

Chapter 2

Where Is Asia Heading?
Trends and Issues for Regional
Integration and Sustainability

Satoshi Kojima and Magnus Bengtsson

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Key Messages

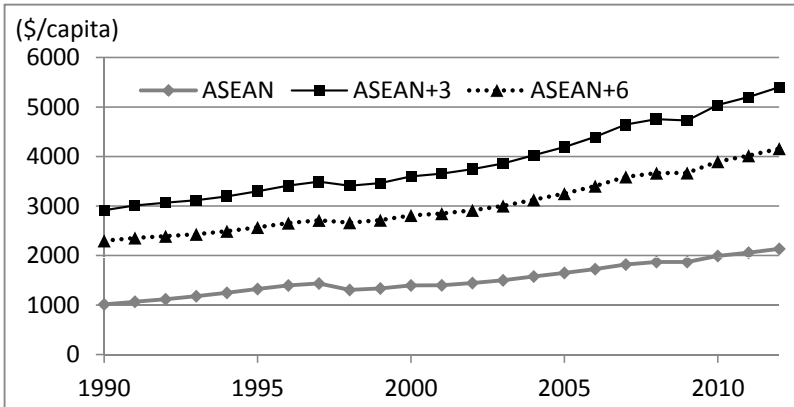
- East Asia has achieved more economic growth and reduced poverty faster than any other region of the world over the past two decades—which has been partially realised by market integration via globalisation and regional economic integration.
- Much of the area has experienced growing inequality in income distribution, a sign that the current development model is neither equitable nor inclusive. Partly to blame is the current mode of economic development, which tends to favour the owners of capital over the labourers, as well as coastal cities over rural inland areas.
- High economic growth has been linked with serious environmental problems—booming carbon dioxide (CO₂) emissions and resource/material consumption. Severe air pollution, water scarcity and deforestation are also rife.
- The current development paradigm in East Asia, i.e., economic growth and market integration, will only aggravate socio-environmental risks of increased inequality and environmental degradation.
- Countries can more effectively address such risks through pursuing regional integration centred on sustainable development.

1. Rationale to focus on East Asia

This chapter reviews the current situation and past trends in the Asia-Pacific region with regards to sustainable development and regional integration. The trends in selected key economic, social and environmental indicators show a likely future scenario for the region under the current development model, which underscores the need for a green development model. Indicators related to economic integration such as trade volume and foreign direct investment (FDI) flows are also given in order to visualise the potential role of liberalised trade and investment in the current development patterns. This chapter focuses on East Asia (ASEAN, ASEAN+3 and ASEAN+6) where both economic development and regional integration processes have been dynamically evolving.¹ For the purposes of this chapter, ASEAN+6, which includes all the major economies in the Asia-Pacific region, can be regarded as representing the region in general.

2. Rapid economic growth and poverty reduction in East Asia

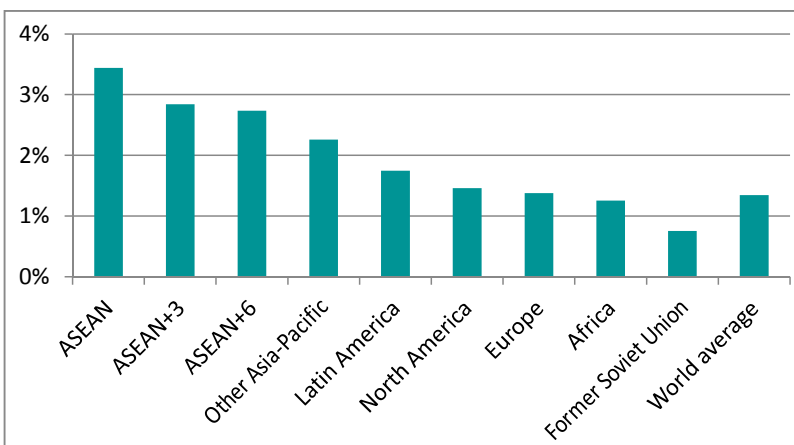
The strong economic growth in East Asia during the 1970s and 80s amazed the world enough to earn it the appellation of “East Asian miracle” (World Bank 1993). Growth has also been maintained throughout the two most recent decades as well. Figure 2.1 shows how real gross domestic product (GDP) per capita in East Asia has increased; robust economic growth was sustained since 1990 except for two brief recessions—the Asian financial crisis in 1997 and Lehman shock in 2008.



Source: U.S. Census Bureau (2013)

Figure 2.1 Real GDP per capita (2005 USD per capita)

East Asia’s strong economic growth is unique in terms of global perspective; the region recorded its highest annual growth rate of real GDP per capita of all major world regions in the last two decades (see Figure 2.2).

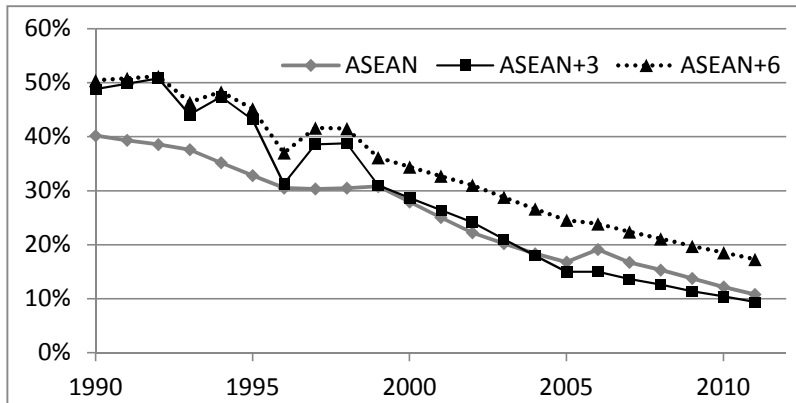


Source: U.S. Census Bureau (2013)

Note: “Other Asia-Pacific” is the aggregate of all Asia-Pacific countries except for ASEAN+6 countries.

