



CHAPTER 1:

Need for further economic growth for poverty reduction

- 1.1 Economic growth – trends and basis
 - 1.1.1 Regional overview – sustained growth in China and India and the rise of the LDCs
 - 1.1.2 Industrial manufacture for export and agricultural intensification – changing intraregional and global trade flows
 - 1.1.3 Fuelling growth – FDI and rising consumption
- 1.2 Need for further economic growth
- 1.3 Underdeveloped infrastructure – a critical poverty trap
- 1.4 Expanding economies, limited carrying capacity
- 1.5 Redirecting economic growth for enhanced sustainability and poverty reduction

The Asian and Pacific region¹ is home to some 3.9 billion people or 61 per cent of the world's population. The region is emerging as a global centre of production; rapid growth has been based on manufacture for export and agricultural intensification, fuelled in part by rapidly increasing consumption in some countries and by foreign direct investment (FDI). Trade has played an important part in driving globalization processes and regional economic growth.

The attention paid by governments to boosting economic growth is indeed justified. Significant poverty reduction efforts are still needed in the region, as are improvements in energy, water, sanitation and transportation infrastructure and equitable access to health services.

These shortcomings all act as 'poverty traps' for the 670 million people thought to be living on less than US\$1 per day in the region.² The ADB estimates that US\$1trillion is needed to maintain and improve water, energy and transport infrastructure over the next five years; this estimate does not cover all of the countries in Asia and the Pacific.

As "ecological footprinting" shows, the demand for ecosystem goods and services is already exceeding the region's natural resource endowment and resulting in declines in carrying capacity. Many developing countries are now increasingly shouldering production-related environmental burdens as a result of their expanding role in the global economy. In many cases, these countries have limited capacity to mitigate the adverse environmental impacts of production, with the consequence that they are subject to mounting environmental pressures on both national and global environmental resources.

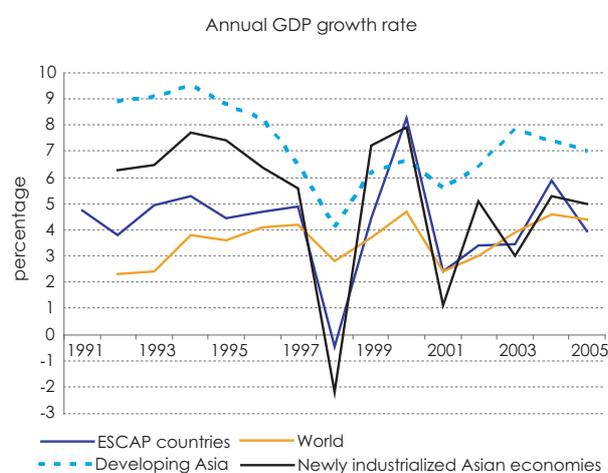
The continuing need for economic growth and the current high pressures on the limited carrying capacity of the region lend urgency to the pursuit of more environmentally sustainable economic growth.

1.1 Economic growth – trends and basis

The State of the Environment in Asia and the Pacific 2005 report identifies economic growth as the most important driver of social and environmental change in this region. The fastest pace of global economic growth for almost three decades – 4 per cent gross domestic product (GDP) growth – occurred in 2004.^{3,4} Continuing a trend that started in the last decades of the twentieth century, GDP growth in the developing countries of Asia and the Pacific, is outstripping world GDP growth rates. These remarkable growth rates have been maintained in spite of the financial crisis of 1997, uncertainties brought about by the conflict in Iraq, high oil prices, and the impact of severe acute respiratory syndrome in East Asia (Figure 1.1). While industry and manufacture for export in particular, remains a pillar of the economies of many regional countries, the services sector is the fastest growing sector in almost two thirds of Asian and Pacific countries.

Despite its economic strength, the region remains vulnerable to economic developments in other countries. Rising energy prices and inflationary pressures pose a particular risk. Developing countries that are highly dependent on energy inputs to the industrial sector are particularly vulnerable to energy price increases and supply fluctuations.

Figure 1.1 Annual GDP growth rates, World and ESCAP countries



Source: International Monetary Fund, World Economic Outlook Database, September 2004.

1.1.1 Regional overview – sustained growth in China and India and the rise of the LDCs

China's and India's sustained economic performances have supported the growth of intraregional trade. China's key role as a global centre of production, growing demand for raw and semi-processed materials and status as a major trading partner for many countries of the region have accelerated the evolution of production and trading patterns. The 1997 financial crisis is now an increasingly distant memory for most affected Asian economies. The economies of Central Asian and the Caucasus are among the fastest-growing in both the region and the world. These relatively small economies have benefited from rising oil and agricultural commodity prices, as well as the ongoing transition to market-oriented economies and the reviving economy of the Russian Federation (Table 1.1).

Table 1.1 Fastest growing countries in Asia and the Pacific: average annual per cent change in GDP, 2000-2005

Afghanistan	16.5
Turkmenistan	16.5
Armenia	11.1
Azerbaijan	11.0
Kazakhstan	10.2
Myanmar	9.8
China	9.3
Tajikistan	9.2
Bhutan	7.9
Viet Nam	7.2
Cambodia	6.9
Russian Federation	6.8
India	6.2
Georgia	6.2
Lao People's Democratic Republic	6.2
Islamic Republic of Iran	5.8
Bangladesh	5.3
ESCAP economies^a	4.1
World	4.0
Developing Asia	7.5
Newly industrialized Asian economies	4.7
Advanced economies (world)	2.4

Source: International Monetary Fund, World Economic Outlook Database, April 2006.

Note: ^a Avg. of weighted avg. annual growth in GDP (constant prices) for 44 ESCAP member and associate members.

Surprisingly, six of the 17 fastest-growing economies in Asia and the Pacific are least developed countries (LDCs): Afghanistan, Bangladesh, Bhutan, Cambodia, Myanmar and the Lao People's Democratic Republic (see table 1.1). Despite the narrow economic base and other limitations that characterize LDCs, the only regional LDCs not included among the 17 fastest-growing regional economies are Nepal, the Maldives and the Pacific island LDCs.

