

MALAYSIA ECONOMIC MONITOR

Smart Cities

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SMART CITIES

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ABBREVIATIONS

3mma	Three-month moving average
10MP	Tenth Malaysia Plan
ALS	Area License Scheme
ASEAN	Association of Southeast Asian Nations
BRT	Bus Rapid Transit
CDM	Clean Development Mechanism
CFL	Compact fluorescent light bulb
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide equivalent
CORT	Center of Research and Teaching
CPI	Consumer price index
DECPG	Development Economics Department, Economic Prospects Group
DO	Domestic-oriented
DSA	Debt sustainability analysis
E&E	Electrical and electronics
EIU	Economist Intelligence Unit
EO	Export-oriented
EPP	Entry-point project
EPU	Economic Planning Unit
ERP	Electronic Road Pricing
ERPA	Emission Reduction Purchase Agreement
ETP	Economic Transformation Program
EU	European Union
FAO	Food and Agriculture Organization
FAR	Floor Area Ratio
FDI	Foreign direct investment
G&S	Goods and non-factor services
GBI	Green Building Index
GDP	Gross Domestic Product
GEF	Global Environment Facility
GERD	Gross expenditure on research and development
GFC	Global financial crisis
GFCF	Gross fixed capital formation
GHG	Greenhouse gas
GLC	Government-linked company
GNI	Gross National Income
GST	Goods and services tax
GTP	Government Transformation Programme
GUM	Globalization, Urbanization and Migration
IEA	International Energy Agency
ICT	Information and communication technology
IMF	International Monetary Fund
KLCI	Kuala Lumpur Composite Index
KPI	Key performance indicator
LHS	Left hand side (left axis in the chart)
LPG	Liquefied petroleum gas
LTV	Loan-to-Value
LUPAR	Land Use Planning Appraisal for Risk Areas
MEM	Malaysia Economic Monitor
MIER	Malaysian Institute of Economic Research
MRT	Mass Rapid Transit
MSMA	Urban Stormwater Management Manual
MSW	Municipal solid waste
NCER	The Northern Corridor Economic Region

NEM	New Economic Model
NKEA	National Key Economic Area
NKRA	National Key Result Area
NSWMD	The National Solid Waste Management Department
NUS	National University of Singapore
OECD	Organization for Economic Cooperation and Development
OPR	Overnight policy rate
OSF	Oil stabilization funds
PEMANDU	Performance Management and Delivery Unit
PPI	Producer price index
PPP	Purchasing power parity
PVs	Photo-voltaic cells
QoQ	Quarter-on-quarter
R&D	Research and development
REER	Real effective exchange rate
RHS	Right hand side (right axis in the chart)
RM	Malaysian ringgit
RMK	Malaysia Development Plan
ROI	Return on investment
RPGT	Real property gains tax
RPM	Royal Police Malaysia
RTB	Flood Mitigation Plan
RTS	Rapid transit system
SA	Seasonally adjusted
SAAR	Seasonally-adjusted annualized rate
SBPA	Civil Service Remuneration scheme
SCI	Scientific Citation Index
SKMM	Malaysian Communications and Multimedia Commission
SME	Small and medium enterprise
sq. KM	Square kilometer
SRI	Strategic Reform Initiative
SRR	Statutory reserve requirement
SSL	Self-sufficiency level
SUDS	Sustainable urban drainage systems
UM	University of Malaya
UN	United Nations
UNEP	United Nations Environment Programme
USD	US dollar
USM	Universiti Sains Malaysia
USPTO	United States Patent and Trademark Office
VAR	Vector Autoregression
YoY	Year on Year

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Executive Summary

ECONOMIC DEVELOPMENTS AND OUTLOOK

The Malaysian economy decelerated as solid domestic demand was not sufficient to offset a weakening external environment. Private consumption growth continued at a healthy pace. Favorable rubber and palm oil prices drove up incomes of smallholders while continued employment and wage growth supported urban incomes. In contrast, fixed investment was more volatile, with private investment showing signs of picking up while public investments lagged.

Exports had a solid start to the year but stalled in the second quarter, partly due to Japan-related supply chain disruptions but also due to the weakening global economic environment. Non-electronics exports expanded steadily on the positive price effect but, as in the past several quarters, electronics shipments remained subdued.

Agricultural output jumped mainly due higher palm oil production, while nearly all service sub-sectors grew steadily on robust consumer spending. In contrast, mining output saw the steepest quarterly decline in two decades due to production problems and maintenance work in some oil and gas fields.

Inflationary pressures appear to have peaked mid-year. Consumer inflation reached the highest level since April 2009 in June before slowing down in July. Prices of food eased in recent months, while transport prices retreated. Core inflation continued to advance, however, suggesting demand-driven price increases fuelled by healthy consumer spending.

Government disbursements have been a drag on growth as current expenditure growth moderated and disbursements of public investments (which comprise half of overall gross fixed capital formation) have been slow. This is often the case during the first year of a new five-year plan, and disbursements have already started to accelerate as of July.

Malaysia's overall balance of payments recorded a larger surplus in the first half of the year reflecting a widening current account surplus and substantial net financial inflows. Further increases in net inflows of portfolio investments and a stronger recovery of FDI

more than offset the continued net outflow of direct investment abroad by Malaysian companies.

Monetary policy normalization paused as growth prospects deteriorated and inflationary pressure subsided. To reduce ample liquidity in the financial markets without adjusting the policy rate (which would attract further capital inflows), the statutory reserve requirement ratio was raised between March and July 2011 to pre-crisis levels.

Malaysia's open economy is expected to slow further in the remainder of 2011 and into early 2012 mainly due to the deterioration in the outlook for external demand. Domestic demand is expected to remain resilient but the weakening global environment is also likely to put pressure on manufacturing wages and agricultural commodity prices, which could dampen consumer spending. Between domestic strength and global weakness, the weak global outlook prevails, and GDP is expected to expand by 4.3 percent in 2011 and by 4.9 percent in 2012.

Risks are tilted to the downside, as the situation in Europe could lead to a new shock to global trade. Upside risks include increased momentum in the implementation of the government's reform agenda, which could boost investor and consumer confidence into the second half of 2012.

Steadfast focus on the implementation of the structural reform agenda is needed to achieve Malaysia's long-term growth aspirations. Implementation of Malaysia's reform agenda under the Government Transformation Programme and of the projects under the Economic Transformation Programme is progressing swiftly: private investment growth seems to be picking up, and the government is leveraging these investments to make further improvements to the investment climate. However, progress in implementing the structural Strategic Reform Initiatives (SRIs) has been mixed. Although the 2012 budget contained new initiatives for liberalizing services sectors, rationalization of subsidies and further fiscal consolidation have been delayed. In addition, measures to improve education continue to focus on inputs, whereas a drastic shift to quality is called for. The continued weakness and volatility in the external environment adds to the urgency of accelerating the pace of reform implementation.

SMART CITIES

Cities are central to Malaysia's aspiration to become a high-income economy. Higher levels of urbanization are associated with higher productivity and overall economic growth. This is because cities create proximity and facilitate the flow of knowledge that drives innovation. Therefore, in order for Malaysia to achieve its goal to become a high income economy by 2020 it will need to make its cities smart.

What are smart cities? Smart cities are skilled and innovative. They play a crucial role in catalyzing economic growth by generating productivity gains through agglomeration economies. Smart cities are green and sustainable. They ensure a high quality of life to all citizens and the sustainability of economic gains. Finally, smart cities are resilient. They are prepared to face natural hazards and climate-related shocks. The innovation, sustainability and resilience agendas are interconnected and require coordinated and coherent policies.

The requirements to transform Malaysian cities are closely linked to broader structural reforms outlined in the New Economic Model. Smart cities must have high concentration of workers with skills of all sorts, a high degree of connectivity, and a vibrant and competitive knowledge-intensive economy that combines high value-added services with the more complex tasks within manufacturing production. Of equal importance, the cities agenda also encompasses the other key pillars of the New Economic Model – sustainability and inclusiveness.

Smart cities are innovative

For Malaysian cities to become hubs of innovation the main priority is to increase both the numbers and quality of skilled workers. Two factors are decisive in this regard: the first is the excellence of schools and tertiary-level institutions, and how effectively they interact with, and cater to, the needs of the local economy. Malaysia needs to improve the quality of its universities and integrate them better with the local economy and urban fabric. The second is the city's ability to retain homegrown talent and attract talent from elsewhere. In addition to pursuing the structural reforms required to retain local talent, Malaysia should consider steps to attract skilled migrants, including those who come to study in Malaysia's universities. Improving quality of life for citizens by reducing crime and congestion is a key factor both to attract and retain talent – as well as an objective in its own right.

Malaysian cities need to become both physically and economically more connected. Smooth connectivity between individuals, jobs, academic institutions and amenities are an integral part of an innovative city and also contribute to quality of life. This requires better public transportation and more mixed use developments. The efficient exchange of information and service delivery requires state-of-the-art information and communications infrastructure. In Malaysia's case, while access to ICT infrastructure is adequate, speed can be substantially improved.

Innovative cities require specialization and industrial concentration in knowledge-intensive services and manufacturing tasks. While the corridor approach aims to leverage on existing comparative advantage of geographic areas, structural policies to promote innovative SMEs are needed to ensure a vibrant economic environment that takes full advantage of – and sustain the demand for – the skills and connectivity in the innovative city.

Smart cities are green

Reducing greenhouse gas (GHG) emissions is an integral part of Malaysia's high income agenda, and will require focused efforts in and related to its cities. Malaysia's largest urban areas have grown significantly in the past two decades, with significant urban sprawl and declining densities. To reduce city GHG emissions, efforts should focus on compact urban form; clean energy and enhanced energy efficiency; and transforming urban transportation. Programs that reduce GHG emissions generate downstream business opportunities, for example in the solar panel industry. Meanwhile, demand for "green" products is growing with awareness of climate change and the competitiveness of Malaysia as an FDI destination may increasingly hinge on its ability to curb emissions.

Increasing waste generation represents a major challenge for sustainability in Malaysian cities. Although waste generation and composition in Malaysia are currently typical of a country at its level of income and urbanization, the quantity of waste generated keeps growing along with the constraints cities face to handle it. The federalization of solid waste management in peninsular Malaysia is innovative and groundbreaking, but hitherto no country in the world has successfully centralized these essentially local functions. The long-term success of federalization will require holding concessionaires fully accountable for performance, ensuring a sustainable

financing model, and addressing urgent issues in waste disposal and landfills. The nationwide cycle of landfills reaching capacity with limited room for expansion in growing urban areas, followed by the establishment of new landfill sites further away, is not sustainable. A landfill strategy for Malaysia can enforce the regulatory framework for operating landfills and seek economies of scale by reducing the total number of landfills through consolidation. Malaysia also needs to focus on waste prevention and minimization, as is practiced in high income economies.

Smart cities are resilient

Natural hazards must be managed to mitigate social and economic consequences. As cities concentrate a growing share of the national economy and population, it is imperative that they have adequate systems to minimize the human and economic costs of disasters. Malaysian cities are especially vulnerable to floods and landslides. To reduce the risks related to these hazards, Malaysia would benefit from environmental restoration and integration of risk reduction into development planning. Zoning, maintaining wetlands and forests and restricting development in flood plains and on hillsides are crucial elements that should take precedence to traditional engineering works such as retention ponds and tunnels, which are helpful but can create a false sense of security.

Smart cities need smart policies

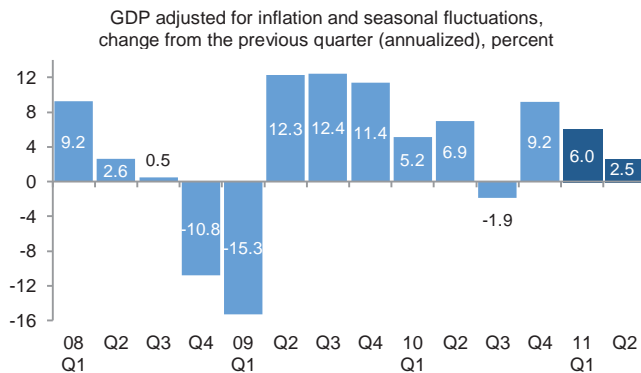
Malaysian cities need to rein in sprawl and move towards a more compact urban form. This will require policies on the supply side – enhancing land use and zoning policies, enforcing building codes and improving public transportation. But equally importantly are demand-side policies to reduce incentives for private vehicle use and suburban housing choices. As a first step, this will require accelerating progress in the Strategic Reform Initiative on subsidy rationalization. Further steps include the introduction of fuel taxes, stricter vehicle emission standards, and congestion pricing in major urban centers such as Kuala Lumpur and Penang.

More and better use of data can improve policy-making at the local level. The National Key Result Area in crime reduction has demonstrated the potential of data analysis to provide improved service delivery, but much more can be accomplished through increased use of data in policy making. For example, better use of data is essential to hold academic institutions accountable and enhance the quality of outcomes. Data is also needed to assess the GHG emissions of Malaysia's cities, so that baselines can be established and progress monitored and reported periodically.

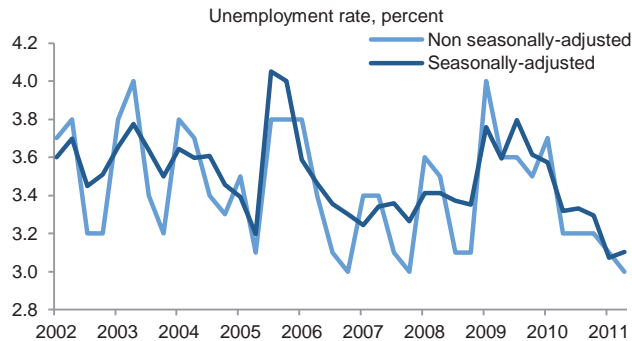
Smart governance balances local decision making and inputs with a coordinated approach and economies of scale. Competition between cities (for example through city-level KPIs on quality of life) can lead to improved outcomes, but requires a degree of local autonomy in decision-making.

The Malaysian Economy in Pictures

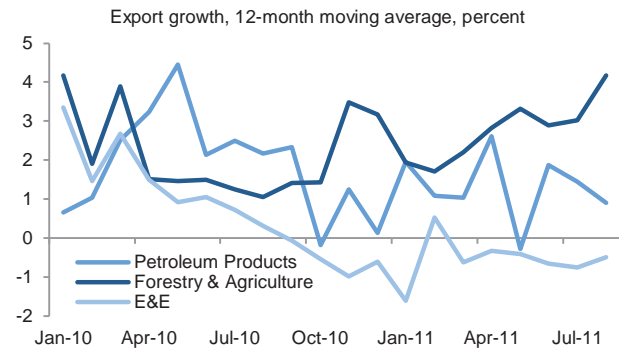
GDP growth decelerated in the first half of 2011



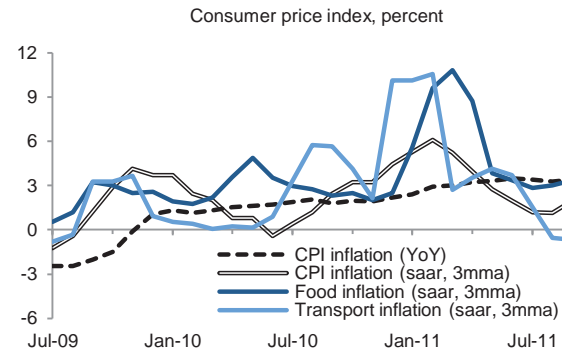
Joblessness reached a multi-year low so far in 2011



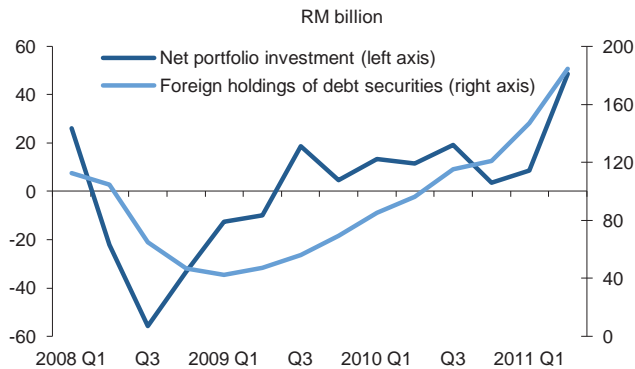
Two-speed: E&E exports fell while commodities soared



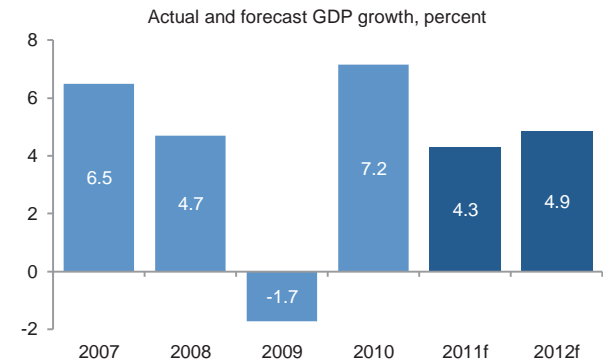
Inflationary pressure started easing



Foreign debt holdings rose together with portfolio inflows

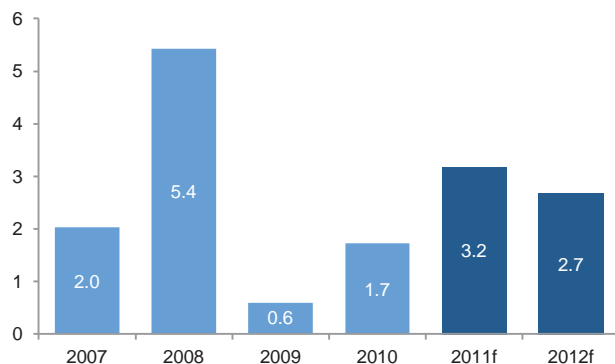


GDP growth likely to slow down in 2011 and 2012

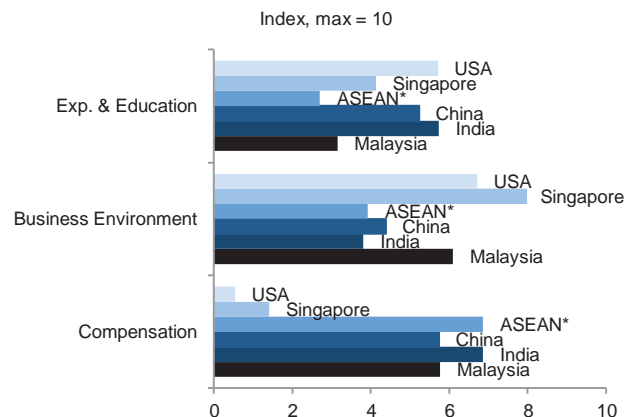


Inflation outlook also softens slightly

Actual and forecast year-on-year CPI inflation, percent

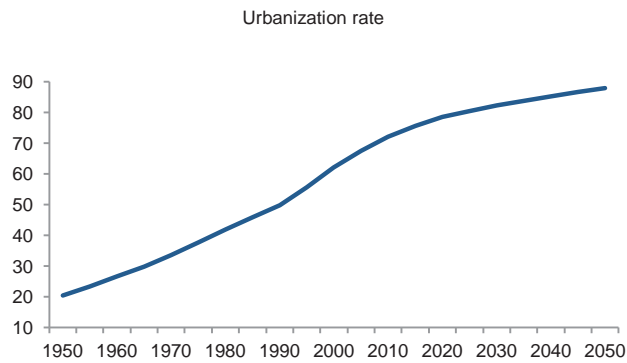


Malaysia's labor costs and skills are closer to those with lower income levels

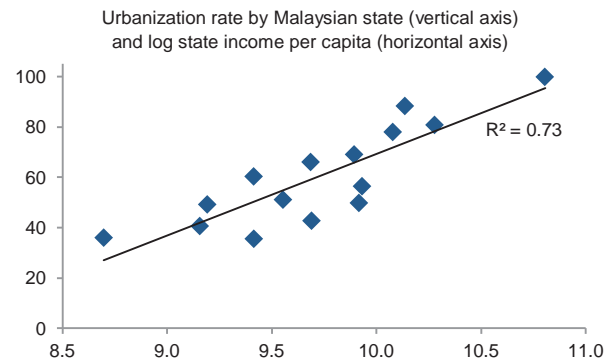


Smart Cities in Pictures

75 percent of Malaysians will live in cities in 2020

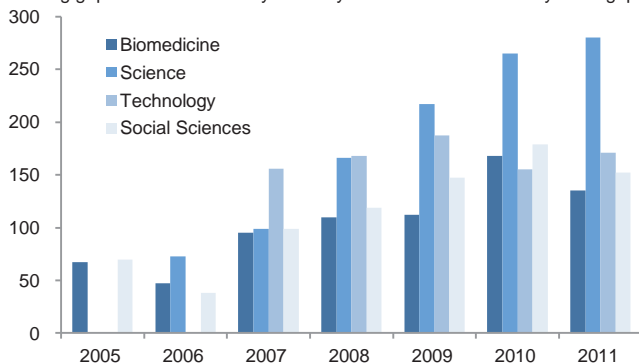


Urbanization is closely linked to income levels

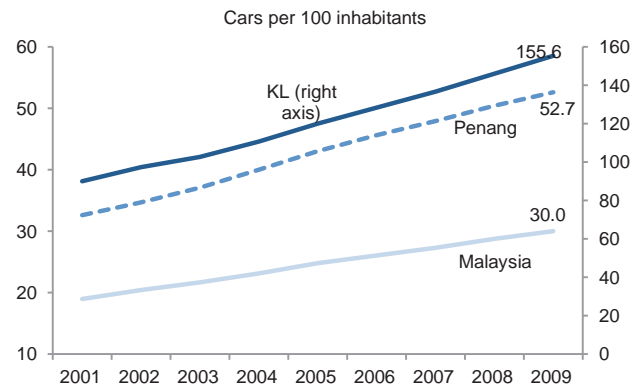


The quality gap in universities has persisted

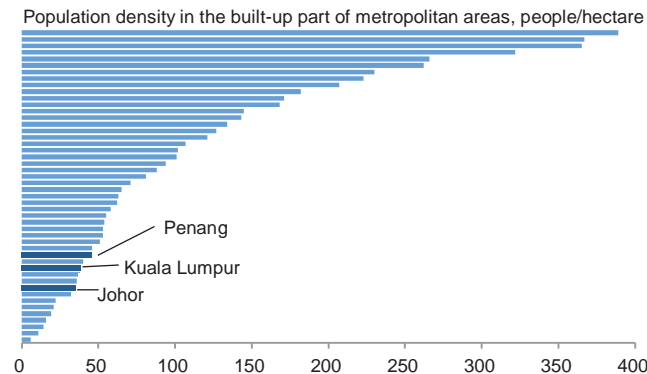
Ranking gap between University of Malaya and National University of Singapore



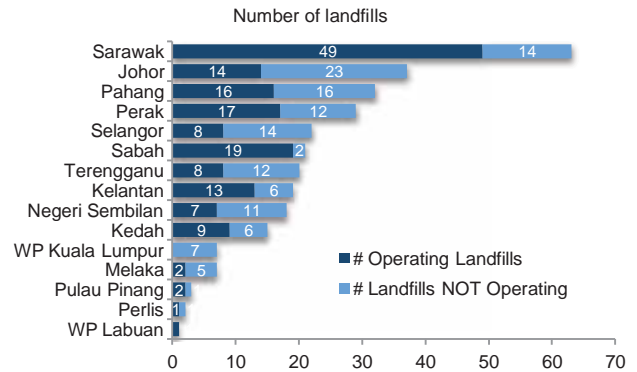
Motorization has increased...



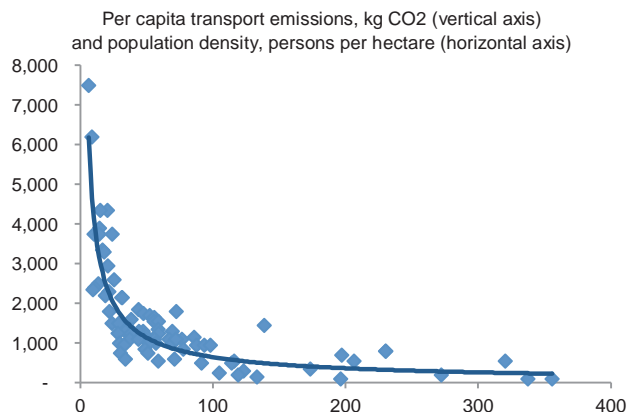
... as has sprawl



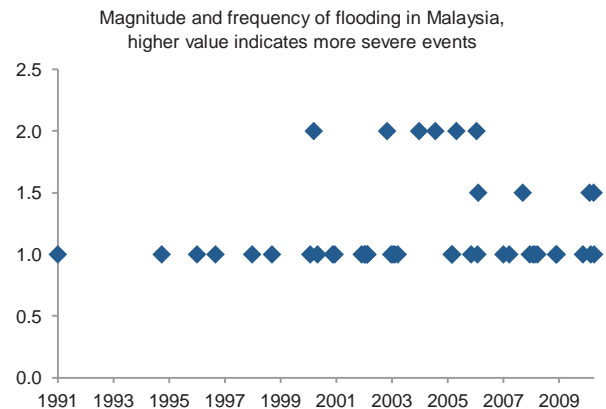
Most landfills are inactive



Per capita transport emissions decline with urban density



Floods have been more frequent and severe



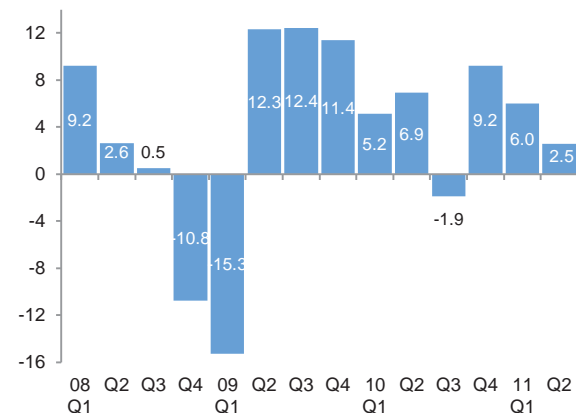
1. Recent Economic Developments

Growth momentum moderates

Malaysia's growth momentum decelerated in 2011. Real GDP increased by 6.0 and 2.5 percent in the first and second quarters of 2011, respectively, on a sequential (quarter-on-quarter, seasonally-adjusted annualized) basis. This followed a solid sequential real GDP growth rate of 9.2 percent in the final quarter of 2010 (Figure 1)¹. On a year-on-year basis, which may not accurately reflect output developments during the volatile crisis years, real GDP growth decelerated less markedly (Figure 2).

Figure 1. Sequential GDP growth slowed down in the first half of the year...

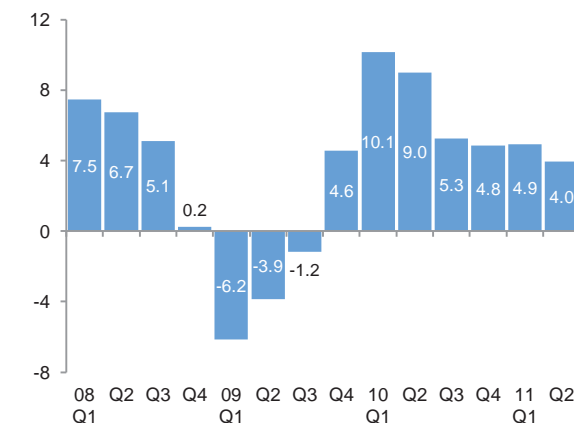
GDP adjusted for inflation and seasonal fluctuations, change from the previous quarter (annualized), percent



Source: Haver and World Bank staff calculations.

Figure 2. ...although the year-on-year growth rate moderated more modestly.

GDP adjusted for inflation, change from previous year, percent.

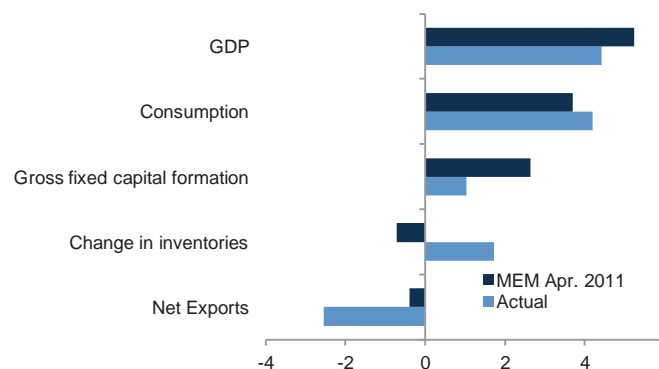


Source: CEIC and World Bank staff calculations.

Growth in the first half of the year came in below expectations. Real GDP expanded by 4.4 percent in the first six months of 2011 compared to the same period in 2010, below the revised official growth estimate of 5.0-5.5 percent for 2011 as a whole and the World Bank's forecast of 5.2 percent in the previous edition of the *Malaysia Economic Monitor*. The 0.8 percent difference between the forecast and the actual outcome can be primarily attributed to underperformance of net exports due to mining production bottlenecks and worsening global demand conditions (Figure 3). Fixed capital formation also surprised on the downside on slow disbursements of public investments. The contribution of consumption slightly exceeded the forecast, whereas inventories continued to contribute positively and significantly to growth, countering expectations that the restocking cycle had been largely completed.

Figure 3. External demand and fixed investment grew less than expected

Contributions to year-on-year GDP growth rates, percent



Source: CEIC, World Bank (2011a) and World Bank staff calculations.

