Southeast Asian Economic Outlook 2011/12

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Southeast Asian Economic Outlook 2011/12

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Foreword

Increased global uncertainty is casting a shadow over the economic outlook of Southeast Asia. Yet, as opposed to most OECD economies, the region will enjoy solid growth until 2016. According to this second edition of the *Southeast Asian Economic Outlook*, real gross domestic product is projected to grow at 5.6% per year on average during 2012-16 in the six Southeast Asian economies (Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam), a rate of expansion that is slightly lower than the average of the pre-2008 crisis period (6.1% for 2003-07).

In order to build on past achievements and consolidate strong and inclusive growth in the years ahead, the Southeast Asian economies need to carry out structural reforms to enhance productivity. Policy priorities vary among countries reflecting the region's heterogeneity in natural resource endowments, institutional settings, organisational capacities and socio-political background. The national structural reform agendas need to be underpinned by strong macroeconomic policies and effective implementation of medium-term development plans in areas such as agriculture, health care, education and skills, infrastructure, taxation, and support for small and medium-sized enterprises.

A process of "growth rebalancing", based on social inclusion and environmental sustainability, began in the aftermath of the 2008 crisis and must continue. Initiatives to promote "green growth" – the special theme of this volume – should also gain prominence in the policy debate. This *Outlook* draws on the *OECD's Green Growth Strategy* to identify policy options in areas such as environmental taxation, emissions trading and carbon labelling, to ensure that strong growth is also sustainable in the region.

This *Outlook* is also an important tool to reaffirm the OECD's strong commitment to promoting development. We are currently designing a broader *Strategy on Development*, focusing on new sources of growth, domestic resource mobilisation and stronger governance. In doing so, we seek to share policy experiences with a larger number of member and partner countries and to reach our goal of "better policies for better lives" on a global scale.

November 2011

Angel Gurría
OECD Secretary-General

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Acronyms and abbreviations

ABCIs	Asian Business Cycle Indicators
ADB	Asian Development Bank
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
BAU	Business-As-Usual
BTA	Border Tax Adjustment
CC	Command and Control
CCT	Conditional Cash Transfer
CDM	Clean Development Mechanism
CERs	Certified Emission Reduction Units
CGE	Computable General Equilibrium
CPI	Consumer Price Index
EC	European Community
ECEC	Early Childhood Education and Care
EEA	European Environment Agency
EERS	Energy Efficiency Resource Standard
EETS	European Emissions Trading System
ETI	Environment Tax Instrument
ETPS	Environmental Tradeable Permit Schemes
ETS	Emissions Trading System
EU	European Union
FAO	Food and Agriculture Organization
FDI	Foreign Direct Investment
FIT	Feed-in Tariff
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GMS	Greater Mekong Sub-region
GST	Goods and Service Tax
GVA	Gross Value Added
HTA	Health Technology Assessment
ICT	Information and Communication Technology
IDR	Indonesian Rupiah
IEA	International Energy Agency
IMF	International Monetary Fund
ISO	International Organization for Standardization
JICA	Japan International Cooperation Agency
LCA	Life-Cycle Assessment
LDCs	Least-developed Countries
LPG	Liquefied Petroleum Gas

MBI	Market Based Instruments
MDGs	Millennium Development Goals
MPF	Medium-term Projection Framework for growth and development
MRV	Measurement, Reporting and Verification
MT	Million Tonnes
MYR	Malaysian Ringgit
NAMA	Nationally Appropriate Mitigation Actions
NGO	Non-Governmental Organisation
OECD	Organisation for Economic Co-operation and Development
PAS	Publicly Available Specification
PHP	Philippine Peso
PISA	Programme for International Student Assessment
PITA	Petroleum Income Tax
PRC	People's Republic of China
PSC	Public Sector Comparator
R&D	Research and Development
RPS	Renewable Portfolio System
SAEO	Southeast Asian Economic Outlook
SMEs	Small and Medium Enterprises
SOEs	State-owned Enterprises
TEVT	Technical Education and Vocational Training
TMS	Target Management System
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UN-REDD	United Nations Reducing Emission from Deforestation and Forest Degradation
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNWTO	United Nations World Tourism Organization
USD	United States Dollar
VAT	Value-Added Tax
WEF	World Economic Forum
WEO	World Economic Outlook
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

Preface

There is "no decoupling" for Southeast Asia from the global economic slowdown. A marked deterioration in confidence and continued financial market turmoil will have an impact on the region's growth prospect. The effect of such negative spillover is different from one country to another. *Nonetheless,* the overall growth impetus will remain robust, underpinned by the strength of domestic demand thanks to large-scale investments in infrastructure and buoyant private consumption. As stated in this second edition of the *Southeast Asian Economic Outlook (SAEO)*, the nature of growth is changing and the region will rely increasingly on domestic drivers to improve economic resilience in the medium term.

Another external factor which has attracted much attention from Southeast Asian policy makers is the size and nature of capital flows. During the first quarter of 2011, the total capital inflows into six ASEAN countries (Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam) amounted to more than USD 40 billion. A combination of accommodating monetary policies taken by major OECD countries and growth differentials between them and ASEAN countries may further push private capital flowing into the region. Appropriate macroeconomic policies are needed to manage such capital flows.

At the same time, structural reforms to enhance productivity are critical to sustain growth and development amid global uncertainties. For the first time, this *Outlook* includes six country notes on structural reforms in wide-ranging areas such as agriculture, health care, human capital, infrastructure, taxation and SME development. Such a country-specific feature intends to facilitate the policy dialogue between Southeast Asian and OECD countries and enhance the relevance of this annual publication to ongoing deliberations between ASEAN countries and their development partner countries and agencies.

As a special theme, this *Outlook* addresses the challenge of green growth. Natural capital should be assigned a fair value, so that it could play a critical role in achieving a more balanced, inclusive and sustainable growth in the long run. This is an area of further co-operation between ASEAN and OECD countries as we look at innovative and sustainable sources of growth as part of the OECD's priority work on development.

As a follow-up to the 2007 OECD Council meeting at Ministerial level, the OECD Development Centre has strengthened its policy dialogue and knowledge sharing activities with several Southeast Asian countries. We wish to continue this work by embracing all ASEAN member states in the future series of the *Southeast Asian Economic Outlook*. Hopefully this volume will continue contributing to the better understanding of the growth and development of Asian economies, as they enter a critical juncture in their growth cycle following the strong recovery from the 2008 financial crisis.

Mario Pezzini
Director
OECD Development Centre
November 2011

Executive summary

Part I. Regional economic monitor

The region's economic outlook will remain solid in the medium term

Growth for six Southeast Asian countries (Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam) will moderate towards the first quarter of 2012 but remain robust through 2016, according to the OECD Development Centre's Medium-term Projection Framework. The six Southeast Asian countries will have achieved the pre-crisis level – an average gross domestic product (GDP) growth rate of 5.9% by 2016 (5.6% per annum on average 2012-16), recovering from a slight moderation of 5.0% in 2011. The growth momentum for the Emerging Asia (six Southeast Asian countries, China and India) as a whole is also robust with an average growth rate of 8.2% in 2011.

Indonesia is likely to lead the region's growth and will keep the strong momentum, thanks to its buoyant domestic demand. Underpinned by relatively strong investment, growth prospects in Malaysia will also remain robust in the medium term, though slower than the pre-2008 level. The Philippine economy also shows resilience owing to domestic demand and workers' remittances. Singapore's growth rate is expected to moderate to a level below the 2003-07 rate, due largely to weaker global trade flows. The unprecedented scale of floods has added to downside risks to the near-term prospect of Thailand. The near-term growth prospect of Viet Nam will be affected by the tightening of monetary policies to bring inflation under control, though the medium-term outlook remains robust.

Table 0.1. Real GDP growth of Emerging Asia
(annual percentage changes)

	2010	2011	2016	Average 2003-07	Average 2012-16
Indonesia	6.1	6.3	6.9	5.5	6.6
Malaysia	7.2	4.6	5.6	6.0	5.3
Philippines	7.3	4.5	5.1	5.7	4.9
Singapore	14.5	5.6	4.8	7.5	4.6
Thailand	7.8	2.5	4.9	5.6	4.5
Viet Nam	6.8	5.9	6.7	8.1	6.3
Average of six countries	7.6	5.0	5.9	6.1	5.6
China	10.4	9.3			
India	8.8	7.7			
Average of Emerging Asia	9.5	8.2			

Note: The cut-off date of data is 1 November 2011.

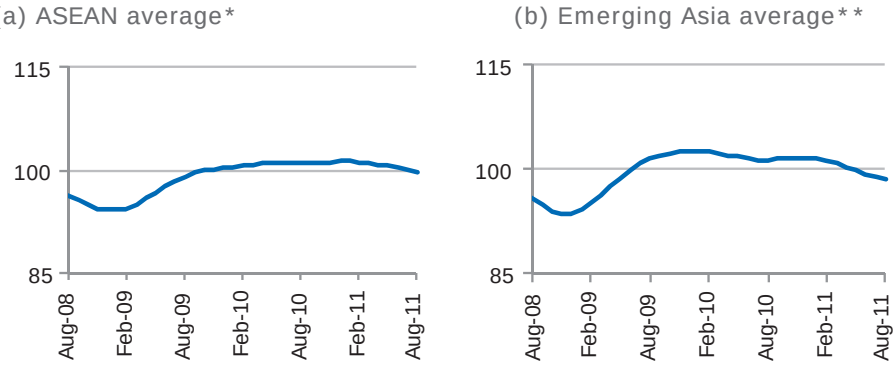
Sources: OECD Development Centre, MPF-SAEO 2011/12, and *OECD Economic Outlook 2011/12*, No.90, for China and India.

However, recent developments cast a shadow over Asian economies in the near term

Global uncertainties, notably reduced confidence in the US fiscal policy and continued Euro-area debt crisis, cast a shadow over Asian economies. Emerging Asia will not be decoupled from the global economic slowdown according to the latest Asian Business Cycle Indicators. The slowdown in most countries has become apparent since the second quarter of 2011 with deterioration in business and consumer sentiments and a negative reaction in financial markets. However, the impact on the economy remains limited at this stage.

Moreover, two large-scale natural disasters, namely the Great Tohoku Earthquake in Japan and the floods in Thailand, also affected the region adversely. The Great Tohoku Earthquake has had a temporary impact on activity and exports in some countries such as Indonesia, the Philippines and Thailand, but in general the magnitude of the negative impact appears to have been short-lived. More recently, the unprecedented scale of floods in Thailand has added to downside risks in the region. The region needs to be vigilant over economic management against the background of continued global uncertainties and natural disasters.

Figure 0.1. Business cycles of Asia: composite leading indicators
(100=threshold point)



Notes:
* ASEAN average includes Indonesia, Malaysia, the Philippines, Singapore and Thailand
** Emerging Asia average includes ASEAN average plus China and India.
See www.oecd.org/dev/asiapacific/abcis for more detailed information.

Source: OECD Development Centre, *This Quarter in Asia*, Vol. 6, October 2011.

StatLink http://dx.doi.org/10.1787/888932561785

Domestic demand will be an important engine for the medium-term growth in the region – infrastructure and social policies will play significant roles

Southeast Asia has been heavily dependent on external demand, more so than other regions in the past. However, the nature of growth is changing towards a more balanced growth in the post-2008 period. The regional economy will rely more on domestic demand, thereby increasing economic resilience to external shocks.

The region-wide current account surplus will fall from 6.5% of GDP in the pre-2008 period to 4.2% by 2016, though the size and nature of external adjustment will differ across countries. For example, the decline in surplus will be relatively large in Malaysia and Singapore, while Viet Nam's current account balance will remain in deficit in 2012-16. This overall decline in current account surplus stems mainly from the strong growth of imports outpacing that of exports.

This prospect reflects a number of measures Southeast Asian economies are likely to take in order to strengthen domestic demand (both consumption and investment). Many Southeast Asian countries have already started (or are about to start) several large infrastructure projects, including a number of public-private partnerships. For instance, Indonesia and the Philippines will make significant investments in transport infrastructure projects, while Malaysia and Singapore are investing in information and communication technology infrastructure. In addition to projects in individual countries, there are several large cross-border projects under the development programmes of GMS (Greater Mekong Sub-region) countries.

A greater focus on social policies is also in line with stimulating domestic demand. Several structural reforms (some of which are addressed in their medium-term plans) would create a more favourable environment for

strengthening private consumption. At the same time, the region has started to focus on "inclusive growth" – this is another factor of changing the nature of growth in the region.

The fiscal situation will gradually improve and further efforts to mobilise domestic resources through tax reform would be critical

Fiscal balances will gradually improve in the medium term, but most economies are projected to remain in deficit, at -2.3% on average as a percentage of GDP during 2012-16. The fiscal situation, thus, will not recover the pre-crisis level given the large demand for public investment in economic and social infrastructure, as planned in their national development plans. The extent and speed of fiscal consolidation will be relatively limited in the region. Gradual removal of fuel subsidies will be a critical issue in Southeast Asia, in particular for Indonesia and Malaysia.

The comparatively low level of tax revenue in ASEAN countries (which averages 15% of GDP in the region) suggests that there is room for domestic resource mobilisation through tax reforms. Most ASEAN countries need to widen their tax bases and phase out unnecessary tax expenditures. The efficiency of tax collection is another issue that economies in the region need to tackle. Needless to say, revenue reforms should be accompanied by efforts to improve the efficiency of spending.

Ageing population poses a medium-term risk in the region

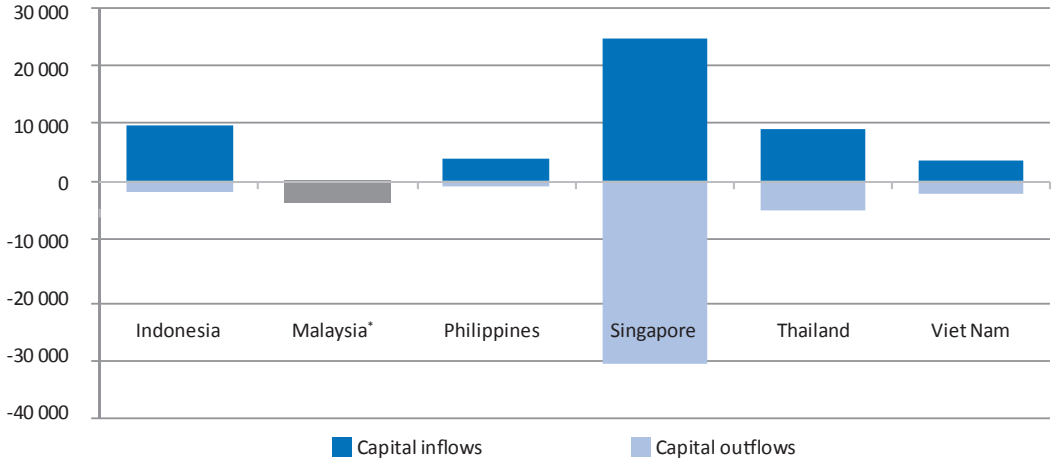
Rapid ageing of the population, in particular in Singapore, Thailand and China, will pose an important challenge to the region in the near term. The ageing problem is gradually approaching Viet Nam, Indonesia and Malaysia around 2030 as well.

Ageing population impacts economic growth through reducing workforce, increasing the dependent population, changing saving and consumption patterns and total factor productivity. In particular, countries in the region need to reshape their health care and pension systems.

Part II. Policy challenges and responses

The recovery in capital inflows into Southeast Asian countries has occurred in all of the major categories. Total capital inflows into the six Southeast Asian countries reached an average of more than USD 40 billion during the first quarter of 2010. This average level is significantly larger than the average quarterly flows observed before the crisis and also larger than the average flows recorded before the 1997-98 crisis.

Figure 0.2. Capital inflows and outflows from 2010-Q3 to 2011-Q1
(quarterly average, millions of current USD)



Notes:
* Net capital flows for Malaysia.
Source: CEIC database and national sources.

StatLink http://dx.doi.org/10.1787/888932561804

Managing large capital inflows requires better macroeconomic policies

Large capital inflows are generally welcomed in the region as they contribute to growth. They channel external savings to domestic investment projects. However, the current level of private flows and in particular short-term investments warns the region that this issue should be handled carefully.

Potential effects of large capital inflows might include harming competitiveness through real exchange-rate appreciation and threatening to generate too much liquidity with their well-known negative consequences on domestic financial markets. To reduce such risk, policy makers should count on a broad set of policies: monetary and exchange rate policies, macro-prudential policy and "capital controls" (in particular, measures to encourage long-term capital inflows). None of these policy tools is a panacea, however. They all may involve potential problems if not used appropriately. Chapter 2 of this volume reviews the measures taken by several Southeast Asian countries to manage capital inflows in a pragmatic way.

A key challenge for the region over the medium term is to implement structural policies necessary to enhance productivity

In addition to macroeconomic measures, effective structural policies to enhance productivity are critical to the success of Southeast Asian countries in dealing with the impact of global uncertainties and other external shocks. Many Southeast Asian countries already recognise the need to shift their development strategies in ways that reflect the changing growth dynamism in the world economy. They have indeed included (or are about to include) several new elements in their five-year national development plans. Formulating new development strategies requires the adoption of a comprehensive package of reform measures, including product, labour and financial markets.

Although different countries have different policy challenges, overall the priority areas identified in the national plans include human capital development, infrastructure development, public sector efficiency including governance and anti-corruption, easing product market regulation and labour market reform.

Human capital development has been identified as a key policy area in all the development plans. This reflects the need to meet the growing demand for skilled labour amid rapid transformation of economic structures. The remarkable growth performance of the region over the past decade has led to increased real incomes, resulting in a decline of international competitiveness in labour-intensive industries in some countries, while at the same time the upgrading of industrial structures to higher levels on the value chain has increased the demand for more skilled labour.

Overall, the region has been relatively successful in raising education levels through increasing enrolment rates. However, education systems need to become more outcome-oriented to guarantee a high-quality labour force. For instance, Indonesia needs to pay more attention to improving the outcomes of tertiary education, in particular to ensure that the skills of graduates correspond to those required by industry. Stronger Technical Education and Vocational Training (TEVT) programmes are critical in the Philippines and Viet Nam in order to help their industries to move up in the value chain. There is also room to reform education systems in Thailand.

Infrastructure investment can become a bottleneck to growth in several economies in the region. This is especially important in Indonesia and the Philippines, where the lack of adequate transport infrastructure impedes efficient trade activities; outdated information and communications technology (ICT) infrastructure delays business transactions.

Reforming tax systems is required to meet development needs such as human capital and infrastructure development and health services (partly due to an ageing population). Overall, widening the tax bases and enhancing the efficiency of tax collection will be critical in the region.

Strengthening SME development is also crucial for ASEAN countries, given that most of these economies are SME-based. In particular, fostering SMEs that are competitive in the international market is key to sustaining growth. The internationalisation of SMEs should be supported by appropriate training and capacity building programmes.

Well-targeted and co-ordinated structural policy reforms are needed

The diversity of policy challenges suggests that the issues can be better highlighted if treated in a country-specific policy context. Chapter 3 of this volume includes six structural policy country notes – a new feature of the SAEO 2011/12. The Structural Policy Country Notes have two specific features. First, each note focuses on policy areas that are identified in the national plans of the country concerned. Second, each note discusses relevant experiences in OECD countries with similar policy issues and the insights they may provide for Southeast Asian countries. Major policy areas discussed in the SAEO 2011/12 are summarised in the table below.

Table 0.2. Summary of structural policy focus

Indonesia	Infrastructure	Speed up transport infrastructure development by improving the regulatory environment
	Human capital development	Improve the outcome of higher education and reduce urban-rural disparities in access to educational infrastructure
	Labour market	Reform labour market regulation to increase employment
Malaysia	SME development	Enhance SME development with special attention to capacity building and innovation
	Human capital development	Strengthen the link between industries and academic institutions to improve labour force skills and to enhance research and development
	Taxation and fiscal system	Reform the tax regime and improve efficiency of public spending to bolster the sustainability of public finances
Philippines	Infrastructure	Increase funding for infrastructure development and attract more private participation
	Human capital development	Improve the access to and the quality of basic education and strengthen TEVT
	Taxation	Reform the tax system by enhancing tax collection and widening the tax base
Singapore	Human capital development	Strengthen life-long learning by enhancing pre-school education
	Innovation	Raise efficiency of innovation policy through well co-ordinated policy evaluation system
	SME development	Enhance SME development by improving assistance programmes
Thailand	Health	Reform health care schemes to provide a higher quality of and equal access to services
	Human capital development	Improve the outcome of education and reduce urban-rural disparities
	Agriculture	Enhance agricultural productivity and improve jobs in the farm sector
Viet Nam	Enterprise development and reform of SOEs	Speed up the reform of state-owned enterprises, particularly by improving the governance and management
	Macroeconomic management	Establish an adequate monetary policy framework to control inflation
	Human capital development	Increase skilled labour by education reform

Note: See Chapter 3 for details.

Part III. Thematic focus – green growth

Green growth is the special theme of the SAEO 2011/12. It takes a regional approach to the OECD's Green Growth Strategy[1] and explores the potential benefits and challenges of transitioning to low-carbon economies in the region. More specifically, it analyses the policies and institutions that the ASEAN countries are adopting to promote green growth in the coming decades.

Green growth offers a viable development model for ASEAN countries in the post-2008 era

The aggregate amount of carbon dioxide (CO_2) emissions from six ASEAN nations (Indonesia, Malaysia, the Philippines, Singapore and Viet Nam) surpassed 1 300 million tonnes (MT) in 2010. Although their relative contribution to global CO_2 emissions remained modest (at about 4%), the amount of CO_2 emission from ASEAN countries grew by 5.5% a year between 1990 and 2010, compared with an annual rise of 0.7% from the OECD region. As a fast-growing economic bloc with the total population of 700 million by 2030, these countries collectively would make a much larger contribution to global CO_2 emissions in the next two decades, should the current emissions trend continue. ASEAN nations, therefore, need to explore affordable and cost-effective mitigation measures as part and parcel of national development plans, while at the same time minimising the negative impact of climate change on the poor and vulnerable. In Southeast Asia nearly a third of the region's total population still earn less than USD 2 a day. It is in this context that "green growth" has attracted much attention from ASEAN policy makers as an alternative to the traditional export-led growth model.

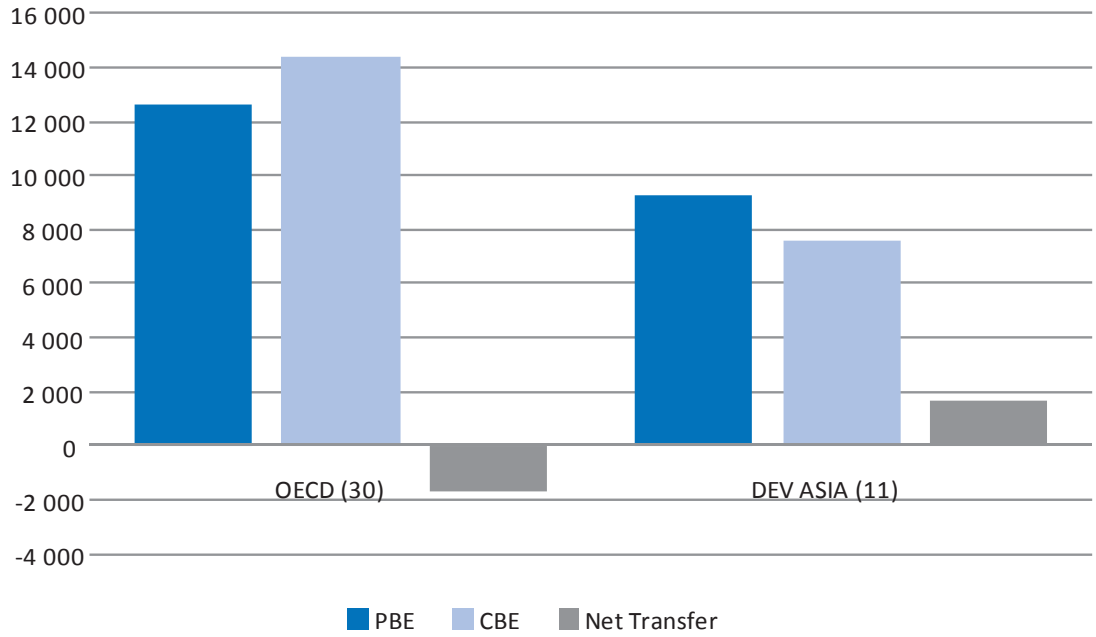
Relocating carbon emissions across national borders has become significant

The net transfer of carbon emissions into Asian developing economies was estimated to reach 1 670 MT in 2008, almost offsetting the total amount of carbon emissions that out-flowed from the OECD area through trade channels in the same year (1 723 MT). This is one of the measurement results reported in this volume with respect to "carbon footprint of nations", *i.e.* estimated carbon emissions embodied in production of goods and services traded in the international market. The rise of China and to a lesser extent India and several ASEAN countries as key participants in global supply chains is largely responsible for the growth of carbon trade surplus in developing Asia. To take a full grasp of national carbon emissions, it is therefore necessary to look at both production- and consumption-based emissions.

Trade plays a more important role in ASEAN emissions than in China or India's

Using the 2005 benchmark information, it is found that the amount of carbon trade in ASEAN countries relative to national emissions averaged 35% for exports and 27% for imports, respectively. While relatively modest in absolute terms, several ASEAN countries are more dependent on international trade as a source of emissions when compared with China or India. This is especially the case on the import side, which reflects the pattern of trade specialisation in ASEAN countries; they tend to import more emission-intensive final products (both durable and non-durable goods) in exchange for supplying intermediate products. This observation suggests that ASEAN countries will need to upgrade their export profiles towards the manufacture of greener products for the region's rapidly expanding consumer durable and non-durable markets.

Figure 0.3. Production- and consumption-based carbon emissions, 2008
(MT CO_2)



Note: DEV ASIA (11) includes eight ASEAN countries (Brunei Darussalam, Cambodia, Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam) plus China, India and Chinese Taipei.

Sources: OECD harmonised input-output and bilateral trade databases; and IEA databases.
OECD Development Centre.

StatLink http://dx.doi.org/10.1787/888932561823

Several ASEAN countries have taken steps to cut greenhouse gas emissions

Indonesia has committed itself to cutting greenhouse gas (GHG) emissions by 26% from the business-as-usual level by 2020 and is prepared to cut more deeply if there is sufficient financial support. As a large country with huge tracts of carbon-absorbing forests, Indonesia is well positioned to play a significant role in minimising the impact of its development on climate change. To enhance its role in this respect, it must nurture institutions that can make effective use of international funds including the USD 30 billion of fast-start funds pledged at the United Nations Climate Change Conference in Copenhagen in December 2009. *Malaysia* too has implemented policies to shift the economy structurally away from polluting, energy-intensive industries. At the sectoral level, greater consideration is being given to tax and regulatory policies that encourage producers to reduce their energy consumption and adopt more sustainable production technologies. *Thailand* is the first ASEAN country to develop carbon labels which help its economy to move towards a low carbon trend. The new Carbon Footprint Label is currently being tested by a number of companies, including Thai Airlines International, the first airline in the world that calculates the carbon footprint of its in-flight meals.

Viet Nam recognises that both adaptation and mitigation actions are critical for its sustainable development. For instance, rising sea levels due to global warming will cause serious damage to the country's coastal areas. Thanks to its late-comer status, appropriate mitigation actions in a number of areas (public transport, green building, adoption of energy-saving equipment and switch to natural gas and smart power plants) would help the country reduce carbon emissions, improve living conditions and protect the environment. Nonetheless, striking a right balance between short-term economic needs and long-term environmental imperatives is a big challenge for lower-income ASEAN counties. But they should begin to put in place policy and regulatory frameworks in order to better design financial and regulatory incentives and build the institutional capabilities for green growth in the long term. *Singapore*'s success in following green policies owes much to its planning capabilities, capabilities which have evolved under a stable government that is able to take a long-term perspective and national plan accordingly. Singapore can share its expertise and experience with other ASEAN nations.

Korea's experience on green growth also provides practical lessons for ASEAN countries

The government adopted in 2008 a new development strategy with focus on three pillars: to reduce GHG emissions through introduction of market-based instruments (*e.g.* an emissions trading system by 2015) and regulatory reforms; to develop green technologies and products through provision of business incentives; and to enhance consumers' awareness and demand for green products. Shifting away from the long-lasting traditional growth paradigm heavily dependent on fossil energy would require both strong political support from the top and institutionalisation in implementing such green growth programmes. Efficient role-sharing and co-operation among public and private stakeholders in the process of planning, budgeting and implementation are major components of Korea's low-carbon green growth strategy.

Greater use of environmental tax instruments would help in the pursuit of green growth

Environmental tax instruments (ETIs) are at a very early stage of development in ASEAN countries and tend to be more focused on subsidies than taxes. This is partly because of the more limited development of ASEAN tax systems, which makes it difficult to introduce and administer ETIs in areas not yet incorporated in the overall tax system. High levels of fuel subsidies, which are nearly one-eighth of government spending in Indonesia and Malaysia, are a further hindrance to the use of ETIs in some countries. Concerns over the burden of ETIs on the poorest households and their impact on the competitiveness of their industries may also have discouraged the use of ETIs.

Both theory and OECD experiences suggest that greater use of ETIs in ASEAN countries could bring considerable benefits to its pursuit of green growth. For example, fuel subsidies could be revised and lowered to better encourage use of less polluting varieties. Burdens of ETIs on poorer households might be mitigated by increasing direct subsidies or by reducing other taxes. More use could be made of ETIs in urban waste disposal and in combating water pollution. Development of ETIs in ASEAN countries is also likely to be most effective if done in consultation, and, where appropriate, co-operation among the region's economies in order to share experiences and best practices, to avoid distortions in competitiveness and to deal with trans-border environmental issues.

ASEAN countries can do more to promote green growth

In the post-2008 era ASEAN countries share the view that the region's long-term growth must be environmentally sustainable. However, for most ASEAN countries, this recognition has yet to be translated into a set of coherent and integrated policies and programmes. There is an urgent need to develop clearly articulated strategies at both national and regional levels. In these countries, the institutional framework is often underdeveloped, as are economic incentives to promote energy-saving and other technologies that fit into local conditions. Much work remains to be done to create an enabling environment for fostering green growth in the region.

To be sure, ASEAN governments can do more to promote green growth with the assistance of international communities. For instance, a significant push to expand access to financing for appropriate green technology projects is needed. Much of the region's energy infrastructure is old, and new infrastructure incorporating innovative energy-saving technologies is badly needed. Furthermore, over the longer term, Southeast Asia will require supportive policies to increase access to advanced green technologies, including carbon sequestration, intelligent transport system and advanced water treatment technologies. At the same time, attention must be given to building the capabilities of the public sector, creating more public-private partnerships in energy conservation and taking part in the global carbon market.

Note

1. The OECD GGS comprises the three publications, *Towards Green Growth*, *Tools for Delivering on Green Growth* and *Towards Green Growth: Measuring Progress – OECD Indicators*.

PART ONE

REGIONAL ECONOMIC MONITOR

CHAPTER ONE

Medium-term growth and recent macroeconomic situation: prospects and assessments

Abstract

The global financial crisis has underscored the need for Southeast Asian economies to rethink their past growth strategies. The export-oriented growth strategies, although successful in earlier decades, have shown their weaknesses. Looking beyond the near future, where are the region's economies heading in the next five years? Southeast Asian countries need to search for a new development model and exploit new sources of growth.

The nature of growth in the region will gradually change, as domestic drivers will play more important roles in sustaining growth. In particular, strengthening infrastructure development and promoting well crafted social policies will be two critical elements. There is also room to mobilise domestic resources through fiscal reforms on both revenue and expenditure fronts.

In order to address the challenges of ageing populations, which will not be negligible in the medium term, many economies in the region will need to reshape their pension and health care systems.

Introduction

The global financial crisis has underscored the need for Southeast Asian economies to rethink their past growth strategies. The export-oriented growth strategies, successful in earlier decades, have shown their weaknesses. Excessive dependence on external demand has made many Southeast Asian countries vulnerable to fluctuations in global demand and to external shocks. Southeast Asian countries need to search for a new growth model, based on exploiting new sources of growth.

In the post-2008 era, the nature of growth in the region is gradually changing towards more balanced, inclusive and sustainable growth. This growth will be more dependent on domestic investment and private consumption.

After a short review of the medium-term outlook for six Southeast Asian countries, the remainder of this chapter discusses the evolving growth landscape and addresses potential medium-term risks to the region.

Overview and main findings: the economic outlook for 2011-16

Growth for six Southeast Asian countries (Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam) will moderate towards the first quarter of 2012 but remain robust through to 2016, according to the OECD Development Centre's Medium-term Projection Framework for the *Southeast Asian Economic Outlook 2011/12* (MPF-SAEO 2011/12, see Technical Appendix 1.A). The six Southeast Asian countries will have achieved the pre-crisis level – an average gross domestic product (GDP) growth rate of 5.9% by 2016 (5.6% per annum on average over 2012-16), recovering from a slight moderation of growth of 5.0% in 2011. The growth momentum for Emerging Asia (the six Southeast Asian countries plus China and India) as a whole is also robust with an average growth rate of 8.2% in 2011 (Table 1.1).

Indonesia is likely to lead the region's growth, thanks to its buoyant domestic demand. Underpinned by relatively strong investment, real GDP growth in Malaysia will also remain robust in the medium term, though weaker than the pre-crisis level. The Philippine economy also shows resilience owing to domestic demand and workers' remittances. Singapore's growth rate is expected to moderate, due largely to weaker global trade flows. The unprecedented scale of floods has added to downside risks to the near-term prospects of Thailand. The near-term growth of Viet Nam will be dampened by the tightening of monetary policies to bring inflation under control, though the medium-term outlook remains robust.

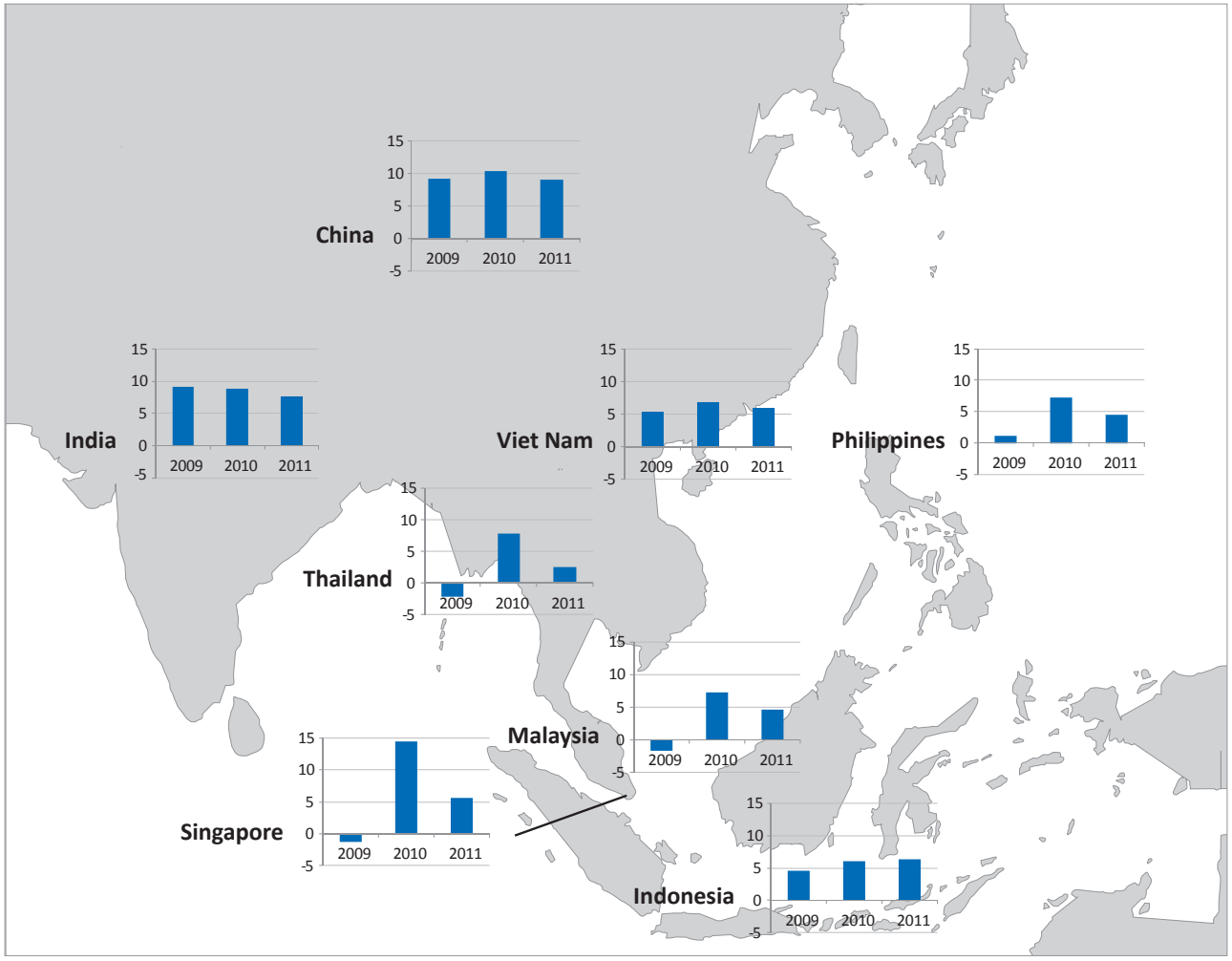
Table 1.1. Real GDP growth of Emerging Asia
(annual percentage changes)

	2010	2011	2016	Average 2003-07	Average 2012-16
Indonesia	6.1	6.3	6.9	5.5	6.6
Malaysia	7.2	4.6	5.6	6.0	5.3
Philippines	7.3	4.5	5.1	5.7	4.9
Singapore	14.5	5.6	4.8	7.5	4.6
Thailand	7.8	2.5	4.9	5.6	4.5
Viet Nam	6.8	5.9	6.7	8.1	6.3
Average of the six countries	7.6	5.0	5.9	6.1	5.6
China	10.4	9.3			
India	8.8	7.7			
Average of Emerging Asia	9.5	8.2			

Note: The cut-off date of data is 1 November 2011.

Sources: OECD Development Centre, MPF-SAEO 2011/12 and *OECD Economic Outlook*, No.90.

Figure 1.1. GDP growth in 2009-11
(annual percentage changes)



Sources: OECD Development Centre, MPF-SAEO 2011/12 and *OECD Economic Outlook*, No.90.

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The main findings implied by the MPF-SAEO 2011/12 are as follows.

- Overall, growth for Southeast Asia will moderate in the near term but solid growth performance will continue until 2016.
- The region's growth prospects will be overshadowed by continued global uncertainties, large capital flows and large-scale natural disasters.
- The nature of growth will gradually change, as domestic drivers will play more important roles. In particular, strengthening infrastructure development and social policies will be critical for maintaining the growth momentum in the region.
- Fiscal situations in the region will gradually improve but budgets will remain in deficit in the medium term. There is room to mobilise domestic resources through tax reforms.
- In order to address the challenges of ageing populations, which will be significant in the medium term, many economies in the region need to reshape their health care and pension systems.

Box 1.1. Key assumptions of the medium-term outlook until 2016

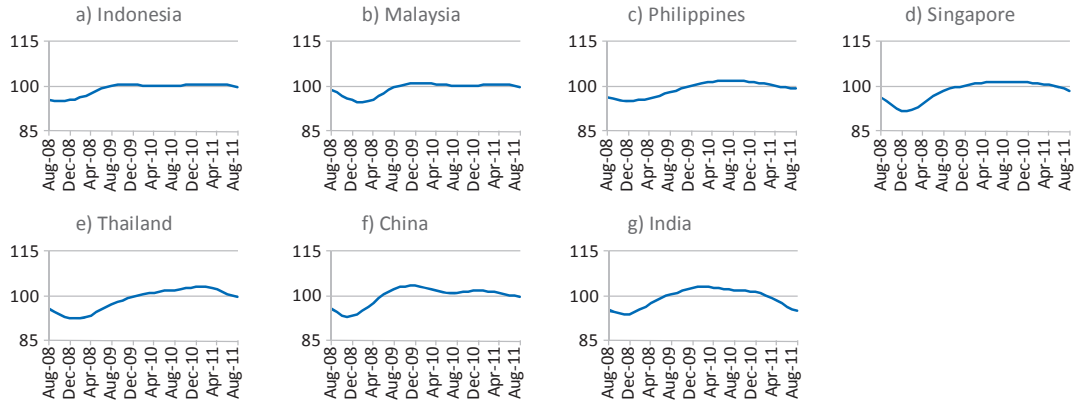
- Output gaps – the gap between actual and potential GDP – will converge to zero by 2016.
- Most Southeast Asian currencies, except for the Viet Nam dong, will gradually appreciate towards 2016.
- Inflation-targeting countries will meet their targets by raising interest rates where necessary.
- Regional integration in Asia will maintain the current pace of increase until 2016.
- The five-year development plans of the Southeast Asian countries will be implemented, where feasible, subject to budgetary and other circumstances (see Chapter 3 for the reference).
- Event free projection – global uncertainties and the Thai floods will not significantly alter the situation beyond the cut-off date.
- The cut-off date of data for MPF-SAEO 2011/12 is 1 November 2011.

Recent macroeconomic situation

In spite of the relatively favourable medium-term prospects, growth in the Asian economies will moderate towards the first quarter of 2012 according to the latest *Asian Business Cycle Indicators* (ABCIs) (Figure 1.2). Recent trade data show some slackening in exports of several Southeast Asian countries due to weaker import demand in OECD countries. Domestic demand will be robust for the region as a whole, but with significant differences across countries: domestic demand in the region will be especially robust in Indonesia but comparatively weak in the Philippines. Inflationary pressures still exist in the region, in particular in Malaysia and Thailand. The near-term deterioration in the macroeconomic situation is most pronounced in China and India. Thus, Emerging Asia will not be decoupled from the global economic slowdown (Box 1.2).

In the near term, countries in the region need to cope with the negative impact of global uncertainties and large capital inflows (see Chapter 2 for detailed discussion), and large-scale natural disasters to maintain the growth momentum.

Figure 1.2. Business cycles: composite leading indicators of Southeast Asia, China and India
(100=threshold point)



Note: see www.oecd.org/dev/asiapacific/abcis for more detailed information.

Source: OECD (2011a), *Asian Business Cycle Indicators*.

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Box 1.2. "Decoupling" revisited

Has Emerging Asia decoupled from advanced economies? The recent global financial crisis has brought this debate to the forefront.

In general, trade and financial liberalisation and the progress of globalisation will make economies more sensitive to external shocks. This suggests that co-movements in business cycles among regions in response to global shocks should have increased. However, the recent robust growth performance of Emerging Asia in the face of much weaker growth elsewhere appears at first glance to better support the "decoupling" hypothesis.

Theory, however, delivers rather nuanced predictions about the impact of increased trade on cross-country output co-movement (IMF 2007). For instance, trade linkages generate both demand- and supply-side spillovers across countries, which can result in more highly correlated output fluctuations. However, if stronger trade linkages lead to increased specialisation of production across countries and if sector specific shocks are dominant, the degree of co-movement of output could even fall.

IMF (2007) and Kose *et al.* (2008) argue that there is no evidence of global convergence of business cycles during the recent period of globalisation. ADB (2007) and Park (2011) also argue that there is no evidence for decoupling. Economic fluctuations in advanced economies have had a significant impact on the growth of Emerging Asia. For instance, in the case of the US recessions of 1981, 1991 and 2011, Park estimated that a 1 percentage point fall in US growth led on average to a decline of 0.5 percentage points in growth in a group of many emerging Asian countries (China, Indonesia, Korea, Malaysia, the Philippines, Chinese Taipei and Thailand). The OECD Development Centre's *Asian Business Cycle Indicators* (Figure 1.3) also show substantial co-movement of the business cycles of Emerging Asia and of the OECD economies.

Figure 1.3. Business cycles: composite leading indicators
(100=threshold point)

Note: Emerging Asia average includes Indonesia, Malaysia, the Philippines, Singapore, Thailand, China and India.
See www.oecd.org/dev/asiapacific/abcis for more detailed information.

Source: OECD (2011a), *Asian Business Cycle Indicators.*

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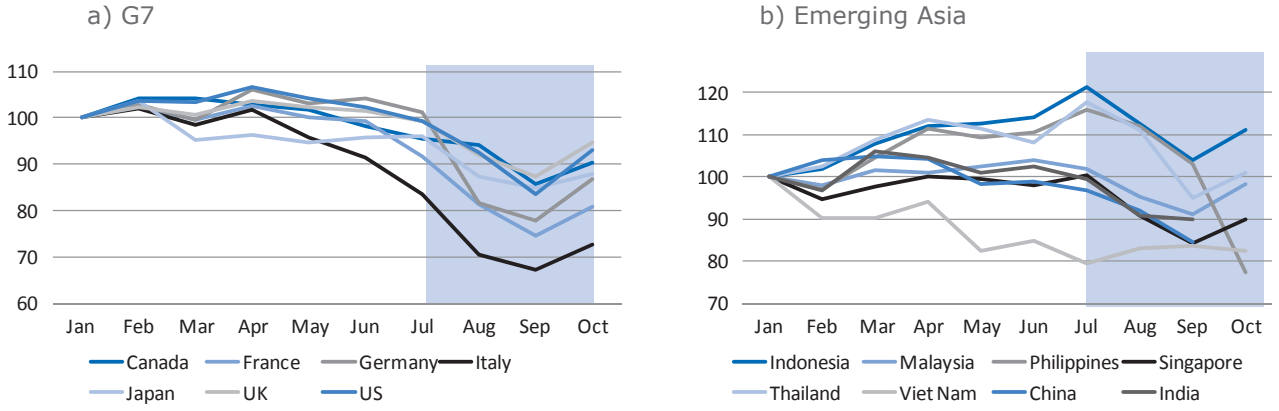
Global uncertainties cast a shadow over the near-term prospects of Southeast Asian economies

The impact of global uncertainties has become apparent since the second quarter of 2011, with deteriorations in business and consumer sentiments and negative reactions in financial markets. However, the overall impact on the regional economy remains limited at this stage (based on the data as of 1 November 2011).

The Greek debt crisis has severely undermined confidence and triggered broad-based sell-offs across equity markets (Figure 1.4). Investors' concerns about the likelihood of a Greek default have also fed into fears of contagion in the banking sector and fragmentation of the euro area. The fragile economic recovery in Europe could stall or tip into another recession. Amidst the widespread uncertainty, market confidence has suffered further blows with the downgrades of Italy and Spain's sovereign debt and of the credit rating of major banks.

These developments have exacerbated global financial market uncertainties that have spilled over to markets in the Southeast Asian countries. In particular, regional stock indexes plunged in August and September (Figure 1.4). The Philippines' stock market saw the largest decline amongst the ASEAN bourses, losing 33% since July. On the other hand, exchange rate movements convey a more mixed picture.

Figure 1.4. Stock indexes in the G7 and Emerging Asia in 2011[1]
(index, January 2011=100)



Sources: CEIC and Datastream.

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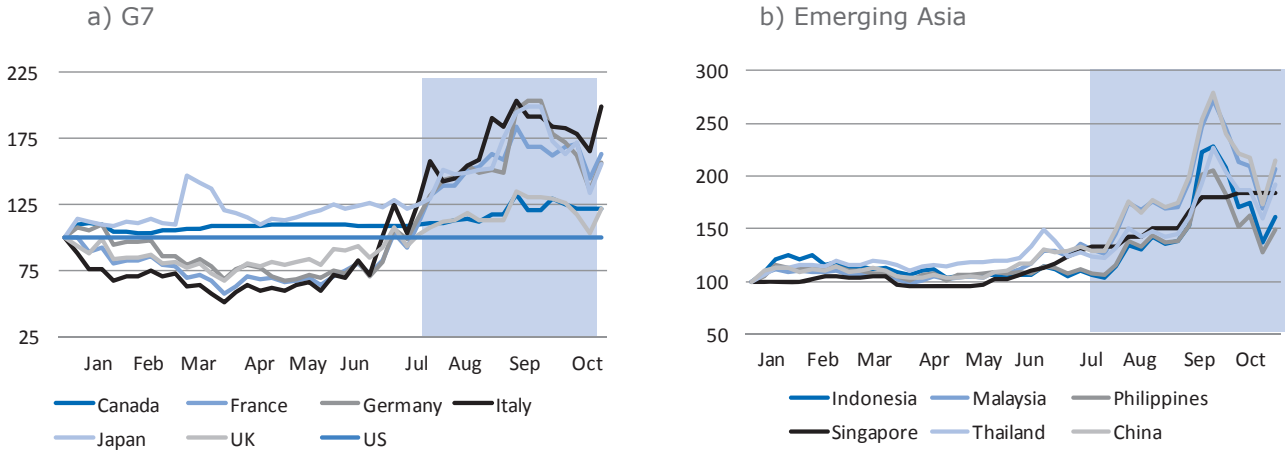
Global uncertainties have led to significant hikes in credit default swap (CDS) premiums on sovereign debt (Figure 1.5). Between July and September 2011, Malaysia, Indonesia and China saw a doubling of premiums for five-year protection. This mirrored the trends in France, Germany and Italy, where the premia have more than doubled in the same period. Fluctuation of risk perceptions continued in October, beginning with a moderation of premia on the positive news of a new bailout for Greece (before announcement of the Greek referendum). This wide swings in CDS premia reveal the high level of uncertainty in the market.

Figure 1.5. Credit default swap premiums in the G7 and Emerging Asia in 2011
(index, January 2011=100)



Source: Datastream.

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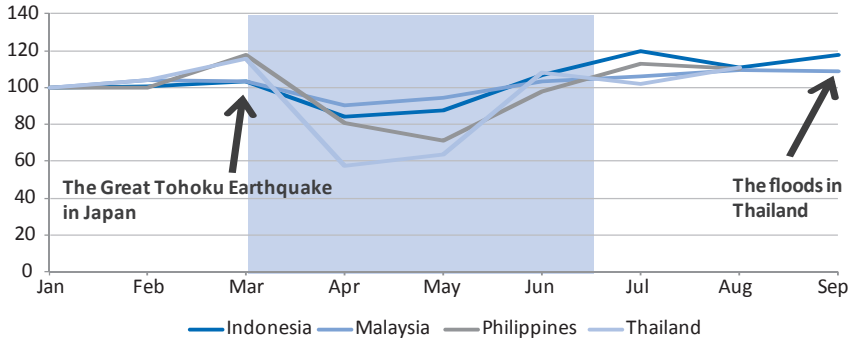
Consumer confidence has been hit as well. For instance, surveys in Indonesia showed weaker consumer sentiment in the month of August. Business expectations have also been affected. In Singapore, the purchasing manager (manufacturing) index (PMI) fell from 49.4 in August to 48.3 in September, the lowest level since March 2009. While the Asian economies have better growth prospects than in the developed markets, the Greek debt crisis and the overall situation in Europe present risks that need close monitoring.

Two large-scale natural disasters have added to the region's downside risks

Two large-scale natural disasters, the Great Tohoku Earthquake in Japan and the floods in Thailand, have also affected the region adversely. Following the earthquake and the subsequent tsunami and nuclear crises in March, the Japanese economy contracted severely in the first two quarters of 2011. The power shortages crippled production of key parts and components in Japan resulting in disruption of global supply chains, particularly in the automotive and electronics sectors.

The impact of this disruption was severely felt in Thailand and the Philippines where production of motor vehicles and components decreased substantially from March to May 2011. Indonesia and Malaysia also saw declines in production although their magnitude was smaller (Figure 1.6).

Figure 1.6. Production of motor vehicles and components in 2011
(index, January, 2011=100)



Source: CEIC.

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The earthquake also had a negative effect on electronics sectors across the region: the production of electronic products and components declined temporarily in Thailand, the Philippines, and to a lesser extent Malaysia. Overall, the Great Tohoku Earthquake has had an adverse impact on production and exports in some countries in the region, but the effects have been short-lived.

Based on the OECD Development Centre's estimates, the damage from Thailand's worst floods in about 70 years will reduce the country's economic growth to 2.5% this year (based on the data as of 1 November 2011). The floods have caused another round of disruption to the supply chains of global automotive and electronics chains. Recognising the need to spread risks by setting up multiple production bases across Asia, many Japanese companies in the automotive and electronics sectors have moved production to Thailand, or found alternative parts and component suppliers in Thailand. These moves have made Thailand a major supplier of hard drives and computer components.

The factory shutdowns in Thailand caused by the flooding have resulted in global parts shortages and price increases, sending ripples through the supply chains of electronics makers such as Western Digital, Toshiba and Acer. In addition, Thailand is also a key manufacturing hub for Japanese automobile-related companies such as Toyota, Nissan and Honda. The floods have halted production lines and led to a shortage of parts for auto production in Japan, and even North America as assembly lines dependent on parts from Thailand were made idle. In early November, the water levels started to recede and clean-up work began in some industrial estates in central Ayutthaya. Some auto makers (Mitsubishi, Nissan and Mazda) have restarted production after the suspension of operations for about a month, but it is still uncertain when production will resume fully.

In addition to the disruption of global supply chain, upward pressures on the rice price pose another risk. The widespread destruction of the rice harvest could push up prices both regionally and globally given that Thailand is the world's largest rice exporter. Indeed, there are already some signs of rice price increases. In particular, the Philippines – the world's largest rice importer – may be affected severely by rice price hikes. This could heighten inflationary pressures in the region.

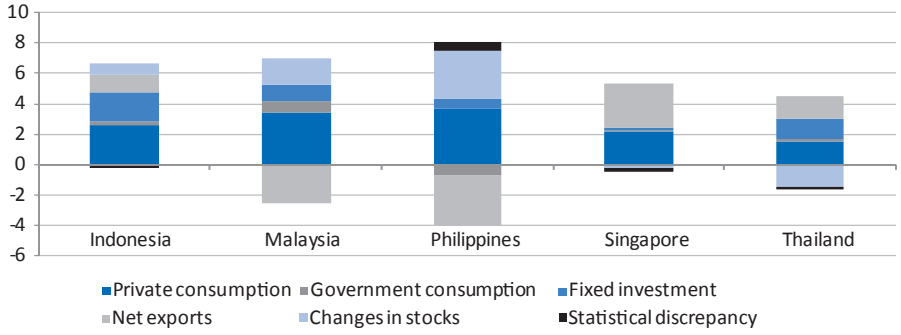
While the earthquake and tsunami in Japan are very rare occurrences, flooding in Thailand is a chronic problem and is likely to recur in cities such as Bangkok. Governments and companies have to consider how to manage the risks of such calamities. As the Thai government takes necessary steps to prevent future floods and to

reconstruct damaged infrastructure, companies are likely to evaluate the benefits of the current clustering of plants in that country against the potential reduction in risks of diversifying production sites across countries in the region. This could lead to a rechannelling of investments to neighbouring countries in the region.

Medium-term perspective: the evolving growth landscape

Given weaker demand from OECD countries, the nature of growth in the region is changing. Overall, the regional economy will rely more on domestic demand in coming years, thereby increasing economic resilience to external shocks. Indeed, the contributions of net exports in 2011 are much smaller than those of domestic investment and private consumption (Figure 1.7). This trend can be observed not only in Indonesia and the Philippines but also in export-dependent countries such as Singapore and Malaysia.

Figure 1.7. Contributions to growth in Southeast Asia in 2011 Q-1 and Q-2
(average of the first two quarters; percentage of GDP)



Sources: CEIC and national sources.

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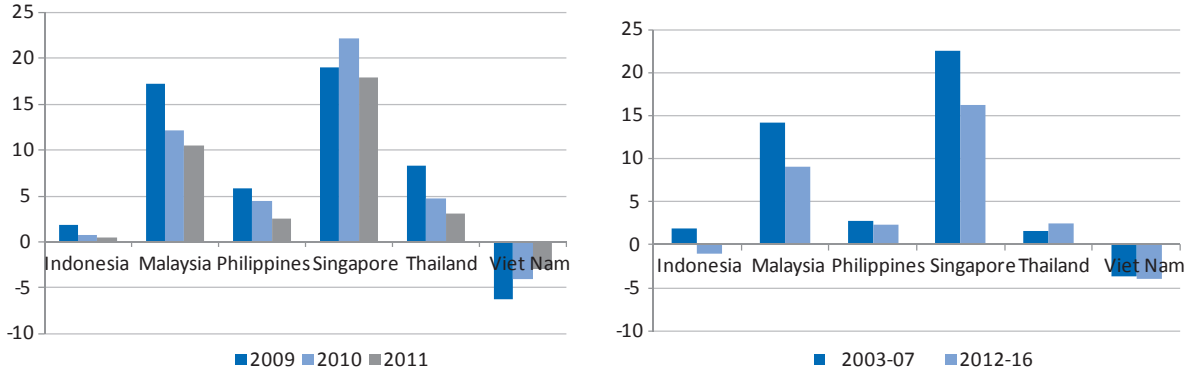
Domestic demand will be an important engine for the medium-term growth in the region

The region-wide current account balances are expected to shrink and will fall to an average of 4.2% of GDP during 2012-16 (Figure 1.8) according to the MPF-SAEO 2011/12, though the size and nature of external adjustment will differ across countries. For instance the decline in the current account surplus will be relatively large in Malaysia, (a decrease of 5.1 percentage points from the 14.2% of GDP average over 2003-07) and in Singapore (4.2 percentage point decrease from the 2003-07 average of 22.5%), while Viet Nam's balance will remain in deficit at 4% of GDP on average over 2012-16.

Figure 1.8. Current account balance of six ASEAN countries
(percentage of GDP)



Source: OECD Development Centre, MPF-SAEO 2011/12.

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This overall decline in current account surplus stems mainly from the strong growth of imports outpacing that of exports. This prospect reflects a number of measures that Southeast Asian economies are planning to take in order to strengthen domestic demand (both consumption and investment).

Many Southeast Asian countries have already started (or are about to start) several large infrastructure projects including a number of public-private partnerships (PPP). At the same time, the region has started to focus on "inclusive growth". This is another factor of changing the nature of growth in the region with a greater focus on social policies. Several structural reforms (some of which are addressed in countries' medium-term development plans) will create a more favourable environment for strengthening private consumption (see Chapter 3 for detailed discussions).

Many Southeast Asian countries have already started several large infrastructure projects, including a number of public-private partnerships

After some delays caused by the global financial crisis, billions worth of infrastructure projects are under construction as governments focus on stimulating economic growth and attracting foreign investment. In particular, Indonesia, the Philippines, Thailand and Viet Nam have made significant investments in transport infrastructure projects. Malaysia and Singapore are focusing on information and communications technology infrastructure. In addition, Singapore is investing in research and development to optimise use of underground space. Recent empirical evidence points to the positive effect of infrastructure development on GDP growth (Box 1.3).

Indonesia and the Philippines have usually drawn on international financing institutions and official development assistance (ODA) to improve their transport infrastructure. In recent years, they have also been exploring the potential for PPP (KPMG, 2009). In the case of **Indonesia**, government spending on infrastructure has been rising rapidly, with the government budget allocation in 2009 at twice the level of 2005. Infrastructure spending (excluding that by local governments) as a share of GDP has risen from 2.7% in 2006 to 3.6% in 2009. However, this is still below the 7-8% of GDP each year that the Indonesian government has estimated will be necessary to support critical infrastructure developments from 2010 to 2014. More than two-thirds of this amount is expected to come from the private sector through PPP (OECD, 2010a). In May 2011, the Indonesian government launched 17 new infrastructure projects, worth IDR 190 trillion (USD 22.3 billion), as part of the 2011-25 Master Plan for the Acceleration and Expansion of Indonesian Economic Development (MP3EI). The projects, mostly for industrial construction, were launched at numerous locations: Sei Mangke in the province of North Sumatra, Cilegon in Banten, Lombok Timur, East Nusa Tenggara and Timika, Papua (see the Indonesia Country Note in Chapter 3).

Similarly, PPP programmes will contribute to the master development plan for the **Philippines** national road network. The government will invest about PHP 750 billion (Philippine peso) for infrastructure projects in 2011-16, boosted by existing ODA of about PHP 50 billion. There are two key road development projects under PPP, namely the Daang Hari-SLEx Link Project and NAIA Expressway Project Phase 2. The Daang Hari-SLEx Link Project is a new four-kilometre, four-lane paved toll road that will pass through the New Bilibid Prison reservation and will connect Bacoor, Cavite to the South Luzon Expressway through Susana Heights while the NAIA Expressway Project Phase 2 with a total length of 5.2 kilometres traversing Pasay City and Parañaque City will improve access to Ninoy Aquino International Airport (See the Philippines Country Note in Chapter 3).

In **Thailand**, the government will also leverage on PPP to improve transport and logistics infrastructure to develop modern information and communication technology (ICT) systems. While **Viet Nam**'s PPP framework is less developed, around 9-10% of GDP has been invested in transport, telecommunications, energy, water, and sanitation in recent years, a very high level of infrastructure investment by international standards (World Bank, 2006a).

On the other hand, Malaysia and Singapore are focusing on information and communications technology infrastructure. **Malaysia** is strengthening the development of ICT infrastructure to foster the innovative use of ICT and become a developed nation by 2020. Information technology infrastructure will be substantially extended to facilitate connectivity to the global knowledge network. The government will target 75% of households to have broadband access by 2015. This will be achieved via two main initiatives: the High-Speed Broadband (HSBB) and the Broadband to General Population (BBGP) programmes, which leverage both wired and wireless technologies and which will cost approximately MYR 2.6 billion (Malaysian ringgit) (MCMC,

2011). **Singapore** will undertake strategic investments to deploy the Next Generation National Infocomm Infrastructure (Next Gen NII). This comprises a nationwide ultra-high speed fibre access infrastructure called the Next Gen Nationwide Broadband Network (Next Gen NBN) and a complementary pervasive wireless network, including a Wireless@SG Wi-Fi service that will be free until 31 March 2013 (Info-communications Development Authority, 2011).

As one means to optimise the use of scarce land, the small island city-state of Singapore (700 square kilometres) is investing in the design and construction of specialised facilities to make the best use of underground space (Urban Redevelopment Authority, 2011). Singapore has already developed underground facilities such as underground shopping malls, transport, common utility service tunnels, sewers, and facilities for storage of storm-water, ammunition, oil and gas. The government has set aside S$ 214 million (Singapore dollar) to develop industrial infrastructure in fiscal year 2011. This includes construction of the Jurong Rock Cavern, consisting of five underground oil storage caverns with a potential capacity of about 1.5 million cubic metres for liquid hydrocarbons such as crude oil, condensates and diesel oil. The project is currently in its first phase and is due for completion in 2014 (Ministry of Finance, 2011).

In addition to projects in individual countries, there are several large cross-border infrastructure projects under the development programmes of the Greater Mekong Sub-region (**GMS countries**) (OECD, 2010b). For example, in Laos and Thailand, the Nakhon Phanom-Khammouane Mekong Bridge, a road infrastructure project worth USD 38 million is under construction (2008-11). In addition, the North-South Economic Corridor International Mekong River Bridge begun in 2009 is expected to be completed in 2012, with a preliminary estimated financial cost of USD 59.4 million, and involving financial assistance from China and Thailand. There are also several railway projects to be completed, including the Nanning-Kunming Railway Capacity Expansion and the Dali-Ruili Railway Line.

In September, ASEAN and the Asian Development Bank (ADB) announced the establishment of the ASEAN Infrastructure Fund, with an initial equity contribution of USD 485.2 million (ADB, 2011). The fund's total lending commitment through to 2020 will amount to about USD 4 billion. With projected 70% co-financing by the ADB, it is expected to leverage more than USD 13 billion in infrastructure financing by 2020. This commitment to enhance infrastructure services in the various medium-term plans should support a favourable outlook for growth.

Box.1.3. Infrastructure development contributes to growth

In recent years, many empirical studies have documented the positive effect of infrastructure development on GDP growth (*e.g.* Égert *et al.*, 2009a and 2009b; Calderón and Servén, 2004; Calderón, 2009; Démurger, 2001; and Esfahani and Ramírez, 2003).

Infrastructure investment impacts growth through several channels. Infrastructure development can have a direct impact on growth through capital accumulation and increase in productivity. There are also potential indirect channels. For instance, by lowering transport and production costs, infrastructure development helps to encourage business activity, facilitate market access and enhance competition and exploit economies of scale.

At the same time, it has been argued that the impact of infrastructure development on growth will depend on the sector where the investments are made. Égert *et al.* (2009b) examined the impact of infrastructure development by different sectors of OECD countries and concluded that, overall, infrastructure projects in the telecommunications and electricity sectors have a robust positive effect on long-term growth, but that this does not hold for investment in railways and road networks. Seethepalli *et al.* (2008) provide similar insights concerning the importance of infrastructure investment based on the examples of East Asia.

Another study (Straub and Terada-Hagiwara, 2010) examined the impact of infrastructure investment focusing on the different channels affecting growth and the characteristics of Asian countries. They concluded that the most positive and significant effect of infrastructe comes through its impact on capital accumulation, while the impact on growth through productivity is very limited. They also found strong impacts of infrastructure on growth in China, Korea and Thailand, but only for some sectors, such as telecommunications and electricity.

Several social policies planned in the region will act as a domestic driver

A critical aspect of rebalancing growth in the region is to make domestic consumption the main engine of economic growth. Some countries are promoting domestic consumption by accelerating reforms in social policies, including the strengthening of the social safety net. According to an International Monetary Fund (IMF) analysis of China, a sustained 1 percentage point of GDP increase in public social expenditures, distributed equally across education, health, and pensions, would result in a permanent increase in the household consumption ratio of 1¼ percentage points of GDP. As public expenditure increases, the incentive for precautionary savings is reduced. The impact of social protection spending on consumption is highest when targeted at low-income households that have high spending propensities. However, it is important to note that social policies are not primarily intended to increase demand, but are meant for poverty relief and risk protection for the most vulnerable segments of the population.

Indonesia's social programmes – especially in the areas of education, health care and social protection – are being strengthened. For instance, government spending on education has risen considerably over the past ten years. Education accounts for a comparatively high share of total government outlays in Indonesia, in part as a result of the introduction in 2002 of a targeted spending floor for education of 20% of total government spending. In the area of health care, an insurance programme (Jamkesmas) was introduced in 2008 to mitigate the adverse impact of catastrophic health risks on vulnerable (poor and near-poor) individuals. The programme covers comprehensive out-patient care in public health clinics and third-class hospital comprehensive in-patient care, and aims to protect vulnerable individuals who might otherwise fall into poverty as a result of unanticipated health events that would prevent them from working. In addition, the authorities launched two pilot conditional cash transfer programmes in 2007: Community Cash Transfer (*PNPM*) and Conditional Cash Transfer (PKH, *Program Keluarga Harapan*) targeting poor households. Coverage of the conditional cash transfer programmes was extended to 720 000 households in 2009 and is planned to be extended gradually by 2013 to all 2.9 million households estimated to be in poverty.

The tenth **Malaysia** plan for 2011-15 stressed that health care access, coverage and quality will continue to be improved. Amongst the government's major initiatives are the construction of eight hospitals, including specialist hospitals and 197 clinics. Measures are also being put in place to strengthen education and training systems across all levels from early childhood to tertiary education. In addition, the Prime Minister recently announced a removal of school fees for primary and secondary students. At the same time, Malaysia will increase civil servants' salaries by as much as 13% and boost pensions as part of the government's overhaul of the civil service system. To reduce the impact of the increasing cost of living on the low-income group, a one-off cash handout of MYR 500 will be given to households with monthly incomes of MYR 3 000 or less.

In the **Philippines**, the strengthening of social protection and the safety net for the vulnerable and the poor are also a priority. The government has expanded direct subsidies to the poor by supporting with PHP 29.2 billion the *Pantawid Pamilyang Pilipino Program* (4Ps), a poverty reduction and social development strategy that provides conditional cash grants to extremely poor households. In addition, PHP 881.2 million will be assigned under the Food-For-Work Programme for internally displaced persons. Other social protection programmes include the Supplemental Feeding Programme (PHP 2.9 billion expenditure), the Rice Subsidy Programme (PHP 4.2 billion expenditure) and the second phase of the DSWD's Kapit-Bisig Laban sa Kahirapan-Comprehensive and Integrated Delivery of Social Services (KALAHI-CIDSS) project.