Figure 2.2 Annual growth rate of real GDP per capita for 1990–2012

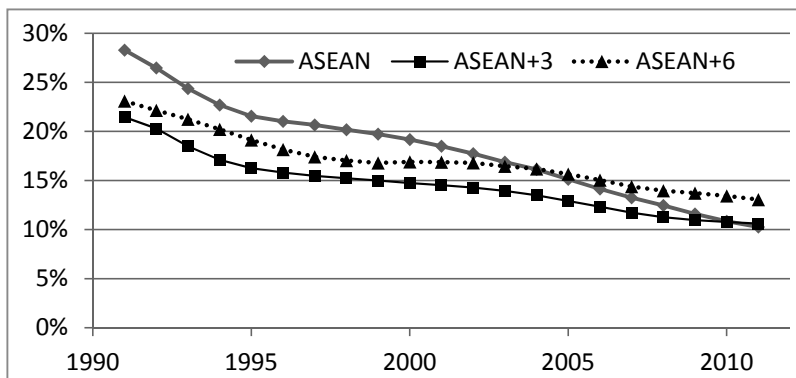
Rapid GDP growth has significantly reduced poverty in East Asia. In 1990 the poverty rate (defined as the ratio of population spending less than 1.25 USD/capita/day) was 40% in ASEAN and nearly 50% in ASEAN+3 and ASEAN+6. These rates have dropped very markedly to around 10% in ASEAN and ASEAN+3 and to less than 20% in ASEAN+6 in just two decades—a remarkable achievement (see Figure 2.3).



Source: World Bank (2013)², U.S. Census Bureau (2013).

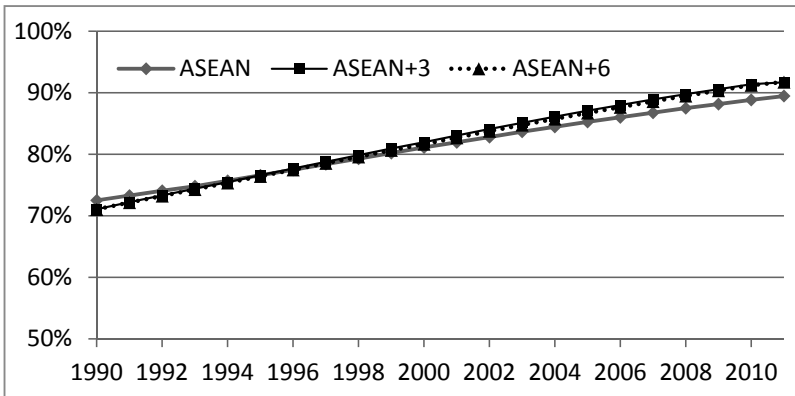
Figure 2.3 Poverty rate (less than 1.25 USD/capita/day)

Significant poverty reduction in East Asia is also observed in other dimensions of poverty, including undernourishment, lack of safe water access and lack of access to improved sanitation (see Figures 2.4, 2.5 and 2.6, respectively). The region has made tremendous progress in this respect also.



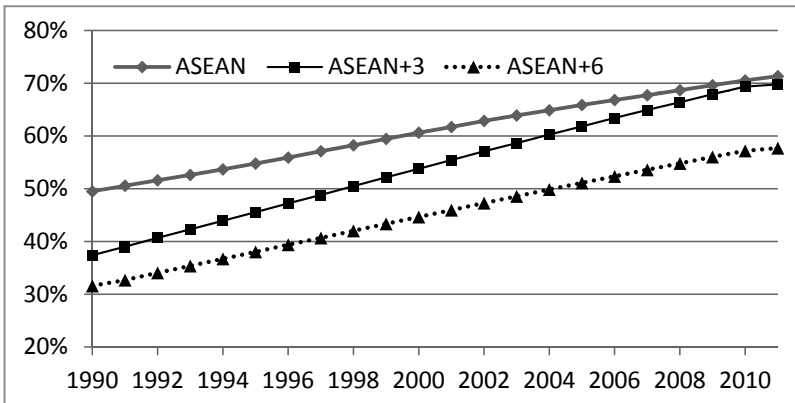
Source: World Bank (2013), U.S. Census Bureau (2013)

Figure 2.4 Percentage of undernourishment in population



Source: World Bank (2013), U.S. Census Bureau (2013)

Figure 2.5 Safe water access rate



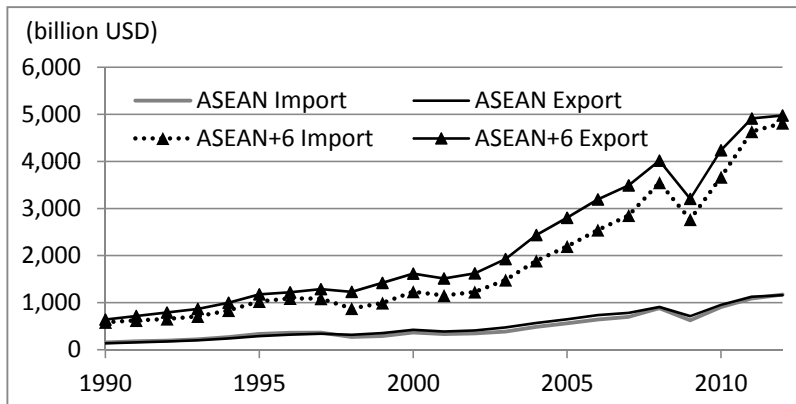
Source: World Bank (2013), U.S. Census Bureau (2013)

Figure 2.6 Improved sanitation access rate

East Asia has reduced poverty faster than any other region of the world over the past two decades (Zhuang et al. 2014). Concurrently it also made the greatest progress in increasing the middle class population. Chun (2010) estimated that East Asia increased the population of the middle class—defined as the group with daily consumption of USD 2–20 (in 2005 purchasing power parity)—by 1.27 billion (equivalent to 33.8% increase) from 1990 to 2008. Needless to say, the degree of success in poverty reduction differs widely across East Asia and some countries still face serious challenges, including sub-national imbalances. In 2011, the ratio of undernourished was over 27% in Lao PDR and around 17% in India, Cambodia and Philippines. More than 30% of the population in Lao PDR and Cambodia lack access to safe water, and more than 60% of the population in India and Cambodia lack access to improved sanitation in 2011, according to World Development Indicators (World Bank 2013).