LDC economies have undergone major structural changes in recent years as a result of the wide-ranging trade reforms undertaken in these countries. Six countries are already members of the WTO and a further five are in the process of accession. The share of the agricultural sector in GDP has declined substantially during the period 1990 to 2003 in the LDCs, with the exception of Afghanistan and Myanmar. Supported by the growing importance of the garment sector, the share held by the manufacturing sector rose significantly in countries such as Bangladesh, Cambodia, Lao People's Democratic Republic and Nepal, but generally remained stagnant in the Pacific LDCs. In Bhutan and the Lao People's Democratic Republic, hydropower production boosted growth, whereas in the Maldives and Myanmar, growth was boosted by tourism and sales of natural gas respectively.

In Timor-Leste, the services sector's share of GDP increased by more than 15 per cent from 1999 to 2003, in large part because of the United Nations post-conflict presence in that country. The potential for economic growth in Pacific island countries continues to be restricted by their limited options, as well as their declining human resource base. GDP growth rates are well below regional averages, with few exceptions. Five of the seven Pacific island countries for which data are available registered slower growth rates in the opening years of this century compared with the closing years of the twentieth century.

1.1.2 Industrial manufacture for export and agricultural intensification – changing intraregional and global trade flows

Growth in industrial production activity in Asia and the Pacific region as a whole, and in Asia and the

Pacific developing countries as a group, has outstripped global increases (Table 1.2 and figure 1.2). From 1995 to 2002, office, computing, radio, television and other electrical equipment were among the fastest-growing areas of industrial manufacturing, followed by chemicals, petroleum, rubber and plastic products and mining and transport equipment.

Developing countries as a group showed the strongest growth in manufacturing activity, with a 40 per cent increase in production in this sector between 1995 and 2002 (Table 1.2). The growth of manufacturing is reflected in merchandise export values. Dominated by China and India, the value of exports from ESCAP developing countries more than doubled between 1994 and 2003. China has become the world's largest trading nation after the United States of America and Germany. The strong revival of the information and communications technology (ICT) sector which began in 2003 and increasing economic growth rates in China, Japan and the United States in 2003-2004 are mainly responsible for more recent growth in regional trade.⁵

An increasing proportion of exports of goods and services are to destinations within the Asian and Pacific region. Imports from within the region made up 55 per cent of all imports in 2003, up from 43 per cent in 1990. Changes in trade flows reflect increased consumer power, changes in consumer preferences, the increased fragmentation of supply chains across countries, investment flows and changing efficiencies in production.⁶

Table 1.2 Percentage increase in production, 1995-2002

	World	ESCAP countries	ESCAP developing countries
Industry (general)	23	9	38
Agriculture	16	22	24
Mining	7	17	11
Manufacturing	25	7	40
Electricity, gas and water	18	22	50

Source: ESCAP (2004). *Statistical Yearbook for Asia and the Pacific, 2003*, United Nations publication, Sales no. E.04.II.F.20 (New York, United Nations).

Note: Indexes of production based on data compiled by the United Nations Statistics Division and FAO.

Agricultural production in Asian and Pacific economies overall increased by some 22 per cent between 1995 and 2002 (Table 1.2 and figure 1.3). Agricultural intensification and the rising demand for agricultural raw materials (such as coffee, vegetable oilseeds and oils)⁷ are among the most important contributors to growth in this sector. China is now the largest consumer and importer of several agricultural commodities. While continuing to expand in absolute terms, the agricultural sector's share of total GDP is decreasing in two thirds of the countries of the region.⁸ Future prospects for South-East and South and South-West Asia will continue to be subject to developments in the agricultural sector, which employs a significant portion of the labour force. Environment and climate factors have significant impacts on this sector; in recent years, droughts have reduced agricultural productivity in Afghanistan, Cambodia, Fiji, India, the Islamic Republic of Iran, Pakistan, the Philippines, Thailand, and Viet Nam, among other countries.

1.1.3 Fuelling growth – FDI and rising consumption

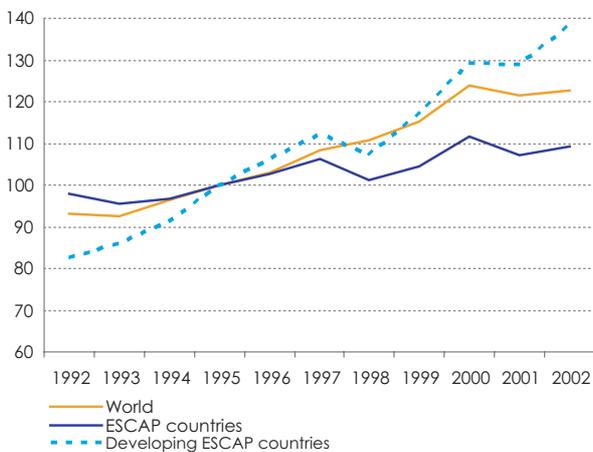
Developing economies in the region have received the major share of global FDI since the 1990s, but experienced a setback during the Asian financial crisis. FDI flows have recovered in the wake of scores of corporate mergers and acquisitions and

privatization programmes,⁹ and reached a new high in 2004. The *World Investment Report 2005* notes that at US\$148 billion in 2004, Asia's share (including Western Asia) of global FDI increased from 16 per cent in 2003 to 23 per cent in 2004.¹⁰ The country most favoured for FDI flow, not only in the Asian and Pacific region, but among developing countries worldwide, is China. That country's economy, along with that of Hong Kong, China; Singapore; the Republic of Korea; and India, receives the major share of regional FDI. FDI inflows to the Pacific island countries have been declining, despite recent increases in Vanuatu and Tuvalu.

Some countries within the region, such as the Republic of Korea and Japan, are gaining in significance as sources of FDI flows within the region. As reported by UNCTAD,¹¹ intraregional FDI has been encouraged by regional integration efforts, the expansion of production networks and the relocation of production to lower-cost areas within the region. The manufacturing sector receives the largest share of FDI overall, although some ground is being lost to the services sector, particularly in the provision of public services such as water and energy. Between 2003 and 2004, Tajikistan made the largest gains in global ranking of FDI recipient countries worldwide, and Australia the fourth-largest gains.