Singapore has also increased social expenditure to provide broader coverage. To help low-wage workers cope with the higher cost of living, the government increased the "in-work" income support under the Workfare Income Supplement Scheme (WIS). Unlike unemployment benefits, which reduce incentives for employment, the WIS Scheme supplements the wages and retirement savings of employed older low-wage workers and encourages them to stay employed. In 2011, the government introduced a three-year Workfare Training Scheme to help low-wage workers train and upgrade so that they can earn more. The scheme provides subsidises to employers of 90% to 95% of the pay and the course fees of the low-wage employess they send for training. The budget of the Community Care Endowment Fund (ComCare), which runs social assistance programmes to help needy Singaporeans, was increased to S$1.5 billion. Support includes the Public Assistance Scheme which provides assistance to those who are unable to work due to old age, illness or disability and have no means of subsistence. The scheme provides monthly cash grants to meet basic needs, including free medical care, free education for their children and a rent subsidy for public housing.

In 2001, the **Thai** government introduced the Universal Health Care (UC) policy (the "30-Baht scheme"), which was followed by establishment of universal health-care coverage in 2002. With these changes, social security coverage and privileges are expanded and extended to spouses and children and informal workers.

Basic health-care units at the local level have been improved by increasing the budget to allow for a higher cost per person. Thailand's expenditure on basic education, as a percentage of the national budget, is one of the highest in the region. Recently, the period of free education was extended from 12 to 15 years. Under this policy, students receive free textbooks and school uniforms (See the Thailand Country Note in Chapter 3).

In **Viet Nam**, the state budget is being restructured towards focusing on social security, on people development through education, on health care, and on science and technology. In particular, the share of education in total expenditure is set to reach 20%. In addition, the Vietnamese Government has put in place a range of support to ensure social security. For instance, children under six years old are exempted from hospital fees; the poor have been issued health insurance cards; and the pension has been raised. In addition, those affected by floods and other natural disasters benefit from increases in contingency funding to help cope with the damage.

Box 1.4. The effects of social safety net programmes on domestic demand

Some recent studies have found a positive effect of improved social protection programmes on boosting domestic demand through a reduction in households' precautionary savings as well as increases in income. Particularly when targeted on low-income households that have high spending propensities, the impact of social protection spending on consumption can be significant.

The impact can be observed through different channels.

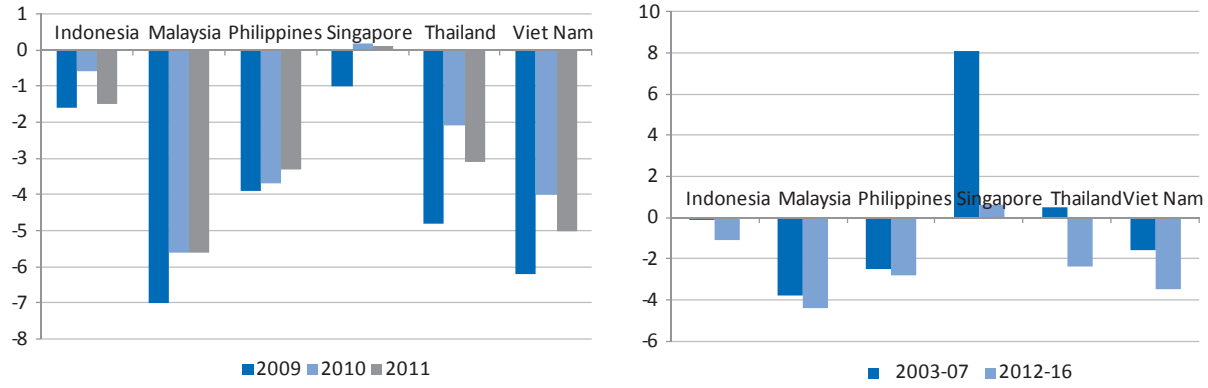
- **Income channel**: An expansion of government social expenditures lowers households' health and education expenditures or increases pension benefits, thus boosting current consumption. In China, Barnett and Brooks (2010) found that a one yuan increase in government health spending is associated with a two yuan increase in urban household consumption.
- **Redistributive channel**: Social spending targeted towards households with relatively high average propensities to consume increases consumption. For instance, pension transfers to the elderly or transfers can increase current consumption. Xing (2010) pointed out that low-income families tend to have a higher consumption propensity than high-income families. Thus, redistributing income from high-income households to rural or other low-income ones would enhance aggregate consumption.
- **Insurance effect**: Safety nets tend to act as a substitute for precautionary saving since they provide insurance against negative income shocks. By reducing the risk of large out-of-pocket medical expenses, comprehensive social health insurance may reduce households' motivation to accumulate precautionary savings. Past OECD studies have found a negative impact of safety nets on private sector savings in OECD countries (OECD, 2006a). Chou *et al.*, (2006) found that comprehensive health insurance had a statistically significant and large effect on household savings in Chinese Taipei: following the introduction of National Health Insurance in 1995, households' savings fell by 1-10%.

Some studies have found an ambiguous relationship between social spending and consumption. While the expectation of income to rely on upon retirement reduces the need to save more, the introduction of a public pension system could induce people to retire earlier, and this in turn will encourage them to save more. The net impact of public pensions on household savings depends upon the relative strengths of these two offsetting effects and thus could be negative (Horioka and Yin, 2009).

Fiscal balances will improve gradually but remain in deficit in the medium term

In the medium term, fiscal balances will gradually improve but most economies are projected to remain in deficit, at -2.3% on average as a percentage of GDP during 2012-16 according to MPF-SAEO 2011/12 (Figure 1.9). Singapore is the exceptional case – owing to profit transfers from the two sovereign wealth funds and expected revenue increases, fiscal balance remains positive through to 2016.

Figure 1.9. Fiscal balance of general government in six countries of Southeast Asia from 2011-16
(percentage of GDP)



Source: OECD Development Centre, MPF-SAEO 2011/12.

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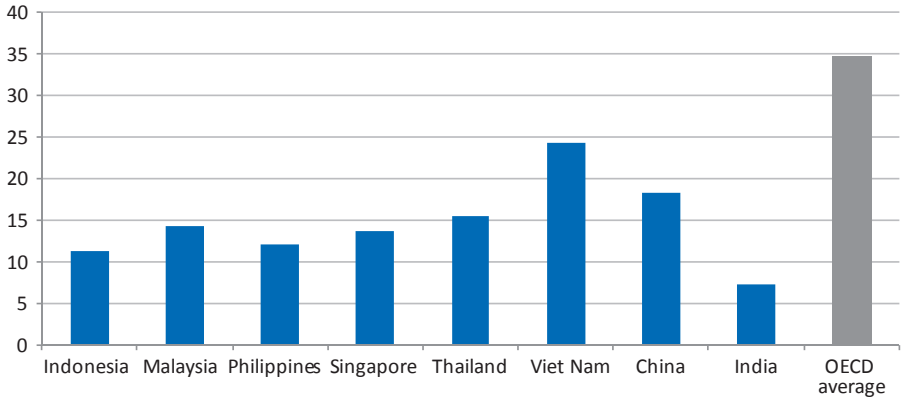
In general, the extent and speed of consolidation will be relatively limited in most countries. Consolidation on the spending side by containing expenditure increases will be an important challenge for the region in the post-2008 period. Fuel subsidies will be a critical issue, particularly for Indonesia and Malaysia. However, current food and oil price hikes will make it politically difficult to implement consolidation in the near term by eliminating subsidies, though steps towards gradual removal will be important. In the Philippines, increased spending on infrastructure development will continue in the medium term and the fiscal deficit is projected to be 2.8 % on average during 2012-16.

The floods in Thailand will require additional expenditures in the next year. These expenditures, together with the expansionary fiscal measures introduced by the new government, mean that the extent of consolidation will be very slow, with the deficit averaging around 2.4% of GDP during 2012-16. An additional increase in social expenditure will also be needed in Thailand to meet the challenge of the ageing population. The effort to improve the fiscal balance is still limited in Viet Nam. The fiscal balance is expected to be in deficit at an average of 3.5% of GDP during 2012-16, due to continued large amount of spending on infrastructure and social programmes. The government of Malaysia plans to introduce a goods and services tax (GST) to widen the tax base but it will take more time than anticipated to achieve implementation. Overall, the fiscal situation will not recover to the pre-2008 levels in the medium term.

Mobilising domestic resources through tax reforms will be critical

Fiscal reform on the revenue side is also progressing at a slow pace in most countries. Tax revenues in Emerging Asia average 15 % of GDP in 2010, varying from 24.3% in Viet Nam to 7.2% in India (Figure 1.10). The comparatively low level of tax revenue is not a new phenomenon in the region. In addition, in some countries (for instance, Indonesia) tax revenues relataive to GDP have declined since 1990. Such evidence suggests that there is room for improved domestic resource mobilisation through tax reforms.

Figure 1.10. Tax revenues in 2010
(percentage of GDP)



Note: Data for Singapore and OECD average refer to the latest year available, 2009 and 2008, respectively.
Sources: OECD, CEIC and ADB.

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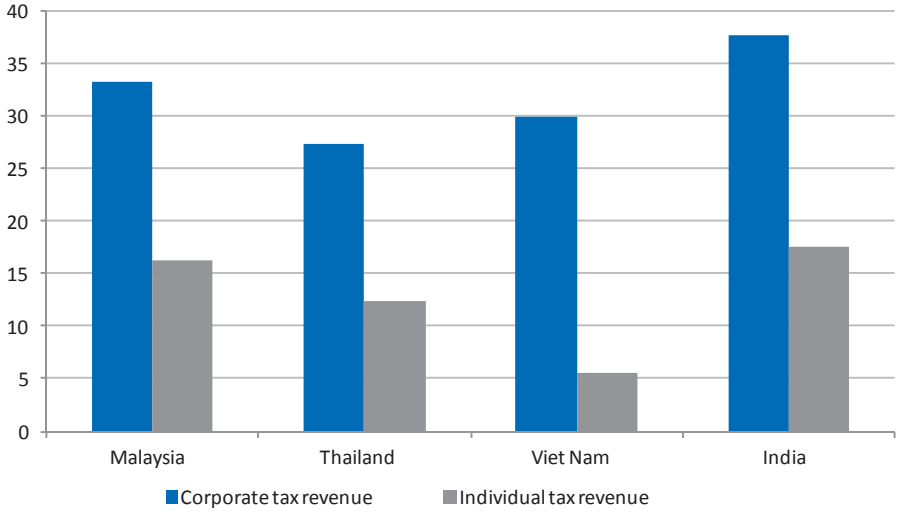
Tax revenues are relatively weak in Indonesia, the Philippines and India. Although tax revenues in Indonesia improved relative to GDP from 2000 until the financial crisis of 2008, they decreased between 2008 and 2010, from 13.3% to 11.3% of GDP. Tax revenues can be increased by strengthening tax administration, including tax audit and enforcement. Moreover, the National Tax Census aims to foster a more progressive tax system.

In the Philippines, tax revenues as a share of GDP have been decreasing since 2007, shrinking to 12.1% by 2010. In order to enhance tax collection, several regulatory reforms and programmes focusing on monitoring and enforcement have been put in place in recent years (see the Philippines Country Note in Chapter 3, Table 3.3.3). The Philippine Development Plan 2011-16 sets out measures to achieve a more transparent and consistent tax system, including the rationalisation of redundant fiscal incentives and unnecessary tax exemptions and the adjustment of excise taxes on alcohol, tobacco and petroleum.

Although revenue collection in India has been improving recently, tax revenues as a share of GDP at 7.2% are still lagging behind its regional peers. The government aims to enhance tax revenues by reforming the tax system and widening the tax base through the realisation of the Direct Taxes Code (DTC) as well as the introduction of a GST.

Figure 1.11. Revenues from corporate and individual income taxes in 2010
(percentage of total tax revenue)



Source: OECD Development Centre's calculation based on CEIC.

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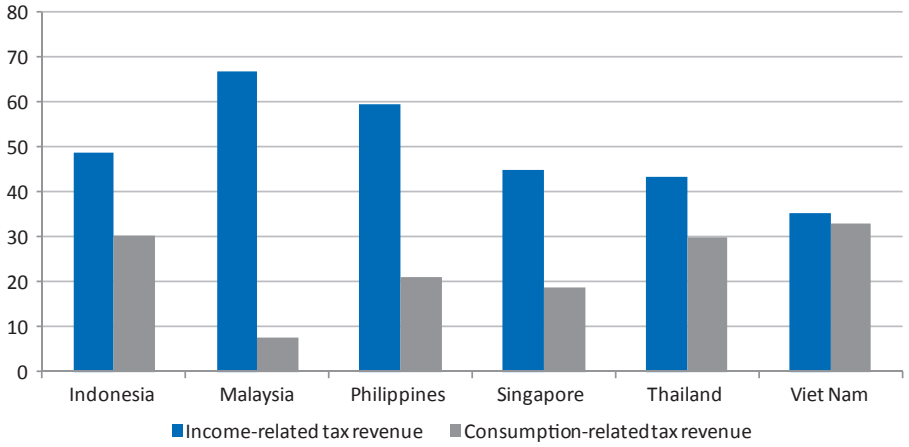
Figure 1.12. Revenues from income- and consumption-related taxes in 2010
(percentage of total tax revenue)



Notes:
Indonesia, the Philippines, Thailand and Viet Nam: Consumption-related tax refers to VAT.
Malaysia: Consumption-related tax refers to sales tax.
Philippines: Both the share of income- and consumption-related tax revenues are calculated as a percentage of domestic tax revenues.
Singapore: Consumption-related tax refers to the goods and services tax.

Source: OECD Development Centre's compilation based on CEIC.

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The revenue share of consumption taxes in Asia is lower than that of income taxes (Figure 1.12). In Indonesia, Thailand and Viet Nam revenues from value-added tax (VAT) account for around 30% of total tax revenues. In the case of the Philippines and Singapore, consumption taxes contribute around 20% to total tax revenues. However in Malaysia the share of consumption (sales) taxes to total tax revenues was only 8% in 2010.

Most Southeast Asian countries need to widen their tax bases and phase out unnecessary tax expenditures. The efficiency of tax collection is another issue that economies in the region need to tackle. Needless to say, revenue reforms should be accompanied by efforts to improve the efficiency of spending (Box 1.5).

Box 1.5. Enhancing spending efficiency through performance budgeting

Measuring public service output is a complex issue but effective use of performance information in the budget process could improve spending efficiency.

"Performance budgeting" started in the early 1990s and is now widely used in OECD countries. Three broad categories of performance budgeting are used in the OECD, defined by how formal performance information is used in the budget process: *i)* **Presentational performance budgeting**, where performance information is used only as background information for the purposes of accountability and dialogue but there is no link between performance information and funding; *ii)* **Performance-informed budgeting**, where resources and performance information are linked indirectly, along with other information, in order to inform budget decisions but there is no automatic linkage between targets or performance results and funding; and *iii)* **Direct/formula performance budgeting**, where the allocation of resources is linked directly to performance, so that funding is directly based on results achieved.

There is no single model of performance budgeting and, in practice, it is adapted to national characteristics. Two OECD countries stand out as exemplary cases:

In **Canada,** performance information is used throughout the main phases of the annual resource management cycle. The federal government's expenditure management framework is complex and decentralised. All major departments produce strategic plans, known as reports on plans and priorities (RPPs). These are planning documents which are submitted to Parliament, detailing the strategic outcomes and planned results of each department. These documents also include information on resource requirements over a three-year period. All departments report on the results of their programmes in departmental performance reports (DPRs) which set out performance against commitments in the RPP. The Treasury Board produces and presents to Parliament two whole-of-government reports. An RPP Overview guides parliamentarians through the many RPPs each spring and Canada's Performance does the same each autumn.

Box 1.5. Enhancing spending efficiency through performance budgeting (contd.)

In addition, all major departments and agencies have internal audit and evaluation units. In 2005, the Management, Resources and Results Structure policy (MRRS), a common whole-of-government planning and reporting framework, was adopted.

In **Denmark**, the current government-wide performance contract system is based on three core elements: setting targets, developing contracts and reporting annually on performance. Although the Ministry of Finance produces recommendations and has developed the general concept, it is for each ministry to decide if and how performance contracts will be used. Ministries develop performance contracts, which are not legally binding, with each individual agency. Agencies are required to produce annual reports that detail results achieved against targets for outcomes/outputs specified in the contract. These annual reports are written by the agencies, approved by the responsible ministry, and then submitted to the Parliament. Direct performance budgeting, also known in Denmark as the taximeter model, is an activity-based budgeting system which directly links funds allocated to results achieved; for instance, in higher education, the level of funding depends on the number of students who pass exams, the universities' research activities and other indicators. This system is now used in almost the entire secondary and tertiary education sectors, and accounts for over one-third of the total funding in the field of higher education. Moreover, this budgeting method has been expanded to the health-care sector.

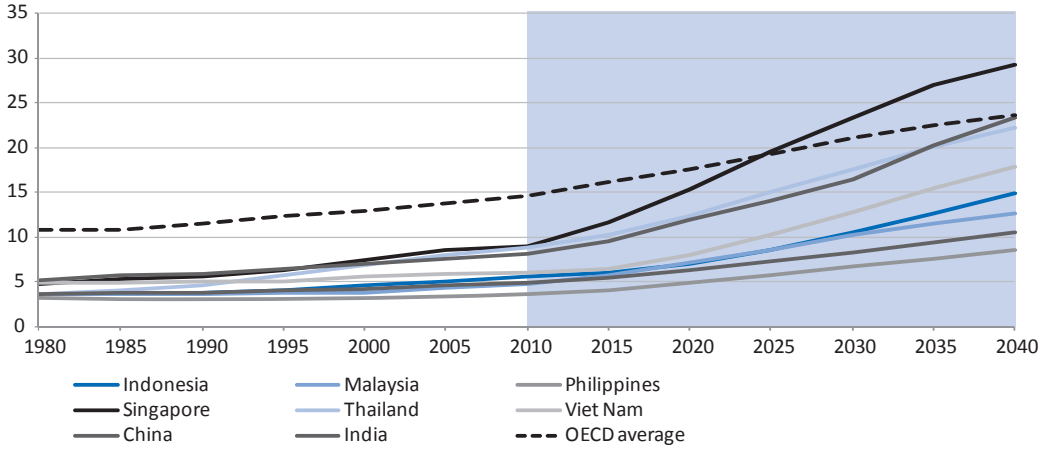
Source: OECD (2007a).

Medium-term challenges from ageing populations

Rapid ageing of the population, in particular, in Singapore, Thailand and China, poses another challenge to the region (Figure 1.13). The challenges from ageing are gradually becoming more significant in Viet Nam, Indonesia and Malaysia as well.

In the first group of countries, the percentage of the population aged 65 or above has already reached almost 10% and is expected to increase further in the future. While the elderly portion of the population in China and Thailand will match that of OECD countries by 2040, the percentage of the elderly population in Singapore is projected to surpass the corresponding share in OECD countries by around 2025 according to the United Nations (UN) projections. On the other hand, challenges from ageing in the second group of countries will begin to be acute by around 2030, with more than 10% of their population aged 65 or over, and the share projected to reach the present OECD average by 2040. The Philippines and India with their relatively young populations will be least affected by the ageing challenge in the medium term.

Figure 1.13. Percentage of population aged 65 or over until 2040
(percentage of total population)



Source: UN, OECD Development Centre and national sources.

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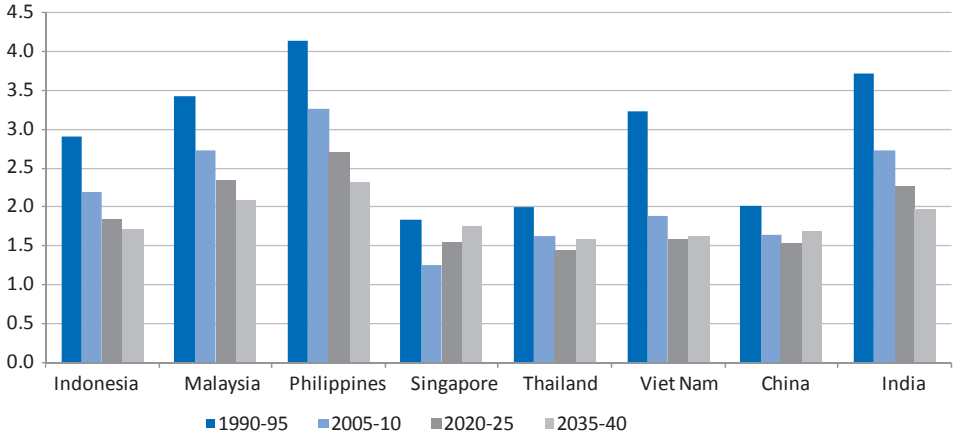
Overall in Emerging Asia, the long-term trend points towards an ageing population, with the share of elderly population to total population projected to be around 10% by the end of the forecast horizon. This trend reflects a confluence of falling fertility and rising life expectancy. Fertility rates (*i.e.* the number of

children per woman) have decreased across all Southeast Asian countries over the past two decades, with Singapore having the lowest fertility rate of 1.25 children per woman in the period between 2005 and 2010 (Figure 1.14). Although the fertility rates are projected to recover to a certain extent in countries such as Singapore, Thailand, Viet Nam and China according to the UN forecast, they are not expected to reach the levels of 1990-95 and will remain below the desired benchmark level of two children per woman. While fertility rates in Malaysia and the Philippines are likely to remain stable until 2040, the rate is projected to decrease to under the "two children per woman" threshold in India by 2040.

Figure 1.14. Fertility rates in Southeast Asia until 2040
(number of children per women)



Source: UN and national sources.

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If the decline in fertility rates is not reversed, the ageing of the population will speed up and could become a drag on the economy. An ageing population impacts economic growth through several channels:

- reducing the workforce
- increasing the dependent population
- changing savings and consumption
- changing physical capital accumulation
- changing total factor productivity (TFP)

Ageing reduces the size of workforce

In the absence of increases in labour productivity or labour market policies to encourage higher female participation, attract migrant workers or raise the retirement age, there will be a decline in the effective labour force with an ageing population.

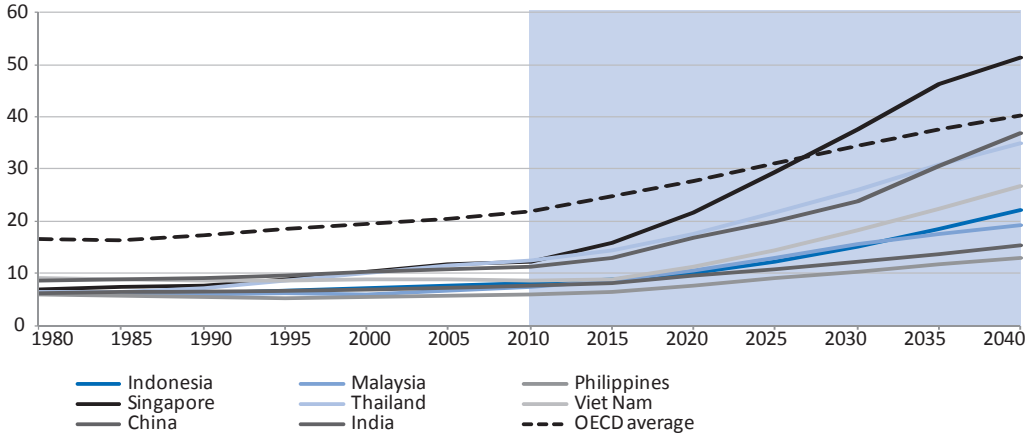
The female labour participation rate (defined as the percentage of the female population aged 15 or over in the labour force) ranged between 33% in India and 68% in Viet Nam in 2009. The difference between male and female participation rates has remained substantial, especially in the case of Indonesia, Malaysia, the Philippines and India. In most of the Asian region, the number of foreign migrant workers as a percentage of the total population is quite small, under 0.5% (including in four of the six countries of ASEAN, China and India). Notable exceptions are Singapore and Malaysia, where foreign migrant workers are a substantial portion of the population. The retirement age in most emerging Asian economies is still below the levels of OECD countries, with the exception of Singapore and the Philippines, where the retirement age is 62 and 65 years old, respectively.

These patterns call for reshaping labour market policies in the region. As ASEAN countries are at different stages of population ageing, there are potentially large gains for intra-regional co-operation and integration initiatives. Greater mobility of workers from younger, labour-abundant countries to older, labour-scarce countries can help to alleviate labour shortages in the latter while improving employment opportunities for workers in the former. Other options include fostering lifelong learning and training programmes to raise employment opportunities for elderly people.

Ageing increases the dependent population

The proportion of the old-age population dependent on the active population has been increasing in the region. Currently, the old-age dependency ratio (*i.e.* the number of persons aged 65 or over for each 100 persons aged between 15 and 64) in the six countries of ASEAN plus China and India ranges from 6 to 13 and is still comfortably below the OECD average of 22. However, the ratio is projected to increase in the forecast period until 2040 (Figure 1.15). In Singapore, the country most affected by the ageing of the population, the old-age dependency ratio is expected to reach the OECD average between 2025 and 2030, and will surpass 50 by 2040. In China and Thailand, the old-age dependency ratio is likely to reach 37 and 35, respectively, by 2040. Similarly, the share of the elderly dependent population will rise significantly in Viet Nam, Indonesia and Malaysia. On the other hand, old-age dependency is a more distant issue in India and the Philippines, where the ratio is still comparatively low and rising only gradually.

Figure 1.15. Old-age dependency ratio until 2040
(ratio of population aged 65+ per 100 population aged 15-64)



Source: UN, OECD Development Centre and national sources.

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Ageing impacts growth through savings and consumption channels

The life-cycle model assumes that individuals choose a consumption path to maximise lifetime utility, subject to a lifetime budget constraint. (Modigliani and Brumberg, 1954) The model suggests that consumption patterns should be relatively constant over time, that is "smoothed" over the entire life cycle including the retirement period. Working-age adults tend to work and save more than the young or the elderly. Consumption relative to income is generally low for working-age adults and high for the young and elderly. A retired person relies on income from savings, transfers from his or her adult children, and pension benefits. Aggregating across all individuals at a point in time, the implication is that a country with a relatively high population share of the elderly has a smaller capacity to save than countries where the elderly portion of the population is lower. As the large cohort of "baby-boomers" moves into retirement, it will start to run down its savings (OECD, 1998). This decline will lower aggregate savings and will have an adverse impact on trends in technical progress and capital accumulation. On the other hand, as advances in medicine increase life expectancy so that the ageing population can expect to live longer, they will need to save more to finance a longer period of time after retirement. Thus aggregate saving and capital accumulation might even increase (World Bank, 2011). Furthermore, if the population has little faith in the sustainability of the pension system, more income will be set aside as precautionary savings to finance consumption in old age.

Population ageing is also likelty to alter the composition of aggregate consumption. Thus an ageing population could support the emergence of new industries catering to the demands of the elderly such as pharmaceuticals, health care and smarter urban homes, to name a few. Older people tend to spend a higher share of their incomes on housing and social services than younger population cohorts do (Lührmann, 2005). Demand for health and long-term care expenditures will likely rise, while housing and energy expenditures will increase as a result of more time spent at home by the retired population. On the other hand, expenditures on entertainment and transportation may decline, while the share of consumption of basic goods such as food and clothing will remain relatively constant (UN, 2007).

Ageing impacts growth through productivity and capital accumulation

Some studies have found that older workers are, on average, less productive than younger ones and that labour force ageing has a negative effect on productivity (OECD, 2006b). Age affects the dexterity of fingers, reasoning, numerical capabilities and speed. In addition, some skills may become depreciated or obsolete simply because the task being performed is no longer highly valued. For example, older typists may be able to perform just as well as younger typists but may find it harder to adapt to the new word-processing environment resulting from the introduction of personal computers. In contrast, some verbal abilities and communication skills remain virtually unchanged over much of the life cycle. As older workers can often rely on their professional experience to adapt and compensate for declines in physical and mental ability, the overall impact on productivity is uncertain.

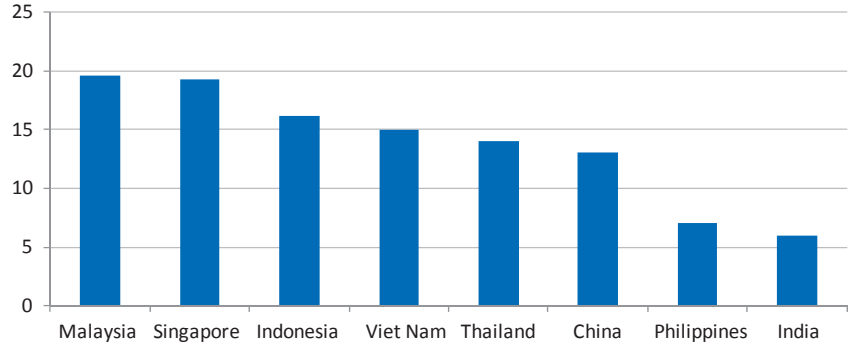
There are two competing hypotheses concerning the interaction between physical capital accumulation, real growth and an ageing population. If physical capital and labour are substitutes, capital accumulation may compensate for a declining population share of the workforce in sustaining growth. On the other hand, if the two production factors are complementary, the growth effects of physical capital accumulation given an increasing proportion of older workers will not be as strong. Beyond these two hypotheses, there may be a capital supply response from the product demand side. That is, as a rising share of the old-age population changes the structure of demand towards goods and services for the elderly, the investment rate may rise to bring about the required structural changes in production.

Pension systems need to respond to ageing

Ageing involves complex issues and will require reshaping several economic institutions, in particular pension and health care systems. Family support of the elderly has traditionally been common in Asia, but most countries nowadays need both pension and health systems that are adapted to an ageing society. In the labour market, providing employment opportunities to elderly people will be another new issue.

The pension system will need to respond to an ageing population, as the gap between the current pension age and life expectancy will increase from the levels today (Figure 1.16). Reform of public pension systems requires a sufficiently long lead time to allow workers to adjust their working and saving decisions. Regulatory and supervisory developments should aim to support more rigorous risk management, greater transparency and better governance for private pension funds. It is also important to ensure consistency among funding and prudential requirements and accounting standards.

Figure 1.16. Current gaps between pension age and life expectancy in 2009
(years)



Sources: WHO (2006b), Various national sources and OECD Development Centre estimates.

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The pension systems in Southeast Asia, China and India show significant diversity (see Table 1.2). The pension age is the most visible parameter of the retirement-income system and significantly impacts financial incentives to retire at different ages and other retirement decisions. In general, pension ages (now normally between 55 and 60 years of age) have been set to ensure that average years in retirement, based on average life expectancy, are around 15 to 20 years. However, in India and the Philippines, the difference between the pension age and life expectancy is noticeably lower, at six and seven years, respectively.

Table 1.2. Pension systems in Asia

Country	Pension age	Life expectancy	Difference between life expectancy and pension age	Defined benefit or defined contribution	Coverage of mandatory pension system (% of labour force)	Early withdrawals?	Other comments
Six countries of Southeast Asia							
Indonesia	55	71	16	Defined contribution	15.5	Possible to start claiming pension at any age with a minimum of 5 years of contribution	
Malaysia	55	75	20	Defined contribution		Possible to withdraw savings between 50 and 55 from Account 2.	In the case of critical illness, savings could be withdrawn from Account 3.
Philippines	65	72	7	Defined benefit	27.1	Possible to start receiving pension from age 60 with 120 months of contributions.	
Singapore	62	81	19	Defined contribution		Not possible	Lump sum withdrawal at 55
Thailand	55	69	14	Defined benefit	22.5	Not possible	15 years of contributions are required for monthly pension receipt and the pension benefit is adjusted for a longer contribution period. For people with a contribution period less than 15 years, a lump sum payment equivalent to the total contributions is made.
Viet Nam	60 (55 for women)	75	15 (20 for women)	Defined benefit	13.2	Possible to start claiming the pension at 55 (50 for women) under specific requirements.	To receive a monthly pension, minimum of 20 years of contributions is required and a lump sum payment is made for people with shorter contribution periods.
Other Emerging Asian countries							
China	60 (50 for women blue collar, 55 for women white collar)	73	13 (23 for women blue collar, 18 for women white collar)	Defined contribution	20.5	Possible to claim pensions at 55 for men and 50 for women if the individual is engaged in physical work. If the individual is disabled, pensions will commence at 50 for men and 45 for women subject to 15 years of contributions.	
India	55 - 58	64	6	Defined contribution + Defined benefit	9.1	Possible from 50 with ten years of contribution (Benefits are reduced by 3% per year of early retirement).	If a member leaves his job before rendering at least ten years of service, he is entitled to a withdrawal benefit.

Sources: World Bank (2006b) and OECD (2009 and 2011b)

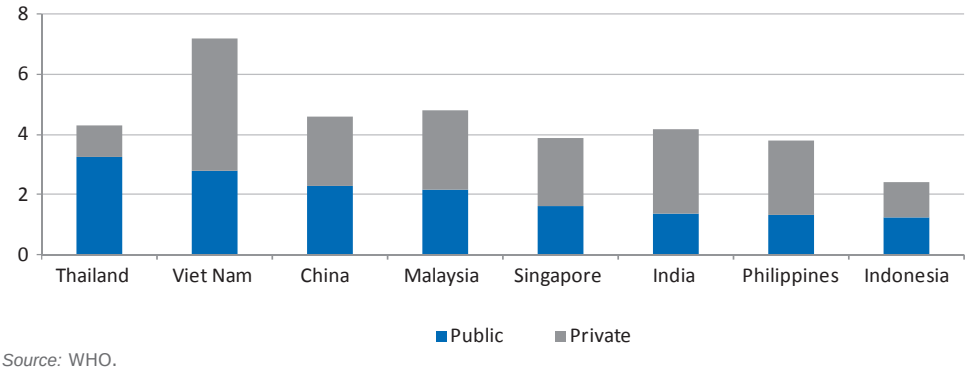
Both defined-benefit (DB) and defined-contribution (DC) schemes exist in Southeast Asia. Briefly, pension entitlements in a DB scheme depend on the number of years of contributions. In DC schemes, individuals contribute each year and the accumulated balance earns a return that depends on the financial performance of the underlying assets (OECD, 2009 and OECD, 2011b). While the pension scheme is based on DB in the Philippines, Thailand and Viet Nam, the DC scheme is applied in Indonesia, Malaysia, Singapore and China.

Under a pure DB scheme, a particular level of benefits is provided regardless of what happens to life expectancy. Increased life expectancy and longer retirement duration mean higher lifetime benefits. On the other hand, the burden of changes in life expectancy is borne by individual retirees under the DC scheme. The amount that they can sustainably take from a pension account of a given size in each period is smaller the longer is life expectancy. In a number of OECD countries, DB pensions are being replaced by DC plans (OECD, 2007b). In the case of India, a hybrid retirement plan comprising both defined benefit and contribution schemes is in place.

Health care systems also need to respond to ageing population

Public expenditure on health care in the OECD ranges between 70% to 80% of total expenditure on health care. In Asia, except for Thailand, the ratio is significantly lower, in most cases below 50%. Total health care expenditure as a percentage of GDP ranges from 2.4% in Indonesia to 7.2% in Viet Nam (Figure 1.17).

Figure 1.17. Public and private expenditure on health care in 2009
(public share of total expenditure: percentage)



Source: WHO.

StatLink http://dx.doi.org/10.1787/888932562146

Although family support has traditionally been common in Asia, this has been changing and will require a rise in the level of public expenditure. For instance, studies have shown that the proportion of those considering that it is the custom or natural duty to care for the elderly in Japan fell from 80% in 1965 to less than 50% in 2000 (Clark *et al.*, 2007).

Table 1.3. Health care systems in Asia

Country	System	Year started	Coverage of system (% of labour force or population)	Entitlement/ Voluntary/ Opt-out/ Compulsory	Financing of system			Expenditure on health as % of GDP (2009)		Public expenditure as a % of total
					Tax	Contribution by				
						Employer	Employee	Total	Public	
Six countries of Southeast Asia								**4.4**	**2.1**	**48**
Indonesia	1) Jamsostek, social insurance for private sector employers with >10 employees or monthly payroll >1 million rupiahs	1968	30% of employed population	Individuals can opt out		x	x	2.4	1.2	52
	2) Askes, health insurance cover for public sector employees	1968, reformed in 1992	24% of population	Compulsory	x		x			
	3) Community based micro-health financing schemes	Various		Voluntary			x			
Malaysia	Employee Provident Fund (EPF)	1991		Compulsory		x	x	4.8	2.2	45
	Social Security Organisation (SOCSO) for employees with monthly payroll <MYR 3 000	1971		Compulsory		x	x			
Philippines	1) PhilHealth, national health insurance	1997	80% of population	Compulsory		x	x	3.8	1.3	35
	2) Co-operative based health insurance	Various		Voluntary			x			
Singapore	2) Medisave, compulsory individual medical savings account scheme	1984	Universal	Compulsory		x	x	3.9	1.6	41
	3) MediShield, low cost catastrophic medical insurance scheme	1990		Individuals can opt out		x	x			
	4) Medifund, medical endowment fund	1993		Entitlement (for the poor)	x					
	5) ElderShield, severe disability insurance	2002		Voluntary	x		x			

Table 1.3. Health care systems in Asia (contd.)

Thailand	1) Civil Service Medical Benefits Scheme (CSMBS), for civil servants	1982	10% of population	Entitlement	x			4.3	3.3	76
	2) Social Security Scheme (SSS) for corporate employees	1990	15% of population	Compulsory	x	x				
	3) Universal Health Coverage scheme (UC) for all others	2002	Remaining 75% of population	Entitlement	x					
Viet Nam	1) Viet Nam Social Insurance (VSS) for salaried workers in the public sector and private sector with >10 employees	1992		Compulsory	x	x	x	7.2	2.8	39
	2) Viet Nam Social Insurance (VSS) for students, farmers, informal sector and private sector with <10 employees	1994		Voluntary			x			
	3) Health Care Fund for the Poor (HCFP)	2003		Enttitlement (for the poor)	x					
Average of Other Emerging Asia								**4.4**	**1.8**	**41**
China	Basic Medical Insurance system for Urban Dwellers for urban salaried employees	1998, reformed in 2009	93% of population	Compulsory	x	x	x	4.6	2.3	50
	Rural Co-operative Medical System (RCMS) for rural workers	2003, reformed in 2009		Voluntary in pilot areas	x		x			
India	Employees State Insurance Scheme (ESIS) for employees working in establishments employing 10 or more persons (with power) or 20 or more persons (without power) and earning less than Rs. 6 500 per month	1948		Compulsory	x	x	x	4.2	1.4	33
	"Central Government Health Scheme (CGHS)"	1954		Compulsory	x		x			
	Community based health insurance schemes	Various		Voluntary			x			

Source: WHO (2005a and b) and OECD (2010c).

Regional health care systems will also need to respond to the challenges arising from the increased health expenditures of an ageing population. Although the health care systems differ across countries, their common challenge is to expand health insurance coverage as well as to improve quality of health services while ensuring the long-term financial sustainability. Along with the rising share of elderly population, health insurance coverage is gradually increasing in the region with universal coverage in Singapore and close-to-universal coverage achieved in Thailand.

As populations will continue to age in the coming decades, it is imperative to ensure the financial sustainability of national health care systems in the region. As Table 1.3 shows, there is room to improve both public and total health spending as a percentage of GDP, since they now average only 2% and 4% of GDP, respectively. For instance, there is potential to convert out-of-pocket payments into pre-payment schemes through health insurance. Recently, there has been growing interest in health insurance not only as a financing mechanism for the overall population, but also as an effective social safety net that provides greater protection for the low-income population against the rising cost of health care services. Countries such as China, India, Indonesia, the Philippines, Thailand and Viet Nam have introduced health insurance schemes and are working towards universal coverage in the near future.

Conclusion

The current economic situation in Southeast Asia has been overshadowed by increased global uncertainties. The combination of a marked deterioration in investors' confidence and financial market turmoil due to uncertainties over US fiscal policy and the Euro-area debt crisis has had a negative impact on the near-term growth prospect of Southeast Asian economies. There is thus no "decoupling" for the region from the global economic turmoil.

Moreover, two large-scale natural disasters, namely the Great Tohoku Earthquake in Japan and the unprecedented scale of floods in Thailand, have added to downside risks in the region, though their direct impacts and repercussions may differ across countries in Asia.

The global economic crisis has also offered an important opportunity for Southeast Asian countries to rethink past growth strategies. Looking beyond the near term, where is the region's economy heading in the next five years? In this context, rebalancing growth will be critical for the region's future. A key question therefore is whether there has been any real progress in this direction and what form rebalancing will take.

This chapter has addressed these questions by providing comparable quantitative information and monitoring of the rebalancing process by applying the Medium-term Projection Framework for Growth and Development (MPF) that has been developed for the *Southeast Asian Economic Outlook*. The main findings are summarised as follows.

- First, overall growth for Southeast Asia will moderate to a level below the 2003-07 rate but solid growth performance will continue until 2016.
- Second, the nature of growth will gradually change, as domestic drivers will play more important roles in sustaining growth in the region. In particular, strengthening infrastructure development within and across national borders and promoting well-crafted social policies will be two critical instruments for maintaining the growth momentum in Southeast Asian countries.
- Third, fiscal balances in the region will gradually improve but remain in deficit in the medium term. There is room to mobilise domestic resources through fiscal reforms on both revenue and expenditure fronts.

Finally, these reforms should be seen in the context of issues arising from ageing populations that will not be negligible for several Southeast Asian countries. Stepping up national efforts to mobilise public resources will be necessary to reshape both pension and health care systems in the region.

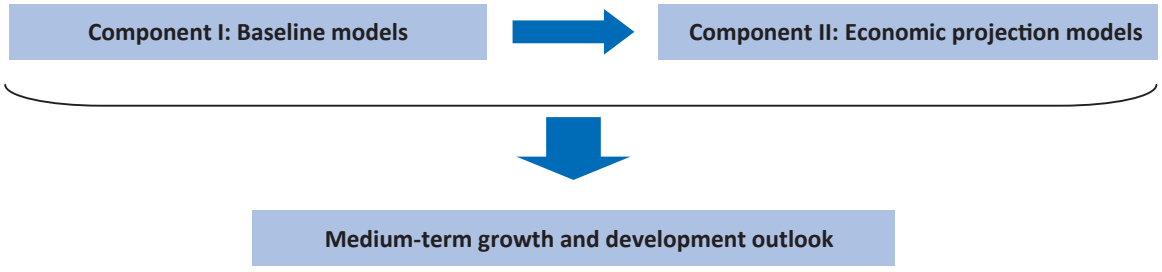
TECHNICAL APPENDIX

The Medium-term Projection Framework for Growth and Development is an analytical tool used for the *Southeast Asian Economic Outlook 2011/12* (MPF-SAEO 2011/12). It was developed in 2010 for the first edition of *Southeast Asian Economic Outlook* (SAEO 2010).

Framework

The Framework has two components: *i)* baseline models for medium-term projections and *ii)* economic projection models.

Figure 1.A.1. How is the MPF-SAEO 2011/12 constructed?



Baseline models determine potential output and the output gap, while the economic projection models provide the components of output and other variables. First, the baseline models derive the GDP series that are consistent with the output gap's closing by 2016. Then these reference series are used as input to economic projection models to obtain a set of variables from the models.

Baseline Models: estimation of potential outputs and output gaps

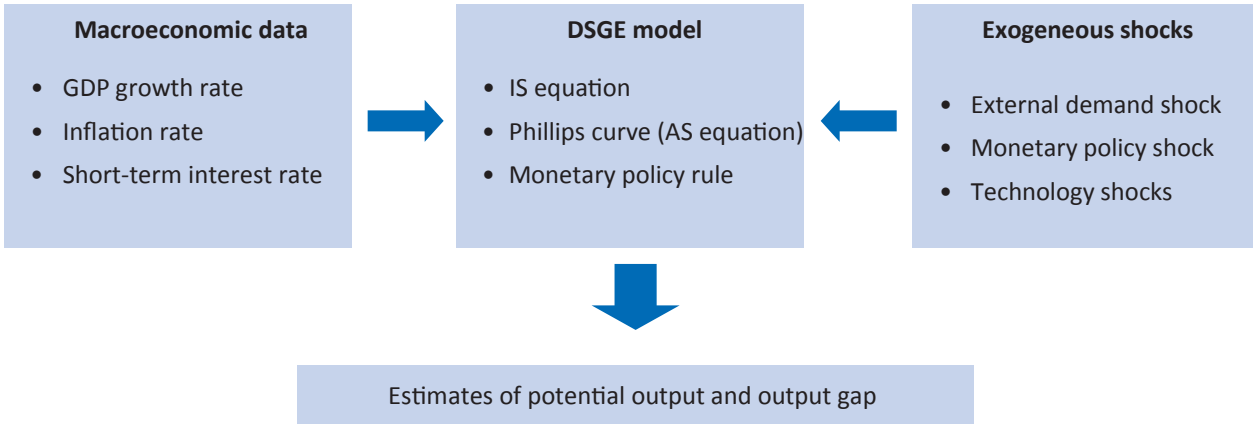
Background

One of the key assumptions for the medium-term projections is related to potential output, which is estimated by the baseline models.

In Southeast Asia, there is no comparable information on output gaps and potential output. Conventionally, potential output is measured either by applying a statistical filter to actual real output data, such as the Hodrick-Prescott filter, or by a production function approach in which potential output is related to labour and capital inputs. The filtering approach is relatively easy to produce results but there are drawbacks resulting from potential instability in the estimates and the need to specify a value for potential output for one period ("end-point" problem); moreover the filtering approach lacks a theoretical base. The production function approach is widely used, but its application to Southeast Asian countries has its limits due to the lack of reliable data.

The estimates of potential output and output gaps used in the baseline models of MPF-SAEO 2010 are based on an alternative approach that has been recently developed, the dynamic stochastic general equilibrium (DSGE) method. The properties of potential output and output gap fluctuations derived from the DSGE approach can be different from those derived from the filtering or production function approaches. A clear advantage of the DSGE approach is that it can provide comparable information on potential output and output gaps for Southeast Asian countries by using relatively easily available data (for instance, GDP, inflation, and interest rates). In addition, this approach has strong theoretical foundations which explicitly reflect the optimising behaviour of households and firms and can take account of different types of shocks from both the supply and the demand side.

Figure 1.A.2. Baseline models of SAEO 2011/12



Theoretical framework

The model for each country is based on a new Keynesian framework that consists of a dynamic Investment-Savings (IS) equation, a Phillips curve (aggregate supply equation), and a monetary policy reaction function. Equilibrium dynamics are driven by three exogenous shocks: total factor productivity (TFP), demand, and monetary policy shocks. The baseline models' parameters are estimated using Bayesian methods. It is assumed that the shocks in the last sample period gradually converge to zero following the estimated stochastic processes. Under these assumptions, the output gap for each country converges to zero by 2016.

The measure of the potential output y_t^* is the equilibrium level of output expected to prevail when the factors of production are at their long-run levels. In this measure, the only driving force of potential output is TFP A_t. Then, the output gap is defined as the deviation of output from its potential level: $GAP = \log(y_t / y_t^*)$, where y_t is the actual output.

The baseline models are completed using relations to determine output, inflation, and the nominal interest rate. These relations are based on the optimising behaviour of households and monopolistically competitive firms that face price stickiness and on a monetary policy interest-rate feedback rule. For empirical validity, the model features gradual adjustment in output, inflation and the interest rate.

The equations presented below are the linear approximation of the model, and the variables are denoted as deviations from the trend levels.

1) Households derive utility from consumption goods and disutility from labour supply. The optimality conditions for utility maximisation give the dynamic IS equation:

$$y_t = \frac{1}{1+b} E_t y_{t+1} + \frac{b}{1+b} y_{t-1} - \frac{1-b}{\sigma(1+b)}(r_t^n - E_t \pi_{t+1}) + \frac{1-b}{\sigma(1+b)}(z_t^d - E_t z_{t+1}^d)$$

where b represents external habit persistence in consumption preferences, σ measures the risk aversion. r_t^n is the nominal interest rate, π_t is inflation, and z_t^d is the demand shock.

According to these equations, demand for output increases (decreases) when the real interest declines (rises). Households adjust their actual consumption to its desired level gradually rather than immediately ("habit persistence").

2) Monopolistically competitive firms maximise their profits by setting the prices of their product.

It is assumed that not all firms adjust prices every period. In each period, a fraction $1\text{-}\theta$ of firms re-optimise prices, while the remaining fraction keeps prices unchanged or indexes prices to past inflation.

Profit maximisation gives a dynamic equation called the New Keynesian Phillips curve:

$$\pi_t = \frac{\beta}{1+\omega\beta} E_t \pi_{t+1} + \frac{\omega}{1+\omega\beta} \pi_{t-1} + \frac{(1-\theta)(1-\theta\beta)}{\theta(1+\omega\beta)} \left[\left(\eta + \frac{\sigma}{1-b} \right) y_t - \frac{\sigma b}{1-b} y_{t-1} - (1+\eta) A_t \right]$$

where β is the subjective discount factor, ω is the weight of price indexation to past inflation and η is the inverse of the labour supply elasticity in the households' utility function. The term in the square brackets represents the real marginal cost for production.

This equation means that the current inflation rate is determined by past and expected future inflation and the real marginal cost. The backward- and forward-looking features of the equation enable the model to replicate realistic inflation dynamics.

3) The monetary authority follows the Taylor-type inflation targeting rule:

$$r_t^n = \rho_r r_{t-1}^n + (1-\rho_r)\left\{\psi_\pi \frac{1}{4}\sum_{j=0}^{3}\pi_{t-j} + \psi_y (y_t - y_t^*)\right\} + \varepsilon_t^r$$

where ρ_r determines the degree of policy smoothing, and ψ_π and ψ_y measure the responsiveness of the interest rate to inflation and the output gap respectively. ε_t^r is the monetary policy shock interpreted as an unsystematic component of the monetary policy.

This means that the monetary authority gradually adjusts the short-term nominal interest rate in response to the deviation of annual inflation from its target and to the output gap.

Empirical framework

The data used for estimation are real GDP (GDP_t), the CPI inflation rate ($INFL_t$), and the short term interest rate (SR_t).These data are related to model variables by the following measurement equations:

$$\begin{bmatrix} GDP_t \\ INFL_t \\ SR_t \end{bmatrix} = \begin{bmatrix} 0 \\ \bar{\pi} \\ \bar{\pi} + \bar{r} \end{bmatrix} + \begin{bmatrix} y_t \\ \pi_t \\ r_t^n \end{bmatrix}$$

where π and $\bar{r}$ are the inflation rate and the nominal interest rate that prevail in the long-run respectively. The real GDP series are de-trended by the HP filter prior to estimation.

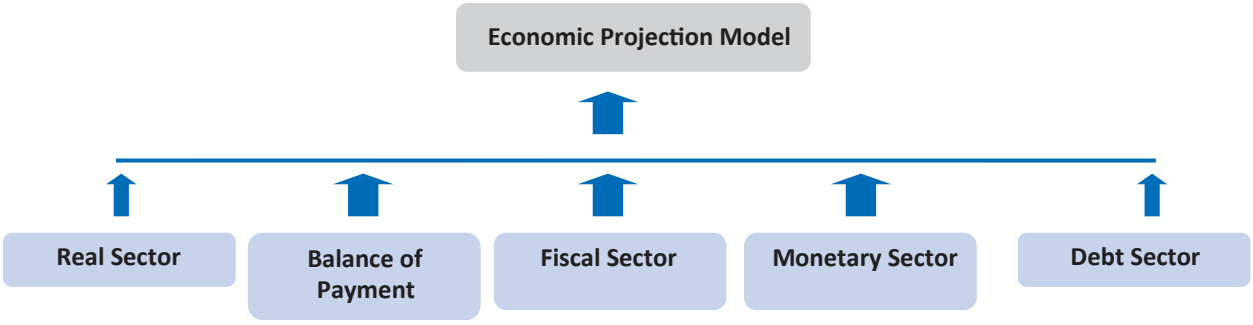
Baseline models of SAEO 2011/12 apply Bayesian methods to estimate model parameters. Given these parameters, the series of potential output and output gaps are then estimated so as to ensure that the results are consistent with both the model and data.

Economic projection models

Using as reference the GDP projections derived from the baseline models, economic projection models are used to provide further details of the forecasts for SAEO 2011/12. Economic projection models are medium-scale demand-driven economic forecasting models that comprise a set of equations describing the five sectors of the economy: the real sector, the monetary sector, the fiscal sector, the balance of payments sector and the debt sector.

The projection results are derived through iterations to identify a set of economic variables in all sectors including the current account, the fiscal balance, investment and private consumption. The Economic Projection Models take into account national development plans subject to their feasibility given the budgetary and other circumstances.

Figure 1.A.3. Economic projection models of SAEO 2011/12



Process

Supplementary data and insights into policy directions were provided during the OECD Development Centre's preparatory missions in July and August 2011. The preliminary results were also discussed with governments and central banks in Southeast Asia during the missions.

Notes

1. Indonesia: Jakarata Composite, Jakarta Stock Exchange
Malaysia: FTSE Bursa Malaysia: Composite, Bursa
Philippines: PSEi, Philippine Stock Exchange
Singapore: SGX, Singapore Exchange
Thailand: SET, The Stock Exchange of Thailand
Vietnam: HCMC, Ho Chi Minh City Securities Exchange Centre
China: Shanghai Composite, Shanghai Stock Exchange
India: S&P CNX Nifty, National Stock Exchange of India Limited

Canada: S&P/TSX: Composite, Toronto Stock Exchange
France: CAC 40, Euronext
Germany: DAX, Deutsche Borse Group
Italy: FTSE, Italian Stock Exchange
Japan: Nikkei 225 Stock, Nikkei
UK: FTSE 100, Financial Times
US: NYSE Composite, New York Stock Exchange

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PART TWO

POLICY CHALLENGES AND RESPONSES

CHAPTER TWO

Coping with global uncertainty: near-term policy responses

Abstract

Southeast Asian countries are now grappling with several policy challenges arising from global economic shocks to their economies. Capital inflows into the region have surged and reached historically high levels. While sustained capital inflows are generally beneficial to recipient countries, past experience indicates that temporary surges can adversely affect international competitiveness by pushing real exchange rates to unsustainable levels and increase risks of excesses in domestic financial markets. Rising international commodity prices are posing further policy challenges by adding to domestic inflationary pressures and imposing burdens on poor households.

Southeast Asian authorities have been fairly successful in managing these problems in the near term. Risks from the surge in capital inflows have been addressed through sterilised foreign exchange market intervention and, in some cases, temporary capital controls without undermining monetary policy control. The impact on households and agriculture industries of increased commodity prices has been addressed through a combination of buffer stocks, temporary import subsidies or export limits, and strengthened monitoring to address shortages and combat predatory abuses.

These near-term policy efforts underscore the need for deeper structural reforms to improve the economic resilience of Southeast Asian economies to global shocks. Financial markets need to be further developed, in part by improving financial disclosure and strengthening compliance with prudential standards. Exchange rate regimes need to become more flexible. Structural reforms to improve productivity are particularly critical to improving their ability to withstand future external disturbances.

Introduction

As documented in Chapter 1, overall Southeast Asian countries have been able to sustain relatively good economic performances despite the weak demand from OECD economies and their medium-term growth prospects are favourable. However, continued success in macroeconomic performance will require careful management of several challenges they are now facing. Capital inflows have risen markedly to historically high levels in a number of countries and are putting upward pressures on Southeast Asian currencies and complicating monetary policy management. Rising international commodity prices, particularly for food and energy, and a milder rise in core inflation as output gaps are closing have increased inflation risks.

This chapter discusses the policies Southeast Asian countries are taking to deal with these problems. ASEAN countries have so far been fairly successful in managing the effects of inflation and large capital inflows and in coping with strains created by volatility in international commodity prices and other global uncertainties. Large-scale sterilised foreign exchange market interventions, reinforced in some cases by direct controls to discourage temporary speculative inflows, have helped to limit disruptions from the large capital inflows without undermining monetary policy. Financial risks from the inflows have been reduced by the financial strength of domestic banks and a successful achievement of key banking reforms mandated under Basel rules. ASEAN countries are also using a variety of measures to buffer against fluctuations in commodity prices and to mitigate harmful effects on poorer households and on agriculture and agribusiness. These near-term policies to manage capital inflows and inflation and deal with global uncertainties need to be followed by deeper structural reforms to improve economic resilience in the longer term.

Near-term policy challenges in the region

Strong capital inflows into Southeast Asian economies have been placing upward pressures on their exchange rates. However, monetary authorities need to be cautious in countering currency appreciations as excess economic capacity diminishes with strong real growth and rising international commodity prices add to domestic inflationary pressures. Policies to address burdens on poorer households and agriculture sectors from fluctuations in international commodity prices need to be carefully designed in order to avoid economic distortions.

Capital inflows to Southeast Asia have reached historically high levels

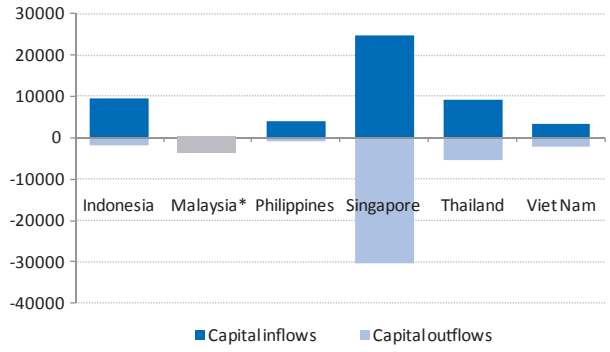
Growing confidence and high interest rates in Southeast Asian economies, coupled with the rise in uncertainty and slackening growth momentum in most OECD countries, have boosted capital inflows into the region. Total capital inflows into the six largest economies in the region reached an average of more than USD 40 billion during each quarter in 2010 (Figure 2.1). This average level is significantly larger than the average quarterly flows observed before the 2009 crisis and also larger than the average flows recorded before the 1997-98 crisis.

Indeed, inflows have shown no signs of abating: for instance, the latest data for Singapore show that capital inflows to this country alone reached almost USD 40 billion in the second quarter of 2011.

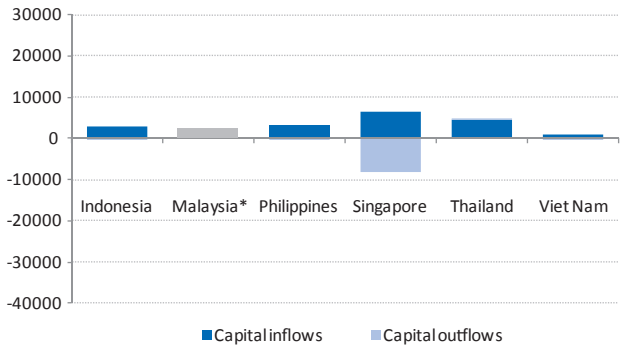
Capital inflows have rebounded sharply in all Southeast Asian countries. While some Southeast Asian countries such as Malaysia, the Philippines and Thailand have gone back to historical averages, inflows to the other countries (*i.e.* Indonesia, Singapore and Viet Nam) have surpassed historical records.

Figure 2.1. Capital inflows and outflows of six countries of Southeast Asia
(quarterly average, millions of current USD)

a) From 2010-Q3 to 2011-Q1



b) From 1996-Q1 to 1996-Q4



Note: * Net capital flows for Malaysia
Source: CEIC.

StatLink http://dx.doi.org/10.1787/888932562165

All the major types of capital inflows are rising

The recovery in capital inflows into Southeast Asian countries has occurred in all of the major categories. Foreign direct investment (FDI) inflows have risen considerably since their lows in the first quarter of 2009 – when total FDI inflows were less than USD 8 billion – to surpass USD 25 billion in the first quarter of 2011. Other types of capital inflows, such as bank loans and portfolio investment, are also increasing.

Capital inflows are in general beneficial to the region. They contribute to growth by funding domestic investments that might otherwise be unrealised. FDI provides a relatively stable source of capital when compared to other sources of financing, a direct consequence of its link to long-term commitments that fund domestic productive sectors. Foreign capital inflows are also a healthy sign of financial openness and integration with the rest of the world. In 2010, capital inflows accounted between 15% (in Indonesia) and more than 100% (in Singapore) of total investment, with a median ratio of 35% among the six countries of ASEAN. On average, FDI constituted more than 35% of capital inflows to each of these countries.

With the exception of Viet Nam, most Southeast Asian economies are net lenders of capital, but they are all simultaneously large recipients of capital inflows (Figure 2.1). This serves as evidence that such large capital inflows have not only reduced the cost of investment, but also indirectly favoured faster financial development.

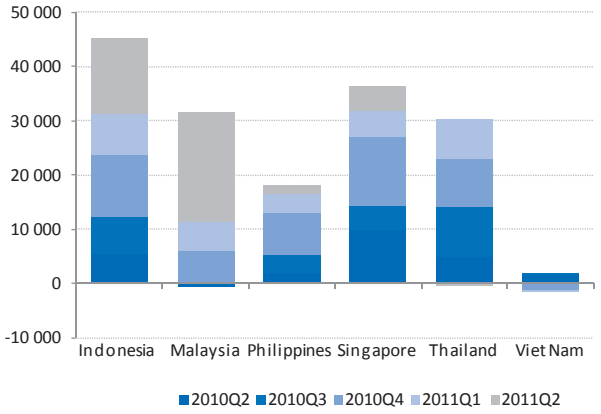
Most Southeast Asian economies faced upward pressures on their currencies in 2011

Large capital inflows have led to upward pressures on the currencies of most Southeast Asian countries. Foreign exchange market interventions by regional monetary authorities to counter these pressures have resulted in large increases in foreign exchange reserves.

The increase in reserves has largely been sterilised, as the risk of inflation has deterred central banks from injecting additional liquidity into their domestic markets. As a result, short-term nominal interest rates have remained stable while longer-term rates have been reduced. For instance, in Indonesia, one month interest rate on deposit at commercial banks has been stable between the end of 2009 and mid-2011 at around 6.8-6.9% and the 12-month deposit rate has been reduced from 9.6% to 6.9% during the same period.

Although not as liquid as bank reserves, the injection of longer maturity instruments resulting from sterilised interventions does affect investors' and consumers' decision making, and thus does not entirely shield the economy from inflationary pressures. Furthermore, sterilisation will be ineffective if appreciation pressures are not cyclical, but are a result of structural and permanent phenomena. If the pressures are cyclical, monetary authorities can withdraw the increase in domestic securities once the appreciation pressure recedes. However, if pressures persist, rolling over and further issuing short-term financial instruments will feed into inflation expectations.

Figure 2.2. Reserve accumulation of six countries of Southeast Asia
(quarterly, millions of USD)



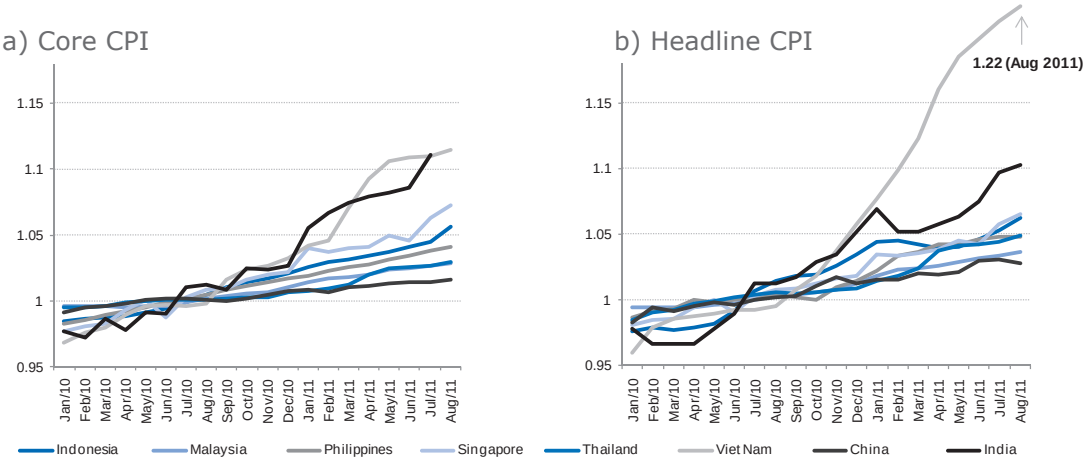
Sources: CEIC and national sources.

StatLink http://dx.doi.org/10.1787/888932562184

Inflationary pressures still exist amid global uncertainty

Inflationary pressures rose in the first half of 2011 – mainly due to the rise of international food and energy prices – and have persisted into the second half of this year. Recent data indicate that both headline and core inflation will be persistent (Figure 2.3).

Figure 2.3. Consumer price index
(index 2010 = 1)



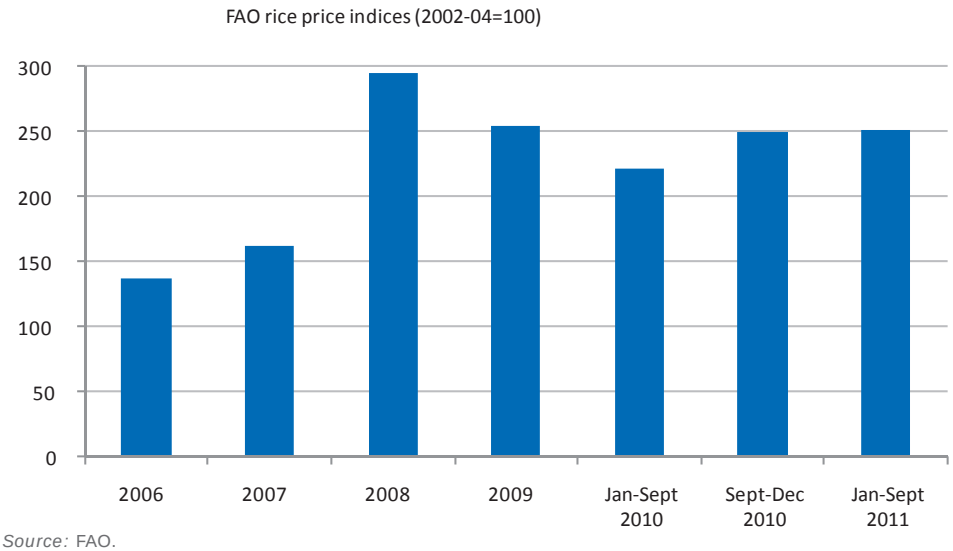
Notes: Definition of core inflation differs among countries: Simple average CPI of non-food components in China. Weighted CPI of non-food and non-fuel components for industrial workers in India. Weighted average of non-food and non-fuel components of CPI in Malaysia. Weighted average of non-food and non-household fuel components of CPI in Singapore. Weighted average of non-food components of CPI in Viet Nam.

Sources: OECD, CEIC and national sources.

StatLink http://dx.doi.org/10.1787/888932562203

World food prices are still near historically peak levels. The most recent (September 2011) figure for the Food Price Index issued by the Food and Agriculture Organization (FAO) was only 6% lower than its peak recorded in February 2011, but it remained 22% higher than the average level observed in 2010 and 43% higher than its average in 2009 (Figure 2.4). A new surge in food prices is not expected in the near term, owing in large part to positive prospects for most of 2011 harvests. However, the potential volatility in food prices that springs from supply shocks and low short-term demand elasticity in food markets remains a source of risk to the outlook in Southeast Asia.

Figure 2.4. Rice price index, 2006-11

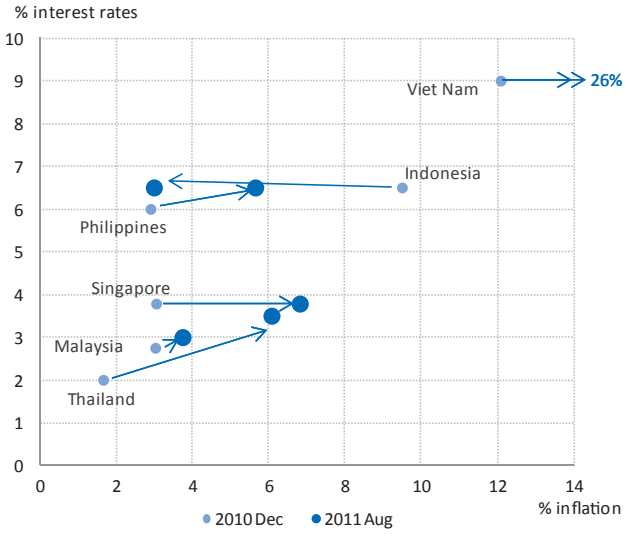


Source: FAO.