3. Market integration in East Asia

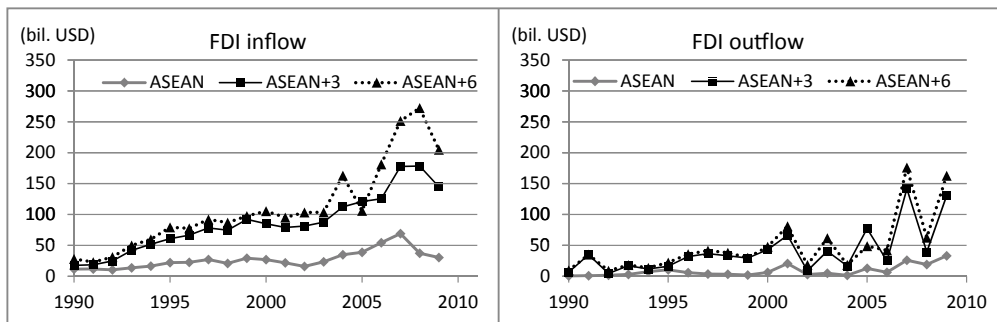
Market integration through globalisation and regional economic integration has played an important role in achieving fast economic growth and poverty reduction (Asian Development Bank 2012). The trade volume of East Asia has grown at an average annual rate of around 10% (see Figure 2.7)—much higher than that of GDP growth in the region. The sharp decline in trade volume in 2008 also indicates that the U.S. Lehman shock seriously affected East Asia’s economy through the globally integrated market.



Source: RIETI-TID2012 database

Figure 2.7 Trade volumes of ASEAN and ASEAN+6

Foreign direct investment (FDI), both inflow to and outflow from East Asia, has also drastically increased during the last two decades, as shown in Figure 2.8.

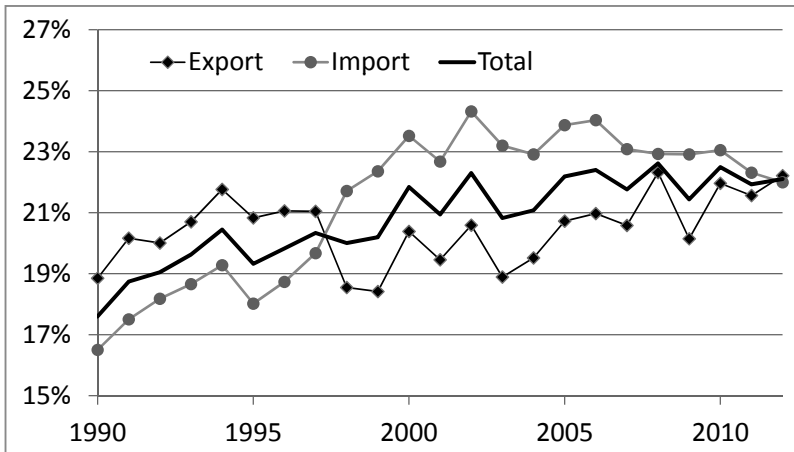


Source: Asia Regional Integration Center database (<http://aric.adb.org/integrationindicators>).

Figure 2.8 FDI volumes

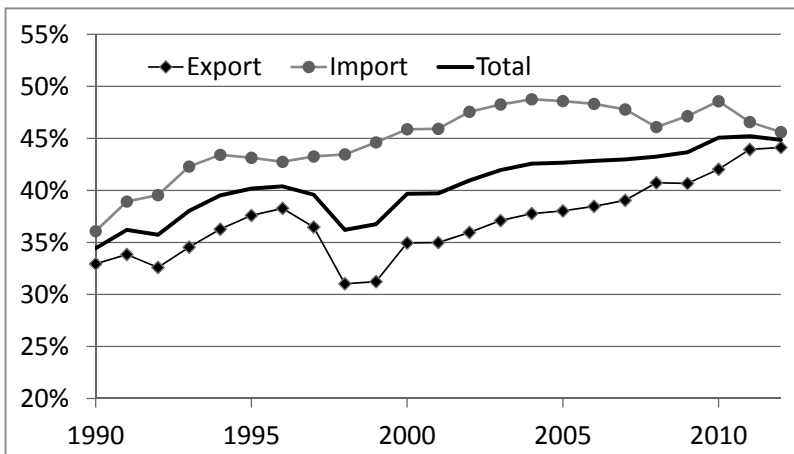
Figure 2.8 shows that the volume of FDI inflow has generally been much larger than that of FDI outflow.

Along with globalisation, regional economic integration has advanced in East Asia. Figures 2.9 and 2.10 show the evolution of intra-regional trade shares of ASEAN and ASEAN+6, respectively.



Source: RIETI-TID2012 database

Figure 2.9 Share of intra-regional trade within ASEAN

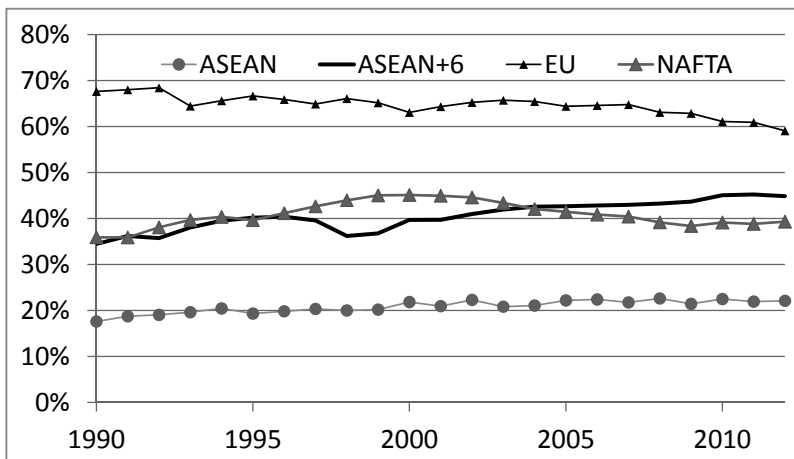


Source: RIETI-TID2012 database

Figure 2.10 Intra-regional trade share of ASEAN+6

As the intra-regional trade share of ASEAN+6 has been much higher than that of ASEAN alone it appears that economic integration between ASEAN and “Plus Six” countries (i.e., Japan, China, Republic of Korea, India, Australia and New Zealand) is most advanced. Actually, regional economic integration in this region has been driven by establishment of regional supply chains of firms, in particular Japanese, Korean or Chinese manufacturers (such as electronics, automobile and machinery industries). The higher intra-regional