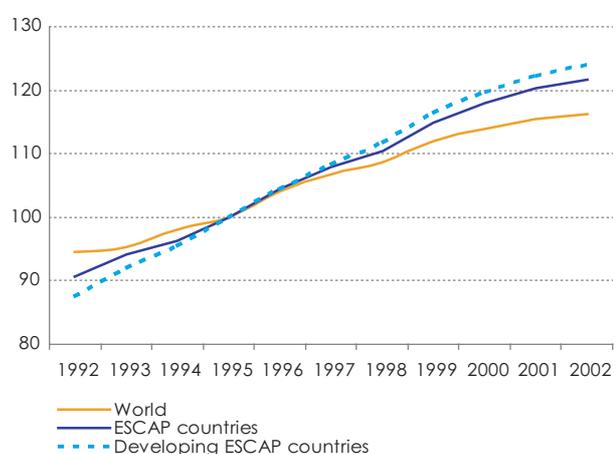
The continued strong economic performance and export orientation of countries such as Indonesia,

Figure 1.2 Industrial production, World and ESCAP countries (index, 1995 = 100)



Source: ESCAP (2004). *Statistical Yearbook for Asia and the Pacific, 2003*, United Nations publication, Sales no. E.04.II.F.20 (New York, United Nations).

Figure 1.3 Agricultural production, World and ESCAP countries (index, 1995 = 100)



Source: ESCAP (2004). *Statistical Yearbook for Asia and the Pacific, 2003*, United Nations publication, Sales no. E.04.II.F.20 (New York, United Nations).

Malaysia, Thailand and, more recently, Viet Nam, can partly be attributed to inflows of official development assistance (ODA) in the 1970s, 1980s and 1990s, which supported fiscal policy and institutional reform and human capital building. These countries have all reduced poverty significantly, improved social and health services and increased agricultural productivity.

As incomes rise, consumption within the region is growing in importance as a driver of growth. GDP per capita (PPP) as a measure of national income almost tripled in China and almost doubled in Viet Nam and the Republic of Korea between 1990 and 2003. This measure increased in the range of 40 to 60 per cent in most South-East Asian countries, with the exception of the Philippines and Viet Nam. In South and South-West Asia, GDP per capita grew more slowly, particularly in Nepal, Pakistan and Turkey. GDP per capita declined between 1990 and 2003 in a few countries, including Mongolia, the Russian Federation, the Solomon Islands and some Central Asian and Caucasus countries.

Household consumption expenditure has been growing at higher-than-global rates in many

countries of the region (see table 1.3). South-East Asian countries and China held the top five places among regional countries in terms of expanding household consumption expenditure between 1990 and 2002. Household expenditure has contracted from 1990 levels in several countries of Central Asia and the Caucasus and the Russian Federation.

However, as a whole, the International Monetary Fund¹² describes autonomous domestic demand as “subdued”, and it is expected to fall in most countries as inflation rises modestly in response to increasing oil prices and as governments pass costs on to the consumer. Asia and the Pacific remains highly dependent on economic developments in the rest of the world, and energizing domestic consumption demand is seen as an important response to the prospect of future global economic slowdown. In the longer term, the influence of consumers in both China and India, as well as continued strong economic growth in these countries, have been identified as potential factors for change in global trade relations, and the basis of a prospective consumption ‘explosion’.

1.2 Need for further economic growth

The rapid economic growth of recent years has certainly brought significant improvements in health, income and investments in social development. However, there are still many needs to be met. The region’s economic growth has not benefited all of its population. As detailed in Chapter 4 section 4.4.4, only a few countries have managed to simultaneously reduce poverty levels and improve equity in income distribution during the 1990s. The distribution of the benefits of growth and the growing gap between the richer and poorer elements of several Asia and the Pacific societies has given rise to concern and, in some places, social tensions.

While sustained poverty reduction implies even higher levels of economic activity and, if based on current development patterns, higher environmental pressures, slowing poverty reduction efforts is not an option. The negative impact of poverty on the natural environment was emphasized in the *State of the Environment in Asia and the Pacific 2000* report. Poverty reduction is recognized as a critical

Table 1.3 Change in household expenditure, top 15 Asia-Pacific countries and World, 1990-2002

	Percentage change
Bangladesh	46
Thailand	49
Pakistan	49
India	52
Philippines	69
Turkmenistan	81
Indonesia	88
Armenia	93
Sri Lanka	107
Republic of Korea	117
Singapore	120
Cambodia	224
China	237
Malaysia	256
Viet Nam	315
World	56

Source: World Bank (2004). *World Development Indicators 2004* (Washington DC, World Bank).

element of sustainable development and is still the over-riding concern of most countries, and in particular of developing countries.

Global and regional reviews¹³ of progress towards achieving the Millennium Development Goals (MDGs) show that poverty and hunger are still far from being eliminated. In 2004, nearly 670 million people, 63 per cent of the world's poor, were still living on less than US\$1 a day (PPP adjusted) in the region. China and India accounted for 80 per cent of this number. While, overall, there have been substantial reductions in undernourishment, some 500 million people are still undernourished region-wide. The number of hungry people has increased by tens of millions in South Asia since 1990, a trend caused mostly by growing populations and, in some areas, by declining agricultural productivity. Over half of the children in South Asia, and 38 per cent of children in South-East Asia are underweight, and more than one third of all child deaths occur in South Asia.¹⁴

Studies in the Philippines¹⁵ and Viet Nam¹⁶ have shown that the continued existence of 'poverty traps' (including a lack of access to education and health services) limits the benefits of national income growth for the welfare of the poorest segments of the population. The need for investment to remove these poverty traps is evident in almost every developing country in the region.