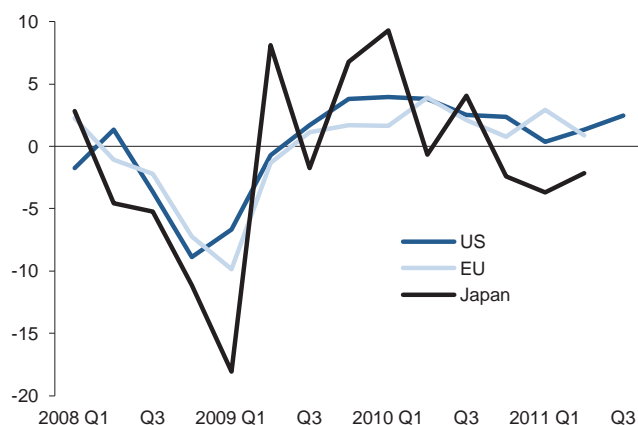
¹ On a non-annualized basis, output growth was 1.5 and 0.6 percent in the first two quarters of 2011 respectively. In the pre-crisis period of 2002-2007, quarterly GDP grew on average 1.5 percent, so recent performance has been below the long-term trend.

A challenging external environment

The tentative recovery in advanced economies was buffeted by shocks from higher oil prices, the tragedy in Japan, and renewed concerns about the European sovereign debt crisis. In the US, higher oil prices, continued weakness in housing and labor markets, fiscal consolidation at the state level, and later supply chain disruptions from the Japanese earthquake (which affected the US auto industry) all conspired to weaken GDP growth, which slowed to an average pace of 0.9 percent in the first half of the year compared to a 3.1 percent average pace in 2010 (Figure 4). In Europe, the core economies of Germany and France drove growth to 3.1 percent in the first quarter (well above the 2.0 percent average for 2010), but continued weakness in the periphery dragged growth down in the second quarter and reignited the sovereign debt crisis in countries such as Greece, Portugal, Ireland, Spain and Italy. In Japan, GDP contracted by 3.6 percent in the first quarter as a result of the tsunami. The related nuclear disaster delayed recovery and created uncertainties on the reliability of power supply in the medium term, keeping GDP growth in negative territory into the second quarter.

Figure 4. US and EU experienced modest output growth so far in 2011

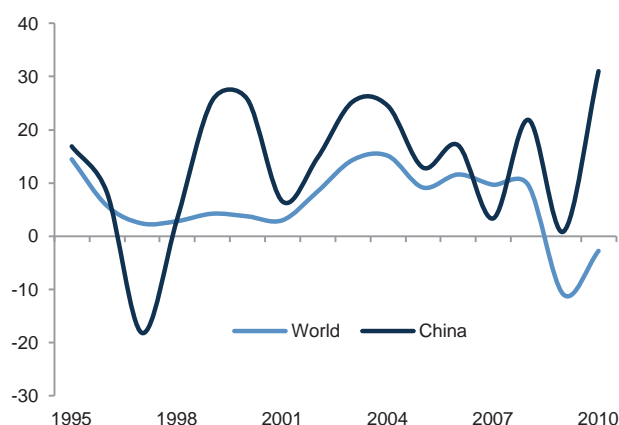
GDP adjusted for inflation and seasonal fluctuations, change from the previous quarter (annualized), percent



Source: CEIC.

Figure 5. China's import demand has increasingly supported growth in other emerging economies

Imports of consumption goods, percent change year-on-year



Source: World Bank (2011b).

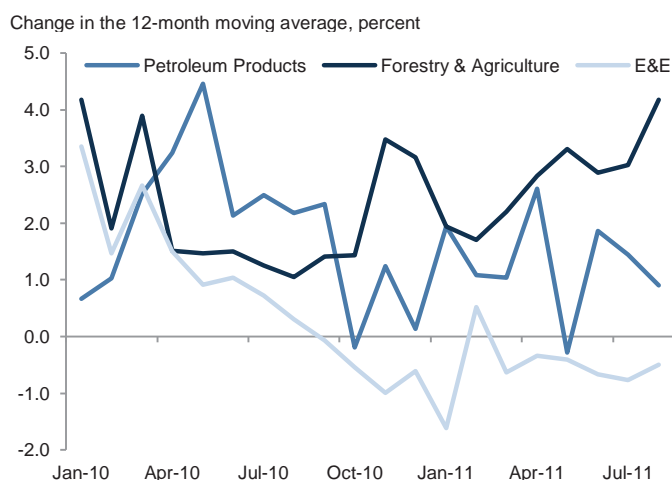
Advanced and emerging economies diverged both in growth and inflation trends, with implications for monetary policy and capital flows. Growth in emerging East Asia slowed due to supply chain disruptions and ongoing weakness in export demand from advanced economies, but the slowdown was less marked compared to advanced economies thanks to domestic and regional demand, especially from China, where demand for consumer goods imports continued to grow robustly (Figure 5). Meanwhile, policy makers worried about rising inflation, as the spike in commodity prices earlier in the year proved relatively sticky. In addition, pressures for wage increases to cope with higher food prices, rapid credit growth in the context of negative real interest rates and related strength domestic demand created concerns of demand-pull inflation. In China, inflation accelerated to a two-year high in July and wage growth has been significant. As a result, many central banks in emerging economies embarked more decisively in monetary policy normalization, which further increased interest rate differentials with advanced economies and created incentives for increased capital inflows. This trend would be reversed into the second half of the year, as noted below.

Commodity prices have remained relatively high, peaking in April 2011 and declining only slowly since then. Commodity prices have been steadily increasing since mid-2010 but spiked in early 2011 due to the turmoil in the Middle East and in North Africa. They have since declined somewhat, but remain high compared to levels in 2010. Brent crude oil, for example, was up 45 percent in the third quarter compared to the previous year. High oil prices and demand from China for industrial commodities drove up the prices of agricultural commodities. In particular, rubber was up 39 percent, while palm oil was up 17 percent in the third quarter from the same period in 2010. Global food prices have been similarly sticky. Prices climbed through April, after declining only modestly through September. Rice prices had been relatively stable, but prices have climbed since June, most recently due to widespread floods in Thailand and the Philippines.

Export growth in a two-speed mode

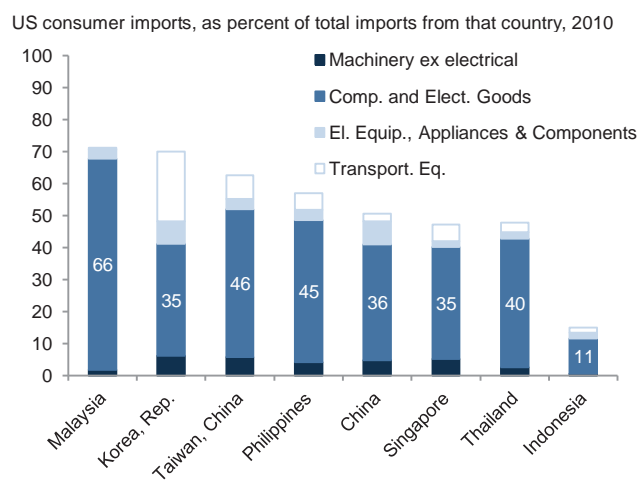
Developments in the global economy translated into a two-speed momentum for Malaysian exports, with a slowdown in E&E products partially compensated by robust commodity-related exports. Real exports increased four percent in the first quarter of 2011 on a sequential basis. This is comparable to the impressive export growth observed during the forceful recovery in late 2009 and early 2010. Booming global commodity prices played a vital role (Figure 6).² On the other hand, shipments of electrical and electronic (E&E) goods remained subdued and well below the pre-crisis level. Because commodity-linked exports have high domestic value-added, the domestic value added of exports registered a 10.6 percent expansion in the first quarter.³ Supply chain disruptions due to the Tohoku earthquake, production bottlenecks in a key oil field as well as the weakening global demand dragged down external demand in the second quarter, and real exports registered virtually no growth while the domestic value added of exports contracted 0.6 percent from the previous quarter. The two-speed export momentum continued in the third quarter, when overall exports rose 1.5 percent from the previous quarter (in nominal US dollar terms) but electronics exports contracted by 3.3 percent (all seasonally-adjusted, annualized rates).

Figure 6. E&E posted negative growth through most of 2011 but commodity-linked exports have soared



Source: CEIC and World Bank staff calculations.

Figure 7. Malaysia's exports to advanced economies are concentrated in consumer electronics



Source: US Census Bureau, in World Bank (2011b).

The long-term weakness in exports of electrical and electronic products was exacerbated by the soft patch in advanced economies. Weak performance of E&E exports, which still comprise 35 percent of Malaysia's overall export basket, has been due to both structural and transitory factors. The Malaysian E&E industry has been underperforming its regional counterparts post-crisis. Structural competitiveness appears to have been gradually eroding as consumer tastes shift to products such as smartphones and tablets that use components where Malaysia is not an important part of the supply chain. Moreover, rising labor costs have been driving production expansion towards lower-cost countries, especially Vietnam. Adding to this structural pattern, final demand for E&E products remains largely dependent on advanced economies (Figure 7), which has yet to recover. Finally, weak performance also partly reflects the temporary supply chain disruptions in the aftermath of the disasters in Japan.

Contributions to growth by net exports presented a different picture from export value-added as consumer goods imports were strong in the first quarter. Despite relatively robust overall exports, net exports contributed negatively to sequential GDP growth in early 2011. Imports grew faster than exports at nearly seven percent (quarterly, seasonally adjusted), mainly on higher global energy and food prices. Healthy imports of final consumption goods due to buoyant consumer spending also contributed. In contrast, imports (particularly machinery and transport equipment) contracted 2.8 percent in the second quarter, the largest since the first quarter of 2009, amid sluggish industrial production and poor new orders for durable goods.

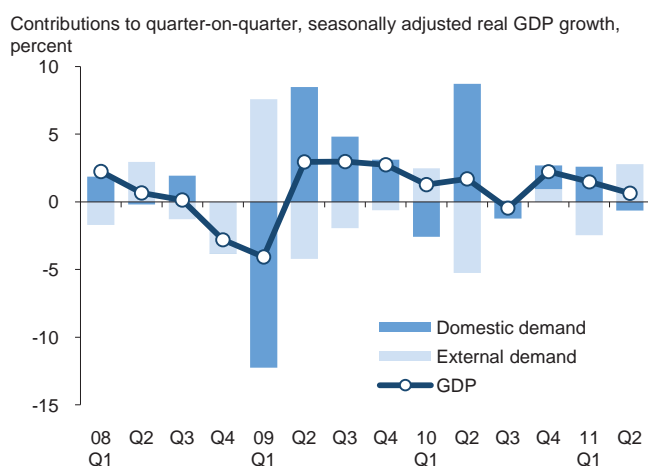
² The international prices of crude oil, palm oil and natural rubber increased 17, 13 and 32 percent in the first quarter of 2011 relative to the fourth quarter of 2010, respectively.

³ The domestic value-added of exports is estimated as gross exports less imports of intermediate goods and changes in inventories.

Domestic demand continued to fuel growth

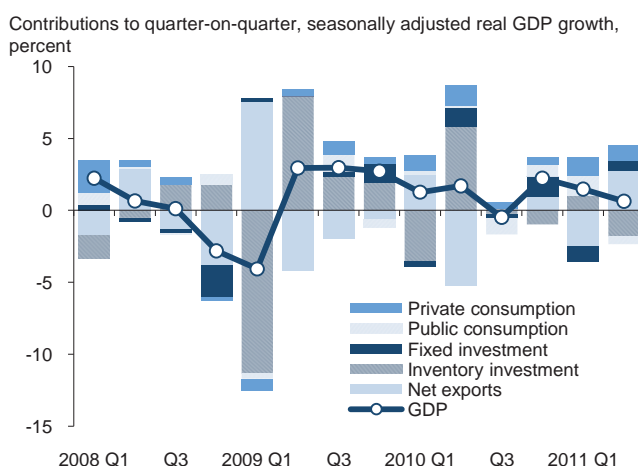
Domestic demand has been a key driver of GDP growth following the end of the post-crisis rebound. A proxy for domestic value added consumed in Malaysia (private consumption excluding imports of consumer goods) rose by 11 and 10 percent in the first and second quarters, respectively (seasonally-adjusted, annualized rates). The domestic value added of fixed investment (investment excluding capital goods imports) was weak in the first quarter, contracting by 24 percent, but picked up in the second quarter. Overall, domestic value added consumed or invested in Malaysia expanded a robust 5 percent in the second quarter.⁴ Domestic demand (consumption and total investment) led quarterly growth in early 2011 boosted by buoyant private and public consumption expenditures but also inventory buildup (Figure 8 and Figure 9). This is in line with the trend observed in the past quarters since mid-2009 when domestic demand typically propelled Malaysia's economic recovery. Meanwhile, the growth pattern reversed in the second quarter of 2011, as net exports of goods and services in real terms turned positive (on much lower imports, especially of capital goods, which boosted the domestic value-added of investment). Private consumption continued to grow, but this was outweighed by stock depletion.

Figure 8. Net exports recently contributed positively to sequential GDP growth



Source: Haver and World Bank staff calculations.

Figure 9. Private consumption advanced steadily unlike fixed investment



Source: Haver and World Bank staff calculations.

Household consumption posted solid gains, driven by buoyant agricultural incomes, strong performance of financial markets, and still-low interest rates. Except during the trough of the crisis in late 2009 and early 2010, real private consumption has consistently registered positive growth. The pace indeed accelerated in the first half of this year relative to the second half of 2010. This was underpinned, among others, by solid employment and wage growth, comfortable access to credit (banks' willingness to lend and low borrowing costs), and favorable commodity prices that supported the incomes of a large number of rural households. Higher consumer inflation appeared to have dampened consumer spending only marginally.

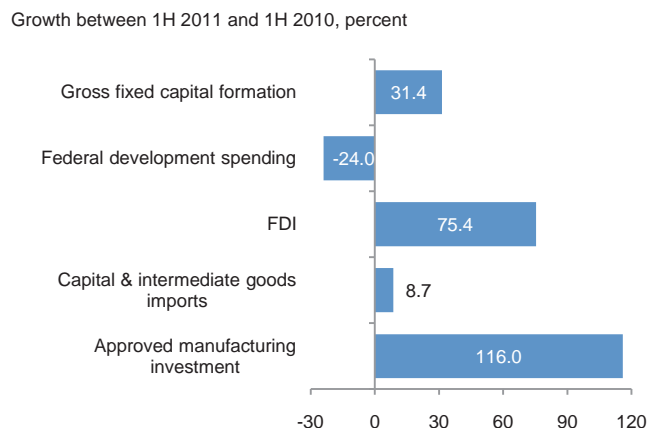
Government consumption has been modestly counter-cyclical since the onset of the global financial crisis. The correlation between growth in real government consumption and growth of real GDP excluding government consumption has been low but negative (-0.08) since the onset of the global financial crisis, suggesting fiscal policy has been modestly counter-cyclical. Public consumption retreated 3.7 percent (quarter-on-quarter, seasonally-adjusted, QoQ sa) in the second quarter of 2011 after expanding noticeably in the preceding six months. Notwithstanding the decline, the current level is still nearly 13 percent above the mean 2008 value.

Fixed investments have generally been on an upward trend. Gross fixed capital formation (GFCF) revived, growing 3.7 percent (QoQ sa) in the second quarter of 2011 after a 4.8 percent decline in the first quarter. The breakdown of private/public investment data is not available from official sources on a quarterly basis. However, according to PEMANDU, private sector investment was up 23.4 per cent to RM51.2 billion in the first half of 2011. Improvements in

⁴ Refers to consumption and fixed investment less service imports and imports of consumer and capital goods.

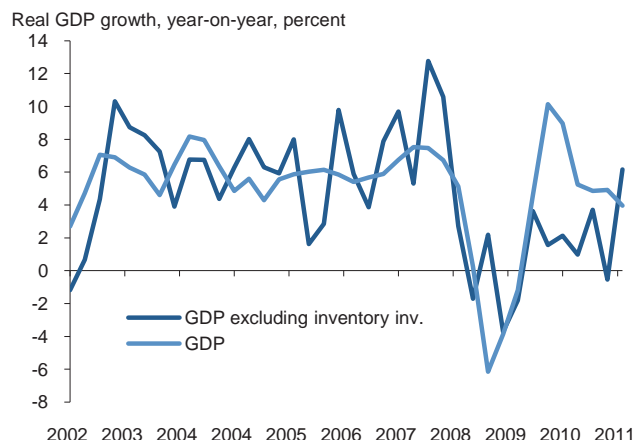
foreign direct investment, the value of approved manufacturing projects, imports of investment and intermediate goods, and subdued disbursements of development expenditures all underlie the strength in private investment (Figure 10). Although investment has been on a generally upward trend it has also been highly volatile: since the final quarter of 2009, quarterly improvements in gross fixed capital formation were always followed by a decline in the subsequent quarter.

Figure 10. All signs point to robust private investment in the first half of 2011



Source: CEIC and World Bank staff calculations.

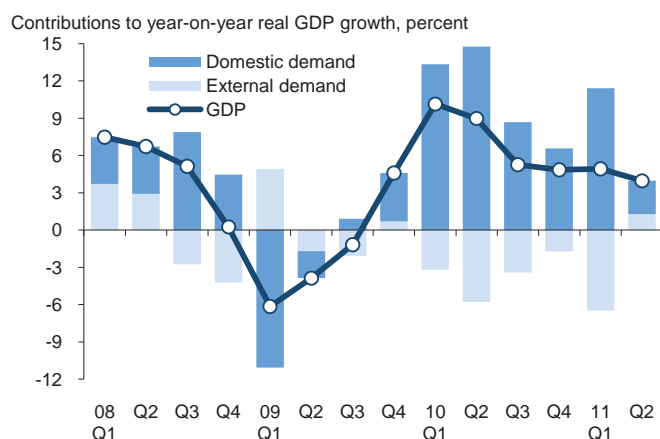
Figure 11. The role of inventory investment in GDP growth remains significant



Source: CEIC and World Bank staff calculations.

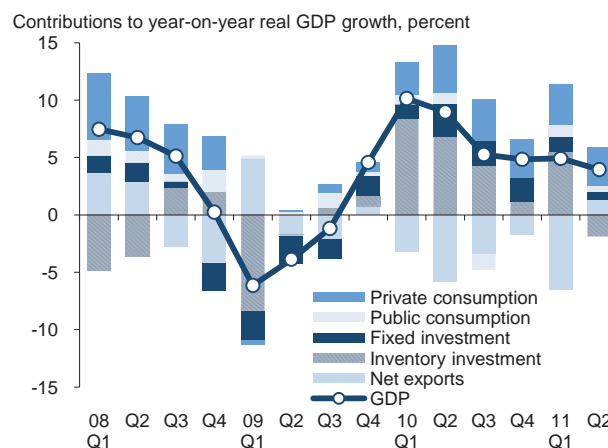
Sustained inventory build-up in recent quarters now offset the crisis-related destocking. As Figure 9 above shows, the role of inventory investment in explaining year-on-year output growth diminished from the crisis years but remains significant in recent quarters. Its contribution to GDP growth in absolute terms ranged between 20 to 111 percent since the recovery took place in the final quarter of 2010 (mean 66 percent).⁵ Continuous stock accumulation since the second quarter of 2010, which largely mirrored deficits in real exports, amounted to RM 22.1 billion by mid-2011. This is now comparable to destocking of RM 22.8 billion over 2008-09. As a result, except for the most recent quarter, GDP growth excluding inventory investment would have been much lower (Figure 11).

Figure 12. Domestic demand has been driving yearly growth...



Source: CEIC and World Bank staff calculations.

Figure 13. ...underpinned mainly by stock buildup and consumer spending



Source: CEIC and World Bank staff calculations.

On a year-on-year basis, growth became more broad-based in the second quarter of 2011. Since real GDP resumed a positive growth trend in the final quarter of 2009, net exports typically held back the Malaysian economy

⁵ This compares to the mean of 210 percent during the crisis (between the third quarter of 2008 and the third quarter of 2010). The same figure for the pre-crisis (2002-07) period is only 43 percent.

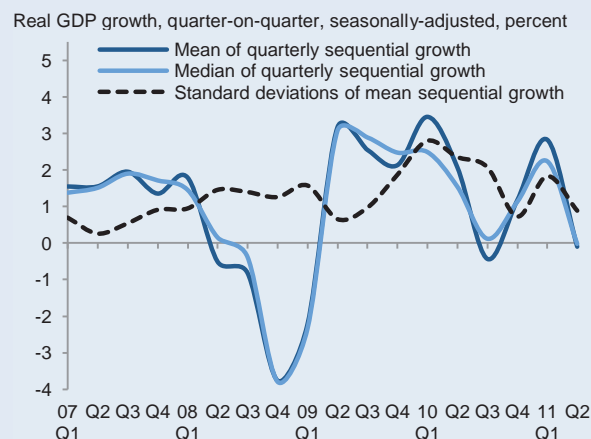
(Figure 12) as import growth nearly always outpaced that of exports, which was associated with inventory accumulation. This pattern however changed in the second quarter of this year where growth became more broad-based. Real imports registered the smallest rise in several quarters on cloudy export prospects. Among domestic demand components, private consumption and fixed investment, as well as public consumption to a lesser extent, steadily fuelled the expansion (Figure 13). A year-on-year comparison hence masks great volatility in government consumption and fixed investment that can be better analyzed from the sequential perspective.

Malaysia's post-crisis performance has been middling compared to other regional economies. As discussed in Box 1 below, the performance of the Malaysian economy has been in line with other open economies in the region that also experienced output contractions during the global financial crisis. Although private consumption growth (and domestic demand more generally) has been a stronger driver of growth compared to countries like Thailand and Hong Kong SAR (China), Malaysia's overall performance has been dragged down by weakness the key E&E export sector, which caused the recovery of exports to lag that of neighboring countries.

Box 1. Malaysia's Economic Performance from a Regional Perspective

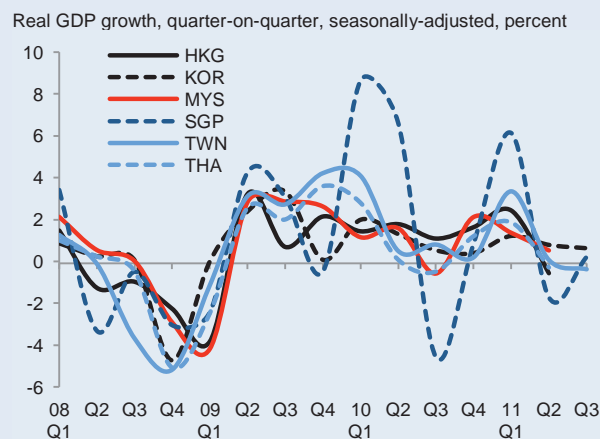
After a strong turnaround in early 2011, crisis-affected East Asian economies faced slower output growth momentum again in mid-year. The quarter-on-quarter, seasonally-adjusted GDP growth in the six regional economies which experienced a recession in 2008-09 stalled in the second quarter of 2011 (Figure 14).^a This represents a decline from a healthy 2.8 percent pickup in the early months of the year. Held back by renewed broad weakness in advanced economies, the slowdown was relatively synchronized, as reflected by a lower standard deviation of mean growth rates. Growth momentum in the second quarter of 2011 went below their pre-crisis trends in all six economies. The last time this took place was in the third quarter of 2010 during the global soft patch. But the recent slowdown has so far appeared milder than that in mid-2010.

Figure 14. Crisis-affected East Asian economies faced slower sequential GDP growth in mid-2011



Source: Haver and World Bank staff calculations.

Figure 15. Available data point to continued weakness in the third quarter



Source: Haver and World Bank staff calculations.

The slowdown in Malaysia appeared milder than most other crisis-affected regional economies. Malaysia's sequential growth decelerated from 1.5 percent in the first quarter of 2011 to 0.6 percent in the second quarter. With the exception of South Korea, the slowdown was more pronounced in the remaining four economies. Growth momentum in fact contracted between 0.2 and 1.6 percent in Singapore, Thailand and Hong Kong SAR (China) (Figure 15). Available data on the third quarter suggests that regional growth remained subdued. Growth in South Korea moderated further, while output in Taiwan (China) declined.

Despite a synchronized slowdown, growth drivers were relatively diverse across economies. Domestic demand mainly drove sequential output expansions in Malaysia, South Korea and Singapore (Table 1). In contrast, net external demand was more influential in Taiwan (China), Thailand and Hong Kong SAR (China). In nearly all

economies, real imports of goods and services contributed positively to GDP growth because imports grew more slowly than exports on poor growth outlook, and hence weak demand for intermediate goods. Private consumption remained buoyant in all economies. The role of public consumption and gross fixed capital formation is more diverse. Finally, the growth contribution by changes in inventory, which was generally strong during the peak of the crisis, appeared to subside.^b

Table 1. Growth engines were relatively diverse across economies in the first half of 2011

	Contribution to sequential GDP growth in H1/2011 (out of 100%)		Contributed positively to sequential GDP growth in H1/2011?					
	Net external demand	Domestic demand	Exports	Imports	Private cons.	Public cons.	GFCF	Stocks
Malaysia	15	85	Yes	Yes	Yes	Yes		
Korea Republic	28	72	Yes	Yes	Yes	Yes		Yes
Singapore	18	82	Yes	Yes	Yes		Yes	Yes
Taiwan, China	122	-22	Yes		Yes			
Thailand	269	-169	Yes	Yes	Yes		Yes	
Hong Kong SAR, China	156	-56	Yes	Yes	Yes	Yes	Yes	

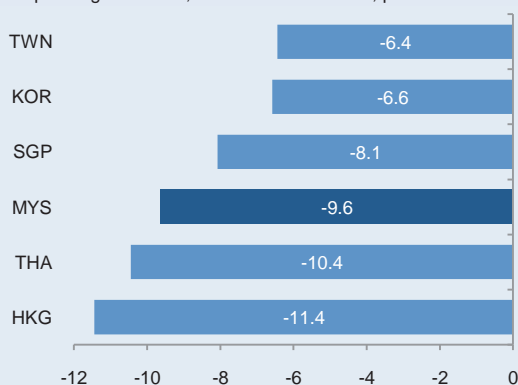
Note: Cons. is consumption, GFCF is gross fixed capital formation.

Source: Haver and World Bank staff calculations.

Malaysia's slower growth so far in 2011 has widened the gap between the actual and simulated, no-crisis GDP levels. Malaysia's actual GDP level in the first half of 2011 is still nearly 10 percent below the level which would be expected had quarterly growth been sustained at the mean rate achieved during 2002-07.^c The gap between the actual and counterfactual "no-crisis" levels in Malaysia is middling relative to the other five economies (Figure 16). Taiwan (China) and South Korea appear to outperform others in this regard with the shortfall of around 6.5 percent. The two particularly lagging expenditure components in Malaysia are exports of goods and services and fixed investment. Their levels in the first half of 2011 are still 17-22 percent below the counterfactual levels. Meanwhile, although private consumption has been largely resilient throughout the turmoil, the gap remains at almost 11 percent. Government consumption exhibited the smallest shortfall (7 percent), underpinned by large fiscal supports when the crisis first hit.

Figure 16. Malaysia's current output level remains below the counterfactual, no-crisis level

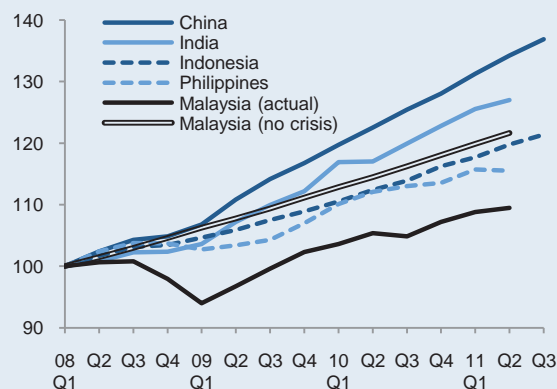
The extent that actual GDP levels in H1/2011 fell short of the corresponding simulated, 'no-crisis' GDP levels, percent



Source: Haver and World Bank staff calculations.

Figure 17. The crisis has pulled back Malaysia's output level relative to those without recession

Actual and simulated GDP levels (seasonally-adjusted) in real terms, Q1 2008=100



Source: Haver and World Bank staff calculations.

Had the Malaysian economy evaded crisis, its growth performance would likely have been favorable relative to some of the regional peers that managed to avoid recession. As of mid-2011, Malaysia's output level (rebased) is 5.2-8.6 percent below those of Indonesia and the Philippines, the two neighbors that unlike Malaysia did not face a recession during 2008-09 (Figure 17). In contrast, assuming no crisis, Malaysia's output level would have been 1.6-5.3 percent higher, given its stronger pre-crisis growth pace. Figure 17 also shows that while output growth in China and India was interrupted by the crisis, this was temporary and the two economies quickly resumed their speedy

expansion. China's output level in the third quarter of 2011 is 37 percent higher than the pre-crisis level, and 27 percent for India as of the second quarter.

Notes:

^a These are Hong Kong SAR, China (HKG), Korea Republic (KOR), Malaysia (MYS), Singapore (SGP), Taiwan, China (TWN) and Thailand (THA).

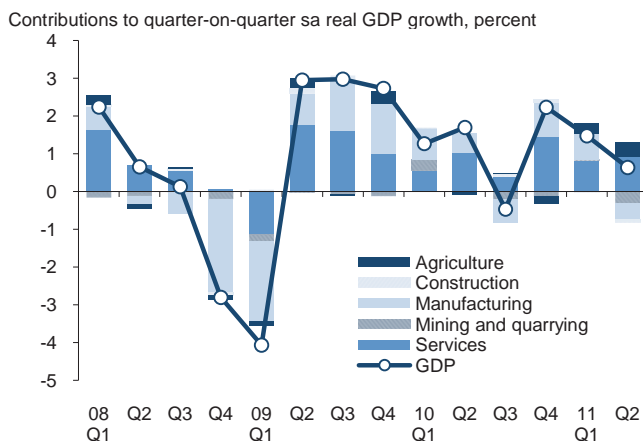
^b Changes in stocks-to-GDP ratio (absolute value, seasonally-adjusted) decreased from 2.7 and 1.7 percent in 2009 and 2010 respectively to 1.3 percent in the first half of 2011, which is now comparable to the pre-crisis level.