StatLink http://dx.doi.org/10.1787/888932562222

Global financial and economic volatility has added to uncertainty about inflation in the region. Monetary policy stances vary across countries. Malaysia, the Philippines and Thailand have tightened their monetary policy stances (Figure 2.5). Monetary policy remains particularly tight in Viet Nam, where inflation remains very high. On the other hand, Indonesia has eased monetary policy recently. Singapore represents a different story, as it follows an exchange rate targeting regime so that short-term interest rates are not a direct policy tool.

Figure 2.5. Evolution of inflation and policy interest rates
(annual percentage changes)



Notes:

a) The figure above illustrates inflation on the horizontal axis and policy interest rates on the vertical axis. For each country, the figure plots inflation and interest rates at the end of 2010 and in September 2011. As a consequence, a movement to the right in the figure means rising inflationary pressures in the first half of 2011, while a movement upwards corresponds to tightening monetary policy in the same period. The figure shows how Viet Nam is an outlier, with inflation peaking at above 25% by September 2011.
b) Singapore's monetary authority does not directly use interest rates as a policy tool. Figure 2.6 uses one-month interbank interest rates instead.

Sources: CEIC and national sources.

StatLink http://dx.doi.org/10.1787/888932562241

Policy responses to cope with increasing global uncertainties

Southeast Asian countries need to be vigilant over near-term policy management amid increased global uncertainty. Policy tools in each country need to be tailored to the expected duration of the cycle and to the nature of the specific financial and macroeconomic risks the country faces. There is vast analysis of the sources of these risks, including government policy mismanagement, banks' misallocation of risk and swings in investors' sentiment. Options chosen by policy makers need to be drawn from the policy space delineated by such risks.

There are four key policy issues that need to be addressed by Southeast Asian authorities.

- Volatility of capital flows needs to be managed by appropriate macroeconomic policies.
- Measures to encourage longer-term capital inflows need to focus on improving the domestic climate for FDI if they are to have more than temporary success. Further development of domestic financial markets will help to encourage longer-term capital inflows.
- Well targeted measures, in particular on low-income households and/or the agricultural sector, will be important to lessen the negative effects of commodity price inflation.
- Strengthening structural policies to enhance productivity is a key to coping with global uncertainties.

Surges in capital inflows can have negative consequences that need to be managed

Sustained capital inflows create economic benefits to recipient countries over the longer term. However, at the same time large transitory capital inflows may create major imbalances, which eventually trigger costly adjustments and deep economic losses. Empirical evidence of the problems large unsustainable inflows can cause is abundant. For instance, Asia's large capital inflows in the 1990s ended with the 1997-98 Asian financial crisis, which resulted in a 13% decline in gross domestic product (GDP) in Indonesia.

Policy makers in the region have responded differently to the recent surge in capital inflows compared to the run-up to the 1997-98 Asian crisis (see Table 2.1). In general, negative effects have been well-controlled so far.

Risks arising from large capital inflows may be grouped into two broad categories: the decline of competitiveness *vis-a-vis* the rest of the world; and threats to the stability and control of the financial system. Regarding the first risk, the decline of export competitiveness is a direct consequence of the significant real exchange rate appreciation that regularly accompanies episodes of large capital inflows. In export-oriented economies such as Malaysia, Thailand and Singapore, real appreciation has a direct negative impact on export sectors that constitute more than 50% of GDP. Real appreciation also has significant negative impacts on exports in less open countries such as Indonesia, where exports average around 25% of total GDP and contributed more than a third of total economic growth in the first quarter of 2011.

Reduced competitiveness of the tradeable sector would not be a problem if the rise in capital inflows were permanent. In that case, the reduction in the size of the export sector represents a structural change and a new equilibrium outcome. In this case, exchange rate intervention would be counterproductive in several ways: it would be economically inefficient and costly for the government and prone to engender conflict with neighbouring countries in the region and more broadly with the international community. On the other hand, episodes of cyclical capital inflows do merit intervention, as they may reduce competitiveness while following a "Dutch disease" chain of events. In this case, otherwise competitive firms may irreversibly lose their advantage during the capital boom and cannot compete once capital inflows fall back to "normal". Transitory intervention can in such cases be both efficient and legitimate in the eyes of a country's international peers.

Table 2.1. Comparison of the 1997-98 Asian crisis and years preceding the recent global financial crisis

	Prior to 1997	During the Asian financial crisis	Current situation
Economic background	• High interest rates in Asia. • Huge capital inflows. • Flows reversed as interest rates in the US rose. • USD appreciated.	• Capital flight. • Under the currency peg, the baht and rupiah became overvalued. • With floating exchange rates in Malaysia, the Ringgit depreciated sharply. The peso and the Singapore dollar depreciated gradually. • Some countries took drastic measures in response to the crisis.	• Strong growth in Asia. • Huge capital inflows. • Flows are multiples of that prior to the 1997-98 Asian financial crisis. • Fear of capital flight.
Policy response: Thailand and Indonesia		• Thailand's and Indonesia's central banks tried to defend the fixed exchange rates, depleting reserves. • Baht and rupiah were floated (Bank Indonesia and the Bank of Thailand intervened in the market to prevent excessive volatility).	• Indonesia and Thailand imposed capital controls and other measures to lengthen the maturity of the flows.
Policy response: Malaysia		• Malaysia imposed capital controls and pegged the ringgit to the USD under a fixed exchange rate regime. • In 2005, Malaysia moved to a managed float against a basket of currencies.	• Malaysia did not impose capital controls.
Policy response: Philippines and Singapore		• Floating exchange rate is maintained (the Singapore dollar is managed against a basket of currencies of its major trading partners and competitors).	• The Philippines and Singapore did not impose capital controls.

Source: OECD Develoment Centre's compilation based on national sources.

Financial instability is a risk factor associated with transitory capital inflows. The recent literature has illustrated four main channels through which such large capital inflows may create negative financial consequences.

- Increases in short-term external liabilities (both public and private) may induce maturity mismatches and thus require large volumes of debt rollover. As observed in the 1997-98 crisis and the Mexican crisis before it, such a situation is prone to self-fulfilling episodes where expectations of a future default dry up external finances; the resulting inability to roll over external debt then forces a default (Cole and Kehoe, 1996; and Chang and Velasco, 2000).
- Financing of large current account deficits may become impaired. In a seminal paper, Milesi-Ferretti and Razin (2000) emphasise the dangers of large current account deficits that must be compressed when external financing dries up (a phenomenon they named "current account reversals"). Although their conclusion was based on Thailand and the costly aftermath of the 1997-98 crisis, large current account deficits have been since associated with low productivity long-term growth around the world (Mello, De *et al*, 2011). This is especially relevant when good macroeconomic management is not in place and inflows finance consumption or unproductive investment (such as potentially inefficient non-tradeable sectors).
- Balance sheet currency mismatches may lead to a domestic banking crisis when the domestic banks and/or their business clients hold liabilities denominated in foreign currency while their assets are denominated in domestic currency. The unfolding and magnification of the banking crisis is characterised by a sudden interruption of capital inflows (Calvo,1998).
- Domestic asset bubbles and their subsequent bursts may lead to macroeconomic instability. Both theory and empirical evidence have shown that relatively shallow financial markets in emerging economies are particularly vulnerable to such risks. In particular, lack of prudent banking regulation plays an important role in feeding a bubble and later magnifying the macroeconomic losses of its burst.

There is room to strengthen macro-prudential policies in the region

Macro-prudential policy consists of regulation aimed at guaranteeing stability of the financial system as a whole. In practice, the emphasis is on banking regulation that prevents the rise of systemic risks in the banking sector due to currency and maturity mismatches and to asset-market bubbles sparked by sudden large capital inflows or domestic factors.

Since the 1997-98 crisis, Southeast Asian countries have been implementing macro-prudential policies to avoid the risk arising from maturity and currency mismatches. Indonesia, for example, has succeeded in reducing by half its ratio of short-term external debt to its total external debt (12% in 2009). It has also stopped, as of 2011, issuing one-month maturity SBIs (Bank of Indonesia Certificates) in favour of longer maturity issuance. Other countries such as Malaysia and Thailand still have high short-term external debt ratios, but have advanced significantly in banking regulation and in reducing currency mismatches.

Banks in the region have relatively high capital adequacy ratios and meet the Basel rules

Traditional prudential policies have emphasised capital requirements and the monitoring of bank credit. The recent financial crisis laid bare the shortcomings of that prudential framework. Overhaul has come in the form of the Basel III solvency and liquidity rules. The collapse of Lehman Brothers drove home the importance of adequate liquidity to the stability of financial markets and of the banking sector. To strengthen global capital adequacy and enhance resilience in the banking sector, Basel III requires banks to hold 4.5% of common equity (up from 2% in Basel II) and 6% of Tier 1 capital (up from 4% in Basel II) of risk-weighted assets. Basel III also introduces an additional mandatory capital conservation buffer of 2.5% and a discretionary countercyclical buffer, which allows national regulators to require up to another 2.5% of capital during periods of high credit growth. These reforms seek to improve the banking sector's ability to absorb shocks arising from financial and economic stress, thus creating a more robust global financial system. The ultimate goal is to reduce the risk of spillover from the financial sector to the real economy.

Emerging economies have generally welcomed the new regulatory framework as their financial systems are relatively well capitalised and in a much better position to meet Basel III recommendations than banks in most developed economies. Capital levels are higher to start with and liquidity is generally strong given lower loan-to-deposit ratios. In addition, existing financial instruments in emerging markets are less sophisticated and banks have engaged in less complex derivative, structured and off-balance sheet activities.

Most of the Southeast Asian economies have announced their intention to adopt Basel III and are analysing how to do it. The Philippines is phasing in Basel III this year. Malaysia and Singapore will be implementing Basel III in 2013. In fact, the Monetary Authority of Singapore has set capital levels for local lenders above the global minimum to solidify the city's position as an international financial hub. Lenders incorporated in Singapore will need to meet a minimum common equity Tier 1 capital adequacy ratio of 6.5% from 1 January 2015, 2 percentage points higher than the Basel III rules. While Indonesia is still implementing Basel II, the Deputy Governor of the Bank of Indonesia has highlighted that the Indonesian banking Tier 1 ratio is much higher than 4.5%, at 14 to 16%. Similarly, the Deputy Governor of the Bank of Thailand sees little difficulty in complying with new capital requirements, and the Vice Chairman of Viet Nam's National Financial Supervision Committee has confirmed that Vietnamese banks already meet the minimum ratios.

China is speeding up implementation of stricter financial regulation based on Basel III ahead of the schedule proposed by the Basel Committee on Banking Supervision (BCBS). In May, the China Banking Regulatory Commission (CBRC) announced its plans to step up efforts to strengthen supervision by implementing new and stricter regulations based on Basel III principles. In India, regulators have taken a number of initiatives to ensure smooth transition of the banking sector to the Basel III framework and to provide support for the implementation of the new framework in line with the time schedule fixed by the BCBS.

Even though the adoption of Basel III recommendations will be smoother in emerging countries than in developed economies, stricter financial regulations will pose challenges. Areas of concern include high compliance costs, reduction in the banks' competitiveness and a higher cost of capital. The OECD study by Slovik and Cournède (2011) estimates that Basel III implementation would lower GDP growth by −0.05 to −0.15 percentage point per annum, as a sort of cost of implementation. Economic output is mainly affected by an increase in bank lending spreads as banks pass a rise in bank funding costs, due to higher capital requirements, to their customers. To meet the new capital requirements, banks are likely to increase lending

spreads by an estimated 15 basis points on average. The higher cost of credit would make capital more difficult to access and some analysts fear that banks could have a significant funding gap in the next five years (BBVA (2011) and Mckinsey (2010)). To offset this negative impact on economic output, countries could reduce (or delay increases in) monetary policy rates.

However, disclosure needs to be improved to allow effective enforcement of the standards

Although Asian banks are generally well capitalised and should be able to meet the new Basel III rules, public disclosure is still lagging. Effective enforcement of the stricter prudential rules requires transparency and adequate disclosure. Beyond standards setting, governments need to recognise that stringent reporting requirements, regular auditing and effective enforcement are key to ensure good governance. Best practices for disclosure need to be clearly established. In addition, markets are growing in sophistication and governments need to strengthen the existing supervisory framework to keep up with the developments. For instance, as capital markets grow and develop, it is important to assess and review the regulatory framework for credit rating agencies in the region. New and more sophisticated financial derivatives may easily undermine existing prudential safeguards.

Measures to lengthen the term of capital inflows are temporarily effective

The effectiveness of capital controls has been one of the most debated issues not only in policy making but also in economic theory. Their use can be seen as a transparent and politically less costly way of maintaining control of both the currency's exchange rate and domestic monetary policy in the face of high international capital mobility. Others think that such policies tend to be both inefficient and ineffective (Magud *et al.* 2011) but acknowledge that they may be of limited usefulness in some circumstances.

However, there is a growing consensus that capital controls should be conceived as temporary measures, with explicit time-lines or exit criteria. Reflecting on the recent theoretical and empirical arguments, policy makers in the region are concerned about such inflows and their potential reversals, which may jeopardise the region's economic stability. Emerging Asian countries have already introduced various measures to restrict short-term, volatile capital flows, without discouraging long-term FDI.

Countries in the region have taken different approaches to deal with these flows (see Table 2.2). For instance, Indonesia and Thailand have imposed a range of measures to alter the composition of capital inflows toward longer maturities. The objective is to ensure financial stability in the face of the increased inflows, which could put upward pressure on exchange rates and inflate asset price bubbles. Indonesia introduced a one-month minimum holding period on Sertifikat Bank Indonesia (SBIs) in June 2010 and phased out one- and three- month SBIs in favour of 9- and 12-month SBIs. This move was followed by reimposition of a limit on short-term foreign borrowing by banks to 30% of capital in March 2011. From 2006 to 2008, Thailand imposed a 30% Unremunerated Reserve Requirement (URR) on foreign currencies sold or exchanged against the baht (except for FDI). Early withdrawals were subject to approval by the Bank of Thailand and were penalised by withholding one-third of the deposit. A 15% withholding tax on non-residents' interest earnings and capital gains was reinstated in October 2010.

On the other hand, Singapore and China have targeted inflows into the real estate market. The minimum holding period on private residential property in Singapore was raised to three years beginning in August 2010. In addition, the loan-to-value (LTV) ratio for mortgage lending was lowered for second homes and stamp duties were raised. Similarly in China, LTV ratios for second and third homes were lowered, and taxes on resale of properties within five years increased. Other countries such as Thailand, Malaysia and the Philippines have sought to balance capital inflows by encouraging outflows. Limits on residents' purchases of foreign investments were raised in 2010.

Table 2.2. Recent measures to manage capital flows

Country	Measures to lengthen the term of capital inflows	Other measures
Southeast Asian countries		
Indonesia	One-month minimum holding period on SBIs	Increased reserve requirements on FX deposits
	Reimposition of limit on short-term foreign borrowing	
Malaysia		Raised limits on overseas investment under the Employee Provident Fund
Philippines		Increased ceilings on residents' purchase of foreign exchange and foreign assets
Singapore	Three-year minimum holding period on private property	Lowered LTV ratio for second homes. Raised stamp duties.
Thailand	2006-08: Imposed a 30% URR on foreign currencies sold or exchanged against baht	Raised ceilings on residents' outward investment
		Reinstated a 15% withholding tax on non-residents' interest earnings and capital gains
Viet Nam		Cap on securities-related credit
Other Emerging Asia		
China	Increased taxes on property resale <5 years	Lowered LTV ratios for second and third homes. Raised downpayment requirements.
India		Increased reserve requirements for real estate credit

Source: OECD Development Centre's compilation based on IMF and UNCTAD.

Determining the impact of capital controls on financial inflows is difficult given that these measures are almost always part of a broader package of policies, all of which can affect capital inflows. Disentangling the effects of different policies and quantifying the contribution of the capital controls poses difficult statistical problems. This is further compounded by the problem of circumvention as targeted flows find other channels to enter the country.

Recent econometric studies (IMF 2011 a, b, c; Habermeier *et al.*, 2011) on the effectiveness of capital controls in countries such as Brazil, Colombia, Korea and Thailand in the 2000s did not provide very definitive conclusions as the measures saw mixed success. Generally, there was no effect of controls on the overall volume of inflows, though there was significant evidence in Brazil, Chile, Colombia, Croatia, Malaysia and Thailand that controls can increase the maturity of inflows (Habermeier *et al.*, 2011).[1]

However, even in cases where capital controls were effective in lengthening the maturity of inflows, the impact was short-lived as market participants eventually found ways to circumvent the controls. This suggests that capital controls are best suited to dealing with temporary surges in capital inflows. Structural policies play an important role in enhancing the long-term capacity of the economy to absorb inflows and to cope with volatility. It is critical to develop a deep and resilient domestic financial market (fixed income, equities and foreign exchange), with improved regulation and supervision of the financial sector.

While reforms in regulatory and supervisory frameworks have led to deepening and broadening of capital markets in Asia, along with improved corporate governance and transparency, some markets in the Southeast Asian countries are still small and relatively less developed. Possible measures for market development include strengthening the legal and regulatory frameworks for local derivative markets (by aligning local and international accounting standards to facilitate the development of hedging mechanisms), enhancing disclosure requirements and improving transparency of issuers. For instance, standardised reporting and wider use of credit scoring can help to narrow information gaps and attract investors. Governments can also help to ensure liquidity along the whole maturity spectrum and to facilitate issuance of longer-term debt instruments. Given the global nature of capital flows, it is also necessary to increase regional co-operation

and co-ordination. Information sharing in monitoring and regulating financial institutions can be enhanced to strengthen the capacity to co-ordinate policies in response to fast-paced changes in financial markets.

Increasing the share of foreign direct investment in capital inflows is important

In Southeast Asia, there is room to reduce restrictions to FDI in order to attract more long-term inflows. In a standard neo-classical investment model, capital stocks are adjusted such that after-corporate-tax rates of return are equalised across locations. This assumes that multinational companies take tax incentives into account when making locational decisions, and that tax incentives operate at the margin to swing investment decisions in favour of the host country. This theory predicts increased (decreased) investment following a decrease (rise) in the host country corporate tax burden and the result has been empirically supported by a range of studies. Empirical studies of the relation for the most part have confirmed a negative relation between taxation and FDI, although they have arrived at a wide range of estimates for the tax elasticity of FDI. When Ederveen and de Mooij (2003) carried out a review of the literature across 31 empirical studies, they found an average semi-elasticity value of –3.72 (measuring the percentage change in FDI in response to a 1 percentage point change in the tax rate).

Success in attracting foreign capital is believed to improve a country's economic performance by generating increased employment, increased incomes and higher tax revenues, and by creating a stronger industrial and economic base, improved infrastructure and increased living standards. At the same time, inflows of foreign capital are often believed to improve a host country's productivity and thus its cost competitiveness, for example through access to production or process technologies used elsewhere by parent companies. Given these potential benefits, policy makers continually update their tax rules to ensure that they remain competitive and will continue to attract investment. Corporate income taxes have been reduced across the board over the past decade in most of Asia, except for Thailand (Table 2.3).

Table 2.3. Recent corporate tax changes

Country	Corporate tax rates			
	2000	2011	Change	Recent changes and proposals
Southeast Asian countries				
Indonesia	30	25	-5	Reduced from 30% to 28% in 2009 and 25% in 2010.
Malaysia	28	25	-3	Reduced from 28% to 27% in 2007, 26% in 2008 and 25% in 2009.
Philippines	32	30	-2	Reduced from 32% to 30% in 2009.
Singapore	26	17	-9	Reduced from 18% to 17% in 2010.
Thailand	30	30	0	Proposed reduction from 30% to 23% in 2012 and to 20% in 2013.
Viet Nam	32.5	25	-7.5	30% reduction for small and medium enterprises in 2008 and 2009.
Other Emerging Asia				
China	33	25	-8	Reduced from 33% to 25% in 2008.
India	38.5	30	-8.5	Proposed reduction to 25%.

Source: Ernst & Young: *Asia Pacific Tax Policy Outlook*.

However, restrictions on foreign equity ownership persist with high intra-regional variance (see Table 2.4). Singapore has relatively lower levels of restrictions, while China and India have maintained relatively restrictive laws and regulations. In addition to Singapore, countries such as Malaysia, Thailand and Viet Nam have liberalised terms for foreign investments in the manufacturing sector. However, restrictions in the primary and service sectors are still high. In particular, foreign ownership of domestic companies is limited in media, telecommunications, transportation, electricity and the financial sector.

Table 2.4. Foreign direct investment restrictions by broad sectors

Country	Foreign capital restrictions in			Other comments
	Primary sectors	Manufacturing	Services	
Southeast Asian countries				
Indonesia	Yes in forestry, oil & gas	Yes	Telecommunications, electricity, banking, insurance, transport	Policy certainty and transparency improved with the Investment Law passed in 2007 and the negative list.
Malaysia	Yes in agriculture, oil & gas	No (fully open)	Telecommunications, electricity, banking, insurance	Foreign capital participation is limited in primary and services sectors.
Philippines	Yes in agriculture, oil & gas	Yes	Telecommunications, electricity Media: closed	Ownership limitations in many industries, in particular the primary and service sectors.
Singapore	No (fully open)	No (fully open)	Transport, broadcasting, newspaper	Foreign participation is limited in some services sectors.
Thailand	Yes in agriculture, oil & gas	Yes (majority are fully open)	Telecommunications, electricity, banking, insurance, transport	Thailand imposes stringent restrictions on foreign equity ownership in many sectors.
Viet Nam	Yes in oil & gas	Yes (majority are fully open)	Telecommunications, electricity, Media closed	Foreign capital participation is limited in services sectors.
Other Emerging Asia				
China	Yes in oil & gas	Yes (majority are fully open)	Telecommunications, electricity, banking, insurance, transport. Media: closed	While manufacturing sectors are largely open to foreign equity ownership, foreign capital participation is limited in primary and services sectors.
India	Yes in agriculture	No	Telecommunications, banking Railway freight transportation: closed	India imposes restrictions on foreign equity ownership in many sectors, in particular service industries.

Source: World Bank: Investing across borders.

Despite the trend towards liberalisation, foreign participation in services sectors is still heavily restricted in Asia. In Indonesia, policy certainty and transparency have improved with the Investment Law passed in 2007, clarifying a number of issues that had been uncertain for investors (*e.g.* investment licensing). In addition, the Negative List of 2010 opened some sectors to greater foreign participation. Nonetheless, Indonesia scored 0.332 on the OECD's FDI Restrictiveness Index, compared to the OECD average of 0.095[2]. The pervasiveness of foreign equity restrictions in numerous sectors makes Indonesia much more restrictive towards FDI than the average in OECD countries. Current efforts to harmonise the bewildering array of foreign equity limits have to be strengthened.

Similarly, India remains restrictive in comparison with the average in OECD countries, scoring 0.220. Although India has greatly liberalised the policy framework for FDI since 1991, many FDI restrictions remain on relatively low-productivity sectors. Growth could be accelerated in sectors such as agriculture and banking, where the influx of FDI could raise productivity and generate higher incomes. India should regularly review foreign ownership ceilings in sectors such as banking and insurance to ascertain that their costs do not outweigh their expected benefits.

Although the majority of the manufacturing sector is open to foreign equity participation, China scores 0.457 on the FDI Restrictiveness Index as the primary and services sectors remain heavily regulated. In 2006, the Chinese Ministry of Commerce (MOFCOM) announced a new set of Regulations on the Acquisition of Domestic Enterprises by Foreign Investors. This added a new screening requirement on cross-border mergers and acquisitions transactions in which the foreign investor obtains controlling rights of a domestic enterprise if the acquisition: involves a major industry; has or may have an impact on national economic security; or may result in the transfer of famous trademarks or traditional Chinese brands. However, there remains a lack of clarity as terms such as "major industry", "impact on national economic security", "famous" trademarks and "traditional" Chinese brands are not defined. To enhance transparency, China should move towards a "top-down" approach, which starts with a presumption that all sectors are open to foreign investment except those explicitly cited in a closed list.

There has also been an increased risk of investment protectionism. Countries have used FDI restrictions for industrial policy purposes connected to the protection of infant industries, national champions, strategic enterprises or ailing domestic industries in times of crisis. Recent restrictive measures have mainly targeted a few industries, in particular natural resource-based industries and financial services. For instance, the Indonesian law No. 4 of 2009 (the "Mining Law") issued in February 2010 generally requires foreign shareholders to divest a portion of their ownership in Indonesian mining concessions to local parties within five years of commencement of production. Also in February 2010, India put caps on foreign investment into mobile television broadcasting, allowing a maximum of 74% of equity. In the OECD, a few major foreign investment deals have been blocked. For instance in November 2010, the Canadian Ministry of Industry rejected the Australian mining company BHP Billiton's proposed acquisition of PotashCorp, a Canadian fertiliser mining company. In Australia, the Australian Stock Exchange (ASX) takeover by the Singapore Stock Exchange was blocked on national interest grounds.

Well targeted measures, in particular to low-income households and the agricultural sector, will be needed

Governments in the region need to further build targeted and efficient mechanisms to reduce the costs associated with high volatility of international commodity prices. In particular, reducing the impact of commodity price volatility on low-income households goes a long way towards alleviating poverty. Targeted measures that are currently being considered include: "insurance mechanisms" (acquisition of options or stock accumulation of food supplies in case of price increases), direct transfers to the sectors most vulnerable to food price increases and investment in domestic agricultural sectors.

Although the recent measures to address inflationary pressures differ among countries, there are some common features in the region (see Table 2.5). Most Southeast Asian countries as well as China and India apply direct transfers to the most affected groups as well as price controls and product subsidies. Direct transfers are implemented through several forms, such as increases in salary and social benefits, food aid, credit and grant programmes, tax or utility bill rebates, and guaranteed minimum purchase prices for farmers' agricultural products.

Other measures implemented across the region include insurance mechanisms, trade policies, co-ordination enhancements, and the monitoring and enhanced production of products affected by inflationary pressure. For instance, insurance mechanisms against commodity price volatility, such as building buffer stocks of food products, are present in Indonesia, Malaysia, Thailand and India.

Trade policies can take two forms. Countries that export a commodity can impose restrictions on foreign sales in order to moderate the increase in the commodity's domestic price (*e.g.* export restrictions on rice exports in Viet Nam). A net importer of the product can moderate increases in its international price by lowering import duties (*e.g.* the suspension of import tariffs on rice in Indonesia). Measures aimed at enhancing domestic agricultural production can also help to cushion against international commodity price increases. Examples are Malaysia, where government funds are allocated for the upgrading of the drainage and irrigation systems as well as the usage of high quality paddy seeds; and Viet Nam, where there is an exemption from land lease charges for construction of storage facilities for rice, corn, aquatic products, vegetables and coffee.

Measures have also been taken to enhance co-ordination and monitoring of key products or sectors in order to better deal with price volatility. Examples can be seen in Indonesia, where the Inflation Control Team (TPI) maps and monitors food stocks, informs the public about the sufficiency of foodstuffs, takes measures to minimise bottlenecks in distribution, and improves information on prices and availability of food staples. Other examples include Malaysia, where the Malaysia Smart Consumer portal helps in tracking of commodity price movements, and China, where companies that encourage hoarding are fined, corporate pricing strategies are monitored, and corn purchases by biochemical and sweetener producing firms are regulated. The number of countries in the region that have adopted such mechanisms is still limited but could be boosted.

It is crucial that any measure aimed at tackling commodity inflationary pressures should be: *i)* well targeted; *ii)* implemented in a timely manner; and *iii)* appropriately budgeted by setting the scale of fund allocation for the designated purpose. It is also important to note that when such measures distort price incentives, they need to be temporary and accompanied by an explicit schedule for their phasing-out. This is particularly important in the case of subsidies. However, this may be a challenge in practice when there is large uncertainty about commodity prices.

Table 2.5. Recent measures to control commodity inflationary pressure in Emerging Asia in 2010-11

Indonesia	Insurance mechanisms	Reinforcing buffer stocks of food
	Direct transfers to vulnerable groups	Distribution of subsidised rice (Raskin)
		Community Block Grant Empowerment Programme (PNPM Mandiri)
		Microcredit extended under the People's Business Credit programme (KUR)
	Trade policies (*i.e.* lower import tariffs/restrict exports)	Suspension of import tariffs on rice
	Information/ co-ordination/ monitoring	Interagency and cross-regional co-ordination under the TPI strengthened at the central and regional levels through cross-regional mapping and monitoring of food stocks, reinforcing food buffer stocks, minimising bottlenecks in distribution and improving information on prices and the availability of food staples for the public
Malaysia	Trade policies (*i.e.* lower import tariffs/restrict exports)	Abolition of import duties on several food items, including vermicelli, biscuits, fruit juice and sweet corn
	Information/ co-ordination/ monitoring	Malaysia Smart Consumer portal to help tracking of price movements
	Direct transfers to vulnerable groups	Rebates on electricity bill payments for monthly consumption of below RM20 (Malaysian ringgat)
		Kedai Rakyat 1Malaysia (KR1M) thrift stores opened charging 40% below market prices of similar essential goods
		Menu Rakyat 1Malaysia to help the rakyat reduce their daily expenses on food by offering breakfast and lunch with drinks at a maximum of RM2 and RM4 respectively
	Price controls and subsidised products	Subsidies for petrol, diesel, liquefied petroleum gas and food items, such as rice, sugar, flour and cooking oil
		Price Control and Anti-Profiteering Act 2010 to control prices of goods or charges for services and to prohibit profiteering
	Enhance production	Providing allocations of: RM 974 million for price subsidies on padi, fertilisers and padi seeds; RM 230 million for production incentives and increasing padi yield; RM 235 million to upgrade the drainage and irrigation system as well as usage of high quality padi seeds; RM 170 million for Fishermen's Subsistence Allowance, Fishermen's Catch Incentive and Fishermen's Welfare Fund as incentives for the fishing industry
		Income tax deduction extended for investors and income tax exemption for companies undertaking food production activities for another five years until 2015
Philippines	Insurance mechanisms	Building buffer food stock
	Trade policies (*i.e.* lower import tariffs/restrict exports)	Import duties on milling wheat, cement and cement clinker reduced to zero
	Direct transfers to vulnerable groups	Guaranteed minimum rice purchase price by the National Food Authority
	Price controls & subsidised products	Rice and fuel subsidy programmes
Singapore	Direct transfers to vulnerable groups	Benefit package for lower- and middle-income households (increases in credits, grants for education and medical care, bonuses and tax rebates; and removal of radio and television licence fees)

Table 2.5. Recent measures to control commodity inflationary pressure in Emerging Asia in 2010-11 (contd.)

Thailand	Insurance mechanisms	Building buffer food stock
	Direct transfers to vulnerable groups	Minimum daily wage and civil servant salaries raised
		Price guarantee scheme for farmers (*e.g.* for rice production)
	Price controls & subsidised products	Free public transport and electricity for households maintained through the second half of 2011
		Subsidies on energy prices and utility costs
		Controlled food prices
		Diesel and cooking gas retail prices capped
		Fuel excise tax reduced
Viet Nam	Trade policies (*i.e.* lower import tariffs/restrict exports)	Restrictions on rice exports
		Import taxes on gasoline, diesel, fuel oil and kerosene reduced
	Direct transfers to vulnerable groups	Public sector wage, pension and social insurance benefits raised
	Price controls & subsidised products	Temporary subsidy for food during Tet festival
		Prices of medicines and milk controlled
	Enhance production	Enhance food production through exemption from land lease charge for construction of storage facilities for rice, corn, aquatic products, vegetable and coffee
China	Trade policies (*i.e.* lower import tariffs/restrict export)	Tariff on fuels reduced
	Information/ co-ordination/ monitoring	Companies that encourage hoarding fined
		Corporate pricing strategies monitored
		Corn purchases by biochemical and sweetener producing firms regulated
India	Insurance mechanisms	Reinforcing buffer stocks
		Higher storage capacity for grains and cold storage chains to manage supply-side shocks in perishable products
	Direct transfers to vulnerable groups	Direct transfers of cash subsidies for cooking fuels and fertiliser (almost USD 35 billion in 2011)
	Price controls & subsidised products	Subsidies for petroleum and food items
	Enhance production	Market-based incentives to augment supply of non-cereal food items
		Better management of water and technical and institutional improvements in the farm sector and allied activities such as land consolidation, improving land quality, better seeds, irrigation, harvesting, technologies and supply chain to retail points

Source: OECD Development Centre's compilation based on national sources.

Structural policies to enhance productivity are needed

Effective structural policies to enhance productivity will be very important to the ultimate success of the region's countries in dealing with the uncertainties from international commodity price fluctuations and other external shocks. This conclusion is illustrated by statistical decompositions of the gap between potential and actual GDP from the MPF-SAEO 2011 model (Figure 2.6). The results indicate that the sources of growth fluctuations differ among countries as do the implied policy implications for further growth.

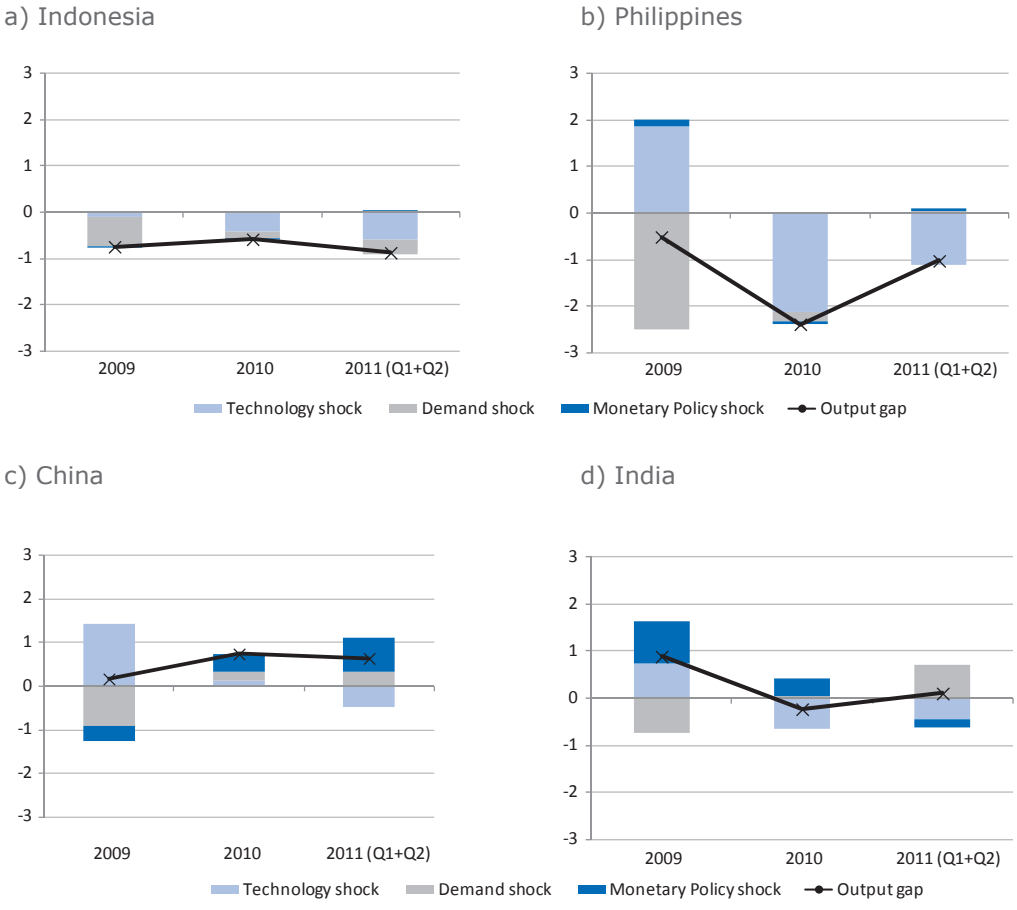
Interestingly the impact of global uncertainty (represented as a demand shock in Figure 2.6) has been limited in many countries in the region while the key factor is "productivity", which is represented by the technology shock. This result is in sharp contrast to the perception that recovery of external demand is critical for the

region. These results suggest that in many Southeast Asian countries, and in China and India, there is room to improve potential output by enhancing productivity through appropriate structural policies. For instance, in Indonesia, Malaysia and the Philippines, a large portion of the negative impact of technology shocks in 2011 reflects negative output gaps, while monetary policy shocks appear to have been well managed. These trends are also observed in China and India.

In Thailand, the negative output gap in 2009 can be explained by an external demand shock – from deteriorating OECD countries' economic growth. External demand has also been relatively influential for Singapore, reflecting that country's high dependence on exports. In Indonesia and the Philippines, the contribution of external demand shocks (interpreted as demand shocks from larger OECD countries and neighbouring Asian countries) is relatively small though in Malaysia - owing to heavy reliance on exports - it contributed positively to growth in 2011.

Macroeconomic policy is important, but as the results suggest - and evidence confirms in most Emerging Asian countries (except for India) - monetary policies have been relatively well managed so far. The results reinforce that reforms to enhance productivity will be critical to cope with global uncertainty. The next chapter will examine several such structural policies based on medium-term development plans for the region's countries.

Figure 2.6. Historical decomposition of output gap in Asia in 2009-11
(percentage)



Source: OECD Development Centre, MPF-SAEO 2011/12.

StatLink http://dx.doi.org/10.1787/888932562260

Conclusion

Southeast Asian countries have had noticeably more success over the past year in managing key obstacles to their recoveries than in the aftermath of the 1997-98 Asian crisis. This success reflects the great progress these economies have made on macroeconomic, financial and structural reforms since that earlier crisis.

The surge in capital inflows into the region since 2010 is due partly to the economic strengths of Southeast Asian countries but also to the financial and economic problems in more advanced economies. The inflows may well moderate when these problems ease. While large sustained capital inflows are desirable in the long term, capital inflows that reach unsustainable levels can have disruptive and costly consequences by raising currencies to unsustainable levels that undermine competitiveness and by increasing risks of financial instability. Southeast Asian countries have so far been able to manage the effects of the inflows through sterilised intervention and targeted capital controls without undermining monetary policy. The comparative strength of domestic banks, which have already achieved the objectives for capital adequacy mandated by the Basel framework, are helping to contain the financial risks from surging capital inflows.

Authorities are also dealing with the adverse consequences of rising international commodity prices on households and agriculture sector. Buffer stocks and other insurance mechanisms, temporary changes in tariffs on food and fuels in some countries and limits on exports of staples in others, along with efforts to monitor and alleviate potential shortages and combat abuses, have helped to mitigate impacts of rising commodity prices on the most vulnerable groups and sectors.

However, the comparative recent success also underscores the need for deeper structural reforms to cope with future global shocks. As discussed in the next chapter, Southeast Asian countries are in the process of developing such reforms in a number of areas. The success of these reforms will depend particularly on progress in three key areas. First, incentives for longer-term capital inflows, especially foreign direct investment, need to be strengthened. Second, domestic financial markets and institutions need to be further developed and strengthened – which will also help to achieve the first objective. Improved financial disclosure and enforcement of financial standards are crucial to this development. Third, structural reforms to improve productivity, which has been the key driver of growth in the region, are critical to improving the resilience of regional economies to global economic shocks.

Notes

1. Cardoso and Goldfajn (1998) for Brazil; De Gregorio, Edwards, and Valdes (2000) for Chile; Cardenas and Barrera (1997) and Clements and Kamil (2009) for Colombia; Jankov (2009) for Croatia; Goh (2005) for Malaysia; Jittrapanum and Prasartset (2009) for Thailand.
2. The FDI Restrictiveness Index, originally developed in 2003, is jointly maintained by the OECD Investment Division and the OECD Economics Department to assess the degree of openness to FDI in OECD and Enhanced Engagement countries (including Indonesia, China and India). A score of 0 is assigned to sectors fully open to foreign equity, while a score of 1 indicates a closed sector where no foreign equity is permitted.

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CHAPTER THREE

Structural policy country notes: medium-term policy challenges

Abstract

Effective implementation of national development plans is a prerequisite for sustained growth in the post-crisis period. Many Asian countries recognise the need to change their growth strategies to reflect the changing growth dynamism in the region and indeed have included (or are about to include) several new elements in their medium-term development plans.

The diversity of policy challenges suggests that the issues can best be highlighted if treated in a country-specific context. The Structural Policy Country Notes that are introduced in this edition of SAEO have two specific features. First, each note focuses on policy areas that are identified in the national plans of the country concerned. Second, each note discusses relevant experiences in OECD countries with similar policy issues and the insights they may provide for Southeast Asian countries.

Although different countries have different policy challenges, overall, the priority areas identified in the national plans have some common elements such as human capital development, infrastructure investment, public sector efficiency (in particular taxation), product market liberalisation and labour market reform.

Synopsis of structural policy challenges in Southeast Asia

Well targeted and co-ordinated structural reforms to pursue the national plans are critical

Remarkable growth rates in the region have brought about an increase in real income levels and accelerated the process of moving up the value chain. Many Asian countries already recognise the need to adapt their development strategies to reflect the changing growth dynamism in the region and international market conditions and indeed have included (or are about to include) several new elements in their medium-term development plans (in most cases, five-year plans) (Table 3.0.1). Formulating new development strategies will require the adoption of a comprehensive package of reform measures including product and labour market policies as well as reforms to government finances.

Table 3.0.1. Medium-term development plans of six ASEAN countries

Country	Period	Theme / Vision
Indonesia*	2010-14	Towards the realisation of an Indonesia that is prosperous, democratic and just
Malaysia	2011-15	Charting development towards a high-income nation
Philippines	2011-16	In pursuit of inclusive growth
Singapore	2010-20	High skilled people, innovative economy, distinctive global city
Thailand	2012**-16	A happy society with equity, fairness and resilience under the philosophy of Sufficiency Economy
Viet Nam	2011-15	Note: Viet Nam's forthcoming medium-term plan was in the process of formulation as of 1 November 2011

Notes:

*The 2011-25 Master Plan for the Acceleration and Expansion of Indonesian Economic Development (MP3EI) aims to encourage large-scale investment, synchronise the national action plan, and develop centres of excellence in each economic corridor.
** The implementation of the Eleventh National Development Plan of Thailand (2012-16) started in 2011.

Source: OECD Development Centre based on national sources.

Although different countries have different policy challenges, overall the priority areas identified in the national plans focus on human capital development, infrastructure investment, public sector efficiency (in particular taxation), product market liberalisation and labour market reform. The overlap across priority areas is large but, even within the same broad policy area, challenges facing each country differ depending on their different economic circumstances, such as their income levels and regulatory frameworks.

Human capital development has been identified as a key policy area in all the development plans. This reflects the need to meet the demand for labour with ever increasing skills amid rapid transformation of economic structures. The remarkable growth performance of the region over the past decade has led to increased real incomes, resulting in a decline of international competitiveness in labour-intensive industries in some countries, while at the same time the upgrading of industrial structures to higher levels on the value chain have increased the need for more skilled labour. To develop more skill- and knowledge- intensive industries and strengthen their competitiveness in the medium to long term, a flexible education system that is responsive to industry needs is required.

Overall, the region has been relatively successful in raising education levels through increasing enrolment rates. However, education systems need to become more outcome-oriented to guarantee a high-quality labour force. The particular areas countries have prioritised in their development plans to achieve this objective differ somewhat. For instance, Indonesia needs to pay more attention to improving the outcomes

of tertiary education, in particular to ensure that the skills of graduates correspond to those required by industry. Unsatisfactory outcomes in education are observed throughout the education system in Thailand. Stronger Technical Education and Vocational Training (TEVT) is critical in the Philippines and Viet Nam in order to help their industries to move up in the value chain.

Infrastructure investment is a bottleneck to growth in several economies in the region. This is especially important in Indonesia and the Philippines, where the lack of adequate transport infrastructure impedes efficient trade activities; outdated information and communicatons technology (ICT) infrastructure delays business transactions; and insufficient or unreliable basic utilities make economic activities impossible altogether in some areas. While improvement in infrastructure will depend mainly on individual country efforts, there is also a need for co-ordination across countries in the region. Intra-regional infrastructure needs to be further developed to reap the full benefits of regional integration.

The comparatively low level of tax revenue in ASEAN countries (which averages 15% of GDP in the region)[1] suggests that there is room for domestic resource mobilisation through tax reforms. Reforming tax systems is required to meet development needs such as infrastructure investment, education and health services (partly due to an ageing population). Most ASEAN countries need to widen their tax bases and phase out unnecessary tax expenditures. There is also a scope for making better use of sales or VAT-type taxes, which are non-existent or very small in some countries. The experience of more developed countries shows that such taxes can provide an important and relatively stable source of revenue. The efficiency of tax collection is another issue that economies in the region need to tackle. Needless to say, revenue reforms should be accompanied by efforts to improve the efficiency of spending.

Strengthening small and medium enterprises (SME) development is also crucial for ASEAN countries, given that most of these economies are SME-based. In particular, fostering an SME base that is competitive in the international market is key to sustaining growth. The internationalisation of SMEs should be supported by government-sponsored training and capacity building programmes and should be part of an integrated framework aimed at promoting growth, enhancing competitiveness and fostering innovation. Support services targeted at SMEs need to be better co-ordinated among provider agencies in order to reduce the administrative burden on SMEs and to assist them to fully reap the benefits of available schemes. In addition, to increase efficiency in the use of public funds and the effectiveness of support measures, government programmes should be developed in co-ordination with private and other non-governmental organisation (NGO) initiatives.

Policy priorities from the *Structural Policy Country Notes* in SAEO 2011/12

The diversity of policy challenges, to a large extent related to different levels of development, suggests that the issues can be better highlighted if treated in a country-specific policy context.

The second edition of the *Southeast Asian Economic Outlook* introduces a series of *Structural Policy Country Notes* that will become a regular feature of future editions. This edition includes individual notes for six Southeast Asian countries: Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam. The policy areas discussed in each note are identified in the national development plans of the country concerned. Each note also discusses relevant experiences in OECD countries, which provide useful insights and suggest "best practices" that may be of use for ASEAN policy makers.

As discussed above, structural policy challenges vary from one country to another, and the speed and progress of the reforms have been uneven. However, it is also clear that there are some common themes, as indicated by policy priorites in the Country Notes. Table 3.O.2. provides a short summary of these medium-term challenges and responses.

Table 3.0.2. Summary of medium-term policy challenges and responses

Indonesia	**Infrastructure**	Speed up transport infrastructure development by improving the regulatory environment
	Human capital development	Improve the outcome of higher education and reduce urban-rural disparities in access to educational infrastructure
	Labour market	Reform labour market regulation to increase employment
Malaysia	**SME development**	Enhance SME development with special attention to capacity building and innovation
	Human capital development	Strengthen the link between industries and academic institutions to improve labour force skills and to enhance research and development
	Taxation and fiscal system	Reform the tax regime and improve efficiency of public spending to bolster the sustainability of public finances
Philippines	**Infrastructure**	Increase funding for infrastructure development and attract more private participation
	Human capital development	Improve the access to and the quality of basic education and strengthen technical education and vocational training
	Taxation	Reform the tax system by enhancing tax collection and widening the tax base
Singapore	**Human capital development**	Strengthen life-long learning by enhancing pre-school education
	Innovation	Raise the efficiency of innovation policy through well co-ordinated policy evaluation system
	SME development	Enhance SME development by improving assistance programmes
Thailand	**Health**	Reform health care schemes to provide a higher quality of and equal access to services
	Human capital development	Improve outcomes in education and reduce urban-rural disparities
	Agriculture	Enhance agricultural productivity and improve jobs in the farm sector
Viet Nam	**Enterprise development and reform of SOEs**	Speed up the reform of state-owned enterprises, particularly by improving the governance and management
	Macroeconomic management	Establish an adequate monetary policy framework to control inflation
	Human capital development	Increase skilled labour by education reform

Source: OECD Development Centre.

Notes

1. In contrast, the OECD average ratio of tax revenue to GDP is approximately 34%.

INDONESIA

Medium-term economic outlook (forecast)

GDP growth (2012-16 average, percentage change)	6.6
Current account balance (2012-16 average, % of GDP)	-1.0
Fiscal balance (2012-16 average, % of GDP)	-1.1

Medium-term plan

Period	2010-14
Theme	Prosperous, democratic and just

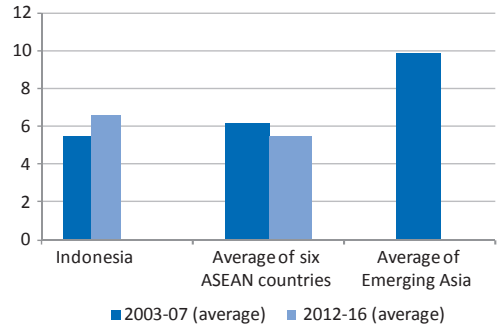
Basic data (in 2010)

Total population	238 million
Population of Jakarta	9.6 million
GDP per capita at PPP	4 394 (current USD)

Sources: OECD Development Centre, MPF-SAEO 2011/12, national sources and IMF.

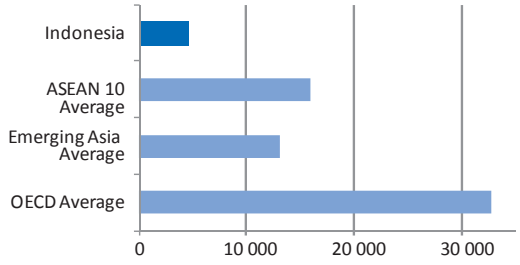
Notes: Six ASEAN countries includes Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam. *Emerging Asia* includes six countries of ASEAN plus China and India.

GDP growth rates (percentage changes)



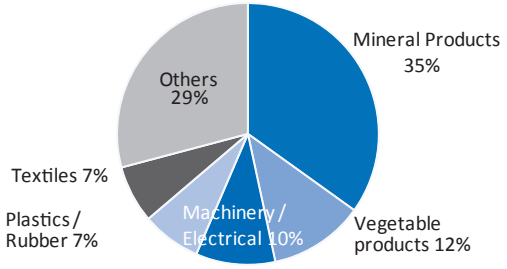
Source: OECD Development Centre, MPF-SAEO 2011/12.

GDP per capita (PPP, current USD)

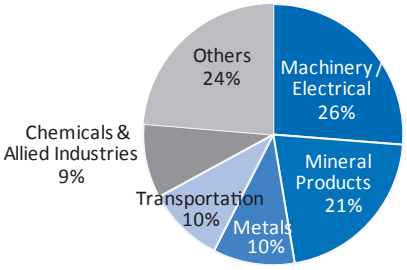


Sources: IMF and national sources.

Composition of exports (in 2010)
(percentage of total exports)



Composition of imports (in 2010)
(percentage of total imports)



Source: Trademap.

Towards a prosperous, democratic and just economy – Indonesia's medium-term development plans and master plans

The 2010-14 national medium-term development plan (RPJMN 2010-14) is the second phase of the implementation of the 2005-25 national long-term development plan (RPJPN 2005-25).

In the next five years (2010-14), Indonesia will face a number of challenges on its way to realising a society that is "prosperous, democratic and just". Economic growth will not only be inclusive but will also reduce inter-regional gaps, be evenly spread within the development sectors and will not damage the natural environment. In addition, economic growth is to include infrastructure development, increased productivity, strengthening of public sector capacity and further consolidation of democracy (Table 3.1.1).

Enhancing regional connectivity and human resources are priorities

The Master Plan for the Acceleration and Expansion of Indonesia's Economic Development (MP3EI) 2011-2025 was launched in May 2011 and is complementary to the medium-term plan. The implementation strategy of MP3EI will integrate three key elements (and eight main programmes): developing the economic potential of six regional economic corridors; strengthening national connectivity locally and internationally; and strengthening human capital and national science and technology capacities. The economic corridors targeted for expanded development in the Master Plan are Sumatra, Kalimantan, Java, Sulawesi, Bali and Nusa Tenggara, and Papua-Maluku.

Table 3.1.1. Summary of the 2010-14 Development Plan: key development targets

	Initial status (2008)	Target (2014)
Economics		
GDP growth rate (%)	6.0, per year (2005-08, average)	6.3-6.8, per year (2010-14, average)
Inflation rate (%)	9.0, per year (2005-09, average)	4-6, per year (2010-14, average)
Unemployment rate (%)	8.4 (7.4 in 2010)	5-6
Education		
Net enrolment rate in junior high school education (%)	72.28	76
Gross enrolment rate in senior high school education(%)	64.28	85.0
Gross enrolment rate at universities of those in the 19-23 year age bracket (%)	21.26	30.0
Health		
Life expectancy (years)	70.7	72.0
Maternal mortality rate per 100 000 live births	228	118
Infrastructure		
Highway construction (km)	-	19 370
Electrification ratio (%)	66	80
Poverty		
Poverty rate (%)	15.4 (13.3 in 2010)	8-10

Source: OECD Development Centre's compilation based on national sources.

Structural policy focus

Indonesia's medium-term policy challenges and responses

- Speed up transport infrastructure development by improving the regulatory environment
- Improve the outcome of higher education and reduce urban-rural disparities in access to educational infrastructure
- Reform labour market regulation to increase employment

POLICY FOCUS

Speed up transport infrastructure development by improving the regulatory environment

The current state of transport infrastructure in Indonesia is a substantial bottleneck to the economic development of the country. Transport infrastructure is both insufficient in quantity and inadequate in quality, which hampers both the internal economic integration and the international competitiveness of the country.

In the last five years, several infrastructure projects have been implemented, including development of the Hasanuddin Makassar Airport, construction of the Suramadu Bridge, and the further development of 11 full container terminals for supporting export and import activities in the harbours. In addition, 11 dams have been constructed.

Additional government-led infrastructure investment will be needed. In May 2011, the Indonesian government launched 17 new infrastructure projects, worth IDR 190 trillion (Indonesian rupiah) (USD 22.3 billion), as part of the 2011-25 Master Plan for the Acceleration and Expansion of Indonesian Economic Development. The projects, mostly industrial construction projects, were launched at numerous locations: Sei Mangke in the province of North Sumatra, Cilegon in Banten, Lombok Timur, East Nusa Tenggara and Timika, Papua.

Though total investment needs for infrastructure development[2] may exceed assigned government funds, there is room to mobilise national savings for infrastructure development further. Together with an effort to enhance sub-regional connectivity, the infrastructure development of Metropolitan Jakarta is also important. Indeed, the transport infrastructure system of Indonesia requires comprehensive actions. The following challenges should be addressed:

- The possibility of additional financing options for infrastructure development should be explored, in particular outside the central government for example, municipal bonds, revenue bounds and infrastructure funds. The general regulatory framework needs to be reformed to provide these "market-based" financing options.
- Private participation in infrastructure investment is limited. Public-private partnerships (PPP) could enhance the feasibility of infrastructure projects. However, further regulatory reform is needed in Indonesia to provide the institutional setting needed to foster PPP (Box 3.1.1).
- Land acquisition is an additional impediment to accelerating transport infrastructure development. Several infrastructure projects have been interrupted because of resistance from small landowners. Reforms of the land acquisition process are needed to speed up further infrastructure development. The new land acquisition bill needs to determine not only the compensation for landowners, but also to construct an effective framework for expeditious payments and appeals.
- Co-ordination with local governments needs to be improved. While local governments' participation in provision of infrastructure services (except for some areas such as water and sanitation) is limited, there are several local regulations which can hamper the flow of goods and labour. Relevant local and national laws, regulations affecting infrastructure investment and capacity of local government need to be further harmonised over time.

Box 3.1.1. Enhancing the use of public-private partnerships: examples from OECD countries

There are several elements for the success of PPP. Two important elements are appropriate risk-sharing between private and public parties to a PPP contract and supporting regulatory and institutional frameworks. There are three key issues to be addressed for enhancing the regulatory framework of PPP based on OECD experiences:

- **The public sector comparator**

In order to carry out an ex-ante comparison of the potential benefits of PPP, many OECD countries have used the public sector comparator (PSC). The PSC involves an estimate of the benefits from a hypothetical PPP (reference PPP) and is used by governments to decide whether a traditional procurement process or a public-private partnership is the better option to provide a service. However, there are different methods governments use to assess value for money. Countries such as **Germany** use a complete cost-benefit analysis. Other OECD countries such as **Japan** and the **Netherlands** use the public sector comparator prior to the bidding process. In this case, the project can only proceed to the bidding phase if the reference PPP demonstrates that a PPP can bring about better value for money than traditional procurement. The third most complex assessment method involves the use of the PSC after the bidding process. This method, which is applied in **Australia,** compares the PSC to the actual PPP bids. The competitive bidding process, the fourth method, is mainly used in **France** and the **United States**.

- **PPP units**

In addition to the PSC, PPP units have also contributed to the success of PPP in OECD countries. The PPP Knowledge Centre in the **Netherlands**, which was created within the Ministry of Finance in 1999, the Partnerships Victoria, a PPP unit in **Australia**, and the PPP units in the **United Kingdom** are successful examples. Efficient PPP units have gone hand in hand with the creation of effective institutional capacity to create, manage and evaluate PPP. PPP units have several advantages: the PPP unit guarantees an adequate spending of budgets; avoids "free riding" by government departments; provides a knowledge centre; regulates the creation of PPPs; and permits a separation between PPP practice and policy.

- **Political support and engagement of all stakeholders**

Due to the long-term nature of PPP contracts, political support and consensus building are fundamental to make sure a PPP is successful, particularly when key public services (such as transport or access to water) are provided.

Source: OECD (2008a).

POLICY FOCUS

Improve the outcome of higher education and reduce urban-rural disparities in access to educational infrastructure

Tertiary education in Indonesia needs to be enhanced as both access to and the quality of university education is insufficient. Although the gross enrolment rate at the tertiary level has been increasing, it was still only 24% in 2009 while the government's target for 2014 as set out by the medium-term development plan is 30%. Public spending on university education ought to be increased as well. Public expenditure per student at the tertiary level as a percentage of gross domestic product (GDP) per capita decreased from 18.7% to 16.2% between 2007 and 2008. This is noticeably below the comparable rates for Thailand and Malaysia, which were 22% and 33.9%, respectively. Expenditure in tertiary education as a percentage of total educational expenditure in Indonesia was 11% in 2008, with expenditures on primary and secondary education accounting for 51% and 36% of total educational expenditures, respectively. There is room to reallocate resources to tertiary education within education sector.

The quality of tertiary education in Indonesia is lagging behind. Although the medium-term development plan sets a goal of having at least 11 Indonesian universities in the Top 500 Times Higher Education Ranking (THE) by 2014, Indonesian universities find it hard to get international recognition[3]. Meanwhile, Indonesia was ranked 66th out of 139 countries in global competitiveness in higher education and training[4] according to the *Global Competitiveness Report 2010-2011* (WEF, 2010). As a result, university graduates often lack

the necessary skills employers need. Higher education also fails to provide the necessary research needed to support innovation. There are gaps in thinking, technical, and behavioural skills for tertiary graduates as perceived by employers and a significant proportion of professionals (*i.e.* about 20-25%) need retraining (World Bank, 2011). Moreover, as their research output indicates, Indonesian universities do not provide sufficient support for innovation. In 2009, only 31 patent applications of Indonesian origin were registered at the World Intellectual Property Organization (WIPO)[5]; while in 2007 the number of scientific and technical journal articles published by Indonesian authors (198) was the second lowest among the ASEAN-6 countries.

Although access to basic education has been steadily improving (highlighted by the increasing enrolment rates), several important challenges remain in Indonesia. Disparities in school infrastructure aggravate rural-urban disparities. The sub-optimal performance of higher education is an important factor behind the inadequate supply of skilled workers and the overall supply-demand gap in the labour market. The effects of the urban-rural disparity in education infrastructure can be observed in both enrolment and literacy rates. For instance, while the school enrolment rate of children 7-12 years old in Jakarta was 99% in 2010, the comparable rate in Papua was only 76%. The same disparities can be observed for literacy: the rate of illiteracy among the population of 15-year-olds or over varies between 0.7 and 31.7% across the country.

Higher education, in particular at the university level, needs to be upgraded (Figure 3.1.1). The current outcomes of higher education highlight the need for a more skilled workforce and the mismatch between the graduates' skills and industry's needs. Although the overall demand for skilled workers is increasing, Indonesia's share of workers with higher education degrees still lags behind other countries. For instance, in 2008, more than one-third of civil servants (37%) had only a general high school education. Educational programmes need to be raised to international standards and the quality of teachers needs to be enhanced if these limitations are to be remedied.

The quality of education needs to be addressed as well. For instance, Indonesia fares poorly on the OECD's International Student Assessment (PISA), ranking 57th in 2009 among the 65 participating countries in reading, 61st in mathematics and 60th in science (Figure 3.1.2).

Figure 3.1.1. Enrolment rates by level of education from 1995-2010
(percentage)

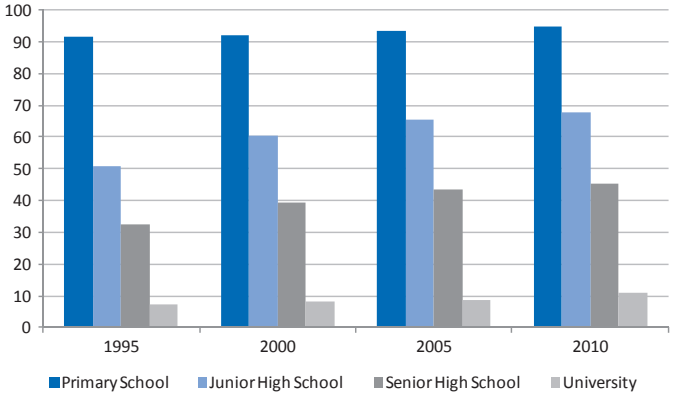
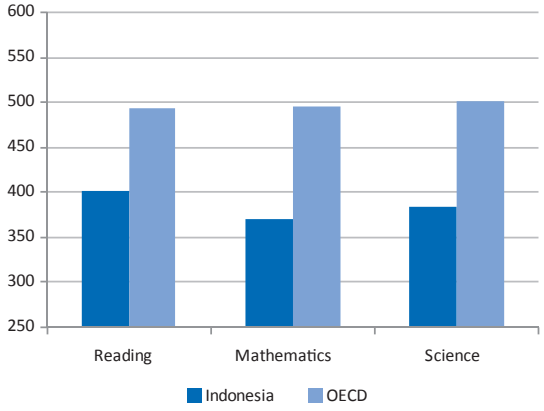


Figure 3.1.2. OECD PISA results[6] in 2009
(score)



Note: The PISA scale was set such that approximately two-thirds of students across OECD countries score between 400 and 600 points. Gaps of 72, 62 and 75 points in reading, mathematics, and science scores, respectively, are equivalent to one proficiency level.

Sources: national sources and OECD.

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Another serious problem is the inefficiency in labour markets created by the mismatch between the skills acquired at school and the needs of businesses. The unemployment rate among workers with higher education has been increasing[7] for years. Given that the demand for skilled workers is likely to remain high, efforts to expand formal education, especially at the higher education level, need to be strengthened through additional public investment. Job market mismatches can be narrowed by fostering a deeper partnership between academia and industry and also by facilitating mobility of job-seekers through better access to information on job opportunities.

There is also room to increase public spending on education aimed at reducing urban-rural disparities, with a special focus on rural school infrastructure development. It is also essential to step up the involvement of regional governments in infrastructure development planning, management and maintenance.

POLICY FOCUS

Reform labour market regulation to increase employment

The Indonesian labour market is characterised by the large portion of the workforce that is employed in the informal sector. In fact, almost two-thirds (*i.e.* 61%) of the active labour force belonged to the informal sector in 2007[8] (World Bank, 2010). However, as a survey of two provinces (Yogyakarta and Banten[9]) by the Asian Development Bank and BPS-Statistics Indonesia (2011) shows, both the contribution of the informal sector to Indonesia's total gross value added (GVA)[10] and its labour productivity[11] are quite low (Figures 3.1.3 and 3.1.4).

Figure 3.1.3. Nature of employment
(percentage of total employment)

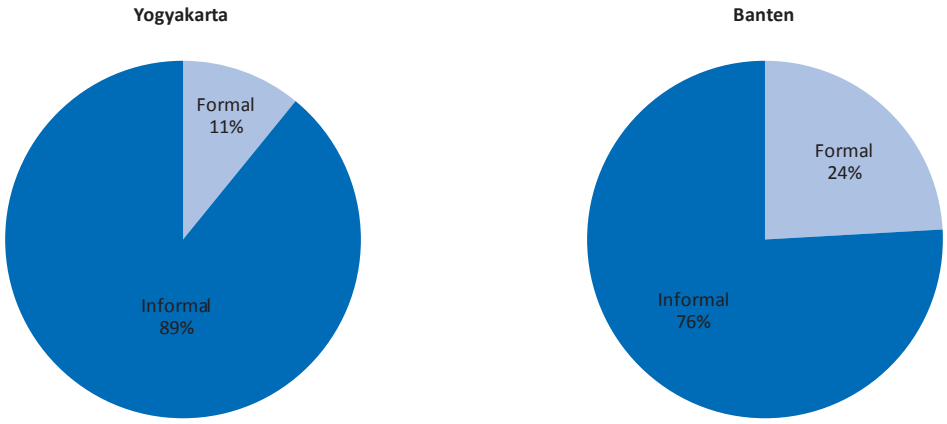

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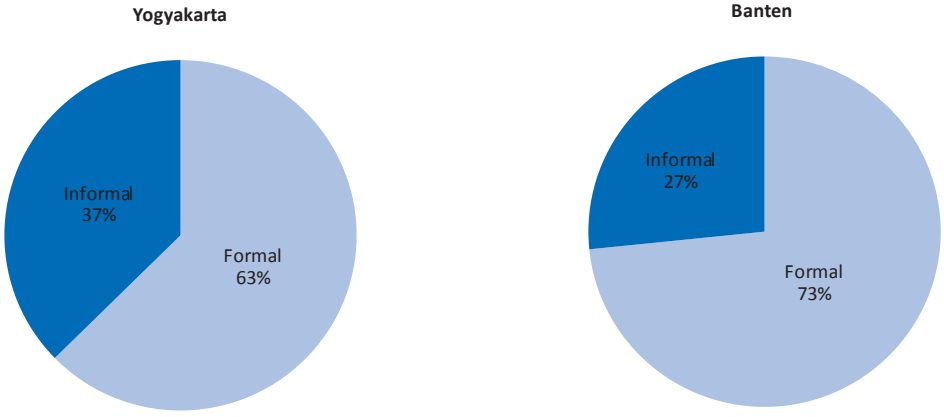
Figure 3.1.4. Contributions to GDP of formal and informal sectors
(percentage of total gross value added)



Source: ADB (2011) and BPS-statistics, Indonesia.

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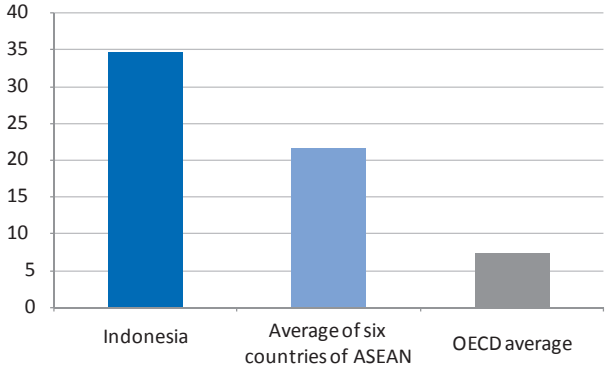
The large informal sector distorts the labour market in Indonesia. There have not been enough opportunities for poor workers to move up to better jobs in the formal non-agricultural sectors. Better integration of the informal sectors with the formal economy is necessary for the creation of a more active labour market.

