacific region is putting severe strains on ecosystems and water resources. Significant amounts of wastewater generated by households and industries are being discharged directly into surface-water bodies without any treatment, in particular in the lower-income economies. This has detrimental effects on ecosystems, undermining livelihoods and causing serious health issues and diseases.

Much of the wastewater produced in urban areas in Asia and the Pacific is not treated

The amount of wastewater generated in urban areas in the Asia-Pacific region, including domestic, commercial and industrial effluents as well as storm water runoff, is increasing, partly due to growing urban populations and rapid expansion of industrial sectors. However, a considerable proportion of wastewater is not treated before being discharged or reused.

The largest producer of municipal wastewater in the region is China, where 38.0 billion m^3 were produced in 2010 and 26.6 billion m^3 were treated in 2009 which means that about 70 per cent of municipal wastewater is treated. Japan is the second largest producer of wastewater with 16.9 billion m^3 generated in 2011, and 11.6 billion m^3, or 69 per cent of the total treated. Singapore is the only country in Asia and the Pacific where all wastewater is treated, or 0.5 billion m^3 in 2013. (Fig 6)

In some countries in the region, however, more than three quarters of all wastewater produced is untreated, such as in Thailand (77.1 per cent in 2012), Pakistan (82.1 per cent in 2011), Armenia (84.7 per cent in 2011), and Viet Nam (90.0 per cent in 2012).

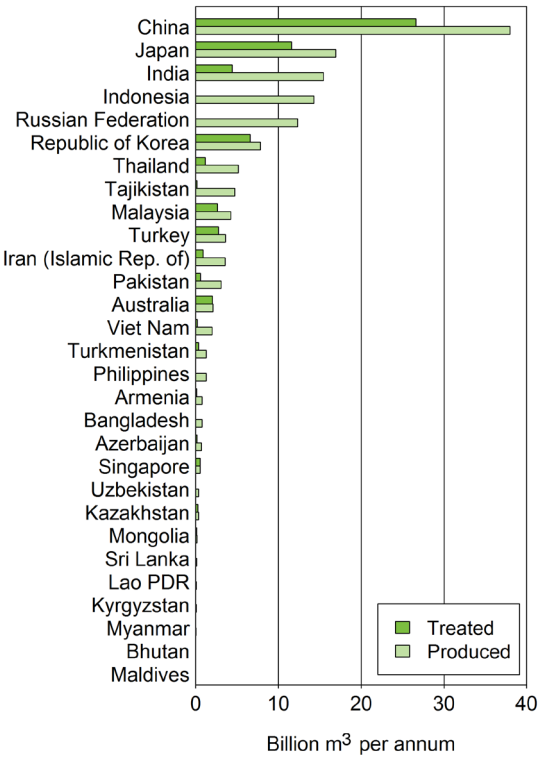


Figure 6
Municipal wastewater production and treatment, selected Asian and Pacific countries, latest years

6.5 Data and monitoring issues

Indicators on the proportion of the population using an improved drinking water source and with access to basic sanitation were already part of the MDG indicators. Hence, there is a good availbility of annual data on these two indicators for the last two decades. Disaggregation between urban and rural is also available.

On the contrary, data related to water withdrawal and use as well as wastewater generation are very limited. According to the FAO AQUASTAT Database, from 2005 to 2014 data are not available, for more than half of Asia-Pacific countries, and there are a maximum of two data points for countries where data are available. In most cases, subregional aggregates cannot be produced. The lack of data poses a challenge to measuring and producing baseline reports and monitoring progress towards the achievement of the SDG targets.

Measurement challenges

The WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation maintains a database with global coverage on the use of improved drinking water sources and improved sanitation facilities.[5] The Programme publishes regular reports on progress made, as reflected in water and sanitation indicators. However, supplementary indicators are needed to measure "access" to safe drinking water and basic sanitation in addition to the "use" of the services/facilities. For instance, time spent on getting water from improved sources which are not on premises is an important aspect of access to safe drinking water. Also, it is vital to track behavioural changes in sanitation practices, as well as to measure how hygienic the sanitation facilities are and how excreta are managed. With regard to faecal management, the World Bank has developed and piloted a framework for measuring faecal waste flows and safety factors in 12 countries.[6] This framework could be used as the basis for monitoring the safe disposal and treatment of faecal waste.

There are still methodological challenges regarding the indicators measuring water resources, even for the commonly used indicators, such as total renewable water resources and freshwater withdrawal. The amount of renewable water resources is defined as the maximum theoretical volume of water available in a country, including all surface-water and groundwater resources as well as

water flows from outside the country. However, renewable water resources are generally not equal to the amount of water available for use. Exploitable water resources – the volume of surface water and groundwater that is available for use – provide a more accurate estimate of the actual amount of water resources available for use. Nonetheless, there is currently no universally agreed method to assess the amount of exploitable water resources, nor is there an agreed method to measure incoming flows originating from outside the country, or a method to account for return flows, that is, water withdrawn and flowing back into a river system after use.

Endnotes

1 Safe dirinking water is measured by the proportion of the population with access to improved drinking water sources, including household wather connection, public standpipe, borehole, protected dug well, protected spring, rainwater collection and bottled water.

2 Basic sanitation is measured by the proportion of the population with access to improved sanitation, including flush or pour-flush toilet or latrine to: piped sewerage, septic tank or pit latrine; a pit latrine with slab; or a composting toilet or latrine.

3 The amount of freshwater withdrawal as a percentage of total renewable water resources.

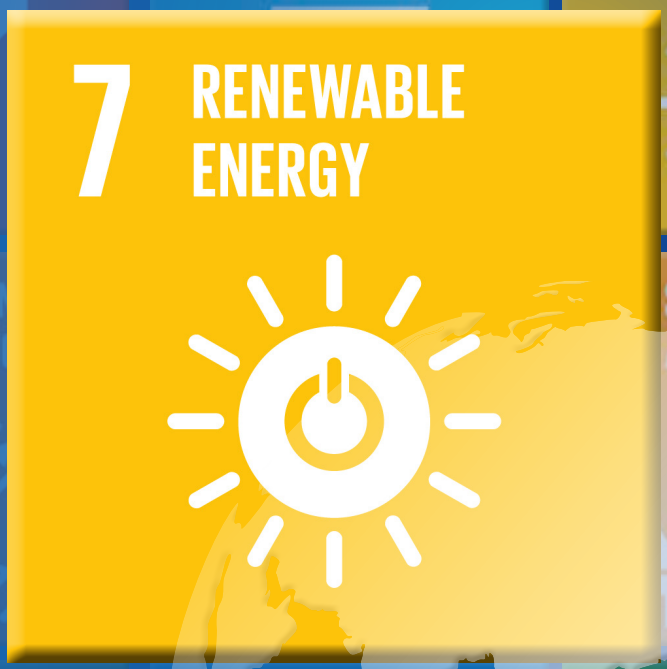
4 When countries withdraw more than 100 per cent of their renewable freshwater resources, they either deplete their renewable groundwater resources, or use fossil non-renewable groundwater and/or use non-conventional sources of water, such as desalinated water or wastewater. For additional details, see Food and Agriculture Organization of the United Nations, "Did you know…? Facts and figures about water withdrawal and pressure on water resources". Available from http://www.fao.org/nr/water/aquastat/didyouknow/index2.stm (accessed 16 November 2015).

5 WHO/UNICEF Joint Mornitoring Programme (JMP) for Water Supply and Sanitation. Reports are available from http://www.wssinfo.org.

6 World Bank Water and Sanitation Program. Details and relevant publications are available from http://www.wsp.org.

UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific

Statistical Yearbook for Asia and the Pacific 2015



Sustainable Development Goal 7
Ensure access to affordable, reliable, sustainable and modern energy for all

Access to affordable, reliable, sustainable and modern energy services is highlighted as a global development priority in the 2030 Agenda for Sustainable Development. The adoption of the Plan of Action on Regional Cooperation for Enhanced Energy Security and the Sustainable Use of Energy in Asia and the Pacific 2014-2018[1] by Ministers attending the Asian and Pacific Energy Forum in May 2013 had earlier confirmed this goal as a priority for the region, underscoring the importance of action by households and Governments and the potential value addition from regional cooperation.

7.1 Ensuring universal access to affordable, reliable and modern energy services

Most economic activity is impossible without access to adequate and reliable modern energy services. Ensuring access to energy, also referred to as "overcoming energy poverty", is therefore vital in the fight against poverty.

Poor people are the least likely to have access to energy services, such as electricity, and they are more likely to remain poor if they stay unconnected to such services. Therefore, statistics on lack of access to energy services are often interpreted as a proxy indicator for the existence of a vicious cycle of energy poverty. Further, because statistics are more readily available for access to electricity than for other types of energy services, electricity access is often used as an indicator for overall access to modern energy services.

People living in high income economies use 36 times more electricity than those living in low income economies

Residential electricity consumption per capita in Asia and the Pacific nearly doubled between 1995 and 2012, from 212 to 424 kWh. The relative increase in per capita residential electricity consumption was smaller in high income economies than in low income economies (Fig 1). Nonetheless, in 2012, on average, a person in a high income economy consumed in excess of 36 times more electricity than a person living in a low income economy. The average residential electricity consumption in low income economies in 2012 was 44.7 kWh per capita, which equates to an average use of 0.12 kWh per capita per day, less electricity than is required to boil a kettle of water.

Residential electricity consumption has increased most notably in the upper middle-income economies, from an average of 118 kWh per capita in 1995 to 495 kWh per capita in 2012, representing a more than fourfold increase. Much of this increase has been driven by China where consumption increased more than five times over the same period, to 459 kWh per capita in 2012.

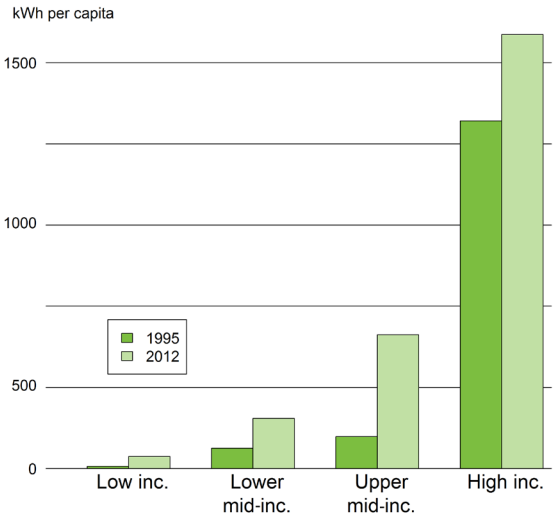


Figure 1 Residential electricity consumption per capita, Asia and the Pacific, 1995 and 2012

Access to electricity is still far from universal in Asia and the Pacific

A 2014 estimate by the International Energy Agency indicated that 621 million people in Asia and the Pacific were without access to electricity in 2012.[2]

Access to electricity is linked with economic prosperity. The three countries where access to electricity is lowest according to the 2014 estimate, namely the Democratic People's Republic of Korea (74 per cent), Myanmar (68 per cent) and Cambodia (66 per cent), are also among the poorest countries in the region (Fig 2). The lack of access to electricity is notable also in India, where about one quarter of the population does not have such access. In view of India's large population, this statistic equates to nearly 300 million people, or about half of those estimated to be living without electricity in the entire Asia-Pacific region.

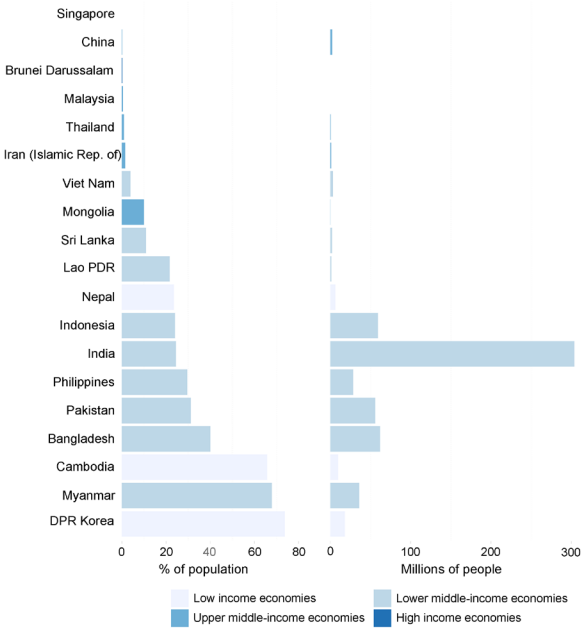


Figure 2 Population without access to electricity, selected Asian and Pacific countries, 2012

There are large variations in access patterns, including between urban and rural areas. Many countries with low access rates also have large disparities in access between urban and rural areas. While 97 per cent of urban residents in Cambodia had access to electricity in 2012, this was the case for only 18 per cent of rural residents.

Further, many people with access to the electricity grid struggle with highly unreliable services; one third of developing countries experience at least 20 hours of power outages a month.[3]

More than 2 billion people in Asia and the Pacific depend on solid fuels to meet their residential energy needs

Approximately 2.1 billion people in Asia and the Pacific depend on solid fuels to meet their residential energy needs, such as for cooking and heating. Solid fuels, such as wood and other types of biomass, is the primary source of energy for four out of five people (84 per cent) in low income countries, nearly two thirds (61 per cent) of people in lower middle-income countries and more than a third (39 per cent) of people living in upper middle-income countries. (Fig 3)

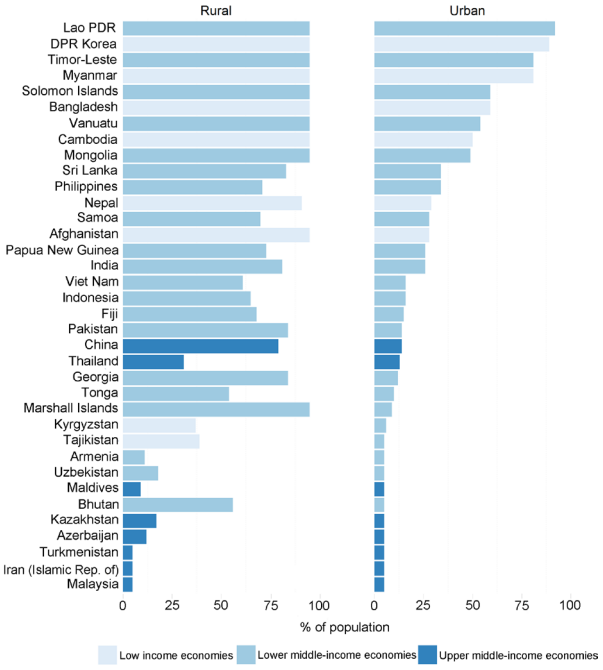
Within each country and overall in the region, higher percentages of rural populations (77 per cent) than urban populations (20 per cent) depend on biomass to meet their energy needs.

The use of biomass is often indicative of a lack of reliable access to electricity or other types of energy services for cooking. The greatest disparity between rural and urban use of biomass is in the upper middle-income economies (72 per cent rural, 13 per cent urban) due in part to the greater access to electricity in urban areas in such countries.

Solid biomass that is used in traditional ways forms a major share of the renewable energy supply in many countries. It is, however, questionable whether biomass when used in a traditional way can be considered renewable as it has been linked to deforestation and local air pollution causing environmental degradation and health problems, such as in Nepal.[4]

Even with access to electricity, some people still rely on traditional fuels for cooking and heating. This situation is caused largely by the unreliability and lack of affordability of electricity services. In some places, however, people find that cooking with traditional fuels and technology makes the food taste better.

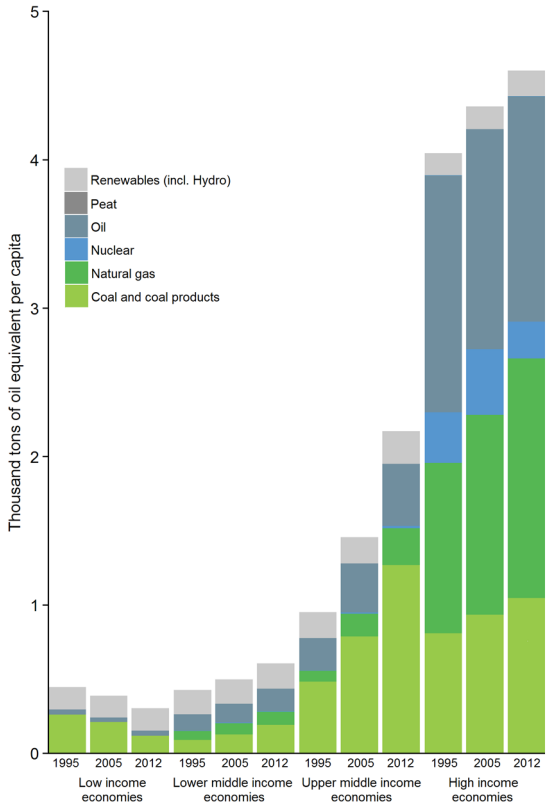
Figure 3
Percentage of urban and rural population using solid fuels, Asia and the Pacific, 2013



7.2 Increasing the share of renewable energy

Sustainable Development Goal target 7.2 is aimed at increasing the share of renewable energy in the global energy mix. In addition to reducing the environmental footprint as a result of energy production and use, development of renewable energy is likely to be an important contributor to improved access to energy services in many parts of the Asia-Pacific region.

Figure 4
Total energy mix per capita in economies of Asia and the Pacific, 1995, 2005 and 2013



Increases in the use of renewable energy in Asia and the Pacific are not keeping up with increases in fossil fuel use

Between 1995 and 2012, renewable energy supply in the Asia-Pacific region increased from 590 to 794 million tons of oil equivalent (Mtoe). During the same period, however, the share of renewables in the total energy supply (total primary energy supply, or TPES) decreased from 17 to 12 per cent. In other words, the increase in renewables was outpaced by other energy sources. This overall trend reflects developments in lower-middle-income economies and upper

middle-income economies, where the share of renewables in the total energy mix fell from 38 to 28 per cent and from 18 to 10 per cent respectively (Fig 4). In contrast, the share of renewables as a fraction of TPES remained at 3 per cent in high income countries and 46-45 per cent in low income economies.

The notable increase in renewable energy supply in low income economies in the region is mainly due to a number of hydropower plants that have become operational during the past few decades. Renewable energy sources now account for the majority of TPES in Nepal (84 per cent), Myanmar (75 per cent), Cambodia (72 per cent), Tajikistan (64 per cent) and Sri Lanka (53 per cent). However, there is no uniform definition of renewable energy (Box 1), and large hydropower plants can have undesirable environmental and social impacts.

Box 1

What is renewable energy?

Although there may be a general understanding of what constitutes renewable energy, precise definitions for statistical purposes vary slightly with differences of opinion existing for boundary types of renewable energy sources, such as peat, and types of use, such as large-scale hydropower.

The International Energy Agency defines renewable energy as "Energy derived from natural processes (e.g. sunlight and wind) that are replenished at a faster rate than they are consumed. Solar, wind, geothermal, hydro, and some forms of biomass are common sources of renewable energy".[a]

In a special report on renewable energy sources and climate change mitigation,[b] renewable energy is described as any form of energy from solar, geophysical or biological sources that is replenished by natural processes at a rate that equals or exceeds its rate of use. Renewable energy is obtained from the continuing or repetitive flows of energy occurring in the natural environment and includes such resources as biomass, solar energy, geothermal heat, hydropower, tide and waves and ocean thermal energy, and wind energy.

The International Renewable Energy Agency has a statutory definition that "renewable energy includes all forms of energy produced from renewable sources in a sustainable manner, including bioenergy, geothermal energy, hydropower, ocean energy, solar energy and wind energy".[c]

These definitions vary slightly in their emphasis on either the types of sources or the ways the sources are used and replenished, indicating absence of a universal definition of renewable energy.

In the International Recommendations for Energy Statistics (IRES),[d] endorsed by the United Nations Statistical Commission in 2011, a list of types of energy sources was adopted that is to be included when calculating renewable energy production. The present *Statistical Yearbook* and the ESCAP Online Statistical Database follow the IRES approach.

a International Energy Agency, "Renewable energy". Available from http://www.iea.org/aboutus/faqs/renewableenergy/.
b International Panel on Climate Change, "Introduction", *IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation*, prepared by Working Group III, O. Edenhofer and others, eds. (Cambridge, United Kingdom, and New York, Cambridge University Press, 2011).
c Conference on the Establishment of the International Renewable Energy Agency, "Statute of the International Renewable Energy Agency (IRENA)", Bonn, Germany, 26 January 2009. Available from http://www.irena.org/menu/index.aspx?mnu=cat&PriMenuID=13&CatID=126.
d See United Nations, *International Recommendations for Energy Statistics*, annex A. Unedited version available from a link at http://unstats.un.org/unsd/energy/ires/.

Overall, fossil fuels (coal, oil and natural gas) dominate as the sources of energy in Asia and the Pacific, and their share of TPES increased from 80 per cent in 1995 to 85 per cent in 2012. High income economies are particularly dependent on fossil fuels; they accounted for 91 per cent of those economies' energy supply in 2012 compared with 50 per cent in the low income economies.

The Asia-Pacific region accounted for 78 per cent of the world's solar and wind energy in 2013

Wind and solar energy are clean, local and effectively infinite sources of energy that have the potential to diversify a country's energy mix towards increased sustainability. In Asia and the Pacific there was a 15-fold increase in the consumption of solar and wind energy between 1990 and 2013, from 1,327 thousand tons of oil equivalent (ktoe) to 20,629 ktoe. (Fig 5)

Even with this impressive increase, however, the consumption of solar and wind energy in Asia and the Pacific represents only a very small fraction of the total energy consumed in the region (less than 0.5 per cent in 2012). Moreover, development has been geographically limited to East and North-East Asia, which in 2013 accounted for 19,072 ktoe or 92 per cent of the region's solar and wind energy consumption. The Asia-Pacific region and the East and North-East Asian subregion accounted for 78 and 72 per cent respectively of the 26,354 ktoe of solar and wind energy consumed globally in 2013.

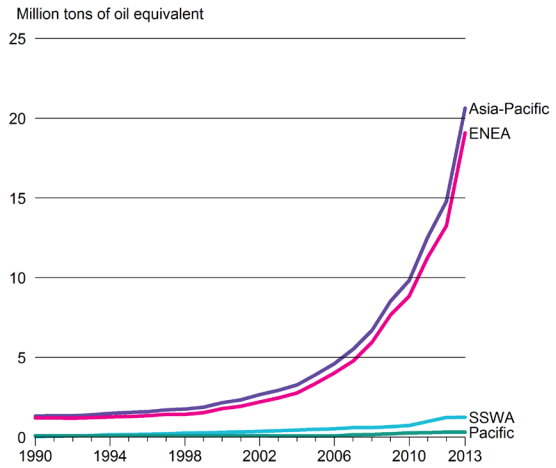


Figure 5
Solar and wind energy consumption in Asia and the Pacific, 1990-2013

7.3 Efficient use of energy

Energy intensity is an indicator of overall energy efficiency in an economy. It is calculated as the amount of energy used divided by the economic value of the goods and services produced. Lower energy intensity is promoted as part of low carbon development. Currently, despite substantial decreases since the 1990s, energy intensity in Asia and the Pacific is higher than the global average.

In the low income economies of Asia and the Pacific, only half of the energy was required in 2012 to generate the same economic output as in 1995

In 2012, an average of 380 units of energy was required to produce 1 unit of economic output in Asia and the Pacific (measured in kilograms of oil equivalent (koe) per 1,000 dollars GDP (2005 USD)), which compares to a global figure of 240 units of energy per unit of economic output. In other words, economies in Asia and the Pacific are more energy intensive than the global average.

However, the region has greatly improved its energy intensity during past decades; the current level of 380 koe should be viewed in comparison with the figure for 1995 when the energy intensity was 406 koe per 1,000 dollars GDP (2005 USD).

Low income economies have made the greatest energy intensity improvements since 1995 (Fig 6). Energy intensity in these countries in 2012 was 642 koe per 1,000 dollars GDP (2005 USD), decreasing from 1,264 koe in 1995, a reduction of nearly half (49 per cent). There have also been substantial improvements in the lower- and upper middle-income economies where energy intensity deceased by nearly a third (30 per cent). In comparison, improvements in energy intensity in the high income countries have been modest, decreasing 15 per cent from 234 koe per 1,000

dollars GDP (2005 USD) in 1995 to 197 koe in 2012. However, the high income economies are still far less energy intensive than other economies in the region and in 2012 used roughly a third of the energy required by the lower-income economies to produce 1 unit of economic output.

Energy intensity improves when increases in economic production outpace increases in energy consumption. Improved energy intensity, therefore, does not necessarily mean that less energy is consumed. For example, figure 6 shows that energy consumption by upper middle-income countries doubled from 1995 to 2012, from 1,044 Mtoe to 2,163 Mtoe. During the same period, GDP (2005 USD) more than tripled, resulting in an increase in the overall energy efficiency of those economies.

By contrast, energy consumption in high income economies, such as Australia, Japan and New Zealand, remained relatively constant, although per capita consumption far exceeded that in other subregions. Since GDP in these countries grew much less quickly than in upper middle-income countries, their relative energy intensity improvements were smaller.

Changes in energy intensity vary by sector

Comparative analyses of energy intensity are affected by differences in the structures of economies, which vary greatly across the region. Some productive activities, such as mining, are inherently energy intensive while other activities, such as service provision, are less so. Comparisons of energy intensity, therefore, are more informative when focused on a specific sector of the economy. For example, a number of developing economies in Asia and the Pacific continue to rely on traditional forms of agriculture with low levels of mechanization (Fig 7). In contrast, agriculture in higher-income economies is more energy intensive, having achieved increased levels of productivity through deployment of modern energy services. During recent decades, energy intensity in the agricultural sector in these economies has again decreased, aligning with the levels seen in lower- and upper middle-income economies.

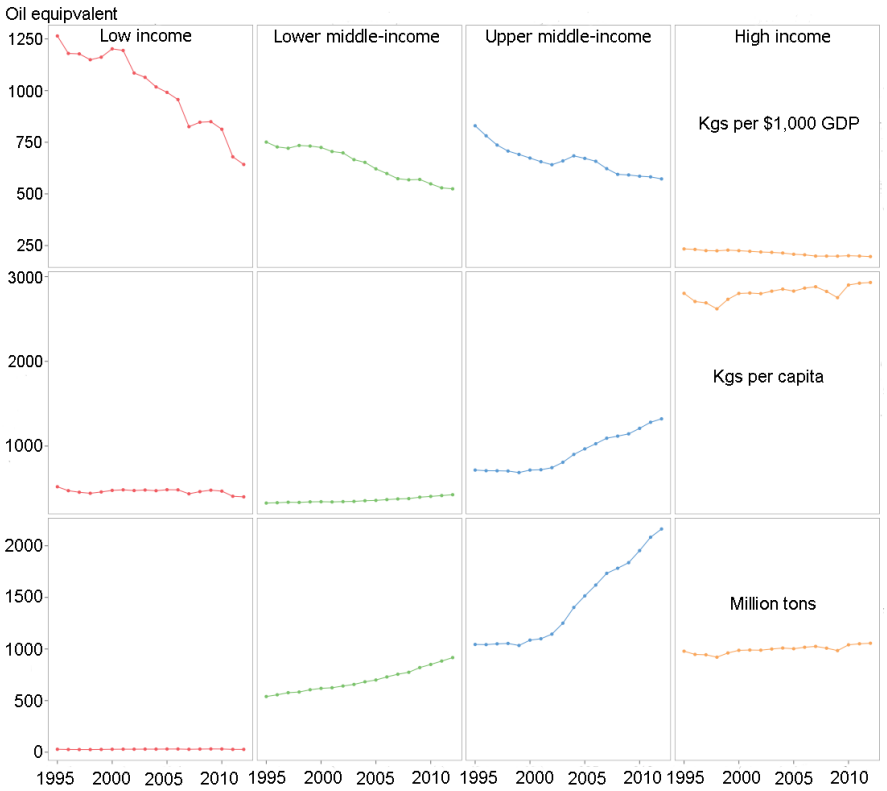


Figure 6
Total primary energy supply, per capita and energy intensity, Asia and the Pacific, 1995-2012

7.4 Energy security

Energy security is an important prerequisite for development. Although the definition of energy security varies across countries, generally it refers to long-term, sufficient and affordable energy supply. Limited years of reserves to the production ratio for fossil fuels in the region, various energy self-sufficiency levels, plus the differentiated influence of fluctuating international oil prices are all significant factors that call for regional collaboration on energy access, trade, connectivity, technology development and transfer, as well as fiscal strategies to enhance energy security for sustainable development in the Asia-Pacific region.

Figure 7
Energy intensity in the agricultural sector, Asia and the Pacific, 1995-2012

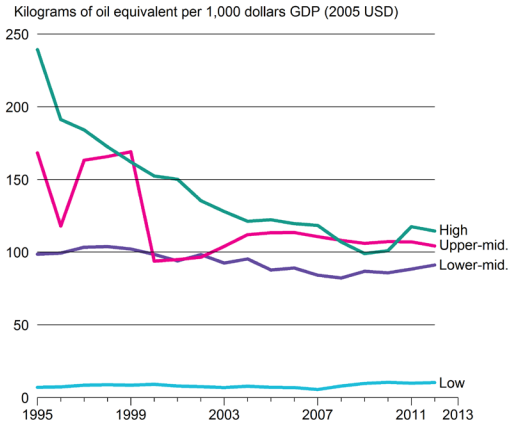
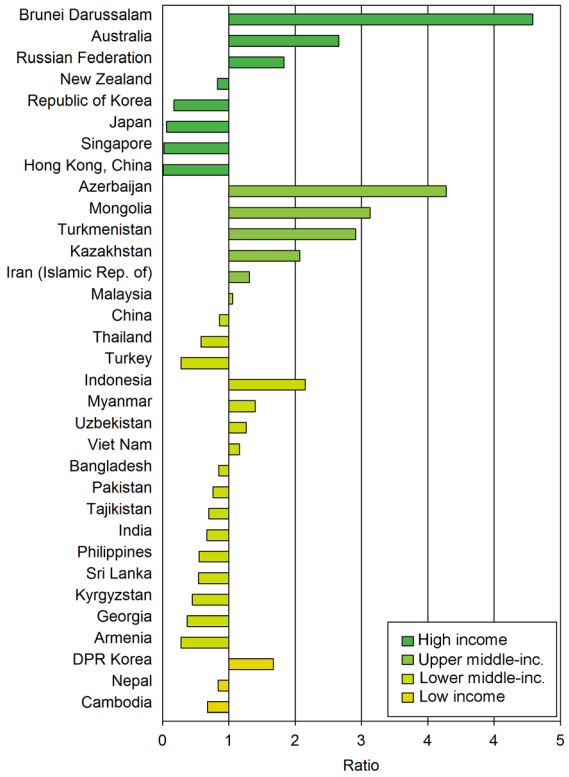


Figure 8
Energy self-sufficiency, Asia and the Pacific, 2013



More than half of the countries in Asia and the Pacific are not self-sufficient with energy

Energy self-sufficiency is one important component of national energy security,[5] and can be thought of as the extent to which countries are able to produce enough energy to meet their own total primary energy supply (TPES). Figure 8 summarizes this relationship for 33 economies in the region by presenting the total energy production in a country as a fraction of total TPES.

Countries with a self-sufficiency of 1 or more produce more energy than total TPES and have the potential to export energy. In contrast, countries where total TPES exceeds production are not self-sufficient and therefore rely on energy imports. A value of zero represents a country that has no domestic energy production and thus imports all its energy.

Owing to the extraordinary economic growth experienced in Asia and the Pacific in recent decades, energy demand has increased significantly and is expected to grow continuously in the foreseeable future. Fossil fuels have been and will continue to be the major energy sources in the region, accounting for more than 60 per cent of total final energy consumption.[5] Soaring energy demand plus unevenly distributed fossil fuel reserves in the region make many developing countries dependent on imported fossil fuels; therefore, they are exposed to energy price volatility in the international market.

Of the 33 countries and areas in Asia and the Pacific for which data are available, 14 were energy self-sufficient in 2013. The remaining 19 countries depended on imports from the international market to meet domestic demand. The four countries and areas furthest below the self-sufficiency threshold of 1.0 are the high income economies of the Republic of Korea (0.17), Japan (0.06), Singapore (0.02) and Hong Kong, China (0.01). These economies depend heavily on imported energy but may

be less economically vulnerable to volatility in international energy markets than lower-income countries. By contrast, countries such as Cambodia (0.68 per cent), Armenia (0.28 per cent) and Georgia (0.37 per cent) are less dependent on energy imports, but may have less economic room to manage market volatility.

7.5 Data and monitoring issues

Relatively broad data coverage for indicators of energy supply

The time series for total primary energy supply, or TPES, which form the basis for much of the trends presented in the present chapter, are available by energy source and for every year from at least 1990 onwards for nearly every country in Asia and the Pacific. The exception is for countries and territories in the Pacific subregion, where data are not available for most Pacific island developing States.

The renewable energy component of the TPES time series has a limitation: the figures do not indicate whether the renewable energy is being sustainably produced and used. For example, a substantial share of today's renewable energy consumption comes from the use of wood and charcoal by households in the developing world; however, such energy use is sometimes associated with unsustainable forestry practices and health-threatening, heavy, indoor air pollution.

Energy self-sufficiency measures are derived from total TPES and domestic energy production data, which as mentioned previously are available for most countries in the region – barring those in the Pacific subregion – and for every year since 1990.

Less data available for analysis of final energy consumption

Statistics on final energy consumption is in general available for the industrial sector, and data availability follows the same pattern of coverage as TPES. However, incompatibility between the definition of the industrial sector used for energy statistics and the classifications used for GDP statistics severely limits the calculation of a number of indicators, such as energy intensity for different sectors. A separate note of caution must be mentioned when referring to energy intensity figures: this indicator is an imperfect proxy for energy efficiency as it is affected by a number of factors unrelated to energy efficiency, such as climate, structure of the economy and nature of economic activities.

With regard to energy consumption by households, data on residential electricity consumption are sufficiently available to produce robust subregional aggregates for every year from at least 1990 onwards. Coverage is, however, again relatively low in the Pacific subregion, with data being available only for Australia and New Zealand.

Measuring access to modern and renewable energy

Data on access to electricity are less complete, and the analysis in the present Yearbook is based on 19 countries and for 2012 only. Available estimates of the size of the population lacking access to electricity vary between 621 million and 427 million depending on the method used. However, the 2012 data available on the percentage of the population using solid fuels can be disaggregated by rural and urban dwellers and are sufficiently complete to produce subregional estimates, except for the Pacific.

The concept of modern energy has not been defined for statistical purposes, and in the previously mentioned International Recommendations for Energy Statistics no distinction is made between modern and traditional energy. In the World Energy Outlook 2010, the International Energy Agency defined traditional biomass energy as "biomass consumption in the residential sector in developing countries that refers to the often

unsustainable use of wood, charcoal, agricultural residues and animal dung for cooking and heating". The United Nations Environmental Programme defines modern bioenergy as energy produced through the conversion of biomass to higher value and more efficient and convenient energy carriers, such as pellets, biogas, ethanol and biodiesel.[6] However, from currently available statistics in most Asian and Pacific countries, there is no way to determine whether the relevant flows of energy that are currently captured in their energy balances and categorized as renewable can be considered "traditional", "modern", or "sustainable". Similar issues pertain to the definition and classification of renewable energy (Box 1).

Sustainable Development Goal 7 implies that greater attention needs to be paid to detailed statistical information on energy use by communities that lack regular access to electricity. Providing such attention may require increased collection and use of data from household surveys, including through international programmes, such as the Demographic and Health Surveys (DHS) and the Multiple Indicator Cluster Surveys (MICS). Data from household surveys were used in this way for monitoring the targets on access to water and sanitation under Millennium Development Goal 7 through the Joint Monitoring Programme of UNICEF and WHO.[7] The most recent DHS (phase 6) and MICS (round 4) household questionnaires include questions on access to electricity and use of energy resources, such as natural gas and charcoal. A similar global monitoring initiative may be applicable for monitoring targets for sustainable access to renewable, affordable, reliable and modern energy resources.

Box 2

Impact of low oil prices

International crude oil prices have dropped significantly since the second half of 2014: the spot price for Brent crude dropped from $111.80 per barrel in June 2014 to $47.80 per barrel in January 2015; it rebounded slightly in early 2015, stabilizing at around $47 per barrel for August, September and October 2015 before dipping below $40 per barrel on 8 December 2015.[a]

Global demand for oil grew by about 1.0 million barrels per day (mb/d) in 2014, while the supply – boosted by unconventional sources in the United States of America – grew by 2.20 mb/d.[b] The world's two largest oil producers – the Russian Federation and Saudi Arabia – have been maintaining their crude oil output levels.[c] The return of the Islamic Republic of Iran to the international oil and gas market will add extra capacity to the global supply. Additionally, the combined impact of slowing growth in major economies and steadily declining energy intensity mean that the growth in energy demand will likely slow.

The United States Energy Information Administration projects that the Brent crude oil price will average about $59 per barrel in 2016,[d] while the World Bank forecasts prices below $60 until 2018, slowly increasing to $88.30 per barrel in 2025 for the average spot price of crude oil.e IMF also predicts that Brent crude oil prices will be below $50 per barrel in 2016 but, using a 95 per cent confidence interval, the forecast ranges from $28 to $98 per barrel.[f] The difference in predictions implies that there is huge uncertainty associated with crude oil price forecasts.

Prevailing low international oil prices have an impact on energy security and the sustainable use of energy in Asia and the Pacific. Low prices will induce economic activity, while reducing inflationary, external and fiscal pressures in oil-importing countries. On the other hand, low prices will adversely affect oil-exporting countries by weakening their fiscal and external positions and by reducing their economic activity.

Many developing countries in the region depend on imported fossil fuels. For those countries, the Asian Development Bank estimates an additional 0.5 per cent growth rate in 2015 GDP if oil prices remain low.[g] Low oil prices also lower inflation rates and present opportunities for oil importing countries to accelerate their programmes related to fossil fuel subsidies. In fact, energy

Box 2

Impact of low oil prices *continued*

subsidy reform has emerged as one of the most important policy challenges for developing Asian economies, as expenditures on fossil fuel subsidies pose a huge burden on government budgets.[h]

Many countries in the region have initiated reforms. The petrol subsidy in Indi was removed in June 2010, producing annual savings of $1 billion; diesel was deregulated in October 2014, producing annual savings of $10 billion. In Indonesia, fossil fuel subsidy reform reduced budgeted costs to below $8 billion in 2015 and is expected to reduce such costs further to less than $4 billion in 2016.[i]

Removal of fossil fuel subsidies is projected to have a significant impact on GDP and the energy sector, with savings becoming available for reallocation to the poor, who are the most vulnerable to the direct and indirect impacts of higher energy prices.[j,k] However, policymakers need to make sure that such reforms are credible and enduring, and that the redistribution of savings is beneficial for the national economy.[j] For example, government savings realized from the removal of fossil fuel subsidies could be redirected towards sustainable infrastructure, which would support improvements in energy access and efficiency, and contribute to further development of renewable energy.

With regard to renewable energy development, the general perception is that low oil prices may undermine the differences in cost between fossil fuels and renewable energy, thus making the latter less attractive. However, the evidence so far does not point uniformly in this direction. In fact, global investment in renewable energy rebounded in 2014 to $270 billion, a 17 per cent increase from that of 2013.[k] One of the reasons for this development is that the cost of renewable energy is declining while the long-term price of oil remains uncertain. Moreover, oil is not the primary fuel used for electricity generation in the Asia-Pacific region; most renewable energy utilization is for power generation. Furthermore, price is not the only driving force for renewable energy development. Concerns such as environmental sustainability, climate change and energy security, as well as technology innovation, also play important roles in the development of renewable energy.

a See United States Energy Information Administration, "Petroleum and other liquids: spot prices". Available from http://www.eia.gov/dnav/pet/pet_pri_spt_s1_m.htm; and Nicole Friedman, "Brent crude falls; oil prices end at nearly seven-year lows", Wall Street Journal, 8 December 2015. Available from http://www.wsj.com/articles/oil-prices-rise-but-more-pain-is-expected-1449577680.

b Organization of the Petroleum Exporting Countries, OPEC Annual Report 2014 (Vienna, 2014). Available from http://www.opec.org/opec_web/static_files_project/media/downloads/publications/Annual_Report_2014.pdf.

c Georgi Kantchev and Summer Said, "Russia and Saudi Arabia to continue pumping oil", Wall Street Journal, 2 October 2015. Available from http://www.wsj.com/articles/russian-oil-output-rises-to-post-soviet-high-in-september-1443777432.

d United States International Energy Administration, "Short-term energy outlook: prices", 8 December 2015. Available from http://www.eia.gov/forecasts/steo/report/prices.cfm.

e World Bank, "World Bank commodity price forecast", 20 October 2015. Available from http://pubdocs.worldbank.org/pubdocs/publicdoc/2015/10/966751445286237369/CMO-Oct-2015-Historical-Forecasts.pdf.

f International Monetary Fund, "Commodity price outlook and risks", 11 November 2015. Available from http://www.imf.org/external/np/res/commod/pdf/cpor/2015/cpor1115.pdf.

g Asian Development Bank, Asian Development Outlook Supplement: Stable Growth Outlook for Developing Asia, 14 July 2014. Available from http://www.adb.org/sites/default/files/publication/42754/ado-supplement-july-2014.pdf.

h Asian Development Bank, Fossil Fuel Subsidies in Thailand: Trends, Impacts, and Reforms (Mandaluyong City, Metro Manila, Philippines, 2015). Available from http://www.adb.org/sites/default/files/publication/175455/fossil-fuel-subsidies-thailand.pdf.

i Asian Development Bank, Fossil Fuel Subsidies in Indonesia: Trends, Impacts, and Reforms (Mandaluyong City, Metro Manila, Philippines, 2015). Available from http://www.adb.org/sites/default/files/publication/175444/fossil-fuel-subsidies-indonesia.pdf.

j Organisation for Economic Co-operation and Development, OECD Companion to the Inventory of Support Measures for Fossil Fuels 2015 (Paris, 2015). Available from http://sciences.blogs.liberation.fr/files/2215011e.pdf.

k Frankfurt School – UNEP Collaborating Centre for Climate and Sustainable Energy Finance, and Frankfurt School of Finance and Management, Global Trends in Renewable Energy Investment 2015. Available from http://fs-unep-centre.org/sites/default/files/attachments/key_findings.pdf.

Footnotes

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2 A more recent estimate that takes into account access to decentralized forms of electrification, for example off-grid solutions, such as solar panels and stand-alone systems in rural areas, and alternative means of grid connection, including illegal connections, points to a much lower but still significant number of people without access: 426 million. See Asian Development Bank, *Sustainable Energy for All: Tracking Progress in Asia and the Pacific – a summary report* (Mandaluyong City, Metro Manila, Philippines, September 2015). Available from http://www.adb.org/sites/default/files/publication/174335/se4all-tracking-progress.pdf.

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UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific

Statistical Yearbook for Asia and the Pacific 2015

Sustainable Development Goal 8

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Sustainable Development Goal 8 is focused on economic growth, and decent employment and working conditions. As such, the targets in place to monitor the progress made in these areas cover the following: GDP growth with a focus on least developed countries; diversification; creation of decent jobs; resource efficiency; decent work for all with a focus on youth employment; eradication of child and forced labour; safe working environments; sustainable tourism; and access to financial support.

Four areas are highlighted in the present analysis. First, issues concerning economic growth are considered, with an examination of the progress made by the 12 least developed countries in Asia and the Pacific with regard to GDP, labour productivity and export diversification. The second area examines the growth in trade, looking at the roles of developing and least developed countries, as well as the impact of the Aid for Trade initiative. The third area contains an analysis of the employment situation within the region, with a focus on opportunities for youth and the sustainability of tourism, especially in countries where it is a vital component of their economic well-being. The fourth area contains an examination of outcomes of research done on child labour and forced labour, which despite being on the decline still exist at unsatisfactory levels in Asia and the Pacific.

8.1 Economic growth: sustained and sustainable

After the global financial and economic crises that began in 2008/09, the situation in the Asian and Pacific region has been improving, despite economic growth not having reached the heights observed in the years before the crisis. Numerous factors have prevented the Asia-Pacific region from developing at a higher rate in the past few years, including volatile food and energy prices and a host of natural disasters, which occur all too frequently in this part of the world.

GDP growth in the Asia-Pacific region was 4.2 per cent annually between 2011 and 2013, a drop from the 5.2 per cent it had been during the period 2002-2007

Economic growth in the Asian and Pacific region is high relative to other regions in the world, but the growth rate has slowed in recent years. Between 2011 and 2013, the entire Asia-Pacific region grew on average by 4.2 per cent per year, which was slower than the average growth rate of 5.2 per cent recorded

during the years prior to the global crisis, that is, the period 2002-2007. That slowdown was due to such factors as stagnant domestic demand in developed economies within and outside the region, the phasing out of macroeconomic policy stimulus programmes launched during the global financial and economic turmoil, and lower potential output growth rate in the region in the face of rapid population ageing in some countries, especially in East and North-East Asia, and inadequate progress on structural policy reforms to address, for example, infrastructure deficits and regulatory burden.

South-East Asia was the fastest-growing subregion in Asia and the Pacific during the period 2011-2013, with the annual growth rate being 5.1 per cent. The South and South-West Asian subregion recorded an annual growth rate of 4.5 per cent during the same period, while in East and North-East Asia the rate was 4.2 per cent, in North and Central Asia 3.6 per cent and in the Pacific 3.0 per cent. At the country level, economic growth was broad-based during the period 2011-2013. Except for the Islamic Republic of Iran, where growth was constrained by nuclear-related international sanctions, all other countries in the region experienced economic expansion.