One critical poverty trap is inadequate investment in health services that leads to the premature loss of life and which increases human vulnerability to the threat of communicable disease. Each year, approximately 250,000 women across the region die during pregnancy and childbirth. Most of these deaths could be prevented by access to routine and emergency obstetric care. In at least 22 countries of the region, maternal mortality rates are rising. South Asia has the lowest level of professional care at birth among the subregions of the world; two thirds of Asian maternal deaths take place in India and Pakistan. Each maternal death leaves the legacy of a generation of vulnerable children within the family, thereby perpetuating poverty from generation to generation. HIV/AIDS is continuing to spread in several parts of Asia; in recent years India, China

and Papua New Guinea have emerged as new epicentres of the disease. In 2004, over 9 million people were living with HIV/AIDS in the region; half a million people die every year from this disease. Malaria is also making new inroads. This mosquito-borne virus kills more than 30,000 people each year in India, and approximately 1.5 million new cases are detected every year in Indonesia.¹⁷ South-East Asia accounts for the second highest number of new tuberculosis cases in the world; over 3 million new infections were reported in China and India in 2003 and 1.5 million new cases were recorded in Indonesia.

As of October 2005, economic losses due to the Avian Flu were estimated at US\$170 million in Indonesia, US\$1.2 billion in Thailand and around US\$200 million in Viet Nam. The projected number of fatalities of an Avian Flu pandemic ranges from 5 million to 150 million people and the projected loss in GDP amounts to US\$200 billion in just one quarter.¹⁸

Inadequate investment in disaster mitigation and preparedness is another poverty trap. Natural disasters cause major loss of life, massive damage to infrastructure and impact on future growth prospects. Asia and the Pacific is the most disaster-prone region in the world; since 1900 the region has accounted for almost 90 per cent of all deaths from disasters globally.¹⁹ The total economic value of damage from natural disasters in the region in 2004 alone was at least US\$55 billion. Floods cause the most damage, followed by earthquakes. It is becoming increasingly difficult to determine whether a natural disaster can be described as wholly "natural"; human activity is increasingly seen as playing a role in triggering disasters or exacerbating their impacts.

1.3 Underdeveloped infrastructure – a critical poverty trap

One of the most important poverty traps is underdeveloped housing, energy, water, sanitation and transportation infrastructure. It has been estimated that in many urban centres, between 40 and 80 per cent of residents have very little or no access to shelter, basic services and amenities such as recreational areas as a result of rapid urbanization, structural adjustment, spatial and institutional

mismanagement and the poor performance of formal housing and basic service delivery programmes.²⁰ The largest proportion of urban dwellers living in slums is found in South and South-West Asia.

Some 665 million people have no access to improved drinking water and around 1.9 billion people have no access to improved sanitation,²¹ with the result that populations in Asia and the Pacific, children in particular, are vulnerable to waterborne diseases which contribute to high mortality rates. A lack of access to improved water and sanitation services incurs costs in terms of increasing the burden of disease and environmental degradation; rural areas are particularly affected. A lack of access to clean energy and appropriate technology means that air pollution is a major cause of ill health and mortality. Indoor air pollution causes some 1.6 million deaths annually worldwide,²² with the majority of these deaths occurring among women and children in the region. At the same time, dependence on biomass fuels is responsible for forest degradation throughout the region.

The annual economic burden due to inadequate access to energy, water and sanitation in rural North India has been estimated at some Rs. 323 billion, or US\$6.8 billion (Table 1.4). On average, members of a household walk over 3,000 km (325 km for fuelwood and 2,774 km for water) a year²³ – roughly equivalent to the distance between New Delhi and Hanoi. In addition to the direct economic costs, there are also significant opportunity costs incurred by not meeting the demand for adequate infrastructure. For every US\$1 invested in improving water and sanitation services, US\$6 in time and health savings are earned for the poor.

An Asian Development Bank (ADB) study covering 21 developing countries estimates that almost US\$1 trillion is needed to fund new investment in, and to maintain, key infrastructure and systems to meet the demands of rapidly expanding populations and urban centres, as well as demands of the private sector, up to 2010.²⁴ One third of this amount is needed for infrastructure maintenance and just over half for the provision of electricity. The bulk of the investment (80 per cent) would go to meeting China's needs. For China, this represents an

annual expenditure of 6.9 per cent of its GDP; for low-income countries, 6.3 per cent; and for middle-income countries, 3.6 per cent.

These estimates do not cover the money needed for urban transport, gas grids, bridges, ports, airports and secondary roads. They also do not include hidden infrastructure costs such as the energy used by cars and the resultant pollution that make up a substantial but unrecognized component of the 'operational' costs of transportation via highway, for example. Underdeveloped infrastructure has substantial long-term environmental implications; patterns of infrastructure development lock societies into predetermined patterns of consumption that can have significant economic, social and environmental impacts. Once committed to a particular infrastructure, changes are extremely costly to make, as indicated by the experiences of the project

Table 1.4 Economic burden due to energy, water, sanitation and health problems caused by lack of infrastructure (per year), rural North India

	Energy	Water	Total
Days spent/lost			
Days spent in collection	822	3,212	4,034
Days lost due to diseases	260	521	781
Total	1,082	3,733	4,815
Monetary value of working days spent/lost (Rs. Billions) ^{a, b}			
Fuelwood gathering and water collection	49	193	242
Due to diseases ^c	16	31	47
Direct expenditure on health	21	13	34
Total economic loss due to improper energy and water facilities and to health impacts of their procurement and use	86	237	323

Source: Parikh, Jyothi, Kirit Parikh, Vijay Laxmi, Shya Karmarkar and Pramod Dabrase (2003). "Economic Analysis of Rural Pollution and Health Impacts in Northern India: A Multi-institutional project", in Jyoti K. Parikh and T.L. Raghu Ram, eds., *Reconciling Environment and Economics: Executive Summaries of EERC Projects* (Mumbai, Indira Gandhi Institute of Development Research).

Notes:

Based on a survey covering 10,265 rural households from 118 villages, in dry desert zones and mountainous ecosystems.

^a Taking 10 hrs as standard working hours per day.

^b Includes imputed cost per working day taken at Rs. 60 per day (approximate wage rate).

^c Diseases include respiratory and eye-related diseases under the energy column and water and sanitation-related diseases under the water column.

to restore the Cheong-gye-cheon River in Seoul, Republic of Korea. This project revitalized a run-down area of Seoul, but as much as US\$386 million was spent removing an overhead highway. The initiative also resulted in social conflict and displacement of businesses.