^c For example, Malaysian sequential growth in the second quarter of 2011 is assumed to be 1.4 percent, which is the mean quarter-two growth during 2002-07, as opposed to the actual of 0.6 percent. Using medians rather means does not materially change the estimates.

Bottlenecks in mining and manufacturing drag down production

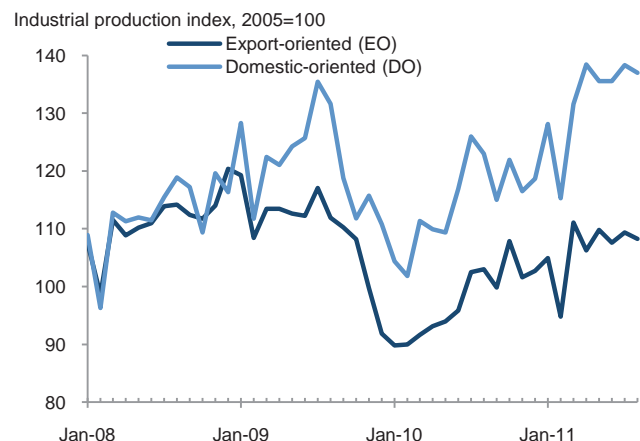
On the supply side, the agriculture and services sectors continued to expand, while mining and manufacturing contracted. Real agricultural output surged in the first half of 2011 mainly as production of palm oil and rubber accelerated in response to higher prices. The cumulative sequential growth amounted to 9.5 percent, the fastest half-year growth since 1992. The agricultural sector alone accounted for one-fifth and two-thirds of sequential GDP in the first and second quarters of this year respectively (Figure 18). Meanwhile, the services sector remained resilient on robust consumer spending. Nearly all service sub-sectors grew steadily, with more significant increases in the retail and wholesale trade, hotels and restaurants, and finance and insurance sub-sectors. In contrast, mining output plunged 4.8 percent (QoQ sa) in the second quarter, the steepest quarterly decline in at least two decades, due to temporary production problems in the Kikeh oil field in offshore Sabah and maintenance shut-downs in other oil and gas fields. The weak E&E sector and Japan-related supply chain disruptions led to a 1.5 percent decline in the manufacturing output in the second quarter (QoQ sa).

Figure 18. The service and agricultural sectors were the main drivers of output expansion



Source: Haver and World Bank staff calculations.

Figure 19. Export-oriented industries remain much more sluggish than domestic-oriented activities



Source: CEIC and World Bank staff calculations.

Domestic-oriented production outperformed export-oriented activities. The production level of domestic-oriented sectors in August 2011 stood 13.1 percent above the pre-crisis level in January 2008. In contrast, production in industries catering to international markets was 5.2 percent below the pre-crisis level (Figure 19). Within export-oriented industries, E&E production has been sluggish, driven by the subdued electronics sub-sector rather than electrical goods. A snag at the Kikeh oil field also led to plunging petroleum production since April. Within industries serving domestic markets, construction materials (notably non-metallic mineral products and fabricated metal) expanded robustly. Production of transport equipment plummeted in April on supply chain disruptions; it has since recovered, but new disruptions from the Thai floods in October and November are expected.

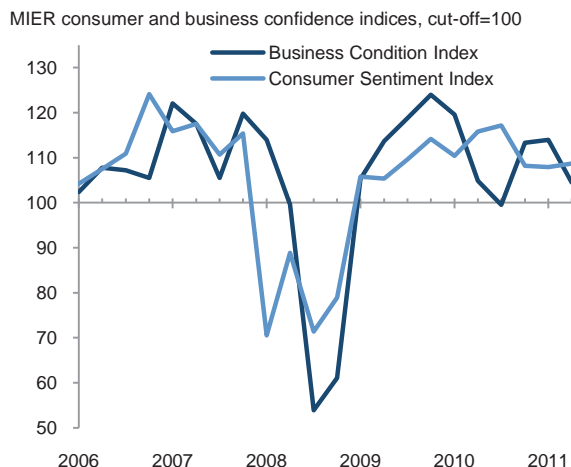
Developments in the production sector were not reflected in capacity utilization rates. The capacity utilization rate for export-oriented industries declined modestly to 78 percent in the second quarter of 2011 from the high point of 80 percent at end-2010. This current level remains relatively high and is comparable to the pre-crisis level.

Meanwhile, spare production capacity in domestic-oriented industries shrank continuously. The utilization rate climbed from the trough of 53 percent in early 2009 to 76 percent in the first half of 2011, when the pre-crisis level was regained. Considering the robust growth in domestic consumption and production in domestic-oriented industries, this may reflect a bias of new private investments towards domestic consumption.

High-frequency indicators point to softness in the third quarter

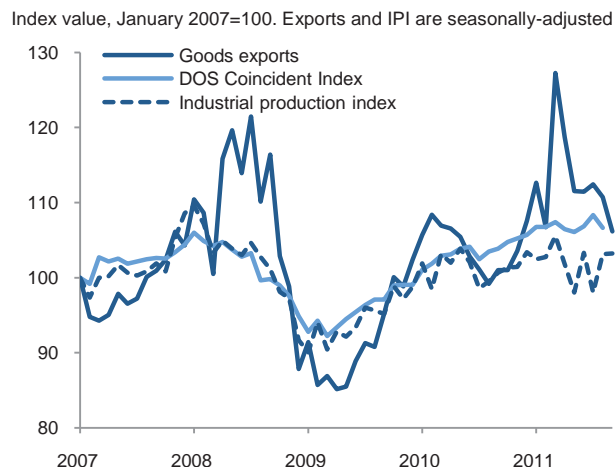
Business confidence weakened in the third quarter on heightened global economic uncertainty while consumer confidence stalled. Business confidence plummeted in mid to late 2010 as a result of the global soft patch. But as this proved temporary, sentiment rebounded strongly in early 2011 (Figure 20). After taking a wait-and-see approach in the second quarter, investor confidence eventually dropped again in the third quarter amid poor global economic conditions. Consumer confidence also halted in mid-2011 after a rather sharp deterioration in the first quarter as optimism in the early part of the year was possibly weighed down by rising food and energy prices, which peaked around February 2011 on a sequential basis (see the inflation section for more detail). Nevertheless, consumer spending continued to expand reasonably well in the first six months of this year.

Figure 20. Business sentiment declined in the third quarter while consumer sentiment stabilized



Source: CEIC.

Figure 21. Monthly indicators suggest weak performance in the third quarter of 2011



Source: Haver, CEIC and World Bank staff calculations.

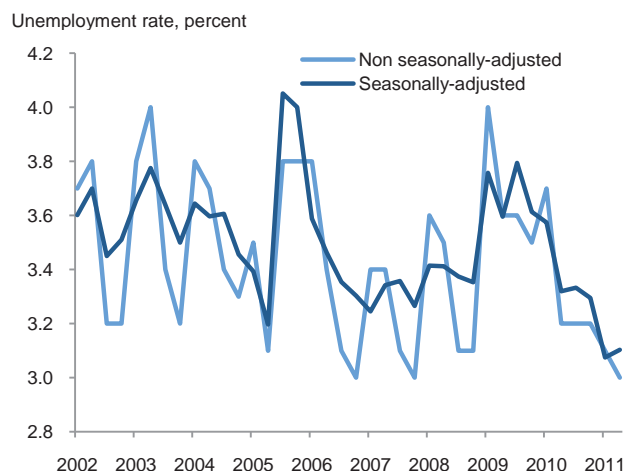
Monthly data suggests economic conditions remained weak between July and September 2011. After registering a 5.2 percent sequential growth in August, the overall industrial production index barely grew in September (Figure 21). Declining mining output was to blame, as manufacturing production expanded. Meanwhile, merchandise exports (seasonally-adjusted) contracted between 0.7-2.0 percent in August and September.⁶ The coincident index by the Department of Statistics also dropped in August 2011, although the July-August average remains higher than that in the second quarter. The index captures, among others, manufacturing sector conditions (employment, real wages and capacity utilization), real contributions to the Employee Provident Fund, and retail sales volume.

Labor markets remained robust

Joblessness reached a decade low in the first half of 2011. On a seasonally-adjusted basis, the unemployment rate declined to around 3.1 percent in the first two quarters of this year (Figure 22), the lowest level since 2000. A non seasonally-adjusted rate decreased rather steadily since early 2009, reaching three percent in the second quarter 2011, which is comparable to pre-crisis years. Available monthly data suggests that the unemployment rate remained stable in July and August 2011. Around 394,000 people were actively looking for a job at that time. The number of new registrants for job-searching schemes also decreased notably during these months.

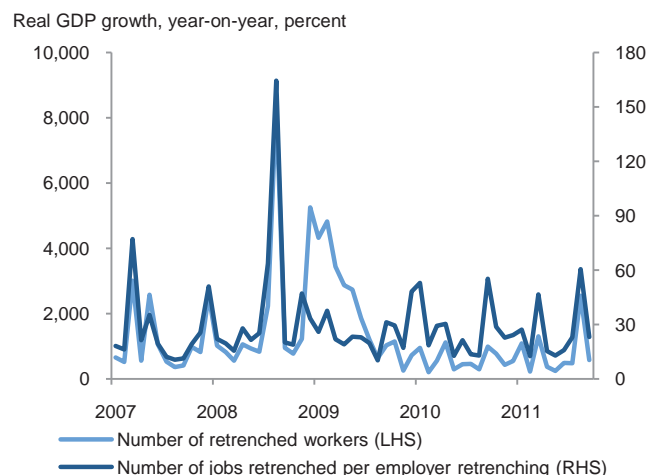
⁶ Different sources suggest seasonally adjusted exports expanded in September, but due to the Hari Raya Aidilfitri holiday falling in September in 2010 and in August in 2011, a decline is more likely.

Figure 22. Joblessness reached a multi-year low in the first half of 2011



Source: CEIC and World Bank staff calculations.

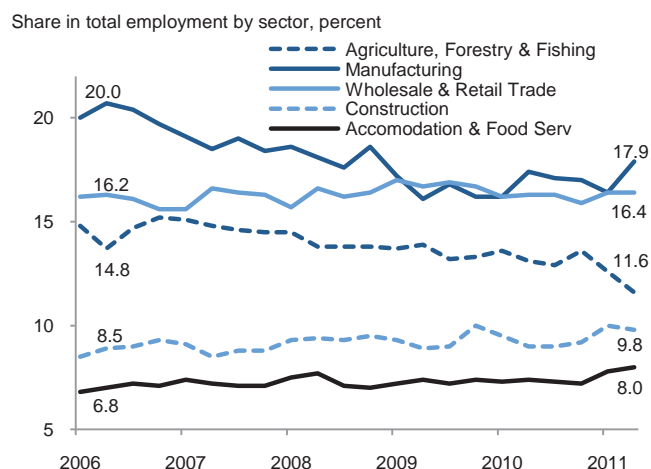
Figure 23. Retrenchments spiked temporarily in August 2011



Source: CEIC and World Bank staff calculations.

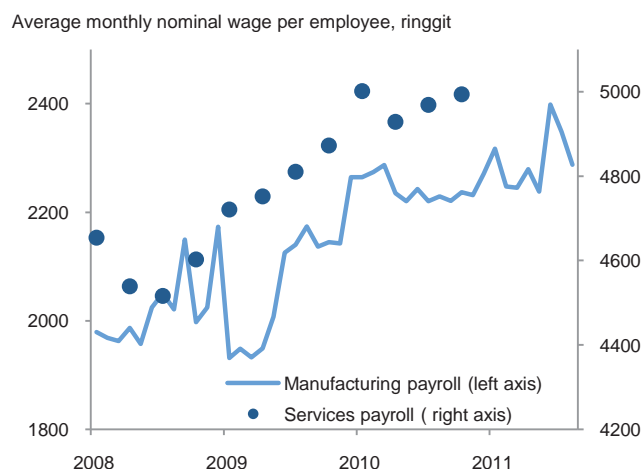
Job retrenchments jumped in August 2011 but appeared to return to normal levels afterwards. Reported retrenchments spiked to 2,545 positions in August this year, compared with a monthly average of 600 posts between January and July (Figure 23). Nearly 80 percent of laid-off workers are domestic employees in Peninsular Malaysia. Both a higher number of firms cutting jobs and larger average retrenchment size per employer contributed to this sharp rise. More specifically, the retrenchments were mainly due to closures of several manufacturers in the low value-added segments of the E&E and furniture industries. The level reported in September however normalized to about 580 jobs. The August surge thus appeared one-off.

Figure 24. Manufacturing employment share picked up in the second quarter of 2011



Source: CEIC and World Bank staff calculations.

Figure 25. Manufacturing wages generally trended up so far in 2011



Note: Service sector wages are only available to Q4 2010.
Source: CEIC and World Bank staff calculations.

Manufacturing employment recently improved relative to other sectors. Employment in the manufacturing sector accounted for nearly 18 percent of total employment in the second quarter of 2011. This edged up by 1.5 percentage points from the first quarter of the year (Figure 24). Most major manufacturing sub-industries (i.e. those employing at least 30,000 workers) such as rubber gloves, semi-conductor devices, electronic valves and printed circuits, televisions, and wooden furniture registered favorable employment growth in the second quarter. But demand for labor was more sluggish for the computer sub-industry, and contracted in the veneer sheets and plastic components businesses. Despite this recent improvement, manufacturing employment share has generally declined in recent years, even before the global economic turmoil started. The agricultural sector shares the same

trend. In contrast, the construction sector and service activities such as retail/wholesale trade, accommodation and food services, and healthcare have seen an increase in their share of total employment.

Despite gains in nominal terms, real wages have not increased. The average wage for a production worker continued to improve, rising from RM 2,245 per month in 2010 to RM 2,295 in the first eight months of 2011 (Figure 25). The year-on-year pay hikes between January and August amounted to 2.2 percent on average. As this is slower than the 3.1 percent consumer inflation during the same period, wages in real terms indeed declined. Nevertheless, in contrast to the continued decline in the export-oriented production of high-tech goods, manufacturing employment and wages appeared to advance in mid-2011, possibly reflecting a positive outlook for production as employers wish to retain scarce skills.

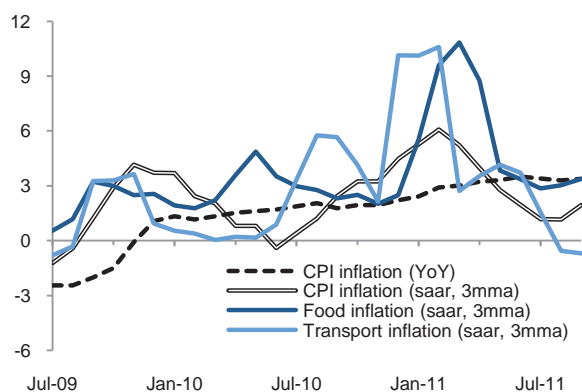
Inflation remained relatively high, but pressures started subsiding

Consumer price inflation remained relatively high but momentum has generally eased. Year-on-year inflation reached 3.5 percent in June 2011, the highest level in over two years, before slowing down to 3.3-3.4 percent between July and September. Although low by international standards, this is considered relatively high compared to the pre-crisis trend of 2.2 percent during 2002-2007. On a sequential, seasonally-adjusted basis, the overall price level continued to rise in recent months but the momentum has generally softened since March (Figure 26). While the food price index edged up slightly, the transport price index fell sequentially in August and September 2011 mainly on a pause in fuel subsidy cuts and lower international oil prices.⁷

Food price increases have been broad-based. Table 2 shows all goods and services that registered at least six percent inflation in the first eight months of 2011, compared with the overall inflation of 3.1 percent. Within the “Food and Non-Alcoholic Beverages” category, all major food items except rice and fresh fish registered significant price increases.⁸ Some of the price hikes are policy-induced, e.g. price subsidy cuts for sugar, fuels and gas⁹ and excise duty hike for cigarette. Others are weather-related like excessive rains that pushed up vegetable prices. Expenses in restaurants also increased in line with raw food prices.

Figure 26. Inflationary pressure remained elevated but has generally softened in recent months

Consumer price index, percent



Source: CEIC, Haver and World Bank staff calculations.

Table 2. Several major food and energy items experienced much higher prices so far in 2011

Average year-on-year CPI inflation between Jan-Aug 2011, percent

CPI category	Item	Chg
Food & Non Alcoholic Beverages	Fresh vegetables	7.1
	Fresh seafood	7.4
	Eggs	8.0
	Spices	8.1
	Fresh meat	8.5
	condensed milk	9.7
	Potatoes	14.3
	Coconut and nuts	18.1
	Sugar	25.8
Alcoholic Beverages & Tobacco	Cigarettes, cigars etc	6.5
Transport	Fuels and lubricants	7.5
Housing, Water, Electr., Gas & Fuels	Gas	7.2
Restaurants & Hotels	Expenses in restaurants	6.1

Source: CEIC and World Bank staff calculations.

⁷ Price subsidies on RON95 petrol, diesel and LPG were reduced in July and December 2010. There were no adjustments in the latest review (July 2011). The domestic price of RON97 petrol has been under the managed floating system since July 2010, hence now partly influenced by moderating international oil prices.

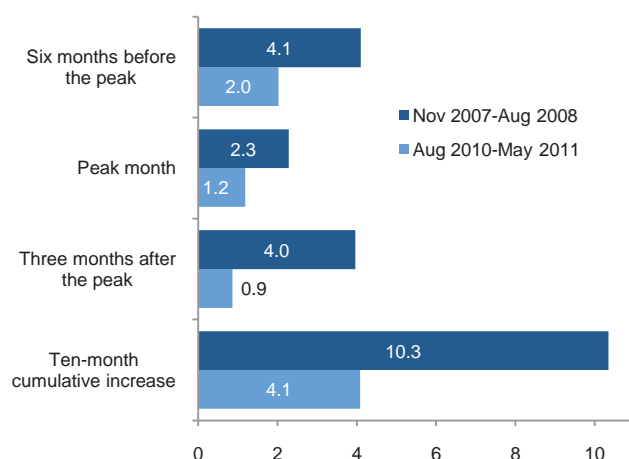
⁸ The nine food items listed here account for nearly 40 percent of the Food at Home CPI sub-category. Adding rice and fresh fish, the total share would increase to 65 percent.

⁹ Effective in June 2011, electricity tariff and natural gas price were raised by 7.1 and 28.0 percent respectively. Industrial and commercial users bear much of rising electricity charges, as 75 percent of all households are not directly affected although there could be some price pass-through.

The recent food price hike in late 2010/early 2011 was much milder than the late 2007/early 2008 episode. In the recent episode, a month-on-month, seasonally-adjusted increase in the CPI food price index peaked at 1.2 percent in February 2011 relative to 2.3 percent in May 2008 (Figure 27). The pace of price increases in the six months before the peak and the three months that followed were also greater in the 2007/08 period. So overall, food prices advanced by over 10 percent in those ten months (November 2007 and August 2008), compared with 4.1 percent between August 2010 and May 2011. Following the two bouts of food price hikes, the food price index was 24 percent higher in September 2011 compared to January 2007 level (seasonally-adjusted). In contrast, prices of non-food items rose only 8 percent during the same period.¹⁰ Food prices and food security are important issues in Malaysia and discussed in greater detail in Box 2 below.

Figure 27. The food price hike in late 2007/early 2008 was sharper than the recent episode

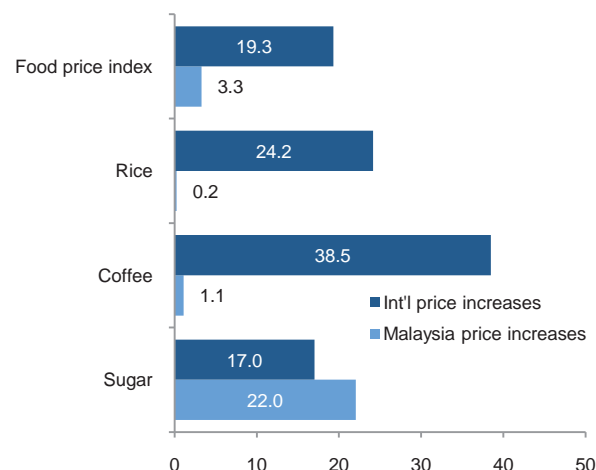
Cumulative increases in month-on-month, seasonally-adjusted of CPI food price index, percent



Note: The peak months are May 2008 and February 2011.
Source: CEIC and World Bank staff calculations.

Figure 28. Pass-through from world food prices to Malaysia domestic prices is commodity-specific

Average year-on-year changes in price indices/levels between January 2010 and August 2011, percent



Source: CEIC, DECPG and World Bank staff calculations.

The pass-through of international food prices to Malaysia domestic food prices is partial and commodity-specific. Between January 2010 and August 2011, the World Bank's Food Price index increased by nearly 20 percent year-on-year, while Malaysia's Food and Non-Alcoholic Beverages CPI category rose by only 3.3 percent (Figure 28). The international-domestic price transmission is thus only partial in the case of Malaysia. This is due to a wide range of factors such as different compositions of food baskets traded/consumed, exchange rate, transport cost, price stabilization measures (import tariff, tax/subsidy and price control), national food self-sufficiency level, and degree of market competition. The magnitude of the pass-through is varying across commodities. For instance, prices of rice and coffee in Malaysia have barely moved since January 2010, while they surged between 24-39 percent in the global market (Figure 28). In contrast, a series of price subsidy cuts on sugar means that international and Malaysia sugar prices have now moved more closely.¹¹

Changes in producer prices typically led consumer prices by a few months. A simple cross-correlation analysis suggests that year-on-year changes in the producer price index (i.e. prices charged by domestic producers of goods and services, PPI) generally led changes in the consumer price index (CPI) by around four months (Figure 29).¹² The correlation coefficient is sufficiently high at 0.65. What explains the overall pass-through appears to be the transmission from PPI for local production to CPI for non-durable goods like food and energy items (Figure 30). Moreover, local production PPI also led semi-durable goods CPI such as clothing, while PPI for imports (i.e. prices

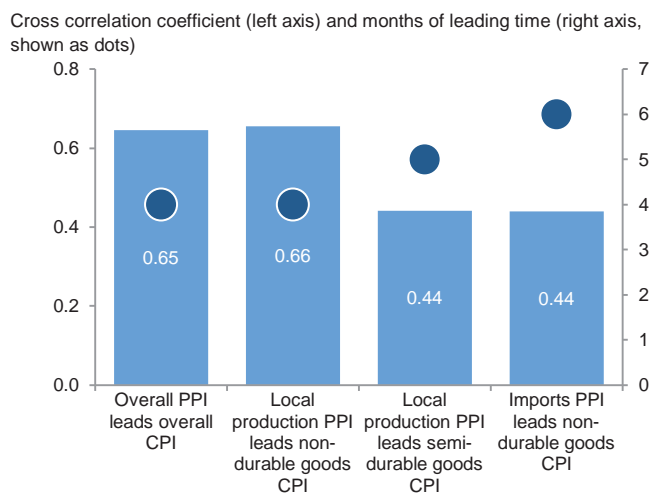
¹⁰ Higher food prices also pushed up the Restaurants and Hotels CPI category by 22 percent. During this period, only the Alcoholic Beverages and Tobacco category increased more quickly than food category at 32 percent.

¹¹ For Malaysia, prices are measured by CPIs for rice, sugar and coffee as market price data are not available.

¹² The analysis is based on Department of Statistics' PPI and CPI data between January 1993 and July 2011. The correlation coefficient decreases to 0.514 when using IMF's PPI for the period between January 1987 and June 2011. The leading time is however unchanged at four months.

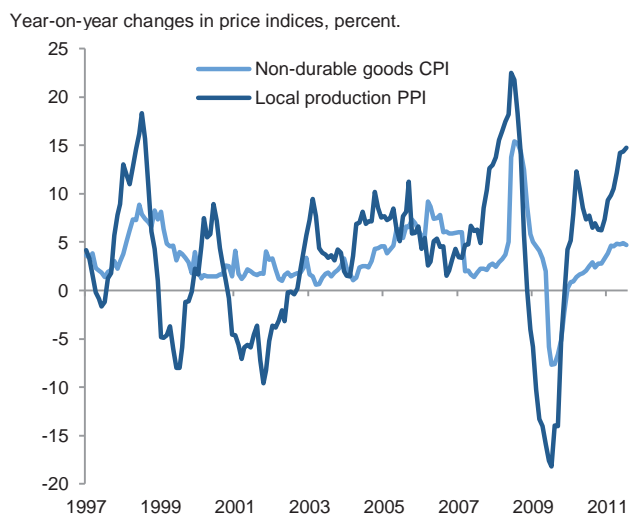
paid by Malaysian importers of goods and services) guided non-durable goods CPI. The strength of association in these two cases is however weaker (correlation coefficients of 0.44). This is in line with the earlier observation on the sizeable but partial pass-through from international food prices to Malaysia domestic food prices. The correlation coefficients tend to be higher without government interventions that seek to moderate or rationalize the transmission.

Figure 29. Changes in producer price index typically led consumer price by around 4 months



Source: CEIC and World Bank staff calculations.

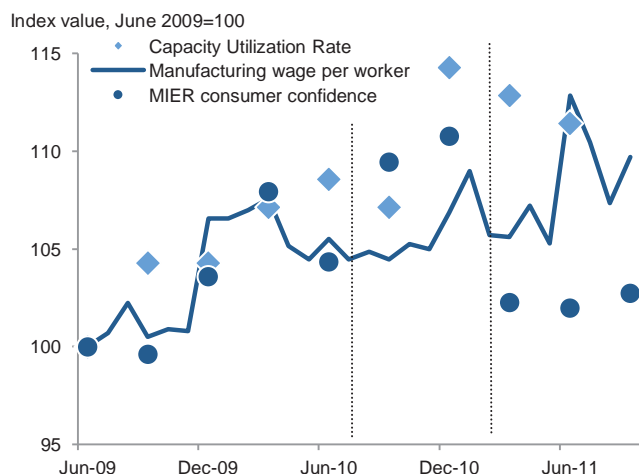
Figure 30. The co-movement is clearer between local production PPI and non-durable CPI



Source: CEIC and World Bank staff calculations.

In addition to supply factors (input prices), demand factors appeared to have pushed up consumer inflation as well. The consumer inflation momentum was particularly strong between July 2010 and February 2011. This period coincided with higher capacity utilization rate, rising manufacturing wages, and improved MIER consumer confidence index (Figure 31). The MIER retail trade index and financial market liquidity (M3) were also on an upward trend during this period. Together, these indicators suggest robust domestic demand in Malaysia, so the inflationary pressure was to some extent demand-driven. In mid-2011, when consumer inflation momentum eased, some of these demand factors also weakened notably.

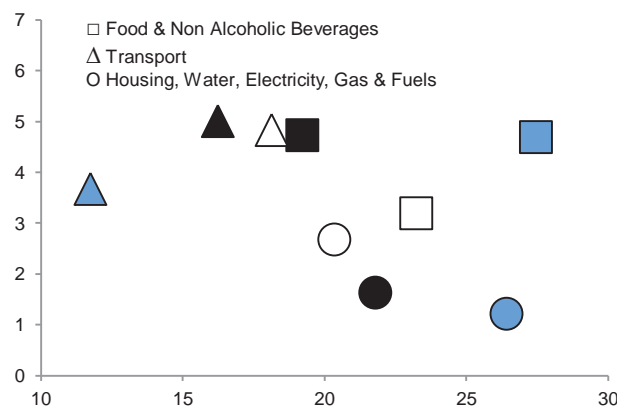
Figure 31. Inflation has been partially demand-driven



Source: CEIC and World Bank staff calculations.

Figure 32. Higher food prices affect Sabah residents more severely than elsewhere

Year-on-year price increases in Jan-Aug 2011 for respective product/region (% vertical axis) and expenditure share in 2005 (% horizontal axis)



Note: Markers with dark fill represent Peninsular Malaysia, lighter fill for Sabah, and no fill for Sarawak.

Source: CEIC and World Bank staff calculations.

Higher food prices appeared to have affected Sabah residents more heavily than those in Peninsular Malaysia and Sarawak. Figure 32 plots the inflation rates for three product groups (food, housing and public utilities, and transport) for each of the three Malaysian regions (Peninsular Malaysia, Sabah, and Sarawak) during the first eight months of 2011 against the respective expenditure shares of these products in 2005 from the household expenditure survey. On food prices, the three squared markers indicate that Sabah residents are more heavily hit than those in Peninsular Malaysia and Sarawak because Sabah residents not only faced relatively high food inflation but they also generally spend higher share of their income on food items (27.5 versus 23.2 percent in Sarawak and 19.2 percent in Peninsular Malaysia).¹³ In contrast, rising transport prices hurt dwellers in Peninsular Malaysia and Sarawak more due to higher inflation rates and expenditure shares there. The effect of housing and public utilities is less clear, as regions with higher expenditure shares experienced smaller price increases for this CPI category. Meanwhile, within Peninsular Malaysia, rural residents likely suffer more than their urban counterparts. They spend proportionally more on foods which recorded steep price rises, and less on housing and public utilities.