Appropriate reform of labour regulations will also enhance the movement of workers from the informal sector to the formal economy. Reducing the rigidity of labour regulations is also necessary to increase employment. Rigid labour regulations have inhibited job creation while failing to provide protection for the most vulnerable workers. Though Indonesia's Manpower Law in 2003 was intended to improve workers' protection, it actually increased the rigidity of the labour market by tightening regulations on hiring and firing without improving the situation of the most vulnerable workers. The law, which increased severance rates for workers with three or more years of employment, resulted in one of the highest firing costs in the region (Figure 3.1.5). In addition, the regulation concerning fixed-term contracts has also been tightened: contracts under the revised regulation cannot be renewed after three years and jobs eligible for temporary contracts have been restricted. These policies not only hamper job creation (as the high cost of downsizing in economic downturns deters new investments); they also fail to protect employees and have a disproportionately large effect on the most vulnerable workers.

The government has recognised the need to reform the current employment regulations, in particular those relating to hiring and firing. Introduction of "appropriate" unemployment benefits would be an option to help improve labour market flexibility. Active labour market programmes (ALMPs) also need to be strengthened in the context of regulatory reform in the labour market.

Both the use and level of minimum wages need to be reconsidered. Indonesia seems to use minimum wage policy for "wage-setting" rather than as a safety net for low-wage workers. The level of minimum wages is relatively high, compared with the average wage (Figure 3.1.6). While the objective of minimum wages is to support the safety net, their level needs to be adequately determined and monitored, not least to ensure compliance and enforcement of minimum wage regulation.

Figure 3.1.5. Severance payment for redundancy dismissal
(average for workers with one, five and ten years of tenure, in salary weeks)



Source: World Bank, *Doing Business 2010.*

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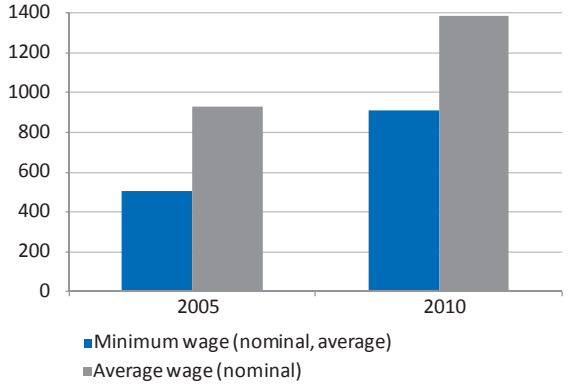
Figure 3.1.6. Minimum and average wage in Indonesia
(average monthly in IDR)



Source: OECD Development Centre's calculation based on CEIC.

StatLink http://dx.doi.org/10.1787/888932562374

Notes

2. Total estimated investment needs of Indonesia for the period of 2010-20 are USD 450 billion.
3. According to the Times Higher Education Ranking 2011/12, there is no Indonesian university among the top 400 universities in the world. Among the top 700 universities considered by the QS World University Rankings 2011/12, there are 3 universities from Indonesia (University of Indonesia, 217th; Universitas Gadjah Mada, 342nd; Bandung Institute of Technology in the 451-500 range).
4. On the same ranking, Singapore was ranked 5th, Malaysia 49th, Thailand 59th, and the Philippines 73rd.
5. Among the six countries of ASEAN, only the number of patent applications of Vietnamese origin was less (six) than the number of patents of Indonesian origin registered at WIPO.
6. The OECD Programme for International Student Assessment (PISA) covers students who are aged between 15 years 3 months and 16 years 2 months at the time of assessment and who have completed at least six years of formal schooling. In the PISA survey, reading, mathematics and science tasks are ranked by difficulty and are associated with each of the seven proficiency levels from 1b (easiest) to 6 (hardest). A student reaches a given proficiency level if the test results show that he or she has at least a 50% chance of performing a task at that level.
7. The percentage of unemployed with university degree increased from 3.4% in 2004 to 8.5% in August 2010.
8. Data show that the informal sector has been shrinking since 2009.
9. In 2009, 89% of total employment was informal in Yogyakarta while in Banten the equivalent figure was 76%.
10. In Yogyakarta, the estimated contribution of the informal sector to its total gross value added (GVA) in 2009 was 37%. In Banten, approximately 27% of its GVA can be attributed to the informal sector.
11. While labour productivity in Yogyakarta's informal sector is approximately IDR 7.0 million per job, with productivity of IDR 76.55 million per job in the formal sector, Banten's labour productivity in the informal sector is estimated at IDR 12.7 million per job, about six times less than the IDR 85.12 million contribution of an average job in the formal sector in 2009.

MALAYSIA

Medium-term economic outlook (forecast)

GDP growth (2012-16 average, percentage change)	5.3
Current account balance (2012-16 average, % of GDP)	9.1
Fiscal balance (2012-16 average, % of GDP)	-4.4

Medium-term plan

Period	2011-15
Theme	Charting development towards a high-income nation

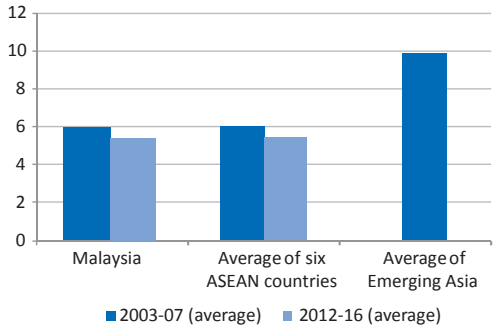
Basic data (in 2010)

Total population	28 million
Population of Kuala Lumpur	1.7 million
GDP per capita at PPP	14 670 (current USD)

Sources: OECD Development Centre, MPF-SAEO 2011/12, national sources and IMF.

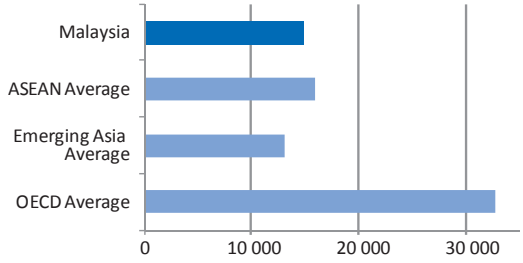
Notes: Six ASEAN countries includes Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam. *Emerging Asia* includes six countries of ASEAN plus China and India.

GDP growth rates (percentage changes)



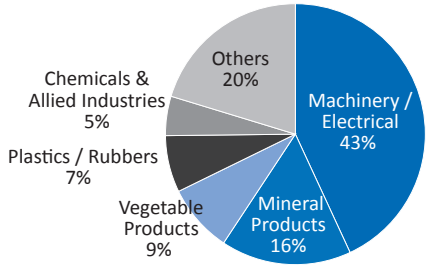
Source: OECD Develeopment Centre, MPF-SAEO 2011/12

GDP per capita (PPP, current USD)

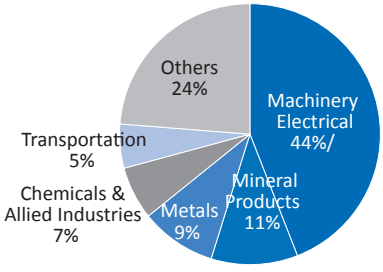


Sources: IMF and national sources.

Composition of exports (in 2010)
(percentage of total exports)



Composition of imports (in 2010)
(percentage of total imports)



Source: Trademap.

Developing a high-income economy – summary of the Tenth Malaysia Plan

The Malaysian economy has to become more productive, innovation-led and diversified to avoid the middle-income trap. The medium-term plan, the Tenth Malaysia Plan (2011-15) provides a strategy to face this challenge (Table 3.2.1). The Plan seeks to foster private sector development, focusing on National Key Economic Areas (NKEAs); to promote a knowledge-intensive and innovation-led economy in order to increase productivity; to upgrade the full life-cycle of human capital development; and to enhance the efficiency of the public sector while sustaining macroeconomic stability and enhancing the effectiveness of fiscal policy. The Plan is in line with the New Economic Model (Box 3.2.1), with the goal of reaching high-income status by 2020.

The Plan targets an annual gross domestic product (GDP) growth rate of 6%, to be supported by increasing domestic demand and productivity. The increased reliance on domestic demand is to be achieved by improving the business environment through: infrastructure development; further liberalisation of economic regulation; strengthened support for small and medium enterprises (SMEs); promotion of public-private partnership (PPP) initiatives; and enhanced public sector efficiency. Human capital development is identified as a core element for transforming Malaysia into a knowledge-based and high-income nation.

Enhancing the quality of life in a broad sense, including reduction in poverty and inequality and preservation of the environment and of ecological resources, is also addressed by the Tenth Plan. Inclusive socio-economic development, in the spirit of the "Malaysia: People First, Performance Now", is to be promoted through ensuring the accessibility of basic physical infrastructure for all. The Plan also encourages more equitable economic participation, including the reduction of imbalances in Bumiputera representation in employment.

Table 3.2.1. The Tenth Malaysia Plan (2011-15): key development targets

	Initial status (2009)	Target (2015)
Macroeconomic environment		
GDP growth rate per year (%)	4.2 (2006-10, average)	6.0 (2011-15, average)
Contribution of Total Factor Productivity to GDP (%)	34.7 (2010)	38.5
Federal Government fiscal deficit as a percentage of GDP (%)	5.3 (2010)	2.8
Human capital development		
Pre-school enrolment rate for children aged 4+ and 5+ years (%)	67	92
Percentage of graduate teachers in primary schools (%)	28	60
Percentage of graduate teachers in secondary schools (%)	89.4	90
Number of students enrolled in higher education (million)	1.0	1.6
Inequality and poverty		
Incidence of poverty (%)	3.8	2.0
Mean income of the bottom 40% of households (Malaysian ringgit)	1 440	2 300
Gini coefficient	0.441	0.420

Source: OECD Development Centre's compilation based on national sources

Box 3.2.1. Summary of the New Economic Model

The New Economic Model (NEM) for Malaysia, which was unveiled on 30 March 2010, is one of the pillars of the national transformation framework highlighted by the Vision 2020. The NEM aims to transform Malaysia into an advanced nation with inclusiveness and sustainability. The Model sets three goals: *i)* reaching high-income (USD 15 000-20 000 GDP per capita) status by 2020; *ii)* achieving a sustainable economy that meets present needs without compromising future generations; and *iii)* creating an inclusive economy that enables all communities to benefit from the wealth of the country.

The NEM was launched because the policies and strategies of the old growth model outlined in the New Economic Policy (NEP) announced in 1970 are inadequate to meet the new challenges the country now faces. After successful years of economic growth resulting in poverty reduction and achievement of firm middle-income status, Malaysia now faces the possibility of middle-income trap. The new approach to economic development is characterised by private sector- and productivity-led growth.

The NEM will be implemented through the Economic Transformation Programme (ETP), which will be driven by eight Strategic Reform Initiatives (SRIs) outlining the main policy directions. The eight SRIs are: *i)* re-energising the private sector; *ii)* developing a quality workforce and reducing dependence on foreign labour; *iii)* creating a competitive domestic economy; *iv)* strengthening the public sector; *v)* instituting transparent and market-friendly affirmative action; *vi)* building the knowledge base and infrastructure; *vii)* enhancing the sources of growth; and *viii)* ensuring the sustainability of growth.

Source: New Economic Model for Malaysia, National Economic Advisory Council.

Structural policy focus

Malaysia's medium-term policy challenges and responses

- Enhance SME development with special attention to capacity building and innovation
- Strengthen the link between industries and academic institutions to improve labour force skills and to enhance research and development
- Reform of the tax regime and improved efficiency of public spending are necessary to bolster the sustainability of public finances

POLICY FOCUS

Enhance SME development with special attention to capacity building and innovation

Development of Malaysia's SMEs is essential to achieve the targeted 6% annual GDP growth rate in forthcoming years. SMEs, most of which are classified as micro entrepreneurships (Figure 3.2.1), constitute 99% of all businesses in Malaysia. Their contribution to GDP has been stable and is now about 31% (Figure 3.2.2).

The government is making a broad effort to encourage SME development. The SME Development Framework overseen by the National SME Development Council (NSDC) comprises policies and programmes across 15 ministries and 60 agencies. The specialised agency responsible for the co-ordination and management of SME development, the Small and Medium Enterprise Corporation Malaysia (SME Corporation), plays an important role.

The SME Corporation implemented 162 key programmes in 2009, with a total expenditure of MYR 3.05 billion (Malaysian ringgit) and benefiting more than 600 000 SMEs.[12] The bulk of the total budget (MYR 2.2 billion) was spent for SME development and was directed towards enhancing access to financing. In 2010, the SME Corporation further increased the scale of its efforts by implementing 267 programmes with a total financial commitment of MYR 6.9 billion. The majority of funds are still being allocated to enhancing access to financing, which is improving steadily.[13] Other components of the financial environment for SMEs in Malaysia, including credit from banking, development financial institutions, and loan-guarantee schemes are generally in favourable condition.

Figure 3.2.1. Number of business establishments by size

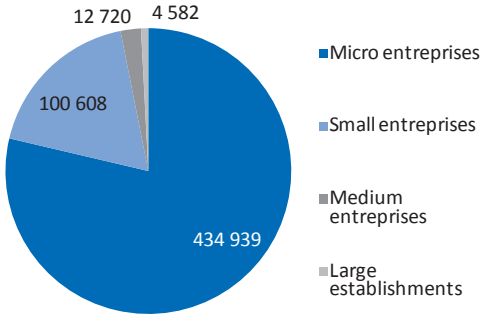
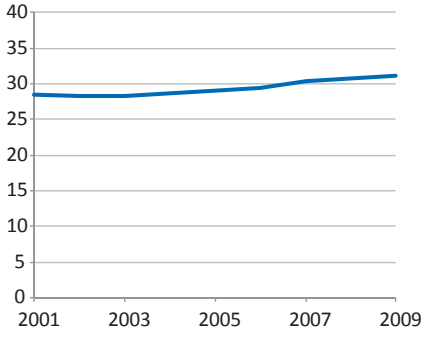


Figure 3.2.2. Contribution of SMEs to GDP (percentage)



Sources: National SME Development Council and national sources.

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Compared with the favourable financial environment of SMEs, institutional capacity building particularly needs to be stressed further in Malaysia. Three objectives are important to note.

- **Strengthen training programmes**. There are already several targeted skills training programmes (such as courses in management, finance, marketing and ICT) in Malaysia. Examples include: the SME-University Internship programme to support the entrepreneurial culture; the 1-InnoCERT certification to

improve the innovation capacity of SMEs; the National Mark-of-Malaysian Brand certification to enhance the promotion of SME products and services; and the SME Competitive Rating for Enhancement (SCORE) system, which is a diagnostic tool to assess and rate the competitiveness of SMEs based on company performance and capabilities. Additional programmes should be further explored.

- **Improve the regulatory environment for SMEs.** The Special Task Force to Facilitate Business (PEMUDAH) in Malaysia is improving the regulatory environment for SMEs – for instance, by reducing the time taken to start a business from 11 days to 3 days, the number of procedures required from 9 to 3, and the time taken to register standard property from 41 days to 1 day. Further efforts to reduce regulatory costs are critical to encourage entrepreneurial activities.
- **Foster international SMEs.** The government can lend support to improving SMEs' access to international markets. This is particularly important in Malaysia. The support programmes aim to remove unnecessary barriers to SMEs participation in international markets and to enhance their capacity to be internationally competitive. Such government support should be well designed with respect to the level of international experience of SMEs. For instance, less experienced firms aiming to enter international markets require "how-to" guides, written or online case studies, support and assistance from experienced international SMEs, and concrete advice on addressing initial problems and challenges (*e.g.* how to anticipate the consequences of going international, how to plan market visits and trade-fair strategies or how to identify potential international partners). On the other hand, more experienced international SMEs may be assisted effectively through the delivery of specific services (*e.g.* introduction to potential clients) or grants to allow them to draw on specialised sources of support.

An OECD (2008b) analysis, based on an OECD-APEC joint survey, also provides insights on how governments can increase the awareness of existing programmes for assisting with SME internationalisation that could be of use in the case of Malaysia. The report emphasises that governments can do more to publicise the wide range of support programmes available to SMEs seeking to access international markets. Programmes to support internationalisation need to be better integrated with other programmes that promote growth, competitiveness and innovation. Government support programmes can be leveraged by establishing a partnership with those being offered by NGOs (non-governmental organisations) and private sector providers. Wherever possible, the interface among support programmes of member economies and with those provided by NGOs and by the private sector should be developed to secure maximum accessibility and benefit.

POLICY FOCUS

Strengthen the link between industries and academic institutions to improve labour force skills and to enhance research and development

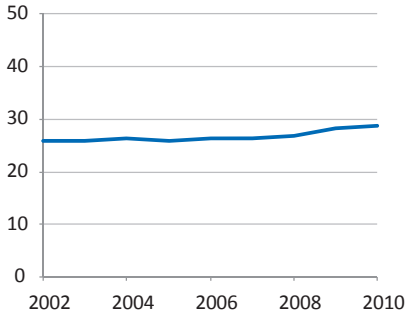
Human capital development to enhance the amount and quality of skilled labour is critical for the Malaysian economy that can be no longer enjoy the advantage of comparatively cheap labour costs in global and Asian value chains.

Some education indicators, in particular the aggregate school enrolment rate (including post-secondary and tertiary education)[14] and literacy rates in Malaysia are improving.[15] However, the quality of education should be enhanced urgently. For instance, Malaysian universities' unsatisfactory performance is highlighted by the international university rankings.[16]

This quality of education is an increasingly serious issue, in particular the mismatch between the skills needed by the labour market and those produced by the education system. Development into a high-income economy is changing the nature of the jobs required. The need for education reform to support this change is illustrated by the fact that the percentage of students enrolled in upper secondary technical and vocational education – now 10% – is considerably lower than that in high-income economies. The percentage of Malaysian jobs in the higher skill bracket[17] was only 29% as of 2010 and further highlights the need to upgrade labour force quality (Figure 3.2.3). Malaysia risks being caught in a vicious circle, where the lack of skilled graduates hampers the ability of its industries to move up the value chain, while the industries also lag behind in providing more skilled jobs (Figure 3.2.4).

In fact, the government is already trying to raise the skills and employability of the workforce by broadening access to technical education and vocational training (TEVT), as well as by enhancing the competencies of tertiary-school graduates. These efforts need to be reinforced by strengthening both TEVT and tertiary education.

Figure 3.2.3. Share of employment in the higher skilled bracket (percentage)



Sources: CEIC and national sources.

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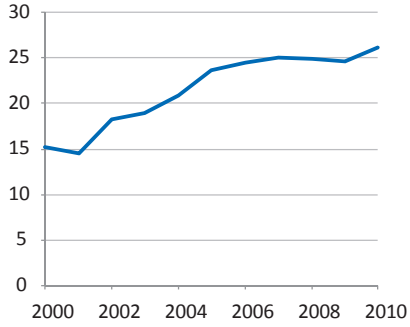
Figure 3.2.4. Unemployment among the population with tertiary education (percentage)



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Strengthening the link between Malaysian industries and academic institutions is also useful to mitigate the skill mismatch. In particular, information sharing between industries and academic experts is effective in generating technological spillovers, knowledge diffusion and innovation (OECD, 2008b). There are already several schemes in Malaysia to promote industry-academic links, such as the "industrial attachment programmes" and the Knowledge Transfer Partnership (KTP) programme that assists joint research and development (R&D) activities between industries and academic institutions. However, there is still room to strengthen these links further.

The KTP aims to enhance the transfer of information (*i.e.* expertise and research findings) between industries and academic institutions by promoting joint R&D activities. The programme is still at an early stage. It would be important to put in place appropriate incentive schemes or institutional arrangements to enhance mobility between industries, academic and other research institutions (Box 3.2.2).

Box 3.2.2. Promoting linkages between industries and academic institutions: examples from OECD countries

Several OECD country examples illustrate a range of policies that can facilitate collaboration and linkages between academia and other research institutions and industry:

In **Australia**, the collaboration between researchers and industry is fostered through the Co-operative Research Centre (CRC) programme. A CRC is a company formed through a collaboration of private sector organisations (both large and small enterprises), industry associations, academic institutions and government research agencies as well as other end users. It is characterised by close interaction between researchers and the user. While a CRC is funded for up to seven years by the Australian Government, a competitive and merit-based selection round for new CRCs is usually held every two years. Moreover, CRCs also help to provide graduates with needed industry skills through the CRC education programmes.

In **the Netherlands**, the linkage between industries and academic institutions is strengthened by a "knowledge vouchers" system, which aims to facilitate innovation for SMEs as well as to strengthen the relation between companies and research institutes. By enabling SMEs to buy research services from academic institutions and from other types of institutes, including large business firms, the "knowledge vouchers" system not only fosters innovation but also strengthens linkages between industry and academia. SMEs contribute only one third of the cost of the "knowledge voucher". The Dutch government has also introduced smaller knowledge vouchers ("sniffing vouchers") to further enhance relations between SMEs and research institutes.

In **Norway**, regional co-operation and enhanced innovative capacity within priority areas are strengthened through a funding initiative (the Programme for Regional R&D and Innovation (VRI)) administered by the Research Council of Norway. The priority areas include the environment, tourism and maritime sectors. One of the main features of the programme is the placement of researchers into companies as well as company employees into a university, college or research institute for a given period to take part in product development and other research projects. This feature is aimed at increasing co-operation between industry and the R&D sector.

Source: OECD (2008c)

POLICY FOCUS

Reform of the tax regime and improved efficiency of public spending to bolster the sustainability of public finances

Although Malaysia's fiscal situation is projected to gradually improve,[18] several problems remain, notably: *i)* heavy dependence on oil and gas revenues and *ii)* a high level of subsidies in government expenditure (Figure 3.2.5).

Total revenue collection in Malaysia is estimated to grow by 14.9% in 2011, reaching MYR 183.4 billion, as a result of stable domestic growth and healthy revenue from the petroleum income tax (PITA)[19] and the corporate income tax (Figure 3.2.6).[20] However, the share of oil and gas revenues to total revenues is still too high and contributes to an over-reliance on direct taxes. For instance, 44% of government revenues in 2008 were linked to petroleum resources through direct taxes, petroleum royalties, export taxes and revenues from investments (Doraisami, 2011). The share of all direct taxes was 72.1% in 2010 and is projected to increase further to 74.7% in 2011.

Adoption of the planned Goods and Services Tax (GST) will help to diversify the tax base away from direct taxes. The GST could also allow the corporate income tax rate to be reduced. Although the date for the implementation of GST is still uncertain, it should be introduced as early as possible.

Tax compliance and revenue collection – as indicated by the number of taxpayers submitting their tax returns online (*i.e.* using the "e-Filling" service) – has been steadily increasing since 2006. The Inland Revenue Board (IRB) plans to continue improving efficiency in tax submission, collection and administration (Table 3.2.2). Tax compliance is to be enhanced and the tax base is to be widened by strengthening audit, investigation and enforcement functions. These efforts need to be continued in order to further improve tax collection and the overall efficiency of the tax regime.

Table 3.2.2. Recent regulatory changes to diversify and increase government revenues

2006	The online service of e-Filling was introduced to ease the submission of tax declarations.
2009	The Tax Audit Framework was amended by the Inland Revenue Board of Malaysia (IRBM) in order to enhance tax compliance and collection.
2010	The Petroleum Income Tax (PITA) has been adjusted by making it self-assessed based on income received in the previous year, with the aim of standardising Malaysia's tax system and ensuring better cash flow management for petroleum companies.
	The Real-Property Gains Tax (RPGT) has been reintroduced at a 5% level to increase revenues.
	A new service tax on credit and charge cards has been introduced.
2011	The rate of service tax has been increased from 5% to 6% and a 6% service tax has been imposed on paid television broadcasting services.
	The foreign workers levy has been increased by MYR 50 across all sectors.

Source: Ministry of Finance, Inland Revenue Board.

Enhancing spending efficiency, in part by reducing subsidies, is also an important issue. The expenditure on subsidies is expected to increase by 41.9% in 2011, accounting for 18.2% of total operating expenditures and 3.9% of GDP. The main reason for this hike is high global fuel and commodity prices, since the bulk of subsidies are linked to fuel and food prices.[21] Moreover, subsidies in the current form are not very efficient. The majority of petrol subsidies benefit middle- and high-income groups, as well as foreigners and businesses. Such subsidies have also encouraged over-consumption of both fuel and sugar[22] together with substantial smuggling activities.

The rationalisation of subsidies has already started. Implementation is scheduled to be gradual in order to smoothen the impact on consumers and businesses, lower income households and the rural population and to contain inflationary pressures.

In addition, further efforts to improve spending efficiency are needed (Chapter 1). The establishment of a fiscal council would also help to strengthen the overall fiscal framework in Malaysia (Box 3.2.3).

Figure 3.2.5. Share of subsidies to total operating expenditure (percentage)

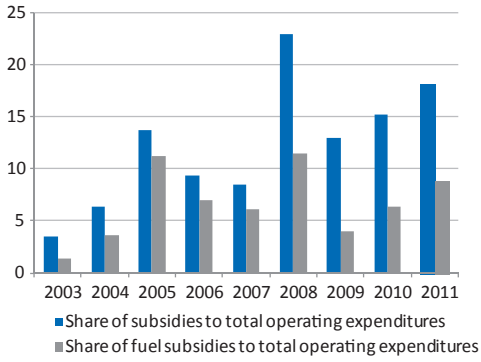
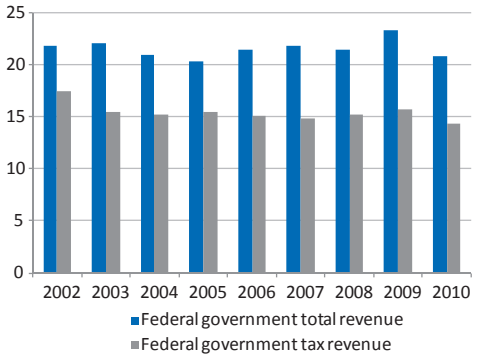


Figure 3.2.6. Federal government revenue (percentage of GDP)



Source: CEIC.

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Box 3.2.3. Fiscal councils: examples from OECD countries

The recent debt crisis has boosted the role of fiscal councils and several OECD countries previously lacking this type of institution have opted to establish one. Fiscal councils can serve as a major disciplinary device. They can pressure governments to adhere to their prudent fiscal policy commitments. To effectively play this role, fiscal councils need to be independent, non-partisan institutions.

The scope of responsibilities of fiscal councils can vary largely, but their major task is to follow the government plans and actions and the deviation between the two (see table below). In addition, fiscal councils may provide their own macroeconomic and fiscal forecasts or budget analyses. They also often evaluate the budgetary impact of specific proposed measures and provide assessment of the observation of fiscal rules.

The power of fiscal councils lies in their independent expert judgement and publicity. The members of the council may be chosen on a full-time or part-time basis and may come from independent think tanks or academia. They are often renown experts of fiscal policy and are independent of any political influence. In some countries, especially northern Europe, fiscal councils are very powerful and are well publicised in the media and the press, thereby putting pressure on governments to follow a prudent fiscal behaviour.

Mandate	Country	Denmark	Belgium	Austria	Sweden	UK
	Independent fiscal councils/ institutions	Danish Economic Council	High Council of Finance	Government Debt Committee	Swedish Fiscal Policy Council	Office for Budget Responsibility
	Year of establishment	1962	1936 (reformed in 1989)	2002	2007	2010
Normative recommendations and independent analysis on fiscal policy	Analysis of budget			X	X	X
	Estimates of short- and long-term effects of policy measures				X	X
	Analysis of whether budgetary plans and outcomes are in line with fiscal rules				X	X
	Alert function to signal a possible deviation from plans	X	X		X	X
	Proposals for changes in the budgetary plans	X	X	X		X
Economic and fiscal forecasting	Macro forecasts	X		X		X
	Forecasts for government expenditure, revenue, balance and debt levels	X				X

Source: OECD Development Centre's compilation.

Notes

12. The majority (73%) of these programmes targeted capacity and capability building.
13. Malaysia has been ranked number one by the *Doing Business* publication of the World Bank in the category of "Getting credit" for the last three years.
14. The number of students enrolled in higher education has been constantly increasing, and it reached 1.1 million in 2010.
15. Malaysia is about to achieve universal primary education, with 99% of school-aged children enrolled in primary education. The enrolment rate of girls is equal to that of boys while literacy rates are at 98% for both girls and boys aged 15 to 24 years.
16. According to the Academic Ranking of World Universities (ARWU) 2011 there are no Malaysian universities on the list of the top 500 unversities. Similarly, there are no Malaysian universities among the top 27 Asian universities according to the Times Higher Education Ranking while there are five universities (Universiti Malaya (167th), Universiti Kebangsaan Malaysia (279th), Universiti Sains Malaysia (335th), Universiti Teknologi Malaysia (in the 401-450 range), International Islamic University Malaysia (451-500 range)) among the top 500 according to the QS World University Ranking.
17. The higher skilled bracket is defined by the percentage of legislators, senior officers and managers, professionals, technicians and associate professionals to the total labour force.
18. Due to the countercyclical stimulus package adopted in response to the financial crisis and the increase in the cost of subsidies caused by high commodity prices, the budget deficit reached 7% in 2009. The deficit decreased to 5.6% in 2010 and it is estimated to fall further to 5.4% in 2011.
19. Revenues from PITA are expected to grow by 38.9% to reach MYR 26 billion in 2011.
20. Revenue from the corporate income tax is expected to increase by 21.2% to MYR 44 billion in 2011.
21. The share of energy (*i.e.* liquefied petroleum gas, diesel and petrol) subsidies to total subsidies was 40% in 2010.
22. There are significant health costs attached to the artificially low price of sugar.

PHILIPPINES

Medium-term economic outlook (forecast)

GDP growth (2012-2016 average, percentage changes)	4.9
Current account balance (2012-2016 average, % of GDP)	2.3
Fiscal balance (2012-2016 average, % of GDP)	-2.8

Medium-term plan

Period	2011-16
Theme	In pursuit of inclusive growth

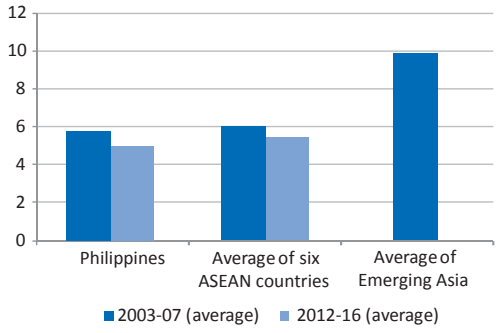
Basic data

Total population	93 million (in 2010)
Population of Manila	11.6 million (in 2007)
GDP per capita at PPP	3 737 (current USD, in 2010)

Sources: OECD Development Centre, MPF-SAEO 2011/12, national sources and IMF.

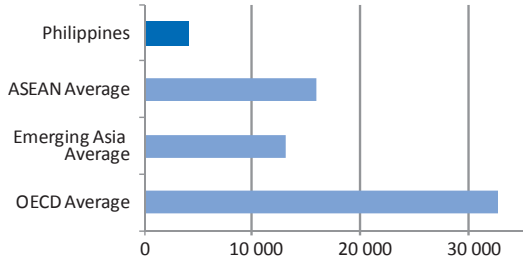
Notes: Six ASEAN countries includes Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam. *Emerging Asia* includes six countries of ASEAN plus China and India.

GDP growth rates (percentage changes)



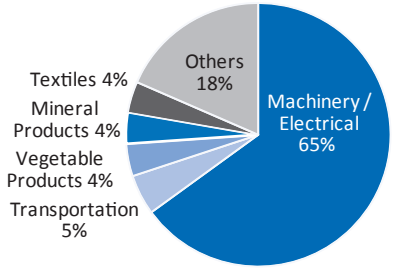
Source: OECD Development Centre, MPF-SAEO 2011/12.

GDP per capita (PPP, current USD)

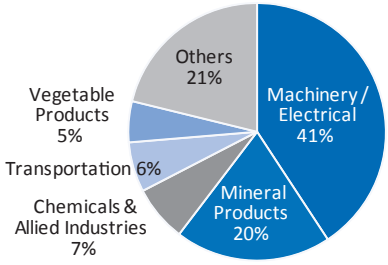


Sources: IMF and national sources.

Composition of exports (in 2010)
(percentage of total exports)



Composition of imports (in 2010)
(percentage of total imports)



Source: Trademap.

Towards inclusive growth – summary of the medium-term development plan

The medium-term development plan (2011-16) of the Philippines aims towards inclusive growth that is rapid, sustained, creates jobs and reduces poverty (Table 3.3.1). Special attention is paid to infrastructure development, including the development of public-private partnerships (PPP) schemes, governance, human development, and strengthening of public finance and of financial institutions. Reducing poverty and inequality[23] are other important priorities. Similarly, enhancing the business environment, especially for small and medium enterprises (SMEs), and improving their productivity are critical for inclusive growth. Finally, the importance of sustainable agriculture and fisheries is also highlighted by the medium-term development plan.

Equitable access to basic social services, such as education, health care and housing as well as stronger social safety nets are stressed in the context of inclusive growth. In addition, the environment and natural resources as well as peace and security are also included in the medium-term development plan. Environmental protection is especially necessary in view of the continuing deterioration in biodiversity and in natural resources.

Table 3.3.1. The Philippine Development Plan (2011-16): key development targets

	Initial status (2010)	Target (2016)
Macroeconomic performance		
GDP growth rate (%)	4.9, per year (2005-10, average)	7-8, per year (2011-16, average)
Fiscal balance (% of GDP)	-3.7	-2.0
Share of investment to GDP (%)	15.6	22
New (net) employment created (million)	0.8, per year (2005-10, average)	1, per year (2011-16, average)
Human capital development		
Net enrolment rate in primary level education (%)	88	100
Net enrolment rate in secondary level education (%)	60	93
Gender parity index (GPI) in primary level education millenium development goal (MDG)	0.98 (2008)	1
Gender parity index (GPI) in secondary level education (MDG)	1.09 (2008)	1
Poverty		
Incidence of poverty (MDG) (%)	26.5 (2009)	16.6 or less (2015)

Source: OECD Development Centre's compilation based on national sources.

Structural policy focus

The Philippines' medium-term policy challenges and responses

- Increase funding for infrastructure development and attract more private participation
- Improve the access to and the quality of basic education and strengthen technical education and vocational training
- Reform the tax system by enhancing tax collection and widening the tax base

POLICY FOCUS

Increase funding for infrastructure development and attract more private participation

An inadequate transport network and unreliable power supplies are major hurdles to economic growth in the Philippines (Figure 3.3.1). Thus, ensuring necessary funding for infrastructure development is a primary issue that needs to be addressed.

There is great room to improve all transport infrastructure – roads, railroads, seaports, and airports[24] – though progress has been made in some areas such as air transport services and shipping in recent years. The percentage of paved roads to total roads was only 77% (in 2010), while the total length of railway routes available for train service decreased from 491 to 479 kilometres between 2004 and 2008. The unreliable

power supply due to the slow pace of investments in power generation and maintenance is also a major obstacle to growth. Inadequate transport infrastructure and power shortages are more severe in poor rural areas than in the rest of the country. Accordingly, infrastructure development is important for mitigating urban-rural disparities in the Philippines.

Insufficient funding, misallocation of limited funds, and poor project implementation are major impediments to infrastructure investment in the Philippines. Indeed, the country's infrastructure investment record has been modest and deteriorating. Actual investments in transport infrastructure averaged less than 1% of gross domestic product (GDP) from 1999 to 2008, compared to about 4% for other Asian countries (PEGR, 2010). Besides the low levels of investment, inadequate project preparation, management and implementation as well as a weak institutional setting characterised by the lack of co-ordination between national and local governments have caused inefficiencies and created project delays and have raised costs.

Two policies to improve infrastructure performance need to be considered.

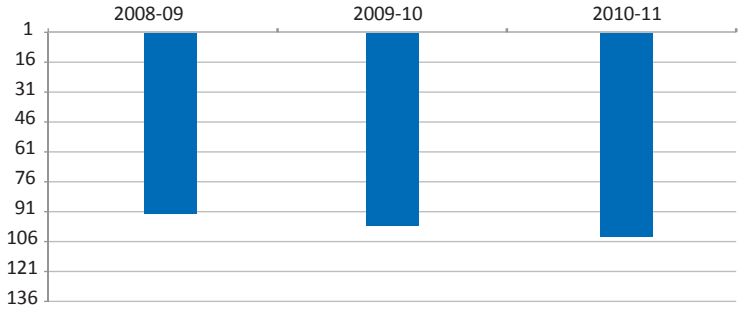
- **Enhance the availability of infrastructure funds through PPP**. Further reform to create better regulatory and institutional frameworks for PPPs is essential. The Philippines already has a "PPP centre" to facilitate co-ordination between the implementing agencies but it has not functioned effectively. Experiences in other ASEAN countries suggest that measures to increase the effectiveness of the PPP centre would be important steps toward improving infrastructure funding in the Philippines (see the Indonesia Country Note).
- **Create an "infrastructure fund"**. Experiences in a number of countries suggest that a government-financed dedicated infrastructure fund can help considerably to reduce the shortage of infrastructure funding (Table 3.3.2). The Philippine government has announced plans to create a similar fund, the Philippine Infrastructure Development Fund (PIDF). The planned fund could provide not only a reliable source of funding but also an institutional framework to increase private participation in infrastructure investment.

Table 3.3.2. Government-led infrastructure funds

Name	Date established	Leading agencies	Objectives
India Infrastructure Finance Company Limited	January 2006	Wholly government owned company	To finance and develop infrastructure projects in India. Direct lending to eligible projects; refinancing to banks and other financial institutions for loans with term of five years or more.
Building Australia Fund	January 2009	Department of Finance and Deregulation	To finance capital investment in transport, communications, energy and water infrastructure.
Community Infrastructure Fund UK	July 2004	Joint venture by the Department for Transport and the Department for Communities and Local Government	To support the transport infrastructure costs required to enable faster housing development. The CIF was financed by a capital grant allocation of £200m in 2006-08.

Source OECD compilation based on national sources.

Figure 3.3.1. Infrastructure competitiveness
(ranking)



Note: The Global Competitiveness Report prepared by the World Economic Forum ranks countries based on both quantitative and qualitative information. The most competitive country is ranked first. In the 2008-09, 2009-10 and 2010-11 rankings of infrastructure competitiveness the Philippines ranked 92nd, 94th, and 104th out of 134, 133 and 139 countries, respectively.

Source: Global Competitiveness Report, World Economic Forum.

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POLICY FOCUS

Improve the access to and the quality of basic education and strengthen technical education and vocational training

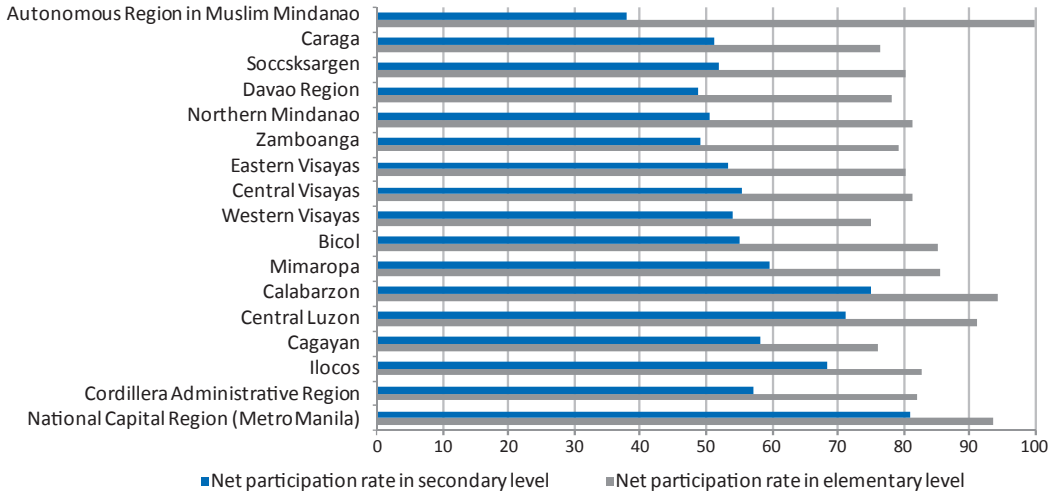
Improving the access to basic education and strengthening technical education and vocational training (TEVT) are important challenges in the Philippines. The latter is critical to reduce the mismatch between workers' skills and those needed by the market.

The education system of the Philippines has yet to provide adequate and equal access to high-quality basic education. Net enrolment rates in primary- and secondary-level education in 2010 were only 88 and 60% respectively; and cohort survival rates were 74% for elementary schools and 79% for secondary level education in 2009. Drop-out rates were also high – at 6% and 8% for elementary and secondary levels, respectively – despite the free provision of education. The gross enrolment rate of 3-4 year-old children in day care services was only 19% while the pre-school net enrolment rate of 5 year olds was 48% in 2010.

Several steps have been taken to improve these figures. The Early Childhood Care and Development (ECCD) Act was enacted in 2000 to increase the access to pre-school education.[25] More recently, the "Kindergarten to 12 Years (K+12) Basic Education Programme" has been instituted to improve the quality of education from kindergarten to the 12 year-old grade level. In addition, the National Competency-Based Teacher Standards (NCBTS) was established to strengthen the assessment of teachers' quality. The government has also instituted the School Improvement Programme to bolster educational capacity and to enhance the independence of school management in exchange for stronger accountability.

Subsidies towards poor households conditional on the school attendance of their children (conditional cash transfers, or CCT) have also been established to improve their enrolment rates. Improved enrolment from poorer households would also be effective in reducing urban-rural disparities, which are quite large in the Philippines (Figure 3.3.2). Other existing programmes, notably "the Alternative Learning Systems" (originally targeted at out-of-school dropouts and illiterates) and the "Alternative Delivery Modes" programmes should also help to reduce rural-urban disparities.

Figure 3.3.2. Regional disparities in enrolment rates in 2008-09
(percentage)



Source: CEIC.

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In the Philippines, there is a mismatch between graduates' skills and the requirements of industries that contributes to unemployment and depresses labour force participation. Between 2006 and 2010, the underemployment rate was 20% and the labour force participation rate was also low, at 64% on average. The ratio of part-time workers[26] to total employment stood at 35% in 2010. The extent of skill mismatch is further highlighted by the fact that the percentage of unemployed with a college degree is above 20%. Skill shortages are especially acute in several industries, notably engineering and business process outsourcing activities that require technical skills.

A number of measures to strengthen TEVT and reduce the skill mismatch need to be considered in the Philippines.

- The inadequate quality of TEVT programme needs to be addressed through the direct participation of businesses in skills development programmes.
- TEVT student preferences and employer demands also need to be aligned more closely, for instance through enhanced career guidance, adjusting course offerings to better reflect the availability of workplace training, or targeted grants for enrolment in areas of skills shortages (Box 3.3.1).
- Curricula need to be reformed by not only strengthening technical streams (*e.g.* engineering, ICT) within TEVT, but also by greater emphasis on development of general skills such as literacy and numeracy as well as soft transferable skills such as the ability to work in teams or communication skills that improve employability in general.
- The industries in need of skilled workers should also improve their ability to recruit from high schools by providing scholarships conditional on graduation in a specific technical profession.

Box 3.3.1. Career guidance as a possible way to meet labour market needs: examples from OECD countries

Enhanced career guidance is one way to help meet labour market needs. As students tend to follow courses that will lead to good jobs, student choices can be influenced to acquire skills in short supply by providing quality information about labour market requirements.

Effective career guidance requires a coherent framework and professional personnel experienced in labour market issues. Independent and objective information, as well as resources to enable pro-active one-to-one delivery of guidance at key career decision points, is also important.

Career guidance policies in some OECD countries illustrate some lessons of potential use to ASEAN members.

In **Switzerland**, career guidance counselling is a specialised profession requiring a university diploma. The university degree programme covers five broad areas: individual development (learning and developmental psychology); the individual in society (sociology, law and economics); the individual and the world of work (the education system, education and professional career choice, occupational psychology and the labour market); work methods (diagnostics, career guidance, monitoring, documentation and public relations); and professional ethics, professional identity and professional quality. In addition, the programme includes a 12-month traineeship (Schweizer Bundesrat, 2009 in OECD, 2010).

Switzerland also has an independent professional career guidance service, carried out through the BIZ (Berufsinformationszentren) centres. Although the BIZ centres work closely with schools, and sometimes provide some services at the school rather than at the BIZ site, they are independent institutions providing information and counselling for all levels of education and training.

There are several OECD examples of effective and detailed provision of mostly web-based career information. In the **Czech Republic**, a website provides information on educational options (entry requirements and the qualifications for individual programmes and the jobs the programmes lead to) and labour market outcomes (data on employment, and unemployment rates and salaries by educational attainment and field as well as employment conditions and employee satisfaction in different occupations). In **Mexico**, a similar career guidance tool is available on portable memory media and on line, including tools to help students identify their strengths and interests. In **Sweden**, the career guidance website also contains information on what former students in the different programmes do five years after finishing school – for example the type of their further education, their occupation and the percentage of those outside the workforce.

Workplace experience at an early stage is also useful in making career choices. In **Denmark**, most lower-secondary students have an opportunity to pursue at least two different one-week work placements in companies in order to gain work experience and to help them choose a career path. In **Norway**, nearly all students in lower secondary education, regardless of whether they are intending to enter a vocational programme, have one week of work experience in their 9th grade and some further work placement in grade 10 (OECD, 2002c in OECD, 2010).

Source: OECD (2010b).

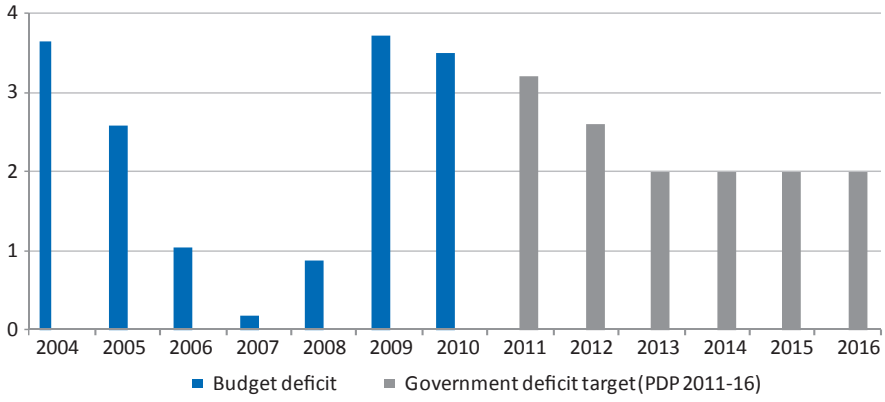
POLICY FOCUS

Reform the tax system by enhancing tax collection and widening the tax base

As highlighted in the medium-term plan and also reflected in the budget proposal for 2012, growth that is more "inclusive" is one of the important issues in the Philippines. Its importance is further indicated by the fact that the social services sector will continue to receive the largest share (31.7%) of the budget.

The fiscal situation of the Philippines had been improving from around 2004 until the global financial crisis in 2008 (Figure 3.3.3). The budget deficit improved from 5% of GDP to 0.2% of GDP between 2002 and 2007. Total revenue and taxes increased from 13.8% and 11.8% of GDP respectively in 2002 to 16.5% and 13.5% of GDP respectively in 2007. However as a result of the financial crisis and the subsequent fiscal stimulus measures,[27] both the budget deficit and revenue have deteriorated. In 2009, the budget deficit increased to 3.7% although it fell back slightly to 3.5% by 2010. Total revenue and taxes also dropped from 16.5% and 13.5% of GDP respectively in 2007 to 13.4% and 12.1% respectively by 2010.

Figure 3.3.3. Budget deficit
(percentage of GDP)



Sources: CEIC and Bureau of the Treasury.

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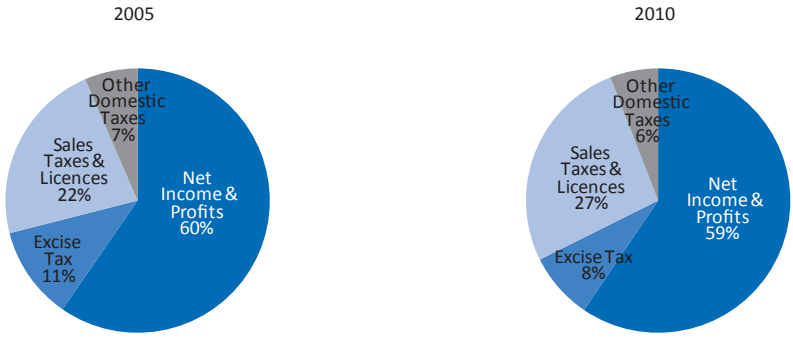
However, the deterioration in revenue cannot be attributed only to the financial crisis. Other structural problems have also contributed, notably the low share of excise taxes on alcohol, tobacco and petroleum[28] and inefficient and unnecessary tax incentives and exemptions along with other factors that narrow the tax base. Although the value added tax (VAT) was increased and the tax base broadened during 2005-06, measures taken subsequently (partly in response to the financial crisis) narrowed the tax base again. In 2010, the primary source of tax revenues was taxes on net income and profits, which accounted for 59% of total revenues, while the second biggest revenue source was sales taxes and licences, which contributed 27% of total domestic tax revenues. The VAT, as the major component of revenues from sales taxes and licences, accounted for 21% of total domestic taxes.

The Philippine Development Plan specifies the rationalisation of redundant fiscal incentives[29] and unnecessary tax exemptions, the introduction of a fiscal responsibility law enforcing fiscal discipline, as well as the improvement of the revenue yield through the adjustment of excise taxes on alcohol, tobacco and petroleum and other measures. Non-tax revenues are also increased by adjusting fees and charges collected so that government services do not make losses, by enhancing privatisation, and by improving the operations of Government Owned and Controlled Corporations (GOCCs) and better enforcement of their financial obligations to the public sector.

Figure 3.3.4. Composition of domestic tax revenues
(percentage of total domestic tax revenues)



Source: Bureau of the Treasury.

StatLink http://dx.doi.org/10.1787/888932562564

Efforts have been made for many years to improve tax collection but they need to be continued and strengthened (Table 3.3.3). The government plans to enhance tax collection by establishing a tax registry including all taxpayers; maintaining an efficient tax audit programme; strengthening both the Bureau of Internal Revenue (BIR) and the Bureau of Customs (BOC); formulating a more transparent and consistent tax system; as well as adjusting the regulatory environment to improve monitoring and enforcement. Revenue bodies can enhance tax collection by introducing transparent and performance-oriented management strategies as well as through special taxpayers' compliance enhancing measures (Box 3.3.2). There is also further room in the Philippines to improve the institutional framework for tax collection and to ensure that tax revenues are used effectively.[30]

The performance of tax collection as measured by the "tax effort" (the share of total tax revenue to GDP) has been below expectations so far. Further measures are needed to reach the target of 15.6% by 2016. Monitoring and compliance should be strengthened, as suggested by the fact that the top ten importers are not among the top ten tax payers.

Table 3.3.3. Recent regulatory reforms and programmes to enhance tax collection

	Regulatory reform / Programme
2005	The RATE Program seeks to identify and prosecute high-profile tax evaders with the aid of an extensive information campaign, as well as periodic news reports in the print and broadcast media on the prosecution of prominent individuals or entities found to be engaged in tax fraud schemes
2009	The "Oplan Kandado" Program aims to increase voluntary compliance with the basic requirements of tax administration, particularly in the area of VAT payments (by sanctions – primarily the closure of business establishments – on taxpayers who have been found to be in violation of the applicable provisions of the Tax Code)
2010	Audit Program for the Revenue District Offices (RDOs) prescribes the policies, guidelines and procedures for the audit and investigation of tax returns and seeks to enhance voluntary compliance by encouraging the payment of the correct amount of tax through the exercise of the Bureau's enforcement function
	Stop-Filer Program (if a taxpayer has filed tax returns in the past and then a return is not filed for the next tax period, that taxpayer is identified as a "stop filer") for the identification, handling, closure and monitoring in connection with the roll-out of the Returns Compliance System (RCS) at the newly computerised RDOs
	The "Premyo Sa Resibo" (PSR) Promo, an SMS text-based raffle promo urging consumers to ask for official receipts, was enhanced significantly
	Update of the Zonal Valuations Project seeks to enhance tax collections from the sale, exchange or disposition of real properties through the updating of zonal values across the country, and their publication in the BIR Portal for easy electronic access by the public
	Monitoring of tax exemptions and fiscal incentives provided by Incentives Promoting Agencies (IPAs) such as the Philippine Economic Zone Authority (PEZA) or the Board of Investments (BOI)

Source: Bureau of Internal Revenue.

Box 3.3.2. Enhancing tax collection by managing revenue bodies and enforcing taxpayers' compliance: examples from OECD countries

Revenue bodies can enhance tax collection by introducing transparent and performance-oriented management strategies as well as through special taxpayers' compliance-enhancing measures.

OECD experience shows that the performance-oriented reform of revenue bodies is highly beneficial. Performance-oriented management is a management cycle under which explicit programme performance targets and objectives are specified (and often published in official planning documents); managers have flexibility to achieve the targets and objectives; actual performance is measured and reported (often in agency annual performance reports); and this information feeds into decisions about future programme funding, design, operations and rewards and penalties.

A growing number of revenue bodies have taken steps to shift the focus of their planning and performance evaluation from "outputs" (*e.g.* the numbers of returns filed, inquiries handled, and audits completed) towards "outcomes" (such as taxpayers' compliance, quality of services delivered to taxpayers and tax professionals, and reductions in taxpayers' compliance burdens). The performance-based evaluation framework includes the use of: *i)* direct and indirect measures of taxpayers' compliance across the major risk types; *ii)* measures that reflect the quality of services delivered to taxpayers and tax professionals; *iii)* indicators of taxpayers' compliance burdens; and *iv)* measures reflecting the level of taxpayer satisfaction with, and confidence in, the revenue body. (The tax authorities in **Denmark, New Zealand, Sweden** and the **United Kingdom** and some other countries report their goals and targets concerning tax compliance, indicators of the quality of their services and reductions in taxpayers' compliance burden, cost effectiveness and productivity improvements as well as the satisfaction levels of individuals and businesses towards the revenue body.)

Transparency of the performance of revenue bodies is as important as its evaluation. Extensive and regular publishing of performance reports together with production and publication of results achieved in comparison with service delivery standards is very important for transparency. Surveys of taxpayers and other stakeholders to gauge their perceptions of service delivery and overall administration on a regular basis can also be useful. Some exemplary cases of transparent reporting of revenue body outcomes can be found in **Australia** (reporting of service delivery performance outcomes), **Canada** and the **United Kingdom** (reporting of indicators of taxpayers' compliance), as well as **Spain** and **Sweden** (reporting of indicators of community perceptions of the quality of services and administration).

Compliance management can be improved through strategies such as the assessment and reporting of the progress being made to address key compliance risks; production and publication of estimates of the aggregate tax gap for the major taxes; and application of random audits to test compliance and for risk profiling purposes in targeted sectors or for the major taxes.

The revenue bodies of **Australia** and **New Zealand** publish a comprehensive summary of their assessment of the major tax compliance risks on a regular basis that serves to deter non-compliance through media interest and publicity. The Australian Taxation Office (ATO) started to produce and publish its assessment of compliance risks in 2002. The risks assessed are structured around key market segments. For instance, some of the risks identified for large taxpayers by the 2010-11 assessment are profit shifting, research and development claims, GST and international cross-border transactions, capital gains and foreign residents. The *Inland Revenue* (IRD) *of New Zealand*, which started to publish its annual assessment report in 2009, identifies risks according to ten key customer groups, including individuals, families, and small and medium enterprises. Then the specific risk treatment approaches are described by the purpose of use (*e.g.* education, campaigns, audit, publicity).

Some of the few revenue bodies that estimate and publish the tax gap on a regular basis are the Internal Revenue Service of **Chile** and Her Majesty's Revenue and Customs (HMRC) in the **United Kingdom**. While in Chile the tax gap reporting has focused mainly on the VAT, which is the major tax revenue source, the HMRC has extended its tax gap estimates to direct taxes as well.

Random audit programmes help to develop and refine audit risk profiling systems and to assist with the development of estimates of aggregate non-compliance, including estimates of the tax gap. The core audit programme of the **Canada** Revenue Agency (CRA) selects a random sample of SMEs to estimate a reliable rate of reporting compliance, which is then published in its annual report. The revenue body of **France** implemented a random audit programme of around 400 VAT taxpayers in 2010 to provide estimates of the overall incidence of non-compliance. The HMRC in the United Kingdom conducts random audit programmes across individuals' self-assessment, SME employers' withholdings and SMEs' corporation tax to derive estimated compliance rates and to revise its risk profiling criteria. Moreover, compliance rates derived from each of these random programmes are published on a regular basis.

Source: OECD (2011a).

NOTES

23. While the poor accounted for 26.5% of the population in 2009, inequality as measured by the Gini-coefficient (0.448 in 2009) is higher than in regional peers such as Indonesia or Viet Nam.
24. The low quality of infrastructure has been a key contributor to the consistently low ranking the Philippines has received on the Global Competitiveness Index of the World Economic Forum. In the *Global Competitiveness Report 2010-2011* of the World Economic Forum, an inadequate supply of infrastructure was indicated as the third most problematic factor for doing business in the country.
25. The Early Childhood Care and Development (ECCD) Act requires all villages to have day care centres and early learning institutions for children.
26. Part-time workers are defined as those who work less than 40 hours per week.
27. According to the Economic Resiliency Plan launched in 2009, the expenditure budget was expanded by PHP 160 billion (Philippine peso) and the corporate tax rate was reduced from 35% to 30%.
28. The share of excise taxes on alcohol, tobacco and petroleum only increased by 1% from 2004 to 2009, reaching 22%.
29. For instance, corporate taxes vary between 5% and 30% depending on geographical location and whether or not the business is located in one of the special economic zones.
30. The measures taken by the government to enhance spending efficiency include: the Zero-Based Budgeting approach introduced in 2010; the Medium-Term Expenditure Framework (MTEF) for multi-year budgeting; the Organisational Performance Indicator Framework (OPIF); the Government Integrated Financial Management Information System (GIFMIS); the Government Rationalization Programme (RP) for improving public service delivery; and the Philippine Government Electronic Procurement System (PhilGEPS) for facilitating the transparency and efficiency of public procurements.

SINGAPORE

Medium-term economic outlook (forecast)

GDP growth (2012-16 average, percentage changes)	4.6
Current account balance (2012-16 average, % of GDP)	16.3
Fiscal balance (2012-16 average, % of GDP)	0.6

Medium-term plan

Period	2010-20
Theme	High skilled people, innovative economy and distinctive global city

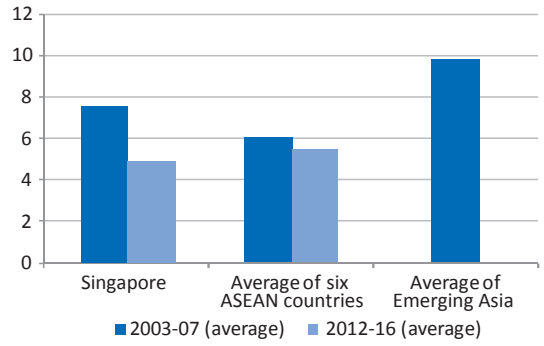
Basic data (in 2010)

Total population	5.2 million
GDP per capita at PPP	56 522 (current USD)

Sources: OECD Development Centre, MPF-SAEO 2011/12, national sources and IMF.

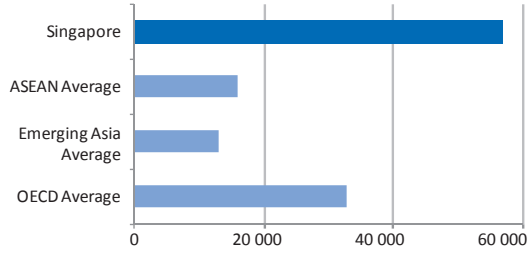
Notes: Six ASEAN countries includes Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam. *Emerging Asia* includes six countries of ASEAN plus China and India.

GDP growth rates (percentage changes)



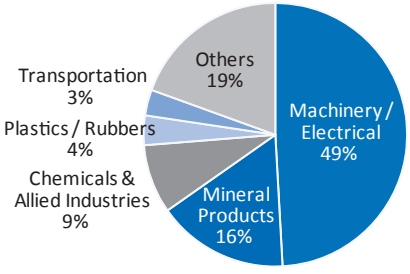
Source: OECD Development Centre, MPF-SAEO 2011/12.

GDP per capita (PPP, current USD)

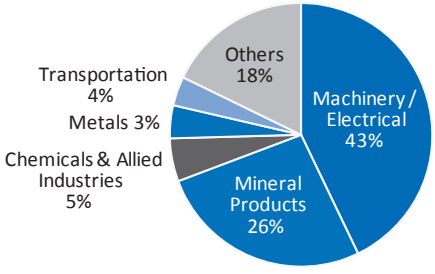


Source: IMF and national sources.

Composition of exports (in 2010)
(percentage of total exports)



Composition of imports (in 2010)
(percentage of total imports)



Source: Trademap.

Skills, innovation and productivity - the medium-term development plan in Singapore

To achieve sustained and inclusive growth, the Prime Minister established the Economic Strategies Committee (ESC) in 2009 to develop medium-term strategies for Singapore. The ESC report in 2010 aimed at the key goals of high-skilled people, an innovative economy and a distinctive global city by 2020. Recommendations made by the committee focused on skills, innovation and productivity as the basis for economic growth. These are to be supported by a nation-wide system of continuing education and training and by programmes to encourage innovation. Priorities identified include the boosting of skills and the deepening of corporate capabilities. The aim is to ensure that Singapore remains a highly liveable place with good living standards.

Table 3.4.1. Economic Strategies Committee (2010-20): key development targets

	Initial status (2009)	Target (2020)
Economics		
GDP growth rate (%)	5.0, per year (average, 2000-10)	3.0-5.0, per year (average, 2010-20)
Productivity growth rate (%)	1.0, per year (average, 2000-10)	2.0-3.0, per year (average, 2010-20)
Education		
Share of resident workforce with at least a diploma[31] (%)	39	50
Share of resident workforce with at least a degree[32] (%)	27	35
Research and Development		
Gross expenditure on research and development (Share of GDP)	2.8 (2008)	3.5 (2015)
SMEs		
Number of SMEs with revenues over S$100 million	530 (2007)	1 000

Source: OECD Development Centre's compilation based on national sources.

Structural policy focus

Singapore's medium-term policy challenges and responses

- Strengthen life-long learning by enhancing pre-school education
- Raise efficiency of innovation policy through well co-ordinated policy evaluation system
- Enhance small and medium enterprise development by improving assistance programmes

POLICY FOCUS

Strengthen life-long learning by enhancing pre-school education

The ESC report included the proposal for a nationwide Continuing Education and Training system to upskill the workforce and enhance productivity. As human capital formation is a life-long learning process, there is a need to consider other aspects of education system. In Singapore, primary and secondary school education has achieved good results. However, early childhood education and care (ECEC) are not part of the national education system. It is necessary to integrate pre-schools with the primary and secondary schools to strengthen the foundation for life-long learning.

Participation in primary and secondary school education is near-universal in Singapore. The quality of primary and secondary education is high and Singapore students have performed well on the OECD's Programme for International Student Assessment (PISA).[33] PISA assesses the level of knowledge and skills of 15 year-old students, with a focus on reading, mathematics and science. On average among OECD countries, 4.1% of 15 year-old students are top performers in all three assessed subject areas. In contrast, 12.3% of students in Singapore attain the highest levels of proficiency in all three of the subjects (OECD, 2010d). These years of formal education are crucial to human capital formation and to ensuring that young people develop the skills and knowledge that will enable them to earn a living later in life.

Despite the good results produced by the formal education system, there remains potential to improve pre-school learning by fully integrating ECEC into the education system alongside primary and secondary schools. There is evidence that high quality pre-school programmes bring a wide range of benefits, such as

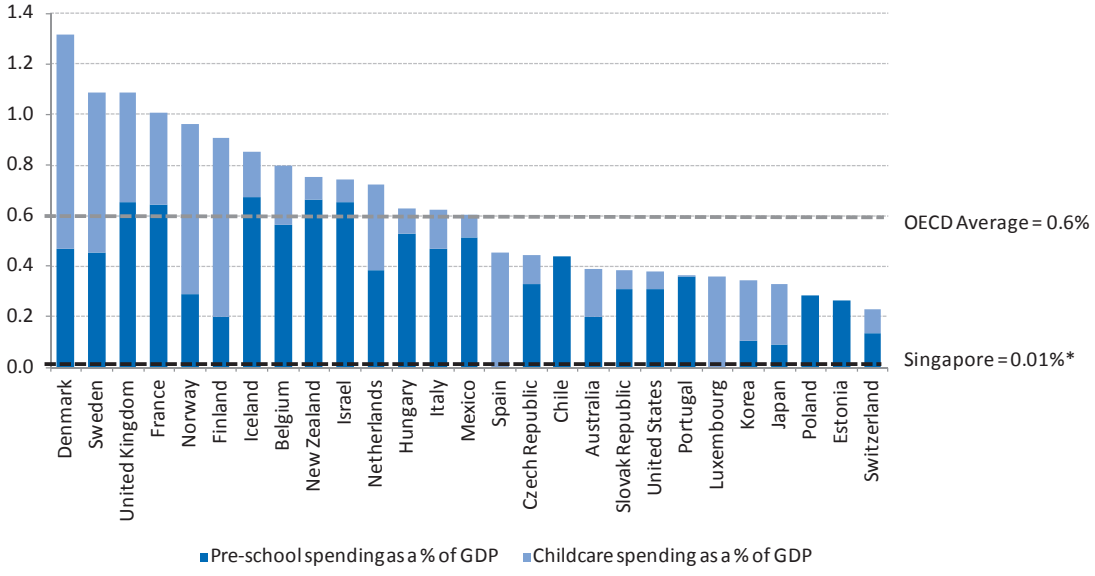
better child well-being and better learning outcomes, as a foundation for life-long learning. In OECD countries, there is a growing recognition that early access to ECEC provides young children, particularly those from low-income groups, with a good start in life and an early foundation for life-long learning.

Kindergartens in Singapore are run by the private sector, including community foundations, religious bodies, social organisations and business organisations. The Ministry of Education has established the Singapore Pre-school Accreditation Framework as a quality assurance system to raise the quality of pre-schools and has raised the minimum academic qualifications of pre-school teachers. However, more could be done.

Raising the quality of ECEC is at the forefront of OECD policy priorities and governments have put in place a range of measures to achieve this objective. Most countries focus on improving quality through lowering staff-child ratios, reducing group size, enhancing facility conditions, and staff training. For instance, child-staff ratios are very low in Denmark, Sweden, Finland and Norway, with fewer than ten children for each staff member. The degree of parental involvement in pre-school education is also key and can help in monitoring progress and in raising quality. Consultation of parents is becoming more important in many countries, such as the Czech Republic, Denmark, Finland, Norway, the Netherlands, Sweden and the US. The consultations consider conditions such as the efficiency of administration, parents' perceptions of the happiness and well-being of the children, and the adequacy of the children's health care.

In addition, funding of pre-school education can be enhanced. Government expenditure on education in Singapore totalled S$ 9.9 billion in 2010, but funding for the pre-school education sector was only S$ 150 million (Singapore dollars) (an average of 0.01% of GDP per annum) over the last five years.[34] This is in marked contrast to the distribution of education spending in the OECD countries, where an average of 0.6% of GDP is spent annually on childcare and early education services, of which two-thirds (0.4% of GDP) is spent on pre-school education (Figure 3.4.1). Singapore can increase funding for ECEC to foster life-long learning from a young age. A longer-term plan of integrating the pre-schools with the existing primary and secondary schools in the education system will help to achieve a greater degree of equity in access to early education, and to strengthen the life-long learning agenda.

Figure 3.4.1. Public expenditure on early childhood education and care in 2007
(percentage of GDP)



Sources: OECD and Eurostat.

StatLink http://dx.doi.org/10.1787/888932562583

Box 3.4.1. Entitlement to early chilhood education and care: examples from OECD countries

In the OECD countries, policy makers have recognised that equitable access to quality ECEC can strengthen the foundations of life-long learning for all children and support the broad educational and social needs of families. In several countries, access to ECEC is a statutory right from age three (or even younger). The trend in all countries is towards full coverage of the three- to six-year-old age group, with the aim of giving all children at least two years of free publicly funded provision of ECEC before beginning compulsory schooling.