The ADB study on regional infrastructure makes the point that “the same level of spending can yield very different service outcomes” and emphasizes that inefficiency results when environmental impacts are costly, or the needs of the poor are not taken into account, among other factors. Chapter 2 highlights approaches to meeting energy, water and sanitation needs that can turn underdeveloped infrastructure into an opportunity for environmentally sustainable growth in support of enhanced human welfare.

1.4 Expanding economies, limited carrying capacity

Continuing the economic growth needed to meet socio-economic development needs of all Asian and Pacific peoples, raises the question of whether the natural resource base can support the implied levels of production and consumption activity indefinitely. The ability of Asian and Pacific, or indeed global, environmental resources to continue to sustain economic activity indefinitely is dependent on its environmental carrying capacity.²⁵ This is, in turn, determined by two main factors: the natural resource endowment (or “natural capital”) and patterns of resource use.

Where the natural resource endowment is large and patterns of resource use are relatively low in environmental impact, a larger population can be sustained indefinitely. The carrying capacity, in this situation, is said to be high. Conversely, where the natural resource endowment is relatively small and patterns of resource use are high in environmental impact, the population which can be sustained will be smaller. Changes in either environmental pressure or the natural resource endowment impact on the carrying capacity and so determine the outlook for future generations.

Overall, the Asian and Pacific region is less generously endowed with natural resources than

elsewhere. Figure 1.4 shows the potential water availability, land area, arable and permanent crop land and biocapacity per capita for regional countries.²⁶ Aggregate data for the region and for the world show that each unit of these natural resources is used by more persons in this region than the world average. Population pressures related to the use of these resources are potentially higher in this region than in other parts of the world. In reality, the uneven distribution of natural resources and populations across the region means that, inevitably, some parts of the region are under extreme population pressure, while other areas are relatively unscathed.

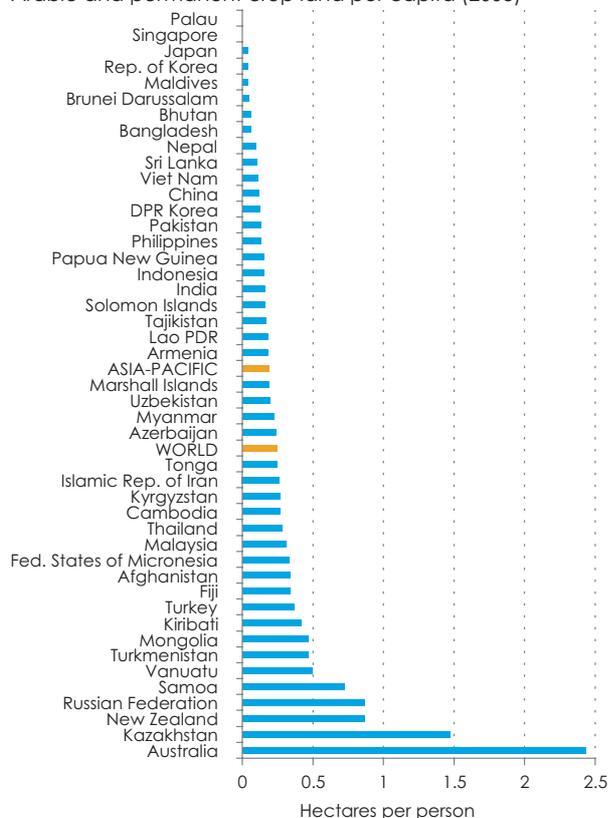
The demand for environmental goods and services provided by the natural resource base depends on the average consumption patterns in a country and can be estimated by “ecological footprinting.” This methodology offers a way of assessing total environmental pressure by estimating how much productive area (or biocapacity) is needed to support a given human activity. Aggregated for all aspects of consumption across a whole population, the total bioproductive space required is termed its “footprint”, and indicates the demand for natural resources to produce “all the resources that a given population consumes, and absorb[ing] the waste it produces.”²⁷ It therefore reflects the consumption pressures exerted by the population under consideration.

Figure 1.5 compares per capita ecological footprints for regional countries and also shows the regional footprint per capita and the world average footprint per capita for 2002. Asia and the Pacific has a per capita footprint almost one-third lower than the global per capita footprint, reflecting the high proportion of the population living in poverty in the region, low levels of access to energy and generally lower levels of consumption. Among regional countries, Australia has the highest per capita ecological footprint.

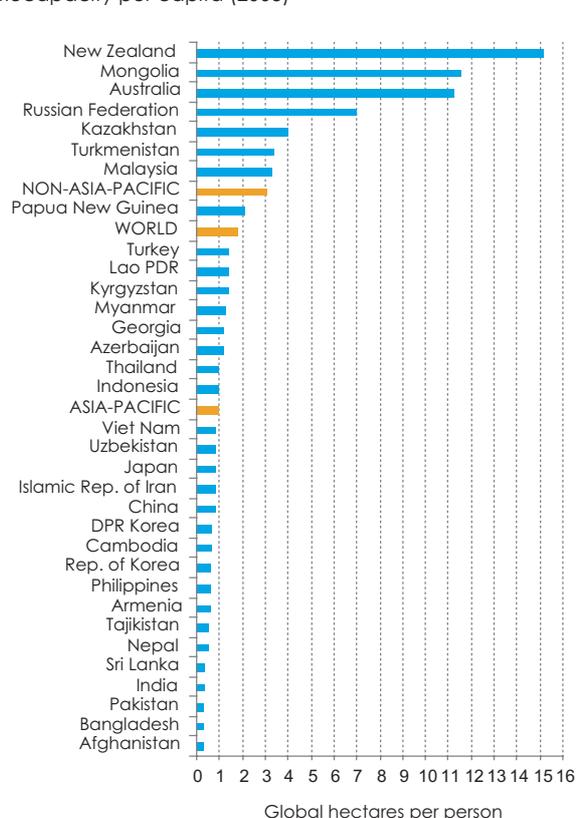
Chambers and others²⁸ compare biocapacity values, described above as a measure of the productive natural resource endowment, with the ecological footprint to estimate the extent to which a country’s consumption levels exceed its natural resource endowment. Where a country’s footprint exceeds its