Economic growth performance in the least developed countries meanwhile generally outperformed that of other developing economies in the region, with the average annual growth rate being 6.4 per cent during the period 2011-2013. The least developed countries that grew rapidly at rates higher than 6 per cent per year were Afghanistan, Bangladesh, Cambodia, the Lao People's Democratic Republic and Myanmar. Overall, more rapid economic growth in economies with lower income levels suggests the convergence of income levels within the Asia-Pacific region, although the pace appeared to be gradual. (Fig 1, 2)

Output per employed person in Asia and the Pacific was $7,500 in 2014, or 42 per cent of the global average of $17,900

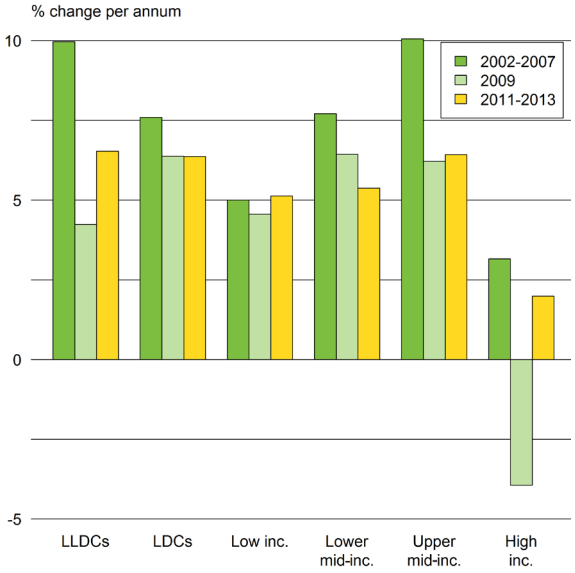


Figure 1
Annual real GDP growth rates, Asia and the Pacific, 2002-2007, 2009 and 2011-2013

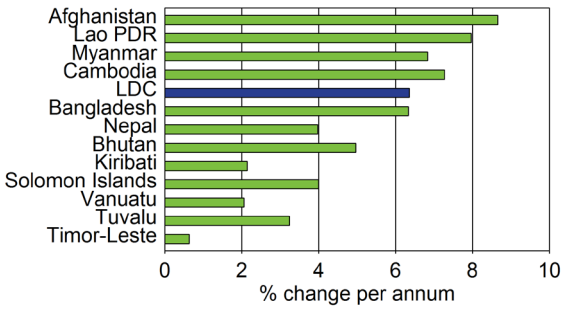


Figure 2
Annual real GDP growth rates, Asian and Pacific least developed countries, 2010-2013

Labour productivity in the Asian and Pacific region rose in the past decade but remained generally low relative to other regions in the world. Output in real terms per employed person (value added in constant 2005 United States dollars divided by the total number of employed persons) in the region stood at about $7,500 in 2014. Although the labour productivity level increased more rapidly in the Asia-Pacific region than in any other region in the world during the period 2000-2014 (3.2 per cent per year relative to the global average of 1.1 per cent), the region's real output per worker in 2014 was still only 42 per cent of the global average of $17,900, and 8 per cent of the value for North America's $94,900. Labour productivity in the region has benefited from, among other factors, rapid industrialization and urbanization, higher educational attainment and workers' skills and the increasing use of technology. Within the Asia-Pacific region, labour productivity levels varied notably, from more than $57,000 per

worker in the Pacific subregion, which was driven by high productivity in Australia and New Zealand, to as low as $3,400 in South and South-West Asia and $4,700 in South-East Asia, where the economic structure is typically dominated by traditional agriculture and low value-added, labour-intensive production sectors, such as processed foods and garments. At the country/area level, available data show that the average annual growth rate in labour productivity since 2000 was greatest in Azerbaijan (10.2 per cent); Macao, China (7.6 per cent); Armenia (6.9 per cent); Georgia (6.8 per cent); Kazakhstan (5.7 per cent); and Timor-Leste (5.5 per cent). In contrast, Brunei Darussalam (–0.5 per cent), Fiji (0.4 per cent), New Zealand (0.5 per cent) and Pakistan (0.8 per cent) were faced with sluggish growth in labour productivity. (Fig 3, 4)

Figure 3
Labour productivity growth rates, world regions, 2000-2014

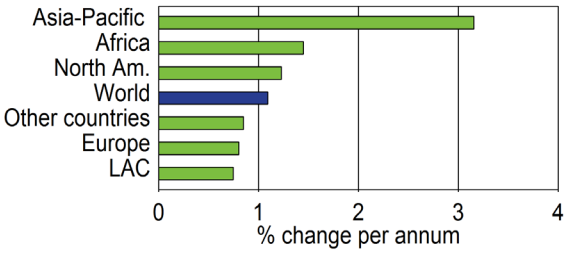
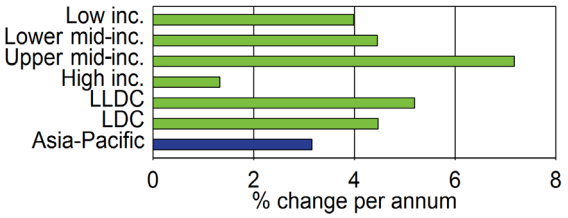


Figure 4
Labour productivity growth rates, selected country groupings in Asia and the Pacific, 2000-2014



Export product diversification in Asia and the Pacific ranges from 4,500 separate items in China to 6 or fewer in some Pacific island countries

Asia-Pacific economies demonstrate substantial variation in export diversification across products and markets. Levels of diversification correspond broadly – although not exactly – with income levels and are also related to the size of countries. For instance, in 2013 China was the most diversified country in the region by number of products, exporting more than 4,500 separate items (at the HS six-digit level of classification). It is followed by Japan, India and the Republic of Korea. In terms of diversification across markets, China is again the leader followed in this case by Japan, India, Thailand and Republic of Korea.[1]

The importance of export diversification as a protection against fluctuations in external demand has been brought home by the recent declines in commodity prices. Many Asia-Pacific economies, especially least developed countries, remained overly dependent on the export of just a few commodities. For example, many Pacific island countries and territories export very limited numbers of products and to only a handful of markets. Other energy-producing economies in Central Asia, such as Turkmenistan or Uzbekistan, would also benefit from further diversification.

Box 1

Economic diversification

Product diversification is an important element of economic development. Diversity in export products is one indicator of broader economic diversification. Countries can diversify by expanding the variety of products that they export, as well as by increasing the number of destination markets. Diversification can lower instability in export earnings and expand export revenues. Diversification can also support the upgrading of value-added activities and enhance growth through improved technological capabilities via broad scientific and technical training, as well as through "learning by doing", and facilitation of forward and backward linkages. Such strategies can lead to increased sophistication of markets, scale economies and externalities, and substitution of commodities with positive price trends for those with declining price trends. Reduced export dependence on a limited number of countries and markets can also improve economic resilience.

For commodity-producing countries, the concentration of export products may make them more vulnerable than their dependence on natural resources per se, which can be alleviated by diversification into agricultural and mineral commodities, particularly in many low income countries. Increasingly, trade in services has also become an important source of export diversification: service exports accounted for more than 40 per cent of exports from some Pacific island countries, such as Vanuatu, in 2013.

This situation suggests that the usual focus on diversification into low-skills manufacturing is not the only option for resource-exporting countries. Alternatives include combining resource-based manufacturing and commodity processing. Other options involve expanding non-traditional primary exports by increasing the efficiency of firms operating in the agricultural and natural resources sectors, building on recent technological advances in food packaging and transportation, and producing new types of commodities, such as off-season specialties, fresh vegetables or cut flowers, as well as trading in services. (Fig 5, 6)

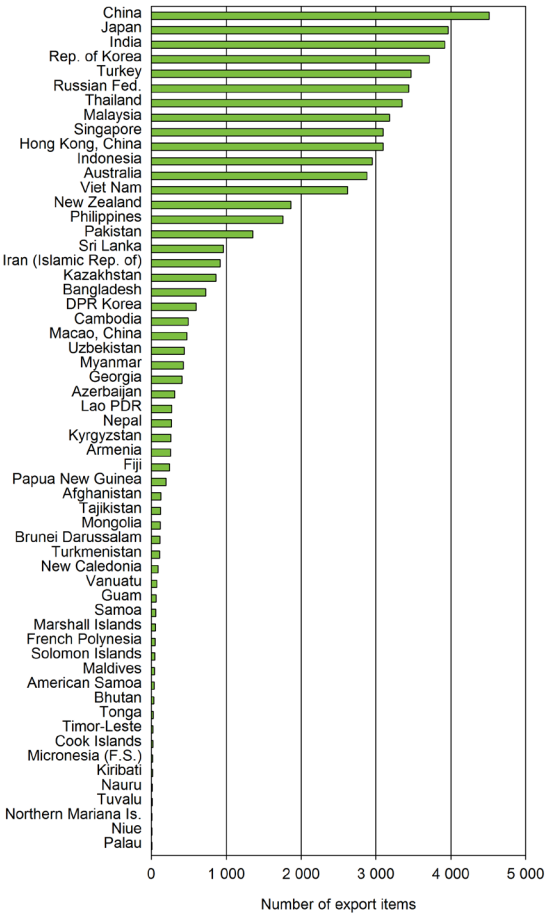


Figure 5 Export diversification of products, Asia and the Pacific, 2013

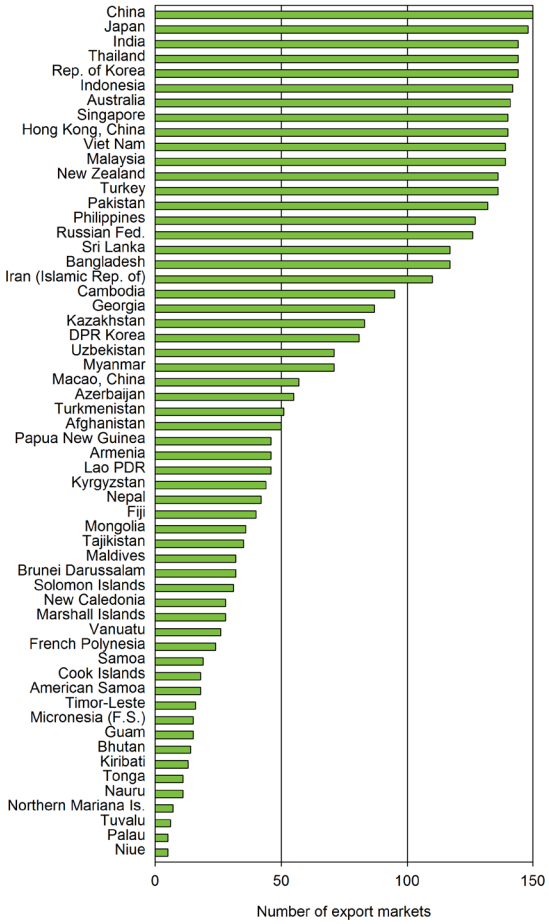


Figure 6 Export diversification of markets, Asia and the Pacific, 2013

8. 2 Trade for development

It is important to ensure that the trading system remains universal, rules-based, open, non-discriminatory and equitable

Growing world trade has been an important engine for economic growth and development in recent decades. Countries in the Asian and Pacific region have been at the centre of these rising trade flows, with the region's economies now accounting for more than 37 per cent of global merchandise exports.

Growing global trade has been supported by liberalizing changes to trade policy in terms of lower tariffs; average applied tariffs today are considerably lower than they were in 1995. Multilateral liberalization through WTO, the growing number of free trade agreements and unilateral opening have all substantially reduced average tariff levels on most products,

although some sectors, notably agriculture and textiles, have generally higher rates of protection.

Of concern, however, is the slowdown and volatility of global trade flows since 2008, which does not augur well as Governments embark on the process of implementing the Sustainable Development Goals, which call for strong and well-balanced growth propelled by both external and domestic demand. Although in Asia and the Pacific exports grew by 1.5 per cent in 2014 – better than global trade figures – growth rates remain well below pre-crisis levels. While this slowdown is due to both structural and cyclical factors, it is well understood that much more needs to be done to remove remaining tariffs, as well as to tackle non-tariff barriers and behind-the-border barriers. In this context, improving preferential market access for developing countries, especially the least developed countries, will be important. A successful outcome to the long-running Doha Round of trade negotiations under WTO would give a substantial boost to global prospects for trade and development (Box 2, Fig 8)

Figure 7
Tariff (simple average) by type of merchandise, selected Asian and Pacific countries, 2013

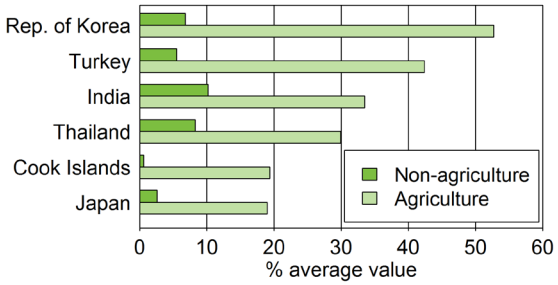


Figure 8
Exports of merchandise annual growth rates, Asia and the Pacific, 1991-2014

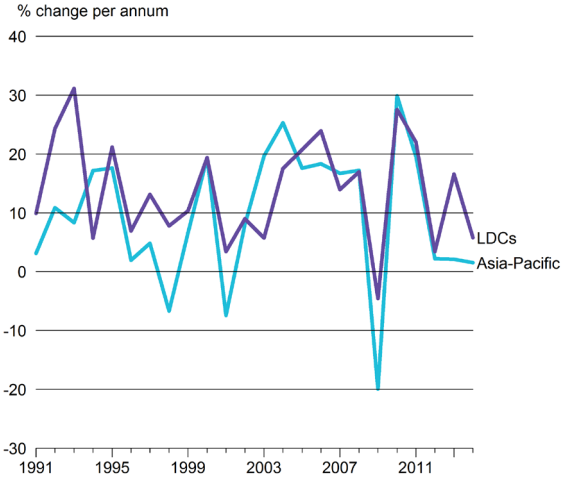
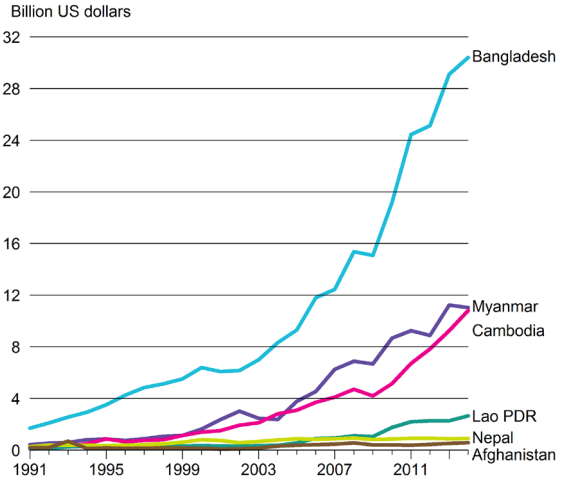


Figure 9
Exports of merchandise, selected Asian and Pacific least developed countries, 1990-2014



The participation of developing countries and least developed countries in global trade needs to be enhanced

Asia-Pacific developing economies now account for more than 30 per cent of global merchandise exports. The Asian region has also been at the centre of South-South trade growth. These trends continue to be driven by weak post-crisis growth in established developed economy markets, combined with rising demand for intraregional imports in large emerging markets.

Not all Asia-Pacific economies have benefitted from rising global and regional trade flows and many countries, especially the least developed countries, could benefit from further integration into the regional economy. Asia-Pacific least developed countries account for a small but growing share of global exports. In 2014 they accounted for 0.30 per cent of global exports, up from 0.08 per cent in 1990. In absolute terms, this rise represents an increase in exports from $2.8 billion to $57.4 billion over this period. Exports remain, however, heavily concentrated across a limited number of products, for instance garments and agricultural commodities. Under the Sustainable Development Goals, the target has been set of doubling the share of global exports from the least developed countries by 2020. (Fig 9)

Box 2

Slow progress on multilateral liberalization encourages spread of preferential trade agreements

What is popularly known as the "Doha Round" is the most comprehensive round of trade negotiations ongoing among the members of the World Trade Organization (WTO) with a focus on 'development'. The Round takes its name as it was launched in Doha, Qatar in November 2001 at the WTO Fourth Ministerial Conference.

The Ministerial Declaration issued by the Conference set as one of the aims of the Round to achieve major reform of the international trading system through the introduction of lower trade barriers and revised trade rules. The main issues at stake are: reforming agricultural subsidies; ensuring that new liberalization in the global economy supports the need for sustainable economic growth in developing countries; and improving developing countries' access to markets for their exports. To date it has not been possible for countries to overcome their differences and conclude the Round. An agreement reached in Bali, Indonesia, in 2013, however, reflected the progress made in some areas, including trade facilitation; agriculture and food security; and treatment of least developed countries.

The tenth Ministerial Council meeting in Nairobi in December 2015 took stock of progress made on Doha round negotiations as the negotiations could not be concluded. The Ministerial Council meeting also highlighted that there is no consensus on the future road map for negotiations on the Doha Round issues; while many members reaffirmed their full commitment to conclude the DDA others believed that new approaches are necessary to achieve meaningful outcomes in multilateral negotiations.

The stalling of progress under the Doha Round has created a strong incentive for countries to use preferential trade agreements for both offensive and defensive liberalization. As a result, there has been a proliferation of preferential trade agreements, including many involving Asia-Pacific economies. Currently, economies in the Asia-Pacific region are parties to 155 (59 per cent) of the global total of 262 preferential trade agreements that are currently in force.

In recognizing that developing countries may require preferential market access to benefit fully from trade, a number of particular initiatives within the multilateral trading system have been introduced, for example non-reciprocal preferences under the Generalized System of Preferences. Most of these efforts have focused on reducing tariffs in order to create favourable margins of preference, such as differences in the tariff rates applied on imports, thereby providing exporters from developing countries with a cost advantage over suppliers from elsewhere.

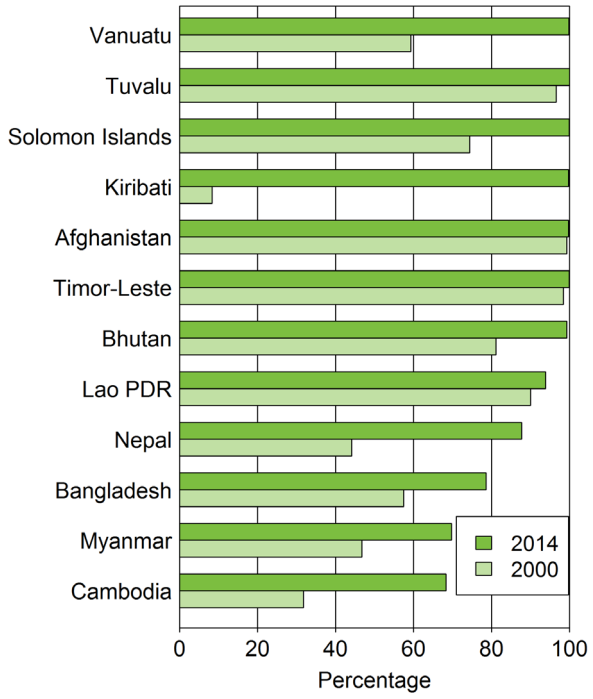
To overcome structural impediments to trade, preferential access schemes for least developed country exports need to be implemented fully and further enhanced so that they are of real benefit to businesses in the least developed countries

Least developed countries are typically economically vulnerable to both internal and external shocks, possess limited productive capacity and suffer from severe infrastructure deficits. Thus, in recent years there have been concerted efforts to give additional preferential access to exports from least developed countries. These go beyond the preferences available to other developing countries in special recognition of the severity of the structural and other challenges the least developed countries face in integrating with global trade. At the launch of the Doha Round in November 2001, WTO members committed themselves to the objective of providing duty-free and quota-free market access to least developed countries, allowing their imports to enter without paying tariffs. Following the Ninth WTO Ministerial Conference, held in Bali, Indonesia, in December 2013, all developed

countries are now expected to offer duty-free and quota-free access to at least 97 per cent of products, and developing countries are encouraged to offer duty-free and quota-free access where possible. As of 2015, all developed and several developing countries have introduced preferential schemes for exports from least developed countries. This change has led to substantial increases in the share of exports from least developed countries entering developed markets duty-free, which has been on the increase since 2000. (Fig 10)

While securing preferential market access can provide important advantages to least developed countries, tariff reduction alone is not a panacea. Non-tariff measures – often consisting of regulatory standards such as sanitary and phytosanitary measures, and technical barriers to trade – can create even more significant border barriers to exports of least developed countries. And "behind the border" barriers, including unnecessary regulations, can also reduce or limit market access. In going forward, it will be important to continue to improve market access for least developed countries by making duty-free and quota-free schemes easier to use, not least by simplifying rules of origin requirements (Box 3). Implementation of preferences for least developed country services exports, following adoption in 2011 by WTO of a "services waiver" for least developed countries, also holds the potential for making improvements in access to services markets.

Figure 10
Least developed countries' exports to developed countries admitted duty free, 2000 and 2014



The Aid for Trade contributions to least developed countries in the Asia-Pacific region increased by 70 per cent from 2012 to 2013, growing in value from $4.2 billion to $7.1 billion

Opening a country to trade can provide new markets for businesses and provide consumers and firms with access to a wider range of goods and services. Within the correct policy framework, trade can enhance competition and spread new technologies, thereby giving a boost to economic dynamism. However, developing and least developed countries often face significant impediments to trade. Launched in 2005, the Aid for Trade initiative has been an important channel for targeting assistance towards increasing the capacity of developing countries to engage in trade and for mainstreaming trade within their development policy strategies. Aid for Trade covers several areas of assistance aimed at enabling countries to tackle the obstacles to trade that they encounter, whether they be lack of infrastructure, customs procedures that need overhauling, or policies that are in need of reform.

Globally, Aid for Trade rose from US$25 billion in 2005 to approximately US$55 billion in 2013.[2] Overall assistance in the Asia-Pacific rose from US$9 Billion to US$21 Billion over the same period. The largest single recipients for the Asia-Pacific region have been India and Viet Nam which received 21 per cent and 16 per cent respectively, over the period 2005- 2013.

The Fifth Global Review of Aid for Trade, held in Geneva from 30 June to 2 July 2015, focused on the importance of further reducing trade costs, particularly in the least developed countries. The Enhanced Integrated Framework for Trade-related Technical Assistance to Least Developed Countries is the main mechanism through which

Box 3

Simplification of rules of origin for least developed country duty-free and quota-free schemes

Rules of origin are the criteria needed to determine the nationality of a product for getting preferential treatment. Their importance is derived from the fact that duties and other restrictions to trade can vary from country to country when imported. For instance, if a product is to be accorded a preferential treatment on import duties when imported from a least developed country, it must satisfy the criteria prescribed under the rules of origin in that exporting least developed country. Rules of origin vary significantly between agreements and between products. Common criteria for rules of origin include: the requirement of substantial transformation; change of tariff classification; an ad valorem (value added) percentage criterion; or the criterion of a manufacturing or processing operation. If rules of origin requirements are too stringent, countries will find it difficult to take advantage of the preferences on offer. The process of demonstrating compliance with rules of origin can also in itself be time-consuming and difficult, and discourage uptake of available preferences. Least developed countries have indicated that reforming rules of origin in preferential arrangements such as duty-free and quota-free schemes is a priority. The Ninth Ministerial Conference of the World Trade Organization (WTO), held in Bali, Indonesia, in December 2013, adopted the first set of multilateral guidelines on preferential rules of origin as one measure in a package of reforms designed to help least developed countries. This decision formally requests members to consider certain guidelines when developing their rules of origin frameworks for least developed countries; it was, however, not legally binding. Building upon the 2013 guidelines, the LDC Group introduced a proposal on 20 October 2015 for consideration in the Nairobi Ministerial Conference. The LDC Group proposal calls for the adoption of a number of changes to make it easier to comply with preferential rules of origin. For instance, it specifies simple and transparent methods for determining "substantial transformation", and asks for additional "cumulation" possibilities. In addition, it also seeks to simplify documentary elements by, for instance, proposing to abolish certain certificates of non-manipulation, and recognizing self-certification of origin. While members have said they are ready to work with the LDC Group on the issue in a constructive manner, several have expressed concerned that the proposal appears to call for binding rules whereas the Bali Decision granted countries flexibility in the application of the guidelines. However, the Nairobi Ministerial Declaration on Preferential Rules of Origin for the LDCs spelt out certain criteria to be decided by the preference granting countries. It also decided that by 31 December 2016 each developed Preference-granting member, and each developing Preference-granting member declaring themselves in a position to do so by that date or thereafter, shall inform the Committee on Rules of Origin (CRO) of the measures being taken to implement the above provisions.

least developed countries can access Aid for Trade. Indeed, increasing the support available through the Framework and the Aid for Trade initiative for least developed countries will be essential if wider development goals are to be accomplished. Currently, least developed countries in the Asia-Pacific region receive about a third of total Aid for Trade spending. The total amount of Aid for Trade for least developed countries in Asia and the Pacific has grown in value from $2.4 billion in 2005 to $7.1 billion in 2013. Growth in the last year from 2012 to 2013 was nearly 70 per cent, increasing from a base of $4.2 billion in 2012.

The least developed countries in the Asian and Pacific region that were the main beneficiaries of the Aid for Trade initiative in the period 2005-2013 are Afghanistan, which accounted for 43 per cent of the benefits for least developed countries during this period, followed by Bangladesh at 27 per cent, with the smaller Pacific island countries and territories receiving less than 1 per cent each of the total amount received by least developed countries. (Fig 11)

In going forward, there is a need to: continue to target and concentrate assistance on the countries where it is most needed; raise the focus on trade policy and regulatory issues, as well as infrastructure; and consider greater regional dimensions to Aid for Trade.

Figure 11
Annual growth in Aid for Trade for least developed countries in Asia and the Pacific, 2005-2013

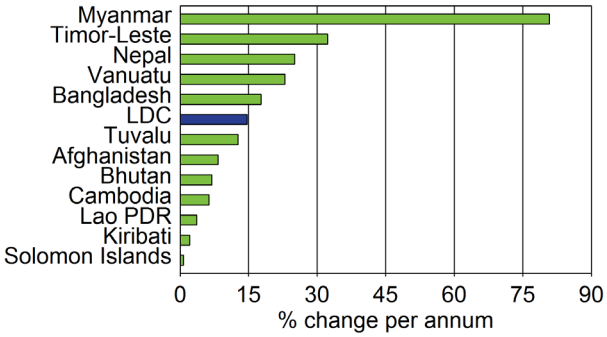


Figure 12
Employment by sector, Asia and the Pacific, 1991-2013

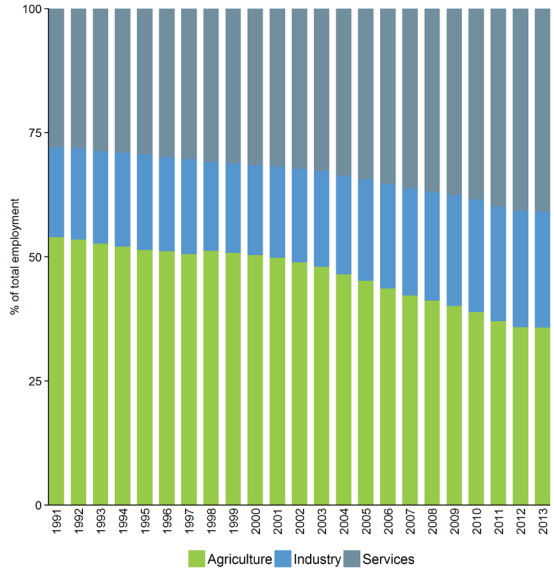
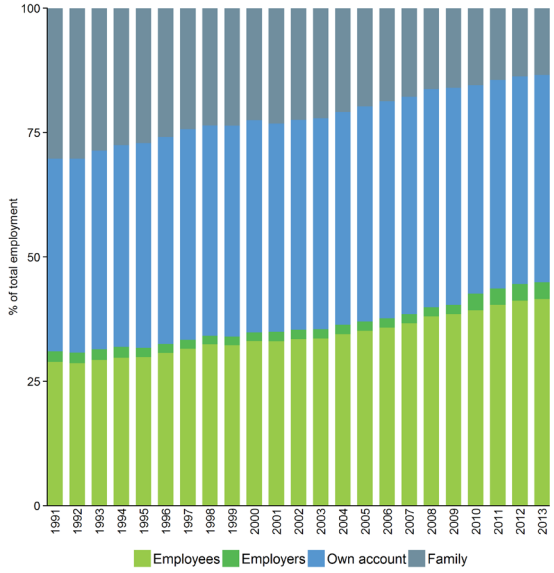


Figure 13
Employment by status, Asia and the Pacific, 1991-2013



8. 3 Employment situation and job creation

The Asian and Pacific region continues to face a range of employment challenges, with the number of persons employed in the region rising steadily since the outbreak of the global financial crisis in 2008, but at a slower rate than had been experienced prior to the crisis. Youth in the region remain a priority, with the youth unemployment rate continuing to be significantly higher than the total unemployment rate.

In Asia and the Pacific, 22.7 million more people were employed in 2014 than in 2013

Just over 2 billion people in Asia and the Pacific were employed in 2014, accounting for 63 per cent of global employment, with China and India alone accounting for nearly 40 per cent of the global total. Employment in the region grew by 22.7 million compared with 2013 and more than half of this increase was in South and South-West Asia (12.7 million persons).

In 2008, during the global financial crisis, the number of employed people in the region grew by only 0.4 per cent. Since then growth in the number of people employed increased by 1.1 per cent per annum between 2013 and 2014. However, this rate is still below the peaks experienced in 1999 and 2003 when the number of people employed grew by 1.8 per cent annually.

The structure of the workforce across Asia and the Pacific has also been shifting from "agriculture" to "services". In 1991, 54 per cent of the workforce in Asia and the Pacific was based in agriculture and 25 per cent in services, whereas these figures in 2013 were 35 per cent and 39 per cent respectively.. A further shift has also taken place in the transformation from "family workers" to "employees". In 1991, 29 per cent of the workforce in Asia and the Pacific comprised employees and 30 per cent family workers, whereas these figures in 2013 were 42 per cent and 13 per cent respectively.

The growth in the number of people employed is generally higher in the lower income economies, partly reflecting stronger labour force growth. Since 1991, annual growth rates have been 2.2 per cent in low income economies, 1.9 per cent in lower middle-income economies, 1.0 per cent in the upper middle-income economies and 0.5 per cent in the high income economies. (Fig 12, 13, 14)

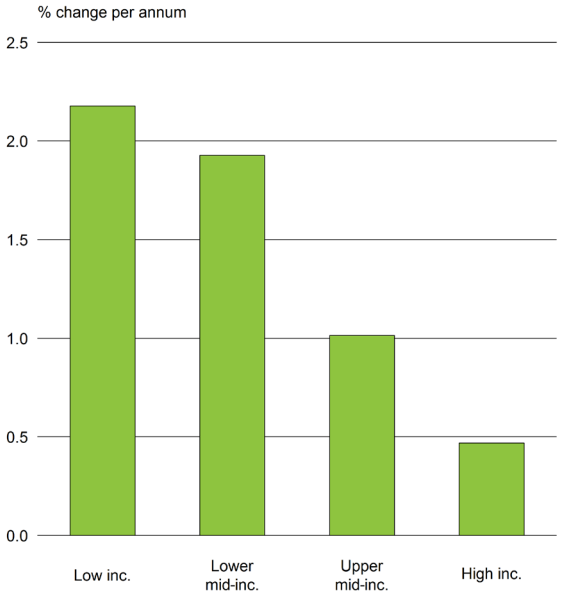


Figure 14
Annual growth rate in number of people employed, selected country groupings in Asia and the Pacific, 1991-2014

Of the Asia-Pacific labour force, 4.6 per cent were unemployed in 2013, which is less than half of the unemployment rate of 10.7 per cent in Europe

Of the labor force in Asia and the Pacific, 4.6 per cent were unemployed in 2013, which is consistent with the unemployment rate in the region over the past 20+ years, which has ranged from a low of 4.5 per cent in 1994 to a high of 5.3 per cent in 2002. About 95 million people were unemployed in the region in 2013, a rise from the 93 million unemployed in 2012.

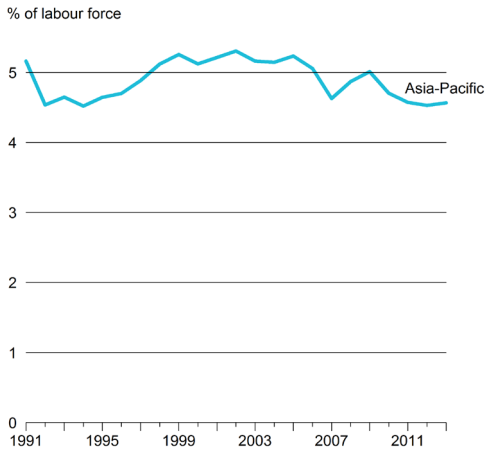


Figure 15
Total unemployment rate, Asia and the Pacific, 1991-2013

Despite the low unemployment rate in Asia and the Pacific (4.6 per cent) compared with other regions of the world, such as Africa (8.6 per cent), Europe (10.7 per cent) and North America (7.4 per cent), owing to the large population of the region, Asia and the Pacific accounts for 47 per cent of the people unemployed globally.

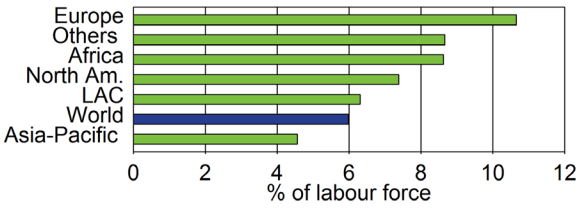


Figure 16
Unemployment rates, world regions, 2013

Within the Asian and Pacific region, the North and Central Asian subregion had the highest rate of unemployment at 6.8 per cent in 2013, followed by the Pacific subregion at 5.3 per cent. Least developed countries in the region had a lower unemployment rate of 4.0 per cent; in upper middle-income economies, the rate was 4.8 per cent and in high income economies it was 4.6 per cent. Landlocked developing countries faired significantly worse with unemployment at 6.9 per cent. (Fig 15, 16, 17)

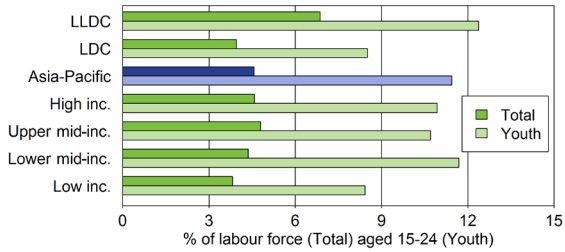


Figure 17
Total and Youth unemployment rates, selected country groupings in Asia and the Pacific, 2013

The youth unemployment rate of 11.4 per cent in 2013 was 2.5 times higher than the total unemployment rate for Asia and the Pacific. The largest difference was in South-East Asia where the youth unemployment rate was more than three times higher than

the total unemployment rate. The North and Central Asian subregion had the highest youth unemployment rate at 14.7 per cent in 2013; however, that rate represents a steep drop from the high of 22.9 per cent in 1998.

At the country level, Armenia (33.1 per cent), Georgia (31.0 per cent), the Islamic Republic of Iran (29.7 per cent) and Maldives (26.5 per cent) all reported youth unemployment rates of more than 1 in 4 for 2013; by contrast, Cambodia had the lowest youth unemployment rate at 0.7 per cent for the same period (see Box 4 for a discussion on a broader measure of potential youth labour market entrants).

Asia and the Pacific receives the second largest number of tourists in the world, at 29 per cent of the global total

Tourism is a very important economic sector in the Asian and Pacific region, and for some countries it is a vital sector. Tourism has direct impacts not only on the economy of many countries, but also on their societies and environment. Over recent years, the region has continued to grow as a major tourist destination.

Although Europe receives the largest share (43 per cent) of tourism arrivals worldwide, the Asia-Pacific region receives the second largest share at 29 per cent of the global total. However, the share of tourism in these regions has changed substantially since 1995 when Europe accounted for 54 per cent of all global tourists, compared with Asia and the Pacific at just 18 per cent. This situation is the result of an annual average increase of 6.8 per cent in the number of tourists arriving in Asia and the Pacific since 1995, compared with a 2.6 per cent annual increase in Europe.

East and North-East Asia along with South-East Asia accounted for nearly two thirds of tourists to the Asia–Pacific region, with the major countries and areas attracting tourists in 2012 being: China (58 million); Malaysia (25 million); Hong Kong, China (24 million); and Thailand (22 million). Other countries in the region also recorded large numbers of tourists visiting

Box 4

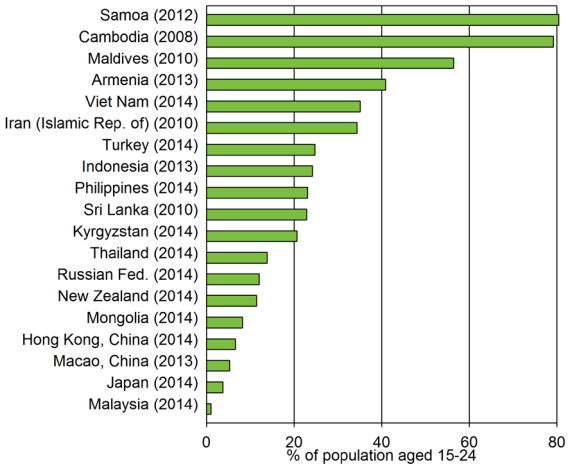
Youth not in education, employment or training

The term NEET is used to describe "youth not in education, employment or training". The indicator provides a measure of the youth who are outside the educational system and not in employment, and thus serves as a broader measure of potential youth labour market entrants than does youth unemployment. A high NEET rate compared with a youth unemployment rate could mean that a large number of young people are discouraged workers, or do not have access to education or training. Some of them may be unable to participate in education or in employment due to such reasons as a severe disability or lack of transportation, among other factors.

From the selected countries in the region that have collected NEET data, it can be seen that Samoa had the highest rate of NEET at 43.5 per cent, followed by Turkey at 34.6 per cent, with Cambodia fairing the best, with a NEET of 8.7 per cent.

Figure

Youth Not in Education, Employment or Training (NEET) rates for selected Asian and Pacific countries, latest year (2010-2012)



in 2012, including Turkey (36 million) and the Russian Federation (28 million). In percentage terms, the two countries experiencing the most dramatic increase in tourist numbers since 1995 were Georgia (increasing from 85,000 to 4.4 million) and the Lao People's Democratic Republic (increasing from 60,000 to 2.1 million).

In 2012, tourists coming to Asia and the Pacific have brought in an estimated $373 billion to the economies of the recipient countries; these injections of cash have been growing steadily since 1995, with only a small dip noticed in 2009 due to the global financial crisis which started in September 2008. Some countries in the region are dependent on such foreign revenue inflows. For example, when expressed as a percentage of GDP in current United States dollars, such inflows equate to 73 per cent of GDP in Maldives and Palau and 100 per cent in Macao, China. (Fig 18, 19)

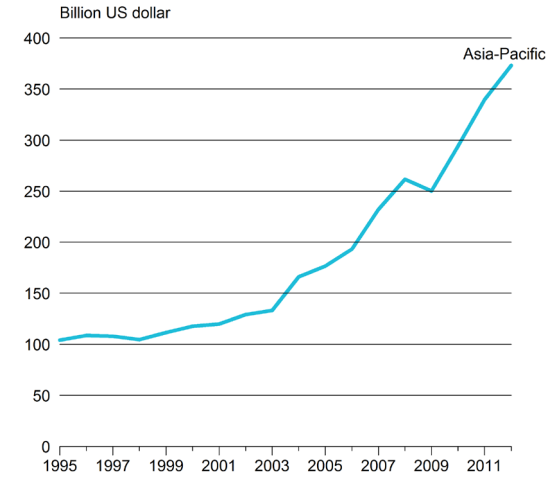


Figure 18
Inbound tourism expenditure, Asia and the Pacific, 1995 to 2012

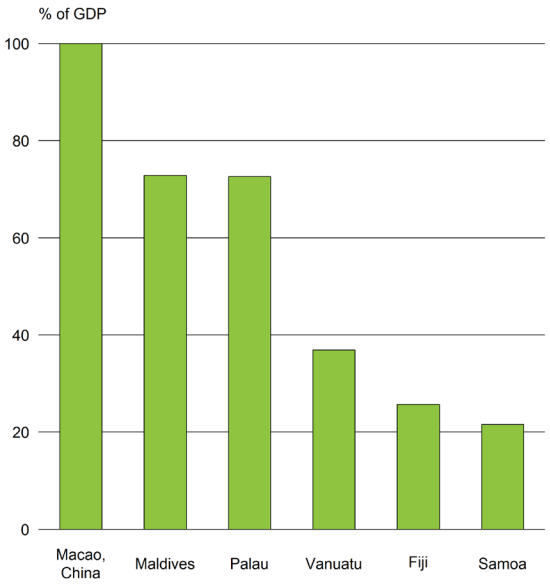


Figure 19
Inbound tourism expenditure, selected Asian and Pacific countries, 2012

8.4 Decent working conditions: child labour and forced labour

A key target of Sustainable Development Goal 8 is to initiate immediate and effective measures to secure the prohibition and elimination of the worst forms of child labour, eradicate forced labour and eventually end child labour in all its forms. Asia and the Pacific is the most populous region in the world, with large levels of poverty in various forms, and there are places where working conditions are unacceptable, producing deleterious impacts on the lives of tens of millions of people within the region. In this section of the chapter, the situations of just two of those scenarios, child labour and forced labour, are examined.

The number of cases of child labour (involving young people aged 5 to 17) in Asia and the Pacific has dropped significantly in the period 2008-2012, from 113.6 million to 77.7 million

The number of cases of child labour (involving young people aged 5 to 17) in Asia and the Pacific has dropped significantly in the period 2008-2012, from 113.6 million to 77.7 million. Despite this significant drop, Asia and the Pacific has the largest proportion of child labour cases globally at 46 per cent, followed by sub-Saharan Africa at 35 per cent. The Asia-Pacific region has, however, since 2008 made the most progress in reducing child labour, shrinking the numbers by 32 per cent as of 2012.

With an estimated child population (persons aged 5-17 years) of 835 million in 2012 throughout the Asian and Pacific region, approximately 1 in every 11 children in this age group is engaged in child labour. This figure compares favourably with sub-Saharan Africa where more than 1 in every 5 children in this age group are in child labour. (Fig 20)

Figure 20
Distribution of child labour, world regions, 2012

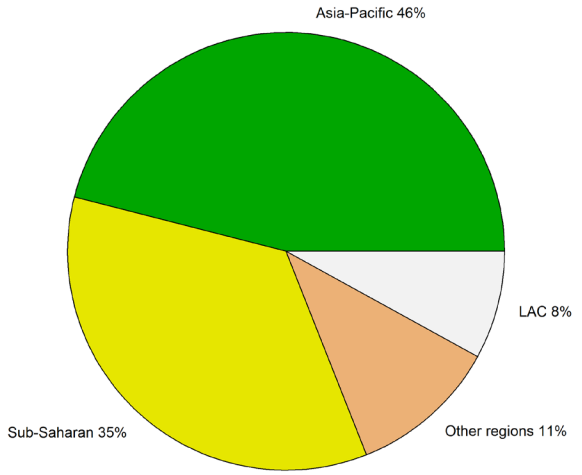
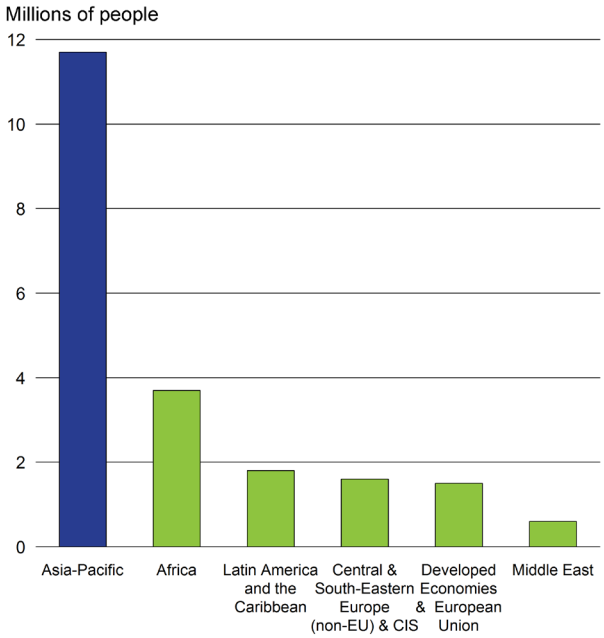


Figure 21
Inbound tourism expenditure, selected Asian and Pacific countries, 2012



Forced labour generated more than $50 billion in Asia and the Pacific in 2012

Nearly 21 million people are victims of forced labour across the world; they are trapped in jobs into which they were coerced or deceived and from which they cannot leave, with the Asia-Pacific region accounting for the largest number of forced labourers in the world at 11.7 million persons, or 56 per cent of the global total.

Forced labour is commonly classified into the following main categories or forms: forced labour imposed by the State, and forced labour imposed in the private economy either for sexual or labour exploitation. Approximately 3 of every 1,000 people around the world are in forced labour today, resulting in nearly 21 million people in the global population being considered in forced labour. Of that number, 4.5 million (22 per cent of the total) are victims of forced sexual exploitation, 14.2 million (68 per cent of the total) are the victims of forced labour exploitation and the remaining 2.2 million (10 per cent of the total) are in State-imposed forms of forced labour.

Forced labour in the private economy generates $150 billion in illegal profits per year, with annual profits from forced labour in the Asian and Pacific region having been estimated at $51.8 billion, or approximately $5,000 per person in 2012. Domestic work, agriculture, construction, manufacturing and entertainment are among the sectors most concerned with migrant workers; indigenous people in particular are vulnerable to forced labour. (Fig 21, Box 5)

8.5 Data and monitoring issues

Data availibility in general high; which notable exceptions for Pacific island developing countries

Economic growth: sustained and sustainable

Data on gross domestic product in absolute terms and by growth rate were available for nearly all countries in the Asia-Pacific region, with the exception of four territories in the Pacific subregion, namely American Samoa, Guam, Northern Mariana Islands and Niue. These data were available from 1990 to 2013, although the analysis was focused on recent years to demonstrate the impact of the global financial and economic crises that began in 2008/09.

Information on labour productivity was available for most countries in the Asian subregions (31 of 37 countries), but was missing for the majority of countries and territories in the Pacific subregion (4 of 21). Data were available for the period 1991-2012, but for a handful of countries were missing for some years. Estimates for 2013 and 2014 were made for subregions and other selected groups.

Box 5

What is "forced labour"?

The term "forced or compulsory labour" is defined by the International Labour Organization Forced Labour Convention, 1930 (No. 29), article 2.1, as "all work or service which is exacted from any person under the menace of any penalty and for which the said person has not offered himself voluntarily".

Data for all countries were available for 2014 only on the indicators product export diversification and market export diversification. For data on product export diversification, different products were counted at the 6-digit Harmonized System (HS) level, which is used for making international comparisons and appears to be the most applicable system for monitoring progress made on this indicator, as opposed to using the more detailed 8-digit, 10-digit or even 12-digit levels.

Trade for development

Data on tariffs presented in this chapter were available for 2013 only and available for 35 of 58 countries across the region; for the Pacific subregion most data were missing. Only duties and imports recorded under HS chapters 01-97 were taken into account. The simple average computed for tariffs was derived for agricultural produce and non-agricultural produce only.

Data on exports of merchandise were available for nearly all countries in the Asian and Pacific region dating back to 1992, with only Nauru having no data and a couple of other countries missing a few of the earlier years' data. Global estimates were also available, enabling computations to be made of each country's contribution to the global export market. The quality of information on trade data, both exports and imports, relies heavily on the customs authorities in each country. In many less developed countries throughout the region these data may be somewhat unreliable, especially in some of the smaller Pacific island countries and territories and in the least developed countries in Asia.

Information on Aid for Trade was available for most countries across all subregions in Asia and the Pacific. As anticipated, some of the countries and areas with missing data would not be expected to be the recipients of that type of assistance, such as Australia; Japan; and Hong Kong, China. The data concerned were available for the period 2002-2013, although the Aid for Trade initiative had not been officially launched until 2005, suggesting that some "back-casting" was done to measure financial assistance in this area prior to the launch of the initiative.

Employment situation and job creation

Data on employment were available for all countries in the Asian subregions for the period 1991-2013, with estimates provided for subregions and other selected groups of interest for 2014. In the Pacific subregion, employment data for each time point were available in only 5 of 21 countries, namely Australia, Fiji, New Zealand, Papua New Guinea and Solomon Islands; no data at all were available for the remaining countries. Estimates were also provided for subregions in Asia and the Pacific for a breakdown by sector (agriculture, industry and services) and services (employee, employer, own account, family worker), despite data being missing at the country level.

Unemployment rates were available for the same countries as employment rates, with data being available for all countries in the Asian subregions; in the Pacific subregion data were available for 5 of 21 countries and territories. Those data were for both unemployment rates for the population as a whole and youth unemployment rates. In the Pacific subregion, despite data being missing for a large number of countries, the countries with data made up a large percentage (about 95 per cent) of the total population for that subregion, thus enabling subregional estimates to be calculated.

Data on the number of inbound tourists were available for nearly all countries in Asia and the Pacific (55 of 58 countries) from 1995 to 2012, although in some cases the data were available for only a limited number of countries. The corresponding information on the expenditure incurred by tourists was not as readily available, although a regional estimate was made dating back to 1995 to enable trend analysis over the last 18 years.

Decent working conditions: child labour and forced labour

Information on child labour was taken from an ILO report[3] that provided relevant data for groups of countries as a whole, with no individual country data provided. The regional grouping of countries was based on the classifications used in the Key Indicators of the Labour Market also produced by ILO. According to this classification, developed economies and countries in the European Union are classified first, and then the remaining countries are classified according to their geographical location. Thus, in that report the region "Asia and the Pacific" does not include Australia, Japan and New Zealand, which are classified among the "developed economies and countries of the European Union".

The results on forced labour came from another ILO report[4], and once again the data were focused on groups of countries, following the ILO Key Indicators of the Labour Market classifications, so the Asia and the Pacific region does not cover Australia, Japan and New Zealand.

Measurement gaps and recent developments

Export diversification of products

Ideally when assessing a country's economic potential through the diversification of the products it produces, all products should be assessed, whether they are exported or not. Obtaining information about products that are not exported is often difficult; as such, collecting data on the diversification of products exported by a country is used as a proxy measure for total product diversification.

New labour force definitions

The 19th International Conference of Labour Statisticians, which was held in Geneva from 2 to 11 October 2013, adopted a resolution concerning statistics of work, employment and labour underutilization. That resolution served to update the previous standards on the economically active population, employment, unemployment and underemployment used by most countries as the basis for producing their official national statistics on the labour force, particularly on the unemployment rate.

A major highlight of the new resolution was its more refined definition and measure of employment as work for pay or profit (therefore excluding from employment other forms of work, such as own-use production of goods, unpaid trainee work and volunteer work). The recommendation of the resolution to remove from the definition of "employment" unpaid forms of work implies that labour force statistics would be affected when implementing the new standards, particularly in those countries where subsistence production is high and had previously been included in the definition of employment. In those cases, such statistics as the number of persons in employment and the labour force are likely to be lower than had been estimated under the old standards. Some of those persons previously recorded as employed may now be considered as unemployed if they are seeking and available for work. As a consequence, the number of people unemployed and outside the labour force, and the unemployment rate are expected to be higher than previously. Changes in the unemployment rate will better reflect the actual number of people with unmet demand (seeking and available) for jobs for pay or profit. However, these changes are expected to yield indicators that are more reflective of and reactive to economic realities, and thus better serve the needs of policymakers to a greater extent than had been the case previously.