Some OECD examples of entitlements to ECEC

Country	Entitlements to ECEC	Age covered				
		3	4	5	6	7
Belgium	Legal right to pre-school	x	x	x	x	
Denmark	Legal right to free kindergarten class in primary schools				x	x
Finland	Legal right free pre-school classes in centres and primary schools				x	x
France	Legal right to school-based ECEC	x	x	x	x	
Germany	Legal right to school-based ECEC	x	x	x	x	
Mexico	Free and compulsory attendance at school-based centres			x	x	
Netherlands	Legal right to free primary schools		x	x	x	x
Sweden	Legal right to free pre-school in primary schools	x	x	x	x	x
UK	Universal, free part-time early education	x	x			
USA	Most school districts offer free kindergarten classes			x	x	

Source: OECD (2001) and OECD (2006).

Public investment in the pre-school network and in entitlements to ECEC have increased enrolments in many countries. The majority of children are enrolled in free early provision from the age of 30 months in Belgium, and increasingly in France from the age of two years; from the age of three years in Austria, the Czech Republic, Germany, Hungary, Italy, the United Kingdom; from the age of four years in Ireland, and the Netherlands; and from the age of five years in Australia, Canada, Mexico and the United States.

Despite these positive developments, there remains the challenge of access for children with special needs, children with disabilities, children from disadvantaged backgrounds, and children from ethnic or cultural minorities.

In Malaysia, pre-school education is made part of the national education system under the Education Bill of 1995. The National Education System at the school level under the government education institution includes pre-school education programmes for pupils aged 4 to 6 years. To ensure that children, particularly those from the most disadvantaged regions, are given the opportunity to participate in quality early childhood education, MYR 100 million has been allocated to the Ministry of Education under a programme called "PERMATA". This programme focuses on early childhood education methods and techniques in an integrated and planned manner, which contributes to knowledge capacity building and high performance among the children.

POLICY FOCUS

Raise efficiency of innovation policy through well co-ordinated policy evaluation system

The medium-term plan recognises that innovation is important in sustaining economic competitiveness. To sustain investments in public research infrastructure and to catalyse more private sector R&D, gross expenditure on R&D is targeted to reach 3.5% of GDP by 2015, up from 1.9% of GDP in 2000 and 2.8% in 2008. Targeting levels of spending on certain dimensions of innovation activity, such as research and development (R&D), has been a widely used policy tool in recent years. However, it is important to know how to reach the target and what that target means in terms of innovation outcomes and impacts. Innovation in itself is not an objective. It needs to be placed in the broader context of its contribution to the economy. It is necessary to go beyond science, technology and innovation indicators to draw on measures of education, entrepreneurship, economic, environmental and social outcomes (such as health outcomes) (OECD, 2010c).

Evaluation is a key tool for learning about how well policies and programmes are delivering, what problems may be emerging, what elements work well and less well and what could be done better in the future.[35] Evaluation of innovation policies is particularly important to maximising their contribution to social and economic objectives. However, innovation programmes are not operated on their own but are part of a "patchwork" of interventions addressing issues such as education, finance and SME support. For instance, higher education and research are best viewed as sub-systems of a broader overall effort to foster innovation. It is necessary to evaluate the impact of measures specifically targeted on innovation in conjunction with these related policies. This is because it is difficult to isolate the impact of any single programme, since the success of one policy depends upon the presence of the others. This requires co-ordination of policy making and evaluation across government agencies.

In addition, policy makers seeking to boost innovation are increasingly looking beyond traditional supply-side policies, such as R&D support, to the demand side in order to accelerate innovation.[36] A number of OECD countries have introduced demand-side measures, with public procurement at the centre of recent policy initiatives. Because of their large purchasing power, governments can influence the diffusion of innovations. Singapore could couple its current supply-side innovation initiatives with demand side instruments, for example by incorporating innovation into public procurement (Box 3.4.2).

Box 3.4.2. Incorporating innovation into public procurement in the OECD

The potential of public procurement for innovation has recently received renewed impetus, and a range of government initiatives in OECD countries have incorporated an innovation dimension into general public procurement.

- **Australia** introduced the New Directions for Innovation, Competitiveness and Productivity in 2007. Public procurement was highlighted as an important way to support innovative Australian firms.
- **Germany** has created a new Agreement on Public Procurement of Innovation under which six federal ministries (Interior, Economics, Defence, Transport, Environment and Research) are mandated to promote innovative procurement.
- The **Netherlands** has introduced measures to make government procurement more innovation-oriented, notably through the Public Innovation Procurement (PIP) programme.
- The **United Kingdom** government issued procurement guidance in 2007, Finding and Procuring Innovative Solutions, and introduced an Innovation Procurement Plan in 2009, making innovation a key requirement for large government facilities and capital programmes.

However, the use of public procurement to stimulate innovation also faces challenges. Firstly, governments need to ensure that the policy does not distort competition. In addition, procurement is often highly fragmented across government agencies. Finally, existing procurement processes are not oriented towards innovation. A survey in Germany showed that public institutions place very little emphasis on innovation in their procurement: promotion of innovation ranked last among procurement aims. Thus it is important to change public procurement processes to make them more innovation-friendly.

Source: OECD (2011b).

POLICY FOCUS

Enhance small and medium enterprise development by improving assistance programmes

The ESC identified a vibrant and diverse corporate ecosystem as one of the medium-term goals. This corporate landscape would comprise a mix of large and small companies. SMEs[37] constitute 99% of all enterprises in Singapore and contribute 40% of gross domestic product (GDP) and 60% of total employment. SMEs are critical to the development of domestic sources of growth and to the reduction of reliance on foreign direct investment. In particular, SME internationalisation is key to Singapore's development as a global hub. While a range of assistance programmes are already in place to support SME development, co-ordination between agencies can be improved. In addition, awareness of the programmes can be enhanced.

Many countries offer a wide range of support programmes to reduce barriers to SME access to international markets. In Singapore, assistance programmes for SME internationalisation come in the form of loans, grants, tax incentives, equity financing and other supports administered mainly by the International Enterprise Singapore and by SPRING Singapore (Table 3.4.2).[38] SMEs can also draw on programmes under other government agencies such as A*STAR, the Infocomm Development Authority of Singapore, the Inland Revenue Authority of Singapore, and Singapore Customs for assistance on other internationalisation aspects such as innovation, operations and taxation. Given the array of measures, there needs to be enhanced awareness of the existing programmes targeting SMEs in different stages of internationalisation. The agencies also need to work closely together to ensure coherent support and to streamline administrative burdens on SMEs.

Table 3.4.2. Some of the SME assistance programmes in Singapore

Agencies providing assistance	Programmes and areas targeted				
	Operations	Finance	Capabilities	Innovation	Others
A*STAR				Technology for Enterprise Capability Upgrading	
Infocomm Development Authority				iSPRINT	
Inland Revenue Authority of Singapore	Jobs Credit Scheme, Major Exporter Scheme			Productivity and Innovation Credit, R&D Incentive for Start-up Enterprises	Tax Exemption for Start-ups
International Enterprise Singapore	International Business Fellowship	Internationalisation Finance Scheme, Loan Insurance Scheme	Manpower for Internationalisation Programme, Design for Internationalisation Programme	IP for Internationalisation	Double Deduction for Overseas Investment Development Expenditure
Singapore Customs	Zero GST Warehouse Scheme				
SPRING	Business Advisers Programme	Business Angel Funds, Loan Insurance Scheme, Micro Loan Programme	Human Resources Capability Programme, Advanced Management Programme	Technology Innovation Programme, Technology Enterprise Commercialisation Scheme	

Source: EnterpriseOne.

Given the multitude of assistance programmes and fragmentation of support across different agencies, SMEs are likely to be uncertain about where to go to access specific types of help at different stages of their internationalisation. The EnterpriseOne[39] portal is a valuable tool, providing a single point of access to a whole range of comprehensive information on government assistance programmes, regulations and e-services for businesses. However, the government should do more to publicise the portal and the wide range of support programmes available to SMEs seeking to access the international market.

While the portal is useful in co-ordinating information, the resources required to navigate applications for the assistance can still be a burden for SMEs. In addition, as individual agencies do not have formal oversight of operations in others, there is the risk of duplication and inefficiencies. To reduce administrative and compliance costs on the SMEs and running costs for the agencies, it is necessary to conduct a systematic review of the provision of assistance and to enhance co-ordination across the agencies to streamline procedures and documentation. As part of these efforts, the multifaceted needs of SMEs at different stages of internationalisation and the different modes of their internationalisation need to be taken into consideration.[40]

While explicit and targeted SME policies influence the SMEs and their access to international markets, other government policies which do not have such a focus can also impact SMEs' growth and development (OECD, 2007). Policies which affect SMEs may be delivered by departments of government that do not view themselves as having SMEs as their key, or perhaps even their secondary, focus. It is important for agencies responsible for SME issues to understand the impact of broader policies (such as taxation, trade and innovation policies) on SMEs and to help to shape decisions on such policies so that they take into account the impact of SMEs.

In Singapore, the agencies directly supporting SME internationalisation (particularly SPRING Singapore) need to be better integrated with other agencies, for instance A*STAR and the Infocomm Development Authority, to influence decisions on growth and innovation policies so that they take into account SME's needs. In some OECD countries, policies and instruments for internationalisation and innovation are closely intertwined and innovation policies incorporate a SME focus. In France for instance, 15% of small technology public contracts are reserved for innovative SMEs over a three-year period to facilitate access to public procurement. SMEs can also tap into government funds (*Fonds d'investissement de proximité*) and tax rebates for innovative projects. In addition, the *Fonds communs de placement dans l'innovation* aim at investing 60% of the fund's money in non-listed innovative SMEs employing fewer than 200 people (OECD, 2010a). Under the New Technology Purchasing Assurance Scheme in Korea, public agencies give preference to the procurement of goods and services from SMEs.

Notes

31. Diplomas are offered by professional-centred post-secondary institutions such as the polytechnics and the Institute of Technical Education (ITE).
32. University degrees.
33. The OECD's PISA (Programme for International Student Assessment) examines the competencies of 15-year-olds in OECD countries and in a number of partner countries and territories.
34. S$ 150 million does not include targeted financial assistance. Low-income families can tap subsidies for monthly kindergarten fees under the Kindergarten Financial Assistance Scheme (KiFAS). In addition, under Budget 2011, the government introduced a new Child Development Credit scheme for all Singaporean children aged six and below to help parents pay for their children's pre-school, childcare and medical expenses. The Child Development Credit scheme will benefit over 220 000 children aged six and below.
35. Papaconstantinou and Polt (1997) defined evaluation as "a process that seeks to determine as systematically and objectively as possible the relevance, efficiency and effectiveness of an activity in terms of its objectives, including the analysis of the implementation and administrative management of such activity". The implicit assumption in this statement is that the policy has clear objectives and that these are stated in sufficiently clear terms.
36. This focus on the demand side also reflects a general perception that traditional supply-side policies – despite refinements in their design over recent decades – have not been able to bring innovation performance and productivity to desired levels. See OECD (2011b).
37. From 1 April 2011, SMEs in Singapore are defined as businesses with annual sales turnover of not more than S$100 million or employing no more than 200 employees.
38. International Enterprise Singapore is the government agency driving policy concerning Singapore's external economy. It has spearheaded the overseas growth of Singapore-based companies and promoted international trade. SPRING Singapore helps SMEs to broaden and deepen their capabilities, to improve productivity and to drive innovation.
39. http://business.gov.sg/
40. Besides exporting, internationalisation can take place through importing, establishment of overseas subsidiaries, branches, franchising, licensing, joint ventures and other means. See OECD (2008b).

THAILAND

Medium-term economic outlook (forecast)

GDP growth (2012-16 average, percentage changes)	4.5
Current account balance (2012-16 average, % of GDP)	2.5
Fiscal balance (2012-16 average, % of GDP)	-2.4

Medium-term plan

Period	2007-11 and 2012-16
Theme	Philosophy of Sufficiency Economy

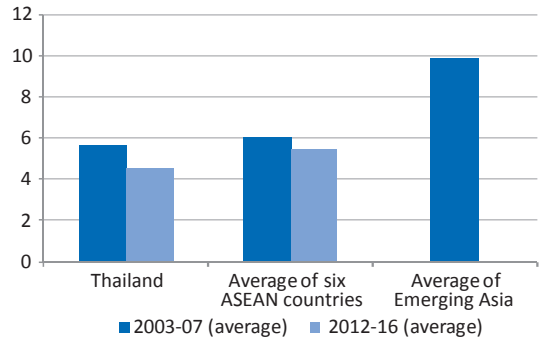
Basic data (in 2010)

Total population	67 million
Population of Bangkok	10.2 million
GDP per capita at PPP	9 187 (current USD)

Sources: OECD Development Centre, MPF-SAEO 2011/12, national sources and IMF.

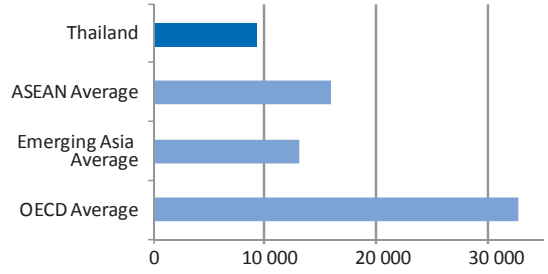
Notes: Six ASEAN countries includes Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam. *Emerging Asia* includes six countries of ASEAN plus China and India.

GDP growth rates (percentage changes)



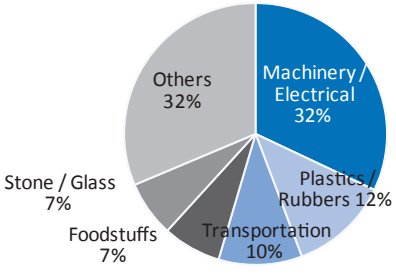
Source: OECD Development Centre, MPF-SAEO 2011/12.

GDP per capita (PPP, current USD)

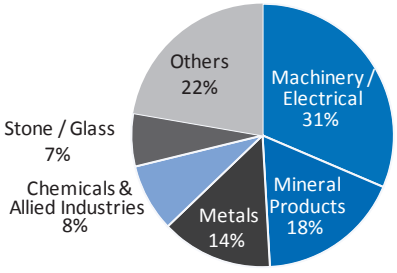


Sources: IMF and national sources.

Composition of exports (in 2010)
(percentage of total exports)



Composition of imports (in 2010)
(percentage of total imports)



Source: Trademap.

Towards a "welfare" society – the medium-term development plan in Thailand

Guided by the "philosophy of a Sufficiency Economy", the Thai economy is aiming towards a "welfare" society. Thailand's latest medium-term development plans emphasise inclusive growth to be accompanied by policies such as economic reform, promotion of research and development (R&D) and innovation, pursuit of good governance and the preservation of natural resources and biodiversity. For instance, the Eleventh National Economic and Social Development Plan (2012-16) emphasises objectives to: provide opportunities for better and life-long learning; increase total factor productivity; and raise the share of agriculture and agro-industry in the economy.

Box 3.5.1. Summary of political pledges of the Yingluck Shinawatra administration

Ms. Yingluck Shinawatra, elected Prime Minister of Thailand in August 2011, is the head of Pheu Thai, the political party of former Prime Minister Thaksin Shinawatra. The Yingluck Shinawatra administration aims to bring about a strong and balanced economic structure for the country and to raise the quality of life and health of the Thai people. The period for implementation of these promises has been divided into two phases: the urgent phase, which is the first year of policy implementation; and the four-year tenure of the government in line with the Sufficiency Economy philosophy.

Prime Minister Yingluck Shinawatra has identified several urgent policy priorities, including the restoration of democracy, sustaining macroeconomic stability and enhancement of living standards. Anti-corruption, agriculture, tourism, and health policies are to be emphasised in the first phase of implementation. Reduction of the corporate income tax to 23% in 2012 is another objective.

Other policies addressed in the political pledges to be implemented over the four-year administrative phase aim to: achieve a fairer income distribution; improve the quality of education; promote good governance; and address natural resource and environment issues.

The current floods have reached a scale in terms of material damage and loss related to forgone production that is likely to reshape government priorities for the coming year.

Structural policy focus

Thailand's medium-term policy challenges and responses

- Reform health care schemes to provide a higher quality of and equal access to services
- Improve outcomes in education and reduce urban-rural disparities
- Enhance agricultural productivity and improve jobs in the farm sector

POLICY FOCUS

Reform health care schemes to provide a higher quality of and equal access to services

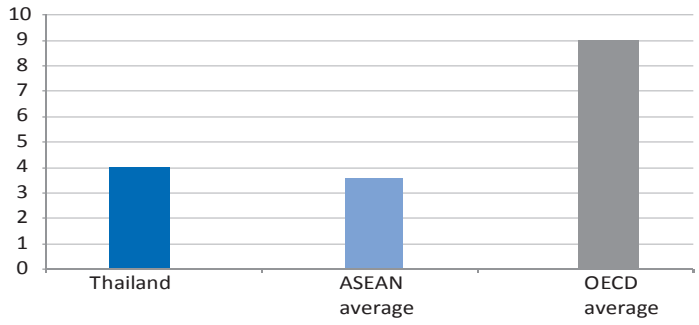
The Thai health care system faces necessary reforms not only because of the pressures engendered by an ageing population but also due to the divergent level of medical services across plans and individuals.

There are three health care schemes[41] currently in place that differ widely in both their coverage and in the quality of medical services provided. While the health insurance system for civil servants and their families (CSMBS) is the most generous of the three schemes (providing better quality and wider coverage of medical services), the insurance plan for private sector employees (SSS) and the Universal Coverage (UC) scheme offer more limited access to and a lower quality of services.

- Improvement in both the access and quality of medical services would not be feasible without upgrading of the UC scheme, which covers 75% of the population. The introduction of the UC scheme in 2002 was a major step towards extending health care coverage to people who had not been covered by any type of health care scheme before. Yet, further reform is required. The system's capacity has been compromised as rapid implementation has put strains on the existing health care infrastructure and on health personnel working in the sector. Furthermore, the closed-end capitation payment of the service provider does not guarantee the coverage of all costs. This creates the risk that providers will seek to reduce their costs by reducing medical treatment, compromising the overall quality of health services.
- The three health care schemes need to be harmonised by reducing current differences in the services covered[42] and by aligning the payment methods[43] applied. This harmonisation process needs to be accelerated for the sake of fairness and financial sustainability.

- The demographic trend caused by an ageing population raises major challenges in the medium term. The financial sustainability of the health care system of Thailand will be put to a test as an increasing share of the old-age population adds to health care costs.
- Although the government launched a strategic national prevention campaign of "Healthy Thailand", focusing on behavioural health risks and major health problems, further measures are necessary to ensure financial sustainability of the system in the medium term.
- While the involvement of the private sector in health service provision is a welcome source of additional funding, it needs to be handled with care (Figure 3.5.1). OECD experiences show that private sector participation in health care provision has to be complemented with adequate regulation, such as the requirement on insurers to enrol any applicant and equalisation payment schemes across insurers to compensate for high risk enrolees. Such measures would help to mitigate "cream-skimming" and other market effects that may raise equity concerns. In the meantime, costs must be kept under control through "cost-effective" medical treatment practices. Both health technology assessments (HTA) and clinical evaluations should assist health care decisions by providing evidence on the cost-effectiveness of different medical treatments (Box 3.5.2).

Figure 3.5.1. Total public expenditure on health care in 2008
(percentage of GDP)



Sources: OECD and national sources.

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Box 3.5.2. Cost-effective medical treatment: examples from OECD countries

OECD studies suggest that health technology assessment (HTA) and clinical evaluation are useful for achieving efficiency gains in medical treatment. They provide evidence on the comparative effectiveness, benefits and harms of different treatments in diagnostic testing, surgery and drug therapy.

For instance, should aspirin be used for the primary prevention of cardiovascular disease? HTA together with clinical evaluation represent the most efficient use of limited resources and can improve health care decisions by providing evidence on the cost-effectiveness of different treatments.

Most OECD countries have national agencies responsible for HTA, although they have varying capacities, institutional settings, scope and mandates. In the majority of countries, HTA is used to assist in decisions about coverage and to provide clinical guidelines. In general, HTA agencies only provide a scientific assessment while the government, third-party payers or joint associations of medical bodies make the decisions. Most countries apply the method of incremental cost-effectiveness ratios (ICERs) to measure the additional costs of a new treatment for an additional unit of benefit or outcome and may also use budget impact analysis (BIA) to quantify the prospective impact of the adoption of the assessed technology on health budgets.

Box 3.5.2. Cost-effective medical treatment: examples from OECD countries (contd.)

However, there are some distinctive country-specific features of HTA agencies. The French national HTA agency, the High Authority on Health (HAS), is the only HTA agency in the OECD that does not consider cost effectiveness and affordability in health technology assessment. The **United States** and **Japan** are among the few OECD countries without a national HTA agency. While in the United States, public payers and private insurers are in charge of HTA activities, in Japan HTA is funded by the Ministry of Health and Welfare. The **UK** National Institute of Health and Clinical Excellence (NICE) and the **Swedish** Pharmaceutical Benefits Board (LFN) are not only responsible for HTA but also for deciding on the coverage of the technology assessed. The Swedish National Agency for Health Technology Assessment (SBU) established in 1987, which was the first national HTA agency in the OECD, is an exemplary case of transparent and regular dissemination of the results of its assessments. Moreover, it also evaluates the use of assessment reports in medical treatments. Although the impact of HTA on medical practice seems to be mostly positive in Sweden, the results are mixed in the UK.

Nonetheless, one of the primary objectives of HTA, besides quality improvement, is to enhance efficiency. Yet, it does not always reduce costs. For instance, the adoption of new technologies by NICE in the United Kingdom have resulted in a GBP 1.65 billion per year cost increase. Some of the main principles for better conduct and use of HTA are: *i)* include all technologies in the scope of the assessment; *ii)* ensure that effective medical practices are disseminated and monitor the implementation of HTA findings; *iii)* involve all stakeholders in the HTA process; and *iv)* apply a full societal perspective (*i.e.* consider costs for the entire society and not only those of health care payers).

Source: OECD (2010h).

POLICY FOCUS

Improve outcomes in education and reduce urban-rural disparities

The outcomes of education policy and the education system appear to be gradually improving in the aggregate, but the trends tend to mask more profound problems. For instance, access to basic education has improved as enrolment rates have been increasing. Nevertheless, several problems remain: students' average performances have stagnated at a mediocre level; and there are serious urban-rural disparities in both education access and quality. Reasons for such differences abound. For instance, absenteeism of both students and teachers is high in rural schools due to family and farming commitments.[44]

Unsatisfactory outcomes are observed throughout the education system. According to the quality assessment (2006-08) of 20 373 schools under the jurisdiction of the Office of Basic Education Commission (OBEC), 4 566 schools (22.41% of the total) did not reach the satisfactory level (for the most part these were smaller schools located in remote rural areas). The English language ability of students in schools in Thailand ranks among the lowest in Southeast Asia, according to the Test of English for International Communication (TOEIC) examination (Punthumasen, P., 2007). In recent years, the average scores in the National Achievement Test for Grade 6 and Grade 12 students have fallen below 50% in English, mathematics, science and the social sciences. Out of 30 010 schools nationwide, 65% fall below the "satisfactory" level in students' educational achievement, in the quality of teachers, and in overall school administration. Furthermore, among the 65 countries participating in the OECD Programme for International Student Assessment (PISA) in 2009, students in Thailand ranked 50th in reading and mathematics and 49th in science (Figure 3.5.2).

Some attempts have been made to enhance the quality of education in Thailand. Most of them are intended to strengthen monitoring of the results of education but overall they have not been effective (Table 3.5.1). Policies to reform curricula and to enhance the quality of teachers are urgently needed.

Figure 3.5.2. OECD PISA[45] results in 2009
(score)

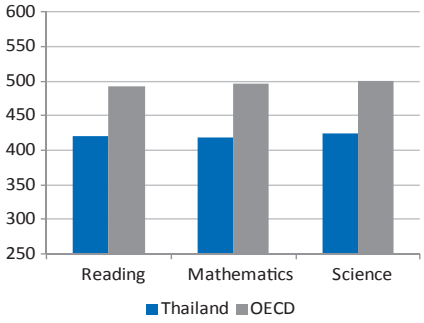
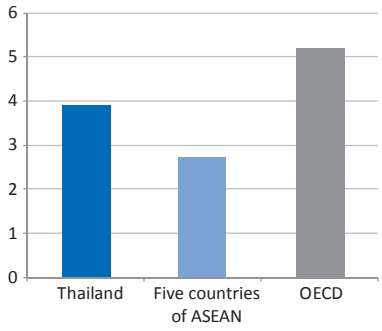


Figure 3.5.3. Public spending on education
(percentage of GDP, 2007)



Note: The PISA scale was set such that approximately two-thirds of students across OECD countries score between 400 and 600 points. Gaps of 72, 62 and 75 points in reading, mathematics, and science scores, respectively, are equivalent to one proficiency level.
Five countries of ASEAN includes Indonesia, Malaysia, the Philippines, Singapore and Thailand.

Sources: OECD and ADB.

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Rural education needs to be strengthened through targeted policies that enhance the quality of education in rural areas. More subsidies to rural schools and conditional cash transfers for disadvantaged rural families would help in reducing disparities. Some measures have been implemented, such as reform of the national curriculum and the university entrance system and improvement of teachers' skills. More focused and rapid efforts are needed, however. In particular, there is the urgent need for policies targeted at improving educational outcomes in the areas of science and mathematics.

Additional resources would boost current efforts aimed at reducing urban-rural disparities and in improving education outcomes. There is also some room for increasing public spending on education, as compared with the OECD average (Figure 3.5.3).

Table 3.5.1. Recent development of Thai education policy

2008	Strengthening and broadening informal education through the promotion of Non-Formal and Informal Education Act (life-long learning promoted through community learning centres).
	Enhancing vocational education through the Vocational Education Act.
	Reforming the curriculum by replacing the old curriculum dating back to 2001 with the Basic Education Core Curriculum (fully implemented across all schools and grades from 2012; focusing on core areas such as the Thai language, mathematics and science; with pre-defined standards and minimal learning times).
	OBEC supervised the monitoring, inspection and evaluation of some 32 269 public schools across the country.
	Second round of quality assessment of Thai schools by the Office for the National Education Standards and Quality Assessment (ONESQA) (improvements reported from the first round of assessment in 2006).
2009	Extension of free basic education from 12 years to 15 years (comprising nine years compulsory education and providing Thai children with free textbooks and learning materials).
	Second Decade of Education Reform (2009-18) focusing on the quality of teachers and students, enhancing formal and informal education to promote life-long learning, decentralisation, development of ICT network.
	Three year National Research Universities project launched in order to enhance research capacity of universities.
	Announcement of the Thai Qualifications Framework for Higher Education which aims at assuring the quality of graduates, credits, degrees and qualifications received from the universities.
2010	The 3Ns are launched, namely the National Education Network (NedNet) linking existing schools, colleges, universities, and libraries; the National Education Information Systems (NEIS) bringing together all available education data and facilitating the exchange of information between relevant agencies; and the National Learning Centre (NCL), a virtual forum for the exchange of teaching and learning materials.
	Malaysian, Indonesian and Thailand Student Exchange Programme (MIT) launched by the Office of Higher Education Commission (OHEC) in collaboration with the Indonesian Ministry of National Education and the Malaysian Ministry of Higher Education. This programme aims at fostering harmonisation of higher education in the three countries through the exchange of their students.

Source: OECD Development Centre's compilation based on national sources.

POLICY FOCUS

Enhance agricultural productivity and improve jobs in the farm sector

The agricultural sector in Thailand is of major importance. The agricultural population constitutes a substantial part of the total population[46] and the agricultural sector is an important contributor to national income due to its competitiveness in the international market. The main objectives highlighted in the latest medium-term development plan include enhancement of agricultural productivity and improvement in job and income security for farmers (Figure 3.5.4 and 3.5.5).

Although Thai agricultural exports have become more competitive[47] as a result of more diversified and specialised farming, the sector's productivity can be further enhanced by modernisation, industrialisation and increased research and development (R&D). The main obstacles to increased agricultural productivity are insufficient investment in crop research, the lack of effective use of new technologies and the limited knowledge transfer from research and development (R&D) institutions to grass-root communities. Since traditional agriculture as a way of life is deeply rooted in Thailand's self-identity, the introduction of new and more effective technologies as part of modernisation and industrialisation might be difficult to gain acceptance by Thai society.

The lack of jobs and absence of income security has triggered a recent trend of farmers leaving the agricultural sector.[48] High prices of agricultural commodities complemented by a public insurance scheme have helped to attract resources to the farm sector, but resource inflows may be depressed by natural disasters and high oil prices. Policies to ensure an adequate workforce are also critical. For instance, a newly established

programme, "Development Promotion of New Generation of Thai Farmers" (by the Office of the Vocational Education Commission and the Thai Rice Foundation) will be an interesting attempt to increase the workforce in the agricultural sector.

Figure 3.5.4. Labour productivity index in agriculture
(per employed persons, 2001=100)

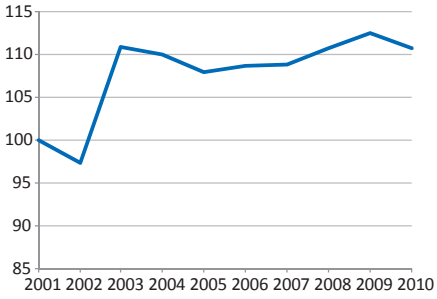
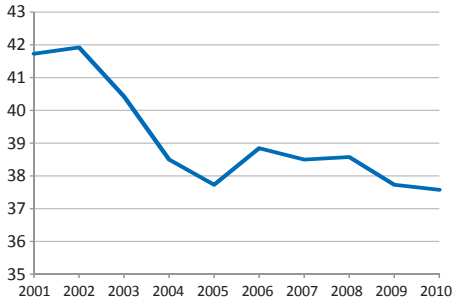


Figure 3.5.5. Employment in agriculture
(percentage of total employment)



Sources: Bank of Thailand and CEIC.

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Despite public investment in hard infrastructure (such as roads and dams), farmers' productivity may not improve to an expected level unless other steps are taken. Infrastructure investment has to be complemented by greater investment in crop research, financial assistance for the adoption of new technologies, and education and training programmes targeted at farm management and production techniques.

Finally, land reform, while complex and difficult to implement, could nonetheless raise the attractiveness of the farm sector by promoting job and income security. Providing low-income tenants and landless farmers with land ownership or other rights to farmlands would help to reduce the outflow of workers from the agricultural sector.

Notes

41. Currently, the Thai health care system is based on three pillars: the Civil Servants Medical Benefit Scheme for civil servants and state enterprise employees and their families; the Social Security Scheme for employees working in a private company employing more than one person; and the Universal Coverage Health Care Scheme for the rest of the population.
42. In January 2008, renal-replacement therapy was included in the UC scheme.
43. In 2007, the fee-for-service payment method used for the inpatient treatments of CSMBS was replaced with a Diagnosis Related Group (DRG) payment, which had already been implemented for the UC scheme, mainly for cost containment purposes. However, the outpatient services of CSMBS, which constitute a substantial part of the overall financing costs, are still based on fee-for-service payment.
44. Some schools close down during the periods of rice planting and harvesting.
45. The OECD Programme for International Student Assessment (PISA) covers students who are aged between 15 years 3 months and 16 years 2 months at the time of assessment and who have completed at least six years of formal schooling. In the PISA survey, reading, mathematics, and science tasks are ranked by difficulty and are associated with each of the seven proficiency levels from 1b (easiest) to 6 (hardest). A student reaches a given proficiency level if the test results show that he or she has at least a 50% chance of performing a task at that level.
46. The agricultural population is made up of 28 million individuals out of the total population of 68 million people.
47. Thailand is a major exporter in the world rice market but other agricultural commodities are also produced in significant amounts, including fish and fishery products, tapioca, rubber, grain and sugar. Exports of industrially processed foods such as canned tuna, pineapples and frozen shrimp are on the rise as well.
48. Approximately 4 million young people left farming permanently between 1995 and 2010. As a result, the average age of farmers increased to over 50 years.

VIET NAM

Medium-term economic outlook (forecast)

GDP growth (2012-16 average, percentage changes)	6.3
Current account balance (2012-16 average, % of GDP)	-4
Fiscal balance (2012-16 average, % of GDP)	-3.5

Medium-term plan

Period	2011-2015
Theme	(*)

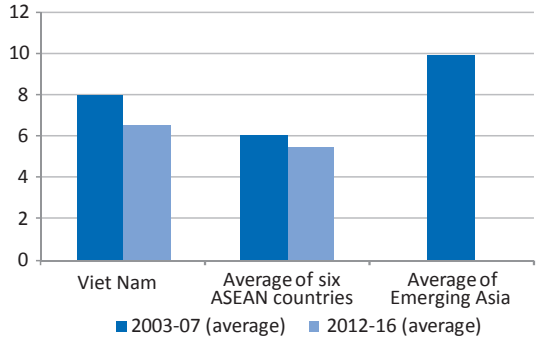
Basic data (in 2010)

Total population	87 million
Population of Hanoi	6.6 million
GDP per capita at PPP	3 134 (current USD)

Sources: OECD Development Centre, MPF-SAEO 2011/12, national sources and IMF.

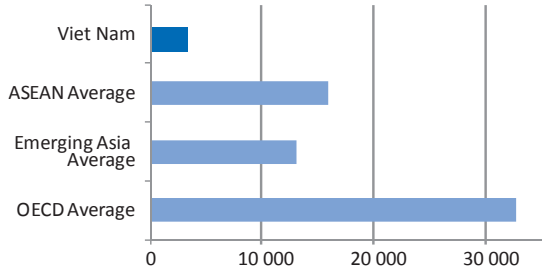
Notes: Six ASEAN countries includes Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam. *Emerging Asia* includes six countries of ASEAN plus China and India.

GDP growth rates (percentage changes)



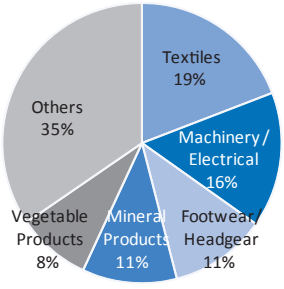
Source: OECD Development Centre, MPF-SAEO 2011/12.

GDP per capita (PPP, current USD)



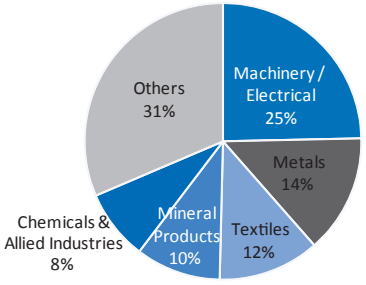
Sources: IMF and national sources.

Composition of exports (in 2010)
(percentage of total exports)



Source: Trademap.

Composition of imports (in 2010)
(percentage of total imports)



(*) Viet Nam's forthcoming medium-term plan was in the process of formulation as of 1 November 2011.

Structural policy focus

Viet Nam's medium-term policy challenges and responses

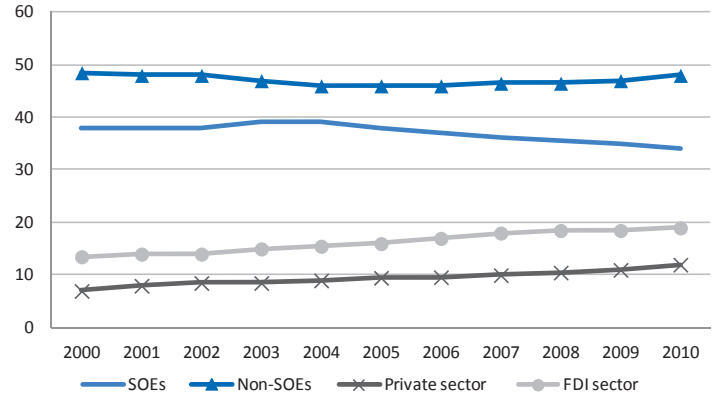
- Speed up the reform of state-owned enterprises, particularly by improving the governance and management
- Establish an adequate monetary policy framework to control inflation
- Increase skilled labour by education reform

POLICY FOCUS

Speed up the reform of state-owned enterprises, particularly by improving governance and management

State-owned enterprises (SOEs) play a big role in Viet Nam's economy (Figure 3.6.1). After decades of reforms, the economy has increased its market orientation and has achieved substantial liberalisation. The number of SOEs fell consistently from around 7 000 in 1995, to about 1 000 in 2010.

Figure 3.6.1. Contribution to GDP by ownership
(percentage)



Source: General Statistics Office, Viet Nam.

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In 2005, the Enterprise Law stipulated the transformation of all state-owned enterprises (SOEs) into joint stock companies and limited liability companies by July 2010. This is in line with the legal and regulatory frameworks in OECD countries, where SOEs are subject to the same laws and regulations as other enterprises. However, management and governance of the SOEs in Viet Nam still need to be strengthened.

Viet Nam needs to improve management of the SOEs, according to international practices. State intervention has continued in the process of SOE reforms. To limit state intervention in business administration of the SOEs and ensure independence, OECD members such as Estonia have put in place specific legislation forbidding SOE boards from taking "instructions" from government. In Chile, the governing body of the ownership agency has been instructed not to "duplicate the work" of SOE boards.

A key factor in ensuring that boards can function effectively is their independence. Boards must have autonomy and independence in the conduct of their duties. In the Slovak Republic, a majority of board members have to be independent (OECD, 2011c). For greater autonomy and to foster improved corporate governance, India made it obligatory for some SOEs to restructure the boards such that there are at least four independent directors with demonstrated experience and professional standing. It further advised that such members of the board should reach at least one third of the total strength.

At the same time, the state needs to ensure that SOEs and the State Capital Investment Corporation (SCIC) are accountable. In Viet Nam, efficiency of state capital investment has been low. The SOE sector has grown more slowly than the private sector and bad debts are growing. For instance, in the case of Vinashin, the state-owned shipbuilder amassed debts of more than USD 4 billion while expanding into non-core activities such as securities and tourism. It was unable to make repayment on a large amount of loan. In addition to Vinashin, mismanagement occurred in a state bank and oil producer. This included credit mismanagement by the director general of the Agribank Financial Leasing Company No. 2 (ALCII), a member of the state-owned Vietnam Bank for Agriculture and Rural Development (Agribank), and misappropriation of funds from state-owned PetroVietnam, the country's largest oil producer and second-largest power producer.

Although the regulation stipulated that SOEs must be audited, implementation has been weak. In particular, *i)* the accounting regime for SOEs in Viet Nam needs to be aligned with international standards such as IFRS (International Financial Reporting Standards) and US GAAP (Generally Accepted Accounting Principles); and *ii)* annual independent external audits are necessary. In most OECD countries, SOEs are subject to the same requirements in terms of auditing by an external auditor. This provides assurance by an outside expert that financial results and performance indicators are reasonable and correct, *i.e.* free from error or misrepresentation. External audits are also an important incentive for SOE management and boards to be accountable.

To improve management of the SOEs, Viet Nam also requires a mechanism to monitor and evaluate the performance and efficiency of SOEs. Reporting is a key element for monitoring whether the board is fulfilling its agreed objectives (OECD, 2005b). Disclosure by SOEs in OECD countries has improved significantly in recent years. In OECD countries, SOEs have to submit annual reports, summarising the main outcomes and financial results of SOEs for the year and SOEs also publish bi-annual reports, (such as Norway), with a few countries publishing quarterly reports (*e.g.* New Zealand, Sweden and Turkey). These reports usually include financial statements, information on capital expenditure to date, reports on operations, as well as discussion on the evolution of strategy and changes in overall operating conditions. Such information helps in the identification of trends and assessment of emerging difficulties regarding SOEs' performance. The comparison across SOEs will allow for benchmarking their performance.

In countries such as Chile and Israel, there is also strong emphasis on annual and case-by-case reporting to Parliament. In Estonia, annual reporting informs government of the operations of SOEs held by individual ministries. In Slovenia, parliament and state auditors probe SOEs on an individual basis. In more developed OECD countries, reporting takes various forms, such as statements of corporate intent, management contracts, corporate plans, etc. For instance in France, performance contracts clarify the respective commitments of the state and SOEs (in terms of profitability, social policy, productivity, quality and indebtedness). They also define common tools to measure the performance in terms of financial profitability and productivity targets. Finally, they define the incentive policy for the management and employees.

In addition, in accordance to market regulations and its World Trade Organisation commitments, Viet Nam needs to ensure a level playing field and effective competition for the private sector. Today, SOEs are still given high priority in resource allocation, enjoying capital raised from government bond issuance. Viet Nam can reduce the number of areas with state monopolies and ensure equal access to finance for SOEs and private entities.

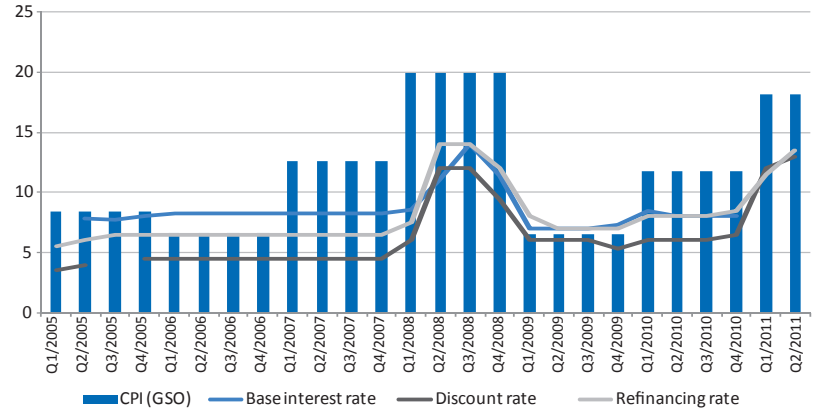
POLICY FOCUS

Establish an adequate monetary policy framework to control inflation

Although Viet Nam has enjoyed high economic growth in the past decade, recent inflation rates exceeding 20% have revealed the weakness of the macroeconomic management framework in this country (Figure 3.6.2).

Due to a lack of tools to anchor inflation expectations of economic agents, international food price inflation directly translates into domestic inflation in Viet Nam. High inflation, compounded by an immature financial sector, forces people to look for refuge in harder currencies. The extent of dollarisation in Viet Nam has reached 20%, entering into such a situation that it turns progressively harder to have an effective monetary policy. But in the current context, dedollarising the banking sector by law (prohibiting deposits in dollars) would run the risk of creating a black market harder to control. Therefore, instead of prohibiting financial transactions in foreign currencies, enhancing credibility of the domestic currency is important.

Figure 3.6.2. Inflation and interest rates from 2005-11
(percentage)



Source: CEIC.

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Under these circumstances, several policy options could be conceivable, though all elements are complementary.

- Establishing a proper framework of macromanagement is urgently needed. In particular, with regards to the monetary regime, anchoring an inflationary goal such as inflation targeting could be a policy option. Overall, OECD countries that apply an inflation targeting framework are considered to be able to manage inflation expectations relatively well and this scheme is managed by an independent body such as the central bank in most cases. In the case of Viet Nam, independence of the central bank should be discussed in line with the macroeconomic management framework in the long run but a more immediate need is to set up an institutional arrangement to conduct monetary policy in a transparent and credible way.
- Fiscal and external balances also need to be monitored closely in the macroeconomic framework.
- Strengthening prudential regulation in the banking sector is also needed to encourage prudent lending behaviour by banks while providing an appropriate safety net.

POLICY FOCUS

Increase skilled labour by education reform

Viet Nam has attained rapid economic development by making full use of low labour costs in the global production network and attracted foreign direct investment. Recently, some signs of upgrading of skills have emerged. However, in recent years, the lack of high quality workforce is a serious issue in many provinces, as the labour market is facing a severe shortage of skilled labour in different service sectors such as banking, finance, tourism and business. There are several pieces of evidence to support this view. For instance, as we will see below, only a limited number of individuals possess the highest professional and technical qualifications necessary for the country's development. The number of scientific publications in Viet Nam lags behind not only globally but also among regional peers. There are no universities in Viet Nam with an international reputation.

This labour quality issue is tightly linked to the issue of education-employment mismatch. The results of a survey carried out in 2006 by the Ministry of Education and Training showed that more than 60% of college graduates were unemployed, the rest were employed but had to be retrained because the field they were working in was unrelated to their major.

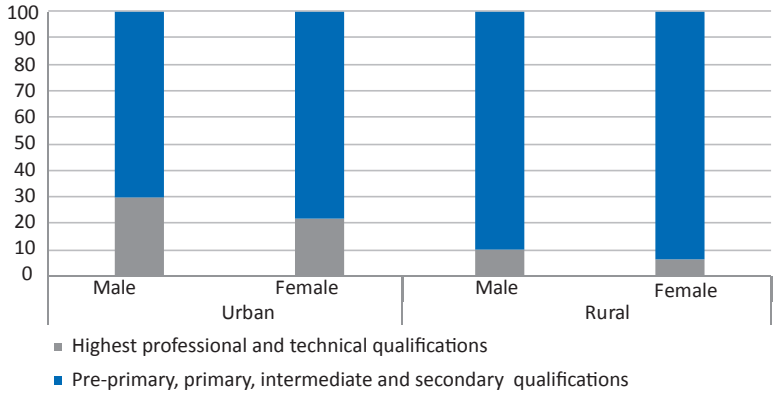
The government recognised that the shortage of skilled labour in Viet Nam is becoming a bottleneck to development in several sectors. The Strategy on Development of Vietnamese Human Resources during

2011-20 approved in September 2010 emphasises that human development strategy should lead the country's sustainable growth and human resources should reach international standards (Box 3.6.1).

In particular, three issues need to be addressed:

- There is room for increasing the rate of tertiary enrolment. Viet Nam's tertiary education needs to be more focused on "mass" education. Given that the income level is the bottleneck to access to tertiary education in Viet Nam, well-targeted subsidy and scholarships/student loans to poor households would be effective to increase enrolment in tertiary education.
- In the access to tertiary education in Viet Nam, there exist disparities in various dimensions: the gap is substantial between urban and rural inhabitants and the gender issue also prevails (Figure 3.6.3). Gaps between urban and rural infrastructure and teachers' salaries should be reduced to encourage a larger participation in tertiary education by rural students.
- In addition to access, the quality of education needs to be enhanced. This could be done by undertaking a number of quality-enhancing measures relating to education infrastructure, such as adopting flexible and international standard curriculum frameworks and effective ways of teaching and increasing academic qualified staff to enhance research capacity. In the last years, the government has started several programmes to overcome these challenges. For example, a plan of training 20 000 PhD students; Vietnamese universities offering programmes based on international curricula; review of exams of teachers, and so on. The evaluation scheme of education should also be enhanced further. Together with university education, strengthening TEVT – traditionally weak in Viet Nam – would be important to reduce the skill mismatch problem in the country's labour market.

Figure 3.6.3. Qualifications by sex and urban-rural areas in 2009
(percentage)



Sources: national sources.

StatLink http://dx.doi.org/10.1787/888932562735

Box 3.6.1. The Strategy on Development of Vietnamese Human Resources 2011-20

Vietnamese Prime Minister, Nguyen Thien Nhan, approved the Strategy on Development of Vietnamese Human Resources in 2011-2020 on April 2011. The objective of this Strategy is to allow Vietnamese human resources to lead the country's sustainable growth, worldwide integration and social stability to increase competitiveness. Key targets of the human resource development plan are the following:

Targets	2010	2015	2020
I. Raising intellectual power and working skills			
1. Rate of trained workers (%)	40.0	55.0	70.0
2. Rate of vocationally trained workers (%)	25.0	40.0	55.0
3. Number of university and college students per 10 000 people	200	300	400
4. Number of international-standard vocational schools	-	5	>10
5. Number of international-standard universities	-	-	>4
6. Highly qualified human resources in breakthrough fields			
-State management, policy making and international law	15 000	18 000	20 000
-University and college lecturers	77 500	100 000	160 000
-Science-technology	40 000	60 000	100 000
-Medicine and health care	60 000	70 000	80 000
-Finance and banking	70 000	100 000	120 000
-Information technology	180 000	350 000	550 000
II. Raising physical strength of human resources			
1. Average life expectancy (years)	73	74	75
2. Young people's average height (m)	>1.61	>1.63	>1.65
3. Malnutrition rate among under-5 children (%)	17.5	<10.0	<5.0

Source: Decision on Approving the Strategy on Development of Vietnamese Human Resources during 2011-2020.

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PART THREE

THEMATIC FOCUS ON GREEN GROWTH

Introductory Note

Green growth is the special theme of *Southeast Asian Economic Outlook 2011/12*. It takes a regional approach to the OECD's Green Growth Strategy in which "green growth" is meant to "[foster] economic growth and development, while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies".*

Emphasis on green growth in the post-2008 era stems from a common understanding among OECD policy makers that a return to business as usual would continue to erode natural capital and eventually become unsustainable. The thrust of green growth is therefore to help exploit new sources of growth through national and sub-national efforts to foster energy conservation and renewable energy development, promote green technologies and products and upgrade infrastructure services. It also pays due attention to social issues and equity concerns as a result of moving towards low-carbon economies. This understanding is widely shared by many Southeast Asian countries. Emphasis on green growth thus provides an important opportunity to reframe growth and development scenarios in the region over the next decades.

Part III comprises three chapters. First, Chapter 4 provides an overview of carbon emissions and footprints in Southeast Asia and discusses implications for mitigation policies in the region. Chapter 5 looks at the policies and institutions that ASEAN countries are adopting to promote green growth. This chapter also includes a reference to the case of Korea that is thought to provide a benchmark for discussions on approaches to green growth. Finally, Chapter 6 explores a greater use of environmental tax instruments in ASEAN countries so as to help pursue green growth in the region.

* The OECD GGS comprises the three publications: *Towards Green Growth*, *Tools for Delivering on Green Growth* and *Towards Green Growth: Measuring Progress – OECD Indicators*. See www.oecd.org/greengrowth.

CHAPTER FOUR

Carbon emissions and footprints of nations

Abstract

Over the past two decades, Southeast Asia has enjoyed strong growth performance amid great diversity on both economic and non-economic fronts. Such regional characteristics put clear marks on national carbon emission inventories. Though relatively modest in absolute terms, the amount of "carbon trade", measured as carbon emissions embodied in international trade flows, relative to national emissions is larger in several ASEAN countries than in China or India. In other words, international trade plays more important a role for ASEAN countries as a source of carbon emissions when compared with the world's two most populous countries. This reflects the pattern of trade specialisation in ASEAN countries; they tend to import more emission-intensive final products (both durable and non-durable goods) in exchange for supplying intermediate products. These results suggest that ASEAN countries need to shift their production structures towards the manufacture of greener products for the region's rapidly expanding consumer markets. This could be achieved by greater use of market-based instruments and better regulation at national and regional levels.

Introduction

This chapter reviews major trends in carbon emissions and characteristics of carbon footprints of nations in Southeast Asia and discusses their implications for mitigation policies. Because carbon emissions transcend national boundaries through international trade flows, observing trends at the regional level is critical.

The region's economic dynamism accompanied by increased openness to the global economy has caused major territorial shifts in carbon emissions over the past two decades. Carbon trade – the amount of carbon emissions embodied in production of goods and services exported to and imported from foreign countries[1] – has grown steadily. Such relocation of carbon emissions across national borders, known as the "carbon footprint of nations",[2] has become increasingly important in volume and complex in nature, as many ASEAN economies have emerged as key participants in global supply chains.[3] The relocation of carbon emissions also may have been facilitated by the developed countries that have made mandatory commitments to reduce carbon emissions under the Kyoto Protocol.

After a short review of major trends in global carbon emissions under the Kyoto Protocol, the remainder of this chapter presents measurement results of the carbon footprints of nations, applying input-output techniques to 50 developed and developing economies[4] including 13 in the Asia-Pacific region.[5] This empirical work owes much to the regular updating of OECD's harmonised input-output and bilateral trade databases.[6] The final section discusses implications for national mitigation policies.

Carbon emission trends

As highlighted in the inaugural edition of *South East Asian Economic Outlook 2010*, the region has enjoyed remarkable growth performance during the past two decades, despite two financial crises (1997-98 and 2008-09). Such economic dynamism also manifests itself in the region's carbon dioxide (CO_2) emission trends. The aggregate amount of carbon emissions from six ASEAN nations (Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam) surpassed 1 300 million tonnes in 2010.[7] Although the region's relative contribution to global CO_2 emissions remained modest (at around 4%), the amount of carbon emissions from these ASEAN countries grew by 5.5% per annum on average between 1990 and 2010, compared with an annual increase of 0.7% in OECD countries. This reflects the region's rapid industrial development reliant on fossil fuels.[8]

ASEAN countries have begun to address the challenge of green growth

As a fast-growing economy with a total population of 700 million by 2030, these ASEAN countries collectively would make a much larger contribution to global CO_2 emissions in the next decades, should the current emission trend continue. ASEAN nations, therefore, need to explore affordable and cost-effective mitigation measures as part and parcel of national development plans, while at the same time minimising the negative impact of climate change on the poor and vulnerable. In Southeast Asia nearly a third of the region's total population still earn less than USD 2 a day (ASEAN, 2009). It is in this context that "green growth" has attracted much attention from ASEAN policy makers as an alternative to traditional export-led growth strategy ("grow first, clean up later"). Should it continue, this conventional strategy could increase human costs due to greater congestion and pollution and further reduce resilience to external natural shocks, such as extreme weather events, which often hit the region badly. ASEAN countries, therefore, need to embrace policies that help achieve concrete and measurable progress towards the twin objectives of green growth, namely "stimulating economic growth" and "promoting environmental sustainability". In so doing, they should also pay due attention to social issues and equity concerns that may arise as a result of policy shifts necessary to achieve a greener economy.[9]

Southeast Asia is characterised by its diversity on both economic and non-economic fronts.[10] For example, in Indonesia - the largest contributor to the region's greenhouse gas (GHG) emissions,[11] the land-use, land-use change and forestry sector (LULUCF) is the major source of emissions, contributing more than 60% of GHG

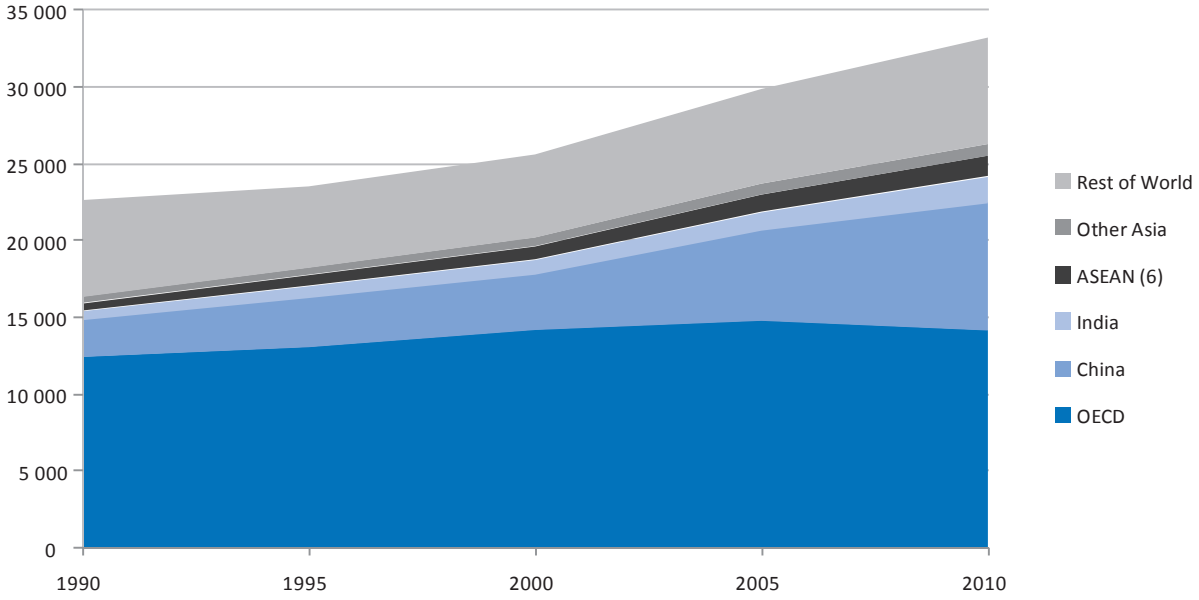
emissions in 2005 (Indonesian Ministry of Environment, 2010).[12] The other key sources include energy (21%), waste (9%) and agriculture (5%).[13] The country's programmes on green economic development unveiled in 2010 therefore include a long list of mitigation measures specific to these major sources of GHG emissions.[14] The importance of managing natural resources in the context of mitigation is taken seriously in several other countries, such as Cambodia, the Philippines and Viet Nam, especially in relation to the forest sector under the United Nations Reducing Emissions from Deforestation and Forest Degradation (UN-REDD) and REDD+ initiatives.[15]

Global carbon emissions are shifting towards Developing Asia under the Kyoto Protocol

The Kyoto Protocol divides its parties into two groups of countries depending upon the obligations to reduce GHG emissions. On the one hand, the developed countries, as well as those in transition, make specific emission limitation and reduction commitments (as inscribed in Annex B), with a view to reducing their overall emissions by at least 5% below 1990 levels in the commitment period from 2008 to 2012. On the other hand, the developing countries have no mandatory emission commitments to allow for their needed economic and social development. This dichotomy reflects "their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances" (Article 10). Yet, it creates an incentive for the former to relocate production of emission-intensive activities to and import such products from the latter. Global warming requires global solutions but the current two-tier architecture on mitigation actions has raised concern over the problem of emissions relocation.

The relocation of CO_2 emissions to China, India, ASEAN and other Asian developing economies, collectively referred to as "Developing Asia", has been taking place on a significant scale since 1990 (Figure 4.1). While total CO_2 emissions from OECD countries tended to stabilise after the turn of this century, those from Developing Asia continued to rise much faster than the world average (7.3% versus 2.6%) during the 2000-10 period. This is due largely to China's emission growth doubling from 4.1% in 1990-2000 to 8.6% in 2000-10 (Table 4.1). As a result, the share of OECD countries in global CO_2 emissions declined from 55% in 1990 to 43% in 2010 (Figure 4.2). On the other hand, the share of Developing Asia jumped from 17% to 37% during the same period, and China alone more than doubled its share to 25% in 2010.

Figure 4.1. Global CO_2 emission trends 1990-2010
(million tonnes)



Source: The Development Centre's calculation based on *BP Statistical Review of World Energy 2011* (www.bp.com/statisticalreview).

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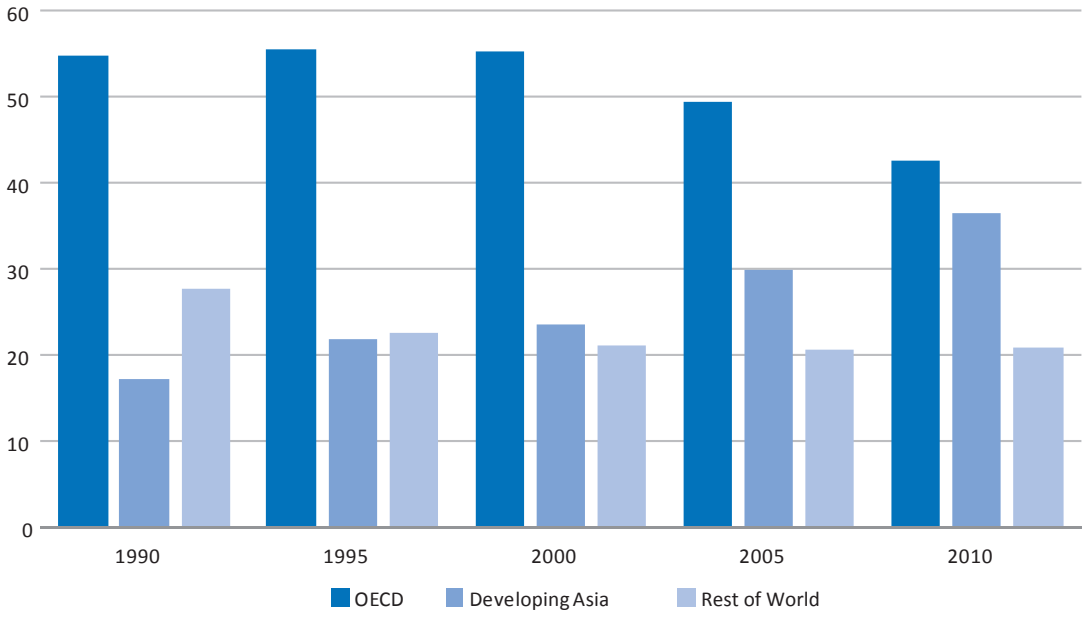
Table 4.1. Global carbon emissions 1990-2010

Region / Country	Global carbon emissions[a] (million tonnes)					Contribution to the increase in CO_2 emissions (%)		
	1990	1995	2000	2005	2010	1990 - 2000	2000 - 10	1990 - 2010
World total	22 613	23 502	25 577	29 826	33 158	100	100	100
OECD member countries[b]	12 417	13 055	14 173	14 767	14 141	59	0	16
of which Asia-Pacific members[c]	1 719	2 044	2 233	2 419	2 425	17	3	7
Developing Asia	3 903	5 163	6 006	8 914	12 111	71	81	78
of which: China	2 459	3 263	3 659	5 932	8 333	40	62	56
India	581	765	953	1 173	1 707	13	10	11
ASEAN (6)[d]	450	663	822	1 094	1 307	13	6	8
Other Asia	412	472	572	714	764	5	3	3
Rest of the world	6 293	5 284	5 398	6 146	6 907	-30	20	6

Notes:
a) The Development Centre's calculation based on *BP Statistical Review of World Energy*, June 2011 (www.bp.com/statisticalreview). The carbon emissions reported in the BP Review are those from consumption of oil, gas and coal and do not allow for any carbon that is sequestered, for other sources of carbon emissions or for other GHG emissions.
b) Refers to 33 OECD countries throughout (excluding Estonia).
c) Australia, Japan, Korea and New Zealand.
d) Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam.

Figure 4.2. CO_2 emission shares by country group (%)



Source: The Development Centre's calculation based on *BP Statistical Review of World Energy 2011* (www.bp.com/statisticalreview).

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Developing Asia taken together accounted for three-quarters of the increase in global CO_2 emissions between 1990 and 2010, and China alone contributed to more than half of that (Table 4.1). While the respective contribution of India, ASEAN and other Asian countries to the global emission increase remains relatively modest, their collective contribution surpassed that of OECD countries as a whole.

Developing Asia's carbon emission per capita still remains far below the OECD average

Two issues stand out for further discussion in this context. The first is related to the political economy of mitigation actions under the Kyoto Protocol. Developing countries were initially opposed to committing mandatory emission targets, because it was the developed countries that were responsible – at least until quite recently – for most of the emissions already accumulated in the atmosphere. They are still responsible for most emissions when measured on the per capita basis. For example, the level of per capita emission for Developing Asia is estimated at 2.7 tonnes of CO_2 in 2008 (Table 4.2). This is equivalent to roughly a quarter of the OECD average (10.6 tonnes). While China's per capital emission comes closer to half of the OECD average, the level of India stands at only 1.3 tonnes of CO_2. To be sure, the level of per capita emission varies considerably across countries in Developing Asia. As will be discussed in the following chapter, the level of Brunei Darussalam and Singapore already exceeds or is close to the OECD average. On the other hand, it was less than 0.5 tonnes of CO_2 in Cambodia and Myanmar.

Table 4.2. CO_2 emissions per capita[a]
(tonnes CO_2)

Region/Country	1990	1995	2000	2005	2008
World total	3.9	3.7	3.7	4.1	4.2
OECD member countries[b]	10.6	10.6	11.1	11.1	10.6
of which: Asia-Pacific OECD[c]	8.4	9.4	10.0	10.5	10.3
Developing Asia	1.3	1.6	1.6	2.3	2.7
of which: China	1.9	2.5	2.4	3.9	4.9
India	0.7	0.8	1.0	1.1	1.3
ASEAN[d]	0.8	1.2	1.4	1.7	1.8
Other Asia	1.1	1.1	1.2	1.3	1.2
Rest of the world	3.9	3.0	2.9	3.0	3.1

Notes:
a) Data here refer to CO_2 emissions from fuel combustion as reported from the IEA but exclude those from international aviation and marine bunkers.
b) Refers to 30 OECD member countries throughout.
c) Australia, Japan, Korea and New Zealand.
d) Except for Cambodia (1990) and Laos (1990-2008).

Source: The Development Centre's calculation based on IEA (2010).

Developing Asia has recently moved forward on national mitigation policy on a unilateral basis

Given the sheer size and rapid growth of their CO_2 emissions, and due to pollution and other environmental damages they are facing at home, China, India and several ASEAN countries have recently placed priority on national mitigation policy. They have made the move to a low-carbon economy a central feature of their climate change mitigation strategies. Unlike developed countries, however, they have made voluntary pledges to cut the emissions *intensity* or reduce emissions below business-as-usual (BAU) levels by 2020 (Box 4.1).

Box 4.1. National pledges to cut carbon emissions: selected OECD and Asian countries

Country	Pledged 2020 targets	Comments
Australia	5% up to 15-25% emissions cut below 2000 levels	Beyond 5% if the world agrees to an ambitious global deal.
Canada	Cut emissions by 17% from 2005 levels	
China	Cut the amount of carbon produced per unit of GDP by 40-45% below projected growth levels from 2005 levels	Generate 15% of energy from non-fossil fuel sources by 2020
India	Cut the carbon emission intensity of GDP by 20-25% from 2005 levels.	The emissions from agriculture sector will not form part of the assessment of emissions intensity.
Indonesia	Cut carbon emissions by 26% from BAU levels	Up to 41% with international support
Japan	Cut GHG emissions by 25% below 1990 levels	Premised on the establishment of a fair and effective international framework in which all major economies participate and on agreement by those economies on ambitious targets.
Korea	Cut GHG emissions by 30% below BAU levels	
Malaysia*	Cut CO_2 emissions by 40% in terms of emissions intensity of GDP from 2005 levels	Subject to assistance from developed countries
New Zealand	Cut emissions by 10-20% from 1990 levels	If there is a comprehensive global agreement
Singapore	Cut carbon emissions by 16% from BAU levels	Contingent on a legally binding global agreement in which all countries implement their commitments in good faith.
United States	Cut emissions in the range of 17% from 2005 levels	

Source: United Nations Framework Convention on Climate Change: http://unfccc.int/home/items/5264.php; http://unfccc.int/home/items/5265.php

* www.doe.gov.my (IMPAK, Issue 1/ 2010)

Choice of accounting methods may matter for national emissions inventories

Another issue of direct relevance to Asian developing economies concerns emissions-accounting methods. National mitigation initiatives currently put in place under the Kyoto Protocol focus on reducing territorial emissions at the point of production, while overlooking the role of international trade, particularly in emission-intensive products such as aluminium, cement, chemicals, iron and steel, and paper and pulp, as well as consumer durables. Thus, differences between production and consumption-based accounting methods may lead to non-trivial distortions in national emission inventories.

The magnitude of this problem is directly related to the nature and extent of trade specialisation in terms of both products and markets, which in turn depends on the level of income, relative factor endowment, stages of industrial development, geography and so on. Past studies found that despite differences in the methodology used in empirical work, there was a significant amount of carbon emissions being relocated through international trade (Box. 4.2).