Figure 1.4 Population-related environmental pressures

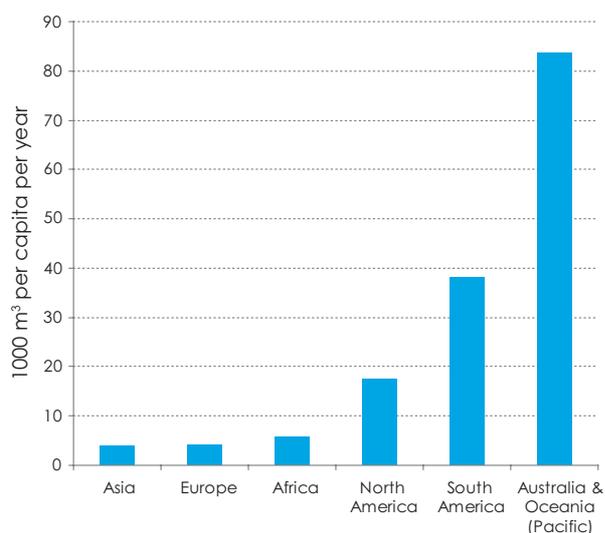
Arable and permanent crop land per capita (2003)



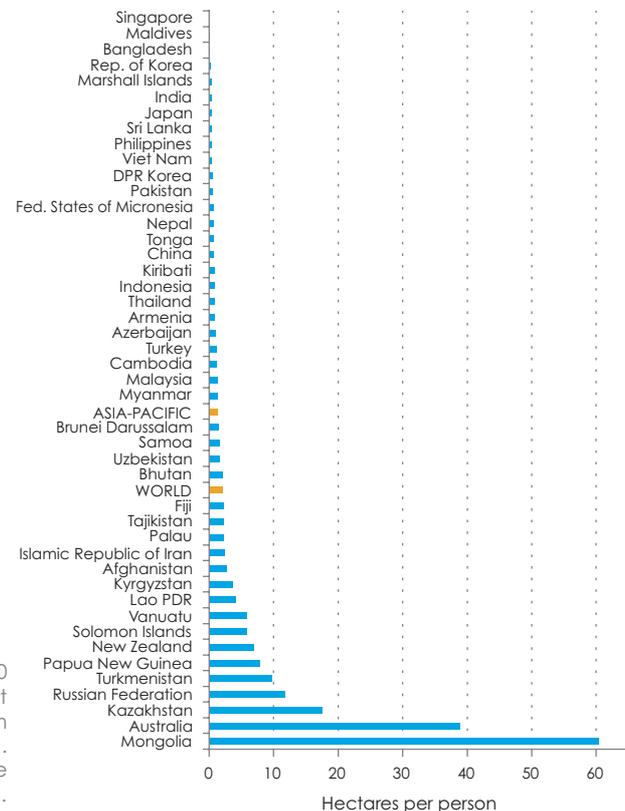
Biocapacity per capita (2003)



Potential water availability (2004)



Land area per capita (2003)



Sources: FAO, FAOSTAT database, data downloaded on 20 July 2005 from <http://faostat.fao.org/>; Global Footprint Network (2006). Data downloaded on 14 March 2006 from <http://www.footprintnetwork.org>; Shiklomanov, I.A. (2004). "Assessment of Water Resources in Asia and the Pacific in the 21st Century" (unpublished report).

own biocapacity, it is said to be running at an “ecological deficit.” On the other hand, if its biocapacity exceeds its footprint, it is running at an “ecological surplus.” Figure 1.5 also shows estimates of per capita ecological surpluses and deficits. Among the 33 countries in Asia and the Pacific for which data are available, at least 18 of them were running at an ecological deficit, per person, in 2002.

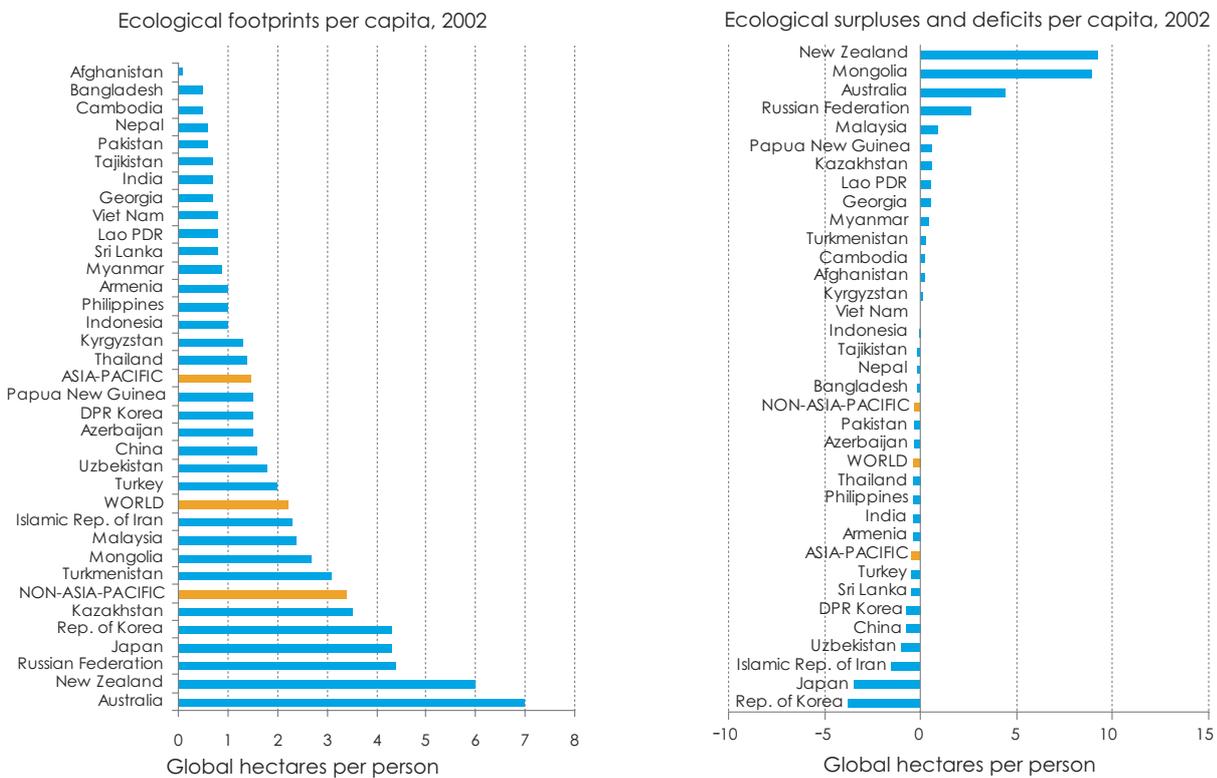
The size of a country’s footprint is amplified by income and consumption growth. Unfortunately, the natural resource endowment does not grow along with the footprint, and where there is environmental degradation, the natural resource endowment is decreased. The result is that the size of the human population that can be sustainably supported at a given point in time tends to decrease as incomes increase and standards of living improve, signalling a growing competition for resources and an effective reduction in carrying capacity.