Endnotes

1 A market is counted if the exporter ships at least one product to that destination in the given year with a trade value of at least 10,000 USD. A product is counted if it is exported to at least one destination in the selected year with a value of at least 10,000 USD. Available from http://wits.worldbank.org/WITS/docs/TradeOutcomes-UserManual.pdf.

2 International Labour Organization, *Global Child Labour Trends 2008 to 2012* (Geneva, ILO International Programme on the Elimination of Child Labour, 2013). Available from http://www.ilo.org/ipec/Informationresources/WCMS_IPEC_PUB_23015/lang--en/index.htm.

3 International Labour Organization, *ILO Global Estimate of Forced Labour: Results and Methodology* (Geneva, Special Action Programme to Combat Forced Labour, 2012). Available from http://www.ilo.org/global/topics/forced-labour/publications/WCMS_182004/lang--en/index.htm.

UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific

Statistical Yearbook for Asia and the Pacific 2015

Sustainable Development Goal 9

Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Sustainable Development Goal 9 is focused on building resilient infrastructure, sustainable industrialization and fostering innovation. As such, the targets in place to monitor the progress made in these areas cover the following: resilient and upgraded infrastructure; inclusive and sustainable industrialization; financial support for small-scale enterprises; enhanced scientific research; development of domestic technology; and increased access to information and communications technology.

Three areas will be highlighted in the present analysis**.** First issues concerning reliable infrastructure with respect to the movement of passengers and freight will be discussed, with a focus on port container traffic and passenger movement by air. Next, issues pertaining to progress in research will be addressed by examining changes in countries' expenditure on research with respect to GDP and the nuber of researchers per capita over time in the region. Finally, progress made in areas of communications will be examined, including trends in access to mobile-cellular telephone subscriptions and fixed broadband subscriptions.

9.1 Safe and sustainable transport infrastructure

Efficient, reliable and safe transport infrastructure and services are crucial to regional integration and the sustainable and inclusive economic and social development of countries. Asia and the Pacific has continued to see improvements in transport infrastructure and services against a backdrop of substantial growth in output, trade and investment experienced by many countries in the region. On the other hand, the improvements have been quite uneven both across and within countries. Long-term commitment is required to address critical issues in the transport sector to support sustained economic growth, improve the living standards of the people and further increase the competitiveness of economies in the region. At the same time, political commitment and effective interventions are required to improve road safety and the energy efficiency of the transport sector.

The Asian and Pacific region continues to account for the major share of global port container traffic, with that share being more than 57 per cent in 2012

The Asia-Pacific region in 2012 accounted for approximately 57 per cent of the global share of "port container traffic", a term referring to measurement of the flow of containers from land-to-sea transport and vice-versa, calculated in twenty-foot equivalent units (TEU). The share of that traffic coming to the Asia-Pacific region has been gradually rising since 2000 when the region's share was 48 per cent of the global total. The volume of port container traffic in China,

with its share being more than 45 per cent of the total regional volume, has contributed significantly to the region's increase. Since 2000, China's port container traffic has increased by 11.7 per cent per annum, growing from 41 million TEU in 2000 to 155 million in 2012. (Fig 1)

The contribution of port container traffic to GDP, measured in TEU per $1 million of GDP, has been in decline in the Asia-Pacific region since 2007, dropping from 17.0 TEU to 13.5 in 2012. However, the figure is still much higher than those for Europe (5.3 TEU) and North America (2.7 TEU). The South-East Asian subregion has the highest figure in Asia and the Pacific at 35.1 TEU per $1 million of GDP, whereas the North and Central Asian subregion has the smallest figure at 2.1 TEU.

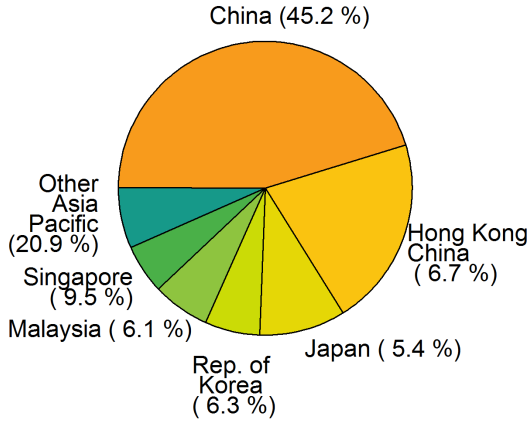


Figure 1
Percentage contribution to total port container traffic in Asia and the Pacific, 2012

A total of 1.26 billion passengers flew with airlines registered in Asia and the Pacific in 2014, an annual increase of 8.6 per cent a year since 2010

Passengers flying both domestically and internationally with airlines registered in the Asian and Pacific region have been steadily increasing in number, growing from 902 million air passengers in 2010 to just under 1.26 billion in 2014.

The subregion with registered airlines carrying the most passengers is East and North-East Asia, which accounted for 48 per cent of the region's total in 2014. All subregions in Asia and the Pacific have experienced solid growth of between 8 and 12 per cent per annum in their air transport passenger numbers, with the exception being the Pacific subregion, which still grew, but by a modest per cent.

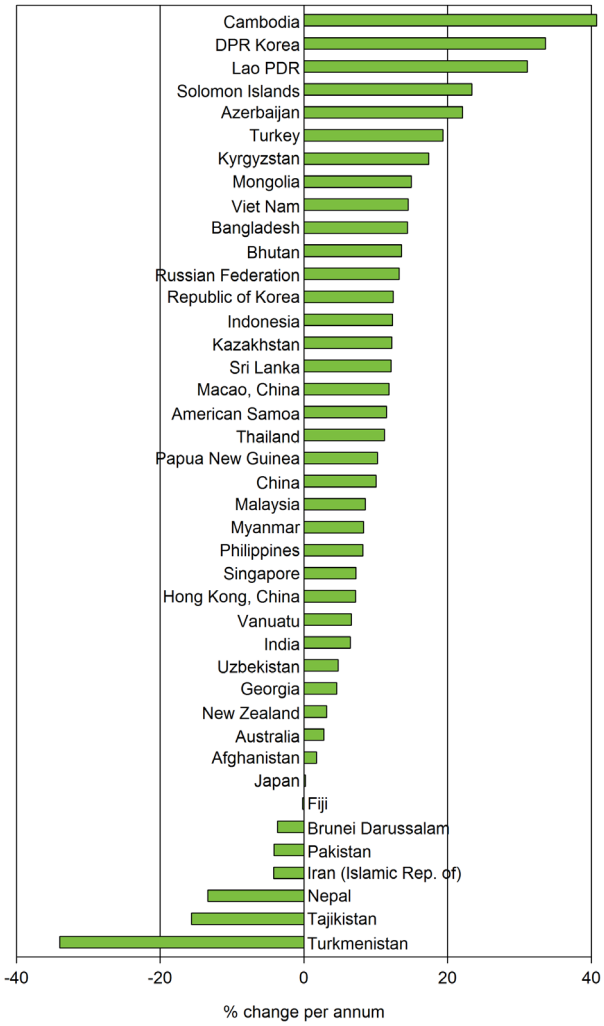


Figure 2
Annual growth in airline passengers, Asia and the Pacific, 2010-2014

Not all countries have experienced growth in the number of airline passengers, with Turkmenistan, Tajikistan and Nepal showing the largest annual drops in the number of passengers, that is, by 34, 16 and 13 per cent respectively. Cambodia, the Democratic People's Republic of Korea and the Lao People's Democratic Republic had the largest percentage increase in airline passengers, with increases of 41, 34 and 31 per cent respectively. (Fig 2)

Figure 3
Gross domestic expenditure on Research and Development, % of GDP, by income grouping, 2013

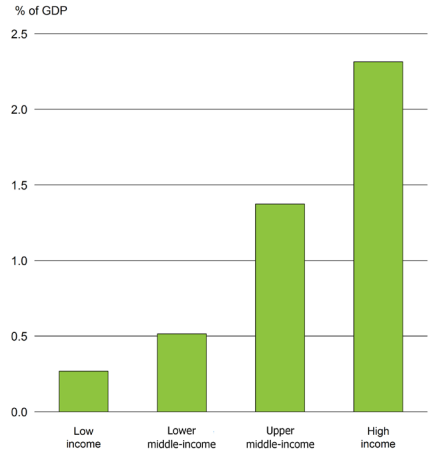
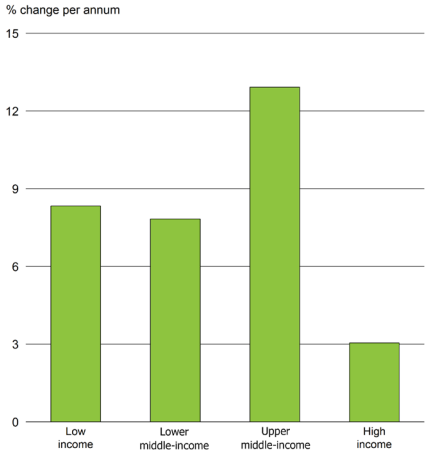


Figure 4
Annual increase in spending on Research and Development, by income grouping, 1999-2013



9.2 Research and science, technology and innovation

The critical role of science, technology and innovation (STI) in efforts to achieve sustainable and inclusive development was confirmed globally in the outcome document of the 2012 United Nations Conference on Sustainable Development, entitled "The future we want".[1] STI is also one of the cross-cutting issues relevant to many of the goals and targets contained in the 2030 Agenda for Sustainable Development,[2] covering all three dimensions – economic, social and environmental – of sustainable development. Within the concept of STI, importance is placed not only on developing and utilizing new technologies, but also on learning to use existing technologies, enhancing local absorption capacity and transferring knowledge to meet the needs of cross sections of society.

In the Asian and Pacific region, countries such as China, Japan and the Republic of Korea have developed substantial levels of STI competence and capabilities, which are driving their national development. However, most developing countries are at various stages of acquiring STI competence and capabilities, while least developed countries and Pacific island developing States have yet to put in place STI infrastructure and develop suitable policies to harness the potential benefits of STI. This situation can be gauged from the 2015 Global Innovation Index,[3] which shows that only 6 Asia-Pacific countries are among the top 20 countries. (Box 1)

Spending on research and development increased tenfold in China between 1999 and 2013

Economies in Asia and the Pacific have actively invested in research and development over the past decade. In 2013, in high income economies, 2.3 per cent of GDP was spent on such activity, compared with only 0.3 per cent in low income economies (Fig 3). Growth in expenditure on research and development across groups at all income levels is significant (Fig 4). In low, lower-middle and upper-middle economies, annual growth in expenditure on research and development was between 7.8 and 12.9 per cent from 1999 to 2013.

In Asia and the Pacific, China is leading in expenditure on research and development, spending $287 billion in 2013, 10 times more than the $28.7 billion spent in 1999. The next largest spender on research in the region was Japan with expenditure of $141 billion in 2013, an increase of one third over the $107 billion spent in 1999, a far smaller increase than that of China. Other countries in the region that invest significantly in research and development include the Republic of Korea ($65 billion in 2013), India ($43 billion in 2011) and the Russian Federation ($25 billion in 2013).

The high income economies of Asia and the Pacific have over 30 times more researchers per person than the low income economies

The number of researchers per million inhabitants is increasing throughout the Asia-Pacific region; the numbers increased the fastest in the upper middle-income economies at 7.7 per cent per year from 1999 to 2013 (Fig 5). The high income economies still had by far the highest proportion of researchers, that is, 3,814 researchers per million inhabitants in 2013 compared with upper middle-income

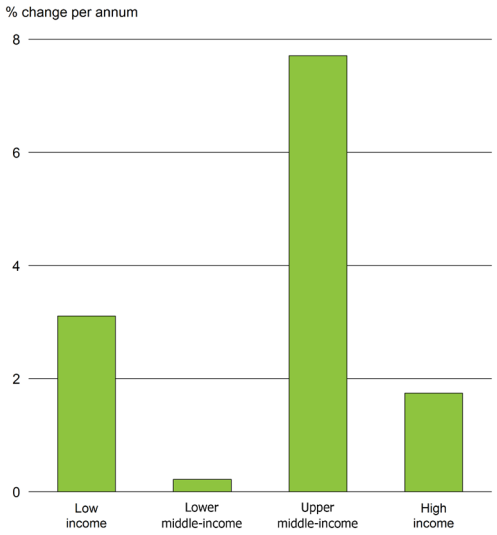


Figure 5
Growth per annum in number of researchers per million inhabitants, by income grouping, 1999-2013

Box 1

Global Innovation Index

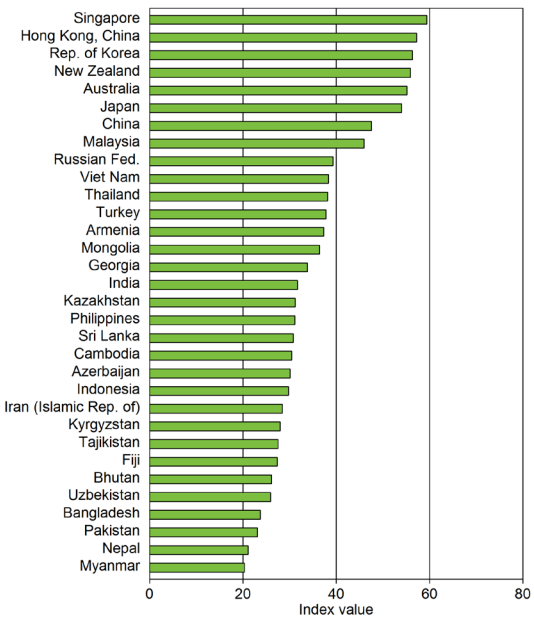
The Global Innovation Index 2015 covers 141 economies around the world (32 from Asia and the Pacific) and uses 79 indicators across a range of themes. The index presents a rich data set to identify and analyse global innovation trends.

The indicator model, which incorporates the 79 indicators, covers three main categories:

(a) Quantitative/objective/hard data (55 indicators);
(b) Composite indicators/index data (19 indicators);
(c) Survey/qualitative/subjective/soft data (5 indicators).

Of the 32 countries and areas in the Asia-Pacific region, Singapore ranked highest at seventh, although its ranking had dropped from third place in 2012. Other countries and areas in the region that ranked highly in the index in 2015 were Hong Kong, China (eleventh); the Republic of Korea (fourteenth); New Zealand (fifteenth); Australia (seventeenth); and Japan (nineteenth). At the other end of the scale, countries in the region that ranked poorly among the 141 countries analysed were Myanmar (138th), Nepal (135th) and Pakistan (131st).

Figure
Global innovation index score, selected countries in Asia and the Pacific, 2015



economies (888 per million), lower middle-income economies (193 per million) and low income economies (121 per million). Based on the data available, the Republic of Korea had the highest rate of researchers per million inhabitants (6,457), followed by Singapore (6,442) and Japan (5,201). Males involved in research still exceed females in most countries in the Asia-Pacific region, especially in Nepal where only 8 per cent of researchers were female in 2010, Japan (15 per cent female in 2013) and the Republic of Korea (18 per cent female in 2013). However, females are more prevalent in this line of work in certain countries, such as Azerbaijan (53 per cent of researchers being female in 2013), Thailand (53 per cent female in 2011), Georgia (52 per cent female in 2013) and Kazakhstan (51 per cent female in 2013).

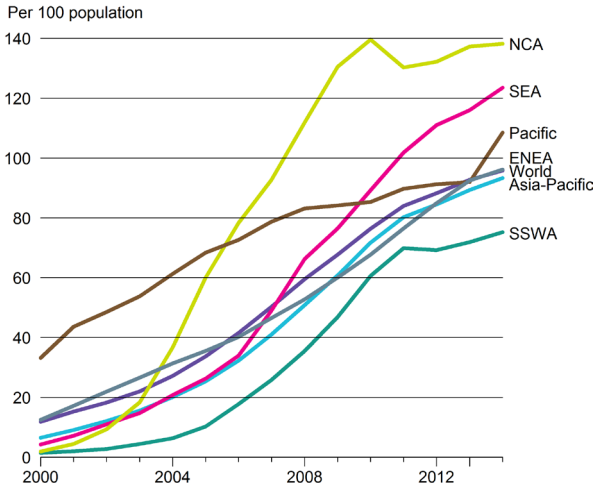


Figure 6
Mobile-cellular subscriptions, subregions in Asian and the Pacific, 2000-2014

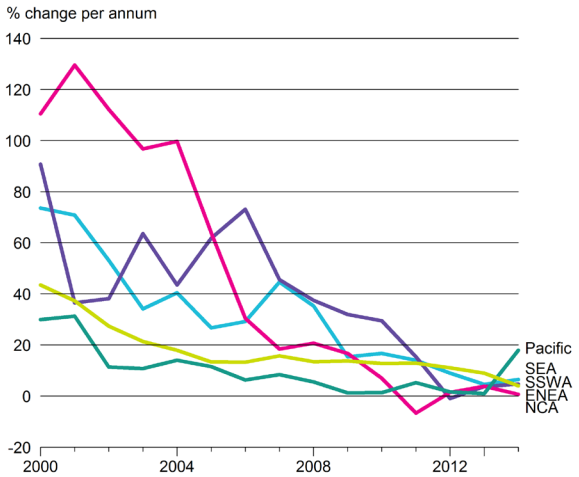


Figure 7
Growth rate of mobile-cellular subscriptions, subregions in Asian and the Pacific, 2000-2014

9. 3 Access to information and communications technology

Access to information and communications technology (ICT) continues to improve in most regions in the world. The ubiquity of mobile phones and affordable communications contributes to the empowerment of previously marginalized and poor people through an increase in people-to-people connectivity and facilitated exchange of knowledge. However, even though more people around the world are now online thanks to the rapid uptake in mobile-broadband technology, large disparities in terms of ICT access and use continue to exist in the Asia-Pacific region, with least developed countries still lagging far behind their developing neighbours in terms of access and use.

In Asia and the Pacific, there was just under one mobile-cellular phone subscription per person in 2014

In the Asia-Pacific region, the number of mobile-cellular subscriptions continued to increase, from 89.3 per 100 population in 2013 to 93.3 in 2014. This figure is a little below the global average of 95.8 (Fig 6). According to ITU estimates, the number of mobile-cellular subscriptions is almost equal to the number of people on Earth (7.0 billion in 2014). Of those with mobile subscriptions, nearly 60 per cent (4.1 billion) are situated in the Asia-Pacific region. As the market reaches saturation levels, however, the annual growth rate of mobile-cellular subscriptions in the region has slowed to single-digit rates. The annual growth rate in 2004 was 28.7 per cent, while in 2014, it was only 4.5 per cent.

Within the Asia-Pacific region, it is notable that countries in North and Central Asia continue to show the highest rates of mobile-cellular subscriptions (138.2 per 100 persons); South-East Asian countries follow closely (123.5 per 100 persons). In terms of growth rate, countries and territories in the Pacific subregion showed the strongest annual growth rate at 17.9 per cent in 2014. (Fig 7)

In 2014, despite recent progress there were only 8.7 fixed broadband subscriptions per 100 people in Asia and the Pacific, which is below the global average of 10.4

The number of fixed broadband subscriptions in the Asia-Pacific region increased from 0.4 per 100 people in 2001 to 8.7 in 2014. Despite the steady growth in the subscription rate, the Asia-Pacific region still lags behind the global average of 10.4 per 100 people in 2014. Within the region, subscriptions in countries and territories in the Pacific subregion remained highest at 19.8 per 100 people (largely influenced by Australia and New Zealand) in 2014, with East and North-East Asia having the second highest subscription rate at 16.7 per 100 people. South and South-West Asian countries had the lowest rate at 2.0 per 100 people. In terms of annual growth rate, subscriptions in the Asia-Pacific region grew by 6.1 per cent in 2014, higher than the global average of 4.3 per cent. (Fig 8)

The uptake of mobile broadband is increasing at a dynamic pace in the Asia-Pacific region; subscriptions increased from 4.6 per 100 people in 2009 to 30.5 in 2014. The subscription rate in Asian and Pacific high income economies is as high as 97.1 per 100 people compared with low income economies in the region, for which the subscription rate is 10.8 per 100 people. (Fig 9)

Since fixed broadband offers many more development-enhancing applications than a mobile-cellular subscribtion and can therefore have far-reaching potential for contributing to the achievement of national development goals, it would be desirable to take measures to increase the uptake of and access to fixed broadband, including addressing existent inadequacies in ICT infrastructure.

9.4 Data and monitoring issues

Huge data gaps on transport infrastructure, innovation and research

Data on "port container traffic", measured in TEU and per $1 million of GDP, are not available for more than half the countries in the Asia-Pacific region. For those countries where such data do exist, the data are available only for the period up to 2012. In the Pacific subregion, only 6 of 21 countries and territories had such data available; in North and Central Asia, 2 of the 9 countries in that subregion had relevant data. For many of the countries which did have such data, the data became available only from 2007 onwards.

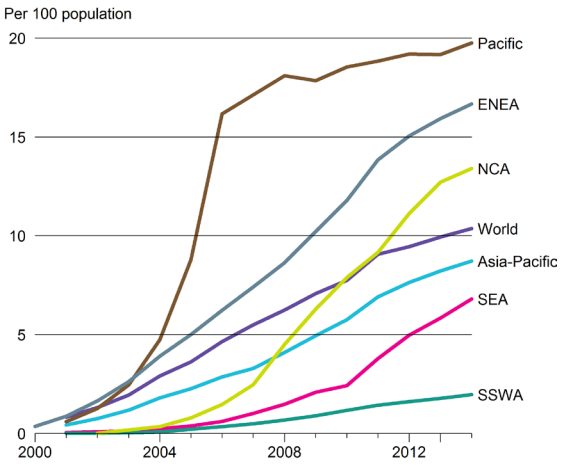


Figure 8
Fixed broadband subscriptions, by subregion, 2000-2014

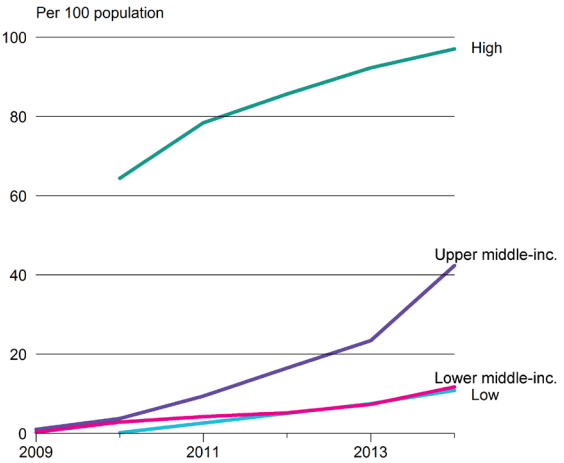


Figure 9
Active mobile-broadband subscriptions,[4] by income grouping, 2009-2014

Box 2

Asia-Pacific information superhighway

In recognizing that large segments of the population in the Asia-Pacific region remain unconnected and excluded from the many social and economic opportunities offered by broadband Internet connectivity, ESCAP launched the Asia-Pacific information superhighway initiative in 2015. The "superhighway" is a continent-wide meshed network of terrestrial optical fibre which is aimed at increasing the availability and affordability of broadband Internet across Asia and the Pacific.

Through a working group, ESCAP countries are currently preparing a regional cooperation framework that would set standards for a range of measures to strengthen the regional broadband terrestrial backbone network; establish sufficient Internet exchange points; harmonize Internet traffic management systems and policies; enhance transmission infrastructure resilience; and provide inclusive access for all to broadband Internet.

See: E/ESCAP/RES/71/10: ESCAP resolution 71/10. Available from http://www.un.org/ga/search/view_doc.asp?symbol=E/ESCAP/RES/71/10.

Data on air passengers recorded by airlines operating in Asia-Pacific countries are available for most countries in the region, but only for the period 2010-2014. Only the Pacific subregion was missing data for most countries and territories; in most of those economies, while flights operate internationally and domestically, they do not have their own airlines to report such information.

Information about countries' spending on research and development in absolute terms and as a percentage of GDP was available for most countries in the subregions of Asia and the Pacific from 1999 through to 2013, although in South-East Asia and South and South-West Asia, most such statistical information is missing for many years. In the Pacific subregion, such data were available only for Australia and New Zealand.

Details on the number of persons undertaking research activities was available for most countries on a yearly basis in East and North-East Asia, along with the Russian Federation, but they were available only for some years for many of the other countries in Asian subregions. In the Pacific subregion, data were available for three economies only (Australia, Guam and New Zealand).

Good data availability on subscriptions to ICT services

Data on mobile-cellular phone subscriptions were available from 1990 to 2014 for all countries in Asia, with only Timor-Leste having started its series more recently in 2007. In the Pacific subregion, most countries and areas, with the exception of the Cook Islands and Niue, had data for most years during this same period.

For subscriptions to fixed broadband, data were also readily available for all countries in Asia, with the exception of the Democratic People's Republic of Korea, from 2000 to 2014, although for a few countries some data were missing in the earlier part of this period. In the Pacific subregion, data were available for 16 of the 21 countries and territories.

Mesurement challenge: Access to roads

In rural areas of the developing world, where the majority of the poor live, good transport connectivity through road infrastructure and transport services is an essential part of the enabling environment for sustainable growth.

A lack of detailed nationwide data has limited previous efforts to develop measures of access to roads in rural areas that would guide policy and investment. The World Bank, with support from the Department for International Development (DFID) of the United Kingdom of Great Britain and Northern Ireland, has been piloting a methodology that exploits advances in digital technology to assess population distribution and infrastructure location and quality.[5] The resulting Rural Access Index (RAI) may serve as a useful and cost effective tool for Governments planning their rural transport programmes and as an indicator of progress towards the achievement of Sustainable Development Goal 9.

An initial such index introduced in 2005 primarily used household surveys to estimate road accessibility, defined as a population living within 2 km of an all-season road. The survey methodology was the source of several weaknesses in the index. In addition to being difficult and costly to conduct and update, household surveys cannot provide both consistent and extensive data on road conditions.

A new, GIS-based index that exploits advances in digital technology is under development. The purpose is to create a more accurate, operationally relevant and cost effective RAI that will also aid in monitoring improvements in accessibility. As in the original survey methodology, access to transport is defined as the share of the rural population living within 2 km of the nearest all-season road. In Africa and South Asia, eight countries are currently testing the new RAI methodology, and preliminary estimates are available for Kenya and Mozambique, but not yet for South Asia.

Endnotes

1 General Assembly resolution 66/288, annex.

2 General Assembly resolution 70/1.

3 Cornell University, INSEAD (Institut Européen d'Administration des Affaires) and World Intellectual Property Organization, *The Global Innovation Index 2015: Effective Innovation Policies for Development* (Ithaca, New York; Fontainebleau, France; and Geneva, 2015). Available from http://www.globalinnovationindex.org/.../reportpdf/gii-full-report-2015-v6 (1).pdf.

4 Calculated by ESCAP based on data from International Telecommunication Union, *World Telecommunication/ICT Indicators database 2015* (19th Edition/June 2015), released on 1 July 2015 (http://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx).

5 World Bank, *A New Measure of Rural Access to Transport.* Available from http://www.worldbank.org/en/topic/transport/brief/connections-note-23.

UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific

Statistical Yearbook for Asia and the Pacific 2015

Sustainable Development Goal 10
Reduce inequality within and among countries

Sustainable Development Goal 10, which is concerned with the issue of inequality, has a broad array of targets that address such matters as income growth; social, economic and political inclusiveness; equality of outcome; social protection; regulation of global financial markets; the representation and voice of developing countries in global decision-making forums; and orderly, safe, regular and responsible migration.

In noting the breadth of commitment to achieving those targets, statistical information is presented on the following: (a) economic equality and inequality; (b) social protection; and (c) financing development through overseas development assistance, foreign direct investment and migrant remittances.

10.1 Economic equality and inequality

Greater economic equality can be achieved only if increases in the income of the bottom 40 per cent of the population are higher than the national average. Economic equality has multiplier effects, as inequality deprives people not only of the immediate benefits of growth but also limits access to means to develop their economic potential such as adequate health care, education, energy, credit, land and the like.

Of the 1.2 billion people worldwide that have lifted themselves out of extreme poverty since 1990, almost all (1.1 billion) were living in Asia and the Pacific

Significant progress has been made in reducing the numbers of people worldwide living on less than $1.25 per day (in 2005 purchasing power parity) with the number of such extremely poor people dropping from 2.4 billion in 1990 to approximately 1.2 billion in 2012 (SDG 1).

Of the 1.2 billion reduction in the number of people living in extreme poverty, 1.1 billion of those people were living in the Asia-Pacific region. Much of the progress can be attributed to China, the world's most populous country, where the percentage of people living in extreme poverty fell from about 60.7 per cent in 1990 to 6.3 per cent in 2011.

All Asia-Pacific countries that have relatively good coverage of poverty data for the past 30+ years report reductions in the proportion of people living in extreme poverty, with most of these countries reporting significant reductions.

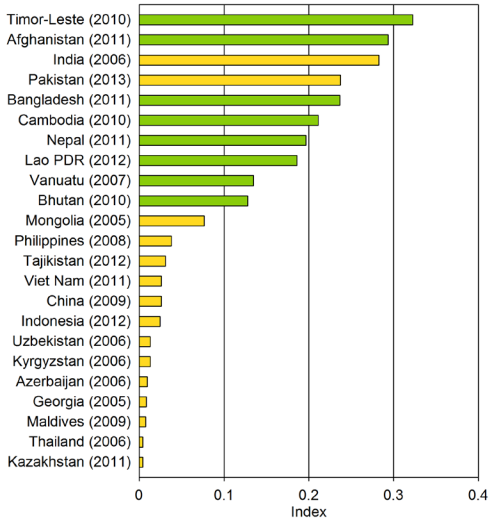
Box 1

Multidimensional Poverty Index supports prioritization of least developed countries in tackling poverty

The Multidimensional Poverty Index (MPI), developed in 2010 by the Oxford Poverty[a] and Human Development Initiative and the United Nations Development Programme[b], is a measure of acute poverty at the level of individuals with respect to education, health and living standards. If a person is deprived in one third or more of 10 (weighted) indicators, namely nutrition, child mortality, years of schooling, child school attendance, cooking fuel, sanitation, potable water, electricity, type of floor, and assets, that person is deemed to be "MPI poor".

In Asia and the Pacific, with a few exceptions, MPIs for the least developed countries (highlighted in green) are distinctly higher than those for other countries in the region (highlighted in yellow); suggesting the prioritization of least developed countries in the fight against poverty.

MPI: Asia and the Pacific, selected countries, selected years, 2005-2013



a Oxford Poverty & Human Development Initiative. Available from http://www.ophi.org.uk/multidimensional-poverty-index/.

b UNDP Human Develoment reports. Available from http://hdr.undp.org/en/content/multidimensional-poverty-index-mpi.

The income of the richest 20 per cent of people living in the countries of Asia and the Pacific is between 11 and 4 times higher than the income of the poorest 20 per cent

The latest data for selected countries in the Asia-Pacific region show a significant difference in the income of the richest quintile compared with the poorest quintile. In Malaysia, the richest quintile had an income level 11.3 times higher than the poorest quintile; in China, the richest quintile earned 10.1 times more than the poorest quintile. At the other end of the scale are countries such as Pakistan (4.1 times higher) and Kazakhstan (4.0 times higher); those data show far less disparity between the richest quintile and poorest quintile.

While income inequality has declined since the early 1990s in some countries in Asia and the Pacific, the share of total income received by the poorest quintile in 11 of 17 countries for which data were available has decreased (Fig 2). Although more people in China have lifted themselves out of poverty than any other country in the world, the poorest quintile in that country now accounts for a lower percentage of total income (4.7 per cent) than in the early 1990s (8.0 per cent). The same unfortunate trend is observed for a number of other countries, including in Indonesia (from 9.4 per cent to 7.6) and in the Lao People's Democratic Republic (from 9.3 per cent to 7.6).

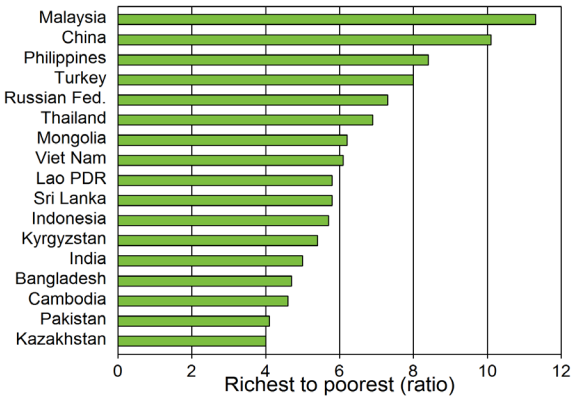


Figure 1
Ratio of income of richest quintile to poorest quintile, selected countries in Asia-Pacific, most recent data

In a number of other countries, people in the poorest income quintile have increased their share of total income including in Kyrgyzstan (from 2.5 per cent to 7.7), the Russian Federation (4.4 per cent to 6.5), Kazakhstan (7.5 per cent to 9.5) and Pakistan (8.1 per cent to 9.6).

Commensurate disparities can be observed in the richest quintile's share of total income (Fig 3). In countries where there has been a decrease in the percentage of total income attributable to the poorest quintile, there has been an increase in the richest quintile's share of total income. The greatest percentage point increase in the share of total income received by the richest quintile was in China (from 40.7 per cent to 47.1), followed by Indonesia (from 38.9 per cent to 43.7) and the Lao People's Democratic Republic (from 40.1 per cent to 44.3). Based on the data available, Kyrgyzstan

Figure 2
Percentage of income of poorest quintile for selected countries in Asia-Pacific, early 1990s and latest year

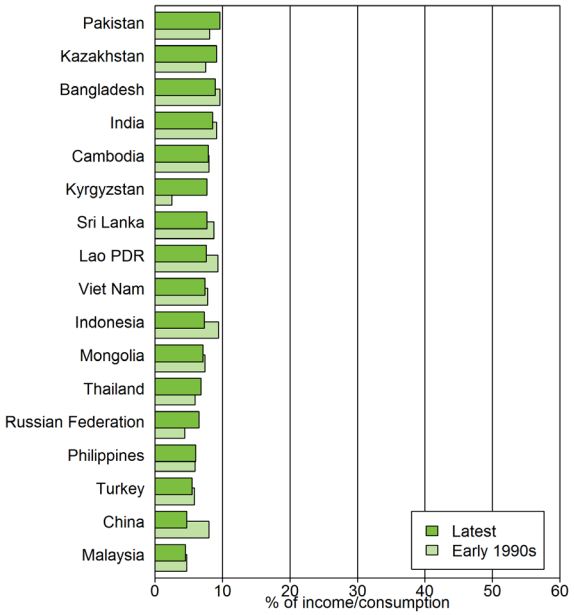
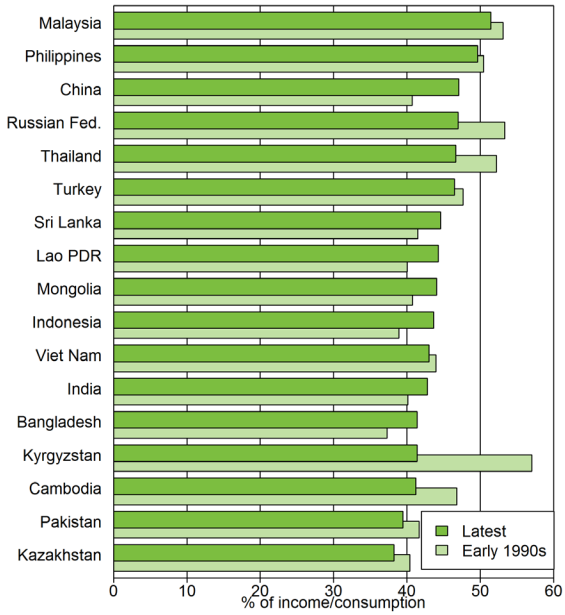


Figure 3 (right)
Percentage of income of richest quintile for selected countries in Asia-Pacific, early 1990s and latest year



Box 2

Social Protection Index

In 2005, the Asian Development Bank, together with its partners, developed the Social Protection Index (SPI), which is a quantitative measure of national social protection systems. It was created for the purpose of providing Governments with data to support policymaking and to assess the nature and effectiveness of social protection programmes.

The index comprises three major elements: social insurance; social assistance; and labour market programmes.

SPI is calculated by dividing expenditure on social protection (E) by the number of intended beneficiaries (B) using the following formula: SPI = (ESI + ESA + ELMP) / (BSI + BSA + BLMP).

For assessment purposes, this ratio of expenditures to beneficiaries is compared with poverty-line expenditures. For example, if SPI were 0.100 in country X, this index number would mean that total social protection expenditures (per intended beneficiary) represent 10 per cent of poverty-line expenditures. The higher the index, the better is a country's performance.

Since the introduction of SPI, social protection indices calculated for the Asian and Pacific region have ranged from 0.001 (India in 2010) to 0.538 (Japan in 2005).

Source: Asian Development Bank (ADB), *The Social Protection Index: Assessing Results for Asia and the Pacific*. Available from http://www.adb.org/sites/default/files/publication/30293/social-protection-index.pdf.

had the highest proportion of income reported for the richest quintile in the early 1990s at 57.0 per cent, but this figure has since dropped by 15.6 percentage points to 41.4 per cent in 2011.

10.2 Provision of social services

While social protection is a key means for reducing inequalities and ensuring that the basic needs and rights of all persons are met, such protection remains elusive for many people across Asia and the Pacific. Reduction in inequalities will, according to global commitments under the 2030 Agenda for Sustainable Development, require the adoption and implementation of social protection policies (target 10.4).

Social protection floors in Asia and the Pacific range from solid to fragile

People living in East and North-East Asia, followed by those in North and Central Asia, have greater access to social protection measures than people living in South and South-West Asia, the Pacific and South-East Asia (Fig 4). The substantial variability is apparent when comparing the social protection indices of such countries as Japan (0.416) and Kyrgyzstan (0.329) with those of Papua New Guinea (0.004) and India (0.001).

Countries that spend a greater percentage of their gross domestic product on providing essential services, such as health, education, housing, food security and sanitation, tend to provide their citizens with more social protection than those that spend less on such services. (Fig 5)

Varied targeting of social expenditure means that the poorest do not always benefit

Social assistance[1] is one method of addressing systemic inequalities in the living standards and access to basic services of the most "vulnerable" members of a population; however, such persons are not always the recipients of that kind

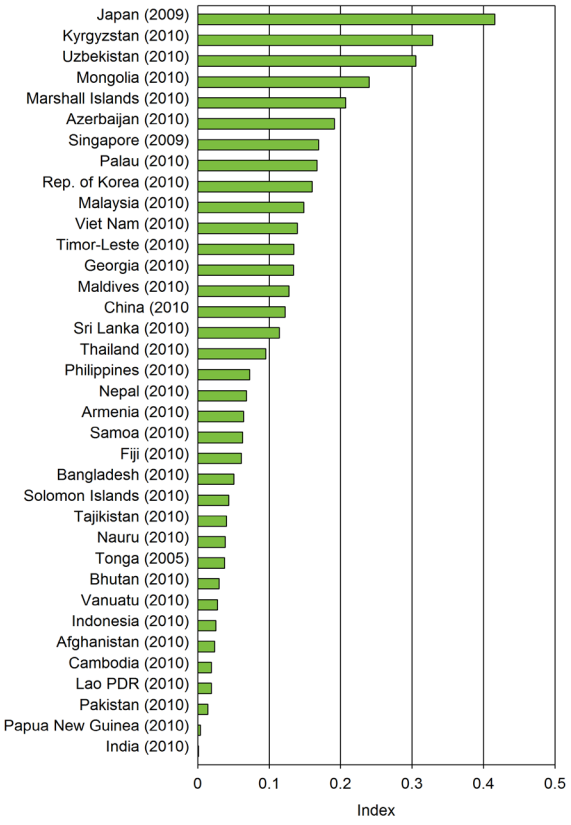


Figure 4
Social Protection Index, selected countries, Asia and the Pacific, most recent data, 2005-2010

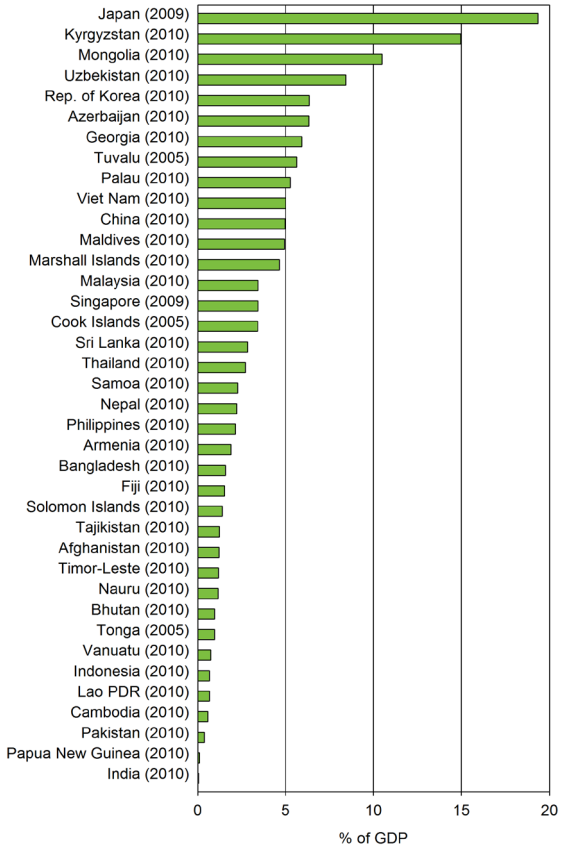


Figure 5
Amount spent on social protection as a percentage of GDP, selected countries, Asia and the Pacific, most recent data, 2004-2010

of assistance. For example, a smaller proportion of the poorest quintile in the Maldives, Papua New Guinea, Solomon Islands and Timor-Leste receive social assistance compared with the richest quintile (Fig 6). In contrast, more than half the people in the poorest quintiles of the populations in Indonesia, the Philippines, Sri Lanka and Turkey receive social assistance

Figure 6
Proportion of population receiving social assistance by selected countries in Asia-Pacific, most recent data, 2004-2013

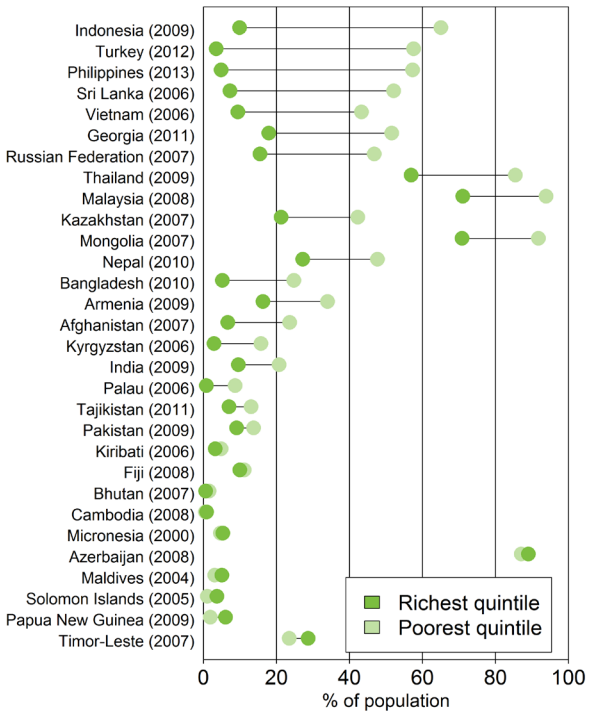
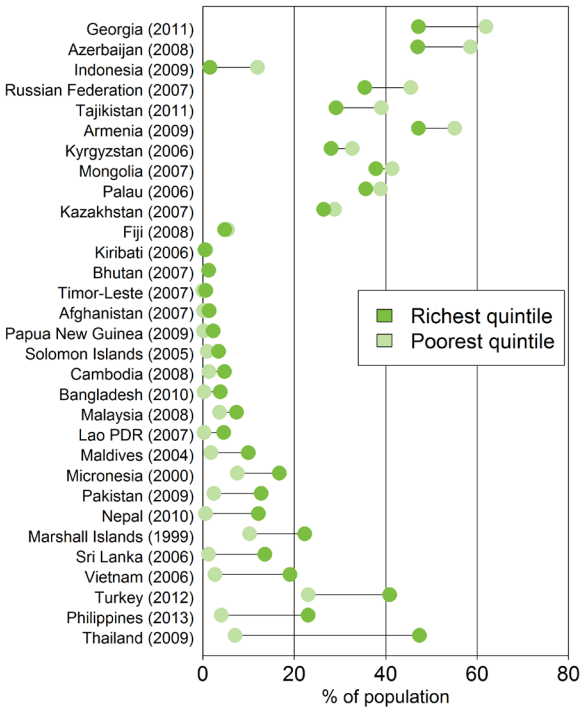


Figure 7
Proportion of population having social insurance, selected countries in Asia-Pacific, most recent data, 2004-2013



expenditures, while less than 10 per cent of the richest quintiles receive such assistance.

Access to social insurance[2] varies across the subregions in Asia and the Pacific (Fig 7). Access is typically higher in the countries of North and Central Asia; more than half the population of Armenia, Azerbaijan and Georgia has social insurance compared with less than 1 per cent of the populations in Afghanistan, Kiribati and Timor-Leste. Furthermore, in 18 of 31 countries for which data are available, people in the richest income quintile are more likely to have access to social insurance schemes than people in the poorest income quintile. The disparity between the richest and the poorest income quintiles is particularly apparent in countries in South and South-West Asia and in South-East Asia. For example, in Thailand in the past decade, 47 per cent of the people in the richest income quintile were involved in "social insurance schemes" compared with 7 per cent in the poorest income quintile.

10.3 Financing development

National economies are increasingly inter-connected through the operations of multi-national companies, cross-border financing and migration flows. Stated means of implementing Sustainable Development Goal 10 include improving official development assistance, foreign direct investment and migrant remittances.

Official development assistance for Asia and the Pacific increased from $30.6 billion in 2009 to $32.4 billion in 2013, but its share of all such assistance decreased from 24.1 to 21.6 per cent

Official development assistance (ODA) is and will remain a critical source of finance, particularly for very poor and fragile countries, throughout the Asian and Pacific region. It is important to use ODA in innovative ways, as well as for strengthening leadership in developing countries in managing the diversity of finance and the mobilization of domestic resources.

Since the 2008/09 global financial crisis, ODA increased by 18 per cent globally, from $127 billion in 2009 to $150 billion in 2013. The corresponding percentage increase for the Asian and Pacific region was lower, rising 6 per cent in the same period from $30.6 billion in 2009 to $32.4 billion in 2013 (Fig 8). In 1999, the Asian and Pacific region received more ODA than the African region ($16.7 billion compared with $16.1 billion), but since that time the African region has been receiving increasingly more ODA than the Asian and Pacific region; the African region received $23.4 billion more ODA in 2013 than did the Asia-Pacific region.