Box 2. Food Security in Malaysia

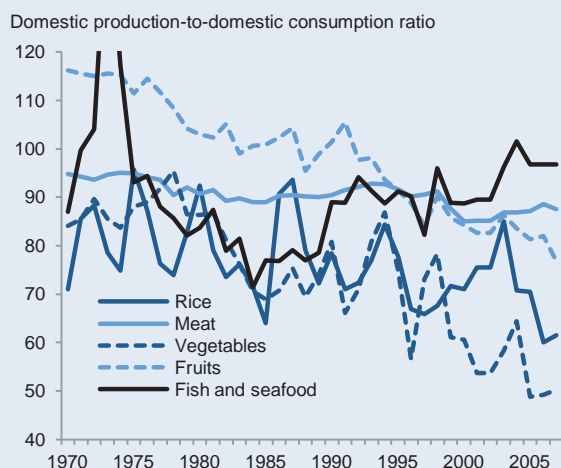
Food security matters especially for the poor and vulnerable groups. While countries are not expected to be self-sufficient in all food items they consume, a reasonable domestic production capacity to serve domestic demand is desirable to enhance the ability of a country to dampen the volatility of international commodity prices. This is especially vital for the poor who spend disproportionately more on food and thus are more severely affected when international food prices soar. For example, Malaysian households earning less than RM 500 per month spend nearly one-third of their income on food compared to only nine percent for households earning more than RM 5,000 per month. Changing external and domestic factors, such as climate change, natural resource degradation, population growth and shift in dietary preferences as national income grows, all add pressure for countries that seek to achieve greater food security.

Malaysia's food self-sufficiency level has generally deteriorated over the long run. Figure 33 depicts Malaysia's self-sufficiency level (SSL) for the main food categories during 1970-2007. SSL is defined as the share of domestic production in domestic consumption, where consumption is calculated as production plus (minus) net imports (exports) and adjusted for changes in stocks. SSL for rice, which was rather volatile across years, went down from 71 percent in 1970 to around 62 percent in 2007 so nearly 40 percent of domestic rice consumption was imported. Reliance on imported vegetables has markedly increased during this period, while this is much lower and more stable for meat products. Meanwhile, Malaysia has turned from a net fruit exporter to a net importer since 1992. Only fish and seafood items exhibit an improving trend, where SSL in 2007 was as high as 97 percent.

Reliance on imported rice intensified mainly because population growth has outpaced domestic rice production growth. Malaysia's domestic rice production volume generally increased since 1998, reaching 1.6 million tons in 2010 (Figure 34). But rice output on a per capita basis has become stagnant at close to 60 kilograms per year during the same period. Given that the size of paddy harvest area shrank rather noticeably, from 717 hectares in 1970 to 453 hectares in 2005 (Mohd Arshad and Abdel Hameed, 2010), rice yields in fact improved significantly. But rice production efficiency has not risen fast enough to keep up with population growth.^a This is despite some evidence that Malaysians have shifted their dietary habits and consumed less rice over time, from 118 kilograms in 1990 to 100 kilograms in 2005 (Warr and others 2008).

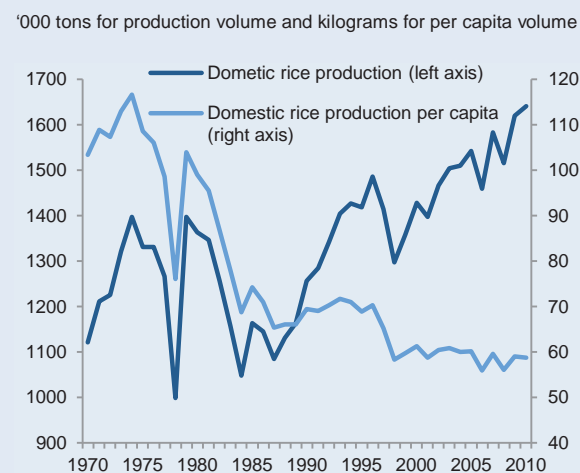
¹³ The analysis here only looks at the *gross* effect of higher price levels. The *net* impact would also take into account higher household incomes gained directly from favorable commodity prices (e.g. 94 percent of rubber production in 2010 was from smallholdings). The net effect of price increases on average Sabah households would thus likely be less severe, as many of them engage in agricultural activities. The share of agricultural output in Sabah was 27.1 percent of total output in 2010, compared to 5.6 percent in Peninsular Malaysia. So Sabah households that do not benefit from higher commodity prices tend to be most adversely affected group.

Figure 33. Most food categories faced deteriorating self-sufficiency levels over the long-run



Source: FAO and World Bank staff calculations.

Figure 34. Domestic rice production volume has risen but slower than population growth



Source: FAO, CEIC and World Bank staff calculations.

At the product level, most basic food items except eggs increasingly rely on imports. Table 3 displays a matrix which classifies selected food items based on whether they were self-sufficient during 2005-2007 and their direction of changes in SSL over 1970-2007. It shows that domestic production of basic food items like rice, freshwater fish, various meat products, tomatoes, coconuts and cassava was unable to meet domestic consumption. Their self-sufficiency trend also worsened over the long run. Malaysia was a net exporter of cassava, cocoa beans, coconut oil, tomatoes and sesame seed oil but now at least 20 percent of domestic consumption of these items needs to be imported. On the other hand, there are food items were already self-sufficient decades ago and improved even further, such as eggs, grapefruit and soybean oil.

Table 3. Many food items have experienced low and deteriorating self-sufficiency level

		Domestic production meets/exceeds domestic consumption (self-sufficient)?	
		Yes	No
Long-term trend on self-sufficiency level	Improved	Eggs (116) Grapefruit (178) Soybean oil (121) Cephalopods (155)	Sugar (7)
	Worsened	Crustaceans (163) Pineapples (120) Palm kernel oil (113)	Rice (64) Freshwater fish (94) Pelagic fish (75) Mutton & goat meat (9) Bovine meat (16) Poultry meat (98) Pig meat (98) Tomatoes (69) Coconuts (84) Cassava (39) Maize (3) Sweet potatoes (86) Lemons, limes (93) Oranges (8) Pimento (3) Coconut oil (68) Sesame seed oil (68) Groundnuts (3) Palm kernels (98)

Note: The numbers in parentheses are average SSLs in 2005-07. The long-term trend "improved" when the domestic production-to-consumption ratio or self-sufficiency level (SSL) in 2005-07 exceeded that in 1970-72 by at least 5 percentage points, and "worsened" when the ratio decreased by at least 5 percentage points.

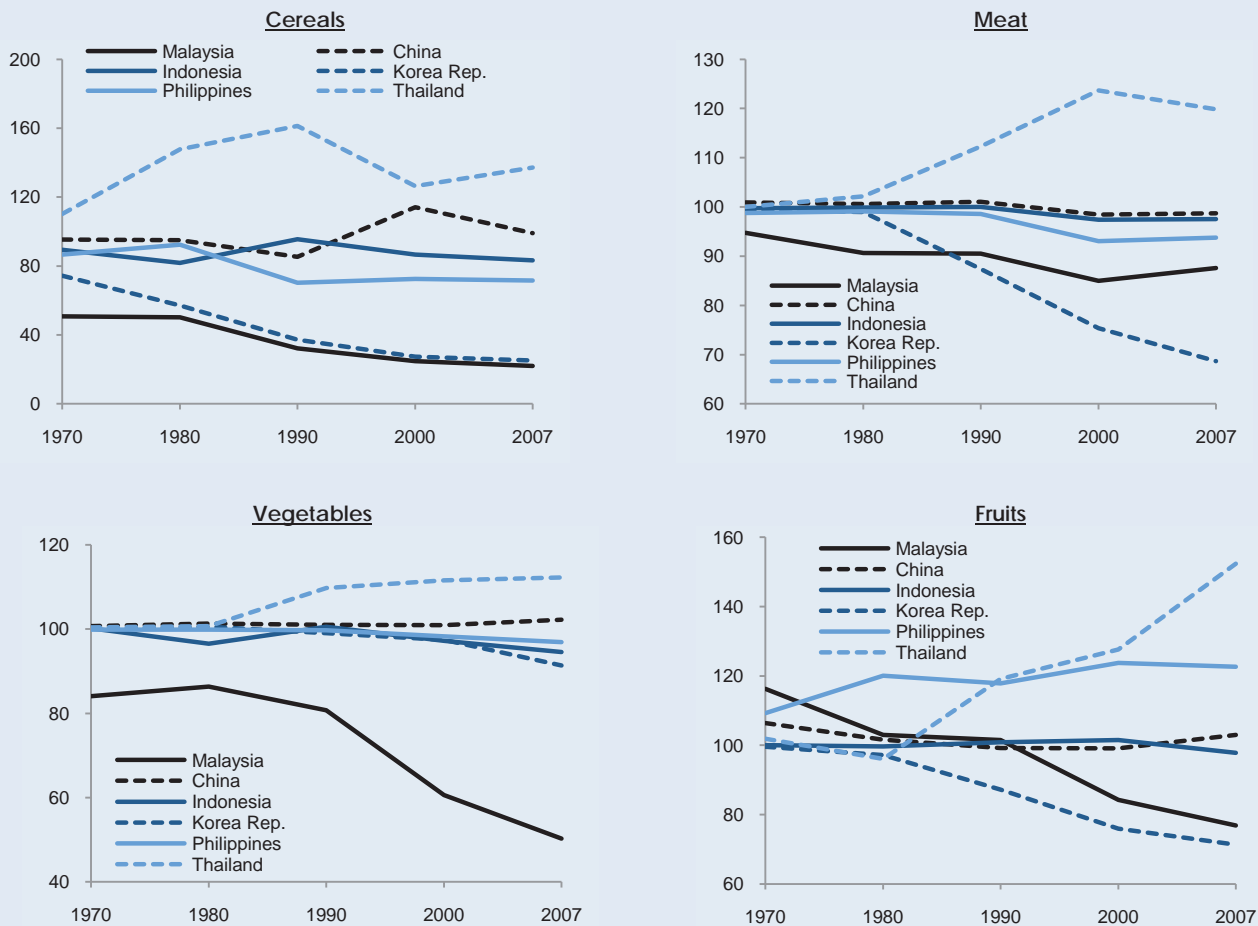
Source: FAO and World Bank staff calculations.

Malaysia generally fares worse on food self-sufficiency relative to regional peers. Figure 35 compares food self-sufficiency levels for cereals (rice, wheat, maize, etc), meat, vegetables and fruits across selected East Asian countries over 1970-2007. Overall, the self-sufficiency levels in Malaysia and South Korea appear weaker than China, Indonesia, the Philippines and Thailand. For example, Malaysia's SSL for cereals was only 22 percent in 2007 compared with the Association of Southeast Asian Nations (ASEAN)'s average of 90 percent. For rice alone, these figures were 62 and 101 percent respectively.^b The food category that Malaysia performs the worst appears to be vegetables. While other economies considered here are largely self-sufficient, imported vegetables accounted for

around half of Malaysia's domestic consumption.

Figure 35. Malaysia's food self-sufficiency levels are less favorable than most other regional peers

Domestic production-to-domestic consumption ratio



Source: FAO and World Bank staff calculations.

Various government initiatives to enhance food self-sufficiency have been introduced in recent years. In response to soaring global food prices, the National Food Security Policy was introduced in 2008 to upgrade food production and ensure stable domestic food prices. During its three-year operation, it focused on boosting rice output, raising food production efficiency, strengthening the marketing and distribution network, supporting crops, aquaculture and livestock, and developing abandoned areas. Rice farmers were provided with subsidies for fertilizer and paddy seeds, a guaranteed minimum paddy price, and production-based incentives. In addition, projects under the Tenth Malaysia Plan (2011-15) are establishing an integrated aquaculture zone, enhancing rice yields, and promoting integration of livestock breeding with oil palm plantation. Finally, the National Agro-Food Policy 2011-2020 has been recently launched with four strategies: ensuring sufficient food supply, increasing agricultural value-added, strengthening supply chains, and providing knowledgeable agricultural workers.

Notes:

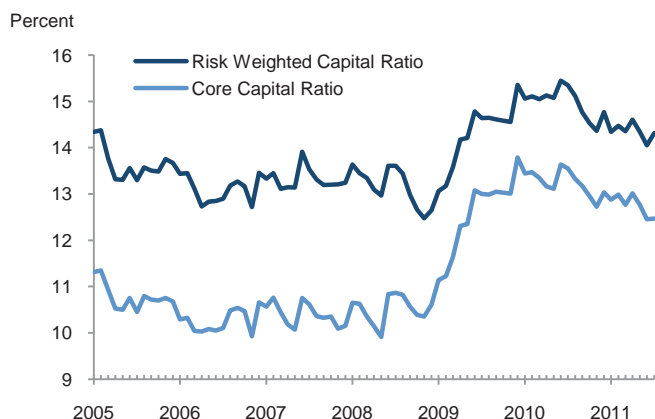
^a Rice production volume in 2010 was only 1.5 times higher than 1970 while this is 2.6 times for population. Higher rice yields here appear consistent with FAO data, which shows that Malaysia's crop production of per hectare of land in use increased 4.7 percent on average per year between 1994 and 2010. The efficiency however decelerated in recent years. FAO data also suggests that agricultural production per agricultural workers increased.

^b Although ASEAN's relatively high SSL for rice is partly pushed up by Thailand (with SSL of 159 percent), SSLs for rice in China, Indonesia, South Korea and the Philippines were between 81-100 percent.

The banking system remains healthy

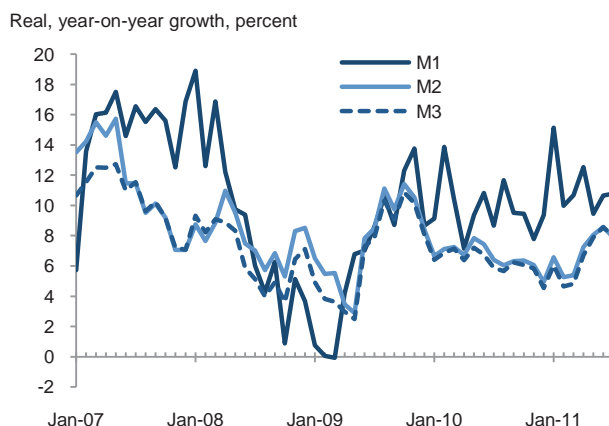
Banks remained well capitalized in the first half of 2011 despite challenging financial market conditions globally. Minimal spillovers to Malaysia's banking system were observed from financial tensions arising from the downgrade of US sovereign rating and the sovereign crisis in the Euro region. Risk-weighted and core capital ratios, at 14.6 and 13.0 percent as of June 2011 respectively, remained well above levels required by Basel III, although both indicators declined marginally in the first half of 2011 (Figure 36). The ratio of impaired loans stood at 2.0 percent in June 2011, down from 2.3 percent at end-2010. The loan loss coverage similarly improved to 97 percent from 89 percent during the same period. Total banking deposits on a price adjusted basis in mid-2011 were 4.1 percent higher than the end-2010 level.

Figure 36. Bank capital adequacy ratios remained sufficiently high



Source: Bank Negara Malaysia.

Figure 37. Financial market liquidity generally increased in mid-2011



Source: CEIC and World Bank staff calculations.

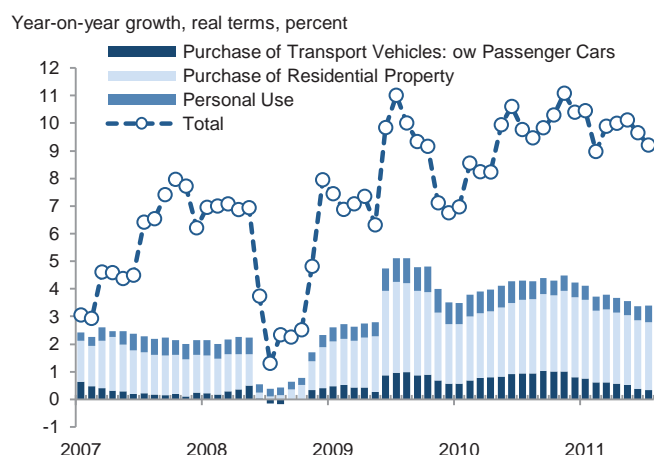
Liquidity and credit conditions are supportive of economic activity

Liquidity in Malaysia's financial system appeared ample and facilitative of economic growth. Total liquidity, as measured by broad money supply (M3), grew at an average, year-on-year monthly rate of 12.4 percent in the first six months of 2011. This accelerated from 7.9 percent in the second half of 2010 (Figure 37). The expansionary effects of capital inflows on M3 were alleviated to a large extent by sterilization efforts from Bank Negara Malaysia. Growth of money supply M1 and M2 was also broadly in line with M3, accelerating in the first half of 2011 relative to the second half of 2010.

Financial market liquidity, a robust banking system, and favorable borrowing costs led to sustained levels of overall lending to the private sector. The banking system remained the private sector's main source of funds. Loan disbursements made up 90 percent of total gross funds raised in 2010 and edged up to 93 percent between January and July 2011. The rest was raised through capital markets via bonds and equities. Total banking loans continued to expand comfortably at a monthly rate of ten percent year-on-year during the first half of the year, which is about the same as that in the preceding six months.

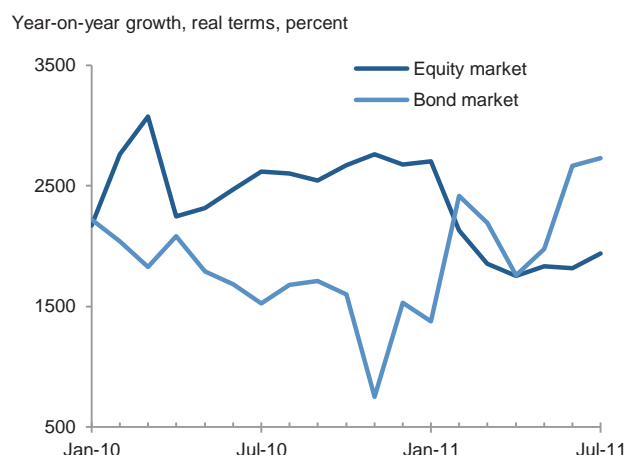
Business loans expanded robustly in general but there are signs of recent slowdown. Manufacturing loans grew on average 11.7 percent in the first half of 2011 compared with 8.5 percent over the preceding 6 months. Loans growth in the construction sector as well as finance, insurance and business activities also improved during this period. This trend however masks potential weaknesses in the coming months as loans growth has recently decelerated. Industries appear to have postponed capacity expansion plans on anticipated weak output growth globally and domestically. For instance, loans growth in the manufacturing and construction sectors peaked, respectively, in May and March 2011.

Figure 38. Loan growth remains generally strong though household credits softened



Source: Bank Negara Malaysia and World Bank staff calculations.

Figure 39. More private sector financing in bond market compared to equity market



Source: CEIC and World Bank staff calculations.

Loans to the household sector slowed mainly on auto and property loans. Credits for purchases of passenger vehicles declined in tandem with lower auto sales due to amendments made to the Hire Purchase Act and Japanese earthquake-related supply constraints (Figure 38).¹⁴ Property loan growth also decelerated slightly in the first half of 2011. This moderation coincides with cooling housing market conditions after a cut in the Loan-to-Value (LTV) ratio to 70 percent imposed on third properties onwards. Increases in the Malaysian House Price Index moderated from 4.9 percent in the final three months of 2010 to only 1.1 percent in the second quarter of this year. Moreover, the pass-through of the cumulative 100 basis point increase in the overnight policy rate (OPR) since early 2010 to mortgage rate appeared to play a role. The impact of policy rate normalization on the mortgage rate likely filtered through only gradually with longer lags. The impact of the lower LTV ratio seemed more immediate, as property loans growth has registered on a downtrend since November 2010, when the macro-prudential measure was announced.

Non-bank financing shifted towards bonds

Private sector funds raised through capital markets rose notably. Notwithstanding healthy growth in bank financing net financing to the private sector via capital markets during the first half of 2011 amounted to RM 22.5 billion, a 17-percent increase on a year-on-year basis. Nearly 80 percent of this was raised through bond issuances while the remaining through equity markets. Investor sentiment in equity markets was adversely affected by uncertainties arising from sovereign debt problems in the US and Europe. In contrast, bond market conditions became more favorable (Figure 39), as larger capital flows to the bond market, predominantly to government bonds, compressed yields of corporate bonds across a range of risk profiles and tenures. In addition, increases in the policy rate seemed to have had little effect on the yield curve as corporate bond yields were either sustained or trended downward. The underlying trend of net financing in both markets, as measured by the 12-month moving average, reflects well the increase in bond issuances and concurrent decline in primary market activity via equities. There is a clear turning point in both trends during the beginning of the 2011.

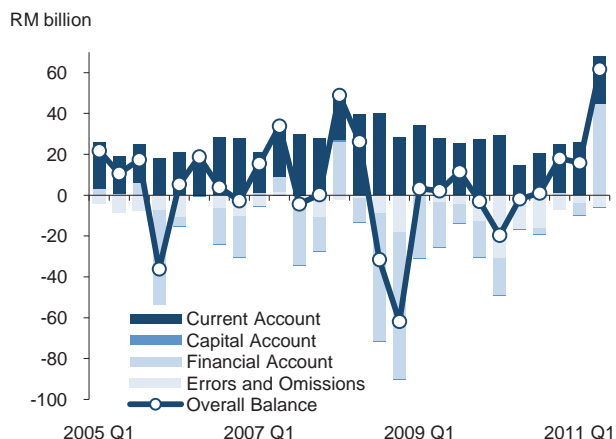
Malaysia's external position strengthened further

The balance of payments turned to a surplus in the first half of 2011, leading to an increase in foreign reserves. The balance of payments turned to a surplus in the first quarter and increased further in the second quarter. For the first half of 2011, Malaysia's overall balance of payments surplus jumped to RM 77.5 billion from RM 18.9 billion in the

¹⁴ The Hire Purchase Act (1967) was amended in June 2011 to preliminarily strengthen buyers' rights. Under the amendments, auto buyers only need to pay a maximum of one percent booking fee of which 90 percent is refundable for cancelled orders (10 percent previously). This resulted in a one-time delay in sales as car dealers waited until customer bookings were confirmed before they placed orders to better manage their inventory. Buyers also had to correspond directly with banks for loan applications, whereas dealers could previously deal with this aspect of the transaction, thus adding to the processing time to a purchase a car.

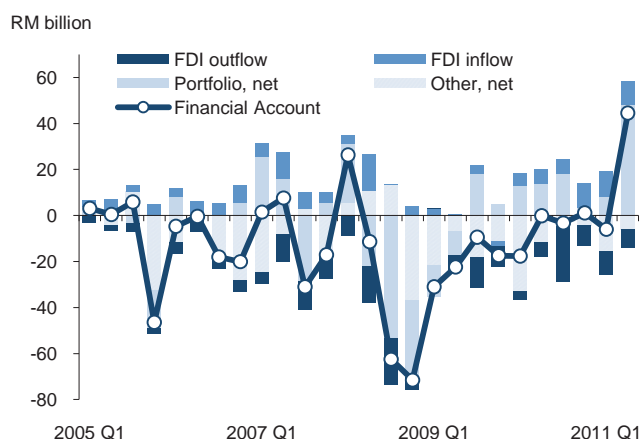
second half of 2010 (Figure 40). The improvement was mainly attributed to strong inflows of portfolio funds and, to a lesser extent, foreign direct investment (FDI) (Figure 41), coupled with larger surplus in the current account.

Figure 40. The balance of payments recorded a much larger surplus in the first half of 2011



Source: CEIC.

Figure 41. The financial account balance turned positive in mid-2011



Source: CEIC.

The current account posted a larger surplus...

The current account surplus widened due to favorable commodity exports. A larger trade surplus in the first half of 2011 was driven by stronger commodity shipments, which outweighed subdued manufacturing exports especially in nominal terms and led to higher overall merchandise exports in the same period. Robust commodity exports largely reflected solid regional demand and relatively high prices. Commodity exports also contributed more positively to the trade surplus relative to manufactured goods due to much lower import content. Meanwhile, manufactured exports remained relatively weak in the first half of 2011. Such a modest performance has been observed since the second half of 2010, and is attributable to the persistent weakness in electrical and electronics exports.

... while the financial account showed large inflows of foreign capital

Increases in net portfolio and FDI inflows turned the financial account into a surplus. The financial account turned around to record a large surplus of RM 38.5 billion in the first half of 2011 from a deficit of RM 2.1 billion in the second half of 2010. Further increases in net portfolio and FDI inflows were major drivers. Net direct investment posted inflows, as inward FDI outpaced outflows of direct investment abroad (DIA) by Malaysian companies. Net FDI in the first six months of this year was almost double the value recorded in the similar period of 2010. The recovery in FDI in Malaysia bodes well for private investment going forward, and may reflect the initial impact of projects under the Economic Transformation Programme (ETP) as well as earlier liberalization in some services sectors.

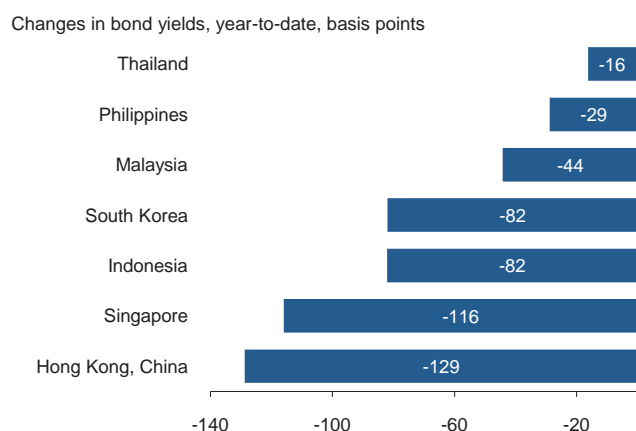
Malaysian companies continued to capitalize on investment opportunities abroad arising from the deepening regional integration. Recent overseas investments by Malaysian firms were predominantly in the form of expansion of existing operations as well as mergers and acquisitions, particularly by firms in the financial services and telecommunication sub-sectors. The liberalization of foreign exchange administration in May 2011, which now allows resident companies to invest any amount of direct investment abroad and enhances the flexibility for these firms to tap on competitive source of financing abroad, will support this trend further.¹⁵

Portfolio inflows, especially to debt securities, surged in the first half of 2011. Portfolio inflows in the first half-year (RM 56.4 billion) already exceeded the full year 2010 figure (RM 48.5 billion). Inflows were largely in the form of debt

¹⁵ Effective in June 2011, all direct investment abroad by resident firms is excluded from the prevailing RM 50 million limits on investment in foreign currency assets. In addition, these companies may now (i) borrow any amount in ringgit or foreign currency from their resident and non-resident, non-bank related companies, and (ii) obtain foreign currency borrowing up to the prevailing aggregate limit of RM100 million for companies on a corporate group basis.

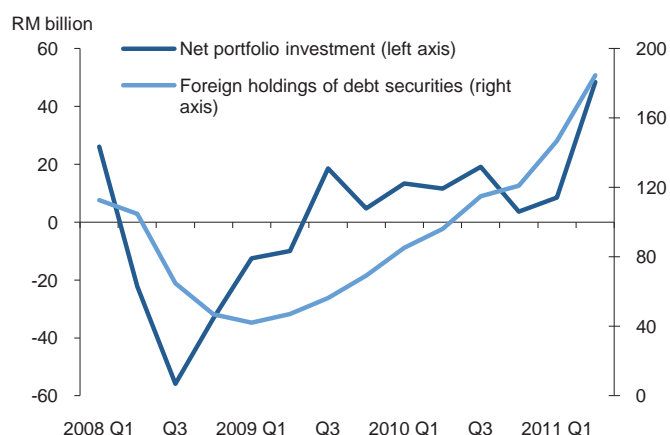
securities, particularly Treasury and BNM securities, which are fairly liquid and thus provide investors the option to exit easily. To a certain extent, these inflows were also induced by prospects of further appreciation in the domestic currency. Despite lingering concerns about the global growth outlook and the European debt crisis, portfolio inflows continued to be buoyed by the region's favorable growth prospects and positive interest rate differential. Nonetheless, there remains a risk of sharp reversal of short-term capital inflows from emerging economies, including Malaysia, should heightened global financial market volatility, and subsequent risk aversion, intensify.

Figure 42. The impact of inflows on bond yields has been limited.



Source: Asian Bonds Online.

Figure 43. Foreign debt holdings rose in line with larger portfolio inflows



Source: Haver.

Government bond yields have trended downward in 2011, in tandem with the continued inflows into the local debt market. The impact of the inflows on the yields of Malaysian government securities was limited compared to other regional economies (Figure 42), partly owing to Malaysia's deep domestic bond market which is currently the third largest in the region behind Japan and South Korea. Foreign holdings in debt securities increased further in line with the higher portfolio inflows (Figure 43). The share of non-resident holdings of government debt has increased steadily, reaching 24 percent in June 2011 from 22 percent in March. In addition, foreign holdings of domestic debt are now equivalent to 45 percent of foreign exchange reserves, up from 25 percent at the beginning of the financial crisis. This could induce greater currency volatility in case of sudden reversal of portfolio flows.

International reserves increased amid a mild depreciation in the ringgit value. Net international reserves rose to RM 429.1 billion (USD 134.8 billion) as of end-October 2011 from RM 328.6 billion at end-2010 (Figure 44). This is equivalent to nearly ten months of retained imports and 4.7 times the short-term external debt. Meanwhile, Malaysia's real effective exchange rate (REER) depreciated slightly by 0.2 percent between end-2010 and August 2011. Several regional currencies also recorded marginal changes during this period, although some experienced larger adjustments (Figure 45). But against the US dollar, the ringgit continued to appreciate in the first eight months of 2011 albeit at a slower pace compared to 2010. The ringgit appreciation was however interrupted by a steep depreciation of nearly six percent in September 2011 on heightened volatility in the global financial markets. The pause was also observed in other emerging Asian economies.