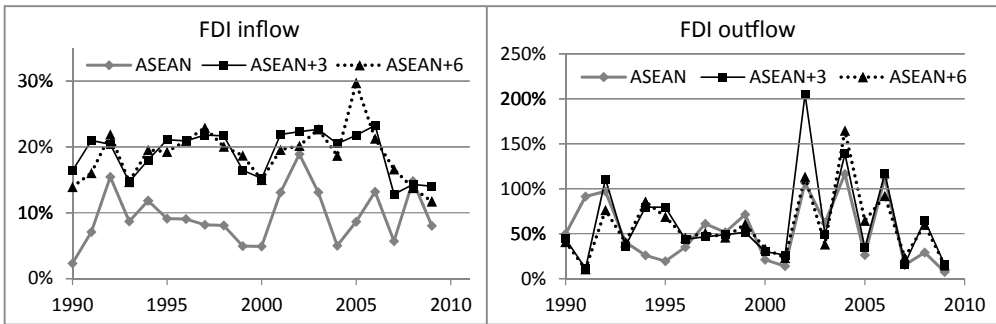
dependence of imports than exports also indicates that regional supply chains provide components and parts to assemble finished products that are exported to regions outside East Asia (Urata 2013). In contrast, intra-regional dependence of exports is higher than that of imports in EU and the North American Free Trade Agreement (NAFTA), which indicates that establishment of instruments such as free trade agreements (FTAs) plays a more significant role than establishment of regional supply chains in these regions (Urata 2013). In the 1990s, the ASEAN Free Trade Area (AFTA) was the only FTA in East Asia, but in the 2000s the number of FTAs in this region rapidly increased and each of the Plus Three countries have concluded FTAs with ASEAN. As shown in Figure 2.11, the intra-regional trade share of ASEAN+6 has been higher than that of NAFTA since 2003 and is approaching that of the EU.



Source: RIETI-TID2012 database

Figure 2.11 Comparison of intra-regional trade share with EU and NAFTA

Intra-regional FDI shares of East Asia do not exhibit a clear tendency (see Figure 2.12). It is clear, however, that multinational firms headquartered in EU or the United States play an active role in FDI to East Asia.

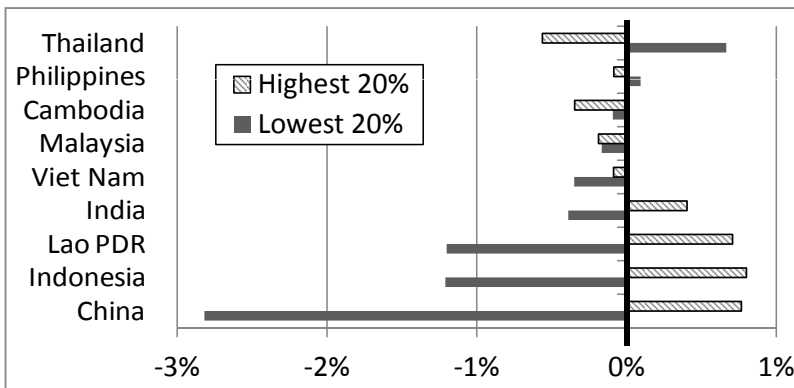


Source: Asia Regional Integration Center database (<http://aric.adb.org/integrationindicators>).

Figure 2.12 *Intra-regional FDI shares*

4. Growing inequality in East Asia

It is worth recalling that it was high and sustained economic growth along with decreasing inequality, not just striking economic growth, which constituted the East Asian miracle in the 1970s and 80s (World Bank 1993). But, is the current economic growth in East Asia equitable and inclusive? Figure 2.13 shows annual growth rates of income share held by the lowest 20% and the highest 20% of ASEAN+6 countries in terms of income class.³



Source: World Bank (2013)

Figure 2.13 *Annual growth rates of income share held by lowest 20% and highest 20% during 1990s and 2000s*

The income share of the poor has decreased in most countries, except for Thailand and the Philippines, and the share of the rich has significantly increased in China, Indonesia, Lao PDR and India. From the perspective of equitable and inclusive development, distributing a larger income share to the poor is important. The current development model in East Asia is neither equitable nor inclusive.

Using a similar analysis based on the Gini index (the most widely used inequality indicator, in which 0 indicates perfect equality and 100 reflects perfect inequality {one person owning all the wealth} of the entire population), a similar story is revealed but with a different nuance. As shown in Table 2.1, inequality has dropped not only in Thailand and Philippines, where income share held by the poorest 20% has increased, but also in Cambodia, Malaysia and Viet Nam, where income share of the richest 20% has dropped. In general, inequality in East Asian countries is less severe than in countries in Latin America or Africa, but some East Asian countries have a Gini index of higher than 40 (e.g., China), and are thus categorised as 'high inequality' countries, as shown in Table 2.1.⁴

Table 2.1 Gini index for 1990s and 2000s

Country	Earliest data		Latest data		Average annual growth rate during the period
	Gini index	Year	Gini index	Year	
Australia	n.a.		35.19	1994	n.a.
Brunei Darussalam	n.a.		n.a.		n.a.
Cambodia	38.28	1994	36.03	2009	-0.40%
China ⁵	32.43	1990	42.06	2009	1.38%
India	30.82	1994	33.90	2010	0.60%
Indonesia	29.19	1990	38.14	2011	1.28%
Japan	n.a.		24.85	1993	n.a.
Republic of Korea	n.a.		31.59	1998	n.a.
Lao PDR	30.43	1992	36.74	2008	1.18%
Malaysia	47.65	1992	46.21	2009	-0.18%
Myanmar	n.a.		n.a.		n.a.
New Zealand	n.a.		36.17	1997	n.a.
Philippines	43.82	1991	42.98	2009	-0.11%
Singapore	n.a.		42.48	1998	n.a.
Thailand	45.27	1990	39.97	2010	-0.70%
Viet Nam	35.68	1993	35.57	2008	-0.02%

Source: World Bank (2013)