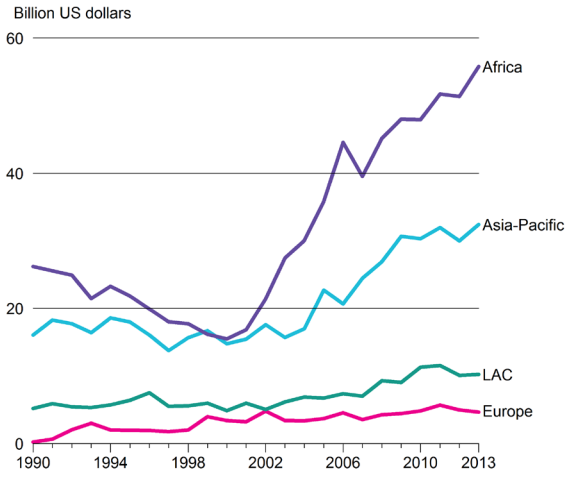


Figure 8
ODA received by global region, 1990- 2013

The amount of ODA received by subregions of Asia and the Pacific differs substantially, with South and South-West Asia having received the largest amount of ODA over the past 10 years, that is, $16.9 billion in 2013, followed by South-East Asia at $9.6 billion, a 50 per cent increase over the $6.1 billion it had received in the previous year. (Fig 9)

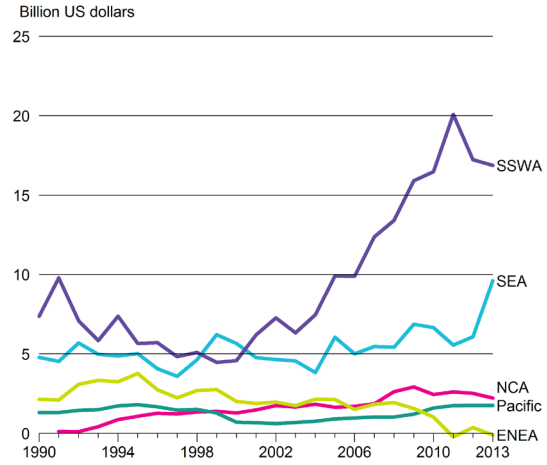


Figure 9
ODA received in Asia-Pacific and subregions, 1990-2013

ODA accounts for a substantial share of total GDP for some countries – and in particular countries in Asia and the Pacific where ODA constitutes the highest share of GDP. Of the 10 countries in Asia and the Pacific where ODA constitutes the highest share of GDP, 9 are small island developing States, with Tuvalu receiving the greatest share at 70 per cent. (Fig 10)

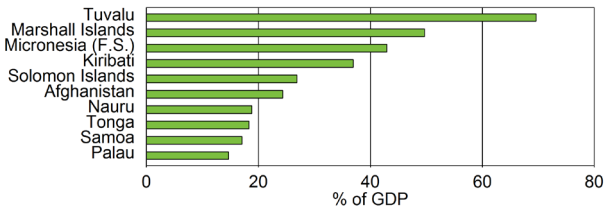


Figure 10
ODA received as percentage of GDP, top ten countries in Asia and the Pacific

Foreign direct investment inflows to Asia and the Pacific were worth $533 billion in 2014, representing 43 per cent of all such investment globally

Foreign investment comes in several forms: portfolio investment, foreign loans and foreign direct investment (FDI) are three important types. Of these, foreign direct investment in industry and services has the strongest association with the economic growth of countries in the Asia-Pacific region.

FDI inflows to the Asia and Pacific region have flattened over the last three years, with a slight decrease in inflows in 2014 to $533 billion from $541 billion in 2013, rebounding after a dip in 2009 following the global financial crisis. However, owing to declines in inflows in other regions of the world, the Asia-Pacific region increased its share of global inflows from 34 per cent in 2011 to 43 per cent in 2014, with China and Hong Kong, China receiving 24 per cent and 19 per cent of all FDI to the region. In contrast, the share of FDI inflows to Europe has dropped from 46 per cent to 24 per cent of total global inflows since 2007. (Fig 11)

Although FDI inflows to Asia and the Pacific have been stable over the last three years, there has been more than a 16-fold increase from the $33 billion in FDI in 1990.

In 2014, East and North-East Asia received $247 billion in FDI, nearly half (46 per cent) of the region's total inflow, 94 per cent of which was provided to China and Hong Kong, China.

For the first time since 1991, FDI outflows from Asia and the Pacific exceeded FDI inflows in 2014. The significant drop in FDI inflows to the Russian Federation was the major cause of this shift, causing an overall decline in FDI inflows for the region, while FDI outflows continued to increase at a steady rate. (Fig 12)

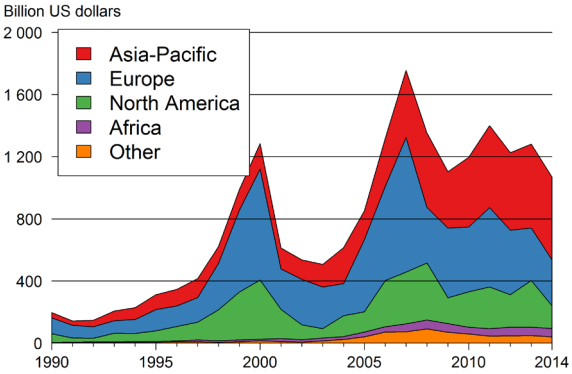


Figure 11
Foreign direct investment

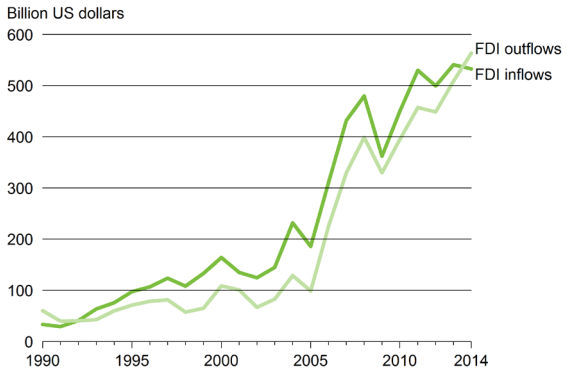


Figure 12
FDI inflows to and outflows from Asia and the Pacific countries. 1990-2014

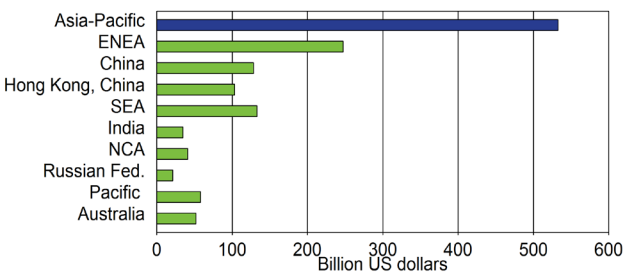


Figure 13
FDI inflows by sub-region and selected countries in Asia-Pacific, 2014

In each subregion of Asia and the Pacific, key countries are the destination for the bulk of the overall inflows for that subregion. In the Pacific subregion, Australia accounts for 89 per cent of the subregion's FDI inflows. In North and Central Asia, the Russian Federation accounts for 51 per cent of the subregion's FDI inflows; in South and South-West Asia, India accounts for 65 per cent. In South-East Asia, Singapore accounts for 51 per cent; in East and North-East Asia, China and Hong Kong, China account for 94 per cent. In total, these 6 countries in the 5 subregions account for 76 per cent of total FDI inflows for Asia and the Pacific. (Fig 13)

Remittances amounted to $226 billion in Asia and the Pacific, with India accounting for 30 per cent of the total

Remittances are a key source of financing for sustainable development and are particularly relevant to economic inclusivity and migration. Remittances into the Asian and Pacific region have been steadily increasing over the years, rising from $20 billion in 1991 to more than $226 billion in 2013. The two most populous countries in the region, India ($70 billion) and China ($39 billion) account for nearly half of all remittances in Asia and the Pacific.

Within the region, Australia; Macao, China; and Singapore, all high income economies, have the highest positive migration rates (where the number of immigrants exceeds the number of emigrants) and receive some of the lowest remittances as a percentage of GDP. In contrast, Georgia, Micronesia and Tonga have relatively high negative migration rates (where the number of emigrants exceeds the number of immigrants) and receive some of the highest remittances as a percentage of GDP.

For many countries in the region, remittances constitute a significant source of income. The top 10 recipients of remittances as a proportion of GDP all have negative net migration rates; they range from low income to upper middle economies and encompass the three

subregions of North and Central Asia, South and South-West Asia, and the Pacific. (Fig 14, 15)

10.4 Data and monitoring issues

Data for poverty analysis rely on household surveys

The issues addressed in this chapter are focused on income equality, social protection and financing development through overseas development assistance, foreign direct investment and migrant remittances. The breadth of Sustainable Development Goal 10 covers a far wider range of issues, however, but they have not been covered in this chapter for a variety of reasons, primarily owing to the lack of data that would enable analysis of progress towards achievement of the associated targets under that Goal.

Targets not addressed in the chapter include eliminating discriminatory laws, policies and practices (10.3); regulation and monitoring of global financial markets (10.5); voice for developing countries in decision-making in global international economic and financial institutions (10.6); and orderly, safe, regular and responsible migration and mobility of people (10.7).

Data used in the analysis of poverty and income inequality, such as the percentage of income attributed to the poorest and richest quintiles, are derived from surveys, such as Household Income and Expenditure Surveys and Living Standard Measurement Studies. These types of surveys have not been conducted in all countries in the region; in those countries where they have been conducted, the surveys have been infrequent in nature, meaning that the relevant data they would produce are scarce. For this reason, the data needed to examine progress in the area of poverty and income inequality in recent years were available for less than one third of the countries in the region. The methodologies adopted for data collection and the quality of field work varied significantly from country to country, making comparisons between countries difficult,

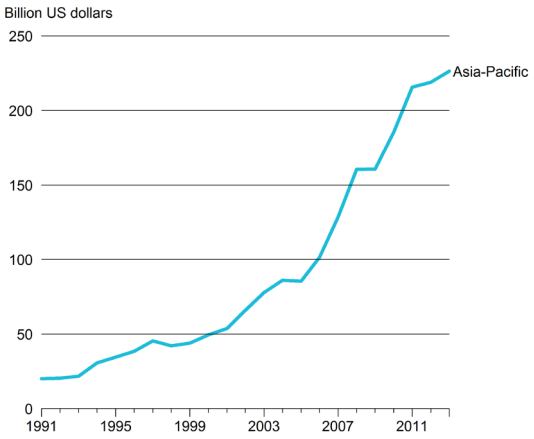


Figure 14
Total remittances received by countries in Asia and the Pacific, 1991-2013

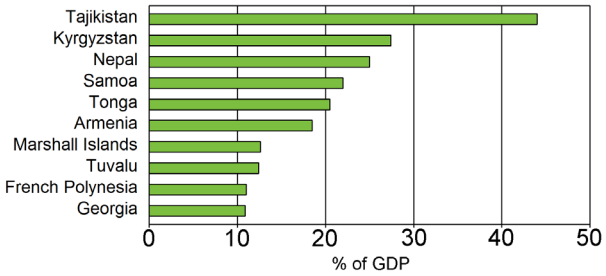


Figure 15
Remittances as a percentage of GDP, top 10 countries in Asia and the Pacific, 2009-2013

but every effort has been made to produce similar measures of income where possible.

Data for multidimensional poverty index analysis were available for a number of countries (23 countries), but not available for more than one time point. The country data used also were not from the same year for each country; the range was from 2005 to 2013. Thus, while comparisons could be made between countries, albeit for different time periods, assessing the progress made by individual countries could not be made over time.

Only limited data available on provision of social services

Data contained in the Social Protection Index developed by the Asian Development Bank were available for 37 countries in the Asian and Pacific region. Those data were collected in the period 2005-2010, with some countries having data only for one year in that period and others for four years.

The data for social protection as a percentage of GDP were available for 38 countries in the region for the years 2003-2010 only, with the vast majority of data existing for the last 3 years only (2008-2010). Most subregions were covered well with such data, except for the Pacific subregion, which accounted for half of the countries and territories with no data.

Data on the proportion of people receiving social assistance and social insurance were available for about 30 countries, although they were available for different subpopulations, including the richest and poorest quintiles.

Comprehensive statistics on financing development

Data on official development assistance (ODA) up to 2013 were available for nearly all countries that would be expected to be recipients of such assistance. The Development Assistance Committee of the Organisation for Economic Co-operation and Development publishes statistics and reports on aid and other resource flows to developing economies, based principally on reporting by Committee members, multilateral organizations and other donors. ODA as a percentage of GDP was also available for nearly all countries that would be expected to be recipients of ODA.

Data on foreign direct investment (FDI) inflows were available for all countries, except seven countries and territories in the Pacific subregion for the years up to and including 2014. This was also the case for FDI inflows as a percentage of GDP. More data were missing, however, on FDI outflows for each subregion, a situation which could be attributed to either the insignificance of such data for some countries in the region or the fact that collecting such data from some countries is a more complex process than doing so for inflows.

Net migration rates for all countries in the Asia-Pacific region were available in five-year blocks, starting from 1990-1995 to 2010-2015, with the exception of eight countries in the Pacific subregion. For data on remittances received as a percentage of GDP, 47 of the 58 countries in the Asia-Pacific region had data available, with the Pacific subregion accounting for 6 of the 11 missing data points.

Measurement challenge 1: Social security[3]

Measuring social security coverage is a complex task. Several dimensions need to be considered in order to arrive at a complete assessment. In practice, few countries have available to them the full range of statistical data necessary for making a complete assessment of social security coverage; nevertheless, partial information is available for a large number of countries. Many countries have acknowledged the need to undertake better regular monitoring of social security coverage and are stepping up their efforts to improve data collection and analysis.

The main sources of information for measuring social security are: country legislation; data on protected persons, beneficiaries, benefits provided, costs and financing from the registers and accounts of the institutions administering various social security schemes; and household survey data from regular labour force surveys, household income and expenditure surveys, household budget surveys or surveys of a similar type, and from surveys specially designed to monitor the coverage and impacts of social security.

To summarize, a number of issues have to be taken into account when measuring social security coverage:

- Social security coverage can be directly measured only separately for each of the specific branches of social security, such as health care, old age or unemployment, or even for a group of specific schemes within each branch. Aggregate coverage measures, such as the previously mentioned Social Protection Index, can be devised only by aggregating the separate coverage indicators for all branches of social security;

- Coverage by social security schemes against specific social risks and contingencies can be understood in two ways: potential coverage, measured by the number of persons protected if a given contingency occurs (for example, those covered by social insurance schemes, or contributors to such schemes), and actual coverage, measured by the number of beneficiaries actually receiving benefits or utilizing services. These two concepts are complementary to each other and should be assessed separately;

- Legal and effective coverage are distinct and must be measured separately. Although people may be legally covered, enforcement of legal provisions may be incomplete, so that effective coverage is usually lower than legal coverage;

- In measuring the extent of coverage, it is important to choose the correct numerator and denominator. Ideally, the absolute number of persons covered for a specific risk is divided by the size of the population group targeted by the specific policy or benefit. For example, to measure the extent of actual coverage by old-age pensions, the number of pensioners should be related to the total number of older persons, where both numerator and denominator can be restricted to a given age bracket, such as those older than 65 (or older than any other statutory pensionable age);

- There is a trade-off between the specificity of national circumstances (and relevance of the indicator at the national level regarding, for example, the retirement age) and international comparability;

- Both administrative and survey data are necessary to arrive at a full assessment of coverage. Administrative data are needed to assess potential and actual effective coverage rates. However, the availability and quality of such data vary across countries and across schemes within countries. Very often, administrative data can be used to trace certain administratively registered events (such as payment of contributions or benefits) rather than the people behind such events. This situation leads to double counting, in particular when aggregating administrative data, as one individual can be contributing to the same scheme from more than one job, or to more than one scheme covering the same contingency, or may be receiving similar types of benefit from more than one source;

- Household survey data are particularly important in assessing the level and quality of coverage and its impacts. Also, only household survey data can help to assess the nature of coverage gaps; the characteristics of population groups not covered, in particular the consequences of their lack of coverage and their need for specific types of coverage. Unfortunately, many regular household surveys still either lack information relevant to assessing coverage or pose questions that are so varied that international comparisons are not possible. Special surveys, too, are rare and not internationally standardized.

Measurement challenge 2: Remittances

According to an IMF framework,[4] remittance measures are perceived as cumulative measures consisting of two standard and eight supplementary components. The components are a mix of primary and secondary income and capital account items, and provide for measuring in sequence personal remittances (R1), total remittances (R2) and total remittances and transfers to households and non-profit institutions serving households (R3).

The two standard components in the balance of payments framework that substantially relate to remittances are "compensation of employees" and "personal transfers" (both components of R1). Currently, only the standard components for remittances appear to be readily available for the calculation of remittance measures. As a consequence, the broader measures R2 and R3 cannot generally be compiled. However,

due to the lack of supplementary components, the compilation of personal remittances (R1) also appears incomplete, resulting from compensation of employees being available predominantly on a gross basis, and missing cross-border capital transfers between households. In the latter case, it appears difficult to assess whether national compilers are indeed missing data or whether this lack of data is regarded as insignificant. In view of the above-mentioned situation, it must be concluded that many remittance measures do not strictly respect the BPM6 standard. For the needs of macroeconomic management and surveillance, however, it appears acceptable to compile measure R1 with gross values for compensation of employees, as well as measures R2 and R3 with less frequency and timeliness.

Within the latest set of proposed indicators for Sustainable Development Goal 10, the key focus with respect to remittances is addressed at reducing the transaction costs of migrant remittances to less than 3 per cent, and eliminating corridors which charge more than 5 per cent. In the Remittance Price Worldwide database, launched by the World Bank in 2008, such vital information on remittances is collected, with a focus on measuring the cost of sending $200 from one location to another. In the latest report issued in June 2015, only 227 corridors worldwide were covered, originating in 32 remittance-sending countries (6 in the Asia-Pacific region) and destined for 89 receiving countries (28 in the Asia-Pacific region).

Endnotes

1 Social assistance refers to the assistance rendered by the government to needy persons without asking them to make contributions to be entitled to get such assistance (eg. workmen's compensation, maternity benefits, old age pensions, etc.).

2 Social insurance refers to a scheme of maintaining fund from the contributions made by the employees and employer, with or without a subsidy from the government (eg. provident fund and health insurance, etc.).

3 International Labour Organization, *World Social Protection Report 2014/15* (Geneva 2014) Available from http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_245201.pdf.

4 International Monetary Fund, *Balance of Payments and International Investment Position Manual,* 6th ed. (Washington, D.C., 2009). Available from http://www.imf.org/external/pubs/ft/bop/2007/pdf/bpm6.pdf.

UNITED NATIONS
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Statistical Yearbook for Asia and the Pacific 2015

11 SUSTAINABLE CITIES AND COMMUNITIES

Sustainable Development Goal 11

Make cities and human settlements inclusive, safe, resilient and sustainable

In the set of Sustainable Development Goals adopted by the General Assembly on 25 September 2015,[1] Goal 11 (Make cities and human settlements inclusive, safe, resilient and sustainable) is the one that refers most directly to urban development issues. It is recognized that increasingly cities are becoming essential to national and regional development prospects, but that much needs to be done to harness their potential and address existing gaps.

Globally, common urban challenges include but are not limited to the availability of safe and affordable housing and basic services, access to land, issues related to urban inquality and livelihood, the management of congestion and sustainable transportation systems, the planning and management of cities, disaster risk reduction, municipal waste management, green public spaces and resilience.[2]

In Asia and the Pacific, the challenges are particularly acute given the region's pronounced urban transformation – and the numbers of people involved. By 2018 more than half of the population of Asia and the Pacific is expected to be living in urban agglomerations. By 2040, added to that huge population will be an additional 1 billion people living in the region's cities. It is expected that by 2050 the urban population in Asia and the Pacific will reach a total of 3.2 billion people, at which time cities will account for two thirds of the region's total population.

11.1 Urbanization

Urbanization refers to the increase in the proportion of the population of a country living in urban areas, expressed as a percentage of the total population of that country. The rate of urbanization is the change in the level of urbanization, usually expressed as an average annual percentage over a particular period.

The rate and level of urbanization in Asia and the Pacific are increasing rapidly. For these reasons, ensuring inclusive and sustainable urbanization, including access for all people to adequate, safe and affordable housing and basic services, will be a major challenge for Governments. (Fig 1)

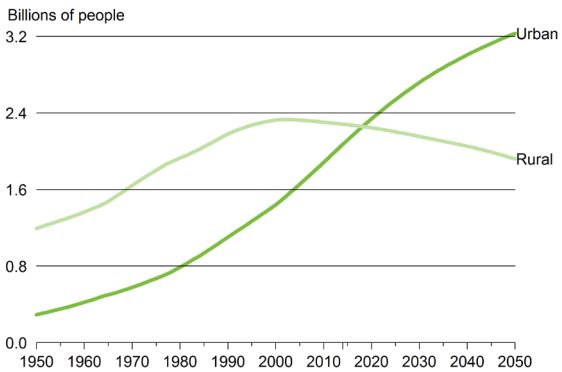


Figure 1
Urban and rural populations, Asia and the Pacific, 1950-2050

By 2018, half of the population of Asia and the Pacific will live in towns or cities

The estimation that the population of Asia and the Pacific will be more than 50 per cent urban by 2018 represents a rapid and profound change since 1950, when four fifths (80 per cent) of people in the Asia-Pacific region lived in rural settlements.

Levels of urbanization vary greatly across the subregions of Asia and the Pacific. In 2014 more than two thirds (71 per cent) of the population lived in towns or cities in the Pacific subregion; in North and Central Asia the figure was 63 per cent and in East and North-East Asia 59 per cent. South and South-West Asia and South-East Asia remained mostly rural at that time, with levels of urbanization being 36 per cent and 47 per cent respectively. (Fig 2)

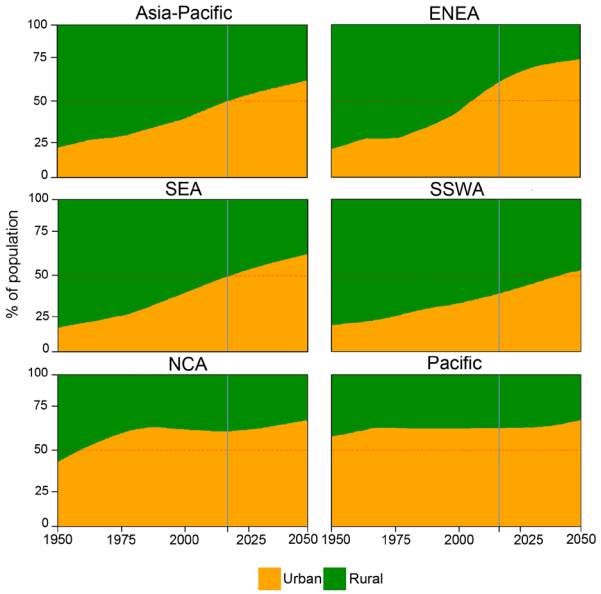


Figure 2
Proportion of urban and rural population to total population, Asia-Pacific subregions, 1950-2050

Of every 10 people living in high income economies, 8 live in towns and cities; by comparison, of those living in low income economies, only 3 of every 10 people live in towns and cities

Levels and rates of urbanization in Asia and the Pacific are closely linked to levels of economic development. Of every 10 people living in high income economies, 8 live in towns and cities (83.9 per cent); by comparison, of those living in low income economies, only 3 of every 10 (31.7 per cent) live in towns and cities. (Fig 3)

While high income countries have been urbanized for several decades, upper middle-income countries have experienced the fastest pace of urbanization since 1950, particularly from 1980 onwards. From 1980 to 2014 the percentage of people in high income countries living in towns or cities increased by 12 percentage points, from 72 per cent to 84 per cent. In comparison, the percentage of people in upper middle-income countries living in towns and cities increased by 33 percentage points, from 23 per cent to 56 per cent.

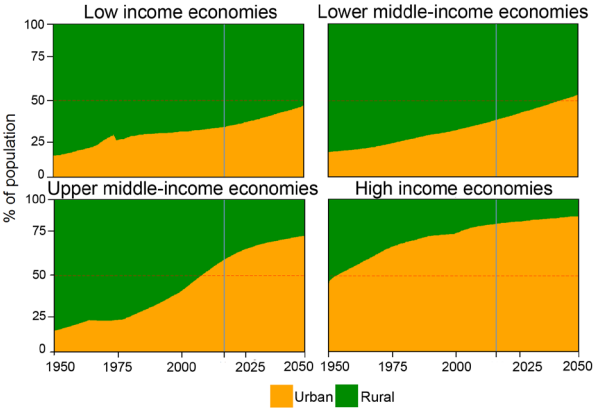


Figure 3
Proportion of urban and rural population to total population, Asia-Pacific income groups, 1950-2050

While more people than ever live in towns and cities in Asia and the Pacific, the overall rate of urbanization in the region is slowing

For the period 1990-2015, a total of 35 countries or areas experienced positive growth rates of both their urban and rural populations (Fig 4; upper-right quadrant).

Countries in which the pace of urban growth exceeded the pace of rural growth, in general experienced faster rates of urbanization (Fig 4; countries above the diagonal).

Figure 4
Average annual change in urban and rural populations in countries by subregion, 1990-2015

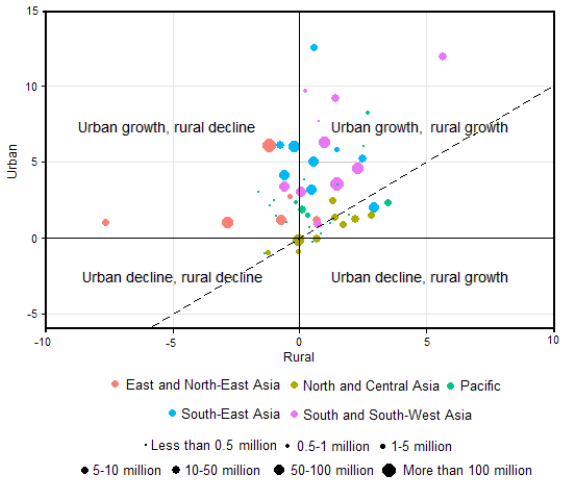
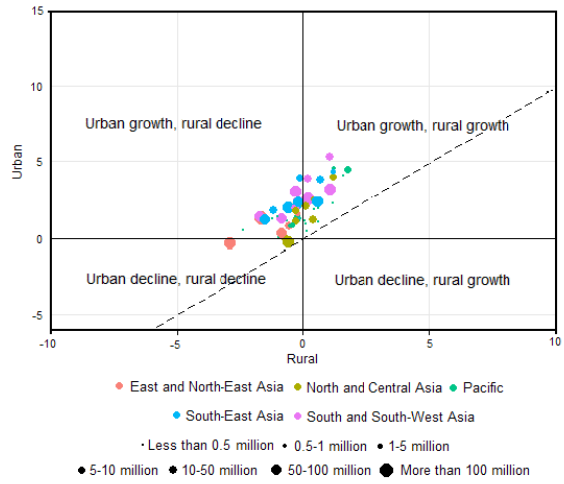


Figure 5
Average annual change in urban and rural populations in countries by subregion, 2015-2040



The Lao People's Democratic Republic, for example, is positioned well above the diagonal; from 1990 to 2015 it had the fastest urban population growth rate in Asia and the Pacific at 12.5 per cent per year. In contrast, several countries in the North and Central Asian subregion fall below the diagonal as rural growth outpaced urban growth.

Only two ESCAP member States experienced urban decline but rural growth over the period 1990-2015, namely Kazakhstan and the Federated States of Micronesia. Four other countries/areas, namely Armenia, Georgia, Niue and the Russian Federation, experienced both rural and urban decline.

Between 2015 and 2040 urban population growth in Asia and the Pacific is expected to be nearly universal, resulting in 3 billion people living in towns and cities in 2040, an increase of 0.89 billion people since 2015 (Fig 5). Only in Japan and the Russian Federation are the urban populations predicted to decline along with their rural populations; the declines are expected to be –0.22 per cent and –0.20 per cent respectively. However, rates of urbanization typically are expected to be slower in the future than they had been during the period 1990-2015, (as indicated by the relative proximity of countries to the diagonal line in figure 5).

Nearly half of urban dwellers live in cities of fewer than 500,000 inhabitants

It is a popular perception that the region's megacities are home to a large proportion of the urban population, but the majority of the urban population in the region actually reside in cities with populations of fewer than 1 million (Fig 6). In fact, only 14 per cent of the urban population live in megacities; 48 per cent of the regional population live in cities and towns classified as having populations of fewer than 500,000 people.

Secondary cities are increasingly significant in national and subnational economies, providing critical links as provincial centres, tourist destinations, sites of emerging technological investment and transportation hubs.

Defining urban areas in the region is becoming more complex. For example, megacities are now giving way to the emergence of mega-urban regions that encompass cities, towns, villages and rural areas, some of which even cross national boundaries in the form of planned or unplanned urban corridors.

Urban dwellers in countries with greater levels of economic development are more likely to live in larger cities than those in countries with lower levels of economic development, but economic development is not the only factor involved. For example, megacities dominate the urban population in both Bangladesh, a country in the low income group, and Japan, a country in the

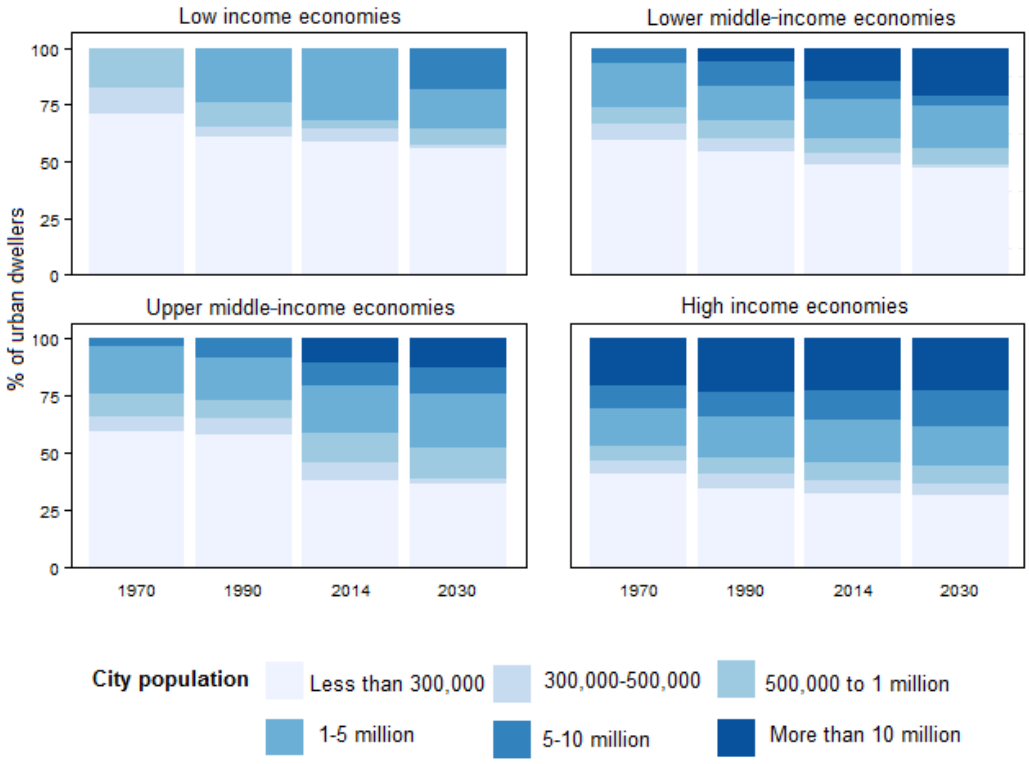


Figure 6
Percentage of urban dwellers by city size

Box 1

Urban environment

Access to green and public spaces is necessary for inclusive and liveable cities

Increasing emphasis is being placed on making cities more inclusive and liveable, and the importance of this has been captured in the 2030 Agenda for Sustainable Development.

In making cities more liveable, the aim must be to increase walkability for pedestrians and to promote automobile-free development, for example; these aspects would be based on the compact city model rather than the current model that allows urban sprawl.[a] While many models exist showing how emerging "eco-city" or "green urbanism" planning principles could contribute to increasing the liveability of cities, relevant data are rare. One area where such data are needed concerns access to safe and green public spaces. Indicators for measuring safe and accessible green areas are necessary for monitoring the 2030 Agenda for Sustainable Development. For example, areas of public space as a proportion of total city space and the proportion of residents within 0.5 km of an accessible green and public space are indicators that could be considered for monitoring Goal 11.7.

The extent of green space in Asian and Pacific cities varies greatly. According to the Asian Green Cities Index[b], in 22 major Asian cities the average total of green space per capita is 38.6 m^2, ranging from as low as 1.8 m^2 per capita in Kolkata, India, to 166.3 m^2 in Guangzhou, China. Interestingly, per capita income does not seem to influence the amount of available green space; Tokyo has a per capita income of $70,800 per year and Hanoi $1,700, but these capital cities have roughly the same amount of green space per capita, 10.6 m^2 and 11.2 m^2 respectively.

a ESCAP and Korea International Cooperation Agency (KOICA), Low Carbon Green Growth Roadmap for Asia and the Pacific: Turning Resource Constraints and the Climate Crisis into Economic Growth Opportunities (Bangkok, 2012) ST/ESCAP/2631. Available from http://www.unescap.org/resources/low-carbon-green-growth-roadmap-asia-and-pacific.

b EIU (2011) . Asian Green City Index, Assessing the environmental performance of Asia's major cities. Available from http://www.siemens.com/entry/cc/features/greencityindex_international/all/en/pdf/report_asia.pdf.

high income group. In contrast the megacity populations of China, a country in the upper middle-income group, and India, a country in the lower middle-income group, are relatively small.

11.2 Quality of housing

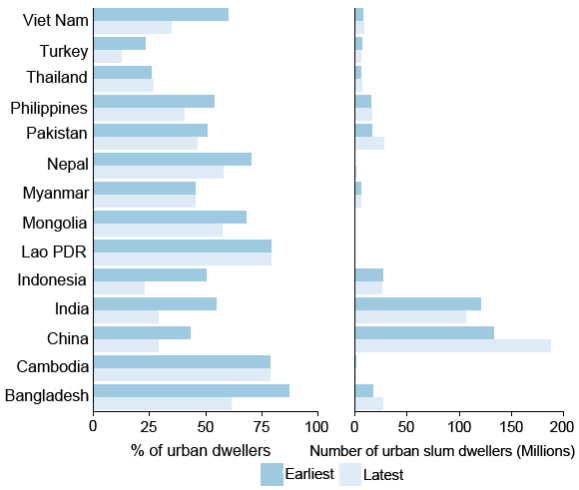
Slums or informal settlements are characterized by housing that is non-durable or overcrowded, offers limited access to improved water and sanitation, or lacks security against eviction of the residents.

Rapid and unplanned urban growth threatens sustainable development when the necessary infrastructure is not developed or when policies are not implemented to ensure that urban resources, including land, are equitably shared.

While the proportion of urban dwellers living in slums is decreasing, more than half a billion people in Asia and the Pacific still live in slums

The challenges of rapid and unplanned urban growth are a particular problem for lower income countries. In 1990, of every 10 urban dwellers in Bangladesh nearly 9 (87 per cent) were living in slums or informal settlements; in Nepal, nearly 3 out of 4 urban dwellers (71 per cent) were living in such places.

Figure 7
Slum dwellers in Asia-Pacific countries, 1990-2009



Despite the rapid pace of urbanization across Asia and the Pacific, the proportion of urban dwellers living in slums has actually decreased by an average of 19 percentage points between 1990 and 2009 for each of the countries for which data are available. (Fig 7)

The highest numbers of urban dwellers living in slums are typically found in countries with a large population and/or in upper middle-income countries where a greater proportion of the population live in cities. In 2009, 190 million urban dwellers in China and 107 million urban dwellers in India were living in slums; the urban dwellers in just these two countries accounted for more than half (53 per cent) of the 558 million people living in slums in the entire Asian and Pacific region.

Furthermore, despite decreases in the percentage of urban dwellers living in slums in China from 1990 to 2009, the absolute number of such slum dwellers has increased. Similar but less pronounced increases can be observed in many of the countries in Asia and the Pacific; this is partly a result of rapid and unplanned urbanization. In addition, much of the increase in the numbers of urban poor is taking place in locations that are highly vulnerable to natural disasters and are expected to experience the greatest impact of climate change, such as low-elevation coastal zones and arid regions known as dry lands. Specifically, about 60 per cent of city and town dwellers in Asia and the Pacific, or 742 million people, are now at extreme to high disaster risk – often living in multi-hazard hotspots that are vulnerable to cyclones and typhoons, earthquakes and tsunamis, floods and landslides.[3]

11.3 Resilient cities and human settlements

The economic development of many of the region's urban economies is often accompanied by risks of new disasters. Unplanned urbanization leads to growth of settlements with unstable living conditions, while rapid expansion of industrial complexes in low-lying flood plains make them susceptible to the risks of flooding.

The region's cities are highly vulnerable to natural disasters and the impacts of climate change, with poor and disadvantaged communities being the most exposed.[4] Unplanned urbanization is an important risk factor as it can increase the susceptibility and exposure of people and economic assets to natural disasters. As rapid urbanization becomes an even greater concern in the coming decades, it will be crucial to give special consideration to urban disaster risk management. Urban vulnerabilities can be reduced by strengthening the capacity of cities to withstand and adapt in the face of shocks.

Between 1970 and 2014, more than 2 million people died as a result of natural disasters in Asia and the Pacific; the region accounted for 57.4 per cent of the total deaths in the world due to disasters

Asia and the Pacific is the most disaster-prone region in the world. Between 1970 and 2014, the region has been affected by more than 5,223 natural disasters – 43.4 per cent of the globally reported events.

The solid lines in figure 9 show the estimated pattern or trend in deaths attributable to natural disasters. These show that, from 1970 to 2014, the number of deaths attributable to natural disasters in Asia and the Pacific was typically higher in any given year than in other regions of the world. Over the decade from 2005 to 2014, there were 1,660 reported disaster events in the region, accounting for more than 40 per cent of the world's reported disasters. During 2005-2014, 60 percent of all deaths due to natural disasters – approximately 500,000 people – occurred in Asia and the Pacific.

The high number of deaths in Asia and the Pacific was due to its large population and the high frequency of natural disasters in the region as compared with other regions of the world. Since 2005, of the 10 largest natural disasters in terms of the number of lives lost, 8 occurred in

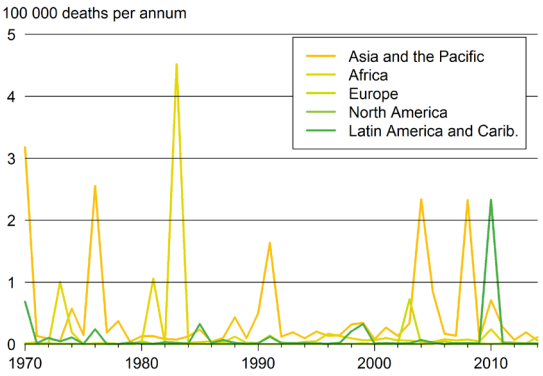


Figure 8
World wide deaths attributable to natural disasters, 1970-2014

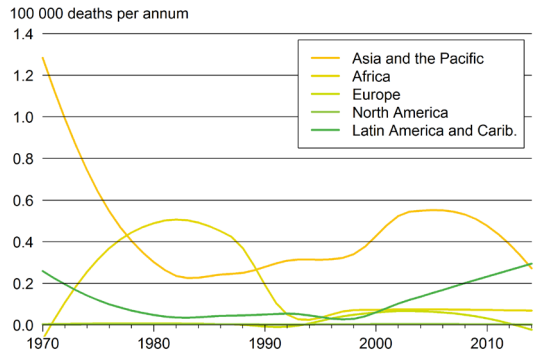


Figure 9
Trend in world wide deaths attributable to natural disasters, 1970-2014

Asia and the Pacific.[5] Furthermore, while there are no clear long-term trends in the number of deaths attributable to natural disasters in the region, there has been a substantial reduction in the number of deaths since the 1970s and indications of a further reduction in the last five years or so. (Fig 8, 9)

From 1970 to 2014, more than 6 billion people in Asia and the Pacific were affected by natural disasters, accounting for 88.8 per cent of the global total

The number of people affected by natural disasters in Asia and the Pacific between 1970 and 2014 was higher than in any other region of the world (Fig 10). The impact and susceptibility of Asian and Pacific countries and areas to disasters is also evident when allowing for its relatively large population compared with that of other regions of the world. From 1970 to 2014, the number of people affected

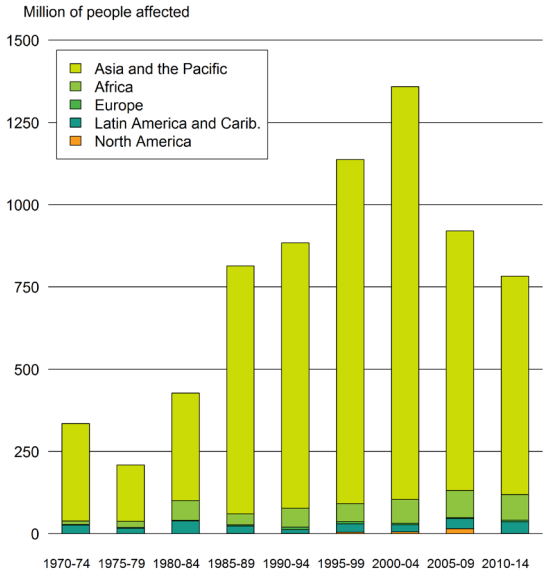


Figure 10
Number of people affected world wide by natural disasters, 1970-2014

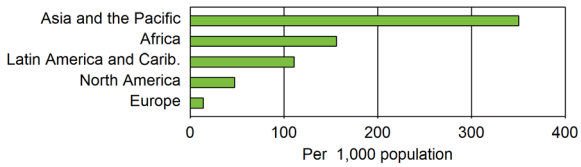


Figure 11
People affected by natural disasters, world regions, 2005-2014

by a natural disaster per 1,000 population was typically higher than in any other region, in particular during the 1990s and 2000s.

In the past decade alone, a person living in the Asia-Pacific region was more than twice as likely to be affected by a natural disaster as a person living in Africa; more than 3 times as likely as someone living in Latin America and the Caribbean, more than 7 times as likely as someone living in North America, and more than 25 times as likely as someone living in Europe. (Fig 11)

The overall trend since 2000 has been for fewer people in the region to be affected by natural disasters, in part due to improved early warning systems and the preparedeness of countries; in recent years the evacuation of potentially affected populations to safe areas in the event of pending large-scale hydrological and meteorological disasters has saved many lives. However, over the last decade, the number of people in Asia and the Pacific affected by such events remained the highest in the world. Of the global total, the region accounted for 85 per cent of those affected, or 1.4 billion people.

The impact of disasters on urban areas in the region can be devastating and far-reaching. High urbanization levels and urban poverty present increasing vulnerability patterns in developing countries of Asia and the Pacific. Urban agglomerations with high population densities are experiencing extreme and high mortality levels as a result.

From 1970 to 2014, natural disasters in the Asian and Pacific region caused economic losses worth $1.22 trillion, amounting to 44 per cent of the global total

Over the past decade, while improvements in disaster risk management have led to reductions in the average number of fatalities, the exposure of vulnerable populations and the value of economic losses have increased substantially. Between 1970 and 2014, internationally reported estimates of global economic losses from natural disasters exceeded $2.8 trillion (in constant 2005 United States dollars). These estimates, however, may understate the true costs, which could be at least 50 per cent higher.[6]

Asia and the Pacific alone reported economic losses worth $1.22 trillion for the period 1970-2014, or 44 per cent of the global total. Furthermore, as shown by the estimated pattern or trend in the cost attributable to natural disasters (Fig 12), economic losses in Asia and the Pacific appear to be increasing. Over the past decade, the economic damage – reaching a total value of $523 billion – accounted for 45 per cent of the global damage. Earthquakes, tsunamis, floods and storms were the costliest hazards, accounting for damage valued at $684 billion, or 97 per cent of the total damage from natural disasters in the region since 2005.[7]

Since 2005, of the 10 costliest natural disasters globally 4 occurred in Asia and the Pacific. The 2011 great east Japan earthquake and tsunami was the costliest natural disaster event ever recorded anywhere in the world – the total damage was $165 billion, representing 3.8 per

cent of Japan's GDP.[8] The damage caused by the 2008 Sichuan earthquake in southwestern China was estimated at $60 billion.

While the overall trend for the damage and losses resulting from natural disasters in the region as a whole is increasing, the economic loss experienced by individual countries is more likely to be sudden and more profound. When measured as a percentage of GDP, the economic losses in a country as a result of a single natural disaster can be devastating, particularly in small economies. (Fig 14, Box 2)

11.4 Data and monitoring issues

Diaggration of relevant statistics by urban and rural areas presents measurement and data availability challenges

Estimates of the number of people living in urban and rural environments are available for every country in Asia and the Pacific from 1950 to 2050. Those estimates can also be disaggregated by the size of urban settlements in categories ranging from less than 0.3 million to more than 10 million.

Internationally comparable data on the urban slum population are far less complete than those on the urban and rural populations; no urban slum data are presented in this chapter for countries and areas in the North and Central Asian and Pacific subregions. There are sufficient data points in the remaining subregions to estimate subregional totals in 2005, 2007 and 2009, but there are no available data from that year on. Those data that are available do not include characteristics about slum dwellers, such as their sex, age or disability status, or differentiate between levels of deprivation in slum environments, which can vary substantially.

Analysis of access to green spaces was severely limited due to the lack of internationally comparable data, and the information presented in this chapter should be considered as an indication of broader trends (Box 1). There

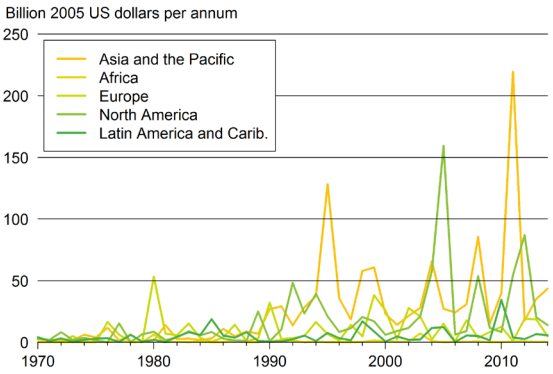


Figure 12
Global cost of natural disasters, 1970-2014

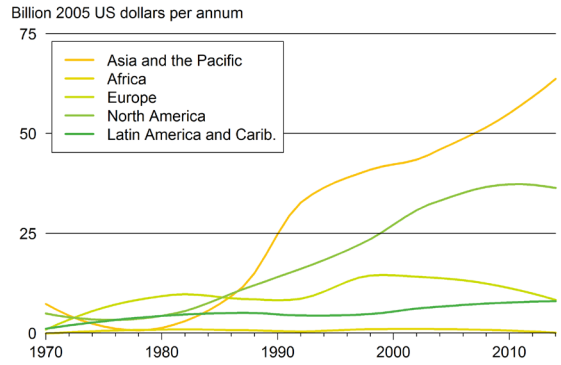


Figure 13
Global cost of natural disasters, 1970-2014

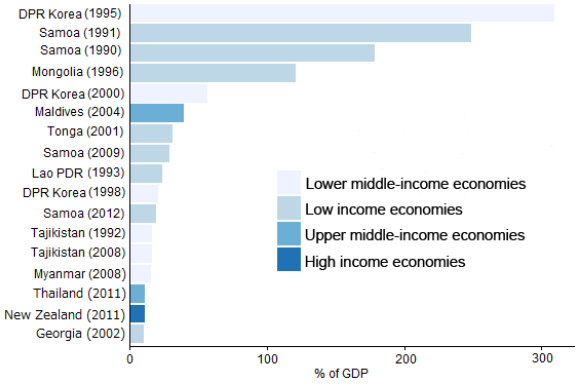


Figure 14
Countries where financial impact of natural disasters was greater than 10 per cent of GDP, 1990-2014

are, however, potentially rich sources of data available on access to green space, including those collected through high-resolution satellite imagery.

Estimates of the number of people affected by natural disasters in Asia and the Pacific between 1970 and 2014 are presented, including estimates of the number of people killed and the financial implications of disasters. However, data coverage varies by subregion and is typically lower in the Pacific. Moreover,

Box 2

Nepal earthquakes in 2015

In April and May 2015, severe earthquakes rocked parts of Nepal causing more than 9,000 deaths and 22,300 injuries. More than 8 million people, or one third of the country's population, were adversely affected by these natural disasters. The destruction was widespread, mostly in the central and western regions of Nepal. In the worst affected areas, entire settlements were swept away by landslides and avalanches triggered by the earthquakes and aftershocks. More than 500,000 houses were damaged and in excess of 250,000 of them were destroyed. Public infrastructure, including government buildings, schools and health-care facilities as well as cultural heritage sites, sustained heavy damage.

The total damage and losses were equivalent to about one third of Nepal's GDP for the year 2013/14. When the relevant statistics are assessed in the future, it is likely to be observed that the earthquakes caused the country to go into economic decline and impeded Nepal's bid to graduate from least developed country status to that of a developing country.[a]

a Nepal, National Planning Commission, Nepal Earthquake 2015: Post Disaster Needs Assessment.Vol. A:Key Findings (Kathmandu, 2015). Available from http://www.alnap.org/resource/20664.

the inter-country comparability of data is limited due to the absence of internally agreed statistical standards for disaster-related statistics. Data collected on losses from natural disasters typically include spatial information (urban and rural) and the age and sex of those killed. Further disaggregation with regard to the socioeconomic profile of those who suffered impacts would also be beneficial to gain a deeper understanding of those most vulnerable to natural disasters.

Issues relevant to Sustainable Development Goal 11 not presented in this chapter include the following: urban air pollution; access to public transport; and management of solid waste collection. In the cases of air pollution and solid waste collection, data are often collected by countries and subnational governments, but too often are incomplete or not comparable if they are available. For example, many countries collect information on the concentration of particles in large cities but not in smaller ones. Another factor restricting the availability of data relevant to these issues is the lack of internationally agreed methods and standards, including for measuring access and the quality of public transportation.