Figure 44. The real effective exchange rate depreciated slightly amid reserve accumulation

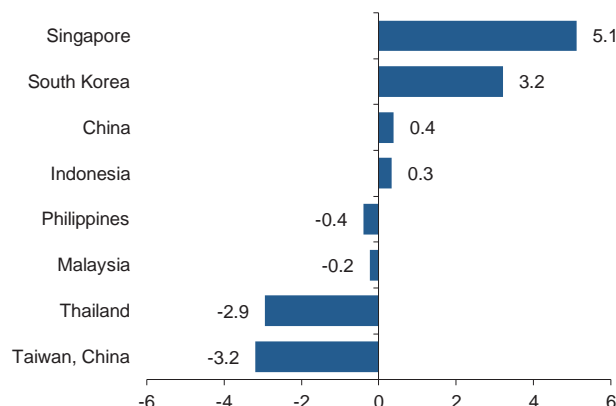
RM billion for international reserves and index of REER



Source: Bank for International Settlements and CEIC.

Figure 45. The value of the ringgit moved narrowly so far in 2011

Real Effective Exchange Rate, percent change from previous year



Source: Bank for International Settlements.

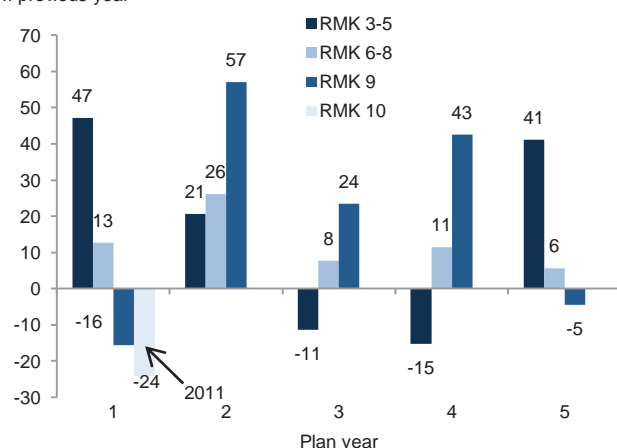
Fiscal and monetary policies gradually normalize but still accommodative

Fiscal policy is dominated by commodity price movements

More expensive oil caused the subsidy bill to increase sharply, although this has been temporarily offset by a decline in development expenditures. Overall expenditures have grown by less than 3.5 percent in real terms from the first half of 2010 suggesting that fiscal policy has been a drag on growth through the first half of the year. Disbursements of public investments (which comprise half of overall gross fixed capital formation) have been slow, contracting by 24 percent in the six months of 2011 compared to the same period in 2010. This appears to be part of an emerging pattern, whereby disbursements are low at the beginning of a new five-year plan (Figure 46) but pick up subsequently.¹⁶ Current expenditures have expanded by 15 percent as higher oil prices (compared to 2010) have led to an increase in subsidy expenditures by 43 percent.

Figure 46. Development expenditures have seen slower disbursements in the first year of a new Malaysia Plan

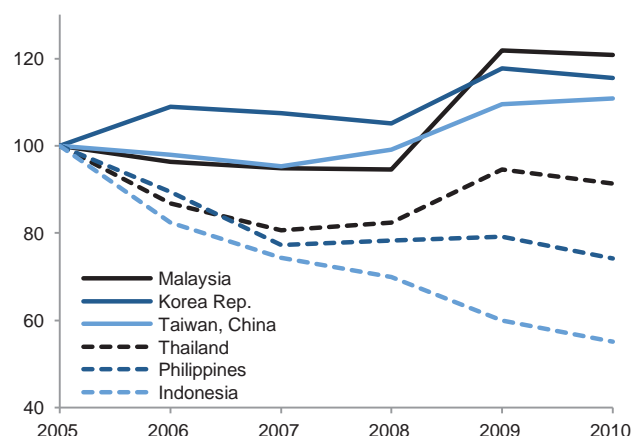
Jan-Jun disbursements of gross development expenditures, percent change from previous year



Source: CEIC and World Bank staff calculations.

Figure 47. Malaysia's debt has risen more than other peers during the crisis

Index value, Q1 2005=100



Source: Haver and World Bank staff calculations.

¹⁶ The lag from plan to disbursements is caused by the time it takes to prepare tender documents, finalize the technical design, conduct the tender process, undertake soil investigations, resolve squatter problems, and choose consultants, among others.

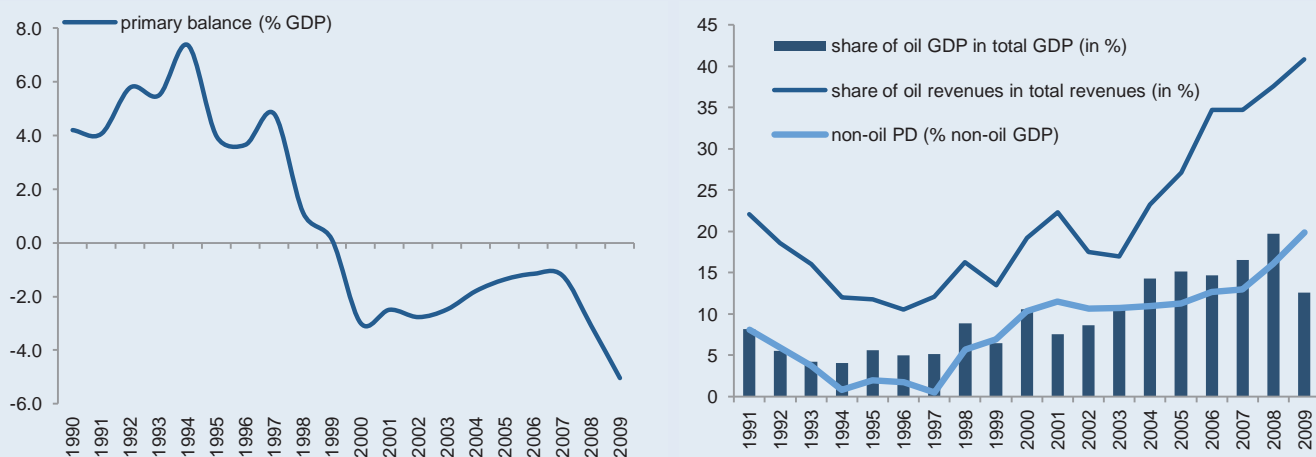
Meanwhile, higher oil prices were also driving revenues higher, keeping the deficit in check but further increasing the dependency of the budget on oil-related revenues. Revenue growth for 2011 is projected to come in about 10.5 percent above last year's budget projections, expanding by 11.5 percent in real terms from 2010. Oil-related receipts have expanded by 16.2 percent in real terms, and now comprise 36 percent of all revenues compared to 21 percent in 2000. Over the past five years, petroleum-related revenues have averaged 38 percent of all revenues compared to 22 percent between 2000 and 2003. The growing reliance of the federal budget on oil receipts is a source of concern as it exposes the budget to volatility induced by shocks to oil prices. Box 3 below explores the potential risks that come from reliance on oil revenues, and mitigating measures that other countries have taken to address these risks.

The federal deficit remains structurally high and limited consolidation is expected in 2011, though some tentative measures have been announced. The federal deficit is expected to come in at RM 45 billion in 2011, as budgeted last year. However, considering the deteriorating prospects for GDP growth in 2011, this amount is likely to exceed the projected 5.4 percent of GDP and perhaps even the 5.6 percent figure posted in 2010. Structurally high deficits have been the product of fast growth in current expenditures (especially the wage bill and subsidies) while non-oil revenue growth has lagged. For an economy like Malaysia, buoyancy in non-oil tax revenues should help reduce the deficit during years of fast growth, but this has not materialized. As a result, Malaysia's debt has been higher (and stickier) than that of its peers (Figure 47). The government recognizes that subsidies and the wage bill need to be reined in. Since June a hiring freeze is in place to facilitate an audit of posts (expected to be completed by year-end) with the objective to eliminate and reallocate existing posts. Gasoline subsidies and electricity tariffs were adjusted earlier this year, although it is unlikely that new subsidy adjustments will be implemented before elections, which may come at any time over the next 18 months.

Box 3. Analysis of Volatility from Oil Revenues

During the financial crisis, the acceleration in Malaysian government debt raised concerns over its sustainability. Malaysian consolidated general government debt jumped 12 percentage points to 55 percent of GDP in 2009, with sizeable risks to the debt outlook, as described in the April 2010 *Malaysia Economic Monitor*. This debt build up has been the outcome of a continuously deteriorating primary balance since the aftermath of the 1997 Asian financial crisis, when the primary balance turned from a surplus of 4 percent of GDP in 1996 to a deficit of 3 percent in 2000 (Figure 48). The second sizeable deterioration took place during the recent global financial crisis, with the primary deficit widening from 1 percent of GDP to 5 percent from 2007 to 2009.

Figure 48. The increase in the primary deficit was followed by an even steeper increase in the non-oil primary deficit



Source: Ministry of Finance and World Bank staff calculations.

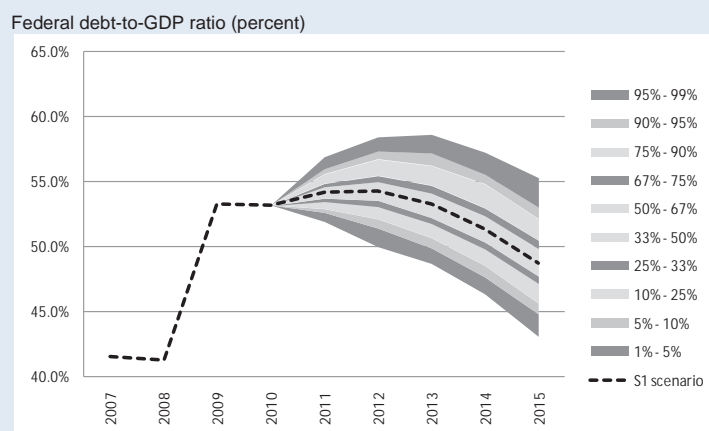
In response to adverse developments in the public debt trajectory and recent unsustainable fiscal trends, the government outlined a fiscal consolidation path as part of the 10th Malaysia Plan. According to the Plan, the federal government deficit will be reduced to below 3 percent of GDP over the medium term, primarily through spending

adjustments, while federal debt returns to below 50 percent of GDP. The government intends to continue with fiscal consolidation also in the longer term, so that by 2020 the budget is balanced and federal debt reduced to below 40 percent of GDP.

The expected depletion of oil and gas revenues adds to the fiscal challenge as oil-related revenues have become a substantial source of funding for the federal budget.^a More precisely, the share of oil-related revenues in total revenues nearly doubled, totaling 40 percent in 2009 (Figure 48). This rising importance of oil-related revenues contrasts with the relative stability of the contribution of nominal oil GDP to total GDP, averaging 15 percent during the period 2004 to 2009. Thus, the budget relies disproportionately on income generated by the oil sector when compared to income from the non-oil sectors. In that respect, the primary non-oil balance provides a useful indicator for measuring the direction and sustainability of fiscal policy. In the case of Malaysia, the non-oil primary deficit has roughly doubled over the past five years to almost 20 percent of GDP in 2009.

To assess the possible impact of volatile oil prices, a stochastic debt sustainability analysis (DSA) can be employed to describe a probabilistic path of government debt. The stochastic DSA, which is based on past co-movements of a set of variables^b, suggests that under very adverse circumstances with respect to oil price developments and domestic real output growth, by 2015 federal government debt could remain above 55 percent of GDP even under a high degree of expenditure consolidation (Figure 49).^c Another way of looking at the probabilistic outcomes is to say that in 2015 federal government debt could exceed 50 percent of GDP with a probability of 25 percent even under the assumption of substantial expenditure consolidation. Importantly, this analysis highlights the magnitude of the volatility to which the government's fiscal position is exposed on account of its reliance on oil revenues: the debt-to-GDP ratio varies by 10 percentage points by 2015.

Figure 49. The debt-to-GDP ratio varies by 10 percentage points by 2015



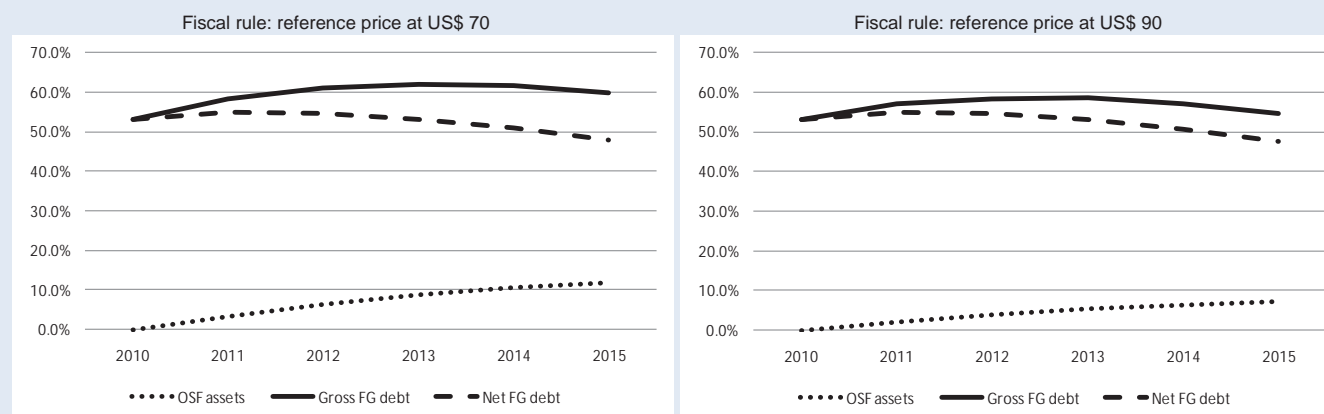
Source: World Bank staff calculations.

In many oil rich countries, oil stabilization funds (OSFs) are established to smooth the volatility linked to oil revenues. Oil revenues are exhaustible, volatile, uncertain and thus unpredictable, complicating fiscal planning and macroeconomic management more broadly. Saving out of current oil income and, hence, stabilizing the flow of oil-related revenues to the budget can result in more predictable spending planning and spending discipline. It also ensures accumulation of funds in the OSF, prolonging the oil-revenue stream once oil reserves are run down. In practice, many oil-exporting countries establish fiscal rules and arrange an OSF to achieve both savings and mitigate fiscal risks. One simple fiscal rule embodies the reference price approach, in which revenues beyond a certain cut-off price are transferred to the OSF. Figure 50 below offers an example for Malaysia at cut-off prices of USD 70 and USD 90/barrel. If the former fiscal rule would have been introduced in 2010, the accumulated funds in the OSF would amount to more than 10 percent of GDP, with net federal debt totaling less than 50 percent of GDP.

Although Malaysia does not have an OSF, it has set up a National Trust Fund or “KWAN” whereby PETRONAS contributes RM100 million annually. Use of funds is defined in the National Trust Fund Act of 1988, and no withdrawals have been made so far. As of June 2011 PETRONAS had already contributed a total of RM 3 billion to the Fund. Moneys in the Fund are invested in various financial instruments and the balance of the KWAN currently stands at

RM 5.43 billion. The Prime Minister has recently stated that administration and management of the fund would be handled by Bank Negara Malaysia while a panel under KWAN would monitor the collection of funds.^d The KWAN can serve as an starting point for a stabilization fund and would benefit going forward from transparent and predictable rules for PETRONAS contributions and future disbursements to the federal budget.

Figure 50. An oil fund can be used to smooth resource-related revenues.



Source: World Bank staff calculations.

Notes:

- Oil-related revenues include petroleum income tax (PITA), export duty on petroleum products, petroleum royalties, Petronas dividends, and MTJA.
- The VAR underlying the stochastic simulations consists of oil prices, output growth, exchange rates, and interest rates
- The scenario assumes fiscal consolidation measures consistent with reaching the targets under the 10th Malaysia Plan.
- Source: The Star (June 30, 2011).

Cautious normalization of monetary policy comes to a halt

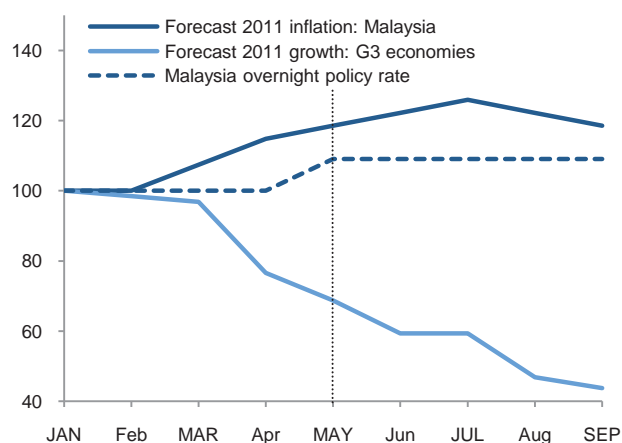
Monetary policy normalization has paused since May on cloudier global economic prospects and reduced domestic price pressures. The overnight policy rate (OPR) was raised by 25 basis points to three percent in May 2011, the first adjustment since July 2010. Rising inflationary pressures, partially demand-driven, led to a tighter policy stance. But as expectations for growth in advanced economies weakened mid-year and domestic inflation momentum steadily subsided, the OPR has since been left unchanged (Figure 51). The current level is still 0.50 percentage points below the pre-crisis level and thus remains generally accommodative. In contrast, the statutory reserve requirement (SRR) ratio was raised three times between April and July 2011 (100 basis points each) such that it is now back to the pre-crisis level of four percent. The SRR is preliminarily adopted to manage liquidity in the financial markets. Raising the OPR to curb inflation would further attract capital inflows into Malaysia with upward pressures on the ringgit value and asset prices. Higher inflation itself attracts more capital inflows as investors anticipated a policy rate rise and further currency appreciation. Relative to the OPR, the SRR thus exhibits lower sterilization costs and more limited unintended consequences on further attracting capital inflows.

The impact of adjustments in the statutory reserve requirement ratio on bank loan growth and financial market liquidity is unclear, however. The recent hikes in the SRR ratio have reduced financial market liquidity by RM 18.7 billion between March and July 2011, or about RM 6.2 billion for every one percentage point increase in the SRR ratio. But this amounts to only two percent of outstanding banking system loans so the link between SRR and credit growth tends to be weak. Figure 52 shows that credit growth remained sluggish after a 300 basis points reduction in the SRR ratio between October 2008 and March 2009, which is unsurprising given the already relatively low reserve requirement ratio¹⁷ and the then rapidly deteriorating macroeconomic environment. In contrast, the SRR tightening in mid-2011 has so far coincided with slower sequential growth of bank loans and money supply (M3). But other factors are clearly at play such as higher borrowing costs (as a result of higher OPR and SRR), subdued year-end orders for durable goods, and worsening business sentiments in general.

¹⁷ The SRR was maintained at four percent between September 1998 and October 2008. Prior to that, the ratio was kept at over ten percent for many years.

Figure 51. Deteriorating market views on global economy in 2011 led to a pause in OPR normalization

Consensus forecasts of G3 economies' GDP growth and Malaysia CPI inflation for 2011. Horizontal axis shows survey months. Jan 2011=100

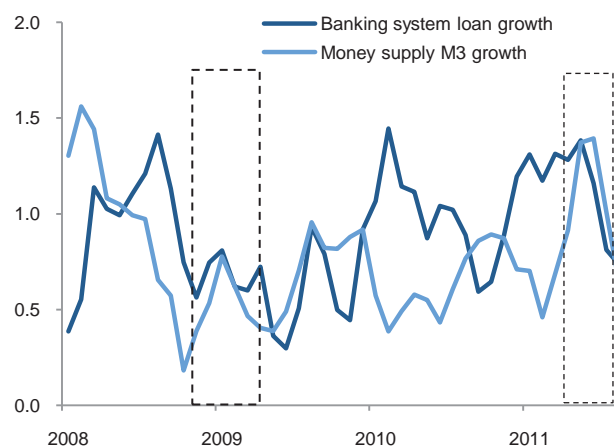


Note: Months in capital letters are those with Monetary Policy Committee meetings.

Source: Consensus Economics, Bank Negara Malaysia and World Bank staff calculations.

Figure 52. The impact of reserve requirement ratio on loan growth and market liquidity is unclear

Three-month moving average, seasonally-adjusted growth, percent.



Note: Highlighted periods are months with changes in statutory reserve requirement ratio.

Source: CEIC, DECPG and World Bank staff calculations.

As in mid-2010, the policy rate hike in May 2011 exhibited an immediate and full pass-through to the lending rate. An increase in OPR of 25 basis points in May 2011 translated into a 27 basis points rise in the base lending rate in the same month. The lending rate recorded no further change since. As noted in *Malaysia Economic Monitor* April 2011, the transmission of recent OPR adjustments is more much immediate and complete than the previous two episodes observed between November 2005-April 2006 and November 2008-February 2009. This suggests that policy rate unwinding tends to influence borrowing costs, and thus fixed investment and consumer spending, fully and promptly. Meanwhile, bank spreads have remained largely stable at around 3.4 percentage points in the past years so depositors also benefit from higher deposits rates. But in real terms, the real deposit rate has turned negative since February 2011 (0.1-0.4 percentage points to August) on rising inflation despite higher average deposits rate since May 2011.¹⁸

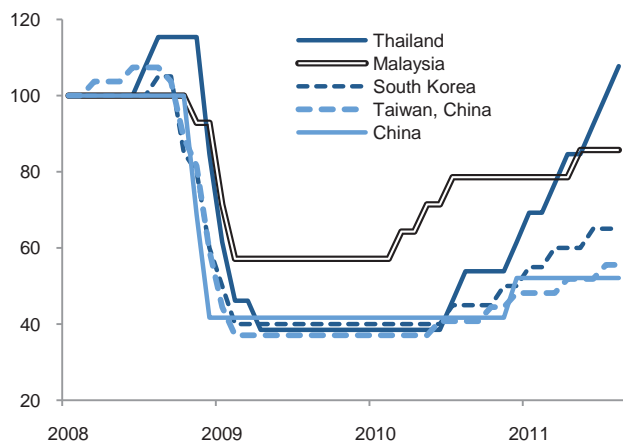
Normalization of policy rates has taken place earlier and more aggressively in Malaysia than in most other regional economies. While policy rate cuts in late 2008 were clearly synchronized among regional economies, the pace of normalization has been much diverse (Figure 53). Malaysia started lifting OPR as early as March 2010. By July 2010, when most other economies only started adjusting their policy rates, Malaysia OPR had already regained 75 basis points out of the 150 basis points reduction made between late 2008 and early 2009. The current level of Malaysia's policy rate is already 86 percent of the pre-crisis (January 2008) level compared with 52-65 percent in China, Taiwan (China) and South Korea. Malaysia's monetary policy thus appears more conservative than in these three economies, especially after taking into account market views that Malaysia's near-term price pressures would only be modest but real GDP likely grows much slower, both in relation to Malaysia's own pre-crisis paces and to other regional economies (Figure 54).¹⁹ A seemingly more vigilant monetary policy in Malaysia may be due to the fact that domestic demand has been more robust than other regional economies, raising concerns of overheating. Domestic demand accounted for 44-99 percent of growth in South Korea, Taiwan (China) and Thailand in 2010 and the first half of 2011, compared with 106 percent in Malaysia.

¹⁸ Bank spreads is the base lending rate minus the average fixed deposits rate (for 1, 3, 6, 9 and 12 months). Real deposit rate is the average fixed deposits rate minus CPI inflation rate.

¹⁹ For instance, market analysts anticipated that Malaysia's inflation rate in the near-term (2011-12) would be around six percent higher than the pre-crisis (2005-07) level, or inflation rates of 3.1 percent against 2.9 percent. This number for China, Taiwan (China) and South Korea ranges between 18-72 percent. Comparison of past and future GDP growth also suggests that Malaysia growth is likely more sluggish than South Korea and Taiwan (China).

Figure 53. Malaysia policy rate tightening began earlier and more forceful than others...

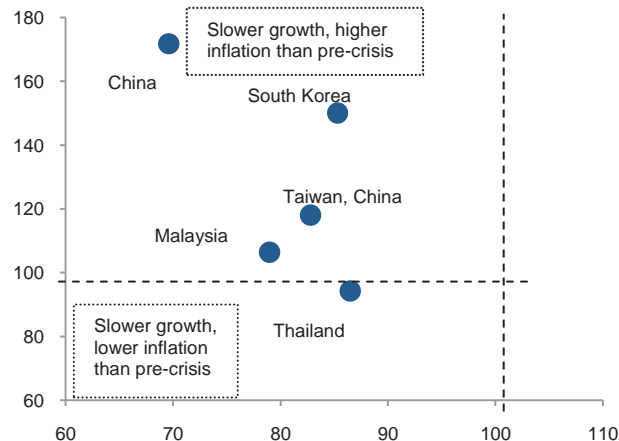
Policy interest rates, January 2008=100



Source: CEIC and World Bank staff calculations.

Figure 54. ...despite modest inflation but slower GDP growth expected relative to pre-crisis

Vertical axis is mean inflation forecast for 2011-12 divided by mean pre-crisis (2005-07) inflation, pre-crisis level=100. Horizontal axis is the same ratio calculated for real GDP growth



Source: Consensus Economics, CEIC and World Bank staff calculations.

The government has recently announced an increase in the real property gains tax, primarily as a macro-prudential rather than revenue-enhancing measure. The real property gains tax (RPGT) was re-imposed at a rate of 5 percent in January 2010 after it was abolished during the global financial crisis. The RPGT is imposed on gains from disposal of real property within five years from the date of purchase. In the most recent budget, the RPGT has been revised upward to 10 percent, and it will be imposed on disposal of properties held and disposed within two years. This measure complements an earlier measure instituted by Bank Negara Malaysia applying a lower loan-to-value ratio for third property financing, with a view to curb property speculation.

2. Economic outlook

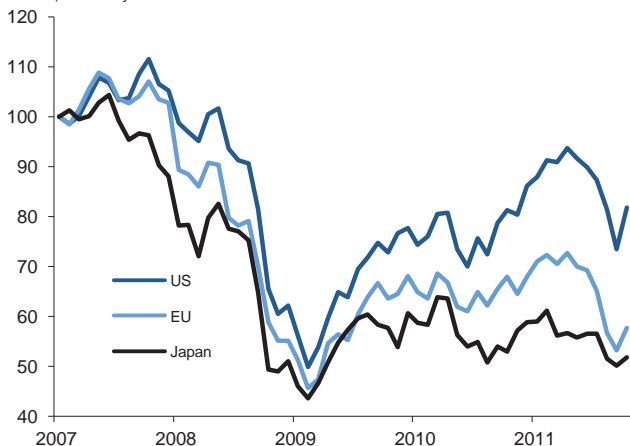
Outlook for the external environment deteriorates markedly

The external environment for the remainder of 2011 and 2012 is expected to be characterized by weak but positive growth in advanced economies as the hard work of rebuilding public and private balance sheets continues. The global outlook has deteriorated sharply since August, as reflected in plunging stock markets (Figure 55) and weakening export demand (Figure 56) from advanced economies. There are two main reasons for this deterioration: first, there was excess optimism earlier in the year that the global economy was headed for imminent normalization. This led to disappointment when growth turned out relatively weak – a disappointment that was transmitted to the real economy through lower investor and consumer confidence. Second and most important, policy implementation risks have increased in the US but especially in Europe, during a time when the focus has shifted to rebuilding public balance sheets.²⁰ These policy risks have led to renewed volatility in financial markets and reinforced the decline of consumer and investor sentiment.

Policy uncertainty in advanced economies has intensified and is likely to loom in 2012. In the US, the debate over the “debt ceiling” and subsequent credit rating downgrade pointed to the difficulty of navigating the narrow space between ensuring fiscal sustainability and limiting the fiscal drag on growth at a time when the jobless rate remains elevated and growth subdued. In Europe, attempts to resolve Greece’s sovereign debt overhang have been elusive as an agreement reached in July proved insufficient and market fears escalated until a new agreement was reached in October, involving substantially higher levels of private sector participation in debt reduction efforts. Although markets initially reacted well to the new agreement, much uncertainty remains as to whether it will find sufficient support both in Greece but also in EU member countries that must support the financial aspects of the package. In addition, fears of contagion to other European countries, most recently to Italy, have re-emerged. “Orderly restructuring” of sovereign debts is the exception rather than the rule, and risks of a new shock to the global financial system stemming from a disorderly default are likely to remain elevated in the near term.

Figure 55. Stock markets plunged in mid-2011 on public debt problems and dim growth outlook

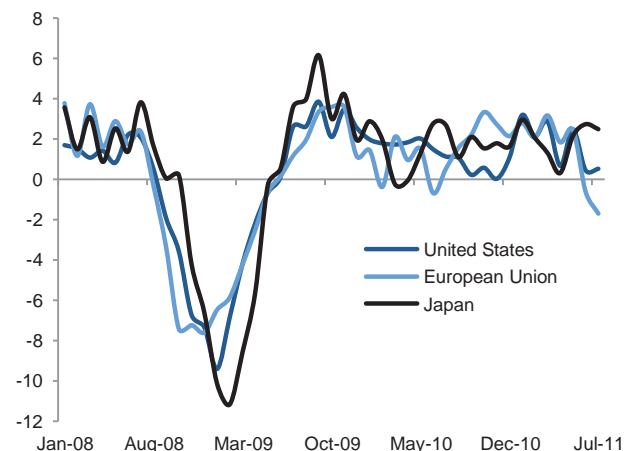
US NYSE Composite, EU Dow Jones Euro Stoxx, and Japan Nikkei 225 Stock indices, January 2007=100



Source: CEIC and World Bank staff calculations.

Figure 56. New orders for manufactured goods slowed since mid-2011, dampening export demand in Europe

Imports, USD terms, year-on-year change, percent



Source: Haver, in World Bank (2011b).