Box 4.2. Embodied carbon emissions in international trade: a review

	Model specification / data sources	Targeted economies and regions / year(s)	Key results
Wyckoff and Roop (1994)	SRIO/ OECD harmonised input-output and bilateral trade databases	Six OECD economies (Canada, France, Germany, Japan, the UK and the US)/ mid-1980s	About 13% of the total carbon emissions of these countries were estimated to be embodied in manufacturing imports.
Ahmad and Wyckoff (2003)	SRIO/ OECD harmonised input-output and bilateral trade databases	20 OECD and 4 non-OECD economies/ 1995	Total consumption-based CO_2 emissions of these OECD countries were 5% higher than production-based emissions in 1995. For many individual countries, this difference was +/- 10%.
Shui and Harriss (2006)	SRIO/ EIO-LCA 1997 model	US-China bilateral trade/ 1997-2003	7-14% of China's CO_2 emissions were a result of producing exports for US consumers.
Ackerman *et al.*, (2007)	MRIO/ Japan-US linked input-output model	Japan-US bilateral trade/ 1995	Japan-US trade reduced US industrial emissions by 14.6 MT CO_2 and increased emissions in Japan by 6.7 MT CO_2, for global savings of 7.9 MT CO_2.
Nakano *et al.* (2009)	SRIO/ OECD harmonised input-output and bilateral trade databases (2006 edition)	28 OECD and 12 Non-OECD economies/ 1995 and 2000	Total consumption-based CO_2 emissions of these OECD countries were 16% higher than production-based emissions in 2000, resulting in global relocation of emissions-intensive activity towards non-OECD economies.
Hertwich and Peters (2009)	MRIO/ GTAP (version6) supplemented with data on CO_2 emissions	73 individual economies and 14 aggregate regions /2001	On the global level, 72% of GHG emissions are related to household consumption, 10% to government consumption and 18% to investments.
Zhou *et al.*, (2010)	Both SRIO and MRIO/ IDE-JETRO AIO 2000	Nine Asian economies and the US / 2000	CO_2 emissions embodied in multilateral trade is significant, accounting for on average 13% of total national emissions in the ten economies.
Peters *et al.*, (2010)	MRIO/GTAP (version 7) supplemented with time-series trade data	113 regions including 95 individual countries/ 1990-2008	Global CO_2 emissions from the production of exported products increased from 20% of global CO_2 emissions in 1990 to 26% in 2008.

Notes: SRIO = Single-region(country) input-output model; MRIO = Multi-region (country) input-output model;

EIO-LCA 1997 model = the US Economic Input Output-Life Cycle Assessment model (developed by Carnegie Mellon University Green Design Initiative, 2004); GTAP = Global Trade Analysis Project database (developed by Purdue University, 2006);

IDE-JETRO AIO 2000 = Institute of Developing Economies-Japan External Trade Organization, Asian International Input-Output Table 2000.

It is, however, important to distinguish conceptually "carbon leakage" and what was observed here as the relocation of emissions to Developing Asia.[16] The former refers to a specific situation in which production facilities located in a country with stricter climate change mitigation policies may migrate to another with less stringent ones. Carbon leakage is thus measured as the ratio of emissions increase from a specific sector outside the country or region applying a mitigation policy over the emissions reduction in the sector as a result of the same mitigation policy. Past modelling exercises indicate that higher leakage rates would be expected in iron and steel and primary aluminium than in cement or electricity, due mainly to differences in traded volumes. But empirical evidence on carbon leakage has been limited to a small number of cases, mostly relating to the European Union's emissions trading system (ETS). It is also difficult to distinguish the effect of climate change mitigation policy from the effects of other factors that are expected to affect changes in trade flows and corporate investment decisions over the medium to long term.[17]

In a nutshell, the relocation of carbon emissions to China, India, ASEAN and other Asian developing economies over the past two decades does not necessarily result from the impact of specific mitigation policies in OECD countries but rather reflects the consequence of major structural transformations that have occurred in the global economy, referred to as the new geography of global growth centres shifting from the West to East and from the North to the South (OECD Development Centre 2010a).

Carbon footprints of nations

Nonetheless, the question of "carbon leakage" has recently gained the attention of Asian policy makers, because many countries in the region have established or are about to establish various mitigation actions necessary to meet national pledges (though voluntary) to cut carbon emissions by 2020. To better understand the magnitude of the *potential* carbon leakage problem, it is necessary to monitor the carbon footprint of nations. This is particularly important for ASEAN economies whose export growth depends in no small part on natural resource-based sectors in which emission responsibilities reside.

Monitoring carbon footprints helps to better understand the potential impact of mitigation policy

To estimate the magnitude of emission relocation through trade channels, a multi-region input-output model (MRIO) has been developed. A detailed account of this model is presented in Annex 4.AI. The model used here allows us to explicitly separate production and consumption-based emissions of CO_2 in each country, thereby calculating *net* CO_2 emissions via international trade (*i.e.* the amount of emissions embodied in *trade balance*). This relationship can be expressed as follows.

Suppose $P_{j,t}$ is the amount of production-based emissions in country j and year t, and $C_{j,t}$ the amount of consumption-based emissions in country j and year t. Then the net transfer of emissions, $T_{j,t}$ is defined as $T_{j,t} = P_{j,t} - C_{j,t}$. This can be expressed equivalently in terms of trade balance, namely, $T_{j,t} = E_{j,t} - M_{j,t}$ where $E_{j,t}$ is the amount of emissions embodied in the production of exported goods and services in country j and year t and $M_{j,t}$ the amount of emissions embodied in the production of imported goods and services in all countries other than j. In other words, "CO_2 emissions embodied in exports" are calculated as total *domestic* CO_2 emissions induced by partner countries' final demand. Likewise, "CO_2 emissions embodied in imports" are estimated as total *foreign* CO_2 emissions induced by domestic final demand in country j.

The model requires three elements: national input-output coefficients, bilateral trade flows and emissions intensities of both firms and households (derived from the energy use and subsequent carbon emissions generated by all economic activities in national territories). OECD harmonised input-output and bilateral trade statistics and IEA carbon emission statistics were used for the calculation. The database used for this model consists of 50 economies and regions and 37 sectors covering three years, 1995, 2000 and 2005.[18]

The multi-region input-output model has a clear analytical advantage in a globalised economy

The multi-region input-output model applied here allows for tracing the emissions embodied in all economic activities across countries, thereby quantifying the amount of emissions embodied in both exports and

imports in a consistent manner. This characteristic offers the clear advantage of using a MRIO over a single-region input-output model (SRIO) used in other studies. As discussed in SAEO 2010 (Chapter 3), greater fragmentation in production processes and higher dependence on supplies of goods and services from neighbouring countries have gone hand in hand since the mid-1990s and contributed to the rapid expansion of trade in parts and components within the Asia region. Under the SRIO model, however, it is implicitly assumed that the importing country does not supply the country where the imports originated with intermediate inputs which have high emissions intensities. Otherwise, the carbon emissions embodied in intermediate products and services would be counted twice – once as exports and again as imports. Under the MRIO model, the problem of double-counting can be avoided: the more countries and regions are included in the MRIO model, the smaller becomes the impact of double-counting in national emissions.

Carbon trade surplus has become large in Developing Asia

The quantitative results of both production- and consumption-based CO_2 emissions for 13 individual Asia-Pacific economies are presented in Table 4.3. For comparison, the table also shows aggregate results for relevant regional groupings. The aggregate amount of carbon trade *deficits* originating from OECD countries is estimated at 1 704 million tonnes of CO_2 (MT CO_2) in 2005, up from 907 MT CO_2 in 1995. This increase in carbon trade deficits (797 MT CO_2) was met by an even larger increase in carbon trade *surpluses* in Developing Asia (968 MT CO_2) during this period. China alone accounted for 82% of this increase. The production-based emissions also exceeded consumption-based emissions in India, Indonesia, Malaysia, Chinese Taipei and Thailand in 2005. The preliminary estimates for 2008 indicate that net transfer of carbon emissions in ASEAN and Developing Asia further increased to 107 MT CO_2 and 1 670 MT CO_2, respectively. Regional averages appear to have been stabilised relative to production-based carbon emissions, though specific country cases differ to some extent.

Table 4.3. Production- and consumption-based carbon emissions

Country / Region	Production-based emissions (million tonnes CO_2)				Consumption-based emissions (million tonnes CO_2)			
	1995	2000	2005	2008[P]	1995	2000	2005	2008[P]
Australia	285	339	389	398	273	314	402	421
China	2 986	3 038	5 068	6 508	2 564	2 519	3 847	5 081
India	785	981	1 160	1 428	715	904	1 115	1 369
Indonesia	192	268	324	385	196	223	290	339
Japan	1 148	1 184	1 221	1 151	1 423	1 465	1 466	1 367
Korea	359	421	468	501	387	412	495	525
Malaysia	79	111	153	181	80	87	93	112
New Zealand	25	30	33	33	27	31	41	43
Philippines	59	70	72	72	66	70	85	81
Singapore	38	43	45	44	40	50	47	68
Chinese Taipei	158	219	262	264	155	178	202	187
Thailand	141	159	214	229	165	142	194	199
Viet Nam	28	44	82	103	29	47	81	108
Memo items:								
OECD (30)	11 554	12 476	12 903	12 630	12 462	13 717	14 607	14 352
DEV ASIA (11)	4 472	4 942	7 387	9 227	4 016	4 227	5 963	7 557
ASEAN (8)	543	703	898	1 027	581	626	799	920

Table 4.3. Production- and consumption-based carbon emissions (contd.)

Country / Region	Net transfer of emissions (Million tonnes CO_2)				Net transfer of emissions as percentage of production-based emissions			
	1995	2000	2005	2008[P]	1995	2000	2005	2008[P]
Australia	13	24	-13	-24	4	7	-3	-6
China	422	519	1 220	1 427	14	17	24	22
India	70	77	45	59	9	8	4	4
Indonesia	-3	45	35	46	-2	17	11	12
Japan	-275	-281	-245	-216	-24	-24	-20	-19
Korea	-29	9	-27	-24	-8	2	-6	-5
Malaysia	-2	24	60	69	-2	22	39	38
New Zealand	-2	-1	-8	-10	-7	-4	-23	-29
Philippines	-7	0	-13	-9	-12	-1	-18	-12
Singapore	-2	-7	-3	-24	-4	-16	-6	-53
Chinese Taipei	3	41	60	77	2	19	23	29
Thailand	-23	18	20	30	-17	11	9	13
Viet Nam	-1	-2	1	-5	-2	-5	1	-5
Memo items:								
OECD (30)	-907	-1 241	-1 704	-1 723	-8	-10	-13	-14
DEV ASIA (11)	456	715	1 424	1 670	10	14	19	18
ASEAN (8)	-38	77	99	107	-7	11	11	10

Notes: DEV ASIA (11) and ASEAN (8) both include Brunei Darussalam and Cambodia but excludes Laos and Myanmar.
The figures for 2008 are preliminary estimates under the assumption that the 2005 input-output coefficients remain unchanged.
Sources: OECD harmonised input-output and bilateral trade databases; and IEA (2010).
See Annex 4.A2 for the methodology used for calculation.

The rise of China and to a lesser extent several other Asian developing economies as key participants in global supply chains is largely responsible for the growing carbon trade surplus in Developing Asia. Among ASEAN countries, the level of carbon trade surpluses has increased to surpass more than 10% of territorial carbon emissions in Indonesia and Thailand and more than 30% in Malaysia. At the same time, a significant proportion of carbon trade deficits are met by imports in the Philippines and Singapore. Given the relative amount of carbon trade, this aspect of national emissions should be considered for ASEAN countries in registering national GHG emission inventories and addressing mitigation actions.

World carbon trade increased much faster than world total emissions

The amount of world carbon trade is estimated to have reached 5 337 MT CO_2 in 2005, equivalent to 20% of world total emissions (Table 4.4). This was up nearly 50% from 3 575 MT CO_2 in 1995. World carbon trade grew twice as fast as world total emissions during this period.

Table 4.4. CO_2 emissions embodied in international trade

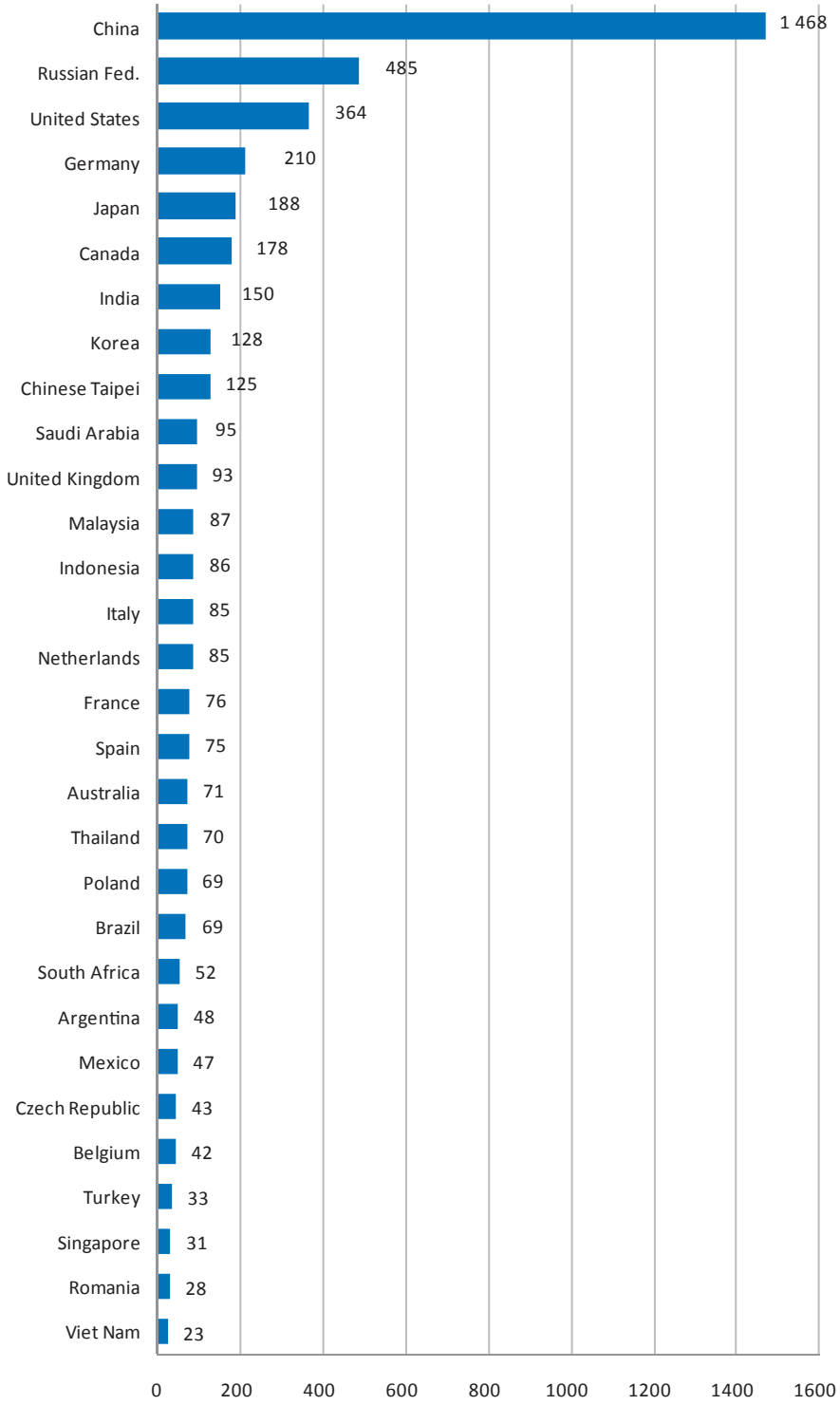
Economy	CO_2 emissions embodied in exports[a] (million tonnes)			Percentage of production-based emissions			CO_2 emissions embodied in imports[b] (million tonnes)			Percentage of consumption-based emissions		
	1995	2000	2005	1995	2000	2005	1995	2000	2005	1995	2000	2005
Australia	56	77	71	20	23	18	43	52	84	16	17	21
China	508	666	1 468	17	22	29	86	147	248	3	6	6
India	96	135	150	12	14	13	26	58	105	4	6	9
Indonesia	37	79	86	19	29	26	40	34	51	21	15	18
Japan	112	122	188	10	10	15	387	403	433	27	28	30
Korea	81	129	128	23	31	27	110	120	155	28	29	31
Malaysia	32	49	87	40	44	57	34	25	27	42	29	29
New Zealand	8	8	8	32	28	23	10	10	15	36	31	37
Philippines	13	18	14	22	26	20	20	19	27	30	26	32
Singapore	23	25	31	61	58	69	25	32	33	62	64	71
Chinese Taipei	59	90	125	37	41	48	56	48	65	36	27	32
Thailand	35	55	70	25	34	33	58	37	50	35	26	26
Viet Nam	4	12	23	15	27	28	5	14	22	17	30	27
Memo items:												
OECD (30)	1 701	1 897	1 970	15	15	15	2 608	3 138	3 673	21	23	25
DEV ASIA (11)	807	1 129	2 056	18	23	28	351	415	631	9	10	11
ASEAN (8)	144	239	312	27	34	35	182	161	213	31	26	27
WORLD	3 575	4 330	5 337	16	18	20	3 575	4 330	5 337	16	18	20

Notes: DEV ASIA (11) and ASEAN (8) both include Brunei Darussalam and Cambodia but exclude Laos and Myanma.
a) CO_2 emissions embodied in exports are defined as total domestic CO_2 emissions induced by partner countries' final demand.
b) CO_2 emissions embodied in imports are defined as total foreign CO_2 emissions induced by domestic final demand.
Sources: OECD harmonised input-output and bilateral trade databases; and IEA (2010).

See Annex 4.A2 for the methodology used for calculation.

The carbon footprint of nations in 2005 is depicted in Figures 4.3 and 4.4. On the export side, China was the world's largest emitter of CO_2, followed by Russia, the United States, Germany and Japan. Due to its sheer size (1 468 Mt CO_2), China alone accounted for 28% of world carbon exports. In addition, India, Korea and Chinese Taipei are also ranked among the world's top ten carbon exporters. Looking at the import side, it is the United States that takes a predominant position to replace China, but other top ten import countries are all OECD countries. Looking at all 50 individual economies contained in the OECD database, the rank correlation coefficient of these two data sets is found to be very high (0.828).

Figure 4.3. CO_2 **emissions embodied in exports in 2005** (million tonnes)

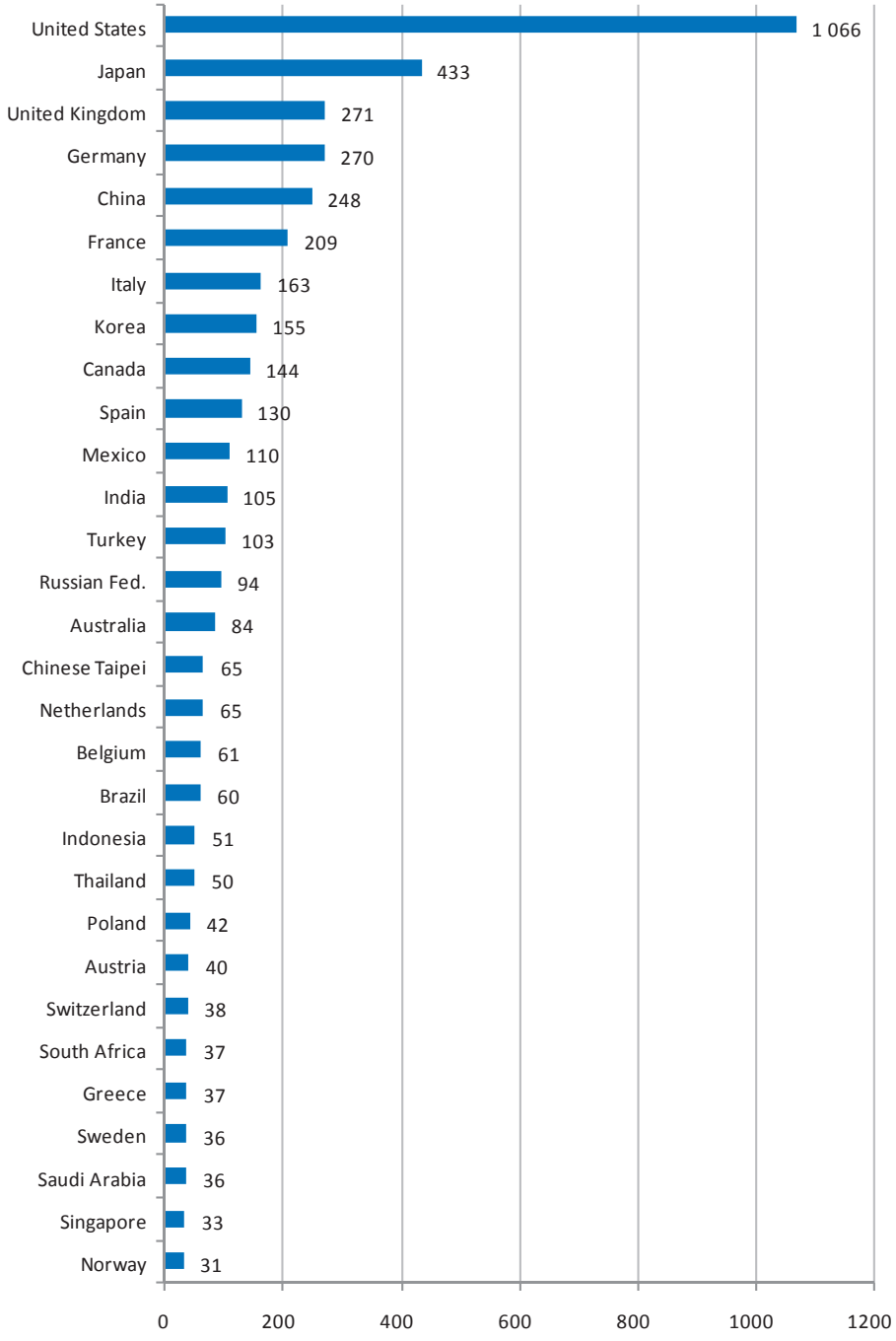


Notes:
CO_2 emissions embodied in exports are defined as total domestic CO_2 emissions induced by partner countries' final demand.
Source: OECD harmonised input-output and bilateral trade databases; and IEA (2010).

See Annex 4.A2 for the methodology used for calculation.

StatLink http://dx.doi.org/10.1787/888932562792

Figure 4.4. CO_2 **emissions embodied in imports in 2005** (million tonnes)



Notes:
CO_2 emissions embodied in imports are defined as total foreign CO_2 emissions induced by domestic final demand.
Source: OECD harmonised input-output and bilateral trade databases; and IEA (2010).

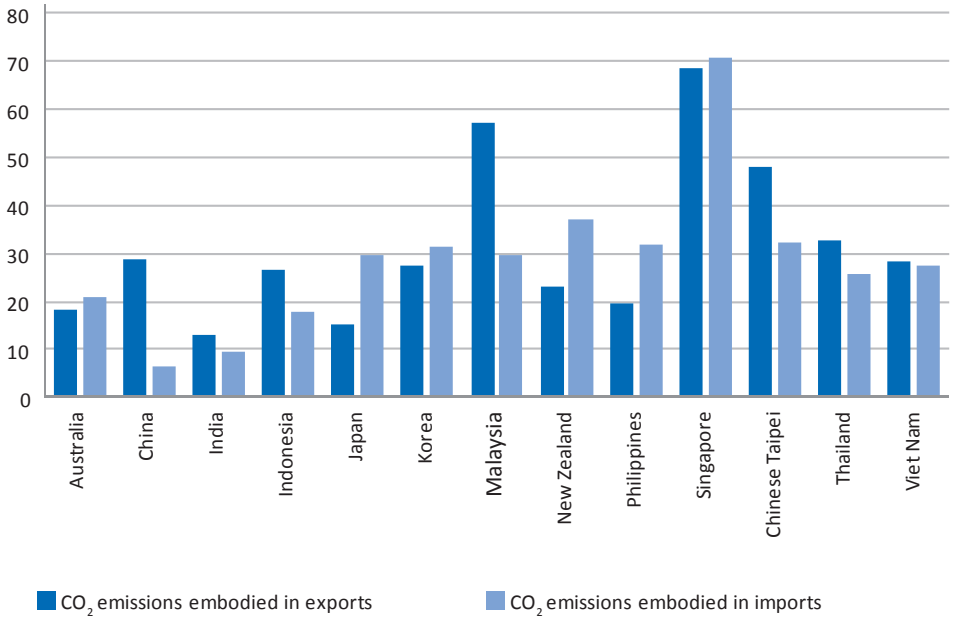
See Annex 4.A2 for the methodology used for calculation.

StatLink http://dx.doi.org/10.1787/888932562811

Trade plays a more important role in ASEAN's emissions than in China's or India's

While relatively modest in absolute terms, the amount of carbon trade relative to national emissions is more important to several ASEAN countries than to China or India (Figure 4.5). This can be verified by looking at the sources of emissions by consumption category (Table 4.5). ASEAN countries, taken together, are much more dependent on imports as a source of emissions when compared with China or India. This may be explained by the pattern of trade specialisation in ASEAN countries in which they tend to import final products (durable and non-durable goods) in exchange for supplying intermediate products. In Table 4.5, for instance, the total amount of emissions embodied in imports is estimated at 212 MT CO_2 in ASEAN countries, which is twice that of India. This figure suggests that ASEAN countries would have to upgrade their export profiles towards the manufacture of greener products in order to exploit the region's rapidly expanding consumer product markets.

Figure 4.5. Carbon trade as percentage of national emissions in 2005



Notes:
CO_2 emissions embodied in exports are defined as total domestic CO_2 emissions induced by partner countries' final demand, while CO_2 emissions embodied in imports are defined as total foreign CO_2 emissions induced by domestic final demand.
Source: OECD harmonised input-output and bilateral trade databases; and IEA (2010).

See Annex 4.A2 for the methodology used for calculation.

StatLink http://dx.doi.org/10.1787/888932562830

Table 4.5. Sources of emissions by consumption category in 2005

China							
	Durable goods	Petroleum products	Other non-durable goods	Utilities	Commercial services	Non-commercial services	Total consumption-based emissions
	(Million tonnes CO_2)						
Total	776	76	635	294	1 576	492	3 847
Imports	85	2	40	2	85	34	247
Electricity	311	7	191	259	644	272	1 685
Other industries	380	13	210	12	846	186	1 646
Direct combustion	0	54	194	21	0	0	268
							(%)
Total	20	2	17	8	41	13	100
Imports	2	0	1	0	2	1	6
Electricity	8	0	5	7	17	7	44
Other industries	10	0	5	0	22	5	43
Direct combustion	0	1	5	1	0	0	7
India							
	Durable goods	Petroleum products	Other non-durable goods	Utilities	Commercial services	Non-commercial services	Total consumption-based emissions
	(Million tonnes CO_2)						
Total	188	87	240	102	399	98	1 115
Imports	38	2	18	0	38	6	104
Electricity	82	5	97	97	171	64	515
Other industries	68	20	84	3	190	28	392
Direct combustion	0	61	41	3	0	0	104
							(%)
Total	17	8	22	9	36	9	100
Imports	3	0	2	0	3	1	9
Electricity	7	0	9	9	15	6	46
Other industries	6	2	8	0	17	2	35
Direct combustion	0	5	4	0	0	0	9

Table 4.5. Sources of emissions by consumption category in 2005 (contd.)

	ASEAN(7)[a]						
	Durable goods	Petroleum products	Other non-durable goods	Utilities	Commercial services	Non-commercial services	Total consumption-based emissions
	(Million tonnes CO_2)						
Total	98	145	142	95	259	53	793
Imports	71	9	47	5	63	17	212
Electricity	10	0	24	86	46	20	186
Other industries	18	16	57	4	149	16	260
Direct combustion	0	120	15	0	0	0	135
							(%)
Total	12	18	18	12	33	7	100
Imports	9	1	6	1	8	2	27
Electricity	1	0	3	11	6	2	24
Other industries	2	2	7	0	19	2	33
Direct combustion	0	15	2	0	0	0	17

Note: a) ASEAN (7) includes Brunei Darussalam, Indonesia, Malaysia, Philippines, Singapore, Thailand and Viet Nam.
Sources: OECD harmonised input-output and bilateral trade databases; and IEA (2010).
See Annex 4.A2 for the methodology used for calculation.

Implications for mitigation policies

Under the Cancun Agreements, developing-country parties including ASEAN counties have agreed to take nationally appropriate mitigation actions (NAMAs) to reduce BAU emissions by 2020 and have committed to establish measurement, reporting and verification (MRV) of mitigation actions; national communications are to be submitted every four years with biennial update reports. As discussed earlier, national characteristics of GHG emission inventories in Southeast Asia are so diverse that there is no "one-size-fits-all" approach to mitigation actions in the region. Still, ASEAN countries are collectively required to address the challenge of green growth by making better use of market-based instruments and at the same time improving regulatory measures. In so doing, the financial and administrative burden of domestic institution building must be taken seriously.[19]

The remainder of this section addresses issues relating to two flexible mitigation mechanisms introduced by the Kyoto Protocol, the ETS and the Clean Development Mechanism (CDM) as well as carbon labelling.

ASEAN countries can make better use of carbon markets in implementing nationally appropriate mitigation actions

Use of carbon markets to reduce emissions has recently gained popularity in OECD countries in response to the "caps" placed on the emissions of six GHGs under the Kyoto Protocol during the first commitment period of 2008-12. Emissions trading introduced under the Kyoto Protocol is a market-based instrument to achieve emissions targets, by allowing the excess reductions in emissions below the caps to be traded so as to offset emissions at another source inside or outside the country. As Box 4.3 shows, emissions trading schemes can take place at various levels, international, national, sub-national and city-based.[20] There is currently no mandatory carbon market related to the selling and buying of carbon credits in Southeast Asia. However, voluntary over-the-counter (OTC) trades are taking place in the region in which developers of CDM projects are trading Certified Emission Reduction Units (CERs) with developed (Annex 4.AI) countries through financial intermediaries and brokers (Hamilton *et al.,* 2010).

Box 4.3. Mandatory emissions trading schemes

Geographical Scope	Name of ETS	Target Pollutant	Target Organisation
International ETS			
European Union[a] (2005~)	EU-ETS	6 GHGs[b]	Electricity generation and energy-intensive industries; aviation will be added from 2012.
National ETS			
New Zealand (2008~)	NZ-ETS	6 GHGs[b]	The scheme has no cap on emissions but strong links to international markets. Targets include all gases and sectors, including agriculture (from January 2015)[c]
Switzerland (2008~)	Swiss-ETS	Energy-based CO_2	Around 350 companies are covered by the scheme, though targets are negotiated on a case-by-case basis[d]
United Kingdom (2010~)	CRC Energy Efficiency Scheme	Energy-based CO_2	Around 5 000 large businesses and public sector organisations using over 6 000 megawatt-hours of electricity (excluding those covered by the EU-ETS)
Sub-national ETS			
New South Wales, Australia (2003~)	Greenhouse Gas Reduction Scheme (GGAS)	GHGs from electricity production	Energy producers and highly energy-intensive users
Alberta, Canada (2007~)	Alberta trading scheme	Industrial GHGs	Around 100 very large emitters (over 100 000 tonnes of CO_2 equivalent per year), such as oil sands mines and coal-fired power plants
North-eastern & Mid-Atlantic regions, United States (2009~)	Regional Greenhouse Gas Initiative (RGGI)	Energy-based CO_2 from power plants	Electricity generators
City-based ETS			
Santiago, Chile	Emission Offset Program of Supreme Decree No. 4	Total suspended particulates	Stationary combustion sources with an exhaust gas flow rate greater than 1 000 m^3 per hour
Tokyo, Japan (2010~)	Tokyo-ETS	Energy-based CO_2	Mandatory emissions reduction for large emitters, defined as single buildings or facilities that consume more than 1 500 KL crude oil-equivalent a year
Los Angeles, United States	Regional Clean Air Incentives Markets (RECLAIM)	NOx (nitrogen oxides), SOx (sulphur oxides)	Facilities emitting more than 4 tonnes a year of either gas
Chicago, United States	Emissions Reduction Market System (ERMS)	Volatile organic compounds, particularly tropospheric ozone	Stationary sources emitting more than 10 tonnes per season (2 seasons per year)

Notes:

a) EU 27 plus Norway, Iceland and Liechtenstein. The last three have been linked to EU-ETS since 2008; *b)* Six GHGs are carbon dioxide (CO_2), Methane (CH_4), Nitrous oxide (N_{2O}), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs) and Sulphur hexafluoride (SF6); *c)* Obligations are placed on emitters to surrender 1 eligible NZU (New Zealand Unit) for every tonne of CO_2 emitted. The price of 1 NZU is set at NZD 25 (though it is set at half the price, NZD 12.5 or €7, during the transition preriod, 2010-12). Participants in the scheme can import and surrender eligible Kyoto units (CERs for CDM and ERUs for JI), convert NZUs to Assigned Amount Units and export them. The goverment has the power to accept units from other ETSs; *d)* Under discussion with the EU to link the scheme to the EU-ETS from 2013.

Sources: Hood (2010); OECD (2011a); World Bank (2010a); http://environment.alberta.ca.

Moreover, some countries, such as Indonesia and Singapore, appear to be in favour of introducing carbon pricing as a means to reduce carbon emissions.[21] In the Green Paper issued in 2009 by the Indonesian Ministry of Finance, it was stated that imposition of a carbon tax would provide a price signal to transition to a lower carbon economy scenario (cutting carbon emissions by 26% from BAU levels by 2020).[22] Once carbon measurement and accounting systems capable of supporting emissions trading were extended to include a sufficient number of market participants, the carbon tax could be replaced by emissions trading, potentially with direct linkages to international carbon markets (Indonesian Ministry of Finance, 2009). Similarly, the Prime Minister of Singapore said in November 2010 that the city state would have to introduce a carbon price – be it through a carbon tax or a cap-and-trade scheme – to send the right price signal, if there is a global regime to curb carbon emissions.[23] The question of environmental tax instruments to be applied in ASEAN countries will be discussed in Chapter 6.

Border tax adjustment is insufficient in a globalised economy

Border tax adjustment (BTA) is a trade measure taken to level the playing field between domestic producers facing more stringent national mitigation actions and foreign producers facing less stringent ones. Proposals to introduce a BTA have been made - but not yet adopted - in several OECD countries as a companion measure to either a domestic carbon tax or an emissions trading scheme (OECD, 2010). In the case of a carbon tax, a BTA would impose tariffs on the imported goods from the countries subject to few mitigation actions by the same rate of a carbon tax. In a cap-and-trade scheme, a BTA would force domestic importers or foreign exporters of goods to buy emission permits based on the amount of carbon emitted in the production process, in a requirement analogous to that faced by domestic producers.

How large might such border carbon adjustment be? A study by World Bank (2010b) calculated the average effective tariff rates, in addition to the existing tariffs, that major emitters would face if a tax of USD 50 per tonne of CO_2 were placed on the carbon content of imported goods and services. According to their calculations, the effective tariff rates, inclusive of a carbon tax, would be significant for some major carbon-exporting countries, such as China and India.[24]

Some proponents have touted BTA as a means to address competitiveness concerns or to avoid what is known as "carbon leakage"(Helm, 2010). That is, if strong domestic action causes firms to relocate production facilities to other countries, or to lose market share to those countries, then the emission reduction achieved at home is simply offset to some extent by an increase in emissions abroad. The fear is that they will be *more* than offset, as production moves to low-standard jurisdictions. Imposing a BTA might act as an effective tool to encourage developing countries to take on hard commitments in the climate change negotiations.

Even if a BTA could be administered in a non-discriminatory and least trade-destructive way, it does not work well as a mitigation measure in the real world. As discussed in the previous section, the analysis of carbon footprints show complex relations between national emissions through international trade flows. A BTA would not only restrict imports of "lower-standard" goods in a BTA-imposing country but also harm its own "higher-standard" exports.[25] A better policy would be to encourage energy efficiency in developing countries in a mutually beneficial way.

Increasing clean development mechanism (CDM) participation can be beneficial to ASEAN countries

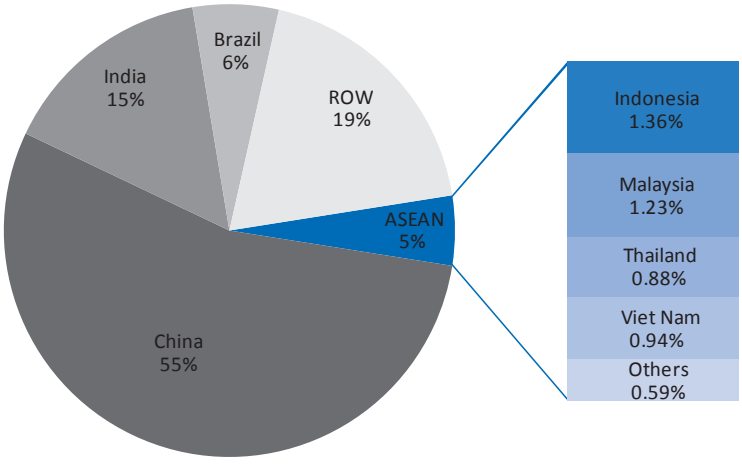
As noted above, the CDM is a market-based instrument established in 2001 under the Kyoto Protocol in order to facilitate the implementation of additional, renewable and alternative energy efficiency projects in host developing (non-Annex 4.A1) countries through the sale of CERs to developed (Annex 4.A1) countries. It helps the latter meet their emissions reduction and limitation commitments under the Kyoto Protocol, and at the same time it assists the former in achieving their ultimate objective of sustainable development.

Participation in the CDM is beneficial to host developing countries for a number of reasons. First, transparency and information sharing should be enhanced at both national and international levels through entry into a national carbon emissions inventory that is to be communicated to the United Nations Framework Convention on Climate Change.[26] Second, CDM-host developing countries receive financial incomes by selling CERs to Annex 4.AI countries. Third, foreign investment in the CDM projects provide host developing countries with learning experiences and opportunities for developing the clean technologies that are most appropriate under local conditions. Host developing countries participating in CDM projects are therefore likely to gain

technological expertise that is essential for offsetting emissions and putting their economies on to low-carbon development paths.

Although several ASEAN countries are listed among major beneficiaries of CDM projects, they are lagging far behind China and India. The amount of all CERs currently placed in pipeline as of July 2011 (which will be issued by 2012) is likely to reach 2 730 million tonnes of CO_2 equivalent, of which China and India account for 55% and 15%, respectively (Figure 4.6). By contrast, the aggregate share of ASEAN countries remains at 5%, led by Indonesia, Malaysia, Thailand and Viet Nam. Most CDM projects in ASEAN countries focus on a few categories. One is the development of renewable energy, such as biomass, hydro and geothermal power. Another major category is the reduction of emissions such as methane and landfill gas through better waste handling and disposal, as well as fugitive leaks (Figure 4.7).

Figure 4.6. Distribution of certified emission reduction units among clean development mechanism host countries (%)



Source: Compiled from "CDM Pipeline Overview" (as of 1 July 2011) available from: http://cd4cdm.org/index.htm

StatLink http://dx.doi.org/10.1787/888932562849

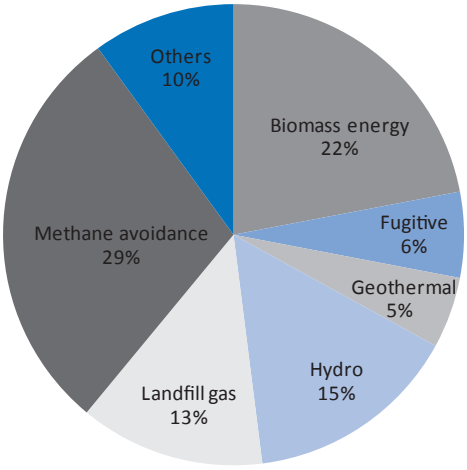
One issue relating to a low rate of ASEAN participation in the CDM concerns the coverage of forestry and forest-related projects. Forestry has been a contentious issue due mainly to the non-permanence of forestry sinks and leakage to other regions.[27] Furthermore, a 2005 review of CDM implementation in ASEAN countries indicates three major factors affecting particpation:

- Availability of data to calculate baseline emission factors is a significant barrier to CDM project developers;
- Limited technical capacity of designated national agencies to manage the CDM project cycle efficiently and effectively (*e.g.* preparing project proposals and dealing with financing issues and transactions); and
- Limited availability of core financing for CDM projects (van Wees, 2005).

Carbon labelling emerges in the midst of a continuous rise in greenhouse gas emissions

The third and final issue to be discussed here concerns carbon labelling. This is a supply chain management instrument that specifies GHG emissions through a product's life-cycle assessment (LCA) – from procurement of inputs, manufacturing, transport and distribution to final consumption and disposal of waste – in tonnes of carbon dioxide equivalent (tCO_2e). It is increasingly applied as a tool for businesses and consumers to contribute to a reduction in GHG emissions. It is also considered as a policy lever for governments to navigate towards a low-carbon economy.

Figure 4.7. Distribution of certified emission reduction units in ASEAN countries by project category (%)



Source: the same as Figure 4.6.

StatLink http://dx.doi.org/10.1787/888932562868

The carbon labelling concept emerged in the United Kingdom in 2007 as an act of the Carbon Trust, in partnership with the UK Department for Environment, Food and Rural Affairs (Defra) and the British Standards Institute (BSI). The origin of carbon labels can be found in the continuous rise in GHG emissions, which have been recognised as having an effect on global warming. Prior to 2007, eco-labelling programmes did not include labels with a carbon footprint focus, but at present eco-labels are adapting to the emergence of carbon labels (Box 4.4). Carbon labels are seen as promising policy tools and are quickly spreading throughout Europe, North America and Asia. ASEAN countries face major challenges, however, before they can consider them effective policy tools.

Box 4.4. Eco-labelling: a pioneer tool to promote environmentally friendly consumption and production patterns[28]

Eco-labelling is a product-related policy instrument that measures and certifies environmentally friendly products, thus helping businesses and consumers work together in tackling climate change and enhancing environmental protection. This tool enables producers to disclose the environmental friendliness of their products and encourages consumers to buy them. Currently more than 300 eco-labels throughout 211 countries and 25 sectors exist (see Table), with more potentially being developed.

Number of eco-labels used in the different regions

Region	N° eco-labels
Africa	22
Asia	76
Europe	160
Latin America	33
North America	161
Oceania	48

Source: Eco-label Index: www.ecolabelindex.com/

Since the late 1970s when they were created, eco-labels have continuously been evolving. These labels arose out of environmental concerns and aim to promote environmentally friendly products (OECD, 1997). The "Blue Angel" eco-label was created in Germany in 1978 and is the first label to distinguish the positive environmental qualities of products on a voluntary basis. Ten years later, in 1988, Canada's Environmental Choice label followed. Since then, many voluntary eco-labelling schemes emerged in a number of developed and developing countries. Singapore was the first ASEAN country to develop an eco-label (see Table below).

Box 4.4. Eco-labelling: a pioneer tool to promote environmentally friendly consumption and production patterns (contd.)

Worldwide eco-labels, mainly in Europe, North America and Asia

Country/Region	Label	Year
Germany	Blue Angel	1978
Canada	Canada's Environmental Choice	1988
United States	Green Seal	1989
Sweden	Nordic Swan[29]	1989
Japan	Ecomark	1989
New Zealand	Environmental Choice New Zealand	1990
Sweden	Good Environmental Choice	1990
India	Ecomark	1991
France	NF Environnement Mark	1991
Europe	EU Eco-label Flower	1992
Singapore	Green Label Singapore	1992

Source: Adapted from US EPA (1998).

ASEAN should play an active role in the international standard-setting process for carbon labelling

Carbon-labelling programmes are proliferating in developed countries. The focus and methodology used to calculate the carbon footprint of products – an estimation of the amount of GHG emissions throughout a product´s LCA – differ considerably across organisations, businesses and governments around the world.[30] The Carbon Trust's[31] carbon label shows commitment to reducing carbon emissions using the Publicly Available Specification 2050 standard (PAS, 2050). PAS 2050, developed by the BSI and published in October 2008,[32] is being used by hundreds of international firms as the standard for calculating their products´ carbon footprints. PAS 2050 is for the moment the most detailed methodology and is the standard used by most Asian countries. The International Organization for Standardization (ISO) Technical Committee 207 on Environmental Management (ISO/TC 207) is also currently working on a new standard (ISO 14067) for the carbon footprint of products. First proposed in 2008, the draft standard is expected to be available in 2012.[33]

From an environmental perspective, stakeholders could start reducing their GHG emissions more rapidly by using multiple voluntary standards. However, it would be desirable to develop internationally accepted standards. Various studies confirm that the use of different methodologies for calculating the carbon footprint of products leads to different outcomes. Moreover, the multiplicity of labels diminishes their effectiveness in influencing consumers' behaviour.[34] Consequently, the Carbon Trust, ISO and the World Resources Institute (WRI) are working together to create a globally acceptable standard for determining embodied carbon emissions (Nanda and Ratna, 2010). It is, therefore, crucial for ASEAN countries to co-operate and participate in the development of such a standard-setting process, because they have played a key role as participants in global supply chains since the mid-1990s. To date, however, the co-operation of carbon-labelling schemes both among ASEAN countries and with their business partners remains at an early stage (Shi, 2010; and Oraboune, 2010).

Thailand is the only ASEAN country that has implemented carbon footprint activities

Thailand is the first ASEAN country to develop carbon labels. The Thailand Greenhouse Gas Management Organisation (TGO) is currently working to develop two types of labels: the Carbon Reduction Label (CRL) and the Carbon Footprint Label (CFL). The purpose of these labels is to help Thailand move towards a low carbon trend. Products carrying Thailand´s Carbon Reduction Label indicate that significant carbon emissions reductions have been produced during the production process. The new Carbon Footprint Label is mainly for goods being exported to Europe and the United States. This new label is currently being tested by a number of companies, including Thai Airlines International Company Limited, the first airline in the world that calculates the carbon footprint of its in-flight food (IGES, 2011).

Labelling schemes could restrict developing countries' market access

Labelling schemes can be potentially detrimental to exports from developing countries if captured by protectionist interests in importing countries.[35] Least-developed countries (LDCs) are especially at risk because of the capacity constraint. In the Asia-Pacific region, for instance, carbon footprint activities have been implemented primarily in developed countries, with the exception of Thailand. Countries such as Malaysia, Singapore and China are developing their own carbon labelling schemes. ASEAN LDCs, Cambodia, Laos and Myanmar, have not made concrete progress in the direction of a carbon footprint labelling scheme, as they are still very much concerned about poverty reduction and economic development.

Methodology bias against developing nations, such as the use of "food miles" (see Box 4.5), must be avoided. Other biases include the PAS 2050's consideration of emissions of recent land-use change and the lack of appropriate weight given to labour-intensive techniques and other carbon-efficient methods of production.[36] Countries using carbon labelling should make such schemes transparent regarding their methodologies and sensitive to the lack of technical and financial resources of LDCs to collect data and to certify that their products meet the carbon label's requirements. In this regard, effective assistance to capacity building in ASEAN LDCs should be given a priority so that their exports are not unfairly affected. Environmental consciousness should not be at odds with the important role that international trade can play in promoting economic and social development and reducing poverty in ASEAN countries.

Box 4.5. "Food miles" can have a negative effect on developing countries' exports

The concept of "food miles"[37] – the measurement of embodied carbon in a traded good as a result of its transport – has gained popularity in the European Union, especially the UK and France, and the United States. Yet a number of LCA studies have shown that locally produced goods do not necessarily guarantee a reduction in total GHG emissions. GHG emissions from transport may be more than compensated by carbon efficient processes of production in developing countries. This labelling scheme might be seen at worst as a case of "green protectionism" since it discriminates against exporting nations, particularly developing countries whose exports depend on long-distance transportation (Bolwig and Gibbon, 2009). Labelling schemes which take into account a product's full life cycle are not as likely to discriminate against developing countries as "food miles".

Carbon labelling should be part of ASEAN countries' climate change mitigation actions

Recently carbon footprint has captured the interest of businesses, consumers and policy makers in developed countries. Under a carbon-constraint environment, corporate managers wish to demonstrate that their companies take social responsibility programmes seriously by reporting product carbon footprints. Similarly, they are willing to report organisations' carbon footprints in order to enhance corporate identity and business reputation. Manufacturers are also keen to know the carbon footprints of their supply chains for cost savings purposes in terms of packaging, transport, energy, waste disposal and so on. Consumers are also increasingly conscious about the environmental impact of the goods and services they use. Policy makers are under pressure to reduce carbon emissions in order to meet national pledges. In a nutshell, it is critically important to integrate the carbon footprint concept into their decision-making processes.

Though still in their infancy, carbon-labelling schemes have been evolving rapidly in the developed world. It cannot be denied that this policy instrument has some influence on the behaviour of green-conscious consumers, thereby forcing change within the supply chain. There is still time for ASEAN countries to have a strong voice in this global attempt to reduce GHG emissions. By participating in the process of international standards for carbon-labelling programmes and by developing such programmes as part of green-growth policy, ASEAN countries can gain positive spillovers arising from this international endeavour to benefit the environment.

Table 4.6. Carbon-labelling schemes in the Asia-Pacific region

Asia-Pacific region	Carbon label	Year of implementation
Japan	Carbon Footprint of Products	2009
Thailand	Carbon Reduction Label; and Carbon Footprint Label	2009
Korea	Carbon Footprint Certification Label Low Carbon Product Certificate	2009 2011
Australia	Carbon Reduction Label	2010
New Zealand	Carbon Reduction Label	2010
Chinese Taipei	Carbon Reduction Label	2010
China	Under development	
Malaysia	Under development	
Singapore	Under development	

Source: Adapted from Shi, 2010.

Pursuing green growth objectives can help achieve tangible progress towards the ASEAN Community

ASEAN as a regional entity has been fully committed to playing a proactive role to address global environmental issues, as proclaimed in *the 4th ASEAN State of the Environment Report* published in 2009. The region stands to suffer more from climate change than many other regions in terms of the impacts of extreme weather events, increased temperature and variability of rainfalls and rising sea levels, if no action is taken. ASEAN member states have all ratified the major multilateral environmental agreements and have been committed to fulfilling their obligations and pledges. At the 28th ASEAN Ministers on Energy Meeting in July 2010, ministers reaffirmed their commitment towards strengthening efforts to address climate change and enhancing ASEAN energy co-operation towards a low-carbon economy.

As ASEAN nations are integrating their economies along the Roadmap for the ASEAN Community (2009-15), it is critical for them to address collectively the challenge of green growth, as this is highly relevant to the Roadmap's stated objectives under the programme of "Ensuring Environmental Sustainability".[38] As will be discussed later in this volume, many countries in the region are at an early stage of development in terms of policy formulation and institution building geared at greening the economy. They may wish to learn from the recent development of Korea's green growth strategy. Many of the instruments proposed by the OECD Green Growth Strategy (OECD, 2011b), such as environmental tax instruments, are worth considering for ASEAN countries.

Annex 4.A1. Global CO_2 emissions: top 50 economies

Economy	(million tonnes) 1990	2010	Annual % change 1990 over 2010	Share in 2010
China	2 459	8 333	6.3	25.1
US	5 445	6 145	0.6	18.5
India	581	1 707	5.5	5.1
Russian Federation	2 343	1 700	-1.6	5.1
Japan	1 158	1 308	0.6	3.9
Germany	1 031	828	-1.1	2.5
Korea	255	716	5.3	2.2
Canada	495	605	1.0	1.8
Saudi Arabia	239	562	4.4	1.7
Iran	197	558	5.3	1.7
United Kingdom	622	548	-0.6	1.7
Brazil	238	464	3.4	1.4
Mexico	290	447	2.2	1.3
Italy	435	439	0.1	1.3
South Africa	314	437	1.7	1.3
Indonesia	147	424	5.4	1.3
France	412	403	-0.1	1.2
Australia	277	367	1.4	1.1
Spain	237	334	1.7	1.0
Chinese Taipei	134	331	4.6	1.0
Poland	387	324	-0.9	1.0
Thailand	90	308	6.4	0.9
Turkey	142	307	3.9	0.9
Ukraine	752	290	-4.7	0.9
Netherlands	220	276	1.1	0.8
Kazakhstan	251	235	-0.3	0.7
United Arab Emirates	83	227	5.1	0.7
Egypt	93	209	4.1	0.6
Singapore	72	209	5.5	0.6
Argentina	104	175	2.7	0.5
Venezuela	108	173	2.4	0.5
Belgium & Luxembourg	140	167	0.9	0.5
Malaysia	66	166	4.7	0.5
Pakistan	67	164	4.6	0.5
Vietnam	36	122	6.2	0.4
Uzbekistan	125	117	-0.3	0.4
Czech Republic	170	111	-2.1	0.3
Algeria	73	108	1.9	0.3
Greece	80	98	1.0	0.3
Kuwait	25	85	6.2	0.3
Hong Kong, China	41	83	3.6	0.2
Romania	169	80	-3.6	0.2
Philippines	39	77	3.4	0.2

Annex 4.A1. Global CO_2 emissions: top 50 economies (contd.)

Israel	36	76	3.8	0.2
Chile	33	70	3.7	0.2
Austria	61	69	0.6	0.2
Colombia	51	68	1.4	0.2
Qatar	19	66	6.5	0.2
Turkmenistan	35	65	3.1	0.2
Portugal	45	63	1.6	0.2
World Total	22 613	33 158	1.9	100.0

Note: The Development Centre's calculation based on *BP Statistical Review of World Energy*, June 2011 (www.bp.com/statisticalreview). The carbon emissions reported in this Review are those from consumption of oil, gas and coal and do not allow for any carbon that is sequestered, for other sources of carbon emissions or for other GHG emissions.

Annex 4.A2. Carbon emissions embodied in international trade: multi-region input-output framework

1. Framework of MRIO: an example

Productions of countries in MRIO model (2 region/countries, 2 sectors) is described as

$$(1)\quad \begin{bmatrix} X_1^1 \\ X_1^2 \\ X_2^1 \\ X_2^2 \end{bmatrix} = B \begin{bmatrix} F_{11}^1 & F_{12}^1 \\ F_{11}^2 & F_{12}^2 \\ F_{21}^1 & F_{22}^1 \\ F_{21}^2 & F_{22}^2 \end{bmatrix}, \text{ where } \quad B = [I - A]^{-1} = \begin{bmatrix} I - \begin{matrix} a_{11}^{11} & a_{11}^{12} & a_{12}^{11} & a_{12}^{12} \\ a_{11}^{21} & a_{11}^{22} & a_{12}^{21} & a_{12}^{22} \\ a_{21}^{11} & a_{21}^{12} & a_{22}^{11} & a_{22}^{12} \\ a_{21}^{21} & a_{21}^{22} & a_{22}^{21} & a_{22}^{22} \end{matrix} \end{bmatrix}^{-1}$$

X_1^2 is output of country 1's sector 2; A is a matrix of input coefficients of the multi-region framework, for instance, a_{21}^{12} is a coefficient for the input of country 1's sector 2 from country 2's sector 1; F_{12}^1 is final consumption by country 2 on country 1's sector 1; and I is an identity matrix (4 x 4).

2. Using the above framework and extending it to the N-sector case, the amount of production-based CO_2 emissions by country j (PBE_j) is defined as the sum of CO_2 emissions from fuel combustion at both industry and household. It can be expressed as

$$(2)\quad PBE_j = \sum_{i=1}^{N} \varepsilon_j^i X_j^i + \sum_{i=1}^{N} \rho_j^i X_j^i + \sum_{i=1}^{N} \sigma_j^i X_j^i + \sum_{i=1}^{N} \theta_j^i F_j^i + \sum_{i=1}^{N} \varphi_j^i F_j^i$$

where ε_j^i is emissions intensity for electricity generation activity by sector i of country j; ρ_j^i is emissions intensity for road transportation activity (fuel consumption) by sector i; σ_j^i is emissions intensity for other industrial activity by sector i; θ_j^i is emissions factor of final consumption related to road transportation (*e.g.* petroleum consumption for passenger cars); φ_j^i is emissions factor of other final consumption of fuel (*e.g.* natural gas consumption for heating and cooking in the household); *N* is number of sectors; and X_j^i and F_j^i are output and final domestic consumption of country j's sector i, respectively.

3. Using the MRIO framework and extending it to the R-country case, the amount of consumption-based CO_2 emissions by country j's resident (CBE j) is expressed as follows:

$$(3) \qquad \mathrm{CBE_j} = \sum_{i=1}^{N} \sum_{p=1}^{R} (h_j^i F_{pj}^i) + (e_1^1 \cdots e_1^N | e_R^1 \cdots e_R^N)\, B \begin{pmatrix} F_{1j}^1 \\ \vdots \\ F_{1j}^N \\ - \\ F_{Rj}^1 \\ \vdots \\ F_{Rj}^N \end{pmatrix}$$

where h_j^i is emissions factor of final consumption on country j's sector i ($h_j^i = \theta_j^i + \varphi_j^i$); e_j^i is industrial emissions intensity of country j's sector i ($e_j^i = \varepsilon_j^i + \rho_j^i + \sigma_j^i$); R is number of countries; B is Leontief inverse; N is number of sector; and F_{1j}^1 is final domestic consumption by country j on the country 1's sector i.

Note that as equation (3) shows, the total amount of consumption-based CO_2 emissions can be separated by expenditure category and sources of emissions (see Table 4.5). For example, the emissions regarding the final expenditures of durable goods from electricity generation are derived by using the same formula of (3), if $e_j^i = \varepsilon_j^i$ and $F_{pj}^i = 0$ for final consumption expenditures other than durable goods.

The available types of final expenditures in our simulation example are summarised as follows.

Description	ISIC Rev.3 [a]
Durable goods	26 - 37
Petroleum products	23
Other non-durable products	01 - 22 and 24 - 25
Utilities	40 - 41
Commercial services	45 - 74
Non-commercial services	75 - 93

a. International Standard Industrial Classification of All Economic Activities

4. The amount of CO_2 emissions due to global consumption for country j's sector i (GCE_j^i) is defined conceptually as

GCE_j^i= Emissions due to household's direct consumption of fuel of country j +
Emissions embodied in all industrial activities across countries (from 1 to R) which are induced by the final expenditure of country j's setor i

Using the MRIO framework and with respect to sector 1, GCE_j^i can be expressed as follows:

$$(4) \qquad (e_1^1 \cdots e_1^N | e_R^1 \cdots e_R^N)\ B \begin{pmatrix} F_{11}^1 & \dots & + F_{1R}^1 \\ & 0 & \\ & 0 & \\ & - & \\ & 0 & \\ & \vdots & \\ & 0 & \end{pmatrix} + \sum_{p=1}^{R} (h_p^1 F_{1p}^1)$$

where e_j^1 is industrial emissions intensity of country j's sector 1 ($e_j^1 = \varepsilon_j^1 + \rho_j^1 + \sigma_j^1$); h_j^1 is emissions factor of final consumption on country j's sector 1 ($h_j^1 = \theta_j^1 + \varphi_j^1$); F_{1j}^1 is final expenditure of country j on country 1's sector 1; B is Leontief inverse; and *R* is number of countries.

The carbon footprint vector for unit consumption (F=1) is simply given as

$$(5) \quad \Omega = [(e_1^1 \cdots e_1^N | e_R^1 \cdots e_R^N)\ B]$$

Notes

1. Another channel is through foreign direct investment (FDI) flows, as this type of investment often involves relocation of low-carbon production facilities and processes and introduction of low-carbon products and services to host countries. UNCTAD (2010) reports that such FDI flows into three key sectors (renewable, recycling and environmental technology manufacturing) alone amounted at 90 billion USD in 2009.
2. A "carbon footprint" measures the total amount of GHG emissions caused directly and indirectly by an organisation's activity (*e.g.* organising an event or manufacturing a product). Here this concept is extended to all of a nation's economic activities causing carbon emissions.
3. See the inaugural edition of the *Southeast Asian Economic Outlook* for the role of ASEAN countries in global supply chains (OECD Development Centre 2010b, Chapter 3).
4. The OECD input-output database also includes the rest of world as a region.
5. Australia, China, India, Indonesia, Japan, Korea, Malaysia, New Zealand, Philippines, Singapore, Chinese Taipei, Thailand and Viet Nam.
6. See www.oecd.org/sti/inputoutput/co2 for further details.
7. These figures were calculated from *BP Statistical Review of World Energy*, June 2011 (www.bp.com/statisticalreview). The carbon emissions reported in this Review are those from consumption of oil, gas and coal and do not allow for any carbon that is sequestered, for other sources of carbon emissions or for other GHG emissions.
8. In 2010 China and India ranked 1st and 3rd among the world's top 50 economies in terms of CO_2 emissions. See Annex 1 for details.
9. The OECD's Development Assistance Committee stresses that "green growth should be pro-poor and address simultaneously the challenges of improving natural resource management, enhancing resilience to climate change and moving towards a low-carbon economy": (see www.oecd.org/document/43/0,3746,en_2649_34421_44309739_1_1_1_1,00.html#Introduction).
10. See OECD (2008) for detailed discussion on these regional characteristics.
11. The Kyoto Protocol deals with six GHG, namely carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF6).In Indonesia, the total amount of GHG emissions was estimated at 1 377 MT of CO_2 equivalent in 2005, of which CO_2 accounted for a little over 80%. Others include CH_4 (17%) and N_2O (2%).
12. This includes emissions from peat fire.
13. According to an Asian Development Bank report (ADB 2009), Southeast Asia was responsible for 12% of the world's total GHG emissions in 2000. LULUCF was the major source of emissions from the region, contributing 75% of total regional GHG emissions. The other two key sources were energy (15%) and agriculture (8%), with emissions from the energy sector growing as much as 83% during 1990-2000, the fastest among these three sources.
14. For instance, the mitigation measures to be taken against GHG emissions from LULUCF include, among others, those through implementing no-burning technology for land clearing for plantation, combating illegal logging and its associated trade, conserving and rehabilitating forest resources and strengthening sustainable forest management.
15. REDD+ activities include reducing emissions from deforestation; reduing emissions from forest degradation; conservation of forest carbon stocks; sustainable management of forest; and enhancement of forest carbon stocks (see www.un-redd.org).
16. This is not necessarily the case in the growing literature on the competitiveness impact of climate mitigation policies. See among others Aldy and Pizer (2009), Asselt *et al.* (2009), Asuka *et al.* (2011), Cosbey and Tarasofsky (2007), De Bruyn *et al.* (2008), Grubb *et al.* (2009), Houser *et al.* (2008), Jaffe *et al.* (1995) and World Bank (2008).
17. See Reinaud (2008), Inoue (2010) and OECD (2010c) for further discussions.

18. Estimation of consumption-based carbon emissions has been extended to 2008 assuming that national input-output coefficients remain unchanged beween 2005 and 2008. Preliminary results of this extrapolation are also reported in this volume.
19. See Clapp *et al.* (2010) for a review of low-emission development strategies in developing countries, including Indonesia and Thailand. See also JICA (2011) for the low-carbon growth potential in Asia and Ellis *et al.* (2010) for a useful overview of emission reduction scenarios and mitigation policy challenges.
20. The core idea of any emissions trading scheme is to set a limit on the total quantity of CO_2 emitted for a given time period. Within such overall cap, each participant in the scheme receives an individual permit, by applying historical performances (*i.e.* grandfathered) or by auctioning permits to participants. A participant who emits less than his permit may then sell the unused balance to another participant who has exceeded his allocated permit. The price per permit is determined by the market. The carbon price is, however, affected by how such cap-and-trade scheme is administered. Garnaut (2011) provides a well balanced political-economic analysis of carbon pricing policy in Australia. See also Australia's official website (www.cleanenergyfuture.gov.au) on the announcement of carbon tax in July 2012 and the introduction of a full emissions trading scheme by July 2015. See also the case of Korea in this volume.
21. In July 2010, the Indian government put in place a nation-wide carbon tax of INR 50 (Indian rupees) per metric tonne of coal both produced and imported into the country. It was also reported that this carbon tax would raise INR 25 billion for fiscal year 2010-11 which would be used to finance a clean energy fund. See Bloomberg Businessweek, "India to Raise USD 535 Million from Carbon Tax on Coal", 11 March 2011. See also the budget speech by the Finance Minister delivered on 26 February 2010 (http://indiabudget,nic.in/).
22. For example, an initial carbon price would be set at Rp 80,000 per tonne of CO_2, roughly 10 USD, rising at a rate of 5% in real terms to 2020.
23. This citation comes from www.channelnewsasia.com on 1 November 2010.
24. According to World Bank (2010a, Focus C), the average effective tariff rate facing China and India amounts to 10.5% and 7.8%, respectively.
25. Based on simulation results, Burniaux *et al.* (2010) conclude that BTAs have typically no beneficial impact on the output of energy-intensive industries in developed countries these measures are intended to support in the first place.
26. Because CDM projects are implemented in developing countries without mandatory emission reduction targets, it is critical to validate additionality of such projects by establishing "business-as-usual" emission levels and validating emission reduction credits.
27. Establishing historical deforestation rates is a major problem as well (Gupta, S. and Tirpak, 2007, pp.778-781).
28. See also OECD (1997).
29. The Nordic Swan is the official eco-label in Sweden, Norway, Finland, Iceland and Denmark.
30. See Nartova (2009), Bolwig and Gibbon (2009), Plassmann *et al.* (2010) and Nanda and Ratna (2010).
31. Information concerning the Carbon Trust can be found at: http://www.carbontrust.co.uk/Pages/Default.aspx. In addition information concerning the Carbon Reduction Label can be found at: http://www.carbon-label.com/
32. Information on PAS 2050 can be found in *Guide to PAS 2050 How to Assess the Carbon Footprint of Goods and Services*, (BSI, 2008).
33. ISO 14067 provides requirements to quantify GHG emissions and harmonise the methodologies used to communicate the carbon footprint of products to the public. This new standard is based on the methodology for LCA in ISO 14040 and on product environmental labels and declarations in ISO 14025. Additionally, the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD) are working on an international standard based on the GHG Protocol Corporate Standard and LCA of ISO 14040-44.
34. See Brenton *et al.* (2010), *The Economist* (2011) and Santillana (2011).
35. See Kloeckner (2008), Nartova (2009), Nanda and Ratna (2010) and Brenton *et al.*, (2009).

36. Agricultural production is typically more carbon efficient in ASEAN LDCs than in developed countries, because the former is more labour intensive, uses fewer ferilisers and is less reliant on fossil fuels in production techniques.

37. See Kejun *et al.* (2008). The concept of food miles originated in 1990 in the United Kingdom (Hogan and Thorpe, 2009). Food miles labels have been supported by European countries and the United States, countries in which agriculture is still highly subsidised (Nanda and Ratna, 2010). One of the main reasons for focusing today's carbon labelling schemes on agricultural products rather than on manufactured goods is the greater complexity in calculating carbon content in the life cycles of manufactured and processed goods (ICTSD, 2008a, b; Brenton *et al.*, 2010).

38. For a use of market-based instruments at the regional level, see for example Loh and Stevenson (2008) and Thomassin and Mukhopadhyay (2008).

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CHAPTER FIVE

Green growth strategies, policies and institutions

Abstract

Southeast Asia is one of the fastest growing regions in the world. Rapid export-led economic growth in the past two decades has lifted millions of people out of poverty. However, there is growing recognition among policy makers in the region that an export-led strategy focusing mainly on growth has been energy-intensive and may not be sustainable in the long term. Attention is increasingly turning to evolving new development strategies that would spur greener growth; that is, growth that requires less energy while protecting the environment. This chapter looks at the strategies that a number of Southeast Asian countries, namely Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam, are putting in place to promote green growth. It analyses the policies and institutions at the national and regional levels that ASEAN countries are adopting to support their transition to a low-carbon economy and in particular the challenges each country faces in promoting green growth while adjusting to a changing, more difficult global environment. Included is a focus on the case of Korea as a benchmark for green growth implementation and lessons learned.

Introduction

Southeast Asia's economic progress since 1990 has been largely export-driven, with less attention paid to environmental sustainability or social inclusion. However, in recent years, policy makers have begun to focus more on the negative consequences of their "grow first, clean up later" approach. As part of a worldwide trend, Southeast Asian countries are now looking to green development strategies to protect the environment while promoting economic growth and job creation. This emerging perspective rejects earlier development models that pit economic prosperity against environmental sustainability, instead seeing these as mutually reinforcing.

This chapter looks at the green growth policies and institutions that a number of ASEAN countries, namely Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam, have put in place to smooth their transition to a low-carbon economy. It examines, in particular, the trade-offs each country must make to protect the environment while ensuring economic growth and job creation.

Korea has been at the forefront of green growth efforts, helping to set the agenda for discussions on green growth in Asia and beyond. Korea's experience can thus be of interest to ASEAN countries in the process of instituting similar strategies. In order to highlight this experience, the chapter includes a special focus and related annex on Korea's green growth strategy, illustrating some of the major challenges and lessons facing ASEAN countries as they work to put green growth in place.

Green growth and ASEAN

The global downturn of 2008 prompted many Southeast Asian countries to introduce programmes to stimulate their economies. Many took the opportunity to increase public investments in green infrastructure particularly in public transport, low-carbon energy production, smart electricity grids, energy-efficient public buildings and water and sanitation infrastructure. A few countries have also invested in research and development (R&D) to support green innovation and raised taxes on environmentally harmful activities. Still, some stimulus measures have been environmentally counterproductive. Support for the automobile industry, for example, via investments in road building and car-scrapping programmes have provided incentives for private car usage and resulted in more emissions.