Closing urban data gaps for better urban planning

The formulation of effective urban policies to manage urbanization and urban growth requires relevant, reliable and up-to-date data on urban trends and conditions and an in-depth understanding of urban dynamics; however, such coherent and comparable data currently are almost impossible to attain. This "data deficit" is adversely affecting the planning of city development, as well as the understanding of urban change, including complex social change. When public and private policymakers prepare urban policies and plans or compare urban trends and conditions, they are forced to use urban data that are often incomparable and incompatible.

Better data and information are needed to determine the numbers and types of people who move into various urban zones and commute between them, as well as move from rural to urban areas on a daily, weekly or seasonal basis. Such data would help in understanding needs related to urban infrastructure and services, as well as employment and mobility trends, and enable local governments to develop more focused and effective policies for the different

parts of urban areas. However, acquiring such data requires new methods, engagement and outreach, which many local governments lack the capacity or political will to pursue.

As the delineation of an urban area depends on the purpose of the analysis, it is necessary to move away from simple criteria, such as administrative status, size, density or occupation, and to apply functional criteria. A functional definition could identify an urban area as a relatively self-contained economic unit, characterized by high levels of labour linkages and other economic interactions. It would allow for spatial analyses of production and productivity growth, and the reach and the organization of labour markets, business linkages and urban-rural spillovers, and infrastructure and service needs.[9]

While cities are engines of economic growth, their contributions to national and global economies remain largely guesswork. Similarly, the needs of growing urban populations are poorly understood owing to the lack of data.

Data gaps could be partly addressed by making better use of existing data. Buses and trains, water-pipe and gas-line networks, hospitals, condominiums and office buildings all generate data which can be collected and analysed in real time. These data could provide insights into trends and conditions that make such phenomena easier to understand and enable more effective action.

Data on urban agglomerations could also help improve poverty reduction policies and environmental decisions. There is a clear need for data on intra-urban conditions, such as disparities in housing conditions, access to safe water and sanitation and solid waste collection, and on inter-urban conditions, including disparities between large and small cities. The lack of such data is particularly significant if the urban poor and other marginal groups live outside administratively defined urban boundaries or in unrecognized – and thus ignored – informal settlements. However, disaggregated data on social and economic conditions are rarely available because the household surveys that are used to collect data in most countries are not representative at the level of any but large cities. Lack of hard evidence affects the formulation of policies aimed at achieving a range of development goals.

Endnotes

Due to differences in the dates data on natural disasters were extracted, figures presented in this report may differ from those presented in the United Nations, Economic and Social Commission for Asia and the Pacific publication, "Overview of natural disasters and their impacts in Asia and the Pacific, 1970-2014", ESCAP Technical Paper (March 2015). A copy of this publication may be downloaded from a link at http://www.unescap.org/resources/overview-natural-disasters-and-their-impactsasia-and-pacific-1970-2014.

1 General Assembly resolution 70/1.

2 United Nations Human Settlements Programme (UN-Habitat) and United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), *The State of Asian and Pacific Cities 2015: Urban Transformations – shifting from quantity to quality* (Nairobi, 2015). Available from http://www.unescap.org/resources/state-asian-and-pacific-cities-2015-urban-transformations-shifting-quantity-quality.

3 Asia-Pacific Disaster Report 2015: Disasters without Borders — regional resilience for sustainable development (United Nations publication, Sales No. E.15.II.F13). Available from http://www.unescap.org/resources/asia-pacific-disaster-report-2015.

4 Economic and Social Commission for Asia and the Pacific (ESCAP), United Nations Human Settlements Programme (UN-Habitat) and Rockefeller Foundation, *Quick Guide for Policy Makers: Pro-Poor Urban Climate Resilience in Asia and the Pacific* (Bangkok and Nairobi, 2014). Available from http://www.unescap.org/resources/quick-guide-policy-makers-pro-poor-urban-climate-resilience-asia-and-pacific-0.

5 Economic and Social Commission for Asia and the Pacific (ESCAP), *Overview of Natural Disasters and their Impacts in Asia and the Pacific, 1970 – 2014* (Bangkok 2015). Avaialable from http://www.unescap.org/resources/overview-natural-disasters-and-their-impacts-asia-and-pacific-1970-2014.

6 The United Nations office for disaster risk reduction, UNISDR (2013), *Annual report 2013, Final report on 2012-2013*. Available from http://www.unisdr.org/files/37302_annualreport2013.pdf.

7 Economic and Social Commission for Asia and the Pacific (ESCAP), *Overview of Natural Disasters and their Impacts in Asia and the Pacific, 1970 – 2014* (Bangkok 2015). Avaialable from http://www.unescap.org/resources/overview-natural-disasters-and-their-impacts-asia-and-pacific-1970-2014.

8 ESCAP Online Statistical Database. Available from http://www.unescap.org/stat/data/statdb/DataExplorer.aspx.

9 OECD and CDRF (2010). *Trends in Urbanisation and Urban Policies in OECD Countries:What Lessons for China?* Available from http://www.oecd.org/urban/roundtable/45159707.pdf.

UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific

Statistical Yearbook for Asia and the Pacific 2015

Sustainable Development Goal 12

Ensure sustainable consumption and production patterns

Sustainable consumption and production refers to "the use of services and related products, which respond to basic needs and bring a better quality of life while minimizing the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardize the needs of future generations."[1] Consumption and production patterns that are more sustainable than is currently the case would result in a reduction in adverse environmental impacts and contribute towards poverty eradication without undermining the basis of human development through opportunities such as creation of new markets, green and decent jobs, and more efficient management of natural resources.

In other words, sustainable consumption and production involves "doing more and better with less,"[2] it is about increasing resource efficiency and promoting sustainable lifestyles. Over the past several decades, economic development has enabled millions of people to get out of poverty. However, corresponding increases in the consumption of resources have led to an increase in pollution and waste, which has harmed the environment and eroded ecosystems. Hence, national and global leaders at the United Nations Conference on Environment, which was held in Rio de Janeiro in June 2012, issued an outcome document[3] and adopted a 10-year framework of programmes on sustainable consumption and production patterns to enhance international cooperation in accelerating the shift towards sustainable consumption and production.[4]

12.1 Resource use

As the engine of manufacturing for the world, the Asian and Pacific region is a fundamental part of material utilization globally. As such, the consumption of goods manufactured in Asia and the Pacific has created a large "material footprint" across the manufacturing sector's supply chain, involving many different kinds of material. The growth in material use by the manufacturing sector has resulted in economic growth in many parts of the region; the less developed countries are now starting to catch up with the living standards enjoyed by their more developed counterparts. An expanding middle class has increased the demand for and consumption of material-intensive products, such as cars, furniture and household appliances. Understanding the rate of material utilization is crucial in ensuring the sustainability of consumption and production patterns as the utilization process results in products and services that generate unwanted waste products.[5]

Material consumption in the Asia-Pacific region has increased at a higher rate than the population growth rate and that of GDP

The economies in the Asia-Pacific region are endowed with a wide range of natural resources – materials, energy and water – available for domestic consumption. Such materials include biomass, fossil fuels, metal ores and non-metallic minerals that support the cultivation of food, the production of energy, infrastructure and transport systems, and production of consumer goods.[6] The term "domestic material consumption" is defined as the total amount of materials used by an economy, extracted from the domestic territory plus all physical imports minus all physical exports.

Between 1990 and 2010, the domestic material consumption of the region increased threefold from 12.4 billion tons to 37.1 billion tons, which equates to an average growth rate of 5.6 per cent annually – more than four times the population growth rate and 0.9 percentage points higher than the average GDP growth rate during the period. China (23.6 billion tons per year) largely dominated domestic material consumption at the regional (and global) level in 2010, followed by India (5.0 billion tons per year), Indonesia (1.6 billion tons per year), Japan (1.2 billion tons per year) and Australia (1.0 billion tons per year). The average annual growth rates between 1990 and 2010 in the low- and lower middle-income economies in Asia and the Pacific were 2.0 and 4.2 per cent respectively compared with 0.5 per cent among the high income economies. (Fig 1)

In Asia and the Pacific, the utilization of non-metallic minerals – mostly construction and industrial minerals – increased by 4.8 times between 1990 and 2010. Over the same period, consumption of fossil fuels and metal ores increased by 2.6 and 3.0 times respectively. These increases reflect a shift from non-durable or short-lived investments towards more permanent and long-lasting infrastructural projects. Better understanding of changes in domestic material consumption over time and by region will help policymakers to develop specific resource use strategies and initiatives. (Fig 2)

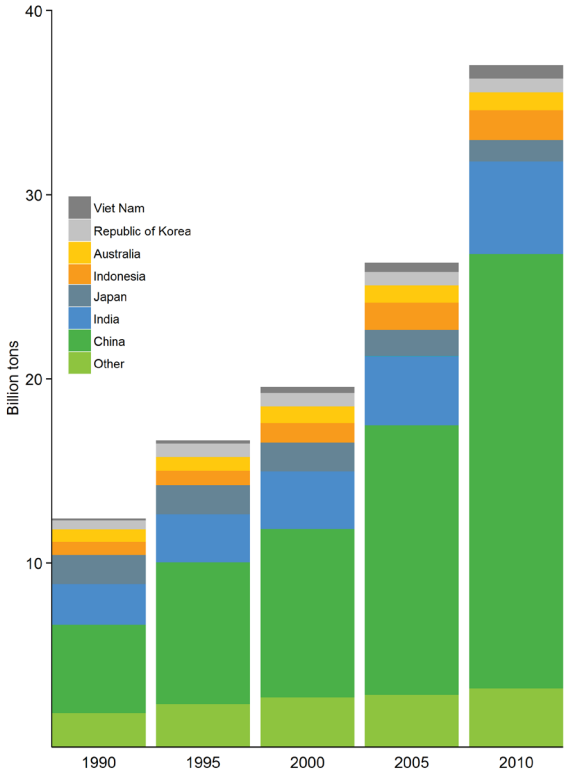


Figure 1
Domestic material consumption, Asia and the Pacific, 1990 to 2010

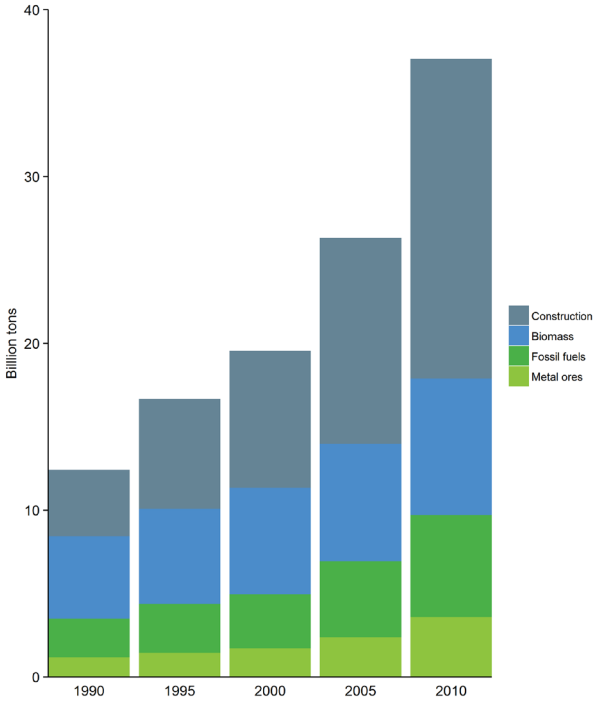


Figure 2
Domestic material consumption by material category, Asia and the Pacific, 1990 to 2010

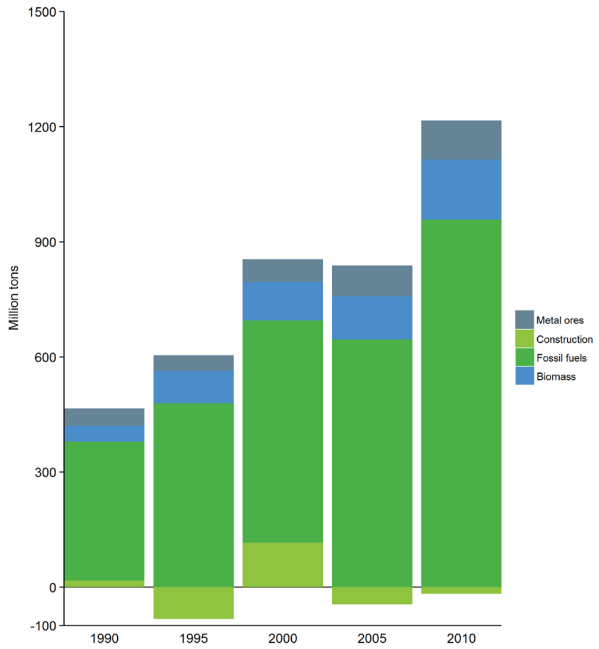
Material consumption in Asia-Pacific economies depends on natural resources from outside the region

Over the past four decades, raw materials, particularly fossil fuels and metal ores, have been supplied from outside the Asia-Pacific region to support economic growth. The domestic supply of raw materials has been unable to meet the growing demand in many countries in the region; consequently physical trade balances – physical mass of imports minus the physical mass of the export of materials – are changing. Some countries have positive physical trade balances, that is, they are net importers of primary materials, while others have negative physical trade balances, that is, they are net exporters of primary materials.

The region as a whole had positive physical trade balances throughout the last two decades, which means it imported more materials from the rest of the world than it exported. The upper middle-income and high income countries contribute the majority of net imports of materials in the region. China (1.1 billion tons) and Japan (0.6 billion tons) were the region's leading net importers of materials in 2010, while Australia (0.7 billion tons) and Indonesia (0.4 billion tons) were the region's highest net exporters of materials. During the last two decades, China, the country with the largest trade in materials in the Asia-Pacific region, shifted from being a net material exporter to a net material importer as its domestic markets grew.

In 2010, the Asia-Pacific region was a net importer of fossil fuels (1.0 billion tons), metal ores (0.1 billion tons) and biomass (0.2 billion tons). The largest net importers of fossil fuels were China and Japan, whereas Indonesia and Australia were the largest net exporters of fossil fuels. On the other hand, the Asia-Pacific region is a net exporter of construction materials (16.9 million tons), mainly as a result of exports from China and Thailand. (Fig 3)

Figure 3
Physical trade balance, Asia and the Pacific, 1990 to 2010



Material use per person has been increasing over the last two decades

The total increase in domestic material consumption in Asia and the Pacific is partly a result of population growth. However, consumption per capita also increased steadily, resulting in a doubling of domestic material consumption from 4.2 tons per capita in 1990 to 9.7 tons in 2010. This represents an average annual increase of 4.3 per cent.

Increases in per capita domestic material consumption have varied considerably in the region. In China, the region's largest economy, domestic material consumption increased from 4.1 tons per capita to 17.6 tons, a much greater increase than that in India, the region's second largest economy, where domestic material consumption increased from 2.5 tons per capita to 4.1 tons. These changes in domestic material consumption can be attributed to the corresponding economic reforms and controls implemented in China, which started in the late 1970s, and in India following its "balance of payments" crisis in 1991.

While most countries in the region increased their per capita domestic material consumption between 1990 and 2010, it decreased in Papua New Guinea, Japan, Mongolia, Fiji, Democratic People's Republic of Korea, Afghanistan and the Philippines. In Papua New Guinea, the decline was attributable largely to the population's decreasing dependence on certain groups of materials, such as fossil fuels. In Fiji, biomass and metal ore consumption per capita declined by 39 per cent and 33 per cent respectively. (Fig 4)

Material footprint of consumption in Asia and the Pacific has grown rapidly since the 1990s

"Material footprint" is a consumption-based indicator of resource use and represents the "global allocation of used raw material extraction to the final demand of an economy".[7] The material footprint offers additional information, as it attributes final material extraction to countries of final demand, and as such corrects the upstream requirements of imports and exports.

Reliance on imports of finished goods for domestic consumption is on the rise. The reliance on non-domestic materials and resources suggests that the full material requirements or material footprint of countries in the region extend beyond national borders. The practice of outsourcing materials has resulted in industrialized countries in the region increasing their material consumption, with the adverse environmental impacts being felt in the exporting economies.

Since 1990, the Asia-Pacific region increased its material footprint of consumption on average by 5.5 per cent annually. The majority of the expansion in the material footprint originated from the growing final consumption and capital investment in the less developed economies in the region. The middle-income economies continue to lead the region in average rate of increase per capita in the footprint of consumption.

In 2010, the highest material footprint per capita was recorded in Singapore at 70.5 tons per capita, followed by Australia (37.8 tons per capita) and the Republic of Korea (22.9 tons per capita). Even if China and India have the highest total material footprint overall, at 20.1 and 4.3 billion tons respectively, owing to their large populations their material footprint per capita is not among the highest in the region at 15.0 and 3.5 tons per capita respectively. (Fig 5)

Material footprint by sector in the Asia-Pacific region has increased significantly in the last two decades. The largest increase was for the construction sector where the material footprint more than tripled from 3.0 billion tons in 1990 to 11.5 billion tons in 2010. In 2010, the

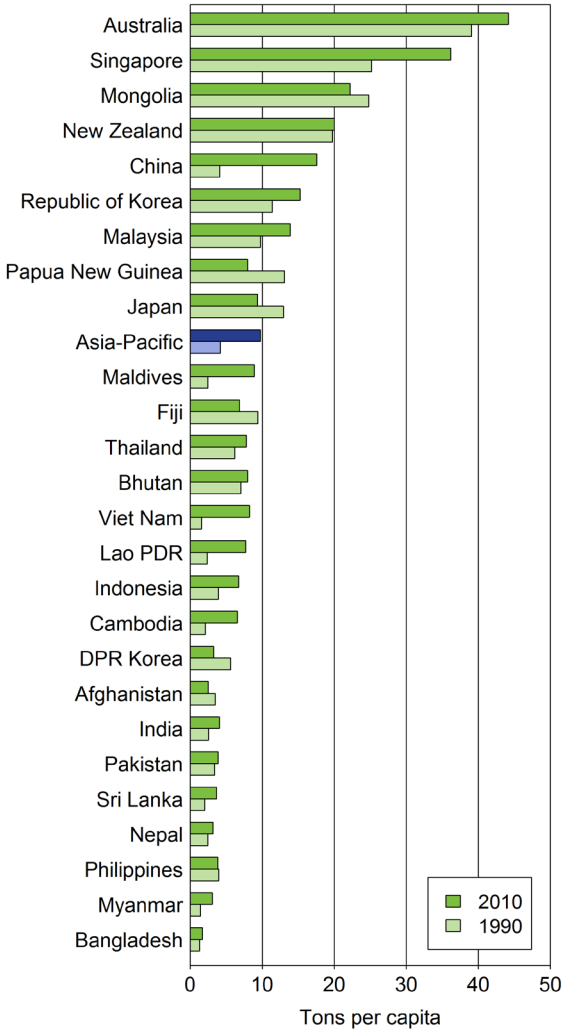


Figure 4
Domestic material consumption per capita, Asia and the Pacific, 1990 and 2010

construction sector was the largest consumer of material, with its share being 34.2 per cent of the total, followed by the manufacturing sector, with 30.5 per cent of the total material footprint in Asia and the Pacific. (Fig 6)

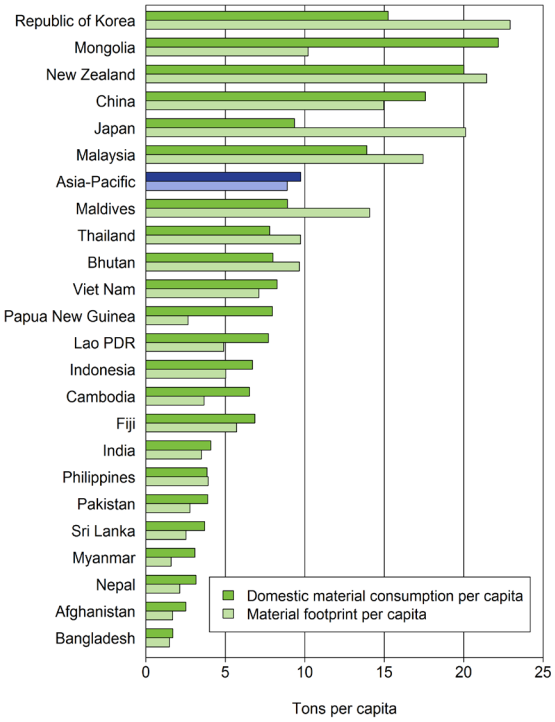


Figure 5
Material footprint and domestic material consumption per capita, Asia and the Pacific, 2010

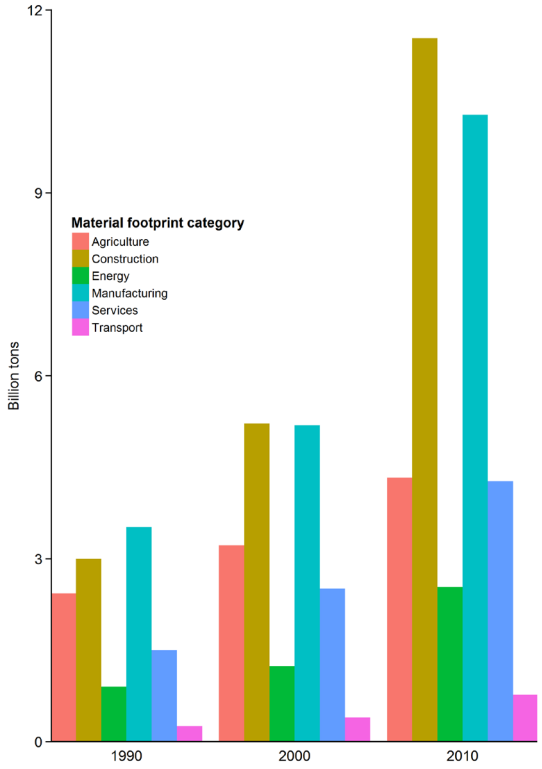


Figure 6
Material footprint, Asia and the Pacific, 1990, 2000 and 2010

Energy consumption of fossil fuels in the Asia-Pacific region continues to increase

Total energy utilization is measured in terms of the total amount of energy available to businesses and households in an economy, which may come in the form of coal, petroleum, natural gas, uranium and renewable energy sources, such as hydro, solar and wind. As a key factor in domestic and industrial production, energy utilization is closely associated with economic growth, and with this linkage, the amount of energy used and the characteristics of energy sources largely determine the emission profile of an economy.

Trends in the regional total primary energy supply[8] show that demand for electricity, gas and transport fuel almost doubled between 1990 and 2012. This increase is partly the result of rapid urbanization, mainly in China, which represents almost half of the region's total primary energy supply. A similar pattern of increase was observed for India during the past decade. While total primary energy supply is increasing for most countries in the region, the total primary energy supply of Japan has remained stable during the past two decades. The total primary energy supply of most Central Asian economies declined during the same period. Overall, per capita energy consumption remains unequal in the region, with the industrialized countries utilizing more than double the amount of energy as that consumed by developing countries. (Fig 7)

12.2 Efficiency in resource use

The basic principle of resource use efficiency is to produce more output per unit of resource input used. From a macroeconomic perspective, resource use efficiency is commonly measured in terms of (a) material or energy intensity, which is the physical mass or energy input needed to produce a unit of GDP and (b) material productivity, which is the GDP generated by a unit of material input or material consumption – the inverse of intensity. In the context of these

measures, improvement in efficiency translates into a decrease in intensity.

Mixed signals concerning economic efficiency of material utilization in Asia and the Pacific

On average, GDP produced in Asia and the Pacific in 2010 required the use of 2.8 kg of materials per United States dollar GDP (constant 2005), an increase from 2.0 kg per dollar in 1990. This increase compares with a global material intensity of 1.0 kg per dollar in 2010. In 2010, the low income economies and upper middle-income economies in the region consumed 16.8 and 12.4 times as many resources per dollar as the high income ones respectively. Despite the high levels in 2010, the material intensity in middle-income economies has been declining over the last decade.

The decline in kilograms of material consumption per dollar is mirrored by the reduction in national material intensity for 22 of the 26 countries in the region for which data are available. Great disparities can be observed in material intensity among countries in the region in 2010, with Mongolia using 17.4 kg of materials per dollar and the Lao People's Democratic Republic using 12.1 kg per dollar while Japan was using 0.3 kg per dollar. This situation is indicative of the fact that the less developed economies in the region are engaged in economic activities with lower value addition, resulting in low levels of resource efficiency. (Fig 8)

Energy intensity is improving at a sluggish rate

Energy intensity is a measure of the amount of energy used for producing goods and services, and is promoted as part of the transition to low carbon development. However, energy intensity is higher in Asia and the Pacific than the global average, despite substantial improvements since 1990.

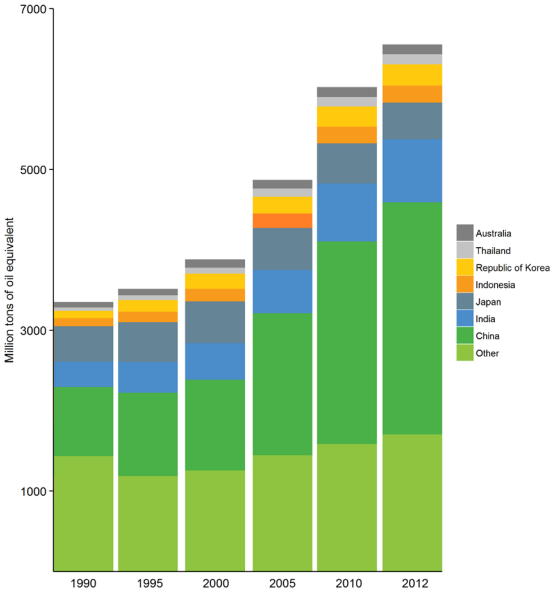


Figure 7
Total primary energy supply, Asia and the Pacific, 1990 to 2010

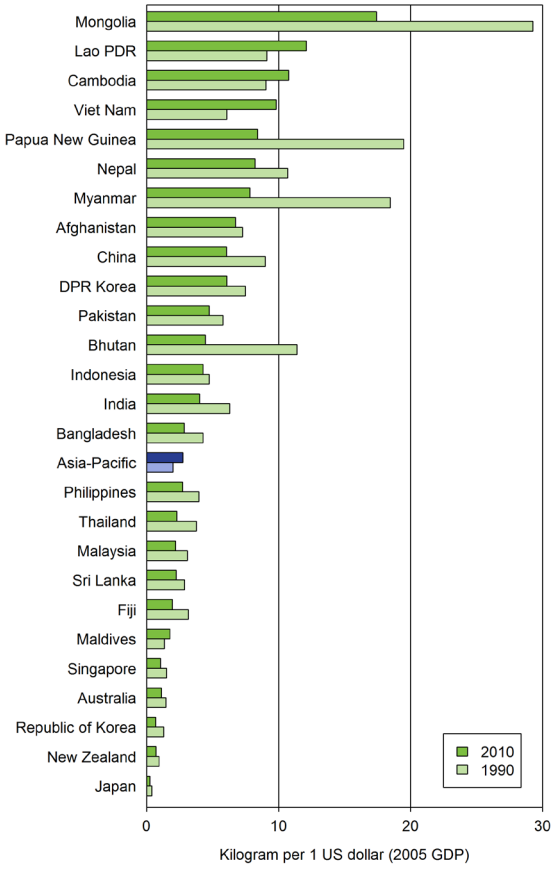


Figure 8
Material intensity, Asia and the Pacific, 1990 and 2010

Improvements in energy intensity have been driven mainly by the upper middle economies which improved their energy efficiency by 44.4 per cent between 1990 and 2012. In 2012, the energy intensity of the upper middle-income economies in the region was 576.1 kg of oil

equivalent per $1,000 GDP (constant 2005 prices in United States dollar), a decrease from the 1,033.4 kg of oil equivalent in 1990, or in percentage terms an average annual decrease of 2.6 per cent. Meanwhile, the energy intensity in high income economies decreased from 266.2 kg of oil equivalent per $1,000 GDP in 1990 to 193.3 in 2012, or an average annual reduction of 1.4 per cent.

Main drives the power energy intensities include the change in fuel mix in most developed countries. For instance, there is an increased use of gas in Australia and Singapore as well as gas and nuclear power in Japan and the Republic of Korea. Meanwhile, many upper middle-income countries have managed to increase their economic output with fewer energy requirements.[9] (Fig 9)

12.3 Production and consumption impact greenhouse gas emissions

Production and consumption processes generate waste and pollutants. In order to transition to sustainable production and consumption patterns, it is necessary to increase efficiency and at the same time reduce the generation of waste through "reduction, recycling and reuse". The reduction in the generation of these waste products throughout all stages in the life cycle of a product or a service would, in turn, alleviate the intensity of resource use and pressure on primary resources.

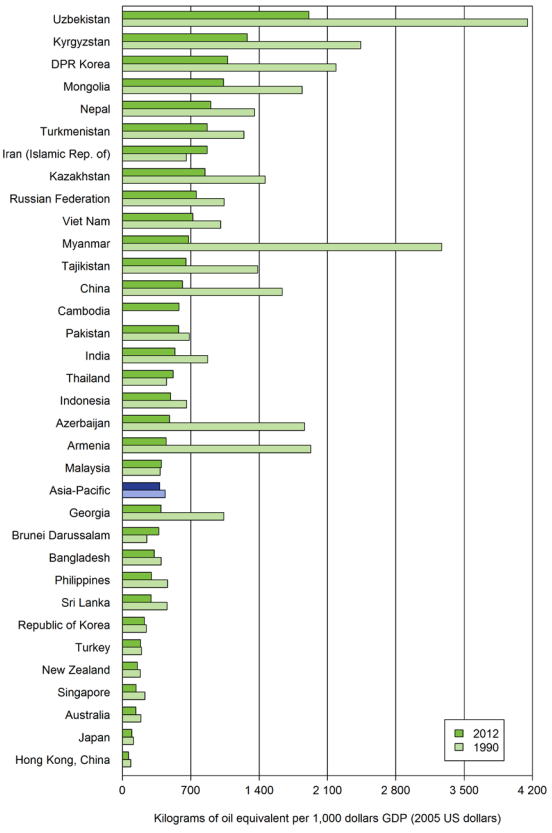
Greenhouse gases (GHG) emitted into the atmosphere and effluents into water bodies are some of the most common waste products of the production and consumption processes resulting from the rapid urbanization and industrialization in Asia and the Pacific. Additionally, the generation of food waste is a growing problem in terms of consumption.[10] Due to data availability issues, this section focuses solely on greenhouse gas emissions.

Aggregate and per capita greenhouse gas emissions are increasing

Rapid urbanization and industrialization in many parts of Asia and the Pacific have contributed to increases in the levels of greenhouse gas emissions over the last two decades. In some parts of the region, particularly in South-East Asia – Cambodia, Indonesia and the Lao People's Democratic Republic – natural land use change also contributed to the rates of GHG emissions. Total GHG emissions of economies in Asia and the Pacific increased from 15.8 billion tons of carbon dioxide (CO_2) equivalent in 1990 to 26.7 billion tons in 2012, a 2.4 per cent average rate of annual increase. The region also increased its share of global GHG emissions from 42.0 to 50.6 per cent of the total between 1990 and 2012.

GHG emissions per capita in Asia and the Pacific increased from 4.8 tons of CO_2 equivalent per capita in 1990 to 6.3 tons in 2012. In most economies in the region, GHG per capita increased over this period, with the most notable exceptions being countries in the North and Central Asian subregion and several Pacific economies. There are also examples of low GHG emission-intense energy sectors – in the

Figure 9
Energy intensity, Asia and the Pacific, 1990 and 2012



case of Myanmar, 74.6 per cent of the country's electricity is generated from renewable energy sources. (Fig 10)

Greenhouse gas emissions per unit of GDP decreased over the past two decades

Globally, GHG emissions increased by 40.7 per cent between 1990 and 2012, and GDP increased by 73.9 per cent. Asia and the Pacific followed this global trend, with GHG emissions increasing by 69.6 per cent and GDP doubling. These increases suggest that the GHG emission-intensity of the economies in the region – the amount of GHG emissions per unit of economic output – declined despite an overall increase in aggregate and per capita GHG emissions.

The decrease in GHG intensity is partly due to the shift from agriculture, which was responsible for the largest share of GDP in the 1970s and the primary source of emissions, to manufacturing. With economic structural changes, countries in the region diversified their sources of emissions from agriculture to industry, transport and energy. The industrialization process in low income economies resulted in GHG emissions increasing more slowly than increases in economic output, thus leading to a decrease in emission intensity. The rates of decline observed during the past two decades for these economies are therefore also generally larger than that of middle- and high income economies. (Fig 11)

12.4 Data and monitoring issues

Sustainable consumption and production patterns described in this chapter are focused on resource use (materials and energy), the efficiency of resource use and GHG emissions. Additional information on the generation of wastes other than air pollutants, as well as private and public sustainability practices, is crucial in gaining a full understanding of sustainable consumption and production patterns. Unfortunately, there are currently too many data

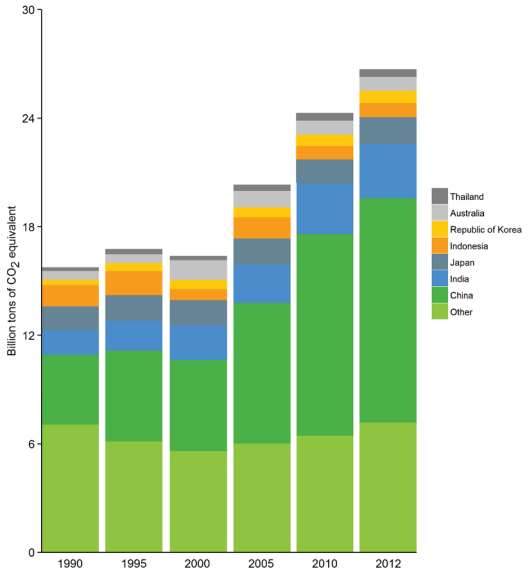


Figure 10
Greenhouse gas emissions, Asia and the Pacific, 1990 to 2012

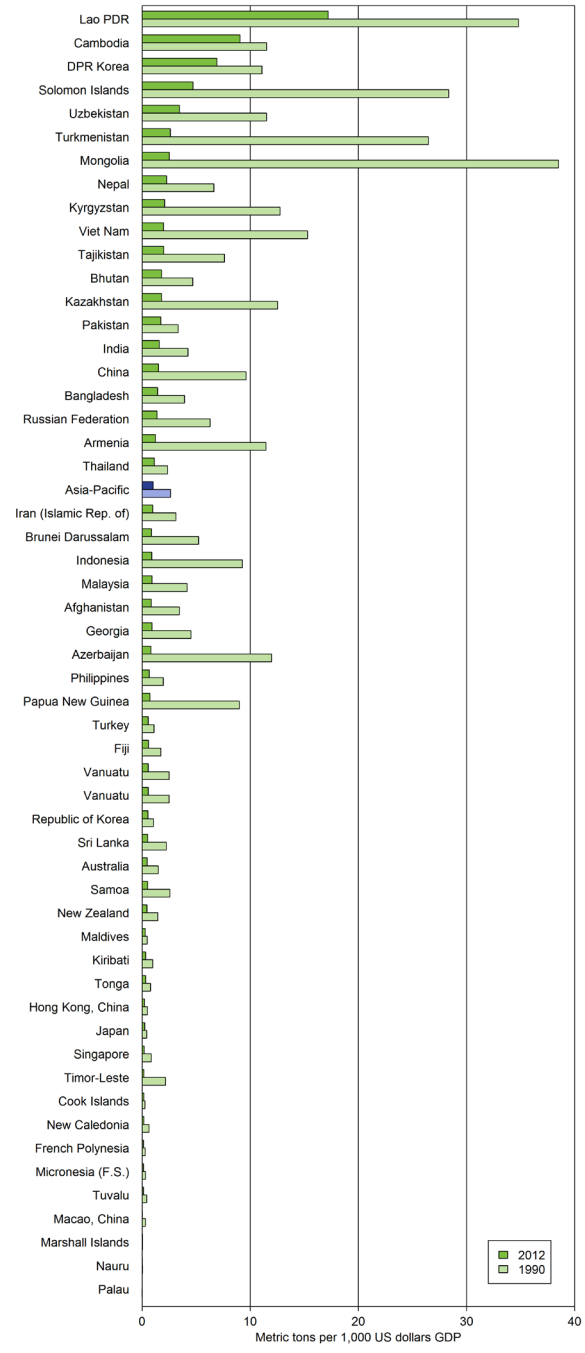


Figure 11
Greenhouse gas emissions intensity, Asia and the Pacific, 1990 and 2012

gaps to enable monitoring of these aspects at a regional level.

Large data and capacity gaps for monitoring sustainable consumption and production

There is a large gap in the data required to measure progress towards sustainable consumption and production. There are also several technical and capacity issues faced by many countries with respect to collecting and reporting the data necessary to operationalize sustainable consumption and production-related indicators for the Sustainable Development Goals. Filling these gaps will require a broader scope and strengthened role for national statistical offices and relevant ministries overseeing local and national monitoring and data collection, particularly ministries of environment.

Assessment of data available for the measurement of indicators for sustainable consumption and production patterns shows that data availability is greatest for monitoring trends in the use of natural resources, using indicators such as domestic material consumption and material footprint, compiled by UNEP, CSIRO (Commonwealth Scientific and Industrial Research Organisation) and the University of Sydney. Data also exist for monitoring waste released into the air, namely greenhouse gas emissions, as well as the number of countries that are parties to international multilateral environmental agreements on hazardous chemicals and waste. Similarly data collection on the business sector's compliance with Corporate Social Responsibility requirements needs to be improved. Ensuring these data are easily accessible would help investors find more environmentally and socially friendly practices.

A number of independent reports from the Global Reporting Initiative, International Integrated Reporting Council, United Nations Global Compact and Sustainability Accounting Standards Board provide some information on companies engaging in sustainability practices. However, the information does not exist as time series and is not sufficiently standardized to enable comparison across countries. (Box 1)

Data on food waste and waste generation are poor or non-existent for most countries and therefore should be made a priority in coming years. Similarly, data on public procurement policies and awareness of sustainable development and lifestyles are poor. Some information is available on national policies, but the implementation and results of such policies are more difficult to monitor and measure.

Measuring production, consumption and generation of waste products

It is estimated that roughly one third of the food produced globally for human consumption is lost or wasted, amounting to about 1.3 billion tons per year,[11] which according to Lipinski and others[12] is equivalent to about one quarter of all calories produced globally. The resources used in the production of wasted food and the greenhouse gas emissions associated with that production are also lost or wasted. There are large differences between countries in food loss and waste, which occur at different stages in the supply chain – referred to as *food loss* in lower segments of the supply chain and *food waste* in segments closer to the consumer. High income economies waste larger quantities of food, mainly at the consumption stage, whereas in low income countries, the food loss occurs mainly in the early stages of the supply chain.

Currently no reliable data exist to measure global food waste, but measurement standards are being developed. The Food Loss and Waste (FLW) Protocol[13] is a multi-stakeholder effort to develop a global accounting and reporting standard for quantifying food and associated inedible parts removed from the food supply chain. It is designed to enable a wide range of entities – countries, companies and other organizations – to account for and report in a credible, practical and internationally consistent

manner on how much food loss and waste has been created and to identify where it occurs. In addition, a global food loss index is being developed and will be integrated into the FLW Protocol.[14] The intention is for the index to measure quantitative food losses; it is based on a model which uses observed variables that conceivably influence food losses, such as road density, weather and pests, to estimate quantitative loss ratios for specific commodities and specific countries over time.

Reducing the generation of waste requires reductions in the input of resources and increases in recycling and reuse, in other words the "3R" approach – reduce, reuse and recycle.[15] A reduction in the generation of waste, relevant for both household and industrial waste, results in a reduction in the amount of waste being sent to landfills and incineration plants, as well as a reduction in the overall resource use of and pressure on primary resources.

Measurement of waste generation and management practices requires data in four separate categories: municipal solid waste, sludge, industrial and other waste.[16] Municipal solid waste is generally defined as waste collected by municipalities or other local authorities, and usually includes household waste, garden/yard and park waste, and commercial/institutional waste. Sludge is waste from domestic and industrial wastewater treatment plants. In some cases, sludge from domestic wastewater treatment plants may be included under municipal solid waste and sludge from industrial wastewater treatment in industrial waste. Industrial wastes are generated by industrial units; other waste categories include clinical, hazardous and agricultural waste.

Data to measure national waste generation and recycling rates are very poor at the moment. The United Nations Centre for Regional Development, in partnership with the Government of Indonesia and the Government of Japan, has developed a core set of 3R policy indicators, which proposes a list of sample indicators useful in monitoring waste management.[17] The list comprises nine indicators for 3Rs in municipal solid waste, industrial sector, rural areas, and new and emerging forms of waste, such as marine plastic waste and e-waste.

Box 1

Business sustainability reporting

Given the core role of businesses in achieving sustainable development, there has been a proliferation of modalities, international initiatives and instruments to advance corporate sustainability and responsible business practices.[a] One of the modalities is "sustainability reporting", a tool for organizations, including businesses, to communicate to their stakeholders through "the practices of measuring, disclosing and being accountable for organizational performance while working towards the goal of sustainable development".[b] An increasing number of companies, especially large transnational corporations, have adopted sustainability reporting mechanisms. According to one source, of the world's 250 largest corporations, 93 per cent of them report on their sustainability performance.[c] There are a number of frameworks and initiatives, and two of the most widely adopted such global initiatives are: the Guidelines for Multinational Enterprises of the Organisation for Economic Co-operation and Development, and the Global Reporting Initiative Standards for Sustainability Reporting.

Although existing reporting standards and indices have been improved in recent years, a number of difficulties are still associated with measuring sustainability impacts.

(continued)

First, as yet there is no globally agreed single standard for capturing the multidimensional and complex concept of sustainability. In addition to the two initiatives mentioned above, some other global sustainability reporting initiatives exist, such as the Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy, which is produced by ILO, the United Nations Global Compact Principles and ISO 26000, and the International Integrated Reporting Council' s Integrated Reporting framework. Many of these are focused only on one aspect of sustainability and therefore are inadequate for providing a holistic view on sustainability. Another approach is to create aggregate indices of various aspects of sustainability, such as the Dow Jones Sustainability Indices. Such indices assess issues related to corporate governance, risk management, branding, climate change mitigation, supply chain standards and labour practices. These indices enable comparability; however, their criteria vary and are debatable.

Second, among different standards and even within a single standard, comparability and consistency are issues. For example, the standards of the Global Reporting Initiative do not provide either quantitative or comparable data; hence, they do not make it possible to compare performance. Another example is the Global 100,[d] which has shown inconsistency over time, with drastic changes in the rankings of listed companies. In addition to these, there are also government laws and regulations, and industry-specific regulations and codes which are not always aligned with global sustainability reporting initiatives.[e] Although there have been efforts to harmonize sustainability reporting standards, there are still disparities among sustainability reports, including inconsistency in reporting time periods, sustainability indicators, reporting formats and metrics. A continuing challenge is the attempt to reach a global consensus on a common set of indicators to measure sustainability.

Third, existing indicators, indices and reports on sustainability make assessments at the level of individual companies or organizations. In view of the cross-border operations of transnational companies, measuring sustainable development at the country or even regional level is very tricky, if not impossible. Even with the well-established global sustainability reporting initiatives mentioned above, when large and complex global value chains are considered, it is extremely difficult to accurately map, measure and monitor suppliers and customers in the second and lower tiers and beyond. While national data are available to enable an analysis of many of the indicators related to the Sustainable Development Goals, the use of organizational-level sustainable development data for the purpose of national and/or regional policy decision-making would be much more challenging.

a For details contained in "The future we want", see General Assembly resolution 66/288, annex.

b Global Reporting Initiative, "Sustainability reporting guidelines", version 3.1 (Amsterdam, 2006). The publication can be downloaded from a link at http://www.globalreporting.org/Pages/resource-library.aspx.

c KPMG, "Corporate responsibility reporting survey 2013". Available from http://www.kpmg.com/au/en/issuesandinsights/articlespublications/pages/corporate-responsibility-reporting-survey-2013.aspx.

d The Global 100, an e-magazine published by the Canadian consultancy firm Corporate Knights, highlights its choice of the top 100 sustainable companies globally. Available from http://www.corporateknights.com/reports/global-100/.

e See M. Abe and M. Chee,"Integrating sustainability reporting into global supply chains in Asia and the Pacific", in Implementing Triple Bottom Line Sustainability into Global Supply Chains, L. Bals and W. Tate, eds. (Sheffield, United Kingdom, Greenleaf Publishing, forthcoming).

Endnotes

All figures in this chapter are adapted from United Nations Environment Programme, *Indicators for a Resource Efficient and Green Asia and the Pacific: Measuring Progress of Sustainable Consumption and Production, Green Economy and Resource Efficiency Policies in the Asia-Pacific Region* (Bangkok, 2015). Available from http://www.unep.org/AsiaPacificIndicators.

1 Definition adopted by the Oslo Symposium on Sustainable Consumption in 1994. See United Nations Environment Programme, ABC of SCP: Clarifying Concepts on Sustainable Consumption and Production –towards a 10-year framework of programmes on sustainable consumption and production. Available from http://www.unep.org/10YFP/Portals/50150/downloads/publications/ABC/ABC_ENGLISH.pdf.

2 Ibid., p. 12.

3 General Assembly resolution 66/288, annex.

4 For more information about the global framework, see http://www.unep.org/10yfp/Home/tabid/133135/Default.aspx.

5 Data on resource use are sourced from United Nations Environment Programme, *Indicators for a Resource Efficient and Green Asia and the Pacific: Measuring Progress of Sustainable Consumption and Production, Green Economy and Resource Efficiency Policies in the Asia-Pacific Region* (Bangkok, 2015). Available from http://www.unep.org/AsiaPacificIndicators.

6 For the purposes of this chapter, materials are composed of biomass (crops, crop residues, wood, animal products, grazed biomass, fodder crops), fossil fuels (coal, petroleum, natural gas), metal ores (ferrous ores, non-ferrous ores) and non-metallic minerals (industrial minerals, construction minerals). See United Nations Environment Programme, *Indicators for a Resource Efficient and Green Asia and the Pacific: Measuring Progress of Sustainable Consumption and Production, Green Economy and Resource Efficiency Policies in the Asia-Pacific Region* (Bangkok, 2015), pp. 15-16. Available from http://www.unep.org/AsiaPacificIndicators.

7 Thomas Wiedmann and others, *The material footprint of nations", Proceedings of the National Academy of Sciences of the United States of America* (PNAS), vol. 112, No. 20, pp. 6271-6276.

8 Total primary energy supply (TPES) equals production plus imports minus exports minus international bunkers plus or minus stock changes. TPES includes fuels such as coal and gas that are subsequently transformed into other forms of energy, such as electricity.

9 United Nations Environment Programme, *Indicators for a Resource Efficient and Green Asia and the Pacific: Measuring Progress of Sustainable Consumption and Production, Green Economy and Resource Efficiency Policies in the Asia-Pacific Region* (Bangkok, 2015). Available from http://www.unep.org/AsiaPacificIndicators.

10 Food and Agriculture Organization of the United Nations, *Global Food Losses and Food Waste: Extent, Causes and Prevention* (Rome, 2011). Available from http://www.fao.org/docrep/014/mb060e/mb060e.pdf.

11 Ibid.

12 B. Lipinski, C. Hanson, J. Lomax, L. Kitinoja, R.Waite and T. Searchinger, "Reducing food loss and waste: creating a sustainable food future", Working Paper, Instalment 2 of "Creating a Sustainable Food Future" (Washington, D.C., World Resource Institute and United Nations Environment Programme, 2013). Available from http://www.wri.org/sites/default/files/reducing_food_loss_and_waste.pdf.

13 For details, see http://www.wri.org/our-work/project/food-loss-waste-protocol.

14 Food and Agriculture Organization of the United Nations, "Targets and indicators for the post-2015 development agenda and the sustainable development goals: a contribution by the Food and Agriculture Organization of the United Nations" (Rome, 2014). Available from http://www.fao.org/fileadmin/user_upload/post-2015/Info_Kit_Post-2015/FAO_TI_14_themes_24_06_2014.pdf.

15 United Nations Centre for Regional Development, "Suggested core set of 3R policy indicators", Background Paper for Plenary Session 1 of the Provisional Programme, Fifth Regional 3R Forum in Asia and the Pacific, 25-27 February 2014, Surabaya, Indonesia. Available from http://www.uncrd.or.jp/content/documents/13425-3R_P1_BGP.pdf.

16 Intergovernmental Panel on Climate Change (IPCC), 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 5 Waste (Hayama, Japan, 2006). Available from http://www.ipcc-nggip.iges.or.jp/public/2006gl/.