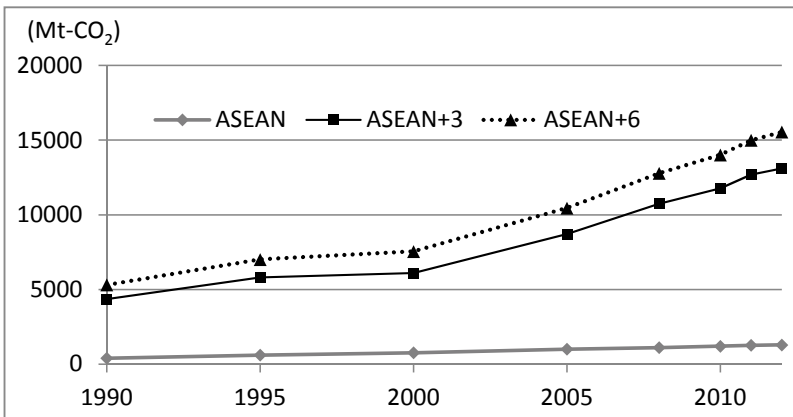
Economic growth, market openness and inequality are all mutually connected through various channels, and recent empirical studies on inequality and market openness show mixed results (Asian Development Bank 2012). For example, Milanovic (2005) claims that trade liberalisation disproportionately benefits the rich in poor countries while Goldberg and Pavcnik (2007) conclude that trade liberalisation has no significant effects on inequality. The International Monetary Fund (2007) found that financial and trade liberalisation have opposite effects on the Gini inequality coefficient—the former tends to increase inequality while the latter tends to decrease it. The Asian Development Bank (2012) observed that the current economic development in East Asia along with market integration favours the owners of capital more than labour, as well as coastal cities more than inland rural areas, which may have led to higher inequality. The key issue is that the current development paradigm and regional integration process have not effectively ensured distributional equality; which is to say the rich-poor gap is growing in many countries.

5. Environmental sustainability under threat

Shifting attention to the environmental sustainability of East Asia’s current development model, many alarm bells are ringing. This section presents major environmental issues particularly relevant to the following chapters, such as CO₂ emissions, resource and material consumption, deforestation, air pollution, and water issues.

5.1 CO₂ emissions

The high economic growth in East Asia has been associated with a drastic increase in carbon dioxide (CO₂) emissions, as shown in Figure 2.14.

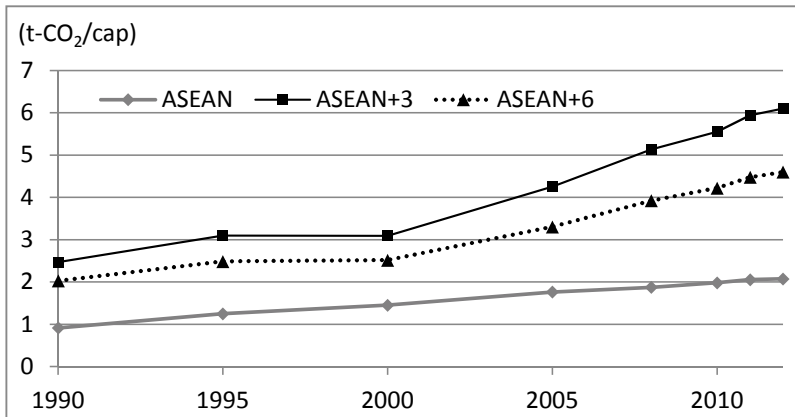


Source: European Commission, Joint Research Centre (JRC)/PBL Netherlands Environmental Assessment Agency. Emission Database for Global Atmospheric Research (EDGAR). (<http://edgar.jrc.ec.europa.eu>)

Figure 2.14 CO₂ emissions in East Asia

Since 1990 the aggregate CO₂ emissions in the region have tripled, with an average annual growth rate of around 5%. It is argued that the current global level of CO₂ emissions has already exceeded the planetary limit—that which ensures the long-term functioning of life-supporting ecosystems (Rockstrom et al. 2009). This phenomenal increase in regional CO₂ emissions in East Asia—45% of global emissions currently—poses a serious threat to global environmental sustainability.

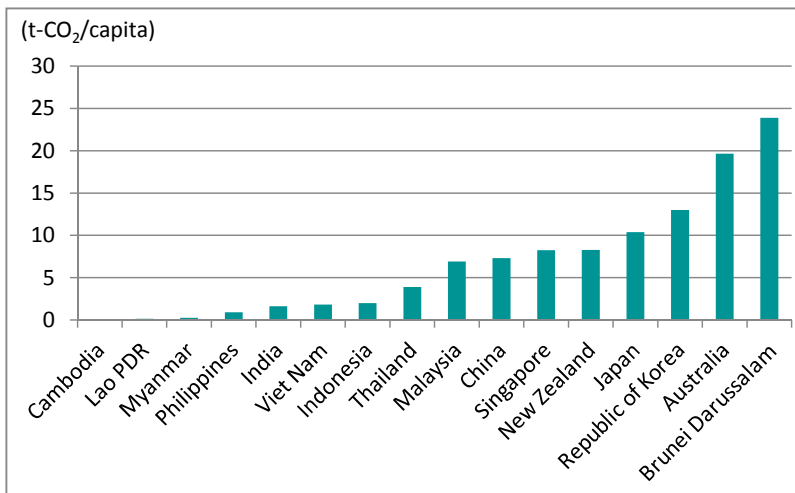
Similarly to GDP, CO₂ emissions per capita, which highly correlates with energy consumption per capita, is more closely related to quality of life than total CO₂ emissions. Figure 2.15 shows the evolution of CO₂ emissions per capita in East Asia.



Source: European Commission, Joint Research Centre (JRC)/PBL Netherlands Environmental Assessment Agency. Emission Database for Global Atmospheric Research (EDGAR). (<http://edgar.jrc.ec.europa.eu>), U.S. Census Bureau, International Data Base (population).

Figure 2.15 Per capita CO₂ emissions in East Asia

Per capita CO₂ emissions of East Asian countries exhibit extreme diversity—from the very low sub 1 t-CO₂ per capita (Cambodia, Lao PDR and Myanmar) to the very high, topping 20 t-CO₂ per capita (Australia and Brunei Darussalam), as shown in Figure 2.16.