Australia, New Zealand and the Russian Federation all have high per capita ecological footprints but nonetheless run ecological surpluses because they have large per capita biocapacities.

Because of the high dependence of many countries on imports to satisfy their consumption needs, even if a country is running at an ecological surplus, some or all of this surplus is likely to form part of the footprint of another country (which may or may not have a substantial natural resource endowment). The footprint measure does not include the biocapacity needed to support a country’s production for export. So in reality, an ecological surplus is seldom left untouched and unused by humans for biodiversity conservation, for example.

The Global Footprint Network estimates that as of 2002, the global ecological footprint was 13.7 billion global hectares, or 2.2 global hectares per person, while the Earth’s biocapacity was approximately 11.2 billion global hectares, or 1.8 global hectares per person. Humanity’s ecological footprint therefore exceeded global biocapacity by some 21 per cent. China alone is estimated to account for some 15 per cent of the world’s total footprint, while it contributes a little under 9 per cent of global biocapacity. Therefore, even though the basic needs of a large percentage of China’s population are yet

Figure 1.5 Consumption and waste: ecological footprints, ecological surpluses and deficits



Source: Global Footprint Network (2006). Data downloaded on 14 March 2006 from <<http://www.footprintnetwork.org>>.

to be met, China is already running at a large ecological deficit. This overshoot is possible because humanity can liquidate its ecological capital rather than live off annual yields. As noted by Chambers and others, the ecological footprint methodology does not capture all of humanity's pressures on the environment. For example, the extraction of non-renewable resources, toxic pollution and species extinction are not incorporated into the footprint model. The ecological footprint methodology therefore produces a conservative estimate of environmental pressures.

Regional interdependence does not only exist in economic or trade contexts, but in environmental terms, as environmental burdens are redistributed within the region through expanding intraregional trade. Concepts such as 'virtual water' and 'pollution havens' seek to define the environmental impacts of trade between countries.²⁹

Rapidly growing developing countries where the manufacturing industry plays an important economic role are perhaps the most susceptible to the environmental pressures related to economic growth, as income grows and consumption patterns change. South-East Asian countries are typical examples of this, with many demonstrating per capita ecological deficits (Figure 1.5). While a transition to a higher dependence on imports and the services sector is likely to relieve some of the ecological pressure, the ecological damage already done may prove to be irreversible.

In conclusion, we should bear in mind that the current demand for ecosystem goods and services is already exceeding the region's natural resource endowment and resulting in declines in carrying capacity. Growing trade represents a shift of production-related environmental burdens; the ever-growing demand for economic expansion is now exerting mounting environmental pressure on national, regional and global environmental resources. The continuing need for economic growth and current pressures on the limited carrying capacity of the region make the pursuit of more environmentally sustainable economic growth all the more urgent.

1.5 Redirecting economic growth for enhanced sustainability and poverty reduction

Several prominent organizations³⁰ have emphasized that natural resources are the lifeline of the poor. The Millennium Ecosystem Assessment showed that the ecosystems that sustain the majority of the world's poor, as well as the global economy, are experiencing mounting pressures. The push for economic growth based on unsustainable patterns of resource use limits the potential for economic growth that benefits all social groups.

This report stresses that inadequate access to water, energy, sanitation, transportation and housing infrastructure that serves as multiple poverty traps can also become long-term 'sustainability traps' if unsustainable strategies are adopted to address them. The answer to the fundamental question of whether rapid economic growth is sustainable or not is that economic growth can be made more environmentally sustainable and beneficial to human welfare through innovative policies and actions involving all stakeholders.

It should be remembered that growing economies are not condemned to declining carrying capacities, and the perhaps irreversible and catastrophic loss of natural resources. Some governments are beginning to focus on the quality of growth, such as Bhutan, which has enshrined the pursuit of happiness over the pursuit of cash in official government policy and China, with its September 2005 announcement that it would no longer seek rapid growth, but higher quality growth targeted at addressing growing social inequity.

A central element of enhancing environmental sustainability will be a greater focus on resource-use efficiency. Rapid economic growth and increasing incomes have led to an increasing demand for raw materials and, consequently, rising prices. Initiatives such as China's move to develop a "Resource-Saving and Environment-Friendly Society" will become increasingly relevant to sustaining economic growth and, at the same time, maintaining growth within the limits of the existing environmental carrying capacity, as discussed in subsequent chapters.