17 United Nations Centre for Regional Development, "Suggested core set of 3R policy indicators", Background Paper for Plenary Session 1 of the Provisional Programme, Fifth Regional 3R Forum in Asia and the Pacific, 25-27 February 2014, Surabaya, Indonesia. Available from http://www.uncrd.or.jp/content/documents/13425-3R_P1_BGP.pdf.

UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific

Statistical Yearbook for Asia and the Pacific 2015

Sustainable Development Goal 13

Take urgent action to combat climate change and its impacts

While the deadline for achieving all 17 Sustainable Development Goals is 15 years into the future, Goal 13 calls for "urgent" action to combat climate change and its adverse impacts.[1] Owing to the highly destructive nature of extreme weather events in Asia and the Pacific, recognition of the need for such rapid action is welcomed by the Governments of countries and areas in the region.

13.1 Climate-related disasters

Not only are disaster events in Asia and the Pacific often highly destructive, climate variability and the sudden impact of extreme weather events mean they are also difficult to predict. Based on observations since 1950,[2] the region is experiencing, among other phenomena, heavier rainfall and higher maximum wind speeds during storms, which cause large-scale local and transboundary floods, as well as greater extremes of temperature that have resulted in severe heat waves and prolonged droughts. Since 1970, records on the occurrence of floods and storms in the region show the highest increases in such phenomena ever recorded.[3] In the current decade, parts of the region were severely affected by Typhoon Haiyan, one of the strongest tropical cyclones ever recorded anywhere in the world, and Cyclone Pam, the most powerful storm to have ever made landfall in the Pacific. (Box 1)

Climate-related disasters have significant impacts on people's livelihoods and on economic assets and infrastructure; indeed, they are among the most potent causes of long-term impoverishment, particularly in rural areas.[4]

Over the last decade, climate-related disasters in Asia and the Pacific affected the largest number of people and accounted for the majority of damage and loss from all types of disasters

Between 2005 and 2014, the overwhelming majority (84 per cent) of the total reported natural disasters in Asia and the Pacific were of hydrological, meteorological and climatological origin. Floods and storms were the most frequent and largest climato-hydro-meteorological disasters in terms of the number of people affected and the amount of economic damage inflicted. In terms of fatalities, storms were the most deadly of the disasters in the region.[5] (Fig 1, Fig 2, Fig 3 and Fig 4)

During the past 10 years, hydrological, meteorological and climatological disasters resulted in the death of nearly 300,000 people in the region.

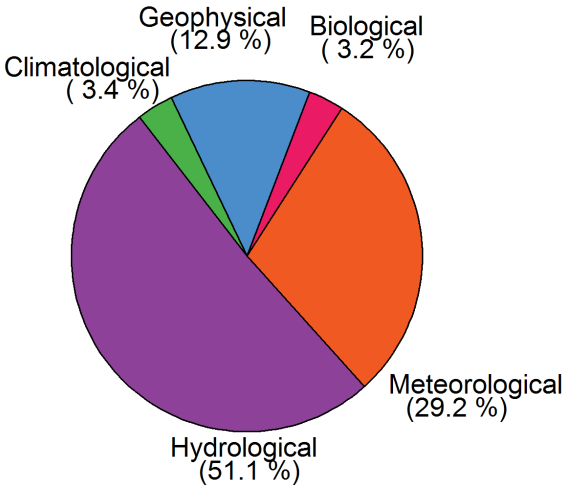


Figure 1
Number of natural disasters by type, Asia and the Pacific, 2005-2014

The deadliest event during this period was the category-3 Cyclone Nargis, which devastated parts of Myanmar in 2008; more than 138,000 people were killed or reported missing, 2.4 million people were adversely affected and as many as 800,000 people were displaced.[6]

From 2005 to 2014, a total of 1.37 billion people in the region were affected – injured, required immediate assistance or made homeless – by hydrological, meteorological and climatological disasters; in other words, an average of 33 per 1,000 people in the region were so affected every year. Such disasters accounted for about 95 per cent of the total number of people affected by all types of natural disasters in Asia and the Pacific in the past 10 years.

Over the same period, hydrological, meteorological and climatological disasters were responsible for 50 per cent of the total economic damage from natural disasters in the region, which was equivalent to $367 billion in value. The highest reported losses ($40 billion) in the past decade were recorded in Thailand mainly due to its devastating 2011 flood.

13. 2 Emissions

Asia and the Pacific has emerged as one of the world's leading GHG emitters as a consequence of industrial and other activities in the region's rapidly growing middle- and high-income economies. The issue of rising GHG emissions can no longer be attributed solely to developed countries. The increasing level of emissions, including rising emissions per capita in the region, reaffirms the universal responsibility of all countries – developed and developing alike – to take urgent action for mitigation of climate change and adaptation to such change. The region's prospects for the inclusive and sustained economic growth necessary for eradicating poverty will depend on its ability to incorporate mitigation and adaptation considerations into national development policies and to transform its development patterns into those that are low-carbon and resource-efficient.

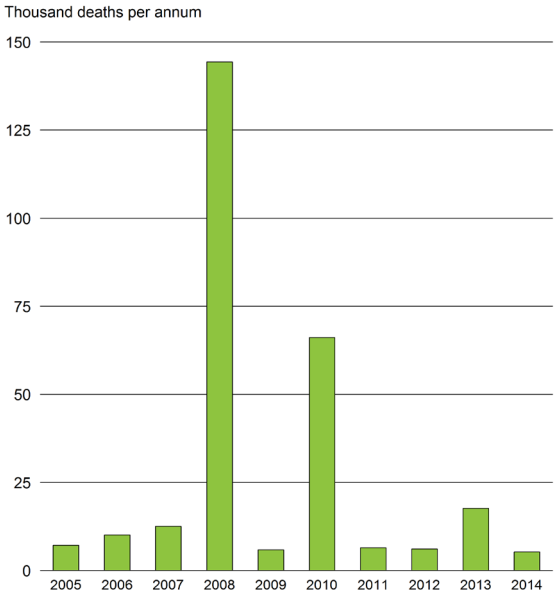


Figure 2
Number of deaths from hydrological, meteorological and climatological disasters, Asia and the Pacific, 2005-2014

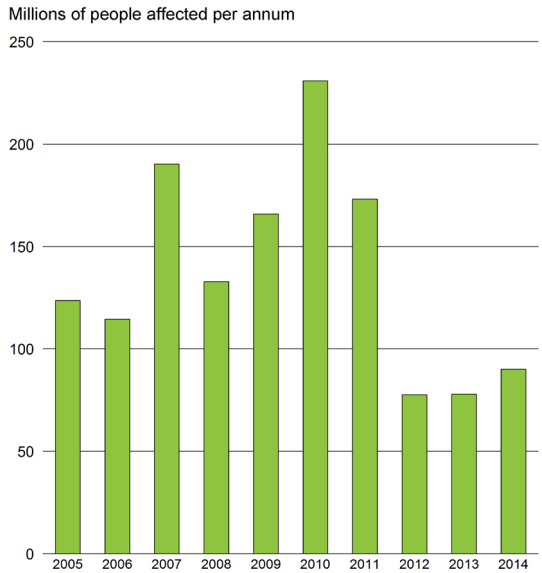


Figure 3
Number of people affected from hydrological, meteorological and climatological disasters, Asia and the Pacific, 2005-2014

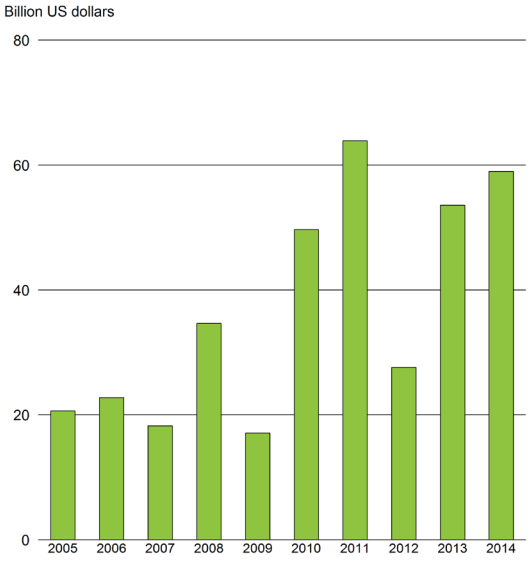


Figure 4
Economic damages from hydrological, meteorological and climatological disasters, Asia and the Pacific, 2005-2014

Box 1

Cyclone Pam

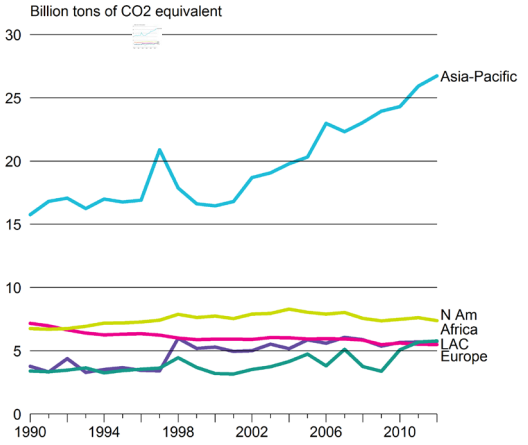
On 13 March 2015, Cyclone Pam, a category-5 tropical storm – one of the most powerful storms that ever made landfall in the Pacific – struck in Vanuatu. The intensity of Cyclone Pam can be compared to that of Typhoon Haiyan, which caused tremendous damage in parts of the Philippines in 2013. In terms of fatalities caused by Cyclone Pam, 11 were reported dead, with an estimated 65,000 people being displaced and approximately 17,000 buildings, including houses, schools and medical facilities, damaged or destroyed. The powerful cyclone destroyed crops on a large scale and adversely affected the livelihoods of at least 80 per cent of Vanuatu's rural population. The total damage and loss was estimated at approximately $449.4 million, which is equivalent to 64.1 per cent of the GDP of Vanuatu.[a] The President of Vanuatu, Baldwin Jacobson Lonsdale, stated that Cyclone Pam "set back the country's development by years."

a Vanuatu, Prime Minister's Office, "Post-disaster needs assessment, Tropical Cyclone Pam, March 2015". Available from http://reliefweb.int/sites/reliefweb.int/files/resources/vanuatu_pdna_cyclone_pam_2015.pdf.

Emissions continue to increase globally, with countries in Asia and the Pacific being responsible for more than half of global greenhouse gas emissions

Countries in the Asia-Pacific region, which is home to more than two thirds of the world's population, were responsible for emitting more than 26,725 million tons of carbon-dioxide-equivalent emissions in 2012, just over half (50.6 per cent) of the total of such emissions globally (Fig 5). While emissions per capita continue to remain relatively low, the region recorded an increase of roughly 3.1 per cent in such emissions over the period 2011 to 2012. By contrast, decreasing total emissions were recorded for both Europe (–0.5 per cent) and North America (–3.1 per cent). Since 1990, Europe has cut the volume of its emissions by close to 23.5 per cent (by 2012), while emissions in Asia and the Pacific have increased by close to 70 per cent over the same period.

Figure 5
Greenhouse gas emissions, Asia and the Pacific and other world regions, 1990 to 2012



Of the 58 countries with data on emissions, 53 recorded an increase in their emissions over the same period, ranging from 0.2 per cent to 22.9 per cent. The largest increases in emissions levels were recorded in Nepal (22.9 per cent), Viet Nam (9 per cent), India (6.2 per cent) and Japan (5.9 per cent). However, some countries in the region reduced their GHG emissions: Australia (–3.1 per cent year-on-year); Uzbekistan (–1.9 per cent); Armenia (–0.8 per cent); Kyrgyzstan (–0.4 per cent); and Georgia (–0.3 per cent).

Middle- and high-income countries are responsible for 99 per cent of all greenhouse gas emissions in the Asia-Pacific region

Middle- and high-income countries in the region are responsible for 99 per cent of total regional GHG emissions, or 26,429 million tons of CO_2 equivalent. Upper middle-income countries account for 55.1 per cent of such emissions; China alone accounts for 84.6 per cent of emissions from upper middle-income countries, or 46.6 per cent of the total for the region. (Fig 6, Fig 7)

High and lower middle-income economies contribute roughly equal shares of regional emissions, 22.2 per cent and 21.7 per cent respectively; each group of economies in Asia and the Pacific emit more greenhouse gases than the individual regions of Europe, Africa, and Latin America and the Caribbean.

Close to 77 per cent of the total emissions from countries in the region can be attributed to the top five emitters (Table 1): China (12,454.7 million tons, or 46.6 per cent of the total), India (3,002.9 million tons, or 11.2 per cent), the Russian Federation (2,803.4 million tons, or 10.5 per cent), Japan (1,478.9 million tons, or 5.5 per cent) and Indonesia (780.6 million tons, or 2.9 per cent). The top 10 regional emitters, which additionally include Australia, the Islamic Republic of Iran, Myanmar, the Republic of Korea and Turkey, together account for close to 90 per cent of regional emissions (87.8 per cent, or more than 23,476 million tons of GHG).

Emissions from low income countries remain negligible (equivalent to 1 per cent of the total for the Asia-Pacific region), with the most vulnerable Pacific small island developing States emitting just a fraction of 1 per cent (0.07 per cent).

Greenhouse gas emissions per capita are lower in Asia and the Pacific than any other region in the world except for Africa

Countries emitting substantial amounts of GHG tend to be those with large populations and sizeable economies. Examining GHG emissions per capita can provide some context to overall emissions data and help in adjusting for the impact of population growth on reported emission levels.[7] In 2012, the Asia-Pacific region emitted an average of 6.3 tons of GHG (CO_2 equivalent) per capita, lower than any other region globally except for Africa (average emissions of 5.3 tons of GHG (CO_2 equivalent) per capita). In the Asia-Pacific region, there has been a steady rise in the emissions rate per capita since 1990;

		Greenhouse gas (GHG) emissions		
		Million tons of CO_2 equivalent	% of regional emissions	% of global emissions
1	China	12 454.7	46.6	23.6
2	India	3 002.9	11.2	5.7
3	Russian Federation	2 803.4	10.5	5.3
4	Japan	1 478.9	5.5	2.8
5	Indonesia	780.6	2.9	1.5
6	Australia	761.7	2.9	1.4
7	Republic of Korea	669.0	2.5	1.3
8	Iran (Islamic Rep. of)	551.1	2.1	1.0
9	Myanmar	528.4	2.0	1.0
10	Turkey	445.6	1.7	0.8

Table 1
Top 10 Greenhouse gas emitters of Asian and Pacific region, 2012

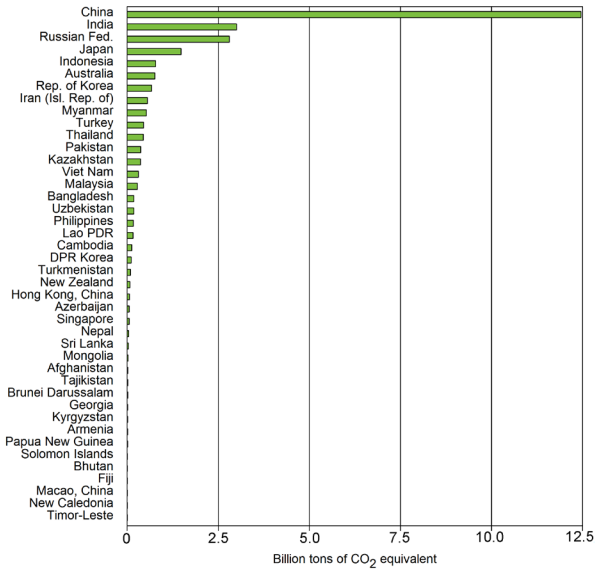


Figure 6
Greenhouse gas emissions, Asia and the Pacific, 2012

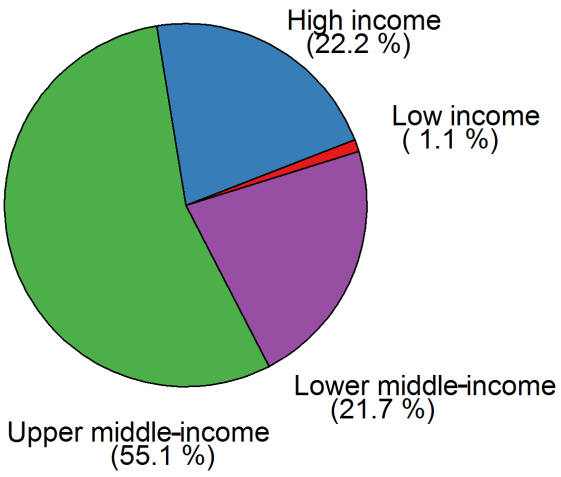


Figure 7
Greenhouse gas emissions, Asia and the Pacific, 2012

the rate increased by 30 per cent since that time. In contrast, GHG emissions per capita have decreased since then in Europe (by 26 per cent compared with 1990 levels), and in Africa and North America (by 12 per cent each compared with 1990 levels). However, the Asia-Pacific region still is below the global average, which in 2012 stood at 7.5 tons of GHG (CO_2 equivalent) per capita.

The upper middle and high income economies in the region are responsible for the highest average of GHG emissions per capita, 9.0 and 16.4 tons of GHG (CO_2 equivalent) respectively. The Pacific subregion has the highest emissions rate per capita among the five subregions, at 22.9 tons of GHG, largely due to the inclusion in that subregion of two developed countries, New Zealand (17.6 tons of GHG per capita) and Australia (33.2 tons of GHG per capita).

The largest GHG emitter (on a per capita basis) in the Asia-Pacific region is Brunei Darussalam at 36.6 tons, followed by Australia and the Lao People's Democratic Republic at 33.2 and 25.0 tons respectively. China emits 9.2 tons per capita, which is the same amount as that emitted by the continent of Europe; by contrast, the continent of North America emits 21.1 tons per capita.

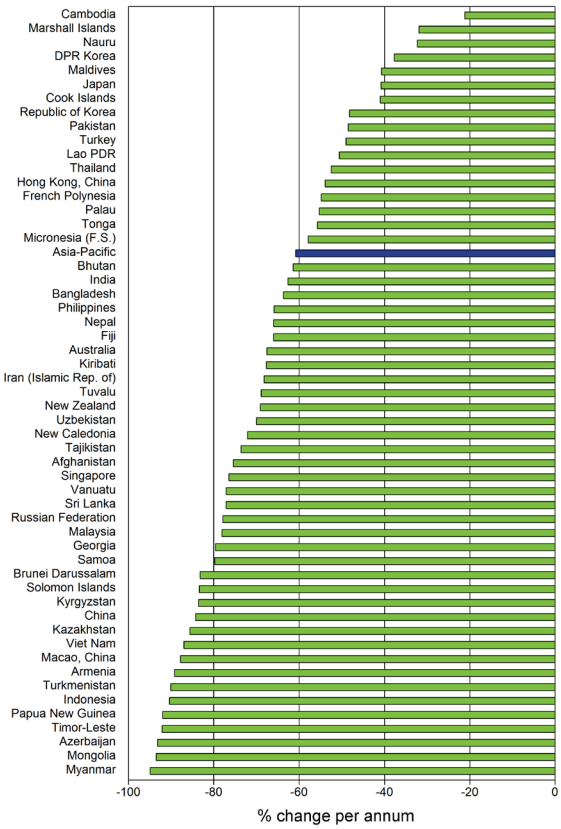


Figure 8
Annual percentage change in greenhouse gas emissions intensity, Asia and the Pacific, 1990-2012

The amount of greenhouse gas produced per unit of GDP is decreasing

GHG emissions intensity is a measure of the GHG emissions per unit of economic output. Decreasing levels of emissions intensity do not necessarily imply an overall decrease in total emissions – just that each unit of economic output is being created more efficiently – that is, with less GHG being emitted. Given the pace of economic growth in the Asia-Pacific region, the ability to deliver one unit of GDP growth while minimizing GHG emissions will be an essential component of a sustainable economic growth strategy and climate change mitigation actions.

The region's GHG emissions intensity has continued to fall since 1990, to 1.0 tons per $1,000 of GDP in 2012, which is higher than the global average of 0.7 tons per $1,000 of GDP. The region's reduction in GHG intensity since 1990 (–61 per cent) has been higher than the global average (–56 per cent).

Many countries in the region have made impressive reductions in GHG emissions intensity over the period 1990 to 2012, including Mongolia (93.5 per cent decrease), Indonesia (a 90.4 per cent decrease), Myanmar (a 94.9 per cent decrease), Viet Nam (an 87 per cent decrease), Armenia (an 89.2 per cent decrease), Azerbaijan (a 93.2 per cent decrease) and Turkmenistan (a 90 per cent decrease). By contrast, in 2011/12 Nepal, India and Japan increased their GHG emissions intensity by 25.9 per cent, 8.3 per cent and 5.3 per cent respectively. (Fig 8)

In 2012, Asia and the Pacific emitted 32 per cent more methane and 22 per cent more nitrous oxide than in 1990

Methane (CH_4) and nitrous oxide (N_2O) are greenhouse gases that have potential climate-warming effects that are 21 and 310 times,[8] respectively, more powerful than that of carbon dioxide. For this reason, emission of these gases is monitored carefully. Countries in Asia and the Pacific have been found to emit 56.9 per cent of global CH_4 emissions and 45.5 per cent of total global N_2O emissions. However, CH_4 emissions per capita in the region (50.9 kg) are on par with the global average (53.9 kg). The Asia-Pacific region is second only to Africa (43.4 kg) in that regard, followed by Europe (51.2 kg), Latin America and the Caribbean (77 kg) and North America (82.6 kg). N_2O emissions per capita for the region (1.1 kg) similarly are on par with the global average (1.4 kg), although regional N_2O emissions are the lowest compared with those of Africa (1.8 kg), Europe (1.7 kg), Latin America and the Caribbean (2.3 kg) and North America (3 kg). (Fig 9, Fig 10)

CH_4 emissions in the region have increased by 32 per cent since 1990 to reach 217.2 million tons in 2012, while in contrast, CH_4 emissions have decreased by 30 per cent in Europe (30.3 million tons) and by 15 per cent in North America (28.9 million tons). The three largest producers of CH_4 emissions in the region are China (38 per cent of the regional total or 83.4 million tons), India (14 per cent or 30.3 million tons) and the Russian Federation (almost 12 per cent or almost 26 million tons). In the Russian Federation, however, methane emissions dropped by 13 per cent compared with 1990 levels, unlike in China and India, where the levels increased by 72 per cent and 24 per cent respectively, during the same period.

As the Asia-Pacific region has continued to develop, N_2O emissions have increased by 22 per cent since 1990, reaching 4.6 million tons in 2012; in the period 2011/12, those emissions increased by 2 per cent. In contrast, N_2O emissions have decreased by 40 per cent in the developed European economies over the same period (a little more than 1.0 million tons in 2012). In 2012, N_2O emissions in China (almost 1.9 million tons) were 72 per cent higher than in 1990, and accounted for 41 per cent of total regional N_2O emissions, followed by India where N_2O emissions increased by 41 per cent since 1990 (773,404 tons in 2012) accounting for 16.8 per cent of the regional total.

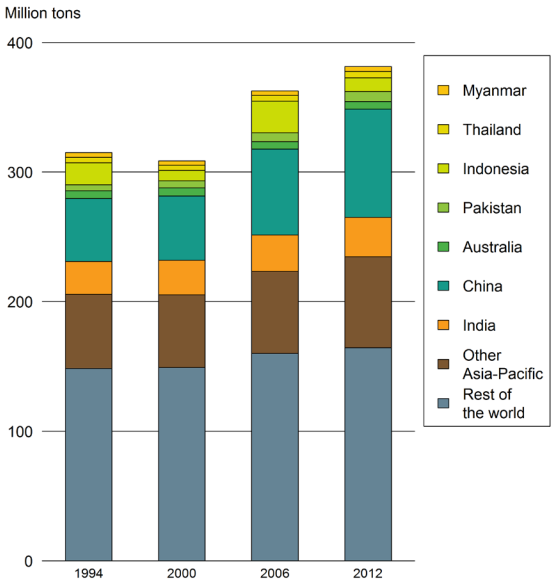


Figure 9
Emissions from agriculture, Asia and the Pacific and other world regions, 2012

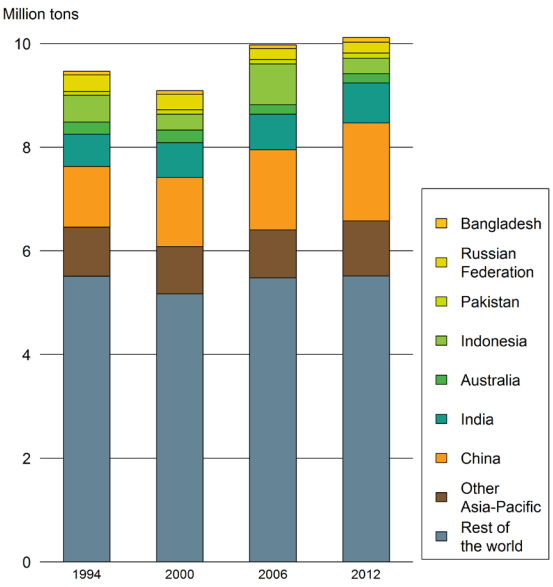


Figure 10
Methane (CH_4) emissions, Asia and the Pacific, 1994-2012

The Asian and Pacific region is responsible for more than half the global GHG emissions from the agricultural sector (Fig 11). Furthermore, agricultural emissions, consisting mainly of CH_4 and N_2O gases, account for 10 per cent of the total regional GHG emissions (all sectors). A growing population and demands for increasing yields from the agricultural sector are fueling increases in agricultural emissions.

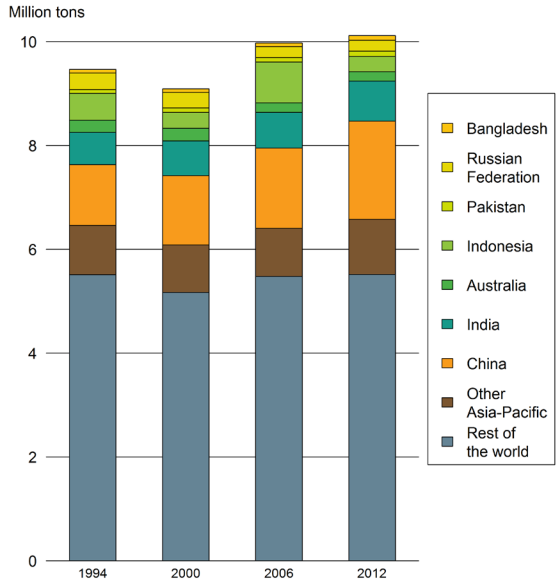


Figure 11
Nitrous oxide (N_2O) emissions, Asia and the Pacific, 1994-2012

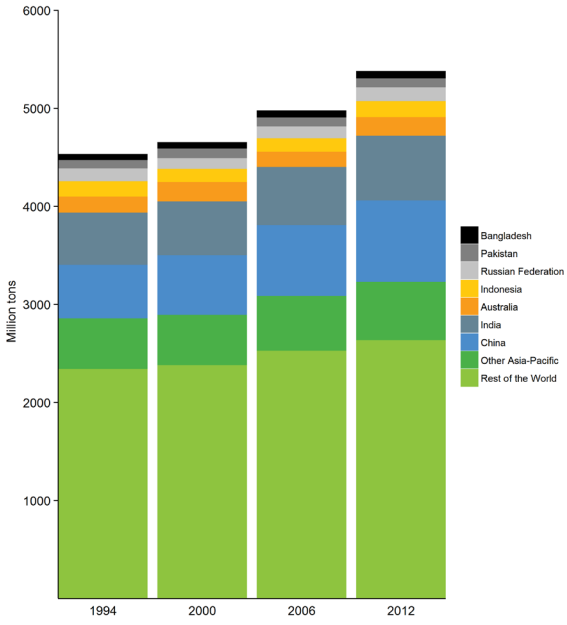


Figure 12
Greenhouse gas emissions from agriculture, Asia and the Pacific and the rest of the world, 1994-2012

13.3 Data and monitoring issues

Possible under - or over - reporting of disasters

Emergency Events Database (EM-DAT), an internationally recognized database on natural and technological disasters, is the source of disaster-related data for the Statistical Yearbook. In terms of data coverage, EM-DAT contains data on disaster occurrences and their effects from 1990 to present that meet at least one of the following criteria.[9] (1) 10 or more people dead; (2) 100 or more people affected; (3) declaration of a state of emergency, and (4) call for international assistance. Therefore, disaster data from EM-DAT could be under- or over- reported when comparing with the information from official sources based on national definitions and criteria. In addition, a blank cell in EM-DAT might be interpreted as missing values or non-reported information in a particular country for a particular year; or it could be due to the fact that no disaster occurred, or the disaster event(s) did not pass at least one of the criteria and thus was not recorded into the database. Furthermore, a '0' (zero) in EM-DAT does not represent a value and could mean that there is no information available.[10]

Addressing the challenge of measuring disasters - an emerging statistical framework

Reliability and comparability of disaster statistics has remained an issue particularly when comparing and analyzing data across countries. Even the most basic information on disaster occurrences, direct comparison of the number of disaster events from official sources may be misleading since the definition of a 'disaster' and how different types of disasters are defined and classified vary country by country. Meanwhile, official data on mortalities and affected people as well as direct economic impacts from disasters are not necessarily

compiled for statistical purposes. Due to a lack of standardized methodologies for the production of disaster statistics, global disaster databases including EM-DAT usually gather disaster data from a variety of secondary sources where data are typically inconsistent with the official figures.

In addressing the need for an agreed statistical framework/guidelines for improving disaster-related statistics, the ESCAP Commission at its 70th session in 2014 constituted an expert group comprising experts from national disaster management agencies and national statistical offices to develop a basic range of disaster-related statistics in Asia and the Pacific. It is anticipated that a draft statistical framework for disaster-related statistics will be presented during the 72nd ESCAP Commission in 2016.

Endnotes

1 General Assembly resolution 70/1.

2 Intergovernmental Panel on Climate Change, *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation: Special Report of the Intergovernmental Panel on Climate Change* (New York, Cambridge University Press, 2012). Available from http://www.ipcc.ch/pdf/special-reports/srex/SREX_Full_Report.pdf.

3 United Nations, Economic and Social Commission for Asia and the Pacific, "Overview of natural disasters and their impacts in Asia and the Pacific, 1970-2014", ESCAP Technical Paper (March 2015). A copy of the publication may be downloaded from a link at http://ww.unescap.org/resources/overview-natural-disasters-and-their-impacts-asia-and-pacific-1970-2014.

4 For detailed discussions on this topic, see United Nations, Economic and Social Commission for Asia and the Pacific, *Asia-Pacific Disaster Report 2015: Disasters without Borders – regional resilience for sustainable development* (Sales No. E.15.II.F.13).

5 Ibid.

6 For additional details on the post-disaster damage and needs assessment (PDNA) in Myanmar, see "PDNA at a glance, Myanmar, Cyclone Nargis, May 2008". Available from http://www.gfdrr.org/sites/gfdrr.org/.../Myanmar_PDNA_GLANCE.pdf.

7 See World Resources Institute, *Navigating the Numbers: Greenhouse Gas Data and International Climate Policy* (Montreal, Canada, 2005), chap. 4. The full publication can be downloaded from a link at http://www.wri.org/publication/navigating-numbers.

8 United Nations Framework Convention on Climate Change, "Global warming potentials", which is based on data from "Climate change 1995, the science of climate change: summary for policymakers and technical summary of the Working Group I report", p. 22. For more information, especially on the time horizon of 100 years, see http://unfccc.int/ghg_data/items/3825.php.

9 For more information, see http://www.emdat.be/frequently-asked-questions.

10 Ibid.

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Statistical Yearbook for Asia and the Pacific 2015

Sustainable Development Goal 14

Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Increased recognition of the role of oceans and seas is vital for the achievement of Sustainable Development Goal 14. Marine ecosystems and the resources they contain provide a broad range of inputs essential for the livelihood of communities across the region. These inputs include various types of ecosystem services that are not easily quantified or measurable in economic terms, such as natural protection against extreme natural events, habitats for marine animals, and natural attractions benefiting tourism and recreational activities.

The small island developing States are particularly vulnerable to changes in marine environments and risks to the sustainability of such activities as fishing and tourism.

The coral reef ecosystems in Asia and the Pacific are an example of crucial sources of a great many natural benefits on which humans depend. The biologist E.O. Wilson referred to coral reefs as the "rainforests of the sea". Just as terrestrial rainforests serve as the lungs of the planet owing to their role in absorbing carbon dioxide and producing oxygen, upon which all animals depend for survival, coral reefs are essential habitats for marine biodiversity and valuable ecosystems on Earth. They are valuable for their fisheries resources, coastal protection function, source of medical advances and tourism, among other goods and services. Yet, coral reefs are being increasingly endangered by a number of threats from overexploitation, warming oceans and acidification. Coral bleaching and other forms of damage to coral reefs in the Pacific and Indian oceans are major threats to the sustainability of coastal communities across the region.

The statistics presented in this chapter are focused only on two specific topics relevant to welfare benefits from oceans for coastal area communities, namely the economics of the fisheries sector and some general statistics related to protection of the relevant ecosystems.

14.1 Ocean fishing

While large shares of ocean fish and other marine-based products brought to market are "farmed", wild ocean fishing is still a hugely important productive activity for many Asia-Pacific economies. Statistics compiled by the Secretariat of the Pacific Community[1] on the value of catches of ocean fish in national waters show that ocean fishing is the most highly valued economic activity for many of the small island developing States in the Pacific sub-region. Owing to the nature of fish as a wild food source, it is tremendously difficult to

make conclusive analyses of the sustainability of ocean fishing. However, there is a general consensus[2] among marine life experts that ocean fisheries have been experiencing major declines that put the industry, as well as the overall condition of ocean ecosystems, at risk.

In addition to ocean fishing being a major source of income, a recent study[3] shows that ocean fishing can also provide health benefits for the Pacific communities where tuna and other fish and marine animals are consumed helping people transition to healthier high-protein diets. Currently, Pacific island communities have some of the world's highest rates of obesity and diabetes as a result of unhealthy diets that are rich in sugar, salt and fat.

Tuna catches in the territorial waters of countries in Asia and the Pacific have more than doubled, from 612,000 tons to 1.6 million tons, between 1997 and 2015

The volumes of tuna catches in Asia and the Pacific that are sustainable are not known. As is the case with many other species targeted by commercial fishing vessels, tuna can habituate over vast ranges of international waters as well as the territorial waters of individual countries. This aspect is one of many reasons why it is challenging to assess the sustainability of ocean fisheries. It is clear, however, that the volume of catches of important wild species cannot continue to increase indefinitely.

Figure 1 presents data for some countries and territories in the Pacific subregion on the value of catches in national waters for just one of the major commercial species: tuna. In the most recent five-year period, the value of the tuna catches in the territorial waters of Kiribati and Tuvalu was about three to four times the value of the total gross production of these States. The value of tuna fish caught in a country's territorial waters can be greater than the size its total domestic economy if the majority of the fish are caught by foreign fishing vessels. For example, the total value of tuna catches by Kiribati and Tuvalu fleets is equal to only about one quarter of the value of the total tuna fishing in those waters. Tuna fishing by foreign vessels may contribute to the Kiribati and Tuvalu economies in other ways, however, such as through trade, licensing fees and employment opportunities.

The seven countries in the Asia-Pacific region recording the largest catches (in current United States dollars) of tuna fish are shown in figure 2. Only a very small portion, of these catches are made within the national territories of those countries, between 17 per cent and 53 per cent for the selected countries, which means that the majority of tuna fishing in Asia and the Pacific is taking place in the territorial waters of foreign countries or in international waters.

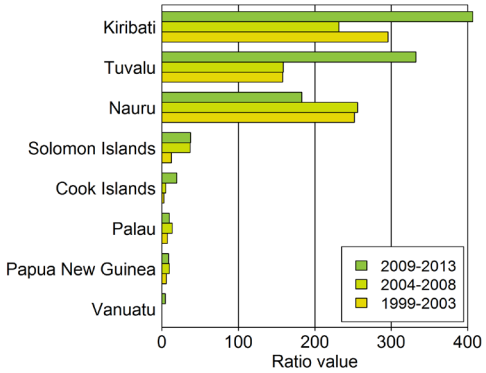


Figure 1
Ratio of value of tuna catches in national waters to domestic GDP

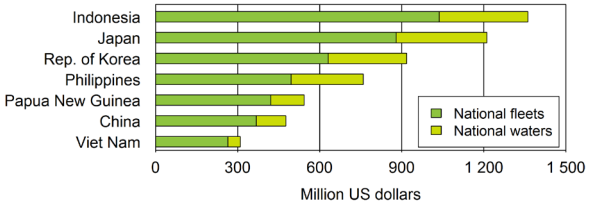


Figure 2
Value of tuna catches, by national fleet and national waters, 2013

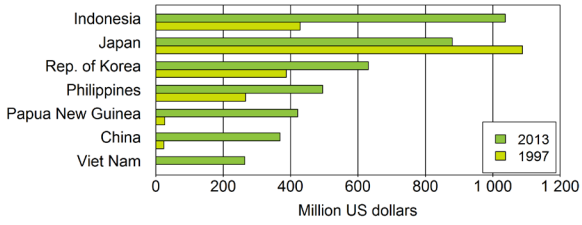


Figure 3
Value of tuna catches by national fleet of selected countries, 1997 and 2013

The value of fish caught in the territorial waters of some small island developing States is worth up to three times their GDP

The value of catches for the large ocean water fishing vessels and their importance to the national or proximate economies can be highly variable from year to year. The one constant trend over the past 8 years, during which the Oceanic Fisheries Program of the Secretariat of the Pacific Community have collected data,[4] has been the growth in volume of fish catches. The tuna fishing industry is an important example. According to SPC catch data, tuna catches in Asia and the Pacific grew by an average rate of approximately 120,000 tons per year during the past 8 years.

Figure 4
Fish net importers and exporters, 2014

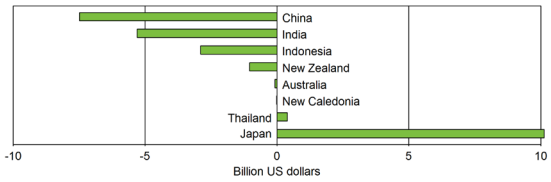


Figure 5
Share of fish exports in GDP for selected countries in Asia and the Pacific, 2014

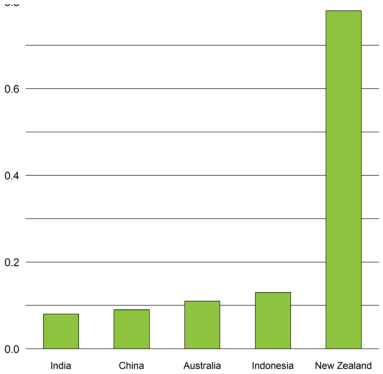
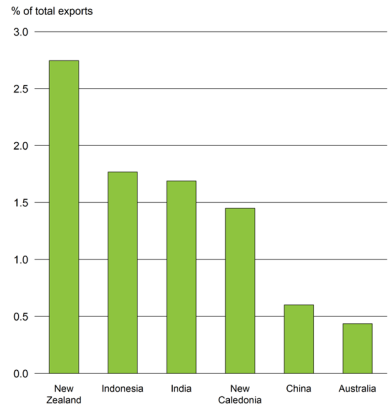


Figure 6
Share of fish exports in total exports for top-ranking countries in Asia and the Pacific, 2014



The order of ranking of countries by value of their tuna fish catches has remained largely stable over time, and the overall value of this industry in some countries has more than trebled since the 1990s. For Viet Nam, the value of the tuna catch of national vessels was zero between 1997 and 2002, but by 2013 the value of tuna caught by Viet Nam's national fleet reached nearly $300 million in value. For Viet Nam and the other countries concerned there has been clear growth over the last 15 years in the economic value of tuna catches (in United States dollar terms) – despite very large year-to-year fluctuations, sometimes by hundreds of millions of United States dollars.

Another way to look at the economic importance of ocean fishing to national economies is through trade statistics and by comparing net exports of ocean fish and other marine resources to overall GDP and to total exports for all the non-landlocked countries in Asia and the Pacific. For example, some major exporters of fish and marine animals are also net importers due to the high volumes of domestic consumption. Net imports is the difference between imports and exports so net importers will have positive values (e.g. Japan and Thailand), while net exporters (e.g. China and India) will have negative values. Exports of ocean fish can make up significant shares of total exports even for some of the largest or most diversified economies in the region, such as Indonesia (2 per cent) and New Zealand (3 per cent). Figure 4, 5 and 6 present related descriptions of the importance of ocean fishing for Asia and Pacific economies: net import of fish (imports less exports), fish exports share of GDP, and fish exports in total exports.[5]

14.2 Healthy marine and coastal ecosystems

To continue benefiting from the economic and other services provided by marine ecosystems, their health, including the shares of protected areas of national territories, will need greater consideration.

More than 200 threatened fish species inhabit the national waters of India alone

Figure 7 the countries of Asia and the Pacific with the largest numbers of individually threatened fish species in their territorial waters are shown. Threatened species are defined in the Red List database, which is produced by the International Union for Conservation of Nature and Natural Resources (IUCN), and classified as critically endangered, endangered or vulnerable (see chapter 15 for definitions of these categories).

These numbers help to provide a general overview for countries in the region facing the most extensive and diverse challenges for achieving Sustainable Development Goal 14. For example, there are more than 200 threatened fish species in the national waters of India alone. The numbers of threatened species in a country are linked with its climate and size, not necessarily to any particular policy or special threat to biodiversity. (Fig 7)

Indonesia has the largest area of mangrove forests in the Asia-Pacific region, but those forests decreased in size by one third since 2000

An important approach to managing biodiversity threats facing oceans is to carefully monitor conditions of the special marine environments upon which fish depend for habitat and reproduction, particularly coral reefs and mangrove forests.

Mangrove forests are a crucial yet vulnerable part of healthy and sustainable marine environments, providing a wide range of ecosystem services, including unique habitats for spawning of many species of fish and other marine animals. Management of mangrove forests has varied in the region over the past 25 years. In countries with relatively large areas of mangroves, such as Australia and Indonesia, the areas devoted to mangrove forests have contracted in size. Although Indonesia has the largest area of mangrove cover in the Asia-Pacific region, that area has decreased in size by one third since 2000. In contrast, there has been substantial growth in the area of mangrove forests in other countries, such as Papua New Guinea, the Philippines and Viet Nam. For the Philippines, the area covered by mangrove forests has more than doubled in size since 1990. For the region as a whole the area of mangrove forests has decreased from 7,569 million hectares in 2000 to 6,791 million hectares in 2015. (Table 1, Fig 8)

Table 1
Size of mangrove forests in selected countries in Asia and the Pacific

	(Thousands of hectares)				
	1990	1995	2000	2010	2015
Indonesia	3 058	3 062	3 444	2 844	2 244
Australia		1 045	749	980	913
Papua New Guinea	565	540	528	516	650
Bangladesh	460	476	476	504	531
India	426	448	445	428	418
Philippines	154	227	265	311	356
Myanmar	517	486	438	438	299
Viet Nam	73	71	62	262	270
Thailand	174	245	265	244	240
Fiji	87	100	108	137	154
Pakistan	207	158	128	98	95
Cambodia	80	68	62	56	50
Solomon Islands	53	46	42	38	34
Sri Lanka	9	11	12	16	16
Sum for Asia-Pacific countries	**6 411**	**7 512**	**7 569**	**7 401**	**6 791**

Source: Food and Agriculture Organization of the United Nations, *Global Forest Resources Assessment 2015: How are the World's Forests Changing?* (Rome, 2015). This publication and others may be downloaded from http://www.fao.org/forest-resources-assessment/en/.

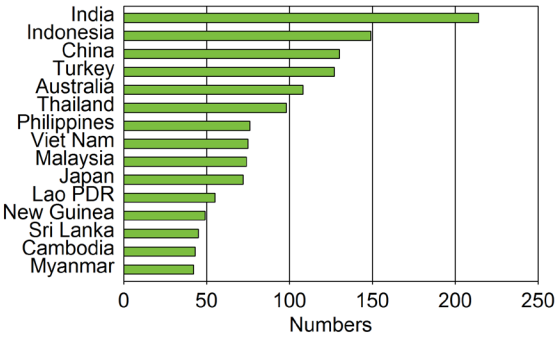


Figure 7
Number of threatened fish species, top-ranking countries in Asia and the Pacific, 2014

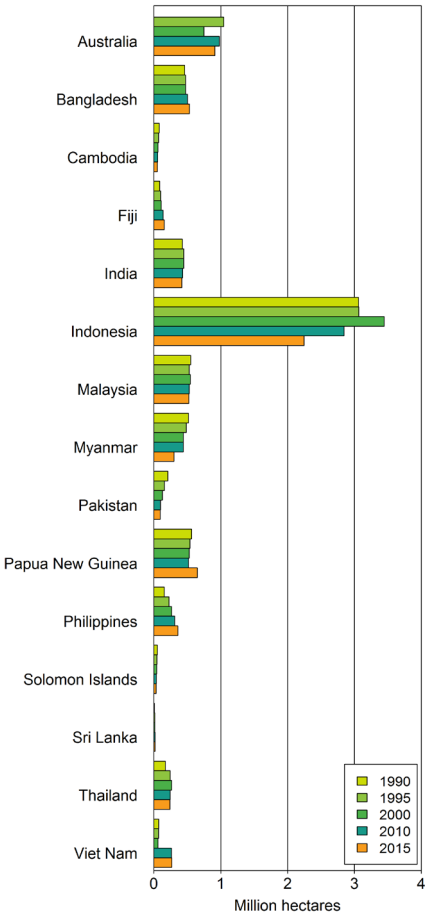


Figure 8
Mangrove forest areas, 1990, 1995, 2000, 2010 and 2015

The vast majority of Asia-Pacific countries with a coastline protect less than 5 per cent of their territorial waters for biodiversity conservation

The distribution across Asia and the Pacific in shares of marine areas protected for biodiversity conservation compared with areas of territorial waters varies greatly. Only eight member States have shares above the average (6.8 per cent) for coastal countries in the region and less than half the countries have protected areas covering at least 1 per cent of their territorial waters. Australia is a unique case in this regard as it is home to the world's largest coral reef system, a substantial portion of which is managed as a national park. Nevertheless, more than 100 threatened fish species still inhabit the territorial waters of Australia, and there is no apparent correlation between shares of protected marine areas and presence of threatened species.

14.3 Data and monitoring issues

National aggregates for threatened species and marine protected areas present a limited picture of biodiversity protection

The emphasis in this chapter on reviewing commercial fish catches, threatened fish species and protected areas was a practical choice based on the available international data compilations for comparison across countries in Asia and the Pacific. For future monitoring of progress towards attaining Sustainable Development Goal 14 to be more comprehensive, statistics are needed on a much broader range of benefits and challenges related to conservation and sustainable use of oceans, seas and marine resources. Moreover, statistical observations and measures are not sufficient for monitoring sustainability. Other types of information will be needed on the condition of ecosystems and wild ocean fish populations to complete the picture and help policymakers determine where their interventions will have the greatest positive impact. Detailed information will also be necessary to produce projections for future uses of oceans and marine ecosystems.

National aggregates provide a limited picture of a highly diverse collection of marine ecosystems and protection policies and enforcement. Moreover, the sustainability of marine ecosystems depends on many factors besides protected areas, including pollution and the impacts of climate change. A similar measurement challenge exists for the terrestrial ecosystems and monitoring of Sustainable Development Goal 15.

For example, no clear relationship exists between national-level indicators of shares of marine protected areas and the number of threatened fish species. There are several possible technical reasons for this lack of correlation, which indicates the challenges of monitoring Sustainable Development Goal 14. Many of the fish species listed in the previously mentioned IUCN Red List

of Threatened Species migrate across the waters of various countries and territories, and nationally aggregated statistics on protected areas do not capture the diversity in the types of conservation areas or in the natural characteristics of the ecosystems. Detailed information on the qualities and special characteristics of marine ecosystems in the region would support more complete oversight of trends related to protection of marine ecosystem biodiversity. (Fig 9)

The indicators described in this chapter were selected based on their coverage of comparable figures from existing international compilations. Statistics on protected areas from the World Database on Protected Areas provide good cross-country coverage. These statistics are collected by the United Nations in the Millennium Development Goals Indicators database, from the World Conservation Monitoring Centre of the United Nations Environment Programme, which updates the figures on a monthly basis. The availability of data on threatened species depends on submission of studies that meet the criteria for inclusion on the IUCN Red List. Nationally aggregated summaries, by species categories, can be produced for most of the ESCAP member States. However, it should be noted that biodiversity is naturally variant, and certain species are migratory. Other species may only live or breed in certain types of waters. Also, mangrove forests and coral reefs are ecosystems particular to the tropical and subtropical climate zones. Thus, many of the indicators relevant to Sustainable Development Goal 14 are not applicable to many member States, in particular landlocked countries. Statistics on budget allocations for protection of conditions, including biodiversity, of both the marine ecosystems (Goal 14) and terrestrial ecosystems (Goal 15), are currently critically limited for comparable analyses across countries in the region.