Southeast Asia is now recovering from the global recession at a relatively rapid rate. In 2010, the region grew by 7.3% and growth will be expected to remain robust in 2011. Strong growth together with an expanding population will increase demand for material and energy resources and continue to put pressure on the environment.

Climate change

Climate change poses a serious risk to lives and livelihoods, particularly for the world's most vulnerable people and countries. The United Nations (UN) projects that two-thirds of the world's population will face growing water shortages by 2030 (UN News Centre, 2009). A University of Washington study estimates that by 2100, half the world's population could face severe food shortages because of rising temperatures (Battisti and Naylor, 2009). Pro-poor green growth policies may help mitigate the impact of climate change. Shifting away from traditional, highly polluting energy sources would spur growth and improve the health of the poor, particularly women.

Highly dependent on natural resources for economic progress, Southeast Asian economies are vulnerable to climate change, especially as it affects food security and access to water. Therefore, they will need to enact sound policies to manage their natural resources in a sustainable manner.

Greenhouse gas emissions

Managing CO_2 emissions, which comprise a large portion of total greenhouse gas (GHG) emissions, will be a massive challenge for ASEAN. As a region projected to have a greater share of global GHG emissions, ASEAN can contribute to global GHG reductions by adopting appropriate green growth policies to cut energy consumption while creating jobs and reducing income disparities. A meaningful transition to greener growth will require the removal of environmentally harmful subsidies. According to the OECD, removing subsidies to fossil fuel consumption in emerging and developing countries could reduce global greenhouse gas emissions by 10% in 2050 (OECD, 2010).

Southeast Asia was responsible for 12% of the world's total GHG emissions in 2000, and given its rapid economic and population growth, the percentage is expected to increase. The OECD Development Centre projects the region to grow at an average of 6% in the next five years, while its population is expected to grow by 20% by 2030, reaching 700 million. Yet, the region has great potential to contribute to GHG emission reductions. Transitioning to a low-carbon economy could simultaneously address the challenges of diminishing non-renewable energy resources, job creation and poverty reduction in the region.

Table 5.1 shows CO_2 emission level in metric-tonnes for the different regions of the world. Global CO_2 emission increased by 47% between 1990 and 2010. This rise is largely due to rapid industrial development in the Asia region, whose share of global CO_2 emission increased significantly from 17% to 37%. OECD's share, in contrast, fell from 55% to 43%. Although ASEAN's global share is small, the region's share of 2% in 1990 rose to 4% in 2010.

Table 5.1. Carbon dioxide emission by country and region

Economy/Region	1990	1995	2000	2005	2010
World total (million tonnes of CO_2)	22 613	23 502	25 577	29 826	33 158
OECD Total [a] *(%)*	55	56	55	50	43
of which Asia-Pacific members [b] *(%)*	8	9	9	8	7
Developing Asia *(%)*	17	22	23	30	37
of which ASEAN [c] *(%)*	2	3	3	4	4

Notes:
a) Refers to 33 OECD countries throughout (excluding Estonia).
b) Australia, Japan, Korea and New Zealand.
c) Indonesia, Malaysia, Philippines, Singapore, Thailand and Viet Nam.

Source: The Development Centre's calculation based on *BP Statistical Review of World Energy*, June 2011.

Table 5.2 shows the CO_2 emission per capita in individual ASEAN countries. ASEAN countries with higher per capita incomes have correspondingly higher per capita emission levels. Singapore's per capita emission level was nine times that of the ASEAN average in 1995. Partly due to a shift to energy-efficient industries, Singapore has reduced its per capita emission level from 10.8 in 1995 to 9.2 in 2008, but this level is still more than five times the ASEAN average of 1.8. By contrast, the per capita CO_2 emission level in other ASEAN countries has increased, though from relatively low levels. Except for Malaysia, Singapore and Brunei Darussalam, emission levels in the other ASEAN countries are still below the world average. However, as ASEAN economies continue with their rapid economic expansion, the CO_2 emission levels in the region are expected to rise further.

Table 5.2. CO_2 emission (metric tonnes per capita) in ASEAN countries

Time	1990	1995	2000	2005	2006	2007	2008
Country							
World	3.9	3.7	3.7	4.1	4.1	4.2	4.2
ASEAN	0.8	1.2	1.4	1.7	1.7	1.8	1.8
Brunei Darussalam	13.1	15.9	14.0	13.6	19.7	18.3	18.9
Cambodia	0.0	0.1	0.2	0.3	0.3	0.3	0.3
Indonesia	0.8	1.0	1.3	1.5	1.5	1.6	1.7
Malaysia	2.7	3.8	4.8	6.0	6.1	6.4	6.7
Myanmar	0.1	0.2	0.2	0.3	0.3	0.3	0.2
Philippines	0.6	0.8	0.9	0.8	0.8	0.8	0.8
Singapore	9.5	10.8	10.6	10.5	10.0	9.6	9.2
Thailand	1.4	2.4	2.6	3.3	3.3	3.4	3.4
Viet Nam	0.3	0.4	0.6	1.0	1.0	1.1	1.2

Source: The Development Centre's calculation based on the IEA database. The emission data used here exclude international aviation and marine bunkers.

As CO_2 emission levels rise, ASEAN will look harder for solutions. Key to developing and diffusing clean technologies, innovation will be a critical driver in any policy framework that ASEAN countries develop. Such a framework would have to be broad, comprising price-based instruments and incentives for firms to engage in green activities, as well as public procurement and sufficient research funding. In addition, barriers to trade in clean technologies and the entry of new firms must be removed.

Financing green growth

Financing is one major obstacle to the implementation of green growth policies. Most ASEAN countries do not have the resources to fund a comprehensive approach to green growth so private sector participation is critical. However, many environmentally sustainable projects are risky and not undertaken because the returns are low. Governments can play a catalytic role by stepping up infrastructural investments, introducing regulations that are more pro-environment, and changing policies on taxes and subsidies to cushion private investment risks. While ASEAN countries recognise that a coherent and integrated policy framework is needed for green growth, such a framework will take some time to evolve, in part because of a shortage of finance and expertise (Economic and Social Commission for Asia and the Pacific, 2010).

Inevitably, the 2008-09 global economic crisis led ASEAN countries to focus on recovery. It also limited the financial resources they could allocate to green growth initiatives. But as economies in the region recover, interest in sustainable development has been revived. As ASEAN comprises a diverse group of countries at different stages of development, they vary in their capacity to effect green growth.

Of the ten country members of ASEAN, Singapore, a city-state with the highest per capita income, is the most advanced in incorporating green policies as part of its national development strategy. Brunei Darussalam, an oil exporter with a small population, also occupies a unique position among ASEAN countries. Indonesia, Malaysia, Philippines and Thailand have all benefited, though to varying degrees, from export-oriented industrialisation. All of these countries have put in place pro-green policies, as will be elaborated in later sections. Viet Nam embarked on the path of industrialisation later than many other ASEAN countries. But it too is concerned about the environmental consequences of rapid growth arising from its export-oriented development strategy. The other ASEAN members – Myanmar, Cambodia and Laos – are still in rudimentary stages of development and will not be discussed in this chapter.

The experiences of six ASEAN countries

Indonesia

Development experience and green growth policies

A relative latecomer to industrialisation, natural resource-rich Indonesia is the most populous country in Southeast Asia. Its growth was slow relative to many ASEAN countries until recently. Since 2000, its economic performance has improved significantly, partly as a result of reforms that have made the economy more open and flexible, partly because of rising oil and gas prices. Even so, Indonesia remains a poor country with nominal gross domestic product (GDP) per capita of about USD 3 015 in 2010 (IMF, 2011). As its industrialisation is at an earlier stage compared with that of middle-income ASEAN countries, Indonesia's CO_2 emissions of 1.7 metric tonnes per capita is low.

By international standards, Indonesia is not a significant contributor to global GHG emission. Yet, it is keenly aware that because of its large size and ecological diversity it can play a significant role in combating climate change. It is one of the major developing countries that have committed themselves to making large cuts in its Business as Usual (BAU) GHG emissions. By 2020, Indonesia expects to cut GHG emissions by 26% (ForestForClimate.Org, 2010).

The international community has welcomed Indonesia's commitment and offered support. In May 2010, Norway pledged USD 1 billion to support GHG reduction programmes in Indonesia. The Norway-Indonesia partnership will provide additional capital for a range of investments including microfinance for local community

sustainable development projects, low-cost loans to help plantation crop smallholders increase their yields, and incentives for palm oil growers to use degraded lands for new plantations.

In 2010, Indonesia unveiled a green economic programme as part of a sustainable development plan that is pro-growth, pro-job, and pro-poor. The plan acknowledges that technological innovations are vital for Indonesia to succeed in creating a new economy. To this end, the government will strengthen local research and development institutions and their links with foreign partners.

The new development programmes will focus on food resilience through the implementation of sustainable agriculture, sustainable forestry management, renewable energy usage, clean technology support, waste management, low carbon transportation management and green infrastructure development.

Deforestation is a major contributor to GHG emission in Indonesia. Addressing this source of GHG emission should greatly improve Indonesia's GHG profile. Prohibiting land clearing by burning, improving logging practices so that less timber is left to rot, reforestation of areas degraded by logging practices and rehabilitation of peat lands are examples of initiatives that would support sustainable, pro-poor development. Such initiatives would enhance long-term economic value and limit high GHG emitting activities. East Kalimantan, for example, can raise its GDP growth from 3% to 5% per annum by encouraging higher value-added activities and promoting less carbon-intensive sectors. (Forestforclimate.org, 2010)

Reducing land clearing by burning would not only reduce GHG emission but would also result in cleaner air and fewer incidents of haze. Neighbouring countries which have suffered the effects of haze originating in Indonesia would welcome more determined efforts to limit the use of fires to clear land for farming and logging, especially in Sumatra and Kalimantan.

Institutions

Many agencies and institutions have functions that bear responsibilities on different aspects of Indonesia's commitment to green growth but none has an over-arching, co-ordinating role. Indonesia's planning and investment promotion agencies recognise the importance of green policies but this recognition is not always reflected in their policies and programmes. Of the agencies with a specific remit on environmental sustainability, one of the most prominent is the Dewan Nasional Perubahan Iklim (DNPI) or National Council on Climate Change (NCCC). Set up in 2008 by the President of Indonesia, Susilo Bambang Yudhoyono, NCCC is tasked to formulate national policies and strategies for green growth. Responsible for co-ordinating activities in implementation, technology transfer and financing, NCCC also collaborates with provincial and district governments to develop green policies. Three provinces, Jambi, Central Kalimantan and East Kalimantan, have been working with NCCC to identify green growth opportunities. They have adopted low carbon growth strategies (LCGS). These strategies outline plans at the sector and district level as well as implementation issues. Since NCCC is a recent creation, it is too early to evaluate its impact.

Another important agency is the Badan Perencanaan Pembangunan Nasional or BAPPENAS. As the National Development Planning Agency, BAPPENAS is responsible for development planning in Indonesia. It draws up the national five-year development plan based on national state guidelines. The Minister for National Development Planning who heads BAPPENAS is a key member of the NCCC. In December 2009, Bappenas in collaboration with NCCC unveiled the "Indonesia Climate Change Sectorial Roadmap (ICCSR) for 2010 to 2029. The document spells out links between climate change and development planning. It details plans and targets for water, waste management, energy, transportation and other areas.

The Indonesia Climate Change Trust Fund (ICCTF), which comes under Bappenas, mobilises funds for activities to address climate change issues. It is an important vehicle for integrating Indonesia's climate change roadmap into Indonesia's development planning.

Another agency with functions that affect sustainability is the Lembaga Ilmu Pengetahuan Indonesia (LIPI) or Indonesian Institute of Sciences. The institute carries out research in many social science, technology and environmental areas. Its current research includes work on the development of wind, solar and oceanic energy.

Indonesia received USD 5.6 million from the UN-REDD (Reducing Emissions from Deforestation and Forest Degradation) programme policy board in 2009. This financial support has allowed Indonesia to organise workshops, train staff in key institutions, develop the National REDD+ Strategy and set up a UN-REDD project management unit in the Ministry of Forestry.

Malaysia

Development experience and green growth policies

Like Indonesia, Malaysia is rich in natural resources and derives considerable income from its exports of oil and gas as well as forest products. But unlike Indonesia, it is a middle-income rapidly industrialising, more urbanised country that hosts a large export-oriented electronics sector. Several decades of sustained economic expansion have greatly changed its natural environment, especially in East Malaysia where logging operations have led to deforestation. Between 1999 and 2008, Malaysia lost 1 039 900 ha or 4.7% of its forest cover [Food and Agriculture Organization (FAO) of the United Nations, 2011]. The declining forest cover in Malaysia is primarily due to urbanisation, agricultural fires, forest conversion for oil-palm plantations and other forms of agriculture. Logging, which is generally excluded in deforestation figures from the FAO, is responsible for widespread forest degradation in the country. In recent years, environmental disasters – floods, landslides, forest fires – have become more frequent. At the same time, rising incomes and urbanisation have increased the demand for cars and better transport infrastructure. With CO_2 emission level at 6.7 metric tonnes per capita, Malaysia's energy consumption is higher than the average of upper middle-income countries. Malaysia therefore recognises the need to reduce its dependence on fossil fuel. As in Indonesia and other ASEAN countries, Malaysia has put in place a variety of policies and institutions to foster greener growth.

Malaysia does not have a central co-ordinating agency to promote green growth. But it has introduced sector-specific policies to encourage more efficient energy use and raise public awareness of environmental issues. One area where government policies can have a significant impact is transport. Malaysia recognises that effective transport demand management is vital to minimising the harmful effects caused by a rapidly growing car population. Its large domestic automobile industry has a key role to play in this respect by introducing more energy-efficient models. But such models would require large investments in research and cost even more to produce. Malaysia could impose additional taxes to raise car prices to curb demand. These measures would likely cause job losses in the state-owned car manufacturer, Proton. Malaysia has to make a painful choice. If it imposes more taxes to curb car sales, it could have a more sustainable car industry in the long term and may need to spend less on transport infrastructure. If it does not, it would have a faster-growing domestic car industry and create more jobs. A more optimal solution would be to impose two taxes – one to discourage less energy-efficient models and the other a subsidy to encourage more energy-efficient models.

A second sector where government policies can make a significant difference in energy usage is construction. To encourage energy-efficient buildings that can help reduce CO_2 emissions, Malaysia has given tax breaks to developers who can satisfy environmental standards. As data are not available, it is difficult to assess how effective these breaks have been in encouraging the design of environmentally friendly buildings.

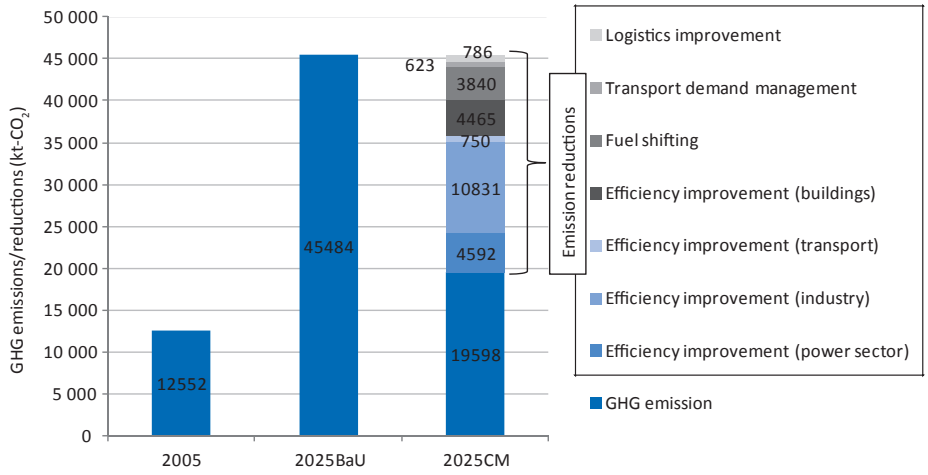
Other sectors that can contribute to CO_2 emission reduction are the power industry and manufacturing. Here the scope for taxes and subsidies to induce energy-saving innovations is great.

Box 5.1. Green growth policies in Iskandar

Iskandar Malaysia (IM), formerly known as Iskandar Development Region (IDR), is the main southern development corridor of Johor. The development region has an area almost three times that of Singapore. It is being used as a test-bed for green growth policies, which, if successful, may be applied to other areas in Malaysia.

A study by Universiti Teknologi Malaysia has projected that in the absence of effective green policies, GHG emissions in 2025 would increase four times by the year 2025. As Figure 5.1 shows, with the right measures to save energy in the industry, building, transport and power sectors, the rise in GHG emission in the same period could be halved, with a significant reduction of GHG emissions coming from efficiency improvements in industries.

Figure 5.1. Projected greenhouse gas emissions in Iskandar, Malaysia under different assumptions



Source: Universiti Teknologi Malaysia (2009).

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Institutions

Like Indonesia, many institutions share the responsibility for developing and implementing green growth policies with no central body co-ordinating green policies at the federal level. But a number of agencies have been set up to carry out research on energy. These include Pusat Tenaga Malaysia (PTM), a national energy research centre established in 1998 as a not-for-profit company under the Ministry of Energy, Communications and Multimedia (MECM). In 2002, the government created the Energy Commission (EC) to replace the Department of Electricity and Gas Supply as the primary regulator of electricity and gas supply. Besides its enforcement activities, the commission is responsible also for other aspects of the energy sector including heat, renewable energy and energy efficiency. The Malaysian government has also co-funded with the Global Environment Facility (GEF), United Nations Development Programme (UNDP) and the Malaysian private sector the Malaysian Industrial Energy Efficiency Improvement Project (MIEEIP). The project aims to remove barriers which will encourage enhancing energy efficiency and energy conservation, and help build institutional capacities.

Another key organisation is the environmental research centre, SIRIM Berhad, owned by the Malaysian Government under the Ministry of Finance. SIRIM focuses on discovering and developing new technologies to help businesses compete better through quality and innovation. At a recent Malaysian Green Growth Policy Tools Training Workshop for Low Carbon Development, SIRIM proposed a technique to determine the environmental impact of a product. Known as Life Cycle Assessment, the technique focuses on the life cycle of a product – from raw material extraction and acquisition to energy and material production to manufacturing and product assembly, product use and final disposal. Products that do not stress the environment are given eco-labels (Environmental Technology Research Centre, SIRIM Berhad, 2010).

The Philippines

Development experience and green growth policies

Compared to Thailand, the Philippines experienced slower growth in the past two decades. Though it has a smaller GDP per capita and a much lower GHG metric tonnes per capita emission level (0.8 compared with 3.4 for Thailand), the Philippines too recognises the importance of green policies. It has set up institutions and taken initiatives to address environmental issues. As in Thailand, policies on sustainable development are made by many different agencies and there is no clear, co-ordinated strategy for integrating green targets into development plans.

One long-term programme is the UN-REDD which values the carbon stocks in forests and aims to conserve forests and enhance carbon stocks with incentives. The Philippines has applied for USD 500 000 in UN-REDD funding to expand the management capabilities in forestland, protected areas and ancestral domains and to implement REDD projects and activities.

A second initiative is BERDE or Building for Ecologically Responsive Design Excellence. A consensus-driven, third party certification monitoring scheme, BERDE enables property market players to benchmark against a single green building rating system. It was developed, in part as a response to the proneness of the Philippines to earthquakes, by a non-partisan forum comprising the leaders from industry, professional institutions, academia and government. BERDE is a step in the right direction and, if widely used, can help make buildings more energy-efficient. Building Green, a series of conferences organised by the Philippine Green Building Council to highlight best green practices of the industry, promotes the work of BERDE.

Green policies in the Philippines aim to improve environmental quality for present and future generations. They focus on a few areas. Particular attention is given to improving air quality in the Metro Manila area and water quality in 19 rivers and coastal areas. Waste management is another priority area. There is a Pollution Adjudication Board (PAB) to settle disputes.

As it is a net importer of oil, the Philippines is especially concerned with the cost of rising energy prices. However, it does have considerable reserves of geothermal energy that could reduce its dependence on imported oil. Located in the Pacific Ring of Fire, the Philippines is subject to frequent seismic and volcanic activity. This activity creates a huge reservoir of geothermal energy which has made the Philippines the world's second-biggest geothermal producer behind the United States. Geothermal power provides 18% of the country's electricity (Davies and Lema, 2008).

Institutions

As in other ASEAN countries, many agencies make policy decisions that affect the environment, directly and indirectly. National economic planning, for example, influences industry structure and so the level of pollution. But environmental consequences are typically not factored in policy decisions as individual agencies have their own remit. For example, the Department of Environment and Natural Resources manages the country's natural resources.

Besides PHILGBC, the Philippine Green Building Council, there are private voluntary organisations that work on environmental issues. One of them is the Haribon Foundation. Established in 1972, Haribon is regarded as a pioneer on environmental issues. Its programmes include nature conservation through community empowerment and research on environmental issues. It is also an advocate of renewable energy practices and forest conservation in the Philippines (Haribon Foundation, 2011).

Singapore

Development experience and green growth policies

A small resource-poor city-state that has transformed itself from a Third World to a First World country in three decades of rapid development, Singapore has paid close attention to its environment since independence in 1965. While other ASEAN countries have recorded rising CO_2 emission in terms of metric tonnes per capita, Singapore's level in 2008, though much higher than that of Indonesia's 1.7, Viet Nam's 1.2, Thailand's 3.4, Philippines' 0.8 and Malaysia's 6.7 in 2008, has fallen from 10.8 in 1995 to 9.2 in 2007 (International Energy Agency, 2010). This improvement is the outcome of the combined impact of tax incentives, regulations,

behaviour changes and structural change in the economy. It would not have happened had the same government, in power for over four decades, not taken a total approach on the long-term consequences of its economic and environmental policies.

Of the factors contributing to the decline in CO_2 emission per capita is the steady shift of the economy from material- and labour-intensive industries to high-value, knowledge- and service-intensive industries. This shift has occurred in response to rising labour costs as well as government policies to encourage CO_2 reduction. Since 2007, the government has continued its efforts to curb CO_2 emissions. In one such initiative, buyers of green cars enjoy tax breaks, 40% off the Additional Registration Fee (ARF), the main tax on passenger vehicles (Green Business Times, 2011). Furthermore, the Maritime and Port Authority of Singapore (MPA) has set SGD100m (Singapore dollars) aside to encourage companies to engage in environmentally friendly shipping practices (Tax News, 2011).

A second factor that has contributed to the absolute decline in CO_2 emission per capita is the literal greening of the country. Notwithstanding population growth and the allocation of more land to industry, housing and roads, the green cover in the island-nation of 700 square kilometres has risen from 36% to 46% in the past two decades. The natural forests covering the central part of the island have been protected. More parks and roadside trees, all the result of a conscious effort to make the island a garden city, have increased the green cover.

The power sector accounts for half the island's total CO_2 emissions. The decision in 2001 to switch from the use of fuel oil to natural gas, which is the cleanest fossil fuel for electricity generation, has reduced the power sector's emissions by a significant 25% (Ministry of Foreign Affairs, 2009).

Policies on waste management have also helped. Singapore recycles 56% and incinerates 41% of its wastes. Incineration provides 2-3% of Singapore's electricity while reducing methane emissions from landfills.

Perhaps the boldest and most innovative of all the policies Singapore has adopted are its transport policies which are designed to curb car ownership and usage. Through several policies, annual car number growth is limited to 3%, and lowered to 1.5% in 2009. (Ministry of Foreign Affairs, 2009) The primary objective of these policies has been to ensure smooth traffic flow and so increase efficiency and productivity. Their impact, though, on fuel consumption and emission reduction has been significant. The thrust of these policies relies on capping vehicle growth. Buyers must have successfully bid for a certificate of entitlement (COE) before they can buy a new car. As the COE is valid only for ten years, this requirement lowers the average age of cars on the road and also CO_2 emission as older cars pollute more and are less energy efficient. The COE may be extended for another five years on payment of an additional fee but the vehicle must pass annual road worthiness tests.

Apart from controlling the absolute number of vehicles on Singapore roads, the Singapore government introduced in 1988 an Electronic Road Pricing (ERP) scheme to complement the COE system. Replacing the Area Licensing Scheme, the ERP scheme allows the Land Transport Authority to impose and vary charges on vehicles entering certain areas at certain times. All vehicles are equipped with a unit which has a stored value card. The entry charge is automatically deducted when the vehicle passes a gantry that is in operation. The COE and ERP schemes together have been effective in reducing traffic congestion as well as CO_2 emission. Neither scheme is popular with motorists but most have accepted them as a heavy price they must pay to drive on relatively uncongested roads in a small, compact city.

The Singapore government unveiled in 2002 a Green Plan 2012 after consulting both the public and private sectors. The plan sets targets on a number of areas including clean air and water, public health and nature conservation. In 2009, the government's inter-ministerial committee on sustainable development released a Sustainable Singapore Blueprint which outlined a strategy for sustainable development until 2030.

Singapore is committed to cutting carbon emissions by 16% to below the 2020 business-as-usual levels. But it will do so only if other countries are also legally bound by a global deal to cut emissions significantly. As the UN Climate Change Conference 2009 in Copenhagen did not produce a binding global agreement, Singapore has declared it will still cut emissions by 7-11% from the 2020 BAU levels.

The Blueprint outlines four goals: *i)* boosting resource efficiency; *ii)* enhancing the urban environment; *iii)* building capabilities; and *iv)* fostering community action. The plan is to improve energy efficiency by 35% between 2005 and 2030 and to achieve a recycling rate of 70% by 2030. The urban environment will be enhanced by the creation of more green cover, parks, waterways and cycle paths. There will be investments in developing new capabilities and innovative technologies that support green growth. The government will also promote community participation in its vision of creating a green and clean city.

The government has also used tax policies to reinforce its vision of sustainable development. Besides providing incentives for businesses to engage in sustainable activities, it has imposed a conservation tax on water usage. This tax has reduced per capita consumption of water from 176 litres in 1994 to 160 litres in 2005 (GreenGrowth.org, 2006).

Institutions

Singapore follows an integrated approach to planning. Agencies and institutions work closely to develop and implement national strategies in many different areas or issues. On sustainable issues, the commitment to integrated action at the national level is shown in the establishment of the Inter-Ministerial Committee on Sustainable Development (IMCSD) in January 2008. There is usually a lead agency or ministry that oversees and implements policies in a particular area. The National Environment Agency (NEA) is the lead organisation responsible for improving and sustaining a clean and green environment in Singapore. One initiative it has developed is the mandatory Energy Labelling Scheme. The scheme requires suppliers of air conditioners and refrigerators to affix energy labels to units they sell in Singapore.

Thailand

Development experience and green growth policies

One of the fastest growing ASEAN countries, Thailand exports a wide range of agricultural and industrial goods. It has long recognised the importance of having green growth. Its CO_2 emission level in terms of metric tonnes per capita is higher than that of other middle-income countries, having risen from 1.4 in 1990 to 3.4 in 2007. Concerned with rising energy usage and prices, the Ministry of Energy proposed in 2010 a 15-year plan for energy efficiency and a 20-year power development plan.

The energy efficiency plan is divided into three phases. First, in the short term, the plan will focus on promoting viable renewable technologies with high potential resources. Second, in the medium term (2012-16), it will focus on promoting renewable technology industry and prototype development of renewable technologies in order to enhance their economic return on investment. Finally, in the long term (2017-22), it will focus on promoting novel renewable technologies with feasible investment and extending their practice as distributed generation to local areas.

The power development plan known as PDP 2010 extends the planning horizon from 15 to 20 years. It revises Thailand's Load Forecast taking into account projected long term economic growth and also identifies promising GHG-reducing projects.

To promote efficient energy use, Thailand has taken several initiatives. One is to encourage the carbon labelling of products or services with low greenhouse gas emission. As of September 2009, 25 products across nine product categories have been registered (Thailand Greenhouse Gas Management Organization, 2011). Another initiative is a voluntary programme to award a High Energy Efficiency Label to products that meet certain energy efficiency standards. The energy efficiency and carbon labels help consumers to make informed decisions on environmentally friendly and energy efficient products. For manufacturers, the labelling enhances their market competitiveness. To maximise the success, efforts to increase public awareness on green products must be stepped up.

In 2008, The Ministry of Natural Resources and Environment announced that government agencies will be buying greener products. The Ministry also started a project to help producers with training, auditing and certification matters. Some 60 producers so far have been certified and given the G logo. The key considerations taken into account for the green production projects were the effective use of environment-friendly raw materials, avoidance of chemical and hazardous substances, energy efficiency, recycling and production management. Since the inception of the project in 2006, 60 producers have obtained the G logo certification.

The government's plan to buy green products is a good initiative. However, the impact of this initiative will become significant only if the private sector follows its lead. Encouragingly, some private sector firms are reported to have joined this initiative (Sirindhorn International Institute of Technology 2010).

Thailand also promotes energy conservation. Its Energy Conservation Promotion Act of 1992 has a fund to support the development of energy-efficient machines and equipment. It is unclear, though, how effective this fund has been.

Box 5.2. Green tourism in Thailand

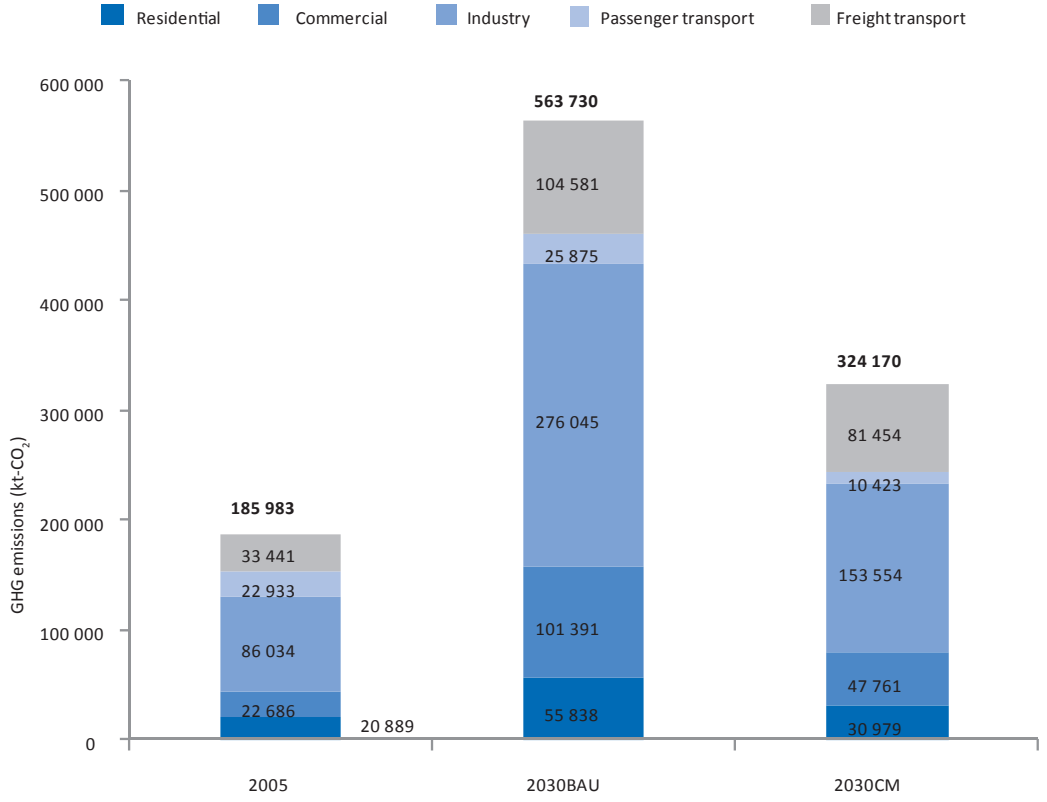
Thailand is a major tourist destination with over 20 million visitors a year in 2010. In June 2009, the Tourism Authority of Thailand (TAT) launched a project on "sustainable tourism" to raise awareness among entrepreneurs and travellers on global warming. The project was in response to a finding made by the World Tourism Organization (UNWTO) that the global tourism industry emitted in 2006 the equivalent of 1 307 million tonnes (MT) of GHG or 5% of the world's GHG emissions. Air transportation accounted for 40% of this total, ground transportation 32% and accommodation 21%.

TAT outlined seven concepts for greener tourism. These include, among others, raising traveller awareness of the environment and global warming, environmental conservation and management, and energy saving transportation logistics. Whether the TAT initiative will make a big difference to GHG emissions is difficult to evaluate. But there is no doubt that sustainable tourism is an area that will be receiving more policy attention not just in Thailand but also in other ASEAN countries.

Thailand has not committed itself to meeting certain targets if there is a global agreement to cut GHG emissions. But it has drawn up an Alternative Energy Development Plan (AEDP) to raise the alternative energy share of the country's total demand to 20% by 2022.

Although Thailand does not have official GHG emission targets, estimates of its GHG emissions if vigorous steps are taken to develop new energy sources and restrain energy usage are encouraging. As Figure 5.2 shows, with aggressive GHG emission cuts, most notably in industry, total GHG emissions will be 70% less than if no greening measures were in place. As seen in Figure 5.3, in the absence of effective policy interventions, per capita GHG emissions will more than double between 2005 and 2030. However, with concrete countermeasures (CM), per capita GHG emissions will grow more modestly – by less than two times for the same period. To do so, there have to be technological advances in energy conservation in several key sectors, namely construction, industry, transport and power generation.

Figure 5.2. Greenhouse gas emissions in Thailand by sector



Source: Sirindhorn International Institute of Technology (2010).

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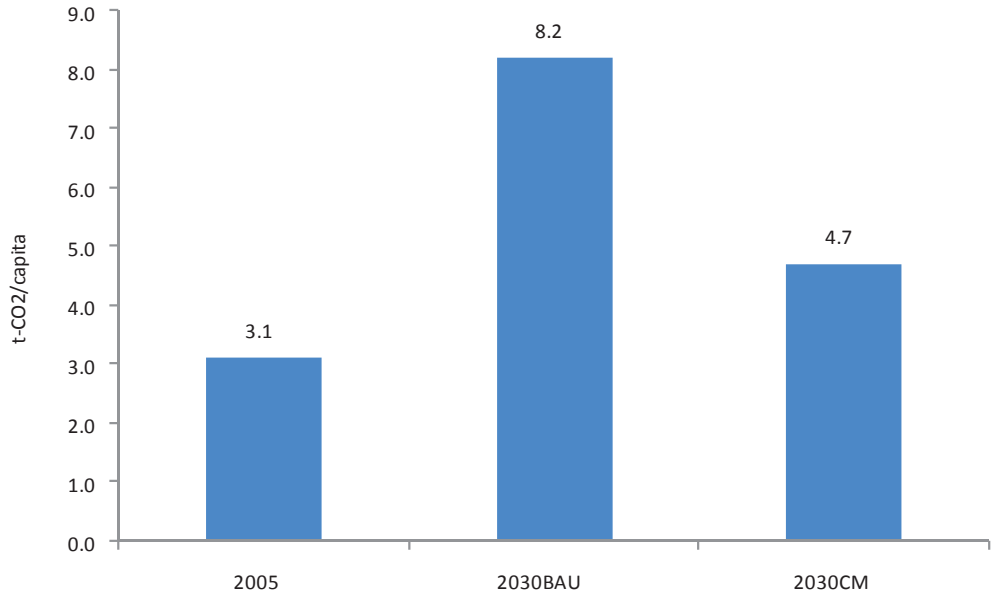
Figure 5.3. **Per capita greenhouse gas emissions in Thailand**



Source: Sirindhorn International Institute of Technology (2010).

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The industry sector offers the greatest potential reduction in emissions. Emission-reducing measures include the import of advanced technologies and the wider use of alternative and renewable energy sources. Tax and subsidy policies can play in important part in promoting emission reduction. Transport is another sector where GHG emission reduction can be made quickly. More fuel-efficient, environmentally friendly cars would lower GHG emissions. Such cars are more likely to be made and bought if taxes and subsidies encourage the production and purchase of green cars.

Institutions

The Ministry of Natural Resources & Environment (MONRE) is the primary agency responsible for climate change issues in Thailand. The ministry works with the key on development planning agency, the National Economic and Social Development Board (NESDB) on climate issues. It is tasked to expand research and adaptation capabilities for climate change and to promote public awareness on climate change.

In 2006, the Thai cabinet set up the National Board on Climate Change Policy, Climate Change Co-ordinating Office and the Thailand Greenhouse Gas Management Organisation (TGO) to oversee a clean development mechanism (CDM) in Thailand. NESDB which prepares Thailand's medium-term development plan works with the TGO on climate change issues. Within the next five years, Thailand will focus on the alternative energy technology industry. It will encourage the development of biofuels and promote greener cities and communities.

Academic institutions and publicly funded research groups also have a part to play in driving Thailand's transition to a low-carbon economy. Sirindhorn International Institute of Technology, Thammasat University has collected GHG data, developed emission scenarios, analysed adaptation and mitigation policies, and worked on the links between climate change, water and food security in Thailand.

Viet Nam

Development experience and green growth policies

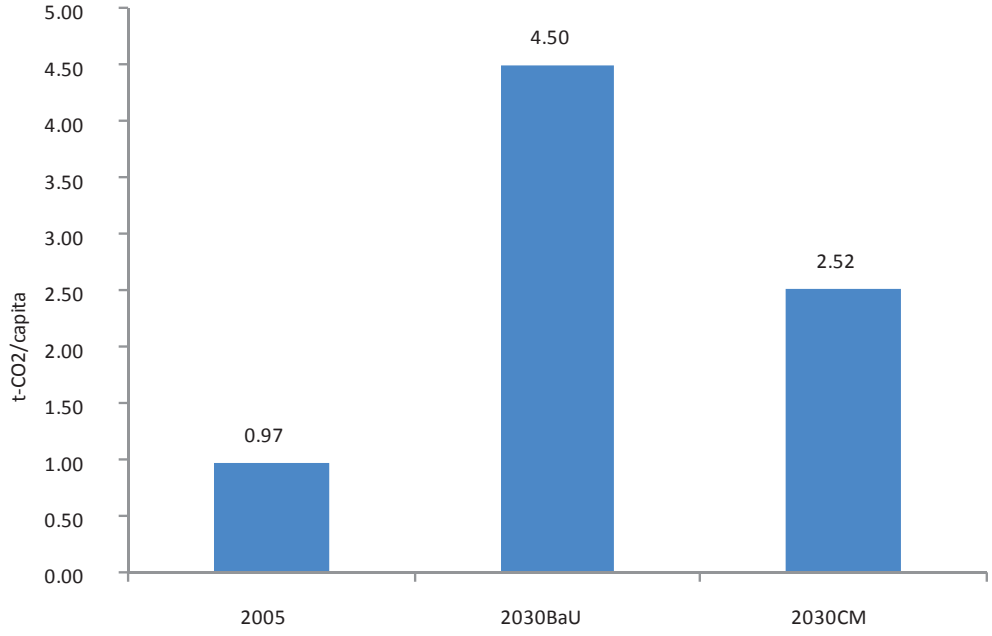
Viet Nam is a latecomer to industrialisation. It was only in the 1990s that it began to industrialise, at the same time that it became a large exporter of farm products including coffee. Rapid urbanisation, notably in Ho Chi Minh City and Hanoi, has added to pollution woes. Land use pressures have created environmental problems including severe deforestation, soil erosion, flooding in the deltas, declining fish yields, and pollution of the coastal and marine environment. According to a 2005 report conducted by the FAO, Viet Nam has the second highest rate of deforestation of primary forests in the world, second only to Nigeria. However, regarding total forest cover, Viet Nam has undergone a forest transition: its forest cover has increased since the early 1990s, after decades of deforestation, from 117 250 square kilometres in 2000 to 137 970 square kilometres in 2010 (FAO of the United Nations, 2011).

Viet Nam's rapid economic growth over the past decade coupled with the industrialisation of its economy has created significant pressures on the environment. (World Bank, 2011) The worsening environmental conditions are becoming a barrier to further development and growth. One especially serious problem is waste treatment and management.

Viet Nam's GHG emission level at 1.2 metric tonnes per capita is much lower than that of other countries in the region. While Viet Nam has not committed itself to CO_2 emission reduction targets, its leaders recognise the importance of promoting energy efficiency and sustainable socio-economic development. They also realise that rising sea levels due to global warming will cause serious damage to the country's coastal areas. In 2008, the Vietnamese government launched several programmes including the establishment of a USD 200 million fund to cope with climate change. It has also signed the United Nations Framework Conventional on Climate Change (UNFCCC) and ratified the Kyoto Protocol. In 2005, the Vietnamese Prime Minister instructed government agencies to implement the CDM of the Kyoto Protocol. Properly prepared, CDM projects in Viet Nam can play a crucial role in sustainable socio-economic development, improve living conditions and reduce poverty through income and employment generation while protecting the environment (National Institute for Environmental Studies, 2010).

The National Institute for Environmental Studies has projected energy demand and GHGs emission levels for Viet Nam to 2030. As in the Philippines and Thailand, GHG emission levels would rise significantly if no action were taken. If CM are initiated, increases in emission levels would be more moderate (Figures 5.4 and 5.5). Some of the sectors where CM could be significant and effective include transport, green buildings, adoption of energy-saving equipment, switch to natural gas and renewable energy sources, and smart power plants. In Viet Nam, policies to improve the public transport system and encourage the introduction of less polluting and noisy motorcycles – the main form of private transport in both major and small cities – would lower urban pollution and noise. Taxes and subsidies to stimulate green buildings and develop energy-saving technologies would also help to reduce GHG emissions. The combined impact of all these countermeasures is shown in Figure 5.6.

Figure 5.4. Per capita greenhouse gas emissions in Viet Nam



Source: National Institute for Environmental Studies (2010).

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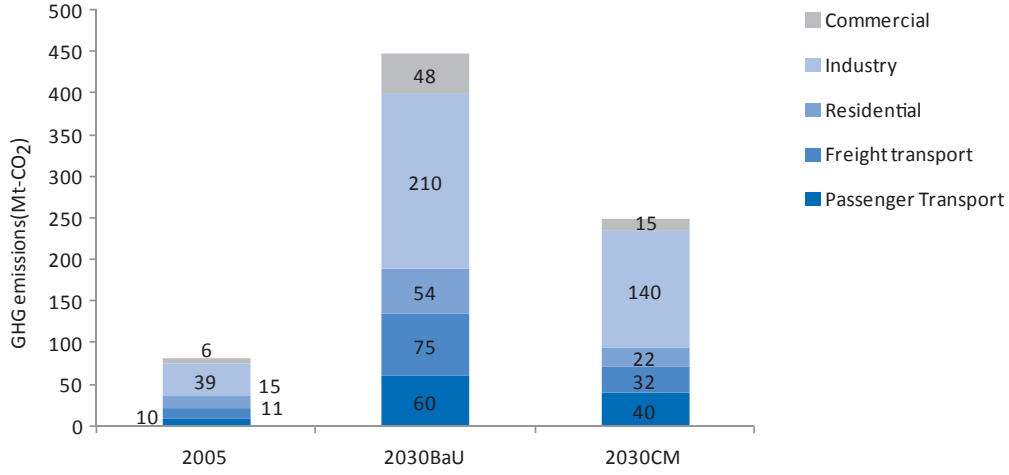
Figure 5.5. Greenhouse gas emissions in Viet Nam by sector



Source: National Institute for Environmental Studies (2010).

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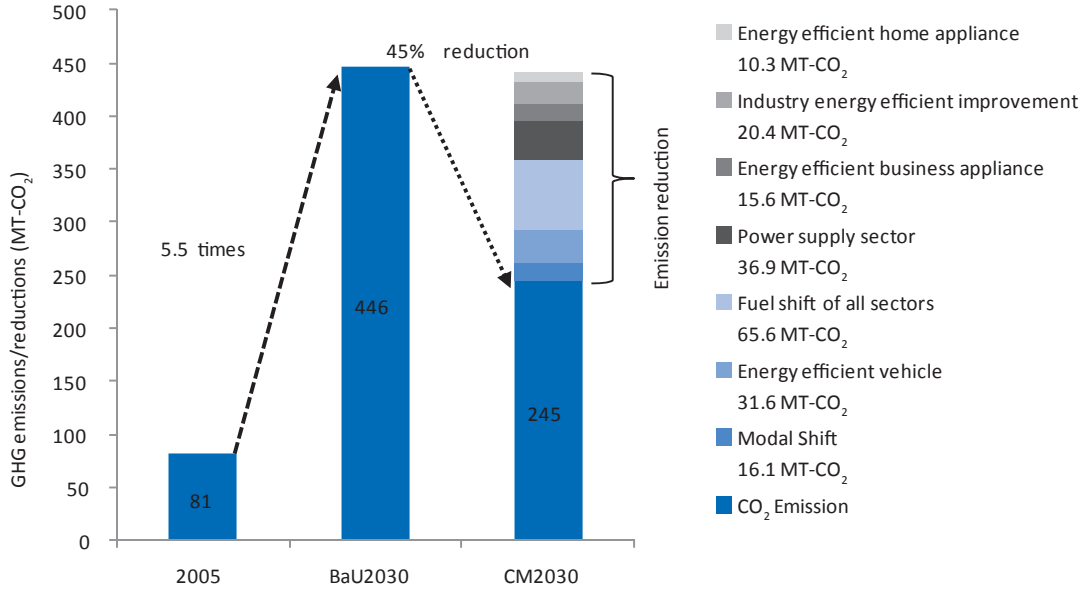
Figure 5.6. Greenhouse gas emissions and mitigations in Viet Nam by countermeasures



Source: National Institute for Environmental Studies (2010).

StatLink http://dx.doi.org/10.1787/888932562982

Institutions

Viet Nam has a number of organisations and agencies handling environmental matters at the national and provincial level. As in other ASEAN countries, national economic planning has the greatest impact on activities that affect the environment. The National Environmental Agency (NEA) under the Ministry of Science, Technology and Environment is responsible for environmental issues at the national level. The Department of Science, Technology and the Environment oversees environmental protection at the provincial level. While the NEA sets goals and directions, implementation depends on provincial agencies which vary greatly in resources and capabilities.

Non-governmental organisations (NGOs) play a small but useful part in raising issues related to green growth, most notably the Institute of Ecological Economics. In Viet Nam, the preoccupation is with economic growth and transformation, not green growth, and there are not many non-profit organisations promoting green growth. Viet Nam's economy has grown by more than 7% a year in the last two decades. (Federal Research Division, 2005). As long as the belief is that a focus on green growth could hurt the economy's growth rate, green growth policies will not get the attention they deserve. However this is now changing.

In 2009, Viet Nam received USD 4.4 million in UN-REDD funding. This financial support has enabled Viet Nam to organise meetings and develop a National REDD+ strategy, outline a framework for future green growth projects. Viet Nam has also set up a webpage to raise awareness and update stakeholders. At the 2010 Second East Asia Climate Forum, Viet Nam acknowledged that it cannot continue indefinitely with its current model of growth, a model that has created many jobs and reduced poverty. Viet Nam recognises it must adopt a more environmentally friendly growth model as it will be hard hit by climate change.

Green growth policy challenges

A focus on green growth can expand opportunities for technological advances, create new jobs and spur skill development. But there will be adjustment costs – some sectors and workers may lose out. It is unclear what the long-term impact on net employment will be or what new skills will be needed. Most governments

focus on short-term issues such as job creation or inflation even though this focus could be detrimental to the environment in the longer term.

The long-term benefits of effective green policies are large. According to a green growth interim report by the OECD, if all industrialised countries cut by 20% their emissions by 2020 using taxes or emission trading systems with full permit auctioning, the proceeds generated could be as high as 2.5% of GDP across countries (OECD, 2010). Revenues from carbon taxes or auctioned permits can be used to finance climate change adaptation and mitigation in developing countries. They could also be used to fund education, health care and poverty alleviation programmes.

Balancing short-term economic needs and long-term environmental imperatives is a challenge especially for many ASEAN countries that face problems of widespread poverty, rising inflation and high energy prices. But they must begin to put in place policy and regulatory frameworks in order to better design financial and regulatory incentives, and build the institutional capabilities for greener growth in the longer term.

ASEAN countries in general are still in the early stages of green growth, with the exception of Singapore. Since its early days of independence, Singapore has paid close attention to environmental issues and believed that industrialisation can be compatible with the evolution of a sustainable city that offers a high quality of urban life.

Rising energy usage coupled with the environmental degradation arising from industrial activities has prompted ASEAN countries to reconsider their long term growth strategies. There is increasing recognition, both on the country level and ASEAN level, of the importance of green growth strategies to the region's long-term goals.

Several ASEAN countries have taken steps to cut GHG emissions. Indonesia has committed itself to cutting GHG by 26% by 2020 and is prepared to cut more deeply if there is sufficient financial support. As a large country with huge tracts of carbon-absorbing forests, Indonesia is well positioned to play a significant role in minimising the impact of its development on climate change. To enhance its role in this respect, it must nurture institutions that can make effective use of international funds including the USD 30 billion of fast-start funds pledged at the United Nations Climate Change Conference in Copenhagen in December 2009.

Malaysia too has implemented policies to shift the economy structurally away from polluting, energy, intensive industries. At the sectoral level, greater consideration is being given to tax and regulatory policies that encourage producers to reduce their energy consumption and adopt more sustainable production technologies.

ASEAN's preoccupation with more pressing issues means that green growth policies have not received the resources and attention they deserve. The recent financial crisis in 2008 shifted attention to getting economies back on track and has diffused the focus on green growth. However, as economies gradually recover, attention on green growth has revived. In the case of Thailand, continuing political uncertainties mean that a green growth strategy may have to wait until after the long awaited elections in 2011 are held and a new government is formed. In the case of the Philippines, green growth policies are unlikely to be a priority area until more urgent issues such as poverty and unemployment have been addressed.

Despite their determination to go green, countries face difficulties and political resistance. Malaysia, for example, has kept local energy prices low relative to global prices. Removing these subsidies would be a step in the right direction but the political costs to the ruling party could be high. Similarly, in Indonesia, powerful interest groups will resist the dismantling of subsidies that have kept fuel prices artificially low. In the case of the Philippines, several decades of misguided, inward-looking development policies coupled with serious under-investment in infrastructure cannot be quickly undone. Although GHG emission level in the Philippines is still low, the possibility that the environment will continue to deteriorate is great, especially as many of its agencies overseeing environmental matters are under-resourced and poorly staffed.

Interest groups in ASEAN countries remain powerful and national interests usually take a back seat when environmental decisions affecting private profits are made. While there have been laudable moves by NGOs and the private sector on environmental issues, real progress is not likely until and unless there is government leadership and political commitment.

There is wide acknowledgement among ASEAN countries that the region's long-term growth must be environmentally sustainable. However, for Viet Nam, Thailand, the Philippines, Indonesia and Malaysia, this recognition has yet to be translated into a set of coherent and integrated policies and programmes. There is a chronic need for clearly articulated strategies at both the country and ASEAN levels. In these countries, the institutional framework is underdeveloped as are economic incentives to promote green industries and energy saving. Much work remains to be done to create a more favourable environment for green growth and technological innovations.

Compared with other ASEAN countries, Singapore has had more success in reducing GHG emission. But its experience is exceptional and not easily replicated by other countries. Singapore's success in following green policies owes much to its planning capabilities, capabilities which have evolved under a stable government that is able to take a long-term perspective and plan accordingly. Singapore can share its expertise and experience with other ASEAN nations. As a financial hub with project-financing expertise, Singapore is also in a position to help fund green projects in the region, especially if these projects can be included as part of the CDM in the Kyoto Protocol.

Focus on Korea - early experience and lessons learned

This special focus and related annex illustrate the three main components of Korea's green growth strategy: Regulations to reduce GHGs emissions from industries, incentive mechanisms for business to develop green technologies and products and public information tools to create awareness and demand for green products. The issues represent the core policy directions that form Korea's low carbon green growth strategy (LCGG).

Korea overcame endemic poverty to become one of the world's leading economies in the space of a generation. However, since the late 1990s the sustainability of Korea's conventional export-oriented growth model has been challenged by resource shortages and global competition with emerging economies.

In response to these challenges, Korea created a low carbon green growth strategy in 2008 as a part of a new national development paradigm. The strategy, based on the concept of environmentally sound and sustainable socio-economic development, emphasised the role of technological progress and innovations as a source of new growth momentum. The government then introduced a set of policies and measures to put the strategy into practice. The institutional base of Korean green growth began with the establishment of the Presidential Committee on Green Growth (PCGG) as headquarters for policy promotion. The government also introduced the "Five Year Green Growth Plan for 2009-2013" and the "Framework Act on Low Carbon Green Growth" during 2009.

As part of building a green growth approach, the government invited its officials as well as national and international think tanks to reflect on a more sustainable national development vision. The expert group identified several important elements which later became the basis of the low carbon green growth strategy. For one, excessive energy-dependency on imported fossil fuels left few alternatives in terms of energy security for Korean industry, especially in the context of ever-increasing global demand for fossil fuels. Furthermore, Korea had doubled its greenhouse gases emissions in the previous 15 years, and suffered more from global warming in terms of the average temperature increase and the sea-level rise that the world has experienced. And finally, the international market conditions had become less favourable to Korean industries with the rise of emerging economies such as China and India equipped with abundant labour and natural resources.

In response to these changes, the Korean government adopted a new development strategy in 2008, composed of three pillars: to reduce greenhouse gas (GHG) emissions through introduction of market-based instruments (*e.g.* an emissions trading system by 2015) and regulatory reforms; to develop green technologies and products through provision of business incentives; and to enhance consumers' awareness and demand for green products. Shifting away from the long-standing traditional growth paradigm heavily dependent on fossil energy requires both strong political support from the top and institutionalisation in implementing such green growth programmes. Efficient role-sharing and co-operation among public and private stakeholders in the process of planning, budget preparation and implementation are major components of Korea's low-carbon green growth strategy. Along with these goals, Korea also sought to enhance its contribution to developing countries' attempts to build green growth.

Korea's success in adopting a green agenda relies in large part on strong support from government. And yet in spite of enhanced efforts directed at climate change mitigation, Korea is still working on finding a functional carbon pricing mechanism such as a carbon tax or emissions trading, this in large part due to objections raised by industry and other stakeholders. There has, however, been significant progress in the reduction of GHG emissions from fossil energy use in major sectors such as power generation and transportation.

In the past, regulatory measures have been mainly micro in nature and sector-specific: demand-side management in the electricity sector, energy-efficiency standards applied to specific appliances and energy efficiency labelling programmes utilised for specific home appliances. These micro and sector-specific regulations have been effective in many areas.

Still, making the shift to low-carbon green growth requires more macro, cross-cutting and system-wide instruments. Transforming high-carbon, resource-wasteful societies and economies requires such measures.

Realising the urgency of structural changes, the Korean government has begun introducing economy-wide regulatory measures. At the centre of these measures is the adoption of national GHG reduction targets and the preparation of an emissions trading system to take effect in 2015, as well as consideration of a carbon tax.

Ways forward

The OECD, which celebrated its 50th anniversary in 2011, has been at the forefront of policy work on green growth. OECD countries have used tax breaks to promote energy-intensive industries. The OECD/European Environment Agency database on environmental instruments lists more than 1 500 exemptions to environmentally related taxes in OECD countries and about 200 tax refund mechanisms. OECD countries have also employed environmentally related taxes, charges and emission trading schemes to promote greener growth. Charges for water use, waste disposal and the use of natural resources are used in many OECD countries though under-pricing remains common. Some OECD countries have imposed taxes on NO_2 emissions, waste, pesticides and fertilisers.

Most environmentally related taxes in OECD countries apply to motor vehicles and fuel use. Across OECD countries, revenues from environmentally related taxes amount to about 1.7% of GDP, varying from about 0.7% on average in North America to 2.5% in Europe. Over 90% of these revenues come from taxes on fuels and motor vehicles. A number of countries are considering the introduction of carbon taxes as part of their national climate change policies. CO_2 taxes have been used for many years in a few countries, notably Sweden. More recently, countries including Iceland and Ireland have introduced CO_2 taxes as part of their fiscal consolidation measures. CO_2 taxes are being considered in France and Japan as well as several emerging economies. The scope for greater use of green taxes in OECD countries remains large (OECD, 2011).

Like OECD countries, ASEAN nations seek to promote new sources of growth through innovation and environmentally friendly "green growth" strategies. But they are some way behind OECD countries in terms of implementing green growth strategies and in using tax and subsidy policies to foster environmentally friendly innovations. This slower adoption of green policies is partly because ASEAN countries are at a lower stage of development and still preoccupied with meeting basic needs.

The problem is that many Southeast Asian countries have neither the legal authority nor the resources to implement green growth programmes. They face barriers in market development and technology transfer. There is poor co-ordination of policies on technology transfer and promotion. Technical standards are not harmonised, industry associations advocating clean energy are weak and there is consumer scepticism about the benefits of clean energy technologies. There is also little information on the effectiveness of various incentives and tax mechanisms. Access to funding from multilateral banks or financial institutions is weak. Project sponsors lack experience in preparing loan and funding requests. Financial institutions themselves have little experience in evaluating the risks associated with innovative green project proposals.

If ASEAN countries are to make real headway in promoting green growth, they will need to address a number of important policy issues. First, they need to develop their legal and regulatory frameworks. Second, they need to put in place clean energy policies and programmes. Third, they will have to invest in training programmes to expand their capabilities to implement policies and regulations for green growth.

To quicken their transition to a green economy, ASEAN nations will need to adopt new policy approaches to the development and accelerate the diffusion of green technologies. They will need new green jobs while limiting the loss of jobs arising from restructuring "brown" industries. This will be a difficult balance to strike, especially in the short term.

According to UNESCAP, the UN Economic and Social Commission for Asia and the Pacific, there are six general green growth paths that ASEAN nations can gradually incorporate into their development plans – Sustainable Consumption and Production (SCP), Greening Business and Markets, Sustainable Infrastructure, Green Tax and Budget Reform (GTBR), Eco-efficiency Indicators, and Investment in Natural Capital.

ASEAN countries recognise the need for green growth, acknowledging the urgent need for energy conservation. The adoption of green growth strategies, though, varies. Singapore has been effective in reducing greenhouse gases and promoting innovations in green industries while improving the quality of life. Other countries have had a more mixed record, in part because they lack the resources and institutions to implement green policies.

Both governments and international organisations in the region can do more to promote green growth. Measures include training and technical assistance, "incubating" market transformation approaches with public benefit funds, soft loans, project development facilities and investment vehicles and taking part in

the global carbon market. A significant push to expand access to financing for clean energy projects is also needed. Much of the region's energy infrastructure is old, and new infrastructure incorporating innovative energy-saving technologies is badly needed. Green development plans require supportive policies to increase access to clean coal, natural gas, carbon sequestration and efficient transportation-related technologies. At the same time, attention must be given to building the capabilities of the public sector and to creating more private-public partnerships in energy conservation.

Focus: Korea's green growth strategy

The success story of the Korean economy hides another story of which many developing countries might be unaware: the continuous pressures of environmental degradation and external shocks from the world economy.

Since the late 1990s, the resource shortage and global competition has cast serious doubts on the sustainability of the country's conventional export-oriented growth. In 2008, in response to these doubts, Korea implemented a low-carbon green-growth strategy emphasising the role of technological progress and innovation to spur new growth. The government then introduced a set of policies and measures to put the strategy into practice. The institutional base of Korean green growth began with the establishment of the Presidential Committee on Green Growth (PCGG) as headquarter of policy promotion. Additionally, in 2009, the government introduced the Five Year Green Growth Plan for 2009-13 and the Framework Act on Low Carbon Green Growth.

The main thrust of Korea's Green Growth Strategy consists of three pillars: reduction of greenhouse gas (GHG) emissions and increasing energy security; creation of new growth engines through green technology innovations; and transition to more environmentally sound and stainable lifestyles. In the following Korea's experience implementing the first pillar is briefly described.[1]

Current emission trends

The Korean government has made an inventory of six GHG emissions (CO_2, CH_4, N_2O, HFCs, PFCs, SF_6) under the Kyoto Protocol. Total gross GHG emissions increased to 620 MT (tCO_2eq or tonne of carbon dioxide equivalent) in 2007, from 305.4 MT in 1990. This amounts to an average annual increase of 4.3 % for the entire 17-year period. The main sources of emissions are energy, industrial process, agriculture and waste. The energy sector bears the heaviest responsibility for the increase. In 2007, it accounted for 85% of total GHG emissions, while industrial process accounted for 10%. The uptake of GHG emissions through forestry and land-use changes was 36.3 MT in 2007, accounting for about 5.8% of total gross emissions. GHG emissions by gas type indicate that the share of CO_2 was largest (89 %), followed by CH_4 (4 %) and N_2O (2 %) in 2007.

Annex Table 5.A1 shows main indicators on energy-related CO_2 emissions, caused by the combustion of fossil fuels such as coal, oil and natural gas. In 2007, energy-related CO_2 was responsible for 518.7 MT, about 84% of total gross emissions. Average annual growth of energy-related CO_2 was 4.6% between 1990 and 2007. Per capita CO_2 emissions almost doubled from 5.6 tonnes in 1990 to 10.7 tonnes in 2007. Carbon intensity, defined as CO_2 over energy, decreased at an average annual rate of 1.0% over the same period.

Annex Table 5.A1. Main indicators of energy-related CO_2 emissions (1990-2007)

	1990	2000	2005	2007	1990-2007 (%)
CO_2 (A) (mil. tCO_2)	242.2	434.4	493.0	518.7	4.6
Population (thousand)	42 869	47 008	48 138	48 456	0.7
Energy (B) (thousand toe)	93 192	192 887	228 622	236 454	5.6
Per capita CO_2 emissions (tonne of CO_2)	5.65	9.24	10.24	10.70	3.8
Carbon intensity (ton/toe) (A/B)	2.6	2.25	2.16	2.19	-1.0

Note: % indicates the average annual growth rate; toe = tonne of oil equivalent.

Source: Korea energy statistics information system, www.kesis.net/

Mid-term greenhouse gas reduction goal and measures

One of the most important decisions the Korean government made in framing the low carbon green growth initiative was to adopt the mid-term GHG Korea reduction goal. On 17 November 2009, the government formally adopted the voluntary mid-term GHG reduction goal which means a 30% emissions reduction from the BAU level by 2020. Non-Annex I countries (mostly developing countries) are not required to set a legally binding reduction target under the Climate Convention and this goal is the most ambitious of the Non-Annex I countries.

This goal aims to advance two agendas. First, Korea wants an early grasp of global mitigation opportunities. Second, setting a reduction target is a strong signal to domestic industries and consumers. Industries are expected to develop an advantage in the world market for low-carbon technologies.

Formulation of the goal was difficult. Industries saw adoption as a cost burden and worried about loss of international competitiveness. They considered mitigation costs only over the short term. Systematic government modelling and analysis took place over the year after the declaration of low carbon green growth vision in August 2008. Various national research institutes carried out GHG emission projections up to 2030 derived from main economic variables such as GDP and population growth and world oil prices. The mitigation potential of various industries was also analysed. Macroeconomic impacts were also considered using a computable general equilibrium (CGE) model. Three goals were formulated and reviewed; namely 21%, 27% and 30% emissions reductions by 2020.

The 30% reduction goal is to be pursued by technological and regulatory means. Technological measures include greening of buildings and construction of highly energy-efficient factories. The transportation system will move towards low carbon system. Generation of new and renewable energy is to increase from the current levels (2.4 % in 2007) to 4.3 % in 2015, and further to 6.1% in 2020, and 11% in 2030. Plans to expand nuclear power plants will both reduce CO_2 emissions and develop new export opportunities. The government will build 12 new additional nuclear power plants to complement existing 20 units while decreasing coal consumption.[2] Finally, the government will also facilitate the development of Smart Grid and carbon capture and storage technology (CCS) and intensify the development of next-generation green cars, opening new technological opportunities for the country via strong demand side management (DSM) measures.

In July 2011, the government announced BAU emission reduction goals by sector. GHG emissions in Korea should peak in 2014 in order to accomplish the 30% reduction goal by 2020. This is regarded as an enormous challenge in Korea.

Annex Table 5.A2. Reduction goal from business-as-usual by sector in 2020
(unit: %)

	Industry	Transport	Building	Agriculture, Forest, Fishery	Waste	Public	Total
Reduction Rate	18.2	34.3	26.9	5.2	12.3	25	21.6[a]
							30.0[b]

Notes:
a) indicates average reduction for six sectors.
b) indicates average reduction including transformation sector such as power generation sector.

Target management system

Technological measures alone cannot ensure that the goals are reached. The adoption of regulatory policy measures, in particular, a target management system (TMS), an emissions trading system, and carbon tax measures, signal the Korean government's determination.

The TMS was implemented by the Ministry of Knowledge Economy responsible for industry, energy, and trade in consultation with industrial sector stakeholders. Under the TMS, the government is a principal player in setting up reduction targets, unlike the voluntary agreement system used in Japan. Under TMS, agreed-upon targets become mandatory. The government provides incentives and imposes penalties. Large emitters

are regulated under this system; at a factory level, those emitting more than 25 000 tonnes (tCO_2) were regulated in 2011. Factories emitting more than 20 000 tonnes will be regulated in 2012. In 2014, coverage will be expanded to include factories emitting more than 15 000 tonnes. Levels over the previous three years are used to calculate average emission of a factory. As of the end of year 2010, 468 companies were designated as target companies who together were responsible for 58% of national GHG emissions in 2007.

The government will provide massive assistance to targeted companies. Financial assistance through the Energy Service Company (ESCO) will be expanded threefold from USD 125 million in 2010 to USD 360 million in 2020 (at the current exchange rate in June 2011) for the installation of energy-efficient and low-carbon facilities, of which the government subsidises up to 50% of preparation. Ninety per cent of energy auditing expenses are provided to small- and medium-sized companies. Loans and tax exemptions are provided for the installation of energy efficient, low carbon facilities.

Emissions trading system

The government sent in February 2011 to Parliament the "Draft Act on GHG Emissions Trading System", which was required to implement an emissions trading system beginning in 2015. An entity that emits less GHG than allocated can sell the surplus to another in the GHG trading market. An entity emitting more than allocated must buy GHG credits to meet its allocated target. Trading of GHG allocations is a market-friendly instrument and the cheapest means to arrive at the pre-determined goal of GHG emissions reduction.

The market determines the price per tonne of GHG but also provides an important signal to companies on cutting their GHG emissions. Different from levying a carbon tax based on carbon content, the trading system is designed in view of application to the entities which generate GHG. According to the emissions trading act, about 95% of the reduction requirement will be allocated free of charge over the first planning period. Excess emissions will be penalised three times more than the market carbon price. It allows banking over planning periods. The emissions trading system is expected to be implemented in 2015, and will draw on the experience from the target management system which will become fully operational in 2012.

The Draft Act on GHG Emissions Trading System requires the first planning period for emissions trading to begin in 2015, lasting until a year to be determined by presidential decree. The second planning period lasts three to five years and will be determined by subsequent presidential decree as well. At the outset, the Korean government wished to embark on a trading system beginning in 2013. Industry, however, wanted more experience before implementing a full trading system, so the date was moved to 2015.

Carbon tax considered

Until recently, Korea had not incorporated carbon pricing in its energy price system out of consideration for maintaining the international competitiveness of its industries, though the government has controlled energy prices for a long time. Currently, taxes levied on the transportation sector are lighter than those on industry. Since 83.4% of GHG are emitted from the energy and industrial sectors, it will be necessary to introduce a carbon tax in the Korean energy price system.

Korean carbon taxes have been discussed in both the policy arena and academia since the 1990s; however, the government has not yet adopted one owing to the heated political debate doing so would provoke. Revenue could be used to finance development of energy-efficient, carbon-saving technologies. Recent analysis of carbon taxation proves that reinvestment of the revenue into industries such as renewable energy enables recovery of a part of GDP lost to GHG reductions.

In spite of the enhanced efforts dedicated to the climate change mitigation, Korea has not yet overcome the industry resistance to carbon pricing mechanisms such as carbon taxes.