End notes

- 1 The term “Asian and the Pacific region” as used in this publication primarily refers to the member and associate members of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) that fall within the region.
- 2 ESCAP estimate for 2004.
- 3 The most widely accepted measure of economic growth is the total value of goods and services produced within the borders of a given country (as measured by GDP), or by national entities of a country, both within and outside of, a country’s borders (as measured by GNP). Economic growth can also be defined in terms of growth in physical throughput, i.e. the amount of material processed by economic activity. See Ekins, Paul (2000). *Economic Growth and Environmental Sustainability: The Prospects for Green Growth* (London, Routledge).
- 4 ESCAP (2005). *Economic and Social Survey of Asia and the Pacific 2005: Dealing with Shocks*, United Nations publication, Sales No. E.05.II.F.10 (New York, United Nations).
- 5 ESCAP (2004). *Economic and Social Survey of Asia and the Pacific 2004: Asia-Pacific Economies: Sustaining Growth and Tackling Poverty*, United Nations publication, Sales No. E.04.II.F.20, 2004 (New York, United Nations).
- 6 ESCAP (2004). *Statistical Yearbook for Asia and the Pacific, 2003*, United Nations publication, Sales No. E/F.04.II.F.1 (New York, United Nations).
- 7 While firmer commodity prices have bolstered the economies of the region, stimulating output growth and reducing poverty, commodity prices in real terms still remain considerably lower than 20 years ago. The terms of trade of commodity producers have deteriorated, reflecting structural problems that have played a major role in the continuation of rural poverty in the region. See ESCAP (2004), op. cit.
- 8 Based on World Bank data, World Development Indicators online database, accessed on 4 January 2005 from <<http://www.worldbank.org/data/dataquery.html>>.
- 9 Asian Development Bank (2004). *Asian Development Outlook 2004* (Manila, ADB), accessed on 11 November 2005 from <<http://www.adb.org/Documents/Books/ADO/2004/part030100.asp>>.
- 10 UNCTAD (2005). *World Investment Report 2005: Transnational Corporations and the Internationalization of R&D* (New York and Geneva, United Nations).
- 11 UNCTAD (2005), *ibid.*
- 12 See International Monetary Fund (2005). *Asia-Pacific Regional Outlook: September 2005* (Washington DC, IMF Asia and Pacific Department), accessed on 12 December 2005 from <www.imf.org/external/np/pp/eng/2005/092705.pdf>.
- 13 See ESCAP, UNDP and ADB (2005). *A Future Within Reach: Reshaping Institutions in a Region of Disparities to Meet the Millennium Development Goals in Asia and the Pacific*, United Nations publication, Sales No. E.05.II.F.27 (New York, United Nations), and United Nations (2005). *Millennium Development Goals Report 2005* (New York, United Nations).
- 14 United Nations (2005), *ibid.*
- 15 Balisacan, Arsenio M., and Ernesto M. Pernia (2002). *What Else Besides Growth Matters to Poverty Reduction?*, ADB Economics and Research Department Policy Brief Series, Number 5 (Manila, ADB).
- 16 Bhushan, Indu, Erik Bloom and Nguyen Minh Thang (2002). *Unequal Benefits of Growth in Viet Nam*, ADB Economics and Research Department Policy Brief Series, Number 3 (Manila, ADB).
- 17 See website of the WHO Regional Office for South-East Asia, accessed on 17 March 2006 from <<http://www.who.or.id/eng/strategy.asp?id=cs2>>.
- 18 ESCAP (2005). “An effective regional response to the threat of a pandemic” Socio-Economic Policy Brief No. 1 (Bangkok, ESCAP).
- 19 Based on data from EM-DAT: The OFDA/CRED International Disaster Database <www.em-dat.net>, Université Catholique de Louvain, Brussels, Belgium.
- 20 United Nations (2004). *World Urbanization Prospects: The 2003 Revision*, United Nations publication, Sales No. E.04.XIII.6 (New York, United Nations).
- 21 “Improved sanitation” refers to facilities that hygienically separate human excreta from human, animal and insect contact. Facilities such as sewers or septic tanks, poor-flush latrines and simple pit or ventilated improved pit latrines are assumed to be adequate, provided that they are not public. See United Nations Development Group (2003). *Indicators for Monitoring the Millennium Development Goals* (New York, United Nations Development Group).
- 22 See World Health Organization (2005). “Indoor air pollution and health”, Fact Sheet No. 292, June 2005, accessed on 18 December 2005 from <<http://www.who.int/mediacentre/factsheets/fs292/en/print.html>>.

²³ Based on a survey covering 10,265 rural households from 118 villages, in dry desert zones and mountainous ecosystems. Parikh, Jyoti, Kirit Parikh, Vijay Laxmi, Shya Karmarkar and Pramod Dabrase (2003). “Economic Analysis of Rural Pollution and Health Impacts in Northern India: A Multi-institutional project”, in Jyoti K. Parikh and T.L. Raghu Ram, eds. (2003). *Reconciling Environment and Economics: Executive Summaries of EERC Projects* (Mumbai, Indira Gandhi Institute of Development Research).

²⁴ Asian Development Bank, Japan Bank for International Cooperation and the World Bank (2005). *Connecting East Asia: A New Framework for Infrastructure* (Washington DC, World Bank).

²⁵ The term “carrying capacity” was originally used to describe the ability of a given environment to sustain livestock or a particular organism, and measured by the maximum population that could be sustained indefinitely. It has also been used to describe the ability of a given ecological system to withstand a given disturbance without irreversible damage. Various authors have subsequently attempted to define the carrying capacity of the earth in terms of the human population that can be supported, or as the maximum demand for ecological services that can be sustained without irreversible ecosystem damage.

²⁶ Biocapacity is a measure of a country’s natural resource endowment, in “bioproductive space with world average productivity”, or “global hectares”. See Chambers, N., C. Simmons and M. Wackernagel (2000). *Sharing Nature’s Interest. Ecological Footprints as an Indicator of Sustainability* (London and Sterling VA, Earthscan Publications Ltd.).

²⁷ See Chambers, N., C. Simmons and M. Wackernagel (2000), op. cit.

²⁸ See Chambers, N., C. Simmons and M. Wackernagel (2000), op. cit.

²⁹ Virtual water refers to the water saved by an economy if it imports a crop rather than grows it, or to water exported along with traded commodities. “Pollution havens” is a term used to describe countries which attract highly polluting industries by virtue of their lower or less strictly applied environmental standards.

³⁰ World Resources Institute, United Nations Development Programme, United Nations Environment Programme, and World Bank (2005). *World Resources 2005: The Wealth of the Poor—Managing Ecosystems to Fight Poverty* (Washington DC, World Resources Institute; Millennium Ecosystem Assessment).