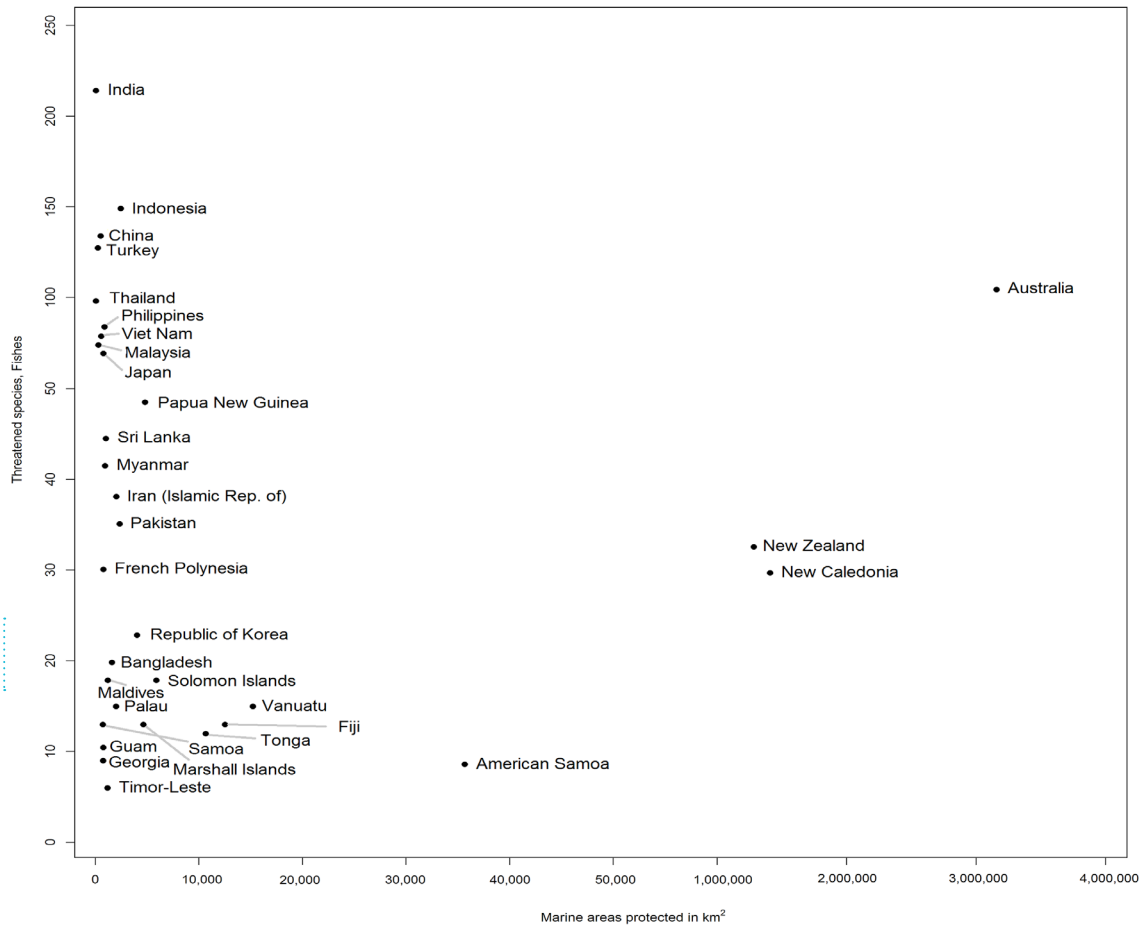


Figure 9
Share of fish exports in total exports for top-ranking countries in Asia and the Pacific, 2014

Statistics for monitoring indicators related to Sustainable Development Goal 14 targets on ocean pollution are being collected by international agencies; however, it is not yet possible to verify the degree of coverage of existing statistics for monitoring those targets for the Asia-Pacific region. Data on fish catches are available for assessing the improvement of sustainability of fishing practices, but the current scientific knowledge on the characteristics of stocks of ocean fish and their habitats is limited for developing complete coverage of indicators for monitoring ocean fishing sustainability.

Endnotes

1 Oceanic Fisheries Program of the Secretariat of the Pacific Community.

2 World Wildlife Fund for Nature (WWF), *Living Planet Report 2014: Species and Spaces, People and Places* (Gland, Switzerland, 2014). The publication may be downloaded from a link at http://wwf.panda.org/about_our_earth/all_publications/living_planet_report/.

3 Johann D. Bell and others, "Diversifying the use of tuna to improve food security and public health in Pacific island countries and territories", *Marine Policy*, vol. 51 (January 2015), pp. 584-591.

4 Secretariat of the Pacific Community (SPC), *Report of the Oceanic Fisheries Program (OFP) of the Secretariat of the Pacific Community* (SPC Ocean Fisheries Programme and the Western and Central Pacific Fisheries Commission, July, 2014).

5 Imports and exports of fish refer to the HS commodity classification 03: "Fish & crustacean, mollusc & other aquatic invertebrates". Imports and exports data compiled from UN Comtrade-International Trade Statistics Database compiled from UN Comtrade-International Trade Statistics Database. Available from http://comtrade.un.org/

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Sustainable Development Goal 15

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Since the United Nations Conference on Environment and Development,[1] which was held in Rio de Janeiro in 1992, awareness of the importance of biodiversity and protecting the condition of terrestrial ecosystems has greatly improved. Factors for protecting biodiversity and creating more sustainable relationships with terrestrial ecosystems, however, are still not well understood. Moreover, the full extent to which the ongoing permanent loss of biodiversity will affect human welfare in the future cannot be entirely known. What is clear, however, is that diversity of species and biomes, or terrestrial landscapes, has been declining, and this trend has major implications for sustainability.

Biodiversity is produced and protected naturally by ecosystems that are in a healthy state and protected from such drastic changes as deforestation and desertification. Sustainable Development Goal 15 is aimed at addressing the current rate of biodiversity loss, which some experts believe to be unprecedented since the last major global extinction event 65 million years ago. In Asia and the Pacific, the problems of biodiversity loss and ecological degradation have been growing. According, to the Living Planet Report 2014,[2] which contains synthesis data collected from biodiversity monitoring sites around the world, there has been a 52 per cent decline globally in biodiversity between 1970 and 2010, and South Asia, South-East Asia and the Pacific have the second highest rates of decline of species populations in the world, following that in Latin America.

15.1 Critical losses to primary forests in Asia and the Pacific

Countries in Asia and the Pacific face diverse challenges in improving the sustainability of terrestrial ecosystems due to vast differences in the scale and characteristics of current stocks of forests. Protected areas are one of the main tools used by Governments for conservation of the remaining forests, but these efforts have had mixed results, according to statistics on primary forests and numbers of threatened species.

During the past five years, the Asia-Pacific region permanently lost the equivalent of approximately 27,000 square meters of primary forest per day

An average of about 27,000 m^2 of primary forest is lost every day in the Asia-Pacific region. Over the five-year period from 2010-2015 the total area lost is equal to about 49,000 km^2 of primary forest, an area equal to nearly one third of the world's total loss of primary forests during the same period. In other words, this destruction

of Asian and Pacific primary forests during the past five years is equivalent in area to an average of 3,842 football fields per day. Primary forests are particularly important to biodiversity as they are exclusive habitats for many animal and plant species that cannot survive in planted forests or other types of environments. Primary forests comprise forests and other wooded land home to native species where there are no clearly visible indications of human activity, and the ecological processes are not significantly disturbed. After they have been lost, primary forests cannot be recovered except through major efforts to reintroduce native species followed by long-term protection of the candidate terrestrial landscapes.

The rate of annual loss of primary forest in Asia and Pacific exceeds the global average. The highest annual percentage change during the period 2010-2015 was observed in the Pacific subregion where the average rate of permanent loss of primary forest stock was 2 per cent per year. (Fig1)

In terms of cumulative percentage change since 2000, the largest percentage loss of primary forest area at the national level between 2000 and 2015 took place in the countries shown in figure 2. In the extreme case, Viet Nam lost more than 50 per cent of its primary forest area compared with the forest cover that had existed in that country in 2000.

In absolute terms, primary forest depletion in Indonesia exceeded 34,000 km^2 during the past 15 years. Land use and land cover change associated with forest depletion is one of the key growing sources of greenhouse gas emissions from Indonesia.[3]

The region's remaining primary forest areas are spread unevenly across countries and subregions. Large countries, such as the Russian Federation, account for the largest share by far of area. The primary forests in the Russian Federation accounted for more than 65 per cent of the region's total primary forest area in 2015. Other countries with large primary forests are Indonesia (11 per cent of the Asia-Pacific total) and Papua New Guinea (4.2 per cent).

The proportion of primary to total forest area in Asia and the Pacific is below the global average, at just over one quarter

Total forest area includes places with tree canopy cover of at least 10 per cent spanning more than half a hectare; total forest area includes plantation forests and areas covered with non-indigenous species. In terms of proportions of primary forest to total forest area, shares of primary forest in Asia and the Pacific are well below the global average. Developed countries tend to have smaller shares of primary forests compared with the developing and low income economies in the region. (Fig 3)

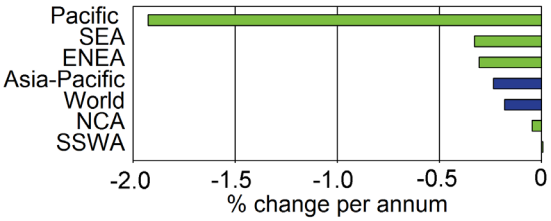


Figure 1 Annual percentage change in primary forest area by sub-region, 2010-2015

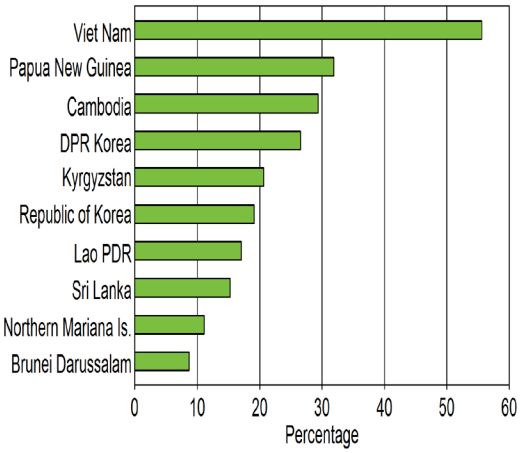


Figure 2 Loss of primary forest area (cumulative percentage change between 2000 and 2015)

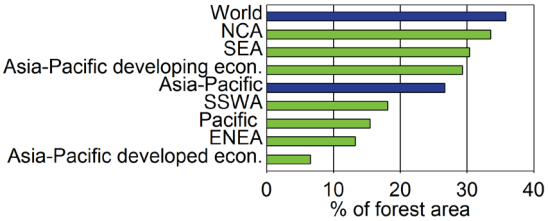


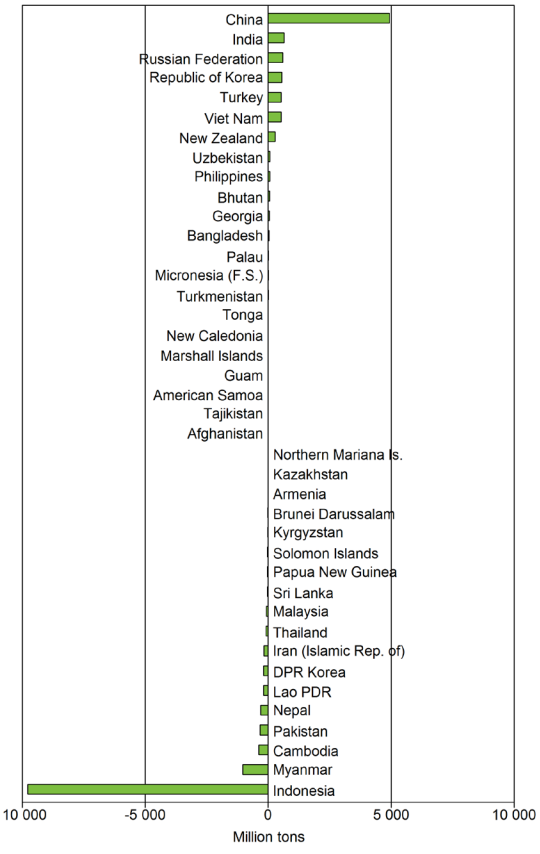
Figure 3 Percentage share of primary forest to total forest area

Qualitative differences are also relevant to protecting primary forests across the region. For example, tropical regions tend to have greater inherent biodiversity in forests, and consequently the largest absolute number of endangered species.

Another source of heterogeneity to consider when analysing statistics on primary forests is the causes or the manner in which deforestation occurs. Much of the illegal removal of trees from primary forests is to obtain wood for use as a household fuel. The cumulative effect of many illegal extractions from protected forests by proximate communities can be quite significant.[4]

Yet another method of deforestation is burning or clear-cutting. Burning and clear-cutting of forest areas, although controversial practices, continue to be one of the major sources of deforestation in the region; these practices have caused dramatic transformations of landscapes and often lead to critical endangerment or extinction of indigenous species, not to mention a source of health risks due to smoke created by burning. Ecologists have observed that relatively small tracts of primary forest, particularly in tropical regions, are sole habitats for species found nowhere else in the world. When such tracks of land are deforested or otherwise converted for other land uses, the possibility for further study of those unique species, their functions in the ecosystem and other potential benefits to humans, is permanently lost.

Figure 4
Changes in living biomass of forests for selected countries in Asia and the Pacific between 1990 and 2015



Since 1990, the stocks of living biomass in forests have increased slightly from 159 billion tons to 167 billion tons in 2015 in the Asia-Pacific region

As forests grow they produce new organic matter or biomass through photosynthesis, whereby carbon is absorbed and oxygen is respired. In addition to sequestering carbon as an offset to carbon emissions, accumulation of biomass is an indicator of productivity of the biological material that forms the basis for the food web and what is sometimes called a forest's metabolism. Given the context of climate and other relevant factors of growth, changes in the stocks of living biomass in forests form one of the basic indicators for monitoring the overall state of forests in a country.

Figure 4 shows the change in stocks of biomass in living carbon stocks, as measured in Global Forest Resources Assessments[5] for selected countries in Asia and the Pacific. Such data are indicative also of forest carbon sequestration and storage**.** Presented are cases for the Asian and Pacific region, where stocks of living forest biomass have dropped by 50 million tons or more between 1990 and 2015.

Since 1990, the stocks of living biomass in forests have increased slightly from 159 billion tons to 167 billion tons in 2015 in the Asia-Pacific region as a whole, but there have been significant declines, particularly in some of the large, naturally forested countries in South-East

Asia. For example, the living biomass of forests in Cambodia and Myanmar have shrunk at more than 1 per cent annually between 1990 and 2015; amounting to a total reduction of living forest biomass of 376 million tons and more than 1 billion tons in Cambodia and Myanmar respectively. In contrast, Viet Nam, mentioned above as the country with the highest relative rate of loss of primary forests, has actually recorded increased total storage of living forest biomass in 2015 as compared with 1990. Generally, primary forests accumulate biomass more slowly than plantation forests or other farms because the trees in primary forests are

Box 1

World Database on Protected Areas

The World Database on Protected Areas, which was jointly initiated by the United Nations Environment Programme and the International Union for Conservation of Nature (IUCN), is the most comprehensive global data set on marine and terrestrial protected areas in the world.

The criteria for inclusion in the database are based on the IUCN definition of a protected area: "A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values".

Included in the database are nationally designated protected areas (designated under regional and international conventions and agreements) regardless of their size and the type of governance involved. There is limited scope for qualitative comparisons of protected areas except in cases of internationally designated sites, such as those covered by the Convention on Wetlands, the so-called Ramsar Convention, and World Heritage sites, where validation is handled by the secretariats for those international agreements.

Box 2

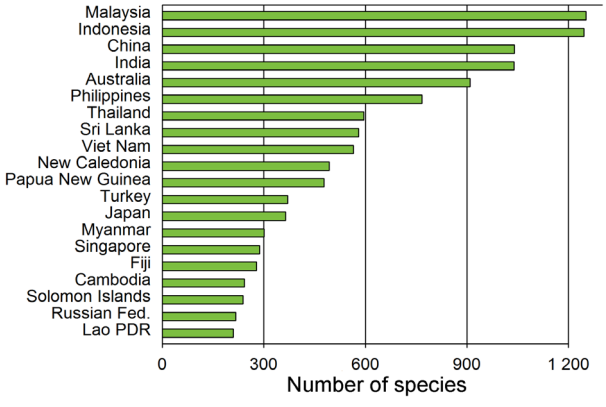
Monitoring threatened species

Tropical climates are characterized by their great biodiversity; countries located in such zones, therefore, have a potentially stronger biodiversity incentive for fostering conservation than countries in other climate zones. Thus, it is logical that the actual rate of increase of protected areas in Asia and the Pacific would be the highest among countries in tropical zones. A tool used by policymakers to preserve biodiversity in their countries is to identify threatened species and adopt specific provisions for their preservation.

Internationally, species are classified and monitored for threat of extinction through the "Red List of Threatened Species" of the International Union for Conservation of Nature (IUCN). Information contained in the Red List database is compiled from global studies, which can provide Governments with useful information for prioritizing conservation efforts and for identifying the likely important causes of species decline in their countries.

Figure

Number of threatened species countries of Asia and the Pacific with over 200 threatened species



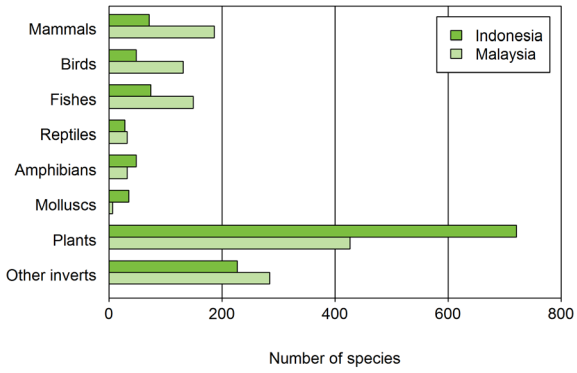


Figure 5
Distribution of threatened species in Malaysia and Indonesia by taxonomic group in 2014 (number of species)

likely to be in a relatively mature state, at which point their growth rates naturally slow and the canopy cover tends to limit the rate of growth of new trees. These factors demonstrate why it is important to consider multiple indicators related to forest cover and conditions in monitoring progress towards attaining Goal 15, particularly when monitoring at the national or regionally aggregated levels.w

15.2 Nationally protected areas as refuges for biodiversity

Many of the benefits from primary forests are public goods, meaning that the benefits are beyond the influence of market forces. Thus, efficient management of the trade-offs between preservation of remaining primary forests and deforestation or conversion of primary forests for other land use purposes depends on public designation and enforcement of protected areas. Many countries in Asia and Pacific have taken action to increase nationally protected areas during recent decades.

In the Asia-Pacific region hundreds of species are threatened with extinction

The number of threatened species in a country is typically higher in larger countries and in those with tropical rather than temperate climates. For the two countries in the Asia-Pacific region with the largest total number of threatened species, Indonesia and Malaysia, the distribution of listed threatened species, according to IUCN, is presented in box 2. Although Indonesia and Malaysia are neighbouring countries with a similar climate and similarly high levels of biodiversity, the number of threatened species by taxonomic group varies between the two of them. In Indonesia, more than twice the number of listed mammal and bird species are threatened than is the case in Malaysia, whereas Malaysia has nearly twice as many endangered plants than Indonesia. (Fig 5)

In practice, monitoring biodiversity requires more than adopting provisions for preserving a selection of species. In addition to species diversity, ecologists also emphasize the importance of monitoring specifically important habitats (such as primary forests), the diversity of landscapes and the diversity of niche roles within an ecosystem, such as the function of decomposers and apex predators. However, species endangerment comprises a useful baseline of information for policymakers that is easily understood by non-specialists.

15.3 Data and monitoring issues

The indicators described in this chapter were selected based on their coverage of comparable figures from existing international compilations. Statistics on protected areas contained in the World Database on Protected Areas provide good cross-country data. Those statistics are compiled by the UNEP World Conservation Monitoring Centre which updates the figures on a monthly basis and gathered in the Millennium Development Goals Indicators database. The availability of data on threatened species depends on the submission of studies meeting IUCN Red List criteria. Statistics on budget allocations for the protection of the conditions of ecosystems, including biodiversity, of both marine ecosystems (Sustainable Development Goal 14) and terrestrial ecosystems (Goal 15) are currently critically limited for making comparable analyses across countries in the region.

FAO Global Forest Resource Assessments, conducted every five years, provide a strong and broad baseline of statistical evidence for monitoring the management of forests at the nationally aggregated level; with good coverage of Asian and Pacific countries.

Box 3

Red List of Threatened Species

The Red List of Threatened Species of the International Union for Conservation of Nature (IUCN) is a compilation of results from global-level assessment studies of individual species. Systems of standard rules are applied to five general criteria for determining appropriate status, by species, according to the Red List classification. The criteria are related to the size of the population and its reduction, geographic range (including fragmentation) and demographic information related to reproduction.

IUCN publishes guidelines for applying the criteria for conducting assessments, for utilizing Red List categories and for transferring status between the classes.[a] The results of assessment studies evaluated for the Red List are classified according to the nine categories below. The indicator "Threatened species" refers to the sum of species classified as critically endangered (CR), endangered (E) and vulnerable (VU).

Extinct (EX)

A taxon (a biological classification, such as genus or species) is "Extinct" when there is no reasonable doubt that the last individual taxon has died. A taxon is presumed extinct when exhaustive surveys in a known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), and throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

Extinct in the wild (EW)

A taxon is "Extinct in the wild" when it is known only to survive in cultivation, in captivity or as a naturalized population well outside the past range. A taxon is presumed extinct in the wild when exhaustive surveys in a known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), and throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

Critically endangered (CR)

A taxon is "Critically endangered" when the best available evidence indicates that it meets any of the criteria from A to E for being critically endangered, and it is therefore considered to be facing an extremely high risk of extinction in the wild.

Endangered (EN)

A taxon is "Endangered" when the best available evidence indicates that it meets any of the criteria from A to E for endangered, and it is therefore considered to be facing a very high risk of extinction in the wild.

Vulnerable (VU)

A taxon is "Vulnerable" when the best available evidence indicates that it meets any of the criteria from A to E for vulnerable, and it is therefore considered to be facing a high risk of extinction in the wild.

Near threatened (NT)

A taxon is "Near threatened" when it has been evaluated against the criteria but does not qualify for the labels of critically endangered, endangered or vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

Least concern (LC)

A taxon is "Least concern" when it has been evaluated against the criteria and does not qualify for the labels of critically endangered, endangered, vulnerable or near threatened. Widespread and abundant taxa are included in this category.

Data deficient (DD)

A taxon is "Data deficient" when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking.

Not evaluated (NE)

A taxon is "Not evaluated" when it is has not yet been evaluated against the criteria.

a For details, see http://www.iucnredlist.org/technical-documents/assessment-process.

Analysis of currently available international compilations of indicators related to conservation of biodiversity provide only partial analysis

Biodiversity depends on many factors besides protected areas, including pollution and impacts from climate change. The poor correlations between the nationally aggregate indicators of protected areas and counts of threatened species shown in figure 6 suggests that these may not be good indicators for monitoring action to reverse a trend of biodiversity.

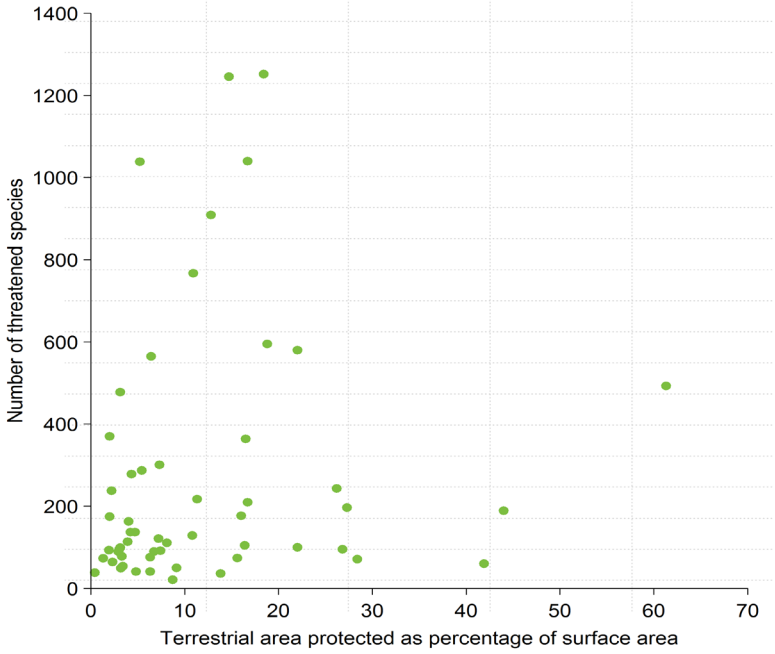
The analysis in this chapter is limited by the partial scope for monitoring of mankind's relationship with terrestrial ecosystems. Terrestrial protected areas provide a useful baseline of information on efforts to halt biodiversity loss, but more information is needed on the characteristics of protected areas and on enforcement of protection.

National shares of protected areas were also used under the Millennium Development Goals as an indicator for the biodiversity target for Goal 7. The experience from monitoring the Millennium Development Goals suggests that there are limitations to the value of this indicator for monitoring and taking action in respect of actual trends in biodiversity. The target concerned (7.B) was to "reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss". (Fig 6)

The Red List of Threatened Species depends not only on population size but also on geographic factors, such as spread and fragmentation of habitats. Terrestrial protected areas include all officially designated sites, but important characteristics relevant to biodiversity are not evident from these indicators, such as the degree of protection and enforcement, connectivity with other protected sites and condition of the fringe areas of protected areas and ecotones, which are regions of transition between two biological communities, such as the periphery areas between different land cover or landscape types.

Ecologists tend to study ecosystems by using detailed information and indicator, or keystone species or a range of data specific to a relatively homogeneous location, rather than by aggregating information across species or across a country's ecosystems. Even if an attempt were made to narrow the scope of a nationally aggregated analysis to the details of threats faced by different groups of taxa, such as threatened bird species which tend to depend on primary forests for habitat, the

Figure 6
The relationship between terrestrial protected areas and threatened species



correlations for national aggregates tend to be weak or non-conclusive.

Correlation is not the same as causality. However, one interpretation of weak or non-conclusive correlations between these aggregate indicators that have been traditionally used for monitoring biodiversity targets since the time of the Millennium Development Goals is that there are other significant factors for the underlying threats that are missed by such indicators.

Geospatial information is essential for monitoring biodiversity

The Red List compilations are not strictly for national-level reporting purposes. In fact, national-level assessment studies are not used for populating the Red List except in special cases of single-country endemic species, in which case the national study is technically a global assessment. ESCAP publishes annually updated figures on numbers of threatened species by country and by major taxa category as a high-level source of information for its member States. A complete assessment for baseline measurement and the assessments of progress, however, would need to take into account trends at other relevant geographic scales as well.

Nationally aggregated counts of threatened species can provide a rough summary of the overall scale of the challenge for individual countries in Asia and the Pacific, but more detailed information is needed for designing an effective course of action. As populations of threatened species may be concentrated in small areas of remaining habitat within a region or spread thinly over large areas and across international boundaries, future analyses for monitoring achievement of Goal 15 will require use of geographic information tools. In this way, policymakers will be able to link the best available evidence on threats to species biodiversity with investments in enforcing conservation commitments that are targeted for maximum benefit.

Investment in statistical development is needed to measure land degradation

Under Sustainable Development Goal 15, there is a call for "urgent and significant action to reduce the degradation of natural habitats," among other measures. Land degradation affects all countries and all regions of the world. Yet, despite the importance and global relevance of this issue, the statistics available for monitoring this target are very limited. Land degradation and desertification are two related issues, but in both cases data are lacking for regional or national monitoring.

Land degradation is a composite term; it describes how ecosystems have changed to a negative effect from the perspective of nature's contributions to well-being. Under the United Nations System of Environmental-Economic Accounting (SEEA), land degradation is estimated through compilation of data for the "Experimental Ecosystem Accounting" system. Experimentation with ecosystem accounting following SEEA proposals has been undertaken in only a few countries in Asia and the Pacific. Yet, the Experimental Ecosystem Accounting framework is potentially a very important basis for integrating statistics on biodiversity and the sustainability of economic activities into the official statistics systems of countries in Asia and the Pacific. However, investment is needed in application of the ecosystem accounting framework in the region that could be used to produce new indicators for countries where land degradation is an urgent threat to their ability to achieve Sustainable Development Goal 15.

Another form of land degradation cited in the Goal 15 targets is desertification. Desertification is a slowly developing risk, linked to changing climates and land use activity, that can result in a disaster for proximate communities, especially in cases where the risk is not carefully monitored by specialists and by policymakers.

The United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification,

Particularly in Africa,[6] was established following the United Nations Conference on Environment and Development in 1992. The Convention is aimed at reversing desertification and mitigating the effects of drought in affected areas in order to support poverty reduction measures and environmental sustainability.[7] Baseline statistics on desertification risks and trends in Asia and the Pacific are needed to initiate monitoring necessary for achieving the global target to combat desertification under Sustainable Development Goal 15.

Endnotes

1 Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3–14 June 1992, vol. I, Resolutions Adopted by the Conference (United Nations publication, Sales No. E.93.I.8 and corrigendum), resolution 1, annex I.

2 WWF (World Wide Fund for Nature), Living Planet Report 2014: Species and Spaces, People and Places (Gland, Switzerland, 2014). Available from http://wwf.panda.org/about_our_earth/all_publications/living_planet_report/

3 Wetlands Intenational, *Carbon emissions from peatlands* (Wageningen, The Netherlands). 2015

4 World Resources Insititute, *New Study Shows Indonesia Losing Primary Forest at Unprecedented Rates*, (http://www.wri.org/, Washing, D.C. USA). 2015.

5 The Food and Agriculture Organization of the United Nations (FAO) has been monitoring the world's forests at 5-10-year intervals since 1946. Assessments are published every five years; the one for 2015 is available from http://www.fao.org/forest-resources-assessment/en/.

6 United Nations, *Treaty Series*, vol. 1954, No. 33480.

7 The 10-year strategic plan and framework to enhance the implementation of the Convention is available from http://www.unccd.int/Lists/SiteDocumentLibrary/10YearStrategy/Decision%203COP8%20adoption%20of%20The%20Strategy.pdf. The 10-year period extends from 2008 to 2018.

UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific

Statistical Yearbook for Asia and the Pacific 2015

Sustainable Development Goal 16

Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Stability, peace and inclusive societies are important for sustainable development. Some countries in Asia and the Pacific enjoy sustained levels of peace, security and prosperity, others experience long-term cycles of conflict and violence. Sustainable Development Goal 16 is focused not only on peace and inclusive societies but also on justice, crime and governance aspects, as well as legal identity for all. These aspects will be considered in this chapter.

16.1 Homicide

Intentional homicide is unlawful death purposefully inflicted on a person by another person; it is more commonly described as "murder". Homicide is considered the ultimate crime as homicides have a ripple effect on families and societies and have a broad impact on security as well as the perception of security.[1]

Homicide rates in Asia and the Pacific are among the lowest in the world

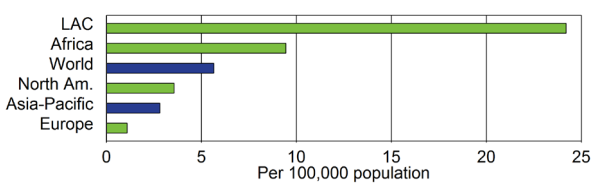


Figure 1
Intentional homicide per 100,000 population by region, latest year

Asia and the Pacific has some of the lowest rates of homicide in the world, with Europe being the only region with lower rates. In 2011, the latest year for which comparable data are available for all regions of the world, the Asia-Pacific region had 2.8 homicides per 100,000 population compared with the global average of 5.7 homicides per 100,000 . (Fig 1)

Mirroring the situation in the region, several countries and areas in Asia and the Pacific have some of the lowest homicide rates in the world: Singapore (0.2 per 100,000 population), Japan (0.3 per 100,000) and Hong Kong, China (0.4 per 100,000).

In 2012, the country in the region with the highest rate of intentional homicide was Tuvalu, with 20.1 homicides per 100,000 population. Homicide rates for countries with small population sizes, such as many Pacific island countries and territories – Tuvalu in particular – vary hugely in different years as their small population sizes make the rate highly dependent on specific, one-off events. Tonga is a case in point, where the rate in 2012 was 0.9 intentional homicides per 100,000 population compared with 7.7 homicides per 100,000 in 2009, which was one of the highest rates in the Pacific subregion that year. The country with

consistently high homicide rates is Papua New Guinea; in 2010, the rate was 10.4 homicides per 100,000.

Homicide rates in Asia and the Pacific are decreasing

Overall, there has been a slight reduction in the homicide rate in the Asia-Pacific region since 2002, as can be seen in figure 2. In East and North-East Asia and North and Central Asia, homicide rates have declined, although the rates in North and Central Asia are still substantially higher than in the rest of the region. (Fig 2)

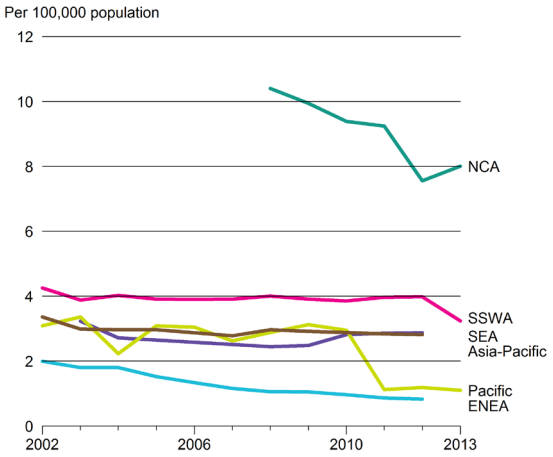


Figure 2
Intentional homicides per 100,000 population by subregion, 2002-2013

In North and Central Asia, the countries with the highest homicide rates are Kazakhstan (9.0 per 100,000 population) and the Russian Federation (9.2 per 100,000). National distribution of homicides in the Russian Federation is atypical, however, as the homicide rates are higher outside major urban centres than inside. In most other countries, the reverse is true with urban areas experiencing higher homicide rates than rural areas.[2]

In East Asia and North-East Asia, Mongolia stands out with a rate of 7.2 homicides per 100,000 population, much above the subregional average rate of 0.8.

One type of homicide worth noting is intimate partner/family-related homicides, where women are often the victims. According to United Nations Office on Drugs and Crime (UNODC), many female victims of intimate partner/family-related homicides are found in Asia and the Pacific; the estimated total number of such deaths was 19,900 in 2012, or 46 per cent of all estimated intimate partner/family-related homicides worldwide.[3]

16. 2 Prisons

Prison populations and prison population rates reflect to varying degrees the levels of crime, criminal justice policy and adherence to the rule of law in a country; such populations also have substantial and often underestimated social and economic impacts. High prison rates can, for example, result in long-term economic problems if they lead to income inequality and more concentrated poverty, particularly if prison rates are highest among vulnerable groups, such as the young, the poor, the poorly educated and minorities. Further disaggregation of data, suggested as part of the Sustainable Development Goal process, would give a more complete picture of the prison population and its socio-economic impacts.

Asia and the Pacific has the lowest number of persons held in prisons per 100,000 population in the world

Asia and the Pacific has the lowest number of people held in prisons per 100,000 population of all regions in the world, with 99 prisoners per 100,000 compared with the global average of 155 prisoners per 100,000. (Fig 3)

Despite this comparatively low incarceration rate, due to the large population of the region 45 per cent of all prisoners in the world are in the Asia-Pacific region. In 2013, the majority of these prisoners were in China (1.68 million) followed by

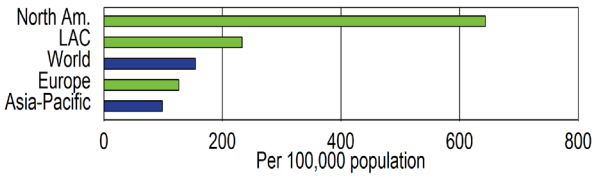


Figure 3
People held in prison per 100,000 population, by region, 2012

the Russian Federation (677,287). In 2012, nearly a third (31 per cent) of all prisoners in the world were held in China and the Russian Federation.

The highest incarceration rates in the region are found in countries in North and Central Asia, such as the Russian Federation (490 per 100,000 population) and Georgia (444 per 100,000). In contrast, countries such as India (31 per 100,000 population), Japan (53 per 100,000) and Indonesia (63 per 100,000) have very low incarceration rates. (Fig 4)

More than 450,000 prisoners in Asia and the Pacific are being held without trial or are awaiting trial

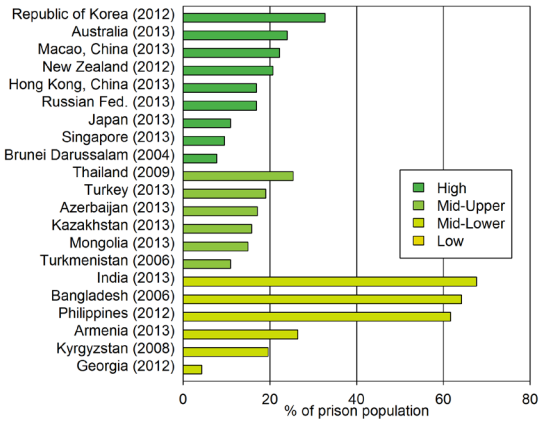


Figure 4
Untried or in pre-trial detention as percentage of prison population

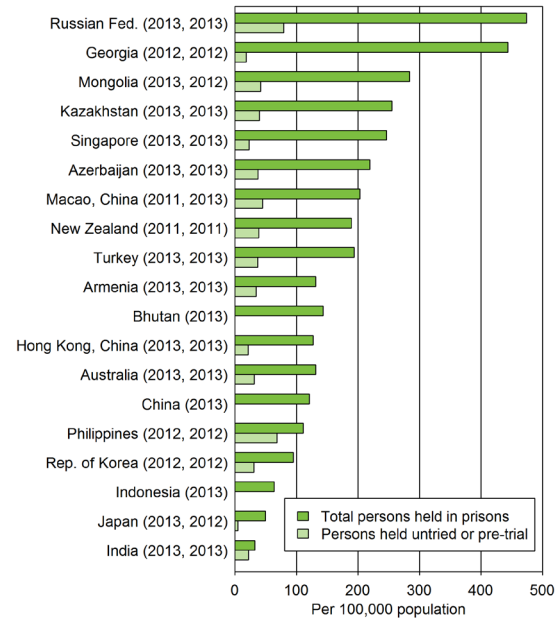


Figure 5
Total persons held in prisons and persons held untried or pre-trial, per 100,000 population

In the Universal Declaration of Human Rights,[4] it is stated that no one may be subjected to arbitrary arrest, detention or imprisonment. All prisoners should have a fair trial and the chance to defend themselves against their accusers. Despite provisions in international law which restrict the use of pretrial detention to narrowly prescribed circumstances, the overuse and long periods of pretrial detention are endemic in many countries.[5]

The proportion of prisoners held without trial or awaiting trial varies substantially across countries in the region, from a low in Georgia of 4.2 per cent of all prisoners to a high of more than 60 per cent of all prisoners in three countries: the Philippines (61.6 per cent); Bangladesh (64.2 per cent); and India (67.6 per cent). In India alone, that statistic equates to more than a quarter of a million prisoners being held without trial or awaiting trial. (Fig 4)

While the numbers of untried prisoners is staggering in some countries, for the sake of comparison the rate of untried or pretrial prisoners per 100,000 population should be compared. Figure 5 shows this rate for a few countries where data are available. As can be seen, the Russian Federation has the highest number of individuals in untried or pretrial detention (79.4 per 100,000 population), followed by the Philippines (68.5 per 100,000). Japan has the lowest number of untried or pretrial detainees in the region at 5.8 per 100,000. (Fig 5)

16. 3 Legal identity

All States issue some sort of proof of identity for their citizens, such as ID cards, birth certificates, drivers' licenses and passports. Such documents are essential for individuals to establish their identity, demonstrate their civil status, and to ensure their rights. Currently, the best proxy data on legal identity are the available data on birth registration coverage, although such data do not exist for all countries in the region and are rarely collected on a routine basis.

More than 135 million people in Asia and the Pacific have not had their births registered[6]

As can be seen in figure 6, many countries in Asia and the Pacific are still far from providing universal birth registration coverage. It is, however, important to note that the data on birth registration coverage are still scarce, and a lot more work is needed on this matter before it will be possible to compare data from different countries.

Based on the latest data available, the three countries in the region with the lowest proportion of registered births are Bangladesh (31 per cent), Pakistan (34 per cent) and Afghanistan (37 per cent). These data are, however, from 2011, and all three countries have recently made a strong effort to improve their registration rates as part of their activities under the regional Civil Registration and Vital Statistics (CRVS) initiative to "Get Every One in the Picture".[7] In Pacific island countries and territories, the picture is mixed, with countries such as Samoa and Vanuatu having low birth registration rates, while other countries have almost 100 per cent coverage rates. As in other subregions, the reasons for these diversions are predominantly historical and depend on government support for establishing and maintaining well-functioning CRVS systems. (Fig 6)

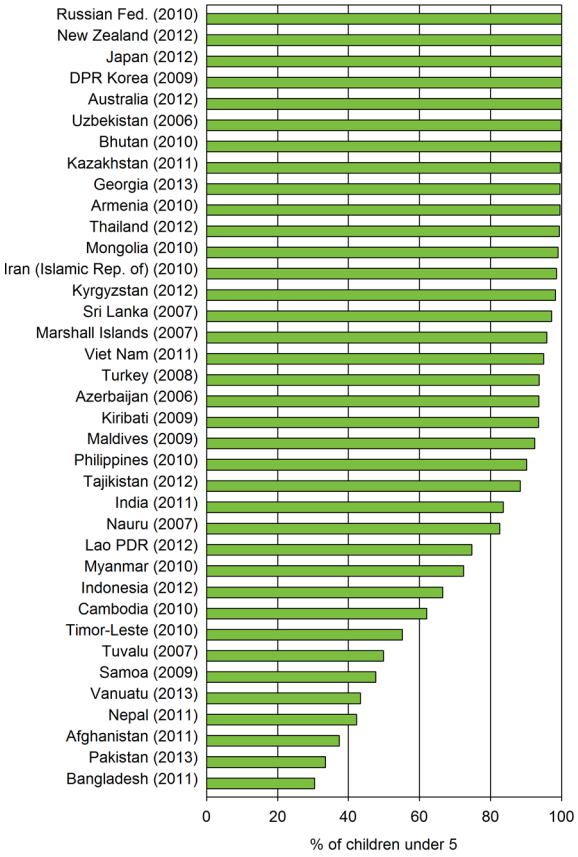


Figure 6
Birth registration coverage, children under 5

Poorer families and those living in rural settlements are less likely to register the birth of their children than wealthier families and those living in urban settlements

While there are only small differences between the birth registration rates of females and males, in many countries a child born into wealthier families is more likely to have its birth registered than a child born into a less wealthy family. As figure 7 shows, birth registration rates in Afghanistan, Indonesia, the Lao People's Democratic Republic, Myanmar, Pakistan, Samoa, Tuvalu and Vanuatu are higher in wealthier quintiles. A lack of legal identity disadvantages individuals in lower wealth quintiles even more than those in higher quintiles. Such anonymity may decrease the access of poorer people to social services, such as education and health, as well as their chances of gaining formal employment. (Fig 7)

The likelihood of parents registering their children's birth is highly dependent on how easily accessible are the registration offices that carry out this function. The distance to registration offices as well as difficulties that parents face in registering their child's birth, such as time and financial costs, can influence parents' decision-making process when they consider registering their child's birth. It is therefore no surprise that birth registration rates are often lower in rural than in urban areas.

Figure 7
Birth registration by wealth quintiles, children under 5

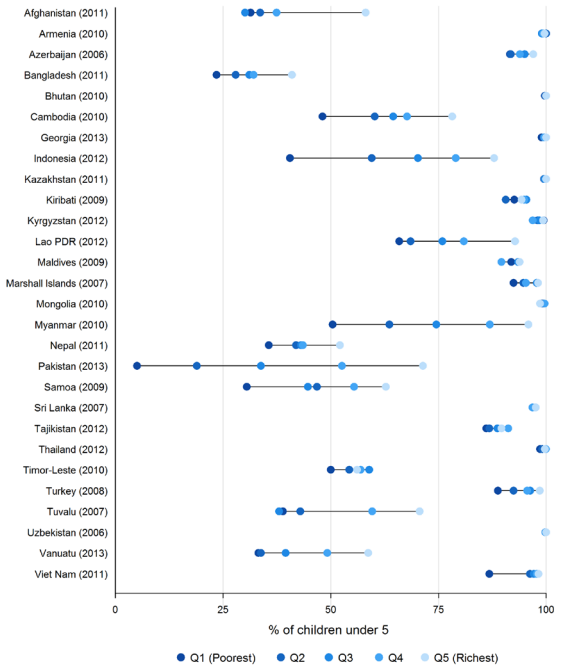
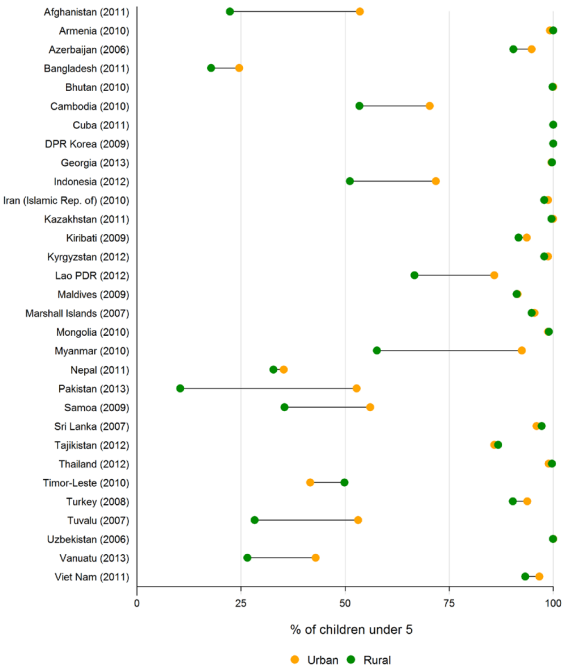


Figure 8
Birth registration rates, rural and urban residence, children under 5



As can be seen in figure 8, in some countries in the region very large differences exist between birth registration coverage for rural and urban populations. The country with the greatest disparity is Pakistan, where 59 per cent of the urban population is registered, compared with only 23 per cent in rural areas. In Myanmar, there is almost universal (94 per cent) birth registration coverage in urban areas; in rural areas, 64 per cent of births are registered. Unfortunately, birth registration rates for the entire region do not yet exist.

16.4 Data and monitoring issues

Data coverage

According to recent discussions on measuring indicators for Sustainable Development Goal 16, significant progress has been made in measuring peace, justice and institutions, although substantial methodological work still needs to be done for some targets.[8] Cases in point are topics including trafficking, corruption and transparency, although countries such as Indonesia have developed a National Democracy Index, and the Office of the High Commissioner for Human Rights has developed a framework of human rights indicators in addition to the ongoing work by the United Nations Office on Drugs and Crime, among others.

Due to data availability, chapter 16 is focused predominantly on issues related to homicide, prisons and legal identity, i.e. birth registration. Some data on robbery and other violent crimes, such as sexual violence, were also available but not included in the chapter as the relevant data were available only for a limited number of countries. In respect of the available indicators, the Pacific island countries and areas were less likely to have data available, although availability has improved over the past 15 years. In looking at the issue of data availability for the region overall, it is clear that there were substantial improvements in data availability in the period from 2000-2004 to 2005-2009 and for the period 2010-2014 when data from more countries were available than previously had been the case.