Japan is likely to experience a lift from reconstruction, though the appreciating currency and uncertainty about energy policies may motivate firms to relocate. Prime Minister Noda’s ¥12.1 trillion disaster reconstruction budget is

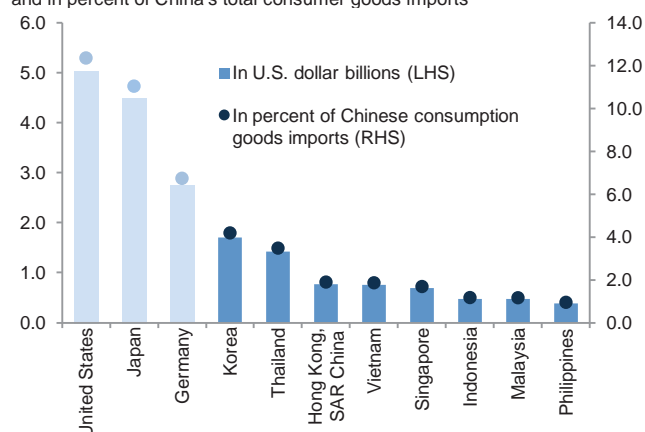
²⁰ It should be noted that in 2008, the largest decline in the S&P 500 did not take place when Lehman Brothers defaulted, but rather when the US Congress rejected an initial version of the financial sector support legislation.

likely to keep the growth momentum in Japan, although headwinds are significant. As a fairly export-oriented economy, Japan is also likely to be affected by weakness in advanced economies. In addition, the strong yen, concerns about labor flexibility and uncertainty about energy policy are likely to accelerate the movement of Japanese firms overseas, including to Malaysia.

Emerging economies will continue to post relatively strong growth due to support from domestic and regional demand – especially from China. Growth may be slower in some emerging economies in 2012, but their performance is expected to remain solid relative to that of advanced economies thanks to growth in domestic and regional demand. There is little indication of a significant slowdown of the Chinese economy, where real GDP growth is projected to stay above 8 percent in 2012. The government also has ample fiscal space to counteract a more severe deterioration in the external environment. In parallel, Chinese imports of consumer goods have been growing rapidly, with emerging East Asian countries currently holding 18 percent of this market (Figure 57). These developments are expected to keep growth in East Asia (excluding China) at a healthy 5 percent in 2011 and 5.4 percent in 2012.

Figure 57. Malaysia has about one percent market share of Chinese consumer goods imports

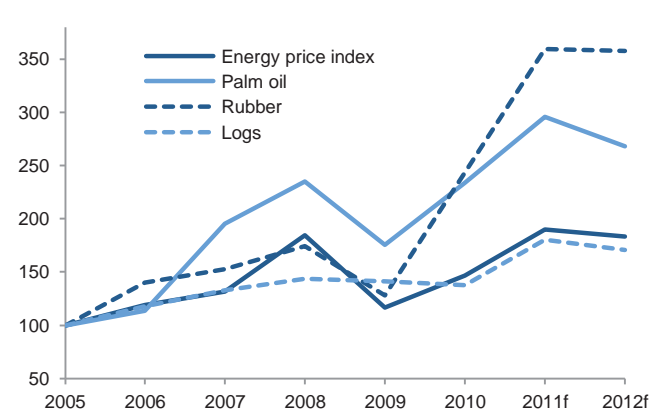
China's imports of consumer goods from selected sources, USD billions, and in percent of China's total consumer goods imports



Source: U.N. Comtrade, in World Bank (2011b).

Figure 58. There's limited upside to the prices of Malaysia's major commodity items in 2012

Actual and forecast commodity prices, 2005=100



Note: Energy price index includes crude oil, natural gas and coal.

Source: IMF, World Economic Outlook September 2011.

The deteriorating global outlook has led emerging market central banks to pause (and some to reverse) monetary policy normalization. Some central banks (such as Indonesia and Brazil) have cut rates as their economies slow while others have paused the normalization cycle, leaving interest rates at still-accommodative levels. The continuing (and until recently increasing) growth and interest rate differentials between advanced and emerging economies are likely to cause continued volatility of capital flows in 2012.

Commodity prices have been on an upward trend since 2003 and are likely to remain relatively firm in the near future even as upside is limited by the weak global outlook. Nominal energy prices have increased three-fold in the second half of the 2000s compared to the previous two decades, and as argued in the April 2011 World Economic Outlook (IMF, 2011) growth in China and other emerging markets is likely to keep oil prices firm until a viable alternative is developed. Higher oil prices are linked to higher prices of agricultural commodities. Food commodities, for example, are up 60 percent in the second half of the 2000's due to demand for some food crops for biofuels from the US, Europe and Brazil, but also to oil's role as an input to agricultural production (notably via fertilizers but also logistics). In addition, world consumption of key commodities has accelerated, partly due to secular trends towards greater urbanization and higher growth in developing countries. Furthermore, on the supply side more volatile weather patterns have led to more frequent shocks to commodity supply. These structural changes suggest prices are likely to remain firm. Against these structural forces, in the near term the dampened outlook for advanced economies is likely to limit any further increases, especially for industrial commodities such as rubber (Figure 58), although demand for timber may increase due to the reconstruction in Japan.

Growth outlook for Malaysia also dims

Malaysia's highly open economy is expected to slow further during the remainder of 2011 and into the first quarter of 2012 due to the deterioration in the outlook for external demand. The outlook for E&E exports has continued to deteriorate along with worsening prospects for advanced economies. For example, chip orders for the Christmas season have been weak. In addition, a number of supply disruptions (from the Tohoku earthquake, oil field production mishaps, and most recently from the floods in Thailand) are still working through the economy, dragging down growth in the second half of 2011. The dissipation of such disruptions could support higher auto sales and mining output in late 2011 and early 2012, however. Domestic demand is expected to remain resilient, supported by implementation of investment projects under the Economic Transformation Programme (ETP) and relatively firm commodity prices. However, the weakening global environment is also likely to put downward pressure on manufacturing wages and share prices, which would have a negative effect on consumer spending (see Box 4).

External demand will be subdued for the remainder of 2011 and is only expected to recover in the second half of 2012. Export growth is expected to decelerate further, from 1.9 percent on average in the first half to just 0.25 percent in the second half of 2011; this compares with a historical average of 1.2 percent (all rates are seasonally adjusted, not annualized). Commodity-based exports (both from mining and agriculture), which supported overall export growth in the first half of the year, will likely decline somewhat in the near term due to reduced demand from advanced and emerging economies. Moreover, the downward trend of electrical and electronics (E&E) exports is expected to continue given the weak outlook for advanced economies. Export growth is not expected to post an outright contraction due to some offsetting effects from the normalization of E&E supply chains following the Tohoku earthquake and relatively healthy growth in China and ASEAN, which is expected to provide a floor for commodity demand. In 2012, quarterly export growth is expected to accelerate to 2.2 percent in the second half of the year. This acceleration is in line with renewed demand for Malaysia's commodity exports, as well as a cyclical pick-up in E&E exports as the global economy's recovery picks up steam. Maintaining such above-average growth rates beyond 2012 will require full implementation of reforms under the New Economic Model to offset the declining trend in E&E exports with increased service exports.

Domestic demand is expected to drive growth through the first half of 2012. The value added consumed and invested in Malaysia is expected to grow at 2.1 percent on average in the second half of 2011 and 1.8 percent in 2012, above the historical average of 1.5 percent (seasonally-adjusted quarter-on-quarter growth rates). This forecast is predicated on the continued implementation of the government's reform agenda, which is behind the assumption of a recovery in consumer sentiment and acceleration in private investment growth in 2012.

Private consumption is projected to grow robustly while public consumption slows but links between consumption and external conditions suggest heightened risks. Stable consumer confidence, firm prices of agricultural commodities (rubber and palm oil), declining inflation and somewhat accommodative fiscal and monetary policies are likely to keep the momentum in consumption growth. Box 4 suggests the external environment poses risks to domestic demand as well: a worsening of externally-driven volatility would affect household consumption through wealth effects, given that many households own financial assets through mutual funds, lower incomes in rural households if commodity prices decline further, and a decline of consumer confidence. Government consumption is expected to be flat, as the government moves towards fiscal consolidation.

Investment is expected to pick up strongly in the second half of 2011 and maintain momentum into 2012. Private investment is expected to retain some upward momentum as entry-point projects (EPPs) in the National Key Economic Areas (NKEA) start to be implemented in earnest. Excessive global capacity and the weakened global outlook suggest a slowdown in the growth of private investments in export-linked manufacturing, but liberalization in key services sectors such as healthcare and retail could bring additional externally-oriented investments, especially into 2012. Most of the growth in fixed capital formation in the second half of 2011 is expected to come from public investments, which should pick up strongly following a sluggish start of the year (indeed, indications are that disbursements started picking up in June). Assuming continued implementation of additional entry-point projects, such as the Kuala Lumpur Mass Rapid Transit (MRT), investment is expected to accelerate in 2012. On a year-on-year basis, fixed capital formation is expected to increase by 8.6 percent in 2012, a robust figure though still below

the readings registered in 2007 and 2010. Inventory levels have returned to pre-crisis levels (unlike Thailand, for example), hence restocking is unlikely to provide an outlet for additional growth in industrial production.

Figure 59. Growth slows down in 2011...

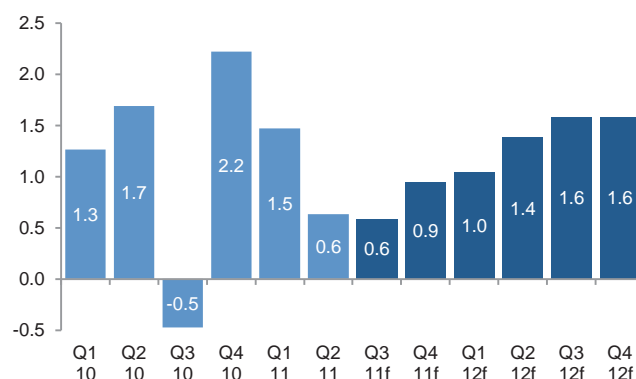
Actual and forecast GDP growth, percent



Source: CEIC and World Bank staff projections.

Figure 60. ...before picking up in the second half of 2012

Actual and forecast GDP growth, quarter-on-quarter, seasonally adjusted



Source: CEIC and World Bank staff projections.

In summary, on a year-on-year basis Malaysia is expected to register real GDP growth of 4.3 percent in 2011 and 4.9 percent in 2012 (Figure 59 and Table 4). Most growth comes from domestic demand, with external demand becoming less of a drag on growth in 2012. The contribution from fixed investments is expected to increase from 1.1 percent in 2011 to 1.9 percent in 2012, a contribution similar to 2010. On a quarter-on-quarter basis, the expectation is for growth to accelerate gradually starting in the fourth quarter of 2011 and stabilizing at 1.6 percent (corresponding to an annualized rate of 6.6 percent) in the second half of 2012, in line with historical averages (Figure 60). The World Bank forecasts for 2011 are below the consensus, but growth expectations for 2012 are above consensus (Figure 61), largely based on the view the external environment is likely to improve in the second half of the year.

Table 4. GDP is expected to accelerate in 2012, driven by domestic demand

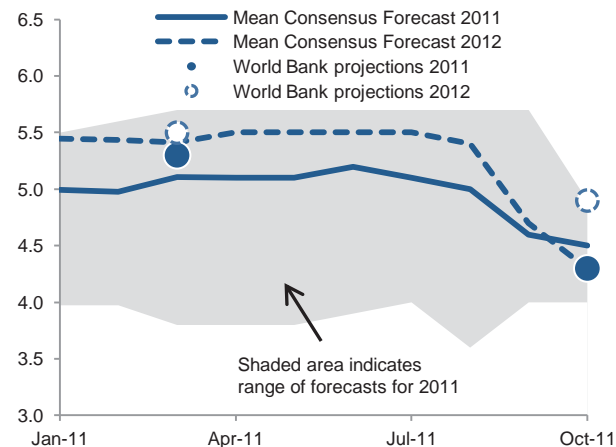
Contributions to GDP Growth, percentage points			
	2010	2011f	2012f
GDP	7.2	4.3	4.9
<i>Domestic demand</i>	10.4	5.6	5.8
Final consumption	3.6	5.0	5.0
Private sector	3.6	3.6	4.3
Public sector	0.0	1.3	0.7
GFCF	2.0	1.1	1.9
Private sector	1.4	0.9	1.3
Public sector	0.6	0.4	0.6
Change in stocks	4.9	-0.5	-1.2
<i>External demand</i>	-3.3	-1.5	-0.9
Exports of G&S	10.5	4.7	6.6
Imports of G&S	13.8	6.2	7.6

Note: GFCF is gross fixed capital formation, G&S is goods and non-factor services.

Source: CEIC and World Bank staff projections.

Figure 61. Consensus estimates have declined sharply since July.

Actual and forecast GDP growth, quarter-on-quarter, seasonally adjusted



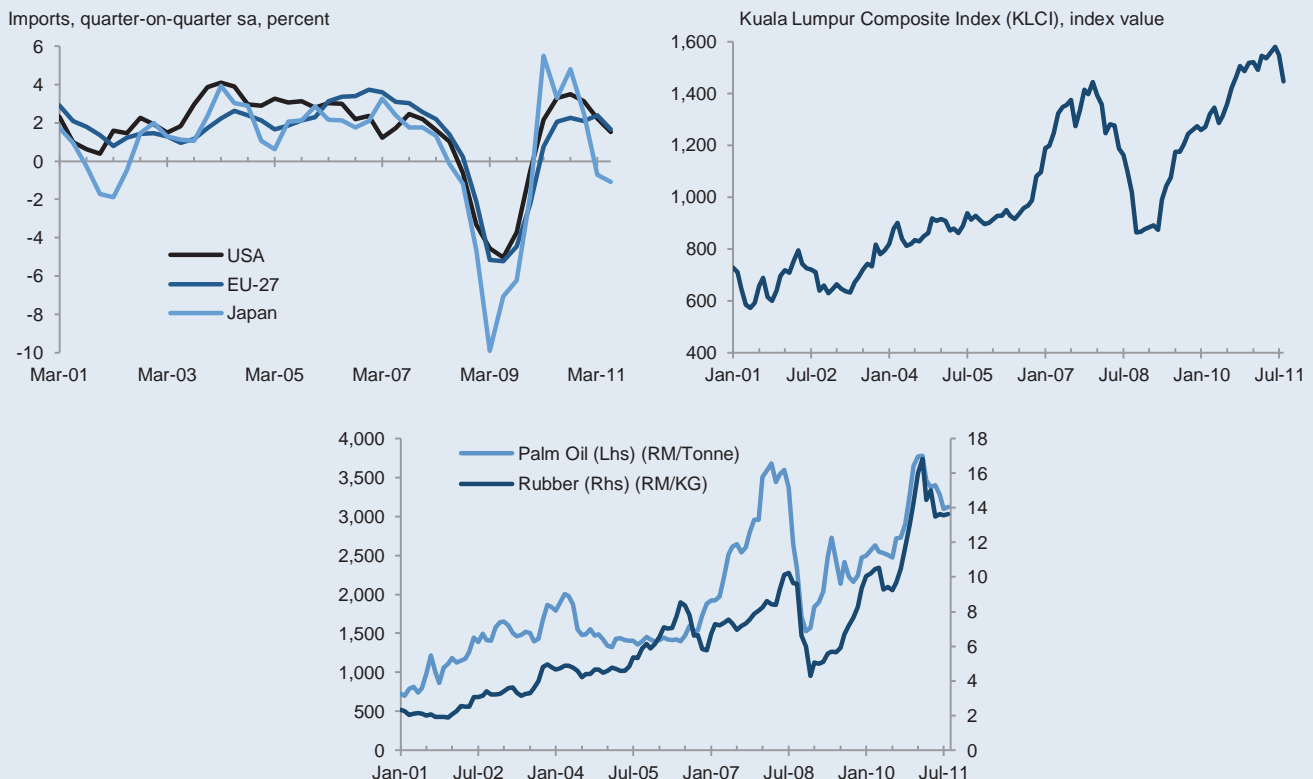
Source: Consensus Economics and World Bank staff projections.

Box 4. Household Consumption in Times of Crisis: A Vector Auto-regression Analysis

With external demand likely to remain weak in the near term, domestic demand, private consumption in particular, becomes the most likely driver of growth for Malaysia going forward. However, private consumption is also vulnerable to external developments in external demand, commodity prices and equity markets. Supposing the magnitude of a hypothetical Euro crisis is similar to the global financial crisis (GFC), the potential impact on private consumption could be a decline of 2.1 percent (quarter-on-quarter) in the subsequent quarter and 1.0 percent in annual growth from our baseline forecast and absent any policy interventions.

Private consumption may be affected by through three external related channels. First, a dip in exports adversely affects wages in the export-oriented and supporting sectors. Second, an equity market decline triggered by an external shock erodes the financial wealth of households. Finally, weak demand globally exerts downward pressure on palm oil and rubber prices and reduces the income of households in these sectors. All three of these shocks seem to have occurred during the 2008 GFC. There was a severe contraction in exports while equity markets and commodity prices experienced their largest declines since the Asian Crisis. In all cases, the reversal was sharp and abrupt. Private consumption followed suit, contracting by 1.4 percent (quarter-on-quarter) in the fourth quarter of 2008, the largest since the Asian Crisis. The current scenario bears some resemblance (Figure 62). Commodity prices have begun to recede after peaking in April 2011, equity markets have been on a downtrend since July 2011 as financial tensions from the ongoing EU sovereign debt woes persist, and export growth remains vulnerable as the advanced economies struggle to generate a sustained recovery.

Figure 62. External demand, equity markets and commodity prices have all dipped recently



Source: Haver, World Bank and Bank Negara Malaysia.

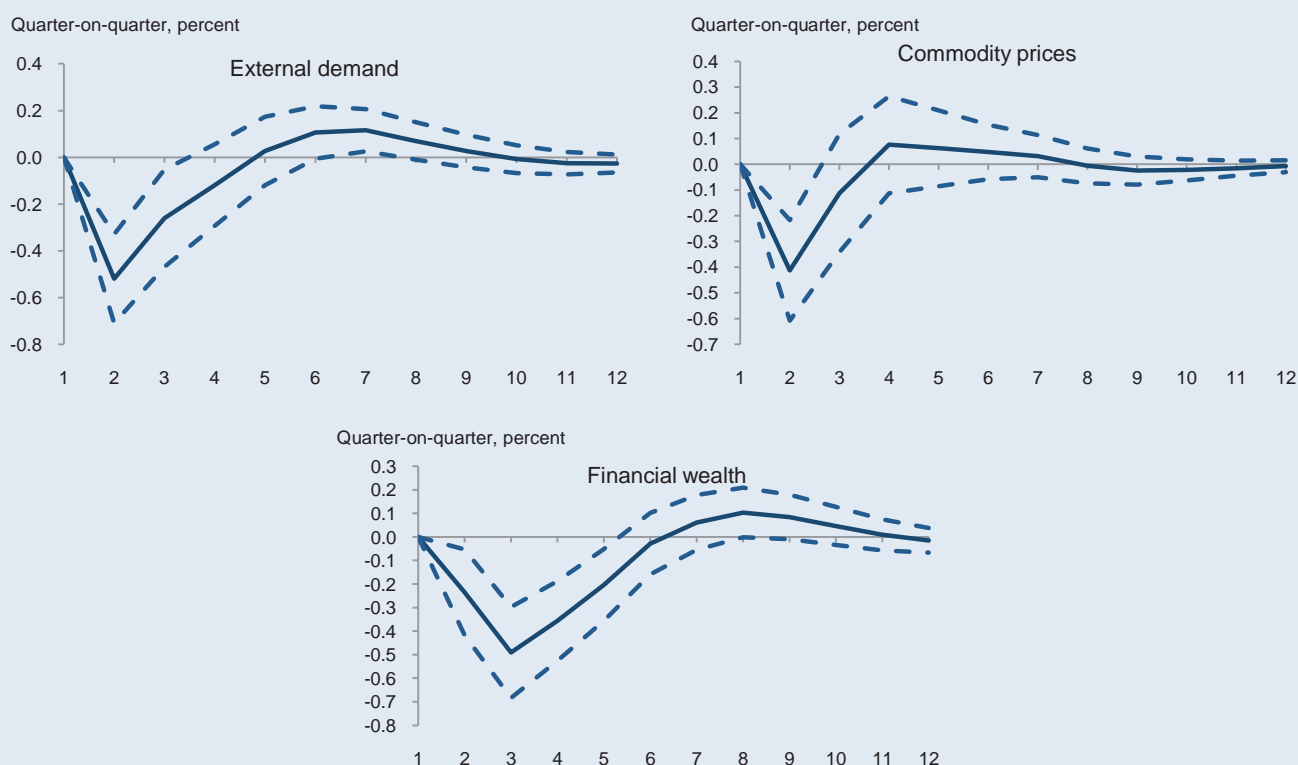
We estimate a Vector Autoregression (VAR) to quantify the potential impact of these external factors on private consumption. The regressors used are shown in Table 5 below.

Table 5. Summary of regressors used in the analysis

Variable	Details	Source
External demand	Export-weighted GDP index of Malaysia's major export destinations	Haver, World Bank
Commodity prices	Production-weighted index of palm oil and rubber	Bank Negara Malaysia
Financial wealth	Net asset value of unit trust funds	Securities Commission Malaysia
Household credit	Includes residential, personal, passenger car, purchases of durable goods	Bank Negara Malaysia, World Bank
Uncertainty	Conditional variance from a GARCH(1,1) model of monthly returns	World Bank

The external demand index and commodity prices capture the income channel from the export-oriented and commodity sectors. The net asset value of unit trust funds measures the financial wealth channel while household credit captures the credit channel. Finally, a stock market volatility variable is included exogenously to control for the impact of economic uncertainty.^a Figure 63 illustrates the response of private consumption to one standard deviation negative shocks in external demand, commodity prices, and financial wealth. Private consumption responds in a v-shaped manner to external demand and commodity shocks. The effects peak two quarters after the shocks, are statistically significant at the peak, and fade out after approximately 4 quarters. The impact from financial shocks is more persistent. The effects peak after 3 quarters and fully dissipate only after about 6 quarters.

Figure 63. Response of private consumption to adverse external demand, commodities and wealth shocks



Note: Dotted lines are 2 standard error bands. Horizontal axes represent quarters.

Source: World Bank staff calculations.

Table 6 below details the estimated size of the shocks experienced during the GFC and the third quarter of 2011, as well as the impact on private consumption. The negative external demand and commodity price shocks during the GFC were approximately 2 standard deviations in magnitude while the negative financial shock was about 1.3 times its standard deviation. The cumulative impact of the shocks amount to a 2.1 percent decline in private consumption in the subsequent quarter. Meanwhile, the estimated sizes of the shocks in the third quarter of 2011 are substantially smaller in comparison to the GFC.

Table 6. Comparison of between current conditions and historical performances ^b (Quarter on quarter, percent)

	Size of 1 standard deviation shock	Size of 4Q 2008 GFC shocks	Size of 3Q 2011 shocks	Impact of 3Q 2011 shocks	
				Impact on 4Q 2011	Avg. quarterly impact in 2012
External demand	0.7	-1.4	0.5	0.3	0.0
Commodity prices	15.0	-29.8	-13.0	-0.4	0.0
Financial wealth	6.0	-7.8	-6.3	-0.2	-0.3

Source: World Bank staff calculations.

Note: Standard deviations are from the estimated VAR model.

Notes:

^a Private consumption, household credit and financial wealth are in 2000 prices, seasonally adjusted and deflated using the consumption deflator. All variables were transformed to quarter-on-quarter percentage changes, except for uncertainty, which was measured in level terms. The Akaike and Schwarz criterions selected lag lengths of 4 and 0. We chose a lag of 2 to balance between capturing the dynamic interactions between the variables and keeping the model size manageable. Autocorrelation LM tests suggested no presence of serial correlation. The sample ranges from the first quarter of 2000 to the second quarter of 2011, side-stepping possible structural changes arising from the consolidation of the banking system after the Asian Crisis.

^b Estimating the third quarter shocks necessitated assumptions on the model variables for the third quarter of 2011. Private consumption and external demand were assumed as equal to the first half of 2011. Household credit is derived from the average annual growth rate, based on figures in July and August in 2011. Financial wealth, commodity prices and uncertainty are based on actual data.

Inflationary pressures likely to weaken next year

Consumer price inflation in the final months of 2011 should stabilize, while 2012 inflation likely softens but remains relatively high. Malaysia's headline inflation rates are projected at around 3.2 percent in 2011 before easing to 2.7 percent in 2012 (Figure 64). The producer price index, which was shown earlier to lead the consumer price index (CPI) by around four months, has stabilized since July 2011. So the baseline case for 2011 assumes that CPI registers a seasonally-adjusted, monthly growth of 0.2 percent in the final three months of the year. For 2012, the projected monthly growth ranges between 0.2 and 0.3 percent.²¹ Most analysts have anticipated moderating price pressures both for 2011 and 2012 in recent months (Figure 65). The main drivers are weakening global commodity prices, which generally retreated from their mid-year highs, and renewed weakness in global demand. Nonetheless, Malaysia's projected inflation in 2012 remains higher than the historical rate of two percent during 2000 and 2007.

Global commodity prices and domestic subsidy rationalization are key to inflation outlook. The impact of global prices on Malaysia's inflation would still be substantial in 2012. Although international commodity prices are anticipated to decline slightly next year, the decline is unlikely to be sharp in the absence of a new global shock.²² The near-term inflation outlook also depends markedly on the timing and magnitude of subsidy rationalization. Subsidy cuts are expected to intensify after the general elections, although Budget 2012 suggests that several price control measures remain firmly in place. The impact of introducing goods and services tax (GST) on inflation should be relatively modest, at least during the initial period.²³ The role of domestic demand in driving inflation likely gains strength in the later part of 2012 assuming the global economy picks up as in our baseline. Finally, the pressure from

²¹ This compares to 0.23 percent between January 2005 and June 2007, the period prior to the global fuel and food price crises.

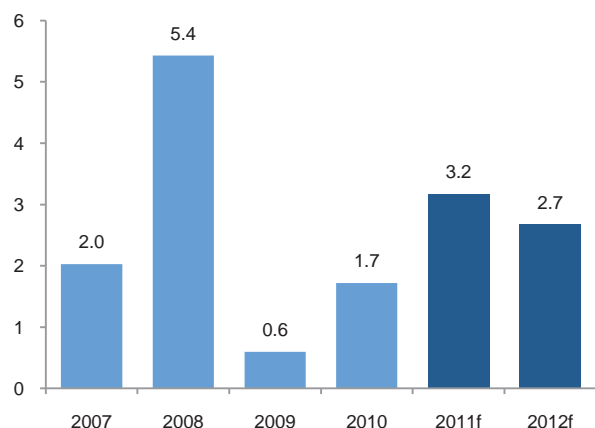
²² The IMF estimated in September 2011 that the average spot price of crude oil would decrease to USD 100 per barrel from USD 103.2 in 2011 (USD 97 in 2008). The food and beverage price index likely drops to 176.4 in 2012 from 184.8 in 2011 but remains much higher than 156.5 recorded in 2008.

²³ Many major food and transport items would be GST-exempted. According to PEMANDU, the impact is commodity-specific. For example, while prices of eggs and fresh fish would largely be unchanged, a typical meal of rice, chicken and vegetables may cost about 1.1 percent more. Depending on the timing of the general elections and the GST effective date, GST may in fact only influence the price levels after 2012.

imported inflation especially from the regional economies should remain, although in general the magnitude tends to be small and commodity-specific.²⁴

Figure 64. Consumer price inflation in 2012 is expected to soften modestly

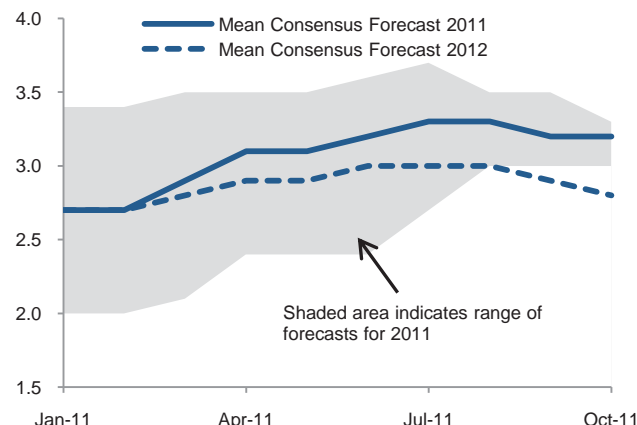
Actual and projected year-on-year CPI inflation, percent.



Source: CEIC and World Bank staff projections.

Figure 65. Market views on price pressure have eased in recent months

Consensus forecasts on Malaysia's consumer price inflation, percent. The horizontal axis shows months of survey.



Source: Consensus Economics.

External financial conditions to remain solid

Malaysia's current account surplus is expected to remain robust as the share of commodity-related exports continues to grow, but the overall export slowdown and higher investments should lead to a further narrowing in 2012. The current account surplus as a share of GDP is estimated to slightly improve in 2011 to 12.1 percent from 11.8 percent in 2010 before narrowing to 10 percent in 2012. The continued strength in the current account is related to the higher share of commodity-related exports. Commodity exports have higher domestic value-added, requiring fewer imported intermediate inputs compared to E&E exports. Moreover, unlike E&E exports, the price of which has been flat in real terms over many years, commodity prices have increased since late 2010 and remained relatively firm despite the weakening of the global outlook starting in July. Merchandise import growth would continue to outpace export growth, a trend that is expected to accelerate in 2012 because of the high import content of equipment investment (estimated at about 55 percent on average). The baseline scenario does not foresee major swings in the net services account, the income account, and current transfers relative to historical movements.