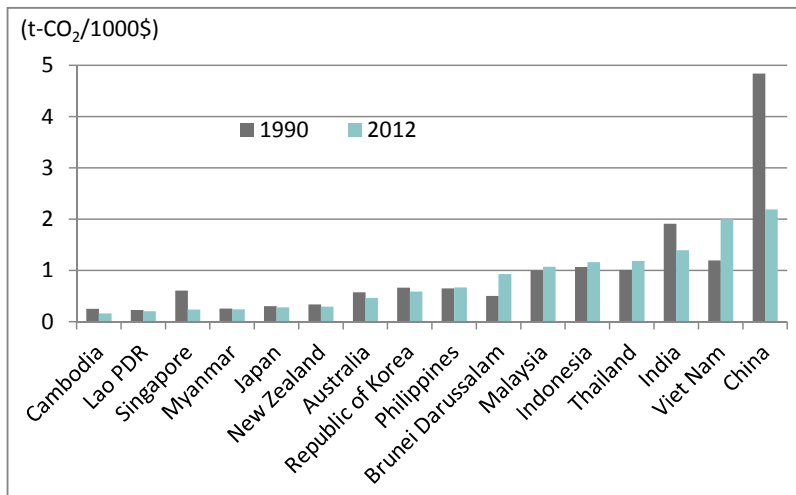
Source: European Commission, Joint Research Centre (JRC)/PBL Netherlands Environmental Assessment Agency. Emission Database for Global Atmospheric Research (EDGAR). (<http://edgar.jrc.ec.europa.eu>), U.S. Census Bureau, International Data Base (population).

Figure 2.16 National per capita CO₂ emissions in 2012

It is the legitimate right of any country to strive to achieve a decent quality of life for its population, and Figure 2.16 illustrates that sound economic development and poverty alleviation for developing countries will entail a significant increase in per capita

CO₂ emissions, based on current emission levels of developed countries. This is why international society, in particular developed countries, must strive to establish a genuine low carbon economy model that can secure a decent quality of life through minimal per capita CO₂ emissions.

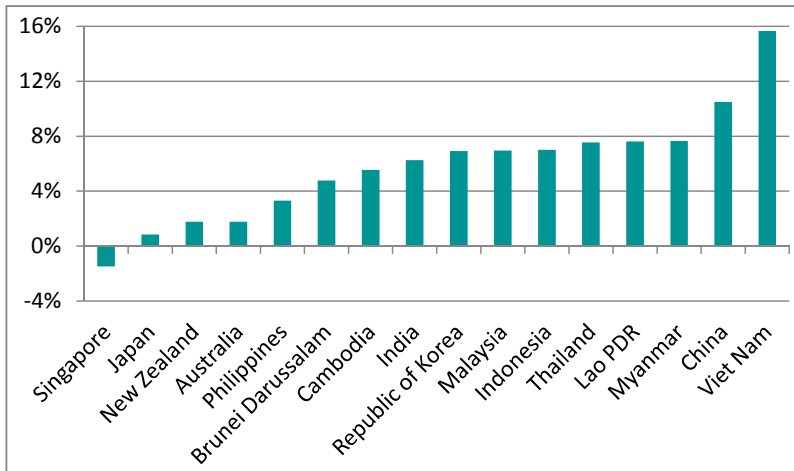
Carbon intensity can be improved on (i.e., reduced) through technological solutions such as energy efficiency improvements and increasing the share of renewable energy (Peng and Shi 2011). Technical cooperation such as in the transfer of low carbon technologies can play an important role to reduce carbon intensity, and this is a promising area of regional cooperation. It should be noted that several countries have actually reduced their carbon intensity during the same period, as shown in Figure 2.17.



Source: European Commission, Joint Research Centre (JRC)/PBL Netherlands Environmental Assessment Agency. Emission Database for Global Atmospheric Research (EDGAR). (<http://edgar.jrc.ec.europa.eu>), U.S. Census Bureau, International Data Base (GDP).

Figure 2.17 Carbon intensity in 1990 and 2012

The carbon intensity of China has significantly improved from nearly 5 t-CO₂ per 1,000 USD in 1990 to around 2 t-CO₂ per 1,000 USD in 2012, and the country is pursuing further carbon intensity reduction by setting a binding CO₂ emissions/unit GDP reduction of 40–45% by 2020 (Zhou et al. 2011). It must be noted that while carbon intensity reductions will help energy systems be less carbon-intensive in the long run, they may not necessarily ensure emission reductions in the short run (Bertran et al. 2014). During 1990 to 2012 the average annual growth rates of CO₂ emissions per capita in China were around 10%, as shown in Figure 2.18.



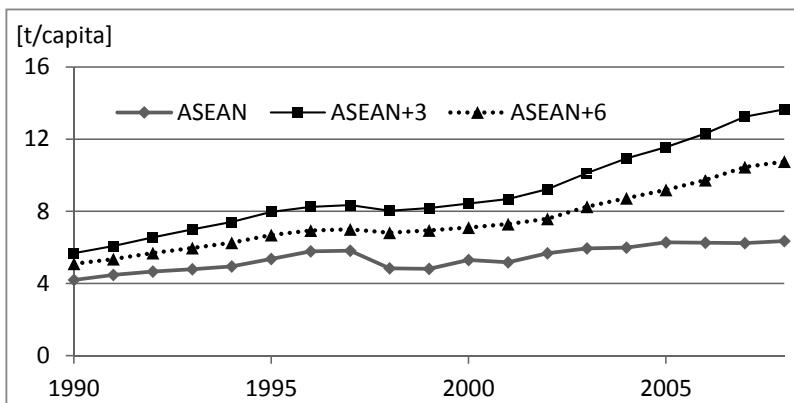
Source: European Commission, Joint Research Centre (JRC)/PBL Netherlands Environmental Assessment Agency. Emission Database for Global Atmospheric Research (EDGAR). (<http://edgar.jrc.ec.europa.eu>), U.S. Census Bureau, International Data Base (population).

Figure 2.18 Average annual growth rate of per capita CO₂ emissions (1990–2012)

A comparison of Figures 2.17 and 2.18 illustrates the difficulty of obtaining absolute reductions in CO₂ emissions under the current growth-oriented development paradigm.