With regard to the indicator used for legal identity, i.e. birth registration of children under age 5, the data used predominantly come from Multiple Indicator Cluster Surveys. The source for registration coverage for children under age 5 should, ideally, come directly from civil registration systems combined with other data sources, such as national censuses, while alternatives, such as Multiple Indicator Cluster Surveys and Demographic and Health Surveys, could be used in the interim until civil

Box 1

Human trafficking

Human trafficking is a particularly heinous type of crime, but measurement of such trafficking is rife with measurement errors. Currently, no methodologically sound estimate of the magnitude of the trafficking problem is available,[a] although UNODC has carried out some analysis of the issue of human trafficking in Asia and the Pacific based on officially detected offenders and victims. The real scope of the problem is therefore likely to be larger than the current estimates, although data can be used to provide an indication of patterns and flows of trafficking in persons.

In South Asia, East Asia and the Pacific,[b] the majority of trafficking victims are exploited in the form of forced labour, servitude and slavery (64 per cent),[c] whereas in Europe and Central Asia, the majority of victims are trafficked into sexual exploitation (66 per cent).

Globally, about 60 per cent of trafficking victims are women or girls.[d] In South Asia, East Asia and the Pacific, the proportion is even higher, with 83 per cent of victims being female. In Asia and the Pacific, the majority of victims are adults (67 per cent in East Asia and the Pacific; 60 per cent in South Asia; and 98 per cent in Eastern Europe and Central Asia).

Trafficking flows are national, regional and interregional, with victims from East Asia being the most widely dispersed around the world. Victims from East Asia are being detected in all regions of the world.[e] South Asia is also a significant source area for trafficked victims.

a United Nations Office on Drugs and Crime (UNODC), *Global Report on Trafficking in Persons 2014* (United Nations publication, Sales No. E.14.V.10), p. 30.

b UNODC subregions definitons differ from ESCAP definitions, please refer to Ibid p. 20.

c Ibid., p. 5. (Note: The data in the UNODC report refer to East Asia, South Asia and the Pacific; those from Central Asia are grouped with those from Europe.).

d Ibid., p. 29.

e Ibid., p. 41.

registration system data are of sufficient quality for the purpose.

As for the issue of measuring birth registration of children under 5, insufficient focus is placed on the issue of timeliness of birth registration. Births need to be registered within the time limit prescribed by the national law and within a maximum of one year of the birth, as recommended by the United Nations.[9] Registration of births after one year is done within the provisions for delayed registration, a practice that should be discouraged. Article 7 of the Convention on the Rights of the Child[10] clearly calls for States to register children immediately after birth.

Measuring corruption

Measurement of corruption is particularly difficult because of its hidden and complex nature; however, corruption covers a range of offences from "petty" exchanges of small amounts of money to "grand" corruption that pervades the highest levels of a national Government, leading to a broad erosion of confidence in good governance, the rule of law and economic stability. However, there is no single, comprehensive, universally accepted definition of corruption; attempts to develop such a definition invariably encounter legal, criminological and, in many countries, political problems. Comprehensive understanding of the extent, modality, cost and enablers of corruption therefore require

a range of indicators that can be tailored to specific country and cultural contexts, including tolerance towards corruption. Data, results and methodologies should be made publicly available in order to increase transparency, assess anti-corruption measures, raise awareness and drive change.

Household corruption surveys and victimization surveys with a module on corruption can provide solid information on the experience of bribery, typically occurring in the interaction between businesses and the public sector in the context of basic service delivery/transactions. However, they do not capture instances of "grand" corruption, trading in influence or abuses of power.

Endnotes

1 United Nations Office on Drugs and Crime (UNODC), Global Study on Homicide 2013: Trends, Contexts, Data (United Nations publication, Sales No. 14.IV.1). Available from http://www.unodc.org/documents/gsh/pdfs/2014_GLOBAL_HOMICIDE_BOOK_web.pdf (accessed 5 October 2015).

2 Ibid., p. 28.

3 Ibid., p. 53.

4 General Assembly resolution 217 A (III).

5 United Nations Office on Drugs and Crime (UNODC), "Handbook on strategies to reduce overcrowding in prisons", Criminal Justice Handbook Series (Vienna, 2013). Available from http://www.unodc.org/documents/justice-and-prison-reform/Overcrowding_in_prisons_Ebook.pdf.

6 United Nations Children's Fund (UNICEF), *Every Child's Birth Right: Inequalities and Trends in Birth Registration (New York, 2013), p. 15*.

7 ESCAP: Report of the Ministerial Conference on Civil Registration and Vital Statistics in Asia and the Pacific E/ESCAP/MCCRVS/4, see also the statements made by these countries at the Ministerial Conference, available from http://www.getinthepicture.org.

8 See "Six main takeaways on indicators for Sustainable Development Goal 16 from the Virtual Network on SDG 16 consultations". Available from http://www.globalpolicywatch.org/wp-content/uploads/2015/02/Six-main-takeaways-on-Indicators-for-SDG-16.pdf.

9 See United Nations, Department of Economic and Social Affairs, *Principles and Recommendations for a Vital Statistics System, Revision 3 (Sales No. E.13.XVII.10).*

10 United Nations, *Treaty Series,* vol. 1577, No. 27531.

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Sustainable Development Goal 17

Strengthening data and statistics to support monitoring

Recognizing the high level of ambition of the 2030 Agenda for Sustainable Development[1], governments also commit to comparably ambitious implantation targets under each of Goals 1-16. Goal 17 of the new Agenda further specifies 19 targets on the means of implementation and a revitalized global partnership for sustainable development to ensure the achievement of the economic, social and environmental development. Specifically, the 19 targets under Goal 17 concern development financing; technology; capacity building; trade; policy and institutional coherence; multi-stakeholder partnerships; and data, monitoring and accountability.

This chapter focuses on data and statistics. High-quality data and statistics that are disaggregated by relevant population groups are essential for key stakeholders to make effective decisions. Such data and statistics are needed if the 2030 Agenda is to be achieved, including ensuring that "no one is left behind" in the development process. United Nations Member States have committed to engage in systematic follow-up and review of the implementation of the 2030 Agenda at national, regional and global levels in fulfilment of their accountability to citizens. Indicators, underpinned by high quality data and statistics, will be integral to the follow-up and review process.

The analysis of data issues presented for SDGs 1 to 16 highlights some of the data coverage and measurement challenges for each of the goals of the 2030 Agenda. Few, if any, countries however currently are able to produce the data and statistics that are required for monitoring progress in the attainment of all 17 goals and 169 targets of the 2030 Agenda, including countries with the strongest statistical systems. Concerted efforts to strengthen the capacity of national statistical systems will be critical to the measurement of progress towards achieving the Sustainable Development Goals, informed decision-making and strong accountability, particularly in the least developed countries, landlocked developing countries and small island developing States. At the same time, the statistical community will need to develop new methodologies, as currently there are no internationally agreed statistical definitions and guidelines for some indicators.

In recognizing both the importance of data and statistics to the successful implementation of the 2030 Agenda and the need to strengthen the related work, Member States have committed to achieving the following targets:[2]

17.18 By 2020, enhance capacity-building support to developing countries, including for least developed countries and small island developing States, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts;

17.19 By 2030, build on existing initiatives to develop measurements of progress on sustainable development that complement gross domestic product, and support statistical capacity-building in developing countries.

Efforts to strengthen data and statistics should harness the data revolution that is sweeping the globe with new technologies, skills and opportunities to connect official statistics so-called big data, citizen-generated data, and geospatial and Earth observations data for the public good.

Tremendous gaps exist in the availability and quality of data and statistics for monitoring the 2030 Agenda for Sustainable Development

How ready are countries in the Asian and Pacific region to measure and monitor the 2030 Agenda? What exactly are the gaps in the availability and quality of existing data and statistics for the 17 goals and 169 targets of the 2030 Agenda? It will be possible to give precise answers to such questions only after a full set of national, regional and global indicators has been developed.

Preliminary assessments, however, indicate that these gaps will be very wide. In 2014, the United Nations Statistical Commission conducted a survey of Member States on data availability for targets under Goals 1 through 16, in which about a dozen countries in Asia and the Pacific participated; the results are summarized in Table 1. The countries that participated in the survey include some with fairly advanced national statistical systems, and others with less advanced systems. As can be seen, for all targets under Goal 3 (Ensure healthy lives and promote well-being for all at all ages), Goal 5 (Achieve gender equality and empower all women and girls) and Goal 7 (Ensure access to affordable, reliable, sustainable and modern energy for all), at least 60 per cent of countries reported that they currently collect data for at least one indicator that could possibly measure the target.

On the other hand, data availability is weak across a number of domains, in particular those related to water and sanitation (Goal 6), inequality (Goal 10), urbanization (Goal 11), sustainable consumption and production (Goal 12), marine resources (Goal 14), forests and land degradation (Goal 15) and peace and justice (Goal 16). These results are similar to the global picture that was based on the responses by a total of 67 countries.[3]

Target No.	1	2	3	4	5	6	7	8	9	10
Goal 1	77	77	67	45	55					
Goal 2	92	91	75	77	9					
Goal 3	100	100	90	92	70	92	80	90	73	
Goal 4	100	83	100	67	100	100	42			
Goal 5	91	100	90	73	100	100				
Goal 6	100	79	57	64	36	50				
Goal 7	69	77	77							
Goal 8	75	73	50	60	100	91	70	70	44	50
Goal 9	55	83	27	73	67					
Goal 10	83	50	92	50	10	30	50			
Goal 11	69	64	30	40	64	64	50			
Goal 12	17	62	8	71	71	67	18	27		
Goal 13	75	50	42							
Goal 14	30	50	40	64	40	11	11			
Goal 15	92	75	91	30	75	36	27	36	36	
Goal 16	89	33	56	11	60	44	33	11	75	75

Table 1
The percentage of countries able to produce data for at least one indicator that could be used to measure progress towards the Sustainable Development Goals.

Source: United Nations Statistics Division, December 2014.

Note: The shaded cells mean that at least 60 per cent of the countries reported that they could currently collect data for at least one indicator that could possibly measure the target. The table contains data for the following countries in the ESCAP region: Armenia; Australia; Bangladesh; Cambodia; India; Indonesia; Mongolia; New Zealand; Philippines; Thailand; Turkey; and Tuvalu.

The real data gaps may even be much larger than the above-mentioned survey indicates. Some of the middle-income countries in the region reported the abilities to compile data for about one quarter of the 200-plus suggested indicators for global monitoring, to about half of such indicators for some high income countries. These estimates did not take into consideration the recommended disaggregation of data.[4]

A 2014 assessment carried out to inform the development of a regional core set of gender indicators revealed that gender-responsive data collection and production were quite weak for such areas as "Participation in unremunerated productive work", the "Human rights of women and girls", "Environment and climate change",

and "Poverty", all of which are high priority goals and targets for promoting gender equality and empowerment of women under the 2030 Agenda. When data are collected and produced, rural-urban disaggregation was not always available, thus potentially hindering the development of policies and programmes to target rural women and girls, a particularly vulnerable group in many developing countries in the region.[5] (Fig 1)

The assessment also revealed wide subregional disparities in readiness to produce and use the regional core set. For some of the basic domains, such as "Poverty", "Participation in unremunerated productive work" and "Governance and participation in public life and decision-making", North and Central Asia as a subregion performed relatively better than other subregions in terms of the data collected and indicators produced, while for other basic domains, such as "Education", "Health and related services" and "Environment and climate change", South-East Asia did relatively better.

Improving key data sources should be a high priority

Official statistics have until now mainly been sourced from a combination of data gathered from statistical surveys and those extracted from other organizations' administrative or management systems. The first consists of sample surveys and periodic censuses. For instance, national statistical offices or other governmental agencies often conduct sample surveys of households to collect information on income and expenditure, health, labour force participation etc. Governments also regularly conduct censuses of population and housing as well as agriculture and economy.

Administrative and management data (business and civil registration records, school enrolment information, police records etc.) are often a by-product of delivering public services. As they are already available within administrative or management systems, using such data eliminates the need for collecting data afresh and can reduce the overall burden placed on respondents while avoiding the costs of data-collection exercises. In addition, the information extracted from such systems often has the advantage of being more timely than statistical data and, when compared with data from surveys (particularly sample surveys), can also deliver data with a greater breadth of coverage.

The World Bank assesses several aspects of a country's capacity to collect, analyse and disseminate key social and economic statistics.[6] Using publicly available information and country inputs, the assessment is focused on major data sources, periodicity and methodology. The adequacy of source data is based on the availability and frequency of such key statistical surveys as poverty surveys, health surveys, population censuses, agricultural censuses and vital registration systems. A score of 100 means that a country conducts poverty and health surveys at least once every 3 years, population and agricultural censuses at least once every 10 years, and is judged to have complete registries of births and deaths.

As can be seen in Figure 2, countries in Asia and the Pacific scored higher on average than those in the Middle East and North Africa, as well as sub-Saharan Africa, but lower than those in

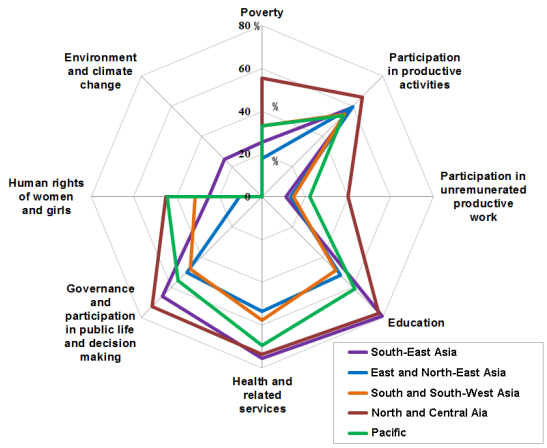


Figure 1
Percentage of countries collecting gender -responses data by thematic area.

Source: Sharita Serrao, "Strengthening gender statistics and indicators in Asia and the Pacific: a key foundation for the sustainable development agenda beyond 2015", *ESCAP Stats Brief*, No. 11 (August 2015). Available at: http://www.unescap.org/resources/stats-brief-august-2015-issue-no-11-strengthening-gender-statistics-and-indicators-asia.

Latin America and the Caribbean in terms of adequacy of key data sources.

There was enormous variation across countries in Asia and the Pacific however. Only three countries in the region had full scores on the adequacy of selected key social and economic statistics sources: Mongolia; the Philippines; and Viet Nam. It is clear that most countries in the region need to improve their key social and economic data sources, in particular Afghanistan, Myanmar, Uzbekistan and quite a number of countries in the Pacific. (Fig 2)

For several countries, their scores on data sources increased over the years: Afghanistan from 20 points in 2004 to 40 points in 2014; Fiji from 40 points in 2005 to 80 points in 2014; and the Philippines and Viet Nam from 80 points each in 2004 to 100 points in 2014. This reflects an increase in key data collection in these countries. Perhaps it is no coincidence that Chan and others[7] observed an increase in household surveys that provided important data for monitoring the Millennium Development Goals, in particular such international surveys as the Multiple Indicator Cluster Survey, the Demographic and Health Survey Programme, the International Comparison Programme and the Living Standard Measurement Survey.

In contrast to the flourishing of household surveys large, improvements are still needed in vital statistics stemming from the registration of births and deaths. Complete registration of vital events – essential for monitoring health outcomes and population dynamics – should be among the best administrative data available. According to assessments of civil registration and vital statistics systems conducted in 47 Asia-Pacific countries between 2010 and 2012, only 11 were categorized as satisfactory, while 36 were found to be dysfunctional, weak or inadequate.[8] The region has therefore ramped up efforts to improve civil registration and vital statistics systems, which involves addressing barriers to reporting births and deaths, fostering cooperation between key agencies and overcoming shortfalls in how the data are recorded and managed. The task is complex and expensive, and will take a significant amount of time and effort to resolve (Box 1)

Many existing data and statistics trail behind developments in the field and sometimes by a wide margin

The deadline for the very ambitious 2030 Agenda is a mere 15 years in the future. Ideally, there should be sufficient data to establish baselines for the various goals and targets when implementation of the Agenda begins in 2016. There should be timely data and statistics that can be used to assess progress towards achieving the targets at national, regional and global levels so that the stakeholders can adjust their policies and programmes accordingly. In general, statistics that are to be used in forming judgements and making decisions must be available in a time frame useful for making judgements and decisions. Statistics that are

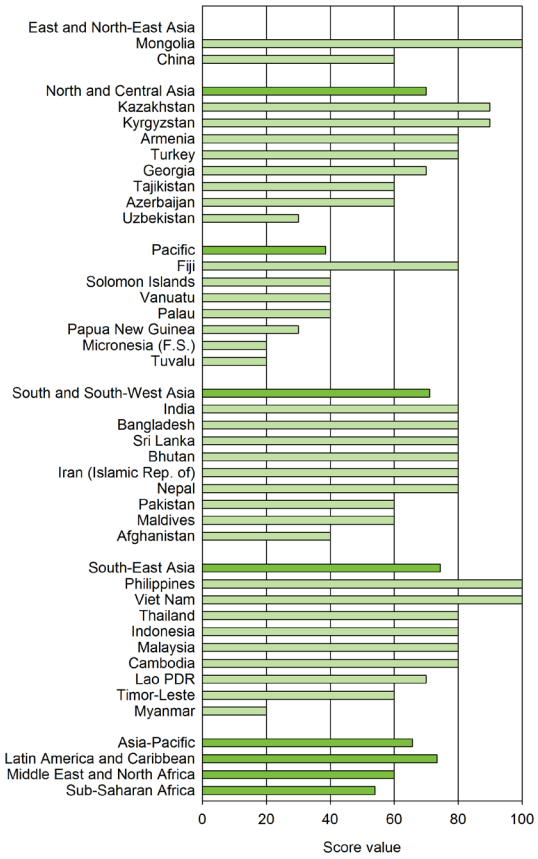


Figure 2
Scores of national statistical capacity: data sources (0 through 100), 2014

Source: World Bank, "Statistical Capacity Indicator Dashboard". Available from http://datatopics.worldbank.org/statisticalcapacity/SCIdashboard.aspx. Accessed on 17 September 2015.

continually lagging behind the changes in the real world may be of little value to such users.

Lack of timely data for high-priority development areas was also a challenge for achieving the targets of the Millennium Development Goals, for example the key indicators relating to child nutrition and maternal health, both of which remain major development issues in the region. Comparable data on the prevalence of underweight children and the rate of skilled birth attendance, available for only half the ESCAP member States, are becoming dated, the most recent statistics being from 2008 and 2009 respectively. The lack of evidence on where to target health services and whether or not child and maternal health programmes are reaching those most in need could be a major impediment to effective action.[9]

The World Bank's assessment of statistical capacity includes the periodicity and timeliness of data, based on how frequently data on some indicators of the Millennium Development Goals were produced at the national level. These indicators include $1 per day poverty; under age 5 malnutrition; use of maternal health services; improved water sources (3 years or less); HIV infection (available for the last 3 years); under age 5 mortality (available for reference year); gender equality in primary and secondary schools, and primary completion (observed in last 5 years); under age 1 measles immunization; and per capita GDP growth (annual).

Out of the 35 countries in Asia-Pacific included in the assessment, only Indonesia had a full score on the measure of periodicity and timeliness in 2014, although Bhutan and Tajikistan had relatively high scores. The challenge to produce timely data for key Millennium Development Goal indicators was evident in most of the other countries too, particularly those in the Pacific subregion. (Fig 3)

Box 1

Strengthening civil registration and vital statistics in Asia and the Pacific by 2024

In November 2014, the Ministerial Conference on Civil Registration and Vital Statistics (CRVS) in Asia and the Pacific adopted a Ministerial Declaration to "Get Every One in the Picture" and proclaimed the "Asian and Pacific Civil Registration and Vital Statistics Decade, 2015-2024.[a] To implement the declaration, Governments of countries in Asia and the Pacific endorsed a regional action framework of goals and nationally set time-bound targets for civil registration coverage, issuance of legal documentation and production of vital statistics by 2024. More specifically, the goals are:

(a) Universal civil registration of births, deaths and other vital events;
(b) All individuals are provided with legal documentation of civil registration of births, deaths and other vital events, as necessary, to claim identity, civil status and ensuing rights;
(c) Accurate, complete and timely vital statistics (including on causes of death) are produced based on registration records and are disseminated.

At the same time, Governments and development partners committed to coordinated and concerted efforts in the following seven action areas:

(a) Political commitment;
(b) Public engagement, participation and generation of demand;
(c) Coordination;
(d) Policies, legislation and implementation of regulations;
(e) Infrastructure and resources;
(f) Operational procedures, practices and innovations;
(g) Production, dissemination and use of vital statistics.

a See E/ESCAP/71/27 and E/ESCAP/RES/71/14

Similar challenges were identified in a region-wide assessment of economic statistics that ESCAP conducted in 2013. That assessment revealed that only a minority of the 51 economies (7 to 20) were producing key economic statistics at the recommended frequency, the notable exceptions being statistics such as the consumer price index, merchandise trade statistics, and balance of payments statistcs. (Table 2)

Improving the accuracy and reliability of data and statistics should be a high priority

Data and statistics are useful only if they are of sufficient accuracy and reliability to be able to provide an adequate answer to questions that matter. In other words, the measures provided by data and statistics must be sufficiently close to reality to provide the basis for making appropriate judgements and decisions.

Statistical guidelines and procedures are a safeguard in the production of accurate and reliable statistics. The World Bank's measure of national statistical capacity assesses a country's adherence to internationally recommended standards and methods to compile macroeconomic and social statistics, reporting and estimation practices. More specifically, countries are evaluated against a set of criteria, such as the national accounts base year, use of the latest of balance of payments manual, external debt reporting status, subscription to the special data dissemination standard of IMF, and reporting of enrolment data to UNESCO. (Fig 4)

The urgency to improve the accuracy and reliability of available data and statistics in high-priority policy areas is evident in Asia and the Pacific. An example is the count of people with disabilities, which underlies the collective commitments by national Governments in the region to the initiative to "Make the right real".[10] Despite the high level of policy priority, the exact figure reflecting the prevalence of disability varies

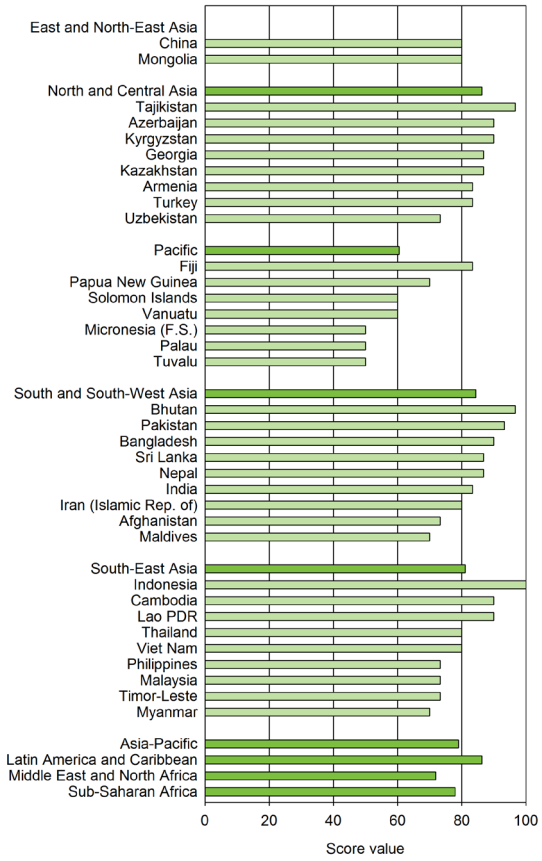


Figure 3
Scores of national statistical capacity: periodicity and timeliness (0 through 100), 2014

Source: World Bank, "Statistical Capacity Indicator Dashboard". Available from http://datatopics.worldbank.org/statisticalcapacity/SCIdashboard.aspx. Accessed on 17 September 2015..

Meeting recommended frequency	Number of States	Percentage
Quarterly GDP	23	45
Monthly commodity price indices	11	21
Annual productivity measures	17	33
Quarterly Balance of Payments	34	67
Annual indicators related to natural resources	8	16

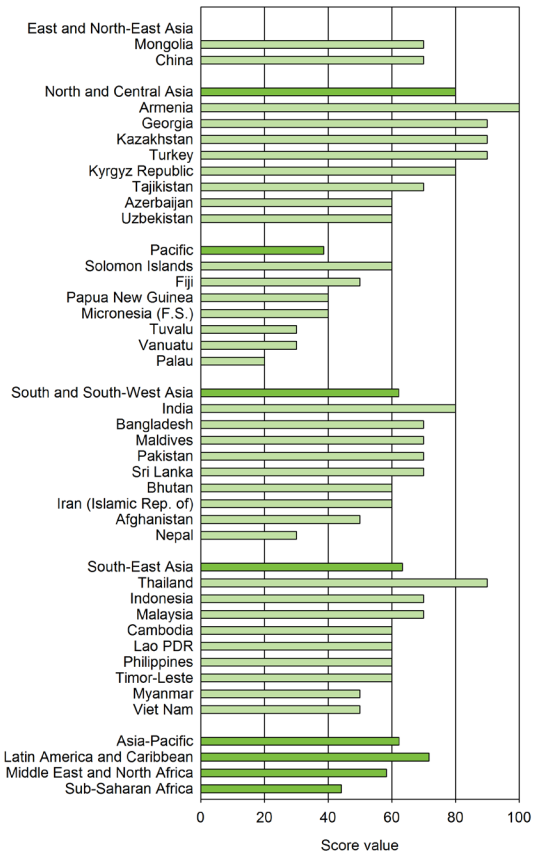
Table 2
ESCAP capacity screening of timeliness in producing the core set of economic statistics, 2013

Source: ESCAP Statistics Division

Note: The results are based on responses by 51 member States.

wildly across countries, ranging from about 1 per cent of the population at one end of the spectrum to as high as almost 20 per cent at the other. A key reason for the wide variation across the region is the differences in the definitions of "disability" and "persons with disabilities" that are used for collecting disability data. Those differences render data comparisons across countries unreliable and thus hinder meaningful policy discussions at the regional level.[11] Similarly, as Asia and the Pacific is the most

Figure 4
Scores of national statistical capacity: dimension of statistical methodology (0 through 100), 2014



Source: World Bank, "Statistical Capacity Indicator Dashboard". Available from http://datatopics.worldbank.org/statisticalcapacity/SCIdashboard.aspx. Accessed on 17 September 2015.

natural disaster-prone region of the world, managing disaster risks is a high priority for national authorities as well as development partners. However, there are serious gaps in the quality of existing statistics on such key issues as hazards, vulnerability and exposure due to the lack of agreed definitions and guidelines for data collection, compilation and dissemination.

Such persistent data challenges on priority development issues in Asia and the Pacific mirror those at the global level. Commentators have pointed out that the development community has repeatedly stated that 70 per cent of the world's poor are female, albeit without much certainty about the reliability of this figure.[12] Similarly, global poverty rates may have been underestimated by as many as 250 million individuals.[13]

The accuracy and reliability of data and statistics depend upon the quality of source data, including their competences. For instance, global monitoring of Millennium Development Goal targets on reducing maternal and child mortality relies on estimates that are typically based on data from statistical surveys. However, statistical estimates of maternal mortality have several severe limitations regarding the use of definitions, and under- or overreporting, as well as obtaining disaggregations for subpopulations.[14] One solution to these limitations is a well-functioning national civil registration and vital statistical system, with universal coverage and accurate recording of births, deaths, causes of death, and other vital events (Box 2).

National statistical institutions need strengthening

Strong institutions are a key to a well-functioning statistical system. Such institutions are underpinned by a strong legal framework that mandates a country's statistical office and other agencies to produce and use official statistics. This framework provides the basis for the "right to information" and ensures that data are not only available but also relevant and cost effective. The institutional set-up of a well-functioning statistical system is one that can facilitate frequent and meaningful exchanges between data producers and users, develop robust and sustainable data sources, apply statistical guidelines and standards, and maintain a workforce of skilled and motivated staff. The institutional set-up would also ensure that the whole of Government and its development partners make a beneficial impact on data quality through their demand for and use of official statistics, as well as by investing adequate resources in statistical work.

In response to the 2013 ESCAP screening of national capacity to produce and disseminate economic statistics, all countries but one reported having statistical legislation

specifying the responsibilities of government agencies in the production of official statistics. However, only 44 member States had articles protecting the independence of official statistics from political influence, an essential safeguard for the integrity and credibility of official statistics, and a foundation for public trust and confidence. (Table 3)

Official statistics are produced by Governments and other public entities. As such effective coordination among the various producers is essential to a strong national statistical institution. The above-mentioned assessment suggested that much improvement is needed in Asia and the Pacific. Only 37 countries out of a total of 51, reported having clear specification of the different responsibilities among various public entities producing economic statistics. A similar number of them reported that they were working on plans to improve coordination. Assessments in other domains of official statistics in the region, including agricultural and rural statistics, gender statistics and civil registration and vital statistics, have all pointed to the need for strengthening coordination among key national stakeholders as a priority for making further improvements in the availability and quality of statistics in these areas.[15]

Strong national statistical institutions are essential for driving the transformative changes that are required to leverage the data revolution needed to support the implementation of the 2030 Agenda. Continuous and strengthened production and dissemination of relevant, reliable and impartial statistics based on international standards are needed.

National statistical systems also need to be empowered, resourced and kept independent so that they can quickly adapt to the rapid increase in and use of new sources and types of data to complete official statistics. The world has witnessed rapid increases in the availability and use of big data, including information automatically recorded and stored from the use of the Internet, satellite imagery, mobile phones and electronic payments etc. In addition, a vast amount of additional quantitative and qualitative information is gathered from various government agencies, academia, the business sector and civil society organizations, which can be used for evidence-based decision-making. Technological advancements have also resulted in the availability of new and more powerful tools and methods of data analysis and presentation.

Indeed, national statistical systems need to lead the coordination of a national data ecosystem that comprises: Government and other entities investing in statistics; international organizations responsible for developing standards and guidelines; various governmental and non-governmental entities that produce and share data and statistics, as well as a broad range of data users in the Government, civil society, the business sector and international organizations (Box 2). Strong national statistical institutions are needed to build and maintain partnerships for strengthened data and statistics for achievement of the 2030 Agenda.

Table 3
ESCAP capacity screening of economic capacity: statistical legislation and national statistical coordination, 2013

Statistical legislation	Number of States
Existence of a statistical law indicating distribution of responsibility for producing official statistics	50
Statistical law protects the independence of official statistics from political influence	44
National statistical coordination	
The distribution of responsibility among agencies for producing a core set of economic statistics is clearly specified	37
Plans are currently being implemented or are under development to improve coordination in production of economic statistics	38

Source: United Nations, Economic and Social Commission for Asia and the Pacific (ESCAP), "Draft report on the region-wide capacity screening of economic statistics in Asia and the Pacific". The document may be downloaded from a link at http://www.unescap.org/resources/report-region-wide-capacity-screening-economic-statistics-asia-and-pacific.

Note: The results are based on responses by 51 member States.

Box 2

A global initiative to strengthen data ecosystems for achieving the Sustainable Development Goals

The Global Partnership for Sustainable Development Data is a multi-stakeholder network of Governments, international organizations, companies, civil society groups, statistics and data communities that represent all sectors of society and all regions of the world; it is committed to harnessing the data revolution to fill critical gaps and ensure that data are more accessible and useable in order to achieve the Sustainable Development Goals by 2030.

The vision of the Global Partnership is a world in which everyone is able to engage in solving the world's greatest problems by using data effectively and fostering trust and accountability in the sharing of data. The Global Partnership works to achieve that vision by bringing the resources of a wide range of stakeholders to bear on the world's development "data poverty" and modernize the data driving the world's sustainable development efforts.

On 28 September 2015, the Global Partnership for Sustainable Development Data was officially launched, with its first year of work being focused on the following:

(a) Set up national, multi-stakeholder data collaboratives to harness the data revolution in all member countries, focusing on building capacity to generate, share and use data at the local level;

(b) Contribute data, including from new data sources and other resources, to fill gaps in the creation of national baselines for the Sustainable Development Goals;

(c) Create dynamic visualizations with the best available data related to the Sustainable Development Goals, and make them accessible and actionable for citizens, policymakers and business leaders;

(d) Build support for principles to harness the data revolution for sustainable development, including the sharing and leveraging of privately held data;

(e) Convene local, regional, thematic and global data events to foster increased connectivity, collaboration and innovation.

Source: http://www.data4sdgs.org/.

Endnotes

1 General Assembly resolution 70/1.

2 Complete details are available from https://sustainabledevelopment.un.org/post2015/transformingourworld.

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Explanatory notes and statistical methods

The methods of compiling data and metadata for this *Yearbook*, and of calculating the indicators and data aggregates, are described in the following sections.

Compilation of data and metadata

The Yearbook presents data from 58 regional ESCAP member countries and areas compiled from United Nations agencies and other international sources. World, regional, subregional and economic groupings aggregates are also presented, most of which are calculated by ESCAP. The regional ESCAP member countries and areas include members and associate members of ESCAP that are geographically located in the Asian and the Pacific region. The *Yearbook* contains data for selected years. Data for all available years may be accessed from the online database at www.unescap.org/stat/data/.

Country-level data have been collected from international sources of official statistics. For each indicator, the definition and source of data, along with other metadata, is given at the end of each topic where the indicator is discussed. To collect the most recent available data for each indicator, ESCAP researches online and print publications, consults experts on specific indicators and monitors the release dates of international reports and databases. In some cases, country level data have been received directly from international organizations: UNAIDS for HIV and AIDS, UNESCO-UIS for education, UNWTO for tourism.

The *Yearbook* strives to present the most recent, internationally comparable data available as of 31 August 2013. In order to maximize comparability, high quality, internationally comparable data sources have been used. Nonetheless, differences in statistical methods may still exist across countries; and, while aiming for international comparability, ESCAP statisticians do not have specialized expertise in all the areas covered in the *Yearbook* and thus cannot ensure full comparability. The status of each data point, which specifies whether the original data source is (a) a country or (b) an international agency, is available in the online database. On the basis of the country-level data, ESCAP calculates:

- Additional indicators (growth rates, periods averages, ratios, derived indicators, such as "percentage of population" or percentage of GDP", etc.)[1]
- Aggregates for the world, regions and subregions, and economic groupings of countries[2]

Calculation of indicators

The technical notes indicate whether the indicator was calculated by ESCAP or obtained from another international agency.

The following types of calculations were performed in deriving indicator values. They are listed here in the order in which they are typically performed:

- imputation of land area
- growth rates
- ratios (such as per capita figures)
- percentages (such as percentage of GDP)
- constant price values using implicit price deflators
- period averages (such as five year averages)

Imputation of land area

A number of environment indicators are expressed as a percentage of total land area. To permit calculation and comparison of such indicators across countries and years, ESCAP completes the information for years where the source — the FAO land area database — does not contain a value. Land area is imputed using the value from the previous or following year. The margin of error is small because the land area of a country normally remains constant. If there is evidence that country borders have changed, the imputation is not completed. Calculations involving imputed land area are included in this *Yearbook*, although land areas themselves are only published online.

Ratios and percentages

Ratios are only displayed if data for the numerator is non missing; and data for the denominator is non-missing and non-zero. Per

capita figures and mortality rates are a few examples of ratios calculated by ESCAP. Indicators expressed as percentages (such as percentage of GDP, land area or population) are calculated following the same methodology as ratios.

For this *Yearbook*, per capita figures were calculated using the United Nations population database *World Population Prospects: The 2012 Revision* (WPP2012) and GDP figures were calculated using the United Nations Statistical Division National Accounts Main Aggregates Database (NAMAD). As NAMAD GDP for 2012 were not available during the preparation of this *Yearbook*, 2012 GDP data are estimated on the basis of 2012 GDP growth rate as available from IMF World Economic Outlook applied to 2011 GDP figures available from NAMAD.

Growth rates in tables

Growth rates are presented as percentage change per annum.

Where annual data are measured in absolute terms, the rates of change from one year to the next are calculated as proportional changes from the earlier period. Rates of change over several years are calculated using the geometric growth model. The geometric growth rate uses discrete compounding.

Where the underlying data are measured in levels, the formula for the average annual percentage change in indicator P over n periods is

$$r = [(P_n / P_0)^{1/n} - 1] * 100.$$

Constant price values using implicit price deflators

Implicit price deflators with a 2005 base, from NAMAD, are used in converting current price data to constant 2005 prices, as follows:

Constant price values using implicit price deflators

$$K_t^{2005} = C_t / I_t^{2005}$$

Where K_t^{2005} is the 2005 constant price value for year t; C_t is the current price value for year t; and I_t^{2005} is the 2005 implicit price deflator for year t.

Period averages

In the *Yearbook*, period averages, such as five-year averages, are calculated either as (a) a simple arithmetic mean, if the period average is based on an indicator from an international data source that is not ESCAP; or (b) the sum of the numerator (for the ratio or percentage) divided by the sum of the denominator over the period. Data are not imputed for the purpose of calculating period averages.

Country names and groupings

"Asia and the Pacific" in this *Yearbook* refers to the 58 regional members and associate members of the Economic and Social Commission for Asia and the Pacific. The 58 regional members and associate members are referred to as "countries" throughout the *Yearbook* even though some territories which are not countries are included. Some countries referred to by a shortened version of their official name in tables and charts, as indicated in brackets in the listing below.

Asia-Pacific subregions

By geographic subregion, the countries and areas of Asia and the Pacific are:

East and North-East Asia (ENEA): China; Democratic People's Republic of Korea (DPR Korea); Hong Kong, China; Japan; Macao, China; Mongolia; Republic of Korea.

South-East Asia (SEA): Brunei Darussalam; Cambodia; Indonesia; Lao People's Democratic Republic (Lao PDR); Malaysia; Myanmar; Philippines; Singapore; Thailand; Timor-Leste; Viet Nam.

South and South-West Asia (SSWA): Afghanistan; Bangladesh; Bhutan; India; Iran (Islamic Republic of), Maldives; Nepal; Pakistan; Sri Lanka; Turkey.

North and Central Asia (NCA): Armenia; Azerbaijan; Georgia; Kazakhstan; Kyrgyzstan; Russian Federation; Tajikistan; Turkmenistan; Uzbekistan.

Pacific: American Samoa; Australia; Cook Islands; Fiji; French Polynesia; Guam; Kiribati; Marshall Islands; Micronesia (Federated States of) (Micronesia (F.S.)); Nauru; New Caledonia; New Zealand; Niue; Northern Mariana Islands

(Northern Mariana Is.); Palau; Papua New Guinea; Samoa; Solomon Islands; Tonga; Tuvalu; Vanuatu.

Development status

ESCAP developed countries: Australia, Japan and New Zealand.

ESCAP developing countries: refers to all countries in Asia and the Pacific except Australia, Japan and New Zealand.

Economic groupings

The classification of countries into income groups is from the World Bank. The World Bank divides countries according to their 2014 gross national income (GNI) per capita, calculated using the World Bank Atlas method. Group classifications are: low income ($1,045 or less); lower-middle income ($1,046–4,125); upper-middle income ($4,126–12,745); and high income ($12,746 or more).

Low-income economies: Afghanistan; Cambodia; Democratic People's Republic of Korea; Nepal.

Lower middle-income economies: Armenia; Bangladesh; Bhutan; Georgia; India; Indonesia; Kiribati; Kyrgyzstan; Lao People's Democratic Republic; Micronesia (Federated States of); Myanmar; Pakistan; Papua New Guinea; Philippines; Samoa; Solomon Islands; Sri Lanka; Tajikistan; Timor-Leste; Uzbekistan; Vanuatu; Viet Nam.

Upper middle-income economies: American Samoa; Azerbaijan; China; Fiji; Iran (Islamic Rep. of); Kazakhstan; Malaysia; Maldives; Marshall Islands; Mongolia; Palau; Thailand; Tonga; Turkey; Turkmenistan; Tuvalu

High-income economies: Australia; Brunei Darussalam; French Polynesia; Guam; Hong Kong, China; Japan; Macao, China; New Caledonia; New Zealand; Northern Mariana Islands; Republic of Korea; Russian Federation; Singapore.

Note: Compared to the previous edition of the *Yearbook* (2014) following changes in the 2 levels grouping took place: Bangladesh; Myanmar and Tajikistan moved from low-income to lower middle income group and Mongolia moved from lower middle income to upper middle income group.

Other Asia-Pacific groupings

Within Asia and the Pacific, the following groupings are also used:

Landlocked developing countries: (LLDCs): Afghanistan; Armenia; Azerbaijan; Bhutan; Kazakhstan; Kyrgyzstan; Lao People's Democratic Republic; Mongolia; Nepal; Tajikistan; Turkmenistan; Uzbekistan.

Least developed countries (LDCs): Afghanistan; Bangladesh; Bhutan; Cambodia; Kiribati; Lao People's Democratic Republic; Myanmar; Nepal; Solomon Islands; Timor-Leste; Tuvalu; Vanuatu.

Pacific island developing economies (PIDEs): American Samoa; Cook Islands; Fiji; French Polynesia; Guam; Kiribati; Marshall Islands; Micronesia (Federated States of); Nauru; New Caledonia; Niue; Northern Mariana Islands; Palau; Papua New Guinea; Samoa; Solomon Islands; Tonga; Tuvalu; Vanuatu.

Association of Southeast Asian Nations (ASEAN): Brunei Darussalam; Cambodia; Indonesia; Lao People's Democratic Republic; Malaysia; Myanmar; Philippines; Singapore; Thailand; Viet Nam.

Economic Cooperation Organization (ECO): Afghanistan; Azerbaijan; Iran (Islamic Republic of); Kazakhstan; Kyrgyzstan; Pakistan; Tajikistan; Turkey; Turkmenistan; Uzbekistan.

South Asian Association for Regional Cooperation (SAARC): Afghanistan; Bangladesh; Bhutan; India; Maldives; Nepal; Pakistan; Sri Lanka.

Central Asia: Armenia; Azerbaijan; Georgia; Kazakhstan; Kyrgyzstan; Tajikistan; Turkmenistan; Uzbekistan.

Regions of the world

For comparative purposes, aggregates are also presented for the major regions of the world as follows:

Africa: Algeria; Angola; Benin; Botswana; Burkina Faso; Burundi; Cameroon; Cape Verde; Central African Republic; Chad; Comoros; Congo; Côte d'Ivoire; Democratic Republic of the Congo; Djibouti; Egypt; Equatorial Guinea;

Eritrea; Ethiopia; Gabon; Gambia; Ghana; Guinea; Guinea-Bissau; Kenya; Lesotho; Liberia; Libya; Madagascar; Malawi; Mali; Mauritania; Mauritius; Mayotte; Morocco; Mozambique; Namibia; Niger; Nigeria; Réunion; Rwanda; Saint Helena; Sào Tomé and PrÌncipe; Senegal; Seychelles; Sierra Leone; Somalia; South Africa; South Sudan; Sudan; Swaziland; Tanzania (United Republic of); Togo; Tunisia; Uganda; Western Sahara; Zambia; Zimbabwe.

Asia-Pacific region: As described above.

Latin America and Caribbean (LAC): Anguilla; Antigua and Barbuda; Argentina; Aruba; Bahamas; Barbados; Belize; Bolivia; Bonaire; Brazil; British Virgin Islands; Cayman Islands; Chile; Colombia; Costa Rica; Cuba; Curacao; Dominica; Dominican Republic; Ecuador; El Salvador; Falkland Islands (Malvinas); French Guiana; Grenada; Guadeloupe; Guatemala; Guyana; Haiti; Honduras; Jamaica; Martinique; Mexico; Montserrat; Netherlands Antilles; Nicaragua; Panama; Paraguay; Peru; Puerto Rico; Saba; Saint Kitts and Nevis; Saint Lucia; Saint Martin (French part); Saint Vincent and the Grenadines; Sint Maarten (Dutch part); Suriname; Trinidad and Tobago; Turks and Caicos Islands; United States Virgin Islands; Uruguay; Venezuela (Bolivarian Republic of).

North America (North Am.): Bermuda; Canada; Greenland; Saint Pierre and Miquelon; United States of America.

Europe: Albania; Andorra; Austria; Belarus; Belgium; Bosnia and Herzegovina; Bulgaria; Channel Islands; Croatia; Cyprus; Czech Republic; Denmark; Estonia; Faeroe Islands; Finland; France; Germany; Gibraltar; Greece; Guernsey; Holy See; Hungary; Iceland; Ireland; Isle of Man; Italy; Jersey; Kosovo; Latvia; Liechtenstein; Lithuania; Luxembourg; Malta; Monaco; Montenegro; Netherlands; Norway; Poland; Portugal; Republic of Moldova; Romania; San Marino; Serbia; Slovakia; Slovenia; Spain; Svalbard and Jan Mayen Islands; Sweden; Switzerland; the former Yugoslav Republic of Macedonia; Ukraine; United Kingdom of Great Britain and Northern Ireland.

Other countries or areas: Bahrain; Iraq; Israel; Jordan; Kuwait; Lebanon; Norfolk Island; Occupied Palestinian Territories; Oman; Pitcairn; Qatar; Saudi Arabia; Syrian Arab Republic; Taiwan Province of China; Tokelau; United Arab Emirates; Wallis and Futuna Islands; Yemen.

Aggregation methods

Aggregate values are presented for subregional, regional, special economic and world groupings (as per the groupings above). World aggregates are taken directly from the data source when available. Subregional, regional, and economic groupings are calculated using ESCAP country groupings to ensure consistency throughout the *Yearbook*.

Some aggregates have been calculated by agencies responsible for the compilation and production of indicators under their area of expertise. These include some food security indicators (aggregates calculated by FAO); some employment indicators (aggregates calculated by ILO); and some education indicators (aggregates calculated by UIS). In such cases, the methodology may differ from the methods described below; additional information can be obtained from the respective agencies. When aggregates are not calculated by ESCAP, the source is indicated in the technical notes.

The calculation of aggregates involves three steps: (1) determining whether "enough" data are available (at least two thirds of the population for social indicators, and at least two thirds of GDP for economic indicators); (2) imputing missing values (not employed for all indicators); and (3) calculating the aggregate sum or weighted average.

For Millennium Development Goal indicators, in addition to aggregate values, the aggregate affected populations are also calculated following the methodology described in the technical note 1 of the Asia-Pacific Regional MDG Report 2011/12 (www.unescap.org/pdd/calendar/CSN-MDG-NewDelhi-Nov-2011/MDG-Report2011-12.pdf).

1. Determining whether "enough" data are available: the"two-thirds test"

To ensure that aggregates are representative, an aggregate is only calculated for a given year if the population (for social and environment

indicators) or the GDP (for economic indicators) of countries with available values for that year covers more than two thirds of the total population or GDP of the group of countries under consideration. As population data (including 2012 data) and GDP data (up to 2011) are available for all United Nations Member States, the test for two thirds of the total population or GDP can be applied to all indicators in the *Yearbook*.

For data not expected to be available for every country (such as official development assistance [ODA], which is only received by specific developing countries), a slight modification of the above methodology is used. The two-thirds test is applied to the group of countries for which data are expected to be non-missing (such as recurrent ODA recipients).

2. Imputing missing values

If an indicator has passed the two-thirds test, but values are missing for some countries, then the missing country data may be imputed to present a more realistic aggregate (the technical notes specifies if missing values are imputed or not). Imputed values are only used in the calculation of aggregates; they are not published online or in print (with the exception of land area). Two methodologies are applied for imputations: one for Millennium Development Goal indicators, and another for non-Millennium Development Goal indicators, as described below.

2a. Imputation methods: Millennium Development Goal indicators

For Millennium Development Goal indicators, missing values are imputed on the basis of the trend; however, if progress is negative, the latest available value is carried forward for future values. For a full description of the methods, see the Asia-Pacific MDG Report 2011/12 (http://www.unescap.org/pdd/calendar/CSN-MDGNewDelhi-Nov-2011/MDG-Report2011-12.pdf).

2b: Imputation methods: non-Millennium Development Goal indicators

For non-Millennium Development Goal indicators, missing country values are imputed using the following methodology:

(a) If values are available for both a preceding and a following year, missing values are imputed using linear interpolation;

(b) If a preceding value is available but not a following value, the most recent year of data is carried forward;

(c) If a following value is available but not a preceding value, the most recent year of data is carried backward;

(d) For countries with only one data point for the whole period, that value is used for all missing years;

(e) If no data exist for any year for a country, no value is imputed. (Information from other countries is never used in imputing missing values.)

3. Calculating aggregate sums and weighted averages

Two types of aggregates are used in the *Yearbook*: straight sums and weighted averages. For calculated indicators, aggregates are based on the original indicator (as opposed to calculating the aggregate based on other aggregates).

If the aggregate is a sum, then the aggregate data are derived by finding the total sum of all country-level data within each aggregation group.

If the aggregate is a weighted average, then the aggregate data are derived by finding the weighted average of all data within each aggregation group. Weights have been determined by ESCAP for each indicator and are included in the technical notes. The weights are not imputed; if the weight is missing, then the country-level data for that country are not included. For ratios, denominators are used as weights.

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