Measures to expand renewable energy

The current share of new and renewable energy is only 2.5 % in Korea, which is much lower than those of the European Union, the United States (5.7%) and Japan (3.4%). The Korean government goal is to increase the share of new and renewable energy to 4.3% in 2015, 6.1% in 2020, and 11% in 2030. To do so, a feed-in tariff (FIT) system and renewable portfolio system (RPS) have been implemented.

The FIT system substantially expanded the market for renewable energy beginning in January 2002 by compensating differences between costs of generating electricity from renewable energy and baseline generation costs. The cost of solar photovoltaic electricity is as high as 710 KRW per kilowatt and 108 KRW for wind (whose baseline generation costs are much less). Subsidy based on FIT amounted to USD 243.1 million for 1 503 gigawatt hours of electricity generation in 291 units in 2009. Solar photovoltaic accounts for 92% of this subsidy. Thus FIT subsidy created substantial incentive to expand solar energy in Korea.

To compensate for the rapid increase of subsidies, the government will change its focus from FIT to the RPS. RPS sets obligatory target shares of renewable generation for each power generation company. Such companies will be able to produce electricity from their own renewable sources or buy renewable energy certificates from the market. RPS will replace FIT in 2011.

Energy efficiency measures

The Korean government has utilised various regulatory measures to enhance energy efficiency. Voluntary agreements, introduced in 1998, have been replaced by a TMS, more obligatory in nature. The government is encouraging energy supply companies to develop DSM and energy efficiency resource standard (EERS) programmes.

The government adopted many energy efficiency rating and labelling programmes, including programmes for condensing boilers and window fittings. In addition, CO_2 emissions labelling will be applied to 17 home appliances, such as refrigerators, washing machines and fluorescent lamps. The minimum energy performance standards will be expanded to include three-phase electric motors, adapters and chargers. The use of incandescent bulbs will be banned by 2013.

Notes

1. The full version of this paper on Korea's Green Growth Strategy will be published separately as a series of Working Papers from the OECD Development Centre. References are also found there.
2. In 2008, the government adopted The Fourth Basic Plan for Electricity.

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CHAPTER SIX

Environmental tax and green growth

Abstract

Environmental tax instruments (ETIs) have become the key tools for achieving environmental objectives in the OECD and many non-OECD economies. As market based instruments (MBI) that make use of price signals and incentives, ETIs can more closely achieve environmental goals at a lower cost to society than older command and control (CC) instruments such as quotas and mandates.

ETIs are used to address a wide range of environmental issues in OECD countries, including air and water pollution, energy efficiency, waste disposal, land and natural resource use and management, noise pollution and, more recently, global warming. OECD experiences demonstrate that ETIs can bring substantial benefits but that their introduction and design can be complex and may involve difficult trade-offs with other policy goals.

ETIs are at an early stage of development in ASEAN countries but have great potential to support the region's objectives for green growth. Wider use of ETIs will depend in part on further development of ASEAN tax systems and improvement in environmental information bases and standards. The benefits of ETIs are likely to be greatest if exemptions and other preferences that narrow the tax base can be limited and taxes rather than subsidies used as far as possible. The benefits from ETIs will also be enhanced by co-ordination with other government policies, public education on the objectives and workings of ETIs and, where appropriate, regional co-operation in their development.

Introduction

Environmental tax instruments (ETIs), including environmental taxes, fees, subsidies and environmental tradeable permit schemes, have become increasingly important tools for achieving environmental objectives in OECD as well as some non-OECD economies. As market based instruments (MBI) that make use of price signals and incentives, such instruments can more closely achieve environmental goals at a lower cost to society than older command and control (CC) instruments such as quotas and mandates. As discussed in the next section, the choice among ETI instruments in any given situation depends not only upon their theoretical cost-effectiveness but also on practical considerations such as administrative cost and their impact on other economic and social goals.

OECD countries make extensive use of ETIs in a wide range of environmental domains. ETIs are most heavily used in the energy and transport sectors, which account for most of the revenue raised from the instruments. The benefits from ETI are partly mitigated, however, by the extensive use of refunds and exemptions. These lead to substantial differences in the effective tax on individual pollutants across sectors. These differences illustrate the important role that political and social concerns have played in constraining and shaping the use of ETI in practice.

The development of ETIs is at a much earlier stage in the ASEAN countries. Use of ETIs is constrained by the more limited development of tax systems compared to the OECD, by the extensive use of subsidies on fuel in some countries, as well as by concerns over their effects on poverty and international competitiveness. OECD experience suggests that more extensive use of ETIs could bring considerable benefits in supporting green growth. OECD experiences and other considerations suggest several lessons for the development of ETIs in ASEAN to maximise their benefits:

- keep the tax base as broad as possible by limiting exemptions and refunds as far as possible;
- use taxes and fees, rather than subsidies, where possible;
- carefully co-ordinate the implementation and design of ETI with other policies to ensure that they are mutually reinforcing;
- strengthen public understanding of the need for and benefits of ETI through education and other outreach programmes.

Co-operate on development of ETI among ASEAN countries and with outside partners for environmental issues that cross borders, such as greenhouse gas emissions, and to limit distortions to competitiveness.

Principles of environmentally related taxes

ETIs encompass a range of instruments including the following (OECD, 2010b; OECD, 2008):

- taxes and fees[1] aimed at environmental objectives. These can be levied directly on a pollutant, as with a carbon tax, or indirectly on a substance or process that leads to the emission of a pollutant, as with a tax on petrol ("proxy tax");
- subsidies (including tax incentives) on products or processes that are less environmentally damaging than alternatives, such as a tax rebate on the purchase of low polluting automobiles;
- environmental tradeable permit schemes (ETPS) in which businesses or individuals are allocated permits to emit a given amount of a pollutant and which can be bought and sold on a market;
- tax expenditures and subsidies aimed at encouraging the development or dissemination of greener technologies and processes such as subsidies for the research and development of more efficient solar panels.

ETIs can be applied to all components of the environment, including congestion, land and other natural resource management (Table 6.1). Environmental instruments can also be distinguished by the specific pollutant(s) they target, as well as by economic sector(s).

Box 6.1. Advantages of environmental levies in theory

Environmental levies are typically aimed at some type of pollutant that causes environmental damage. The basic rationale for such levies is to make the businesses or individuals whose activities produce the pollution bear the cost of the damage it does to society ("polluter pays" principle). Because pollution is an externality whose costs are wholly or mainly borne by outside economic actors, polluters have no economic incentive to limit their pollutions absent such a tax or other government intervention. For this reason, in a purely free market, there would be "too much" pollution in the sense that the damage caused would be greater than the cost of reducing it by some amount. However, since pollution reduction typically is costly, it is also not generally optimal to eliminate pollution entirely.

The simplest pollution levy is one levied on the amount of pollutants emitted by a given business or individual ("Pigouvian tax") and which is set at a rate that equates the marginal cost of reducing the pollution (abatement) to the marginal social cost of the pollution to society. Pollution is reduced but not eliminated by the optimal tax.

Pollution levies achieve a given amount of abatement at the lowest possible social cost. Producers that face comparatively low abatement costs will tend to reduce their pollution more than those who face higher abatement costs. In contrast, a CC limit applied uniformly to all producers (based, for example, on their production levels) requires producers with higher abatement costs to reduce pollution by as much as those with lower costs resulting in a higher total cost for a given aggregate pollution reduction. Pollution taxes also encourage the innovation of and adoption of new technologies that can achieve lower abatement costs. So long as the damage caused by the pollution does not depend on the specific source, all polluters must face the same tax rate for full cost effectiveness to be achieved.

Table 6.1. Taxonomy of environmental domains

Water quality	Noise
Air quality	Energy efficiency
Ozone layer protection	Transport
Land contamination	Natural resource management
Waste management	Land management
Climate change	

Note: Domains specified in the OECD/EEA database on economic instruments used for environmental and natural resources management.

Environmental levies have a number of advantages over non-market instruments

Environmental levies are generally an economically more efficient means of accomplishing environmental objectives than non-market instruments for a number of reasons. First, as indicated in Box 6.1, levies can achieve a given reduction in pollution at a lower cost to the economy than is likely to be possible with CC instruments. A regulator seeking to achieve comparable efficiency with a ceiling on emissions for individual producers determined, in part, on the ease with which they could abate would require detailed information on individual production processes and technologies that regulators rarely if ever possess and which would be very costly to acquire. By making use of market-determined prices, environmental levies effectively economise on the information needed by the regulatory authority.

Admittedly, the precise amount of pollution reduction achieved by a tax or fee is also less certain than with mandated emission limits. However, as will be discussed later, emissions trading schemes can achieve a pre-specified reduction in pollution at a minimum cost.

For similar reasons, environmental levies generally offer greater incentives for the development of new technologies to reduce or abate pollution as well as for the acquisition of more environmentally beneficial existing technologies (OECD, 2010a). By providing a price for pollution, environmental levies create incentives for pollution-reducing innovation at all stages of production whereas direct controls generally create a

narrower range of incentives[2] (OECD, 2010a; OECD, 2006). Designation of specific production processes or the use of certain technologies obviously limits innovation incentives even more and makes the adoption of new technologies and processes dependent on the knowledge of regulators. The greater flexibility afforded by environmental levies also facilitates the development of technologies that can be sold on international markets, which increases the potential return to the innovation (Johnstone and Hascic, 2009).

Environmental levies can also be easier and less costly to administer than non-market instruments. In many cases, environmental levies are imposed on bases that are already being taxed (for example on petrol) and can make use of existing tax administrative institutions. Mandated limits and other non-market instruments are more likely to require new administrative institutions.

Finally, environmental levies provide revenues to the government that can be used for other government purposes. In particular, revenues could be used to reduce other taxes and the dead-weight losses they impose on the economy, thereby yielding a "double dividend" to the economy in addition to the improvement in environmental quality.[3] Alternatively, revenues can be used to help ameliorate adverse distributional or other problematic effects of the levies, for example by providing lower income households with income to offset the burden of energy or other taxes. Australia's recently proposed carbon tax incorporates such a compensation mechanism. (See Box 6.5 in the next section.)

While their potential advantages over non-market instruments can be substantial, environmental levies may not be preferable to non-market instruments in all circumstances. Where tax systems are not well developed and improvement in environmental quality is crucial, direct controls, because they can offer greater certainty in accomplishing environmental objectives, may be necessary. Non-market instruments may also be needed, at least in addition to levies, in sectors where competition is limited and/or dominated by state controlled institutions with limited capacity to respond to market signals.

The choice among alternative types of levies depends on several considerations

The design and implementation of ETI is more complex in practice than simple theory might seem to suggest. The choice among ETIs in specific applications depends on several theoretical and practical considerations. A key consideration is the cost-effectiveness of each instrument in achieving the desired level of abatement over time (Box 6.2). Cost effectiveness depends not only on the theoretical advantages of an instrument but also on the characteristics of the pollutant and its sources, which affect the degree to which the maximum theoretical cost-effectiveness can be achieved in practice.

Box 6.2. The cost effectiveness of environment tax instruments

The cost effectiveness of specific ETI can be judged on two criteria. The first is the degree to which the instrument achieves the desired level of pollution reduction at the lowest cost to the economy, known as static efficiency (De Serres *et al.*, 2010; OECD, 2006). Since the factors determining abatement costs and environmental damage are unlikely to be perfectly known and are likely to change over time, the static efficiency of an instrument needs to be robust to deviations from estimated conditions and to unpredicted changes in those conditions.

A second and related criterion is the effectiveness of the instrument in encouraging innovation and the adoption of new technologies to reduce pollution or to achieve abatement at reduced costs (*dynamic efficiency*). Instruments that lead to a reasonably predictable price for pollution over time are likely to be most effective in encouraging such innovation.

A second important consideration is the administrative efficiency of instituting and applying an ETI. Instruments whose implementation and ongoing application require a large amount of difficult to collect information will have higher costs than those whose information requirements are less demanding. Administrative costs can also be higher if the instrument has to be applied to a very large number of businesses or individuals as opposed to a smaller number; this is especially likely when a significant portion of those subject to the instrument are not already part of the existing tax or other administrative systems. Partly for this reason, administrative costs tend to be greater when tax systems are at an earlier stage of development. Simpler levies involving little or no exemptions or preferences are likely to be less costly to administer and involve less compliance cost than more complex levies (OECD, 2006).

Administrative efficiency involves not only the direct costs to the government but also the costs to those taxed of complying. For example, an environmental tax that requires smaller businesses to maintain new and expensive record keeping systems may entail costs that outweigh its benefits.

As important as the cost effectiveness and administrative efficiency of particular ETIs are their compatibility with other social and economic goals and policies. At the least, the introduction and design of ETIs needs to take into account interactions with other taxes in order to avoid conflicts or unnecessary duplication. For example, introduction of a carbon tax may require modifications in the terms or rates of other energy taxes in order to ensure that overall effective tax rates are in line with policy objectives. Decisions about the introduction of an ETI and its designs also need to take account of their impact on other policy goals and to be taken in consultation and co-ordination with government organs responsible for achieving those goals. As will be discussed in the next section, concerns over the impact of ETI on lower income households and their burden on business, especially on their international competitiveness, have heavily conditioned the application of ETI in practice.

Lower income groups often bear a greater direct burden from environmental levies, for example those on fuel for home heating and cooking, electricity and on fuels for transport.[4] Levies that are highly cost effective in achieving their environmental objectives may therefore be politically unacceptable or have adverse effects on other development objectives that are deemed to outweigh their environmental benefits.

ETIs in some areas, such as a tax on sulphur pollution by factories, can impose a significant financial burden on businesses, especially on those that use the polluting source most intensely. These concerns become all the more acute where the businesses have to compete with rivals from other countries that are subject to lower tax rates. Agreements to harmonise rates on ETIs with such spillover effects would neutralise their impacts on competitiveness but can be hard to achieve in practice.

In principle, adverse distributional impacts and unacceptable burdens from ETI can be mitigated in a number of ways. The most severely affected groups can be exempted from the ETI, or subjected to a lower rate. However, this lowers the cost effectiveness of the instrument by blunting its incentives for abatement. Generally, other measures to mitigate burdens are preferable. For example, a reduction in income taxes on lower income groups or reductions in taxes or increase in subsidies on other goods that lower income households use most intensively (*e.g.* food or clothing) could be used to compensate for the burdens of an energy tax. However such compensating measures can require fairly broad and well-developed tax systems and may not be feasible where those systems are less developed.

Finally, both the overall effectiveness of ETIs in achieving environmental goals and their political acceptability are likely to be greater if their purposes and characteristics are well understood by those they are applied to and by the general public. A direct or proxy environmental tax, for example, creates incentives for abatement and the adoption of less polluting technologies only if the relation between the tax and the pollutant is known by those subject to it. Supporting policies, such as requirements to list the pollutant content of substances or the energy efficiency of automobiles, help to improve the incentives provided by ETI. Public service and other public education efforts to improve understanding of ETI and their objectives can help to improve their political acceptability.

Direct taxes on pollutants are preferable in theory but are not always feasible

Each type of ETI has advantages and disadvantages whose relative importance depends on considerations just discussed. As these considerations may differ across countries, the instrument that is most appropriate for a given environmental problem in one country may not be appropriate for another.

The big advantage of direct levies (taxes or fees) on a pollutant (*e.g.* on carbon emissions) is their capacity to achieve maximum static and dynamic efficiency. A direct levy on a pollutant that equalises the marginal cost of pollution with the marginal cost of abatement achieves a socially optimal level of pollution at the lowest social cost (Box 6.1). The rate of the levy effectively provides a market price of pollution that can be used to assess the rate of return to alternative pollution-reducing innovations and their adoption. It is important to emphasise that all polluters generally must face the same rate for maximum cost efficiency to be achieved.[5]

Direct levies on pollutants also raise revenues that can used to reduce other taxes, thereby lowering the dead weight losses they impose on society, or for other socially beneficial purposes. These benefits amount to a "double dividend" in that they are in addition to the environmental benefits from the tax.

However, direct environmental levies are subject to two drawbacks that can be quite important in practice. First, when information on abatement costs or marginal damage from emissions is incomplete, as it often is, the amount of pollution abatement from a direct levy remains uncertain and the optimal pollution levy cannot be determined precisely. This disadvantage is particularly great when the marginal cost function is "steep" so that costs rise sharply as pollution increases. The second disadvantage is that it can be difficult to precisely monitor and measure the actual pollutant. Pollution emissions are often the by-product of other processes, such as the burning of fossil fuels, and the amount of emissions can vary considerably depending on the type of fuel used and the techniques used in the burning. A direct levy on the pollutant in such circumstances can involve significant cost of gathering information (with the attendant reporting burden on the emitting businesses).

In such circumstances, levies on pollution proxies can be administratively more practical than direct levies on the pollutant. Proxies, such as motor fuels, are also often easier to levy because they are sold directly on the market through channels that are part of the existing tax system. When the relation between the proxy and emissions is known and stable, a proxy levy may achieve, or nearly achieve, static and dynamic efficiency comparable to that of direct pollution levies. Proxy levies also raise revenue that can be used for other beneficial purposes. Proxy levies, however, share with direct levies the disadvantage of uncertainty over the amount of pollution reduction that will be achieved at a given rate. Both types of levies impose financial burdens that can generate considerable political resistance to their imposition. Moreover, the static and dynamic efficiency of a proxy levy can be reduced considerably when the relation between the pollutant and the proxy is not known or stable.

ETPS, in which emitters trade permits to pollute in theory, can achieve efficiency equivalent to that of direct environmental levies (Box 6.3). The price of the permits (which is equal to the levy rate under a direct levy) allows calculation of the return on innovations, which is necessary to achieve dynamic efficiency. Permit schemes have the further advantage of achieving a certain level of pollution reduction, but at the cost of uncertainty about the price of pollution (the permit price) when information about abatement costs is limited. Permit schemes are also vulnerable to price volatility as market conditions change, although this can be partly mitigated by provisions to smooth supply-demand imbalances over time. ETPS raise revenue when the permits are auctioned, although this is rarely done in practice. The schemes can be and are used in a wide range of applications (see next section). However, ETPS can also involve significant start-up costs, especially when permits are not allocated by auction, and can entail substantial ongoing monitoring and other administrative costs. They also work best when conditions necessary for well functioning markets, such as information dissemination, competition and effective enforcement of laws against fraud, are in place.

Subsidies to use less polluting products or to lower pollution by other means are often more politically feasible than levies or ETPS, especially when they have significant distribution or competitiveness impacts. But their environmental benefits are likely to be less, and come at a higher cost, than direct levies. To be effective, the subsidised activity or product needs to be a good substitute for the polluting activity or product. Both the rate and target of the subsidy are likely to have to change over time as new technologies become available; but this may be politically difficult to achieve since subsidies tend to build political constituencies for their continuation. Subsidies use rather than generate revenue and so have to be financed by other taxes if they are not to add to the government's deficit. These considerations suggest that subsidies may be regarded as second best or as supplemental environmental measures when levies or permit schemes are not feasible (OECD, 2006).

Finally, subsidies to support or encourage innovation and the adoption of more environmentally beneficial technologies, while they do not provide direct incentives to reduce emissions in the near term, can be useful complements to ETIs and other instruments that do so. To be cost effective, subsidies need to be targeted on innovations that markets would otherwise not provide, or provide in less than optimal amounts, such as innovations needing to achieve substantial scale before being commercially viable (for example, solar panels) or innovations involving "learning by doing" or other externalities that prevent their inventors from reaping the full return from their discovery (De Serres *et al.*, 2010).

Box 6.3. Environmental tradeable permit schemes

ETPS are arrangements in which the right to emit a given amount of a pollutant is conveyed by a permit that can be traded in the market. Each permit conveys right to emit a certain amount of a pollutant over a specified time period. The relevant regulatory authority determines the aggregate supply of permits, which determines the aggregate amount of pollution that is allowed at any given time. The price determined by the market for the permits is the effective price of pollution, similar to that determined by a pollution tax.

Under conditions of perfect and widely disseminated information and competitive markets, a tradeable permit scheme achieves equivalent results as an optimal direct ("Pigouvian") tax on a pollutant. The regulator imposes the socially optimal ceiling on pollution through the aggregate supply of permits rather than directly determining the price of pollution, as with the tax. This equivalence is valid theoretically regardless of whether the permits are auctioned, distributed based on a historical benchmark of past pollution performance, or by some other means (not dependent on current or future pollution)[a]. When there is uncertainty about marginal abatement or environmental damage costs, this equivalence breaks down since it is generally not possible to determine the optimal tax or aggregate pollution level, and the price of pollution cannot be determined precisely.

Theoretical analyses have shown that Pigouvian taxes are likely to achieve greater static efficiency when the marginal pollution damage function is relatively steep compared to the marginal abatement cost function (since deviations from the optimum pollution level are less costly to society than comparable deviations from the optimal price). Permit schemes, on the other hand, are preferable on efficiency grounds when the marginal abatement cost function is steep relative to the marginal pollution damage function (because deviations from the optimal pollution level are then more costly).

While simple in theory, tradeable permit schemes can be and often are complex in practice. Much of the complexity arises from the allocation process and from mechanisms to reduce volatility in the permit/pollution price. Allocating permits to individual entities based on a baseline of their past pollution ("grandfathering"), the most common method, involves substantial gathering of data and analysis to determine the benchmarks. Newly entering firms either have to be allocated new permits – which requires adjusting the amount available to incumbent firms to maintain the desired overall level of pollution – or buy them from existing firms, which can increase the cost of entry and reduce completion.

Since the short-run elasticity in the demand for pollution permits is apt to be quite low, permit prices can become quite volatile as market conditions change. This volatility can be reduced by "banking" provisions that allow permits that are unneeded in one period to be used ("carried over") to subsequent periods; and by "borrowing" provisions that allow participants to borrow against future permit allocations. Banking and borrowing provisions require detailed record-keeping and effective monitoring mechanisms to prevent abuse and to maintain the desired aggregate pollution level.

Note: a) When markets are imperfect, the allocation mechanism of tradeable permits can create distribution effects that affect the permit/pollution price.

Experiences with environment tax instruments in the OECD

ETIs began to be used in the OECD as early as the 1970s in the United States, although their development began somewhat later in Europe, Japan and other Asia-Pacific countries. Typically, environmental taxes have been developed initially as modifications or additions to other taxes directed at different purposes, for example (and most commonly) with taxes on fuels and motor vehicles.

In the *United States*, the development of ETIs has taken a distinctive path characterised by a much greater and wider use of ETPS relative to taxes compared to the *European Community* (EC) and other OECD countries (Tietenburg 1999; see Box 6.4). ETIs began to be introduced in individual members of the European Community by the 1980s, but in the absence of any formal community wide framework (Zajíček *et al.,* 2011). This began to change in the 1990s with the issuance of the EC *Energy Taxation Directive* in 1993, which ultimately led (after nearly a decade of discussion) to the 2003 Directive from the EC Council of Ministers that broadened the earlier framework to cover not only mineral fuels but virtually all other energy sources including natural gas, coal and electricity. ETPS were a relatively small component of ETIs in Europe until 2005, when the community-wide emissions trading system for greenhouse gases was introduced (Box 6.4).

A large number and variety of ETIs are used in the OECD

There is, to say the least, a large number of ETIs used in OECD countries. The OECD/European Environmental Agency database on environmental tax instruments (OECD/EEA, 2011), lists 909 distinct environmental taxes and fees, along with 734 environmentally related subsidies and 74 ETPS[6] (Table 6.2). Many of the individual instruments cover more than one pollutant (e.g. general taxes on pollutants).

Table 6.2. Environment tax instruments in the OECD
(total distinct instruments, as of 2011)

Instrument type	Number
Taxes and fees/charges	909
▪ taxes	627
▪ fees and charges	282
Subsidies	734
ETPS	74

Source: OECD/European Environment Agency Database on instruments used for environmental policy and natural resources management.

ETIs cover the full range of economic domains mentioned earlier, but are concentrated in several major sectors (Table 6.3) Taxes and fees on transport and energy – mainly on motor vehicles and their fuels – constitute 45% of the total of these instruments, while most of the remainder are applied to various forms of waste management and land and natural resource management. A substantial portion of existing ETPS schemes are focused on climate change and air pollution. Subsidies tend to be focused on energy efficiency in housing and transport and on agriculture. Environmental taxes and fees in energy and transport are nearly always applied to pollution proxies, such as the amount of fuel used or the weight of a vehicle, rather than to a specific pollutant.

Table 6.3. Taxes and fees by economic domain

Domain	Number of taxes and tees
Transportation	303
Energy	106
Air and water quality (including ozone depletion)	55
Land and natural resource management	165
Waste disposal and management	215
Climate change	10
All other	55

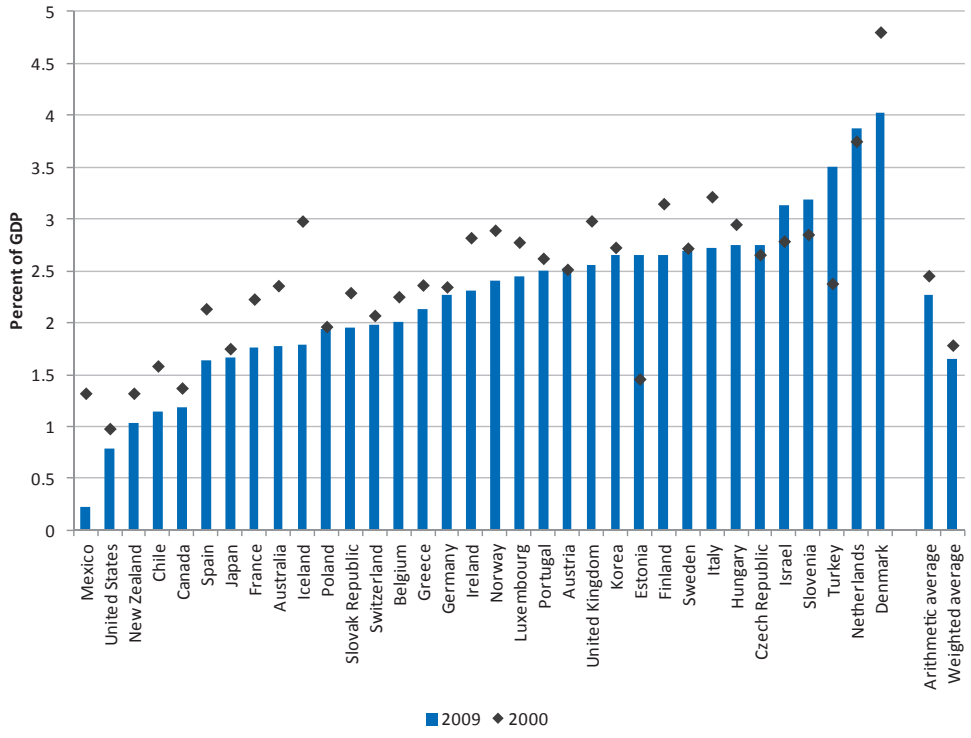
Note: Figures as of 2011. Land and natural resource management includes various severance taxes and fees for disposal of vehicle tyres.

Source: OECD/European Environment Agency Database on instruments used for environmental policy and natural resources management and staff calculations.

Environment tax instruments account for only a moderate portion of government revenues in the OECD

Revenues raised by environmental taxes and fees are modest for the OECD as a whole, amounting to about 1.6% of OECD gross domestic product (GDP) in 2009 and about 5.7% of general government revenues. However the importance of these revenues varies considerably across countries. Revenues range from a low of under 1% of GDP and under 4% of total government revenues in Mexico and the United States to more than 4% of GDP for Turkey, the Netherlands and Denmark and 10% or more of total government revenues in Japan, Turkey and Estonia (Figures 6.1 and 6.2). The relatively low revenue share for the United States is partly a reflection of its relatively greater reliance on ETPS relative to taxes and fees while the higher shares for many European countries are partly a reflection of their generally higher level of government taxation relative to GDP than in the rest of the OECD.

Figure 6.1. Revenues from environmental levies as percent of GDP

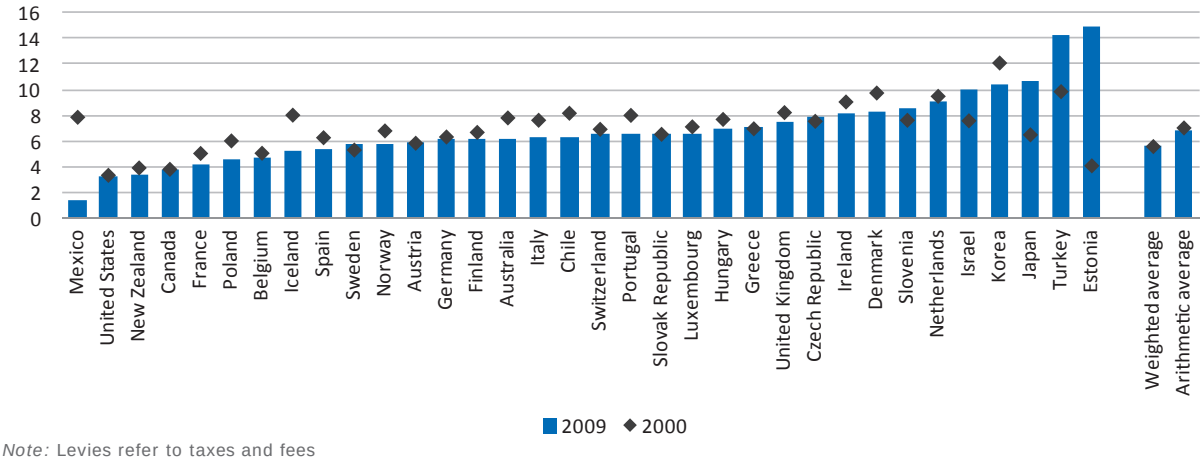


Notes: Levies refer to taxes and fees

Source: OECD/EEA database on economic instruments used for environmental and natural resources management

StatLink http://dx.doi.org/10.1787/888932563001

Figure 6.2. **Revenues from environmental levies, share of total tax revenue**



Note: Levies refer to taxes and fees

Source: OECD/EEA database on economic instruments used for environmental and natural resources management

StatLink http://dx.doi.org/10.1787/888932563020

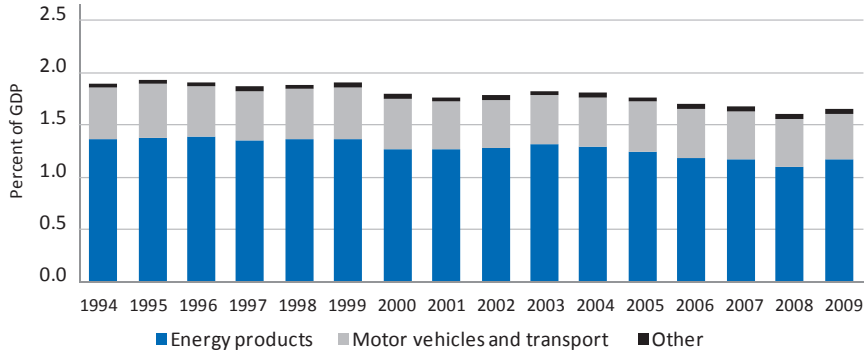
Most of the revenues from environmental taxes and fees are derived from energy and transport sectors, mainly on motor vehicles. Levies on energy account for nearly two-thirds of the total revenues from environmental taxes and fees for the OECD as a whole, with most coming from taxes on vehicle fuels (Figure 6.3). Various taxes on motor vehicles (and to a much lesser extent other forms of transport) account for nearly all of the remaining third; while all other environmental taxes and fees account for less than 5% of the total. Again, there are noticeable variations in the relative importance of the various levies across the OECD. Levies on energy products, mainly motor vehicle fuels, are relatively more important in most of the newer EC countries than for the OECD as a whole, for example. Levies on non-energy/transport, mainly for waste disposal and management, are a larger (albeit still modest) share of total environmental revenues in Denmark and the Netherlands (where they are around 10% of total environmental taxes and fees).[7]

Current levels of revenues from environmental taxes and fees in relation to GDP are somewhat lower than they were in the mid-1990s, when they were about 1.9% of GDP. Most of the decline occurred during the first decade of this century and can be attributed mainly to three factors: (EEA, 2005; OECD, 2006).

- *Improvements in energy efficiency and substitution in consumption and products toward less polluting products and processes* have narrowed environmental tax bases. That ETI are partly responsible for this substitution is suggested by the significantly lower ratio of transport fuel use relative to GDP in those countries with the highest rate of fuel taxes (*e.g.* the United Kingdom, Germany, Sweden, Norway and Turkey) than in countries, notably those in North America, with the lowest fuel tax rates.[8]
- *Fluctuations in world energy prices* have affected the share of environmental levies relative to GDP through substitution between more and less energy-related goods and services. As rising petrol prices induce consumers and producers to economise on petrol use, revenues from this source tend to decline relative to GDP since petrol is taxed more heavily than other goods and services.
- *Inflation* has lowered revenues relative to GDP raised by specific (as opposed to *ad valorem*) taxes, which are a major component of taxes on energy and transport.[9]

More recently, the importance of environmental levies has probably been reduced by the increasing importance of other ETIs, notably ETPS, which in theory can be used to raise revenue but which in practice generally have not.

Figure 6.3. Revenues from environmental levies by major base



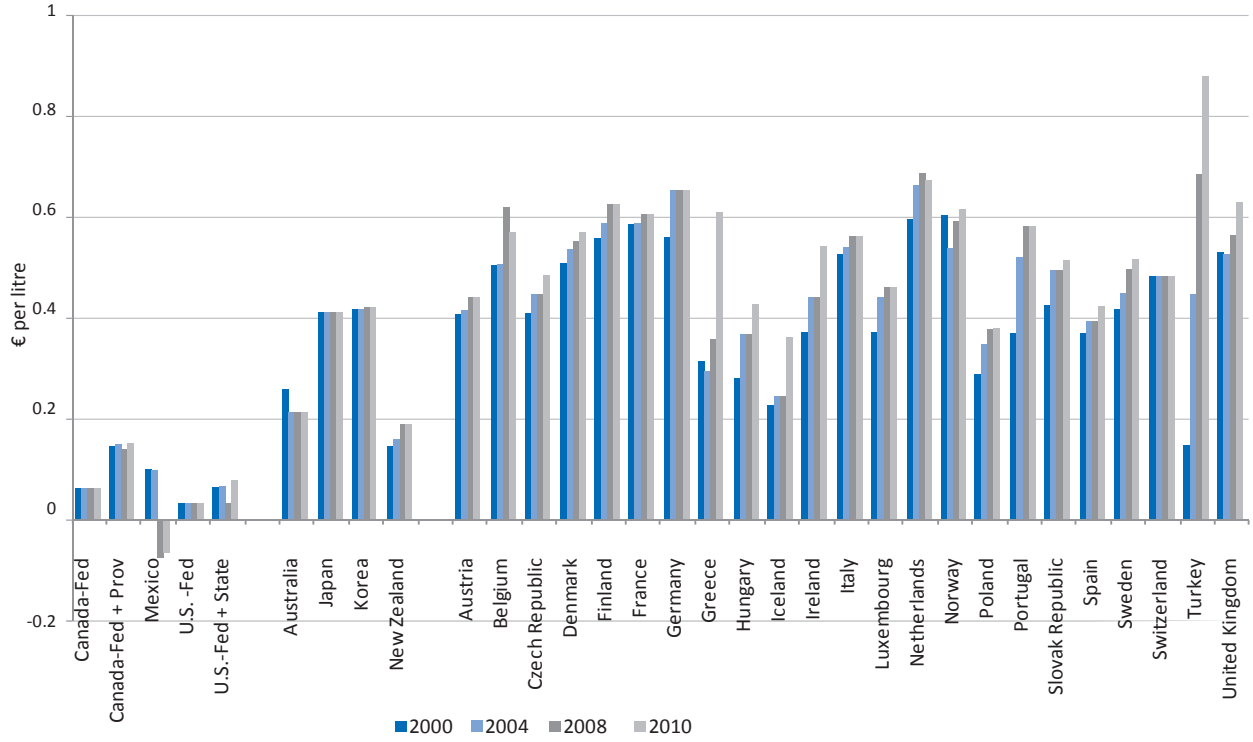
Source: OECD/EEA database on economic instruments used for environmental and natural resources management

StatLink http://dx.doi.org/10.1787/888932563039

Tax rates vary considerably across countries as well as across sectors within countries

There is considerable variation in environmental tax rates across OECD countries. Tax rates on motor fuels are highest in the EC countries, followed by Korea and Japan, and much lower in North America, with Australia and New Zealand in between but closer to the North American rates[10] (Figure 6.4). Tax rates in other domains, such as waste disposal in landfill and sulphur emissions, also vary widely. The highest tax rates are in several European countries while the rate in the United States is much lower in both cases (Figure 6.5).

Figure 6.4. Taxes on unleaded petrol



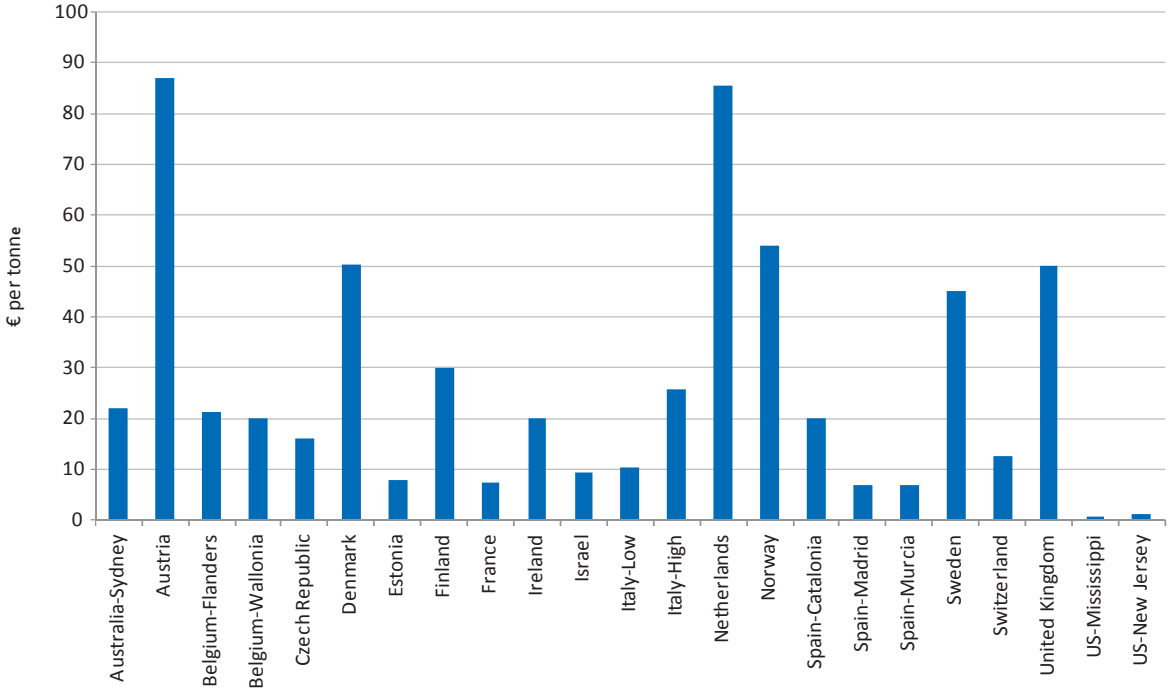
Notes: Figures are converted from national currencies using year average exchange rates

Source: OECD/EEA database on economic instruments used for environmental and natural resources management

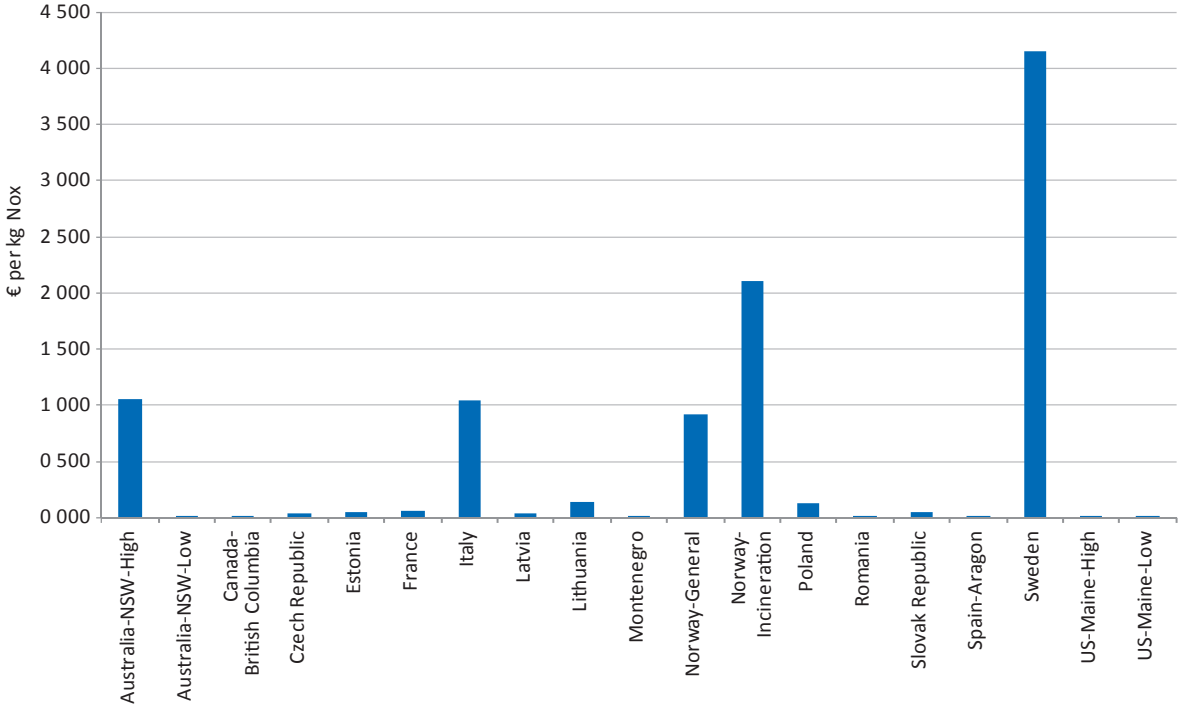
StatLink http://dx.doi.org/10.1787/888932563058

Figure 6.5. Tax rates on landfill disposal and on nitrogen oxide emissions

a. Tax rates on landfill disposal of household waste



b. Tax rates on nitrogen oxide emissions



Source: OECD/EEA database on economic instruments used for environmental and natural resources management

StatLink http://dx.doi.org/10.1787/888932563077

The differences in tax rates on the major environmental tax bases help to explain the differences in the overall ratio of revenues from environmental levies to GDP. Those countries with the highest (lowest) tax rates on motor fuels also have among the highest (lowest) overall environmental revenue ratios (see Figures 6.1 and 6.2).

Environmental tax rates also vary considerably across sectors within countries. Tax rates are highest on households and the transport sector and lower in the rest of industry, and generally lowest in energy intensive industries (OECD, 2006). The resulting variation in effective tax rates on pollutants across sectors represents a departure from full optimality since the marginal damages from the pollutants generally is largely the same regardless of the source.

OECD environmental tax laws include an extensive array of exemptions and refunds that partly account for the variation in effective tax rates across sectors. There were 1 572 distinct full or partial exemptions in 2011. Exemptions are most common for fuels and other refined petroleum products and for transport, but are also fairly widely used in waste disposal. The exemptions are targeted most often on the business sector and to a less extent on agriculture, and less often on the household sector.

The exemptions are motivated by a number of considerations. In some cases, (partial) exemptions can be viewed as helping to align the effective tax rate on a pollution proxy more closely with its actual environmental harm in exempted activities.[11] Certain public sector activities, such as ambulance services and public transport, are often exempted from vehicle excise and other environmental levies. Many exemptions reduce or mitigate the burden of a tax on certain industries (for example the exemption of agriculture from the nitrogen tax in Denmark) or reduce adverse impacts on competitiveness. Other exemptions act as subsidies to encourage the adoption of more environmentally favourable alternatives to the product or process taxed, as with, for example, the exemption of solar and wind generated power from the electricity tax in Germany and a number of other countries. Exemptions to reduce the burden of a tax on lower income or otherwise disadvantaged households are also common; for example, disabled persons are often exempted from vehicle excise and certain other taxes.

Environmental levies are often combined with other instruments

Environmental levies are very often used together with other, including non-market, instruments in order to accomplish their goals. For example, taxes in some countries are sometimes combined with subsidies (in some cases financed from the tax revenue; in other cases from general revenues or other sources) to further encourage substitution of less polluting for more polluting products or processes. Such a combination can help to sharpen incentives from proxy taxes to adopt less polluting substitutes, for example by subsidising bio-fuels in combination with taxes on fossil fuels (OECD, 2011b). Subsidies can also be used to reduce the burden of an environmental levy in a way that reinforces rather than undercuts its incentive effects. Environmental levies are also sometimes used in conjunction with "voluntary" agreements to achieve specified pollution reductions or adoption of less polluting processes in return for full or partial exemption.

Instrument combinations can also help to improve the effectiveness of ETIs when information is incomplete or other market imperfections exist. For example, rules requiring accurate labelling of pollutant content can improve the transparency of pollution taxes by making the link between the tax and pollutant clearer.

Combining environmental taxes with a tradeable permit system can help to ensure against adverse outcomes when effects of individual taxes cannot be adequately predicted. For example, when the impact of a tax on pollution abatement is uncertain (because of imprecise knowledge of marginal abatement costs or marginal damages), adding a direct ceiling on maximum pollution through a permit system can serve as a hedge against allowing pollution levels to reach dangerous levels. A combination of a tax and a tradeable permit scheme can also help to reduce volatility and uncertainty about the price of pollution by placing an effective cap on the price of pollution. Such a tax can also help to recover windfall profits from a permit system when the permits are allocated rather than auctioned (OECD, 2011b).

Effective combination of ETI and other instruments and the design of individual ETI require careful assessment of their interactions and their linkages with other policies. OECD experiences suggest three guidelines in the design of such combinations (OECD, 2011b).

- First, the environmental objective needs to be clearly defined in order to identify the ETI and other policies to achieve the objective most efficiently;
- Second, the interactions among instruments need to be determined to avoid conflicting effects;

- Third, linkages to other government policies, such as those concerned with poverty or industry competitiveness, need to be evaluated through consultation and co-ordination among affected government organs in order to achieve an appropriate balance between objectives and to minimise conflicts.

The use of environmental tradeable permit systems has grown over the past decade

ETPS are far from new to the OECD. The United States Environmental Protection Agency adopted ETPS as a primary tool for addressing air pollution and, later, other environmental problems beginning in the mid-1970s (Box 6.4). Canada and a number of European countries have also used ETPS to help address problems relating to land use, waste, and management of fisheries and other natural resources.

The 1997 Kyoto accord on climate change has provided a major impetus to the development of ETPS, especially in European and Asian members. In 2005, the European Community began operation of the European Emissions Trading System (EETS) to control carbon emissions throughout the community. The EETS is now the largest single ETPS in the OECD (and world) (EEA, 2005; Ellerman and Buchner, 2007). Although limited to industry and to carbon emissions in the initial stages, the EETS is supposed to be broadened to include other sectors, notably aviation and other greenhouse gas (GHG) in later stages.

Use of ETPS in OECD-Asia is at an earlier stage. New Zealand adopted a trading scheme for GHGs in 2008 (and amended in 2009). The Australian government has announced plans for a transitional carbon emissions trading system beginning in 2015 to be preceded by a temporary carbon tax beginning in mid-2012 (Box 6.5). National trading schemes for GHG are also being considered by authorities in Japan and Korea.

In total, there were 76 distinct ETPS in operation in the OECD countries at the beginning of 2011 (Table 6.4). About one-third of these are in North America and most of the rest are in Europe. The largest number of schemes – 22 – are targeted at GHG emissions while another 21 schemes apply to various forms of air pollution (including ozone depletion). However almost one-third of the schemes are in other areas, including water pollution, fisheries and land management.

Box 6.4. Emissions permit tradeable schemes in the United States

Environmental tradeable permit schemes have been used the longest and most extensively in the United States (Tietenburg, 1999). The first such scheme, the Emissions Trading Programme, was introduced by the federal Environmental Protection Agency (EPA) in 1975 to limit air pollutants and is still in operation. Under the scheme, participating firms receive "emission reduction credits" from the regulator for emissions that are below the regulatory ceiling at a given source. These can then be used to offset emissions that are higher than the ceiling at other sources. The credits traded among firms can be saved ("banked") for future use.

The EPA has since implemented a further number of major programmes to address other pollution problems, either on an ongoing basis or to achieve the transition to new more stringent standards on more timely and cost-effective manner than would have been feasible with traditional direct controls. These include the programme to facilitate the phasing out of leaded gasoline (1982-87); the programme to limit ozone-depleting gases introduced in 1988 to meet the United States commitment under the Montreal Protocol of that year; and the programme to reduce acid rain adopted in response to amendments to the federal Clean Air Act in 1990.

Beginning in the 1990s, a number of states began to introduce ETPS. The State of California instituted its Regional Clean Air Incentives Market in 1994 to limit air emissions of sulphur and nitrogen oxides in Southern California. Total emissions are limited by the number of permits issued under the programme (allocated under a "grandfathering" scheme) and were reduced each year between 1994 and 2000 to bring aggregate pollution down to acceptable levels. The state has also developed a programme to reduce emissions from vehicles by providing tradeable credits for the retirement of vehicles with characteristics that make them especially heavy polluters. Other states have instituted tradeable permit schemes to limit water pollution (Colorado and Wisconsin), to allocate fishing quotas and for land management. Multi-state regional programmes have also been developed to deal with pollutants that spill over across state lines and to allow development of a multi-state market in permits[a].

Box 6.4. Emissions permit tradeable schemes in the United States (contd.)

The features of ETPS programmes have become increasingly refined over time. The credits in the earliest systems have been replaced by allowances for a fixed amount of pollution, which give better incentives for permanent reductions and do not require the detailed setting of regulatory ceilings. Allowances also facilitate the setting of ceilings ("caps") on aggregate pollution levels. Programmes have also become more flexible in adapting to changes in polluting industries, for example by allowing firms not initially included to join; for example firms outside a scheme that can reduce their pollution at a cost below the permit price stand to profit by joining. Newer programmes generally have also included more flexible arrangements for storing credits ("banking") and in some cases for borrowing credits from future allocations ("borrowing")[a].

Note: a) A notable example is the regional compact instituted by the Ozone Transport Commission, a regional body charged with co-ordinating state programmes to deal with smog pollution, in concert with the federal EPA.

Source: Tietenburg, 2003.

A distinctive feature of ETPS in the OECD is that permits are nearly always allocated by "grandfathering" rather than auctioned. Businesses participating in the schemes tend to be strongly opposed to auctioning because of the additional financial costs auctioning would impose and because of their possible adverse impact on their competitiveness. A number of schemes in the United States, although not the largest in terms of participation, have used auctions. The EC plans to increase the use of auctions in stages, with as much as 60% of total permits to be allocated by auctioning beginning as early as 2013.

Box 6.5. Australia's proposed environmental tradeable permit systems for carbon emissions

In July 2011, Australia's new government proposed a transitional plan to institute a carbon emissions trading scheme by 2015. Under the proposal, the transition will begin in July 2012 with a temporary tax of AUD 23 (Australian dollars) per tonne of carbon emitted applied to 500 of the country's largest polluters. The tax would be replaced by a full carbon emissions trading scheme beginning in the second half of 2015. The ultimate aim of the plan is to reduce the country's carbon emissions to 95% of their 2000 level. The plan covers most of industry, accounting for about 60% of Australia's total emissions, but exempts agriculture. A portion of permits will be auctioned, although major exporting industries, including several that are large polluters, will receive most of their permits (94.5%) for free.

Half of the revenues raised from the tax are to be used to compensate households for higher electricity and other costs resulting from the levy. Most of the remaining revenues will go to various measures to help industry to adopt less polluting energy sources and making other adjustments to the cost of carbon emissions that will result from the plan; and to limit job losses from the tax (Government of Australia, 2011).

Sources: Government of Australia, 2011; "Australian Carbon Tax Goes to Parliament", *The Guardian*, 10 September 2011, www.guardian.co.uk/world/2011/sep/13/australian-carbon-tax-plan-parliament; "Breaching the Brick Wall", the *Economist*, 11 July 2011, www.economist.com/blogs/banyan/2011/07/australias-carbon-tax.

ETPS impose transactions costs on governments, both in their set-up and in their ongoing administration (monitoring and enforcement), and on their participants through their trading of the permits. Costs to participants are likely to be least when financial markets are reasonably well developed and the market for permits is reasonably large in scope.

The "grandfathering" of permit allocation in ETPS can result in substantial set-up costs and add to ongoing administrative costs. The implementation of the European scheme, for example, involved several years of extensive data collection to establish baselines for GHG emissions by individual industries and firms on which the initial allocations were based (Smith, 2008; EEA, 2005). Adapting the baselines as firms expand or contract, and exit and enter, involves further ongoing costs.

Table 6.4. Environmental permit trading schemes in the OECD

By economic domain		By country/region	
Domain	Number of schemes	Region	Number of schemes
CO_2 and other GHG	22	Western Hemisphere	28
Electricity	4	United States	16
Air Pollution	18	Canada	8
Ozone Depletion	3	Other WH	4
Water Pollution	9	Europe	41
Land Use and Management	5	Belgium	8
Waste Disposal	1	United Kingdom	6
Fisheries	6	Italy	5
All Other	6	Other Europe	22
		Asia	5
		Australia	3
		New Zealand	2

Source: OECD/European Environment Association *Database on instruments used for environmental policy and natural resources management*. Data are for 2011.

Benefits from environment tax instruments have been constrained by political and other considerations

The previous discussion has mentioned several features of ETIs in the OECD that reduce their benefits relative to the maximum they could achieve. The cost effectiveness of energy and other key environmental taxes is reduced by the substantial variation in rates across sectors within individual countries. The marked variation in rates across countries for particular levies at least suggests that the rates often differ from those that would achieve full cost effectiveness.[12] The extensive use of exemptions and refunds (which partly account for the differences in tax rates across sectors) narrows the tax base and limits the revenue raised. Greater revenues could also be raised through ETPS schemes if more use were made of auctioning in permit allocation.

The departure of ETIs from full optimality in the OECD is not surprising given their impacts on the economic interests of major economic groups. Concerns over the impact of ETIs on lower income or otherwise disadvantaged households have been an important consideration in the design of many taxes. Financial burdens on industries and impacts on their competitiveness have often made it difficult to introduce ETIs, even those with strong cases on environmental grounds, and explain much of the differences in tax rates across industries.

Environment tax instruments in Southeast Asian countries

ASEAN countries face many of the same environmental issues as OECD countries but their challenges are often more acute due to ASEAN's rapid growth and development.

- Urbanisation in ASEAN countries is rising rapidly, with the proportion of the population living in urban areas projected to rise to 44% by 2050 compared with 32% in 1990. This along with rising urban incomes is posing major challenges of dealing with congestion, particularly road congestion and air pollution from vehicles and other sources. Air pollution problems are becoming increasingly acute; for example, air pollution has been estimated to cost the Indonesian economy nearly USD 400 million annually (0.4% of 2010 GDP) (ASEAN, 2009). Urban vehicle use is expected to double by 2025, due mainly to motorcycles, and will greatly aggravate air pollution problems unless less polluting vehicles and sources are used (ASEAN, 2009; GFEI, 2010).
- The region's extensive forests face threats from deforestation and loss of biodiversity, as well as trans-border pollution from forest fires.

- Fresh water resources and marine and coastal eco-systems are under increasing pressure from rising populations and economic activity. Demand for fresh water is growing very rapidly and is projected to double between 2007 and 2020 in Indonesia and Malaysia (ASEAN, 2009).
- Climate change poses future risks that need to be addressed if they are to be contained. ASEAN countries are relatively vulnerable to the effects of climate change. Climate change has major implications for key eco-systems as well as other major policies such as food security and public health.

Many of these environmental issues are regional in nature, either because problems originating in one country spillover to its neighbours (as with trans-border pollution from forest fires); or because key eco-systems are shared by several countries, in particular the Mekong River Basin, which is critical to the ASEAN economies of the Indo-China peninsula as well as the People's Republic of China. These and other shared concerns, such as the need to address climate change, have spurred an extensive programme of co-operation under the aegis of ASEAN (Box 6.6).

Box 6.6. The ASEAN framework for regional co-operation on the environment

ASEAN countries have long recognised the critical importance of addressing environmental issues in order to ensure the realisation of sustainable growth in line with their potential. Members' commitments under international agreements on climate change have further reinforced the priority on addressing environmental issues. Individual countries have put in place laws and government institutions as to provide frameworks for environmental policies.

ASEAN member countries have also recognised that successful green growth policies require co-operation and joint initiatives at the regional level. This recognition was formally expressed in the *ASEAN Vision 2020* issued in 1997, which stated that:[13]

"We envision a clean and green ASEAN with fully established mechanisms for sustainable development to ensure the protection of the region's environment, the sustainability of natural resources and the high quality of life of its peoples."

The organisation has since elaborated a framework for regional co-operation on environmental issues, as part of the *ASEAN Socio-Cultural Community Blueprint* contained in the *Roadmap for an ASEAN Community 2009-2015.* The *Blueprint* identifies regional strategies and actions in 11 thematic areas. Ten priority areas for co-operation have been specified, with an individual ASEAN member designated as lead country in each area (See Table 6.5).

Table 6.5. Priority areas for co-operation on the environment in ASEAN

Priority areas for co-operation	Lead country
Global environmental issues	Thailand
Environmental education and public participation	Brunei Darussalam
Environmentally sound technology	Malaysia
Quality living standards in urban areas	Indonesia
Harmonising environmental policies and databases	ASEAN Secretariat
Coastal and marine environments	Viet Nam
Natural resources and biodiversity	Thailand
Freshwater resources	Philippines
Climate change and its impacts	Thailand
Land and forest fires and trans-border smog pollution	

Source: ASEAN, 2009.

Use of environment tax instruments in ASEAN is at an early stage

ASEAN country environmental policies at present make only limited use of ETIs. Most of the ETIs that are used are subsidies (including tax incentives).[14] Taxes or fees are comparatively rare and consist mainly of excise or general taxes on motor vehicles. Singapore and Thailand are the only countries with a tax on gasoline, although Viet Nam has a road and bridge fee (GFEI, 2010). Viet Nam has also recently enacted a law instituting a general environmental tax that takes effect in 2011 (Socialist Republic of Viet Nam, 2010). The tax applies to a wide range of fuels and lubricants, as well as certain herbicides, pesticides, preservatives and disinfectants as well as plastic bags.

The early and incomplete stage of development of emission standards in most ASEAN countries is probably one reason for the limited use of ETIs. Effective design of such instruments, for example the choice of the tax or subsidy rate to apply to a given pollutant or proxy, depends upon the regulatory goal for pollution reduction. Most of these countries are in the process of developing fuel economy and emission standards (GFEI, 2010). Specification of environmental standards and targets for energy and other areas will help to facilitate further development of ETIs.

ASEAN tax systems, which are less developed than in most OECD countries, also constrain the scope for ETIs in several ways. Excise taxes make up only a small portion of total revenues in the majority of ASEAN countries[15] and income taxes are derived primarily from businesses rather than households. Introduction of new environmental levies in areas not now covered by the tax system could be quite costly, especially in areas where there are a large number of small businesses or other units that would need to pay the tax. The limited scope of the personal income tax constrains the options for mitigating the burden environmental levies on fuel or other basic commodities would impose on poorer households.

ASEAN countries' understandable priority of alleviating poverty has sometimes led to policies that make the introduction of ETIs more difficult. This is most obviously the case with fuel subsidies to households. Fuel subsidies amount to nearly 13% of total government expenditure in Indonesia and Malaysia and are also significant for Thailand, where they amount to more than 2% of total government expenditure (GFEI, 2010). While aimed primarily at income support, the subsidies also encourage fuel use. Reducing or eliminating fuel subsidies, with the revenue released used to, say, increase food subsidies or other assistance to poorer households could help considerably to achieve a more environmentally beneficial use of fuels while continuing to support poorer households. To the extent that subsidies are retained, their success as incentives for more beneficial environmental behaviour would be increased by providing greater subsidy rates for fuels that are more efficient and less polluting.

Finally, the openness of ASEAN economies and their linkage in regional production chains mean that ETIs applied to an industry in one country can spillover to industries in partner countries and impact competitiveness. Concerns over the impact of ETIs on the competitiveness of priority domestic industries have probably been a significant further factor discouraging their use in ASEAN. For example, concerns over the impact on the developing domestic auto industry have discouraged the introduction of a tax on less energy-efficient vehicles in Malaysia (see Chapter 5 in this volume). A number of mechanisms, such as harmonisation of tax rates or border-tax adjustments, can be used to mitigate the impacts of ETI on competitiveness but they will require co-operation among ASEAN members and with key trading partners outside the region.

Wider use of environment tax instruments could bring considerable benefits in supporting green growth

The development of ETIs in ASEAN countries is being spurred by member nations' commitments under international agreements to reduce GHG emissions and otherwise combat the effects of climate change. A number of member countries are either planning or considering the institution of a carbon tax as a key instrument to combat climate change.

Implementation of a carbon tax could significantly reduce carbon emissions in ASEAN countries. Moreover, some recent evidence suggests that the tax could be instituted without significantly slowing overall economic growth or aggravating poverty, provided that the revenues raised were used to mitigate burdens on poorer households or for other beneficial purposes (Nurdianto and Resosdarma, 2010).

A number of considerations, including OECD experiences, suggest that greater and wider use of ETIs could help significantly in achieving objectives for sustainable green growth in ASEAN countries. Development of a more complete system of taxes on motor vehicle fuels would help to improve energy efficiency and restrain

urban air pollution than direct controls are likely to do. Taxes on other pollutants emitted by industry, such as sulphur and nitrogen oxides, might be phased in with carbon taxes in order to further improve air and water quality. Development of ETIs for ASEAN's forest, water and other key eco-systems would help to improve their management – as they have in many OECD countries.

The early stage of development of ETI in ASEAN also presents an opportunity to draw on lessons from OECD and other international experiences in designing ETIs that most effectively and efficiently achieve their environmental goals. Among the key lessons suggested by those experiences are the following:

- use taxes and fees, rather than subsidies, where possible;
- keep the tax base as broad as possible by limiting exemptions and refunds as far as possible;
- use instruments, such as income tax reductions, to mitigate rather than exempt heavily burdened households and businesses from environmental levies in order to maintain incentives to limit pollution;
- co-ordinate carefully the implementation and design of ETI with other policies to ensure that they are mutually reinforcing;
- strengthen public understanding of the need for and benefits of ETI through education and other outreach programmes.

Close regional consultation and co-operation, among the members as well as with outside partners in some cases, is likely to be particularly important to the development of ETI in ASEAN countries, given the openness of their economies and linkages in regional production chains. Such co-operation is especially important to deal with environmental issues that cross national borders, such as pollution for forest fires, and to limit distortions to the international competitiveness of ASEAN industries.

Conclusion

Sustainable green growth depends upon environmental policies that are both effective and efficient in their use of society's resources. Because of their use of market price signals, well designed ETIs are capable, in most circumstances, of achieving environmental goals at lower overall cost than command-and-control approaches and provide greater incentives for environmentally beneficial innovations. Moreover, the revenues from environmental levies and ETPS (where auctioning is used) can be used for other beneficial public purposes.

OECD experiences illustrate both the benefits of ETIs and the complexities that can be involved in their implementation. ETIs are used to address a wide range of environmental issues, including air and water pollution, energy efficiency, noise pollution, waste disposal and natural resource management. Environmental taxes and ETPS have become central to member countries' efforts to limit GHG in order to address global warming. While only a modest share of total government revenues, funds raised from ETIs have helped to finance research and development into environmentally beneficial innovations and to help households and businesses to bear the burden of environmental levies.

OECD experiences also illustrate that the introduction and design of ETIs is often much more complex in practice than theory and can involve difficult trade-offs with other social objectives. Environmental levies on energy and transport can impose heavy burdens on poorer households and impair the competitiveness of certain industries. Attempts to alleviate these consequences have led to extensive exemptions and differential tax rates across sectors for ETIs. However these measures have reduced the overall cost effectiveness of the instruments in achieving their goals and raised the costs of their administration.

ETIs have the potential to contribute substantially to the green growth objectives of ASEAN countries, particularly in meeting goals for limiting GHG, improving energy efficiency, controlling urban air pollution, ensuring water quality and managing the region's critical forest and water eco-systems. The early stage of development of ETIs in ASEAN countries provides opportunities to design instruments that efficiently achieve their environmental objectives while supporting other social goals.

International experiences suggest several principles in designing ETIs in order to realise their full benefits. First, use taxes in preference to subsidies as far as possible and avoid narrowing the tax base through exemptions and other preferences. Second, closely co-ordinate the introduction and design of ETIs with other policies so that they are mutually reinforcing. Third, educate the public about the objectives of ETIs and their functioning to lesson opposition to their introduction and limit provisions that reduce their effectiveness. And fourth, enhance regional co-operation and co-ordination in support of the development of ETIs, especially in addressing environmental issues that cross international borders or affect the international competitiveness of member country industries.

Notes

1. The distinction between taxes and fees/charges is that the latter are directly proportionate to a specific "service" or output, as in sewage charges proportional to the amount of waste, while taxes are payments whose amount is not directly related to a service or output provided by the government (see OECD, 2006).
2. For example, direct limits on the amount of carbon emissions from a generating facility provide incentives for the development of more efficient abatement but not (as much) for the development of production technologies that reduce emissions.
3. The "double-dividend" argument for environmental taxes, not only as better alternatives to non-market environmental instruments but as partial replacements for other taxes, was much discussed in the early 1990s. See Zajicik *et al.* (2011) and OECD (2006).
4. The regressive direct distributional effects tend to be at least partially offset by changes in factor prices induced by the levy and by the benefits of the reduction in pollution (OECD 2006; see also OECD 2011a). However these secondary effects are likely to be less apparent to those taxed than the direct burdens.
5. This is true unless the damage from a given amount of pollution differs across sources. For example, if marginal damage from a given amount of air pollution is smaller in rural areas compared to urban areas, the optimal tax on the pollutant would be lower in the rural areas.
6. The number of taxes and fees as of 2011 compares to 625 listed as of around 2006 (see OECD, 2006). Much of the increase probably represents the addition of previously existing instruments into the database rather than the introduction of new instruments. Note also many of the instruments are imposed by sub-national governments in the United States and other OECD federal states.
7. See OECD/EEA database, page link http://www2.oecd.org/ecoinst/queries/TaxInfo.htm.
8. See OECD/EEA database, page link http://www2.oecd.org/ecoinst/queries/TaxInfo.htm, charts on petrol and fuel use taxes versus the amount of petrol and other motor fuels per unit of GDP.
9. Indexation of specific energy taxes is relatively rare in the OECD, a notable exception being Denmark (see Zajíček *et al.*, 2011).
10. The spread in tax rates on diesel fuel is less broad, although still substantial, since diesel tax rates are lower than those on petrol in Europe but higher in the United States.
11. For example, a partial exemption for agricultural vehicles from a vehicle excise could be justified on the ground that the tax is set in to compensate for damage to public roads, which tractors and other agricultural vehicles use less intensively than, say, passenger cars or commercial trucks.
12. For example, a study by Parry and Small (2002) estimated the aggregate environmental and public health costs associated with vehicle fuels from air pollution, GHG emissions, road congestion, and accidents for the United States and the United Kingdom. The estimates imply that the tax rates on vehicle fuels are below the level for maximum cost effectiveness in the United States, and above the rate justified on the basis of environmental/health considerations alone in the United Kingdom.
13. ASEAN Vision 2020, Kuala Lumpur, 19 December, 1997. Accessible at: www.asean.org/1814.htm
14. Singapore uses a range of tax incentives in industry, transport and construction focused mainly on encouraging energy efficiency, although there is also a rebate programme to narrow the cost differential between green and conventional vehicles ("green vehicle rebate") (Government of Singapore, 2008). Malaysia is using tax incentives to encourage energy production from renewable sources and to encourage energy conservation (PricewaterhouseCoopers, 2010).
15. However Thailand does have a more extensive array of excise taxes, including on motor vehicles (and gasoline). Several countries also have general sales or value-added taxes that amount to more than one-quarter of total revenue in Indonesia.

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