5.2 Resource and material consumption

Rapid economic growth has also yielded a significant increase in resource and material consumption. Figure 2.19 shows the evolution of per capita total domestic material consumption (DMC) in East Asia.⁶

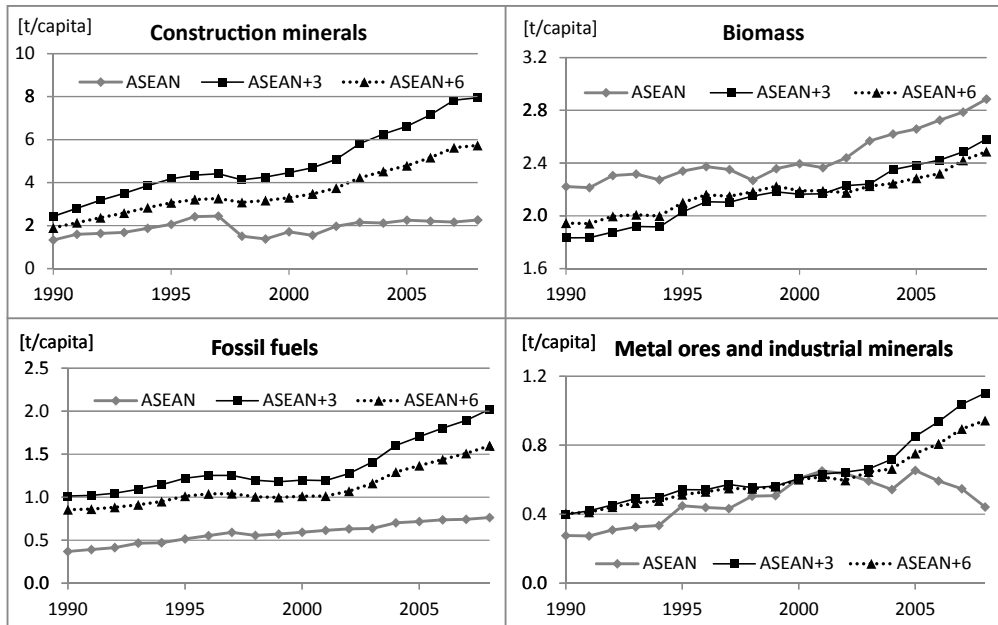


Source: CSIRO and UNEP Asia-Pacific Material Flows online database. U.S. Census Bureau, International Data Base (population).

Figure 2.19 Per capita total domestic material consumption (DMC) in East Asia

In terms of average annual growth rate, per capita total DMC of ASEAN has grown at 2.3% and that of ASEAN+3 and ASEAN+6 have grown at 5.8 % and 4.8%, respectively. By comparing these figures with average annual growth rates of real GDP per capita, ASEAN has improved resource (material) efficiency in terms of real GDP per unit of material consumption while in ASEAN+3 and ASEAN+6 resource efficiency has decreased.

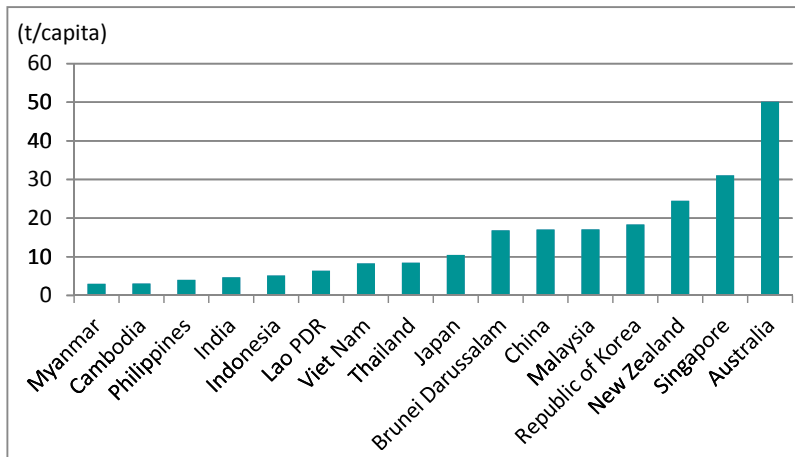
The breakdown of DMC based on four material types is shown in Figure 2.20.



Source: CSIRO and UNEP Asia-Pacific Material Flows online database. U.S. Census Bureau, International Database (population).

Figure 2.20 Per capita DMC of four material types in East Asia

ASEAN's increased resource efficiency is largely driven by the reduced DMC of metal ores and industrial minerals since 2001. In contrast, in ASEAN+3 and ASEAN+6 the growth in DMC accelerated for all material types during the 2000s. Consumption of resources and materials is expected to significantly increase due to the extreme diversity currently demonstrated in East Asian countries, in terms of per capita DMC (see Figure 2.21).



Source: CSIRO and UNEP Asia-Pacific Material Flows online database. U.S. Census Bureau (2013).

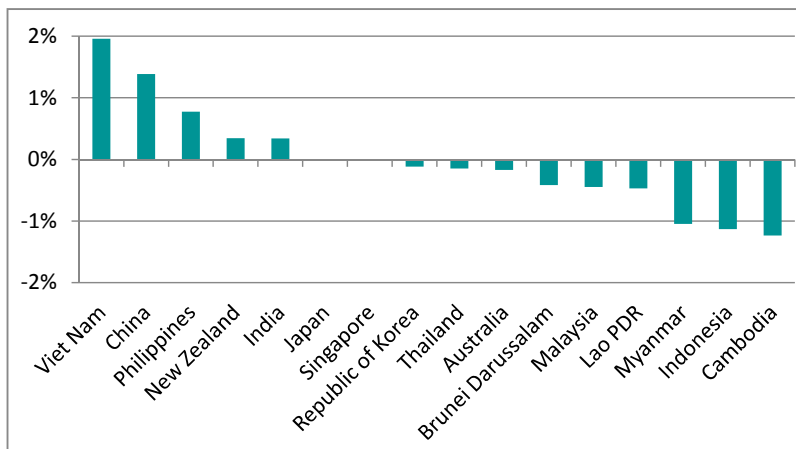
Figure 2.21 National per capita total DMC in 2008

Low per capita DMC in developing countries often reflects basic needs not being satisfied and a low standard of living, thus reducing poverty and attaining a decent quality of life in these countries will entail significant increases in resource and material consumption (Giljum et al. 2010; UNEP 2011).