Fiscal policy heads for consolidation while monetary policy pauses

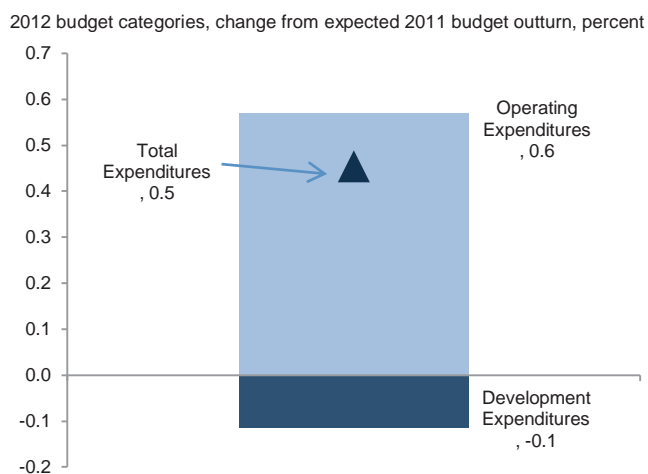
Fiscal policy is expected to enter a consolidation path in 2012. According to the 2012 budget presented on October 7, total expenditures are expected to increase by 0.5 percent from 2011 compared with a projected increase in revenues of 1.9 percent. Looking in more detail at the composition of the changes in expenditure, operating expenditure is expected to grow 0.7 percent and contribute 0.6 percent of the expansion of expenditures, whereas development expenditures contribute -0.1 percent (Figure 66). Within operating expenditures, expenditure consolidation can be found in pensions and gratuities, partly reflecting the government's decision to extend the retirement age from 58 to 60, and in transfers to non-financial public enterprises, which have been cut by nearly 40 percent and contribute the bulk of expenditure reduction (Figure 67). Included in the "other declines" category are cuts to asset acquisition and grants to statutory funds. Revenue growth is assumed to be modest based on stable or declining oil prices, as well as the low buoyancy of corporate and income tax revenues to economic growth (which is still assumed to be above 5 percent in the budget). The government forecasts the deficit to decline from 5.4 percent of GDP in 2011 to 4.7 percent in 2012; however, given the deteriorating

²⁴ For example, although about one-third of Malaysia's rice imports come from Thailand, domestic prices are not expected to rise meaningfully despite floods in Thailand, due to price controls and subsidies. According to CIMB (2011), Malaysia has a relatively large stockpile of rice (one million tons or equivalent to 5-6 months of domestic consumption). The government also secured another 800,000 tons of rice from Vietnam.

economic outlook the overall deficit figures are likely to exceed these forecasts. Box 5 below presents the main new initiatives in the Prime Minister's most recent budget speech.

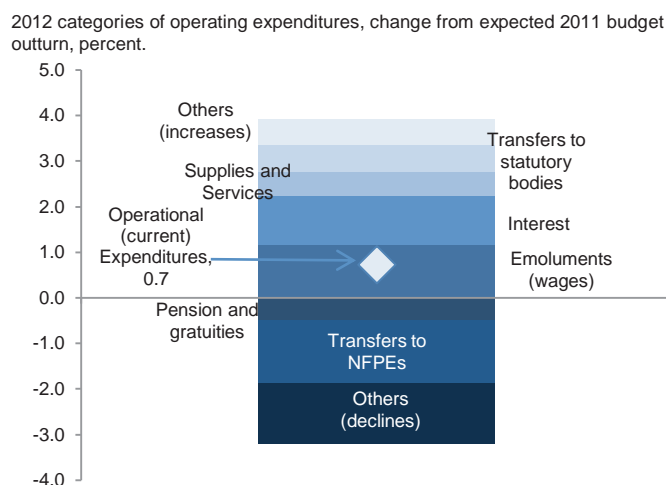
Debt levels are expected to increase modestly. Assuming lower growth rates in line with the World Bank forecast, the federal debt-to-GDP ratio should come in at close to 55 percent in 2011 (compared to 53 percent in 2010) before increasing modestly to 56 percent in 2012. These levels are somewhat above the government's stated targets, but committing to a credible long-term strategy for fiscal consolidation is more important than keeping debt below a given pre-set level.

Figure 66. Operating expenditures continue to grow, but the pace is dramatically slower...



Source: Ministry of Finance and World Bank staff calculations.

Figure 67. ... especially thanks to declines in transfers to NFPEs



Source: Ministry of Finance and World Bank staff calculations.

Box 5. Highlights of Budget 2012

The main initiatives announced in Budget 2012 with fiscal implications were (i) civil service reform; (ii) a bonus to pensioners and civil servants; (iii) cash transfers to poor households; and (iv) assistance to SMEs. Three other important initiatives announced in the 2012 budget – services sector liberalization, incentives for investments in the financial sector and the increase in the real property gains tax – are discussed elsewhere in this report.

Notably absent from the budget speech were subsidy reform and the goods and services tax (GST) – two important policy measures under the government's reform agenda to ensure the sustainability of public finances. The GST in particular would be important to reduce the government's reliance on oil revenues, which as noted earlier has increased further in 2011.

With respect to **civil service reform**, the budget proposed the creation of a New Civil Service Remuneration scheme (SBPA) that creates an exit policy for underperforming civil servants and for those who opt to leave the service and improves salaries of civil servants through a single tier structure. The budget also proposes the extension of the retirement age from 58 to 60. The Ministry of Finance's Economic Report noted that a hiring freeze was put in place from June through December 2011 to facilitate an audit of posts in all departments, with a view to eliminate unnecessary posts.

The budget offered a **bonus to 1.3 million civil servants and 618,000 pensioners** in the amount of half-month salary with a minimum payment of RM 500 and an assistance of RM 500 to government pensioners. In addition, as part of the new SBPA pensioners would benefit from a pension adjustment and effective 2013 the government will implement an annual pension increase of 2 percent without having to wait for any review of the remuneration system or salary adjustments.

The budget also proposed **assistance of RM 500 to 3.4 million households with a monthly income below RM 3,000.**

This measure, which is a response to concerns about the rising cost of living, is expected to reach 53 percent of total households. To be eligible, the head of the household must register with the Inland Revenue Board, which is entrusted to implement the program. The assistance will be distributed through banks and post offices. In addition, schooling assistance of RM 100 will be provided to all primary and secondary school students.

The government will allocate about RM 4.7 billion to **SME development**. About half of this amount (RM 2.5 billion) will be allocated to Shariah-compliant funds, whereas another large portion (RM 2.1 billion) will be allocated to Amanah Ikhtiar Malaysia, a fund to provide micro-financing to entrepreneurs.

Considering the importance of reining in the wage bill to secure long-term fiscal sustainability, measures that relate to the civil service hold promise, but appropriate implementation will be essential to ensure the new scheme is more systematic than the old one in rewarding performance and ensuring greater mobility between the public and private sectors. The hiring freeze currently in place can be particularly effective, but it needs to be sustained to translate into an appropriate reduction in the growth of the civil service in the coming years and provide meaningful savings.

Redistributive measures to address the rising cost of living could provide a platform for later subsidy rationalization through the database created for the distribution of the RM 500 assistance. Two concerns emerge, however. First, it will be important to prevent both with this program and the bonus to civil servants and pensioners from becoming recurrent expenditures. Second, the cost of living assistance should not add to Malaysia's fragmented patchwork of social assistance schemes, but rather be integrated into fewer and more effective schemes.

Monetary authorities will follow external developments closely. With the deterioration in the global outlook, risks to inflation and growth have become more balanced. In its latest meeting, Bank Negara kept the OPR at 3 percent and noted that "while inflation remains a concern, the increased uncertainties on the global and domestic economic growth prospects and their potential consequences could have a moderating impact on inflation." Because real policy rates remain negative and inflation uncomfortably high (for Malaysian standards) at 3.4 percent in September, rate cuts are unlikely in the absence of more decisive evidence of deterioration of growth prospects. Considering the outlook for falling inflation and a combination of strong domestic demand and weak (but expanding) external demand in the first half of 2012, rates would tend to remain fairly stable until greater clarity emerges. The pause in the normalization of the OPR is also consistent with expectations that interest rates in advanced economies are likely to remain low for a longer period than was anticipated in early 2011.²⁵ A higher interest rate differential over a longer period would increase risks from capital inflows and add pressure to the exchange rate at a time of faltering exports.

Main downside risks remain external

The 2011 forecast has downside risks from shocks to external demand. A possible disorderly debt restructuring in the Euro zone could lead to a new shock to the global economy and to a sharp contraction in export growth rather than the deceleration that is currently anticipated. Moreover, higher rates of de-stocking are possible and would subtract from growth. In addition, the forecast anticipates normalization of mining activities towards the fourth quarter; failure to resolve the problems in the Kikeh oil field also present a downside risk.

The forecast for 2012 is predicated on the implementation of the government's reform agenda and there is potential upside if implementation gains momentum. The forecast assumes that reforms proceed at the current moderate pace and incorporate some uncertainty on the timing of implementation of recently announced reforms such as liberalization of services sectors. Should reforms gain momentum, they could pave the way for higher rates of private investment growth than currently anticipated. Risks in 2012 are therefore more balanced between the upside and downside. A new financial crisis or sluggish implementation of domestic reforms could easily push GDP growth closer to 4 percent, while a more favorable external environment coupled with strong reform momentum could take growth rates closer to 6 percent.

²⁵ The US Federal Reserve announced that it would keep rates at exceptionally low levels at least until mid-2013.

Medium Term Outlook

The Government Transformation Programme continue to post promising results

The Government Transformation Programme (GTP) has shown adequate progress in the first half of 2011 although some areas seem to lag behind. As of July, some targets for the whole year 2011 were already met or exceeded. For example, the number of reported street crime in the first half of 2011 dropped by 41.6 percent from the baseline period in 2009 compared to a 40-percent reduction target. The numeracy rate also reached the goal of 95 percent. But the progress appeared less notable in certain areas, possibly due to ambitious targets. For instance, the target is to equip 26,882 rural houses with 24-hour electricity supply in 2011. The mid-year review suggests that only 2,906 houses were completed. The progress on providing new or restored low-cost houses also seems to lag behind (2,567 out of targeted 9,146 houses delivered as of mid-year).

Several GTP initiatives for 2011 focus on the National Key Result Areas (NKRAs) on “Reducing Crime” and “Fighting Corruption”. The NKRA on Reducing Crime introduced on-site facility to rate the services provided by the Royal Police Malaysia (RPM) and a witness management unit to reduce the backlog of cases. Under the NKRA on Fighting Corruption, 14 special corruption courts were set up in February 2011 to speed up prosecutions. Stiffer punishment for corrupt government officials are under discussion, while law enforcement agencies such as police, customs and immigration agencies have set up compliance units to strengthen their integrity. Pursuant to the introduction of the Integrity Pact by the Ministry of Finance, the government is also enlisting the private sector to fight graft with the launching of the Corporate Integrity Pledge.

The new, seventh NKRA on Cost of Living has been announced. The new NKRA seeks to mitigate the burden of rising cost of living on people’s well-being. Details are to be announced but reported to include, among others, food supply chain management, liberalization of food imports, and utilization of idle land for food production. Measures already in place like price control schemes and subsidies for essential items would continue. The cost of living NKRA also covers non-food items such as expenses on housing, transport and healthcare. The initiatives on 1Malaysia Clinic and 1Malaysia Shop, for instances, would be expanded.

Implementation of the Economic Transformation Programme could be accelerated

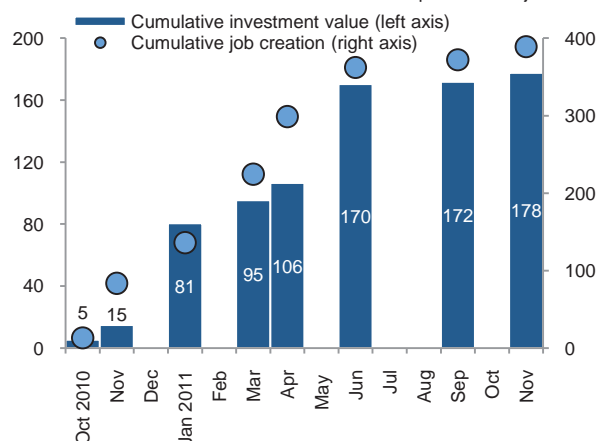
Investment projects under the Economic Transformation Programme (ETP) have continued to come in despite a challenging external environment. Over the first year since its first launch, the overall investment value under ETP projects as of November 2011 amounted to RM 177.6 billion (Figure 68). This is about 13 percent of the target for 2020 and therefore on track. Over half of these investment projects has already commenced, while another 31 percent is operational or completed (Figure 69). Meanwhile, the latest round of announcement in November 2011 reported an increase in investment value of RM 5.9 billion from the cumulative level in September. These additional projects include a RM 1 billion investment by IBM for the establishment of a global delivery center in Cyberjaya as well as large investments in building new hospitals in four different states.

Six Strategic Reform Initiatives (SRIs) were launched under the ETP to address the enabling environment for private investments. Introduced in July 2011, the six SRIs contain 37 policy measures that correspond to structural reform areas and serve as enablers of growth and competitiveness. The six areas cover (i) international standards and liberalization, (ii) public finance, (iii) public service delivery, (iv) human capital development, (v) government’s role in business, and (vi) narrowing disparities and Bumiputera small and medium-sized enterprises (Table 7).²⁶

²⁶ These 37 policy measures are part of the 51 policy measures proposed by the National Economic Advisory Council (NEAC) under the New Economic Model (NEM). The remaining 14 policy measures went to different NKRAs under GTP, National Key Economic Areas (NKEAs) under ETP, investment committee, innovation agencies, and others. Examples include policies on broadband, intellectual property management, sustainable agriculture, research and development, energy efficiency, and judiciary administration reform.

Figure 68. Investment under ETP rose sharply in mid-2011

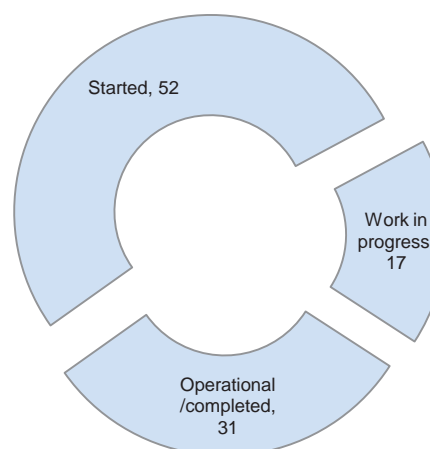
Cumulative values since Oct 2010. Horizontal axis shows months of announcements. RM billion for investment and '000 positions for jobs.



Source: PEMANDU.

Figure 69. Over one-fifth of ETP entry point projects is completed or operational

Status breakdown of entry-point projects as of October 2011, percent



Source: PEMANDU.

Each policy measure outlines detailed initiatives. For example, the Public Finance SRI has five policy measures that includes 21 initiatives. To improve tax administration and compliance, the government seeks to, among others, widen field audit and investigation coverage, expand the tax base, revise the depreciation rate of used cars, improve tax collection efficiency (e.g. prompt collection and taxpayers segmentation), and strengthen customs' enforcement and audit. Special programs and capacity building to support Bumiputera SMEs also have a clear set of qualifications determining eligibility of firms.

Table 7. Strategic Reform Initiatives concentrate on six areas with 37 policy measures

Strategic Reform Initiative	No. of policy measures	Selected focus areas
International standards and liberalization	9	<ul style="list-style-type: none"> Compliance with international standards to improve market access Adoption of standards to enhance quality of goods and services Liberalization of entry and operations, including ownership Liberalization of the Services Sector including entry, ownership and operations. Implementation of the Competition Law
Public finance	5	<ul style="list-style-type: none"> Strengthening tax administration and compliance Transparent procurement Control of government expenditure Introducing goods and services tax
Public service delivery	7	<ul style="list-style-type: none"> Single online portal, integrating all business and general online services Improve public service delivery through real time monitoring and counter feedback rating Implement Open Recruitment and portable pension to increase talent pool Launching a citizen-centered public service
Human capital development	9	<ul style="list-style-type: none"> Setting up a National Wage Consultative Council Introduction of minimum retirement age for private sector Studying minimum wage policy Labor safety nets/unemployment insurance Up-skilling schemes
Government's role in business	5	<ul style="list-style-type: none"> Establishing a central oversight authority Divestment of selected government-linked companies (GLCs) Reorienting GLCs to support private sector Merge public enterprises to enlarge scale
Narrowing disparities and Bumiputera SMEs	2	<ul style="list-style-type: none"> Assistance and capacity building programs for Bumiputera SMEs

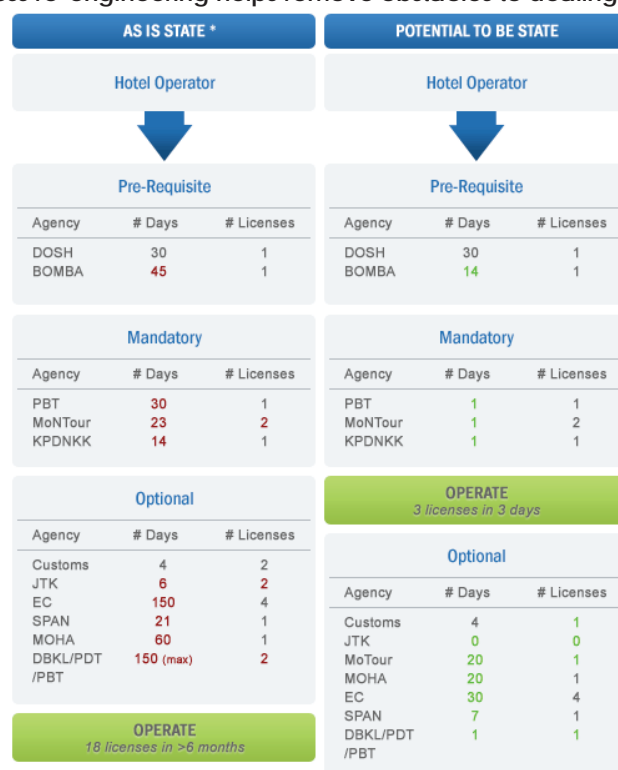
Source: PEMANDU.

The pace of implementation of the SRIs has been less robust compared to that of ETP projects. In the 2010 Budget, the government announced it will liberalize 17 services subsectors in phases in 2012, including private hospital services, medical and dental specialist services, architectural, engineering, accounting and taxation, legal services; courier services; education and training services; as well as telecommunications services. This initiative will allow up to 100 percent foreign equity participation in selected subsectors. The government also announced tax incentives for investments in the financial sector to develop the Kuala Lumpur International Financial District. However, the implementation of the goods and services tax (GST) and the continued rationalization of subsidies remain in the backburner for the time being.²⁷

Implementation of structural reforms remains the key challenge

Malaysia appears to be taking a “bush fire” approach to reform, with accompanying promises and risks. Faced with the daunting task of clearing a dense forest (overcoming the structural challenges identified in the NEM), the government has in part used a strategy to start many bush fires (investment projects under the ETP) in the hope that the fires will catch on and clear the whole area. By elevating the details of implementation of individual projects to the highest levels, obstacles that were previously abstract become concrete and can be removed to benefit not only the project at hand but also future projects, thus improving the environment for private investments more broadly.²⁸ As a concrete example, PEMANDU is currently supporting the implementation of an entry-point project that involves the construction of a hotel (the St. Regis Kuala Lumpur). In the process of implementing this project, it encountered the obstacles to obtaining construction permits that are reflected in Malaysia’s poor performance (113 out of 183 countries) in the “Dealing with Construction Permits” indicator of the World Bank’s *Doing Business* publication. As a result, PEMANDU has proposed as part of the public service delivery SRI changes to the way construction permits are issued in order to reduce the number of permits and time required (Figure 70).

Figure 70. Business process re-engineering helps remove obstacles to dealing with construction permits



* Have incorporated previous studies by MAMPU and PEMUDAH

Source: PEMANDU

²⁷ Although technically not an SRI, subsidy rationalization is an important reform under the New Economic Model.

²⁸ According to Senator Dato' Sri Idris Jala, CEO of PEMANDU: "The NKEA and SRI teams are in constant contact with project owners. If there are any problems, we deal with it (...) by escalating them to the respective Steering Committees (SCs) chaired by the lead minister. Problems that cannot be solved in the SCs are escalated to the Economic Council, which the Prime Minister chairs (...)"

A similar approach under PEMUDAH has already yielded a number of improvements to Malaysia's business environment. On the regulatory side, Malaysia is to be praised for its ongoing and highly effective efforts to address issues of regulatory and administrative constraints. PEMUDAH has had much success in this regard through well run public private dialogue characterized by strong involvement of high levels of government, trust between the private sector and government built over several years, willingness to go deep into the issues using monitoring reports, and ability to work with the implementing agencies to develop practical solutions. Partly as a reflection of this effort, Malaysia improved five places in the World Bank's *Doing Business* survey 2012. The project-based approach under the ETP is likely to continue to generate improvements to Malaysia's business environment.

But the risks are that Malaysia will become increasingly externally competitive in its regulatory environment without addressing more difficult domestic structural challenges to competitiveness. Malaysia is a very competitive country in the sense that it can provide businesses with an attractive package with which to compete in global markets. This package includes infrastructure, regulations, fiscal incentives and political stability. While the "bush fire" approach has proven its ability to deliver improvements to the business environment, its ability to support the delivery of structural reforms called for in the New Economic Model remains untested. If not accompanied by the costly investments in structural reforms to increase competition and competencies in the economy, "rains" may result in the forest taking over the clearances created by the "bush fires", or in the clearances remaining empty. Box 6 below uses one particular indicator to illustrate how the largest gains for Malaysia at this time would come from addressing structural constraints through accelerated implementation of the SRLs rather than further improving the business environment (although of course both can and should be pursued in parallel).

Box 6. Malaysia's Performance in the A.T. Kearney Global Services Location Index™, 2011²⁹

The Global Locations Index prepared by global consulting firm A.T. Kearney provides a succinct example of Malaysia's challenges in enhancing its competitiveness going forward and the relative importance of improvements to the business environment compared to addressing structural issues such as skills provision. The index considers the attractiveness of different countries for services off-shoring (such as business process outsourcing, IT operations and call centers). Considering that Malaysia has set the objective to grow its services sectors to 60 percent of GDP by 2015 while creating high-paying services jobs, this is a very relevant indicator.

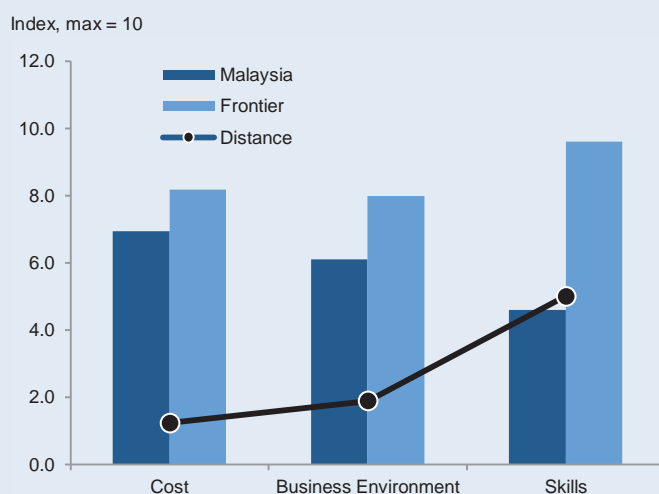
It turns out that Malaysia does very well in the Global Services Location Index – ranking 3rd out of 50 countries, behind only India and China and ahead of many advanced economies. But investigating the sources of Malaysia's strong performance in this index (its competitiveness in services) reveals more reasons for concern than encouragement.

The index is divided into three sub-components: cost ("financial attractiveness"), business environment and skills quality and availability. "Financial attractiveness" is comprised primarily of labor costs (compensation) but also infrastructure, tax and regulatory costs. The business environment includes a number of sub-indicators such as respecting intellectual property, country risk and infrastructure. What emerges from analyzing this index is that Malaysia ranks highly because its business environment, while not at the level of advanced economies, compares very favorably against lower-income countries, while labor costs remain much closer to lower-income countries than advanced economies (Figure 71). Malaysia's performance in skills is its weak point.

Meanwhile, China and India rank highly despite relatively poor business environments because they do well in the skills component. To some extent this is due to their large labor forces (a separate sub-index for availability of labor), but even focusing only on the experience and education sub-indices still shows these countries on par with advanced economies (see Figure 72). Malaysia's distance to the frontier confirms that its "cost advantage" (low wages) is still its leading source of absolute competitiveness, followed by the business environment, with skills far behind (Figure 71).

²⁹ See <http://www.atkearney.com/index.php/Publications/offshoring-opportunities-amid-economic-turbulence-the-at-kearney-global-services-location-index-gsli-2011.html> for more details.

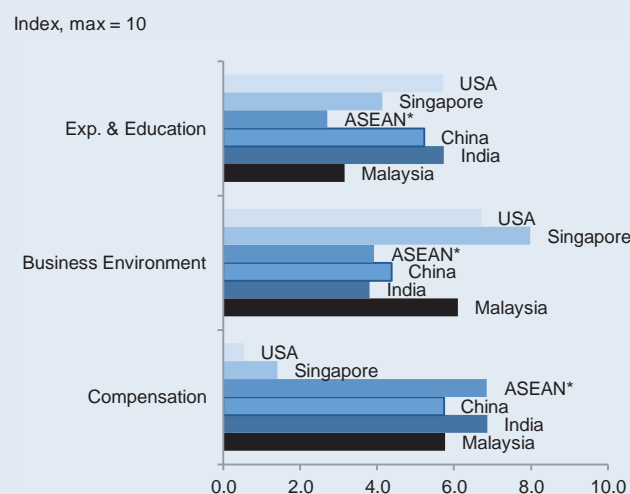
Figure 71. Malaysia's greatest absolute advantage remains "cost competitiveness"



Note: A high index for "cost" means lower costs.

Source: A.T. Kearney and World Bank staff calculations.

Figure 72. Malaysia's indicators on labor costs and skills are closer to lower-income countries.



Note: ASEAN includes Thailand, Philippines, Indonesia and Vietnam.

Source: A.T. Kearney and World Bank staff calculations.

As Malaysia joins the ranks of high income economies, it is expected and desirable that its "cost competitiveness" should decline to the level of other high income economies. While Malaysia still has room to continue to improve its business environment and should strive to make efforts in that direction, this brief analysis suggests that the main priority should be to address structural issues such as skills provision, an area where it is already behind key competitors such as China and India, and an area where reforms are necessarily more difficult considering the complexity of reforming the country's educational system.

Successful implementation of the Strategic Reform Initiatives is crucial to addressing structural challenges. SRIs capture various policy measures that are pre-requisites for a successful implementation of other components under the reform agenda. For instance, achieving SRIs on international standards and liberalization, human capital development, and government's role in business would equip Malaysia not only with reduced business regulatory burdens, but also stronger domestic market competition, better-functioning labor markets, a larger pool of skilled workers, and less government's participation in the economy (thus creating room for private sector-led growth). These are all essential conditions in order to achieve the target on ETP investment. Similarly, to successfully deliver NKRAs under GTP, sufficient progress on public finance and public service delivery SRIs is required. Therefore, SRIs should be viewed as top priorities.

But securing timely and notable progress on SRIs can be more challenging than successfully implementing a project. In addition to strong and uninterrupted political will, success implementation of SRIs requires a buy-in from all stakeholders. This also includes those that may initially bear the cost of the reform. Examples include business sectors where liberalization is planned or fiscal incentives reduced, as well as public entities where divestment is intended or mandate shifted. Within the civil service, pushing forward unprecedentedly large-scale reforms require reorienting bureaucratic management culture and a more effective inter-agency coordination. In addition, advancing SRIs takes time. In many cases, current laws and regulations need to be thoroughly reviewed and amended and many stakeholders need to be consulted. Capacity to implement, monitor and evaluate new initiatives can vary considerably across public agencies. Essential capacity building is costly and time-consuming.

Managing expectations and perceptions on reform progress is also important. Public confidence on the reform agenda depends on comparing their prior expectations with perceptions of how reforms are proceeding. Targets that are too ambitious and probably set to demonstrate the determination of implementing agencies could raise

public expectations excessively.³⁰ Over-delivering realistic, well-received targets could work more effectively in enhancing public confidence. Public confidence is also conditional on consistency between day-to-day experiences and outcomes of selected indicators that the government reports. In this regard, measurement of outcomes needs to be carefully carried out.³¹

³⁰ For instance, the GTP sought to reduce the number of poor households by up to 46,000 in 2010. The actual outcome was only 15,868 households, although this shortfall was partly due to new information on poverty incidence estimate that became available only after the target was set. Earlier this section also highlighted the ambitious target of equipping close to 27,000 rural houses with 24-hour electricity access in 2011.

³¹ For example, the government estimates that around 6.8 million people have benefitted from GTP. But this could be biased from double-counting. Each household tends to benefit from more than one NKRA simultaneously, such as bus ridership, access to water and electricity, low-cost housing, and new pre-schools. Estimating the number of beneficiaries from NKRAs on Fighting Corruption and Reducing Crime can even be more challenging as they are public goods. Under-reporting is common in this context.