5.3 Deforestation

Deforestation is of severe environmental concern in the Asia-Pacific region. For example, the average annual forest loss of Indonesia from 1990 to 2010 was 1.2 million hectares (ha), which is equivalent to the size of Palawan Island of the Philippines (FAO 2010). Of the various environmental problems associated with deforestation, there is acute concern over biodiversity loss due to deforestation (Sodhi et al. 2010; Wilcove et al. 2013).

Figure 2.22 shows the average annual growth rates of forest areas.



Source: FAO (2010), Global Forest Resources Assessment 2010.

Figure 2.22 Average annual growth rate of forest areas (1990–2010)

In terms of the pace of forest loss, deforestation is serious not only in Indonesia but also in Cambodia and Myanmar. On the other hand, Viet Nam, China and Philippines have implemented afforestation. In particular, China increased its forest area by 2.5 million ha yearly during 1990–2010 (FAO 2010). However, the afforestation programme has sparked concern, as pointed out by Cao (2008), in that 80% of it comprised monoculture planting (for economic reasons), which led to dried out soil that could not support tree growth. Only 15% of trees survived across the arid and semi-arid areas of northern China (Cao 2008). This illustrates the challenges in trying to resuscitate forest ecosystems that have been decimated through deforestation.

5.4 Air pollution

During the winter of 2013/2014, over 70 major Chinese cities, including Beijing and Shanghai, suffered from heavy toxic smog containing high concentrations of PM2.5 (Guan et al. 2014). PM2.5 refers to airborne particles smaller than 2.5 micrometres, such as sulphates, black carbon, organics, and trace metals that cause respiratory damage (Helble et al. 2000).⁷ In many cities concentrations of PM2.5 were extremely high and in Beijing exceeded 1,000 micrograms per cubic meter, 40 times higher than the World Health Organization (WHO) standard level for good health (Guan et al. 2014). PM2.5 pollution in China caused an estimated 1.23 million premature deaths and economic loss equivalent to 9.7–13.2% of GDP in 2010 (Global Commission on the Economy and Climate 2014). Guan et al. (2014) analyses the driving forces of China’s PM2.5 emissions using environmentally extended input-output analysis and found that export production was chiefly to blame for the rise in PM2.5 emissions.

According to WHO (2014), India also suffers from severe PM2.5 pollution. Annual average concentrations in many Indian cities exceed those of Beijing—Delhi’s is almost three times higher. Primary sources of PM2.5 in Delhi are ascribed to petrol and diesel exhaust, road dust, coal and biomass combustion (Chowdhury et al. 2007). PM2.5 pollution in India caused an estimated 0.63 million premature deaths and economic loss equivalent to 5.5–7.5% of GDP in 2010 (Global Commission on the Economy and Climate 2014).

5.5 Water crisis

Asian Development Bank (2013) warned that more than three quarters of Asia-Pacific countries face an imminent water crisis and that 80% of rivers in the region are unhealthy as regards watershed disturbance, pollution, altered natural flows and biotic factors. For example, China's water crisis is serious, with over 400 of 669 cities lacking sufficient water and over 40% of rivers severely polluted (Liu and Yang 2012). Water stress could also jeopardise economic performance in 14 of its 31 provinces (Wong 2013). In fact, water pollution is so serious that 300 million of China's rural inhabitants people are forced to drink contaminated water (Wong 2013).

6. Conclusion

Chronological economic, social and environmental indicators at the regional level show that simply maintaining past trends will result in further economic growth in East Asia along with a more integrated market, in particular a regionally integrated market. At the same time, it is clear that socio-environmental risks of increased inequality and further compromised environment will be aggravated.

The magnitude of environmental pressures brought about as a result of the current development paradigm (in other words 'business as usual') is expected to be massive. Total DMC of the Asia-Pacific region is expected to almost double by 2030 (UNEP 2011). If the average per capita annual CO₂ emissions hits 10 tonnes (the current level of Japan), the total emissions of ASEAN+6 in 2030 will be 2.4 times higher than in 2012. Even if the region is successful in improving environmental efficiency and can halve its per capita emissions (to 5 t-CO₂/capita), the total regional emissions will still be 1.2 times higher than the 2012 level. If current trends of inequality and rapid degradation of the region's resource bases continue, a tipping point may be reached leading to widespread social unrest. Competition over natural resources is already fuelling a number of local conflicts across Asia (Wilson 2014; Chellaney 2014). Increasing international competition over resources is also highly likely to undermine the region's efforts to ensure peace and stability. 'Resource wars' is not merely a theoretical concept and could easily become a political reality if we fail to establish fair and effective rules for resource management at the regional level (e.g., Klare 2001).

One of the messages that run throughout this book is that regional integration in East Asia in its current blinkered form, which emphasises trade, investment and economic growth, seems to be fuelling these worrying trends. However, the studies presented here also send a positive message—that a different form of regional integration could underpin alternative development models and thereby help turn the negative trends around.

Notes

1. ASEAN+3 consists of 10 ASEAN member countries and China, Japan and Republic of Korea.
2. With linear interpolation for data of missing years
3. The evaluated periods vary across countries due to data availability; for example, that of Cambodia is between 1994 and 2009 and that of Indonesia is between 1990 and 2011, but the 1990s and 2000s are mostly covered. Data for Brunei Darussalam and Myanmar are not available. For OECD members (Japan, Republic of Korea, Australia and New Zealand) and Singapore, data is available only for single year.
4. Gini index at or greater than 40 is widely considered the threshold for 'high inequality' (Asian Development Bank 2012).
5. Some studies estimated a much higher Gini index in China. Xie and Zhou (2014) reported that university-based surveys estimated a higher Gini index than the official figures, ranging from 53.0 in 2010 based on the 2012 China Family Panel Studies to 61.1 in 2011 based on the 2011 Chinese Household Finance Survey.

6. Domestic material consumption is defined as the total amount of materials directly used in an economy (used domestic extraction plus imports), minus the materials that are exported (Eurostat 2001).
7. Sulfur dioxide (SO₂) is also major pollutant in many Asian cities associated with respiratory damage (Chen et al. 2012).

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