3. Smart cities

Smart Cities: Innovative, Green and Resilient³²

Smart cities are skilled and innovative. They play a crucial role in catalyzing economic growth by generating productivity gains through agglomeration economies. Cities essentially provide proximity, both between firms and between people, reducing the cost of moving goods, people and ideas.³³ Industrial clusters form near or in cities to take advantage of lower transportation costs of goods between firms, while the proximity between firms and a large pool of workers facilitates business creation and reduces the costs for workers to find new jobs. But most importantly, proximity between people facilitates the exchange of new ideas. The higher the level of skills in a city, the larger is the potential for idea spillovers that leads to innovations.³⁴ Finally, cities also provide economies of scale in the provision of amenities and basic services that effectively raise the purchasing power of urban wages.³⁵

Smart cities are green and sustainable. They ensure a high quality of life to all citizens and the sustainability of economic gains. The agglomeration forces that provide the impetus for the growth of cities also generate dispersion forces such as congestion, crime and pollution, as well as greenhouse gas emissions.³⁶ Smart cities minimize these negative side-effects of urbanization to ensure a high quality of life for all citizens and long-term sustainability of the city's economy. Making a city green and sustainable can also help make it more innovative and competitive. Green growth creates downstream incentives for innovation, and growing global awareness of climate change implies that Malaysia will need to make its exports "greener" to remain competitive as a greater share of globally-traded goods and services may eventually be labeled for their carbon emissions.

Smart cities are resilient. They are prepared to face natural hazards and climate-related shocks. The increasing concentration of economic activity in cities potentially raises the exposure of the national economy to natural hazards as urban areas are exposed to vulnerabilities such as floods, tsunamis, earthquakes or other natural disasters. Meanwhile, climate change may potentially increase the severity and frequency of extreme weather events such as floods and droughts. In order to cope with the potential for increasing frequency and costs of natural disasters, cities must take measures to manage and mitigate risks. In many cases, increasing resilience goes hand-in-hand with greening cities. For example, effective flood prevention may be achieved by preserving and rehabilitating catchment areas of waterways that flow through the city.

The 10th Malaysia Plan marked a major shift in Malaysia's territorial development strategy by recognizing the importance of density and cities to economic growth. Historically, Malaysia's development strategy aimed at balanced regional development, with incentives to disperse economic activity throughout the country. The 10th Malaysia Plan takes to heart the message of the 2009 World Development Report – that "economic growth will be unbalanced. To try to spread out economic activity is to discourage it" (World Bank, 2009) and instead focuses on developing a small number of high density clusters and building vibrant and attractive living spaces in cities to attract talent and create technological clusters. In line with this new vision, the 2010 National Physical Plan is based on the concept of "concentrated decentralization" to "concentrate the nation's scarce resources to a few priority urban centers with the greatest growth potential for job creation (...) while protecting the rural areas and natural environment." (NPP-2, 2010) For the vast areas that remain rural the NPP aims to improve the delivery of services and infrastructure (telecommunications, schools, transport, health facilities etc).

³² Many definitions of "smart cities" exist. For example, the European Smart Cities project (<http://www.smart-cities.eu>) defines a smart city as one that has "smart economy, smart mobility, smart environment, smart people, smart living and smart governance." IBM defines "smarter cities" as ones that apply "advanced information technology, analytics and systems thinking to improve how a city works and how it stimulates a thriving, knowledge-driven economy." (IBM, 2010).

³³ See Glaeser and Gottlieb (2009); Glaeser (2010); Ellison, Glaeser and Kerr (2010); and Puga (2010) for recent surveys on the role of agglomeration economies.

³⁴ For example, "a dense pool of skills for firms to draw upon [...] reduces transaction costs, promotes spillovers which facilitate technology diffusion and lead to broader gains in productivity." (World Bank and NESDB, 2010, p. 98).

³⁵ Glaeser (2008) argues that location choice is a function of local wages, housing costs and other amenities.

³⁶ Hiratsuka (2011) points for example to dispersion forces generated from congestion in the labor and land markets.

Malaysian cities face a number of challenges to become “smart”. Before Malaysia can fully realize the benefits of density and provide opportunities for entrepreneurs, build human capital, enable clusters to emerge, and nurture a clean and sustainable environment, a number of trends and developments must be decisively reversed. Malaysia’s leading universities are performing below potential and not contributing sufficiently to the cities that host them; skill shortages have persisted; car ownership is spreading; public transport options remain limited; GHG emissions are high and rising; urban densities are declining; and disposal of solid waste has been overlooked with the result that most landfills are small and non-sanitary.

The innovation, sustainability and resilience agendas are interconnected and require coordinated policies. Urban transportation is a relevant example: it contributes to innovation by enhancing connectivity between firms, workers, academic institutions and public agencies, and by increasing quality of life through easier access to amenities. Urban transport can also lead to substantial reductions in greenhouse gas emissions and increase energy efficiency – both directly, and indirectly through the reduction of urban sprawl. Policies to increase the uptake of public transportation must focus both on the supply of more public transportation options, but also on the incentives vis-à-vis private vehicle use, including fuel and road use costs. Another example is illustrated in Box 7 below, which describes the “River of Life” project: cleaning and redeveloping the Klang River has implications for economic growth, sustainability and flood risk management, although as with the “bush fire” approach of other ETP projects it can complement but not replace further structural and coordinated policies.

This chapter is organized as follows: The first part of the chapter is about innovative cities. It emphasizes the human capital dimension and the importance of academic institutions (such as universities), as well as information technology and transportation infrastructure. It also looks briefly at the issues linked to quality of life that attract skilled workers. **The second part is about green cities.** Building “green” and sustainable cities requires increasing energy efficiency, reducing carbon emissions, and improving waste and water management. **The third part is about resilient cities.** This part will also consider the management of natural disasters, which take a different magnitude in cities. **The chapter concludes with options for smart management of cities,** emphasizing the need for coordinated and transformative approaches.

Box 7. River of Life

The River of Life project is part of the vision to make Greater KL a world-class city by 2020

In Malaysia, Kuala Lumpur has long been the face of the country, driving the national economy. At the same time, urbanization brings challenges. In all of history’s episodes of rapid economic growth, cities have come under strain. From the squalor of industrial revolution London, to the slums and congestion of 1980s Mexico City, or the pollution of modern day Beijing, citizens’ lives have often been impacted by development. The aspiration for Greater Kuala Lumpur / Klang Valley (Greater KL/KV) is to drive rapid growth in parallel with upgrading the city’s livability.

Recognizing the importance of Greater KL/KV for the country’s high income and sustainability agendas, the NEM included Greater KL/KV as a National Key Economic Area (NKEA) with the objective “to simultaneously achieve top-20 economic growth and be among the global top-20 most livable cities by 2020”. One of the key Entry Point Projects (EPPs) under the KL NKEA is the River of Life project. The goal of the project is to transform the Klang River into a vibrant and livable waterfront with high economic value. This transformation is divided into three components: river cleaning, river masterplanning and beautification, and river development.

The River of Life aims to support quality of life and connectivity in central KL...

The Klang and Gombak riverfront is perhaps Greater KL’s most underutilized natural asset with all the key ingredients to become a vibrant waterfront, i.e. historical importance, heritage centre and location within the city centre. To increase economic viability of the area, masterplanning and beautification works will be carried out along a 10.7km stretch along the Klang and Gombak river corridor. The approach to the project has been comprehensive and integrated, considering the whole larger river/park system and creating a framework that:

- integrates a new river-based public transportation system as support system for transportation in KL;
- connects and enhances existing public spaces and to provide a distinct and uniform identity for all public

spaces along the riverfront.

- spurs real-estate development along the river; and
- transforms the river from a barrier to a connector by knitting both sides of the riverfront together with their surrounding communities;

... as well as private investments.

The masterplanning and beautification works will spur private investments in developing the areas immediately surrounding the river corridor. To catalyze development along the corridor, potential government land will be identified and tendered out to private developers through competitive bidding. This approach seeks to unlock the land value enabling sustainable urban development. According to preliminary estimates, private investments in real estate development around the river areas may amount to RM 14.3 billion.

Cleaning the river will contribute to a greener KL...

Currently, the river is regarded as a large monsoon drain and dumping ground with an estimated 175 thousand tons of solid waste entering the rivers annually and only 25 thousand tons removed. In addition, the city's aged infrastructure and sewerage system results in much untreated sewage being discharged directly to the river. River cleaning will be conducted along a 110km stretch along the Klang River basin. The goal is to bring the river from its current Class III – Class V water quality (not suitable for body contact) to Class IIb (suitable for body-contact recreational usage) by year 2020. To achieve this goal, the project will involve upgrading existing sewerage facilities, installing additional gross pollutant traps to improve the river aesthetics and water quality, installing wastewater treatment plants at 5 wet markets to decrease rubbish and pollutants, and promoting, enforcing, and managing river cleanliness and health. An integral part of the planning is also storm water management where the Drainage and Stormwater Management Master Plan for Kuala Lumpur to improve the city's drainage systems will be implemented along with the water quality improvement projects.

... with increased resilience.

In addition to improving the water quality of both Klang and Gombak rivers, there are several initiatives programmed under the project to increase the city's resilience to floods. For example, ponds in Benteng and Puhah are being upgraded and expanded to increase their capacity to retain rainwater effectively, thus helping prevent flashfloods and overflow from the rivers. River deepening and widening are also being implemented along Sungai Kerayong and Sungai Klang to mitigate flooding risks downstream of the river.

RoL also brings lessons to governance of large-scale urban projects...

The River Beautification taskforce had organized an International Masterplanning Competition that was completed on the 1st of August to identify the best vision and masterplan for the beautification works. Five internationally acclaimed masterplanners were shortlisted to participate in the competition. Not only was the competition judged by professionals globally from the US, UK and Australia, but citizens and the public at large were invited to participate in the decision making process by voting for their favorite masterplanner through an online e-voting platform. The public's voice accounted for 20 percent of the decision of the winning masterplanner.

The project also provides an example of a mechanism to coordinate among a large number of agencies towards a common goal. The Department of Irrigation and Drainage is leading 26 government agencies and departments³⁷ involved in land use planning, water management, and housing, among others, in implementing 12 key initiatives under the project.

... and to other Malaysian cities.

In addition to the River of Life project in the Greater Kuala Lumpur/Klang Valley NKEA, rivers in other cities in Malaysia are also receiving renewed attention. Similar projects are currently being studied in other cities such as the Sungai Pinang in Penang, Sungai Seget in Johor Bahru and Sungai Sarawak in Kuching, Sarawak.

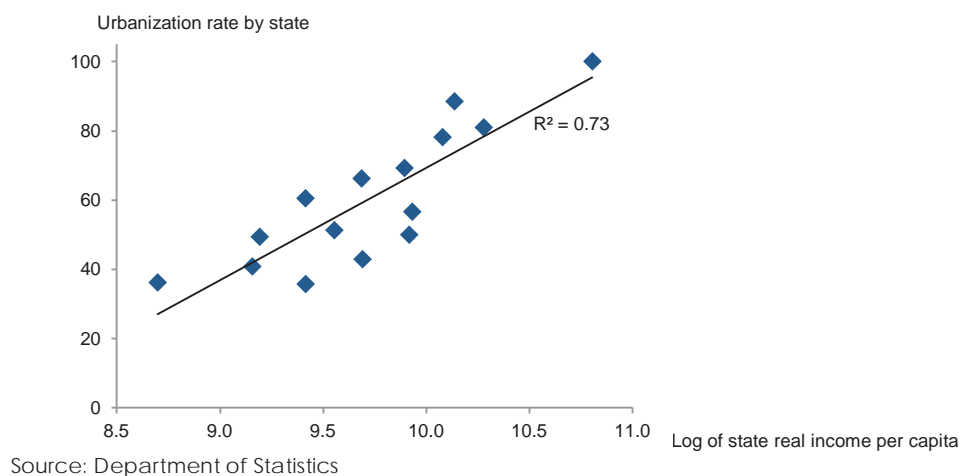
³⁷ The departments span four ministries (Ministry of Federal Territories and Urban Well-being, Ministry of Natural Resources and Environment, Ministry of Energy, Green Technology and Water and Ministry of Housing and Local Government), two states (Selangor and the Federal Territory of KL) and three municipalities (Kuala Lumpur, Selayang and Ampang Jaya).

Innovative cities

Cities are central to Malaysia's high income agenda

Growth happens in cities. Malaysia shows the typical pattern found in most countries: higher levels of urbanization are associated with higher levels of productivity and economic growth (Figure 73). In the past, higher productivity in some cities was due to innate advantages. Hong Kong and Singapore benefited from being strategic ports, for example. But the drastic reduction in shipping costs over the 20th Century and the transformation of Singapore and Hong Kong's economies away from simply serving as trading posts suggest that innate advantages cannot account for much of the productivity differences observed in the 21st Century.³⁸ Rather, productivity is higher in cities primarily because of agglomeration economies. Glaeser and Gottlieb (2009) provide a succinct definition: "Agglomeration economies are, at their root, advantages that come from reducing transportation costs. After all, urban density is just the absence of physical space between people and firms. Agglomeration economies can exist because of reduced transportation costs for goods: input suppliers and customers save on those costs if they locate near one another. Agglomeration economies can exist because of reduced transportation costs for people: labor markets may be more efficient in urban areas and service providers may find it easier to cater to their customers. Finally, agglomeration economies can exist because of easier transmission of ideas: cities may thrive because they facilitate the flow of knowledge across people and enterprises. " (p. 22).

Figure 73. Urbanization is closely linked to income levels



In particular, growth happens in *innovative cities* that are characterized by (i) high concentration of human capital, (ii) excellent connectivity, and (iii) a vibrant, knowledge-based economy. The main characteristic of an innovative city is the concentration of human capital of all types – technical, scientific, creative, vocational and managerial. Cities with large numbers of highly skilled individuals living in close proximity create the greatest opportunities for knowledge spillovers that generate innovation-led growth. Connectivity – of individuals within the city, between the city and the national economy, and between the city and other national global cities – is essential both to the standards for quality of life demanded by a talented workforce, but also to further facilitate the flow of information and ideas. Connectivity allows the city to absorb ideas from the outside and take its ideas (as well as those ideas embedded in products and services) to the world market. Transportation of people and goods, as well as information and communication technology infrastructure, are the primary determinants of connectivity. Finally, it is the agglomeration of entrepreneurs with similar economic interests and who draw on the local pool of talent that creates a vibrant knowledge-based *economy* that can translate new ideas into marketable production. A vibrant knowledge base economy also ensures the sustainability of demand for (and adequate returns to) a highly skilled labor force.

Innovative cities are closely linked to the high income agenda. As recognized in the New Economic Model, Malaysia needs to move from a growth model driven by factor accumulation to one driven by productivity gains and innovation. Innovation is the introduction of new or improved goods, services, production processes or modes

³⁸ Glaeser and Gottlieb (2009)

of production. Innovative activities may be “new to the world” or “new to the firm”. In all cases innovation involves the performance of complex tasks (design, development, planning, research, etc.) that require not only skilled individuals, but *teams* of skilled individuals where knowledge spillovers can take place.³⁹ Smart cities can serve as cradles for innovation by providing the conditions for knowledge spillovers and linking them to the market, which is a key difference between pure science and innovation.

Concerted policy efforts to develop innovative cities will be fundamental to Malaysia’s competitiveness going forward. As Malaysia’s development progresses, the source of its competitiveness must move from natural resource endowments, good infrastructure, political stability and favorable business regulations to the attractiveness of Malaysia’s cities to knowledge workers and knowledge-intensive businesses. These workers and businesses are becoming increasingly globally-mobile and choose to locate in successful areas – sustaining their success but making it harder for other successful areas to emerge. Berry and Glaeser (2005) find that in the United States, “over the past 30 years, the share of adult populations with college degrees increased more in cities with higher initial schooling levels than in initially less-educated places... [apparently] driven by shifts in labor demand as there is an *increasing wage premium for skilled people working in skilled cities.*” (italics added) This suggests an important role for policy to facilitate the transformation of Malaysian cities into smart cities, so that they can benefit from these positive dynamics of locational choice.

The New Economic Model (NEM), the 10th Malaysia Plan (RMK 10) and the National Physical Plan-2 recognize the importance of – and links between – innovation and cities. The NEM puts forward a vision of growth driven by “innovative processes and cutting-edge technology, supported by healthy level of private investment and talent, for high value added goods and services.” (NEAC, 2010). The 10th Malaysia Plan operationalizes this vision by “shaping a supportive ecosystem for innovation, creating innovation opportunities, putting in place innovation enablers and funding innovation” (p. 69). In addition, RMK 10 looks to leverage on cities to accelerate economic growth. Two main initiatives are supported in this area: first the National Key Result Area (NKRA) on Kuala Lumpur (Box 8), and second a broader initiative to build vibrant and livable cities.

Kuala Lumpur and Malaysia’s secondary cities of Penang and Johor require different strategies to foster innovation. Malaysia needs to foster and promote an efficient national system of cities that enable a rich, diverse and productive urban portfolio. Kuala Lumpur is Malaysia’s “primate” or primary city – far denser in economic and human terms than other Malaysian cities. The GDP of the federal territory alone is 1.6-1.8 times higher than that of the states of Penang and Johor Bahru, and the population of the Greater Kuala Lumpur area is about 4 times that of that of Penang and Johor. For the primary city, this involves facilitating innovation both in products and in economic activities, whereas secondary cities tend to be more specialized, sometimes in mature industries.⁴⁰ The topics discussed in this report are relevant to both types of cities as they represent the basic enabling environment for redirecting cities towards innovation-led growth.

Box 8. Greater Kuala Lumpur National Key Economic Area

The Greater Kuala Lumpur / Klang Valley NKEA’s vision can be summarized as 20-20 by 2020—that is, to be a city that simultaneously achieves a top-20 ranking in city economic growth (as defined by city GDP growth rates) while being among the global top-20 most livable cities by 2020. Additional aspirations include increasing per capita GNI from RM40,000 to RM70,000 per year while growing the population from 6 to 10 million, with a focus on growing the foreign talent base from 9 percent to 20 percent of the population.

Nine Entry-Point Projects (EPPs) along four dimensions have been identified to deliver on the Greater KL aspirations. The most relevant EPPs from the perspective of making KL an innovative city are:

³⁹ Costinot (2009) argues that “goods differ in their complexity, defined as the number of elementary tasks that must be performed to produce one unit. The more complex a good is, the longer it takes to learn how to perform all tasks, and the larger are the gains from the division of labor.” This definition can be tweaked (as in Baldwin and Robert-Nicoud, 2010) to say that tasks themselves can be ranked in complexity, with more complex tasks taking longer to learn. In the same paper, Costinot argues that more complex goods (similarly, ones that involve more complex tasks) require larger teams to be produced.

⁴⁰ Kharas, Zeufack and Majeed (2010).

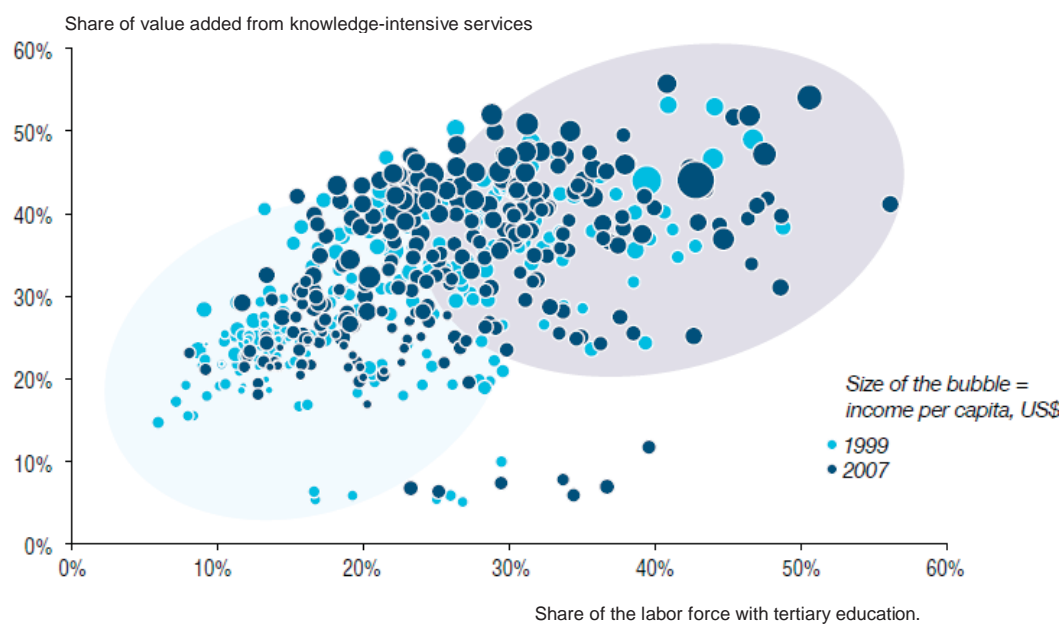
- Attracting 100 multinationals within priority sectors.
- Attracting the right mix of internal and external talent, aiming to increase the foreign talent base from 9 percent to 20 percent of the population.
- Connecting to Singapore via a high speed rail system
- Building an integrated urban mass rapid transit (MRT) system

The Greater KL NKEA aims to address issues of human capital (talent), vibrant knowledge economy (100 MNCs) and connectivity (link to Singapore and MRT). While these initiatives (as argued below) are in the right direction, structural policies need to be supportive to ensure the overall success of the NKEA. This relates, for example, to liberalization of key sectors to attract investments in knowledge-intensive services sectors, and addressing issues with the quality of higher education.

What are the main challenges to make Malaysian cities more innovative?

The main priority for Malaysian cities is to increase both the volume and quality of all sorts of skills: technical, scientific, vocational and managerial.⁴¹ As Figure 74 indicates, a higher proportion of university graduates is associated with higher value added from knowledge-intensive activities in OECD regions. Meanwhile, as discussed in Chapter 2 and previous editions of the *Malaysia Economic Monitor*, skills remain perhaps the single most important challenge for Malaysia. Therefore, the cities agenda needs to be closely linked with creating, attracting and retaining human capital. Two factors are decisive in this regard: the first is the excellence of schools and tertiary level institutions (public and private universities but also technical and vocational schools), and how effectively they interact with and cater to the needs of local employers. Universities also serve as catalysts to innovation, performing innovation-related activities, creating demand for human capital, and providing amenities (such as libraries, performing arts centers, and sports facilities) to the broader urban community as spillovers from their core activities. The second factor is the city's ability to retain homegrown talent and bring in talent from elsewhere. Talent is attracted by the quality of life and job opportunities available in the city. At the interaction between quality of life and job opportunities is the purchasing power of local wages, which is influenced by the overall cost of living (especially housing costs) as well as the availability and quality of public services such as health, education, transport and leisure.

Figure 74. High levels of tertiary-educated workers are needed for a knowledge economy



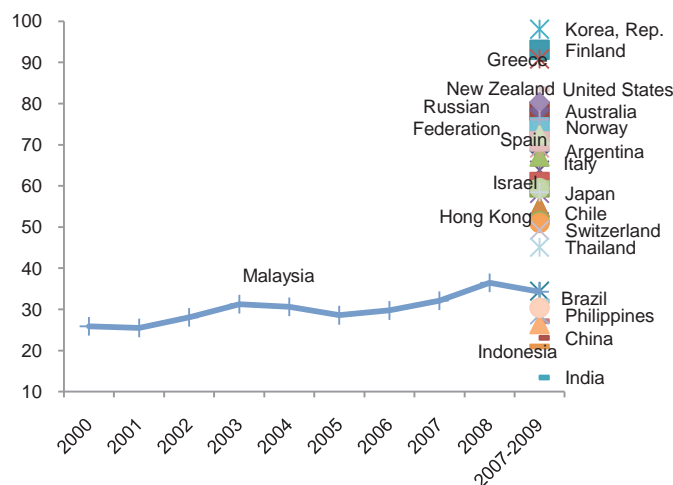
Source: OECD Regional Database in IBM (2010).

⁴¹ See World Bank and NESDB (2011).

Malaysia has expanded the supply of tertiary-educated workers, but there is ample room for further improvements. Gross enrollment rates in tertiary education have climbed from 26 percent in 2000 to 36 percent in 2008 (Figure 75). Graduation rates at Malaysian universities are high, with the four-year graduation rate reaching 92 percent. As a result, the percentage of the population with a tertiary degree has climbed to 4.7 percent (Figure 76) in 2010 from 3.2 percent in 2000. Notwithstanding this improvement, it is clear that Malaysia can do better if it wishes to join the group of high income economies. Figure 75 shows that the group of aspirational high and middle-income economies has substantially higher enrollment ratios, while Figure 76 shows that Malaysia not only has a lower percentage of its population with tertiary education, but is also not catching up fast enough.⁴²

Figure 75. Malaysia has a lower tertiary enrollment rate compared to a set of aspirational countries...

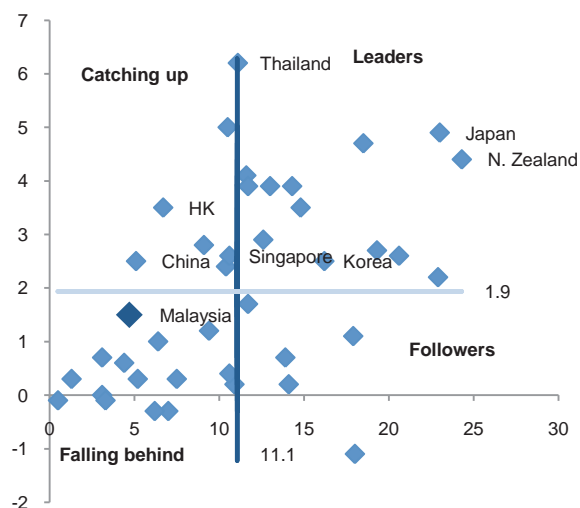
Gross enrollment rates (tertiary)



Source: World Bank EdStats.

Figure 76. ...and is not improving quickly enough.

Change between 2000 and 2010 in the share of the population 15+ with completed tertiary education (percentage points, y-axis)
Percent of the population (15+) with a tertiary degree, 2010 (x axis)



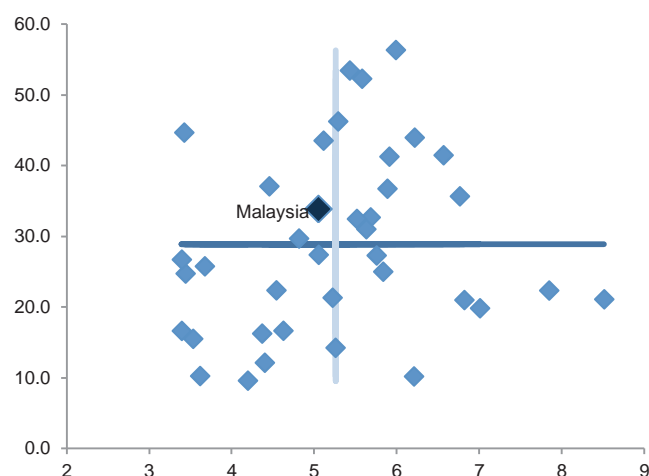
Source: Source: Barro and Lee, World Bank EdStats.

The quality of Malaysia's universities can be significantly improved. While Malaysia spends slightly more than most countries on its university students (Figure 77), leading Malaysian universities perform relatively poorly in global rankings. The latest US News and World Report places four Malaysian universities in its global ranking of the top 400 universities in the world – University of Malaya (#167), National University of Malaysia (#279), Universiti Sains Malaysia (#335), and Universiti Putra Malaysia (#358). In the QS World University Rankings for 2010, University of Malaya ranked #207 worldwide and #39 for Asia, behind universities in Japan, China, Korea, Taiwan (China), Hong Kong (China), Thailand and India. More worrisome is the pattern of an increasing gap between the University of Malaya (UM) and the National University of Singapore (NUS), the leading university in Southeast Asia according to the QS rankings. Figure 78 below shows that the gap between UM and NUS has been high and generally increasing, especially in the sciences. Although additional expenditures on education may help with quality, Figure 77 suggests the relationship is not trivial. In addition to (or even instead of) additional resources, further measures to improve performance should be adopted including greater competition from private universities.

⁴² It should be noted that Malaysia's relatively high fertility rate compared to the other countries in the sample biases Malaysia's improvements downward.

Figure 77. Malaysia spends more than most countries in higher education, but outcomes are average

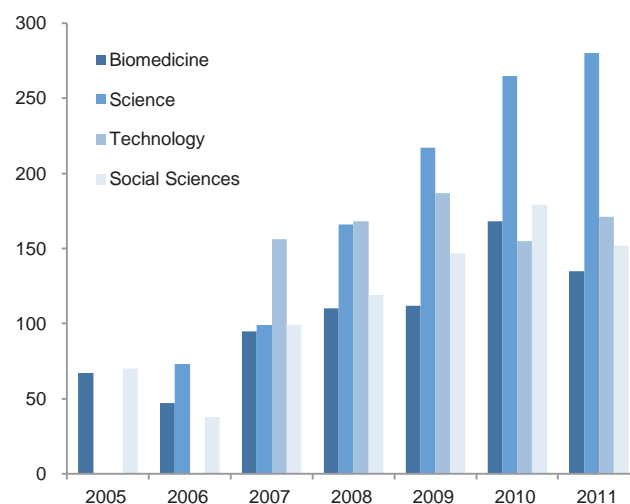
Spending per pupil (percent of GDP per capita), y axis
Index of quality of higher education based on scores of universities in the US News and World Report Global rankings (units) – x-axis



Source: EdStats, US News and World Report, World Bank staff calculations.

Figure 78. The quality gap to leading regional universities seems to have increased over time especially in the sciences

Difference in ranking between University of Malaya and National University of Singapore (units).



Source: THE-QS World University Rankings, <http://www.topuniversities.com>, and World Bank staff calculations.

On a key aspect of innovation – research outcomes – Malaysia’s universities also do not fare very well. For many years, Malaysia pursued a policy favoring commercialization and applied research over fundamental research, and devoted limited resources to research and development. On most measures, Malaysia lags other comparator countries in the region (Table 8). Since the introduction of the 2007 National Higher Education Plan, significant funds have been devoted to research and a number of large and relatively sophisticated programs have been put in place to support more fundamental research at Malaysian universities. As the main measures of science production are lagging indicators, results of the reforms have yet to show in the data.

Table 8. Southeast Asia/Oceania key science and research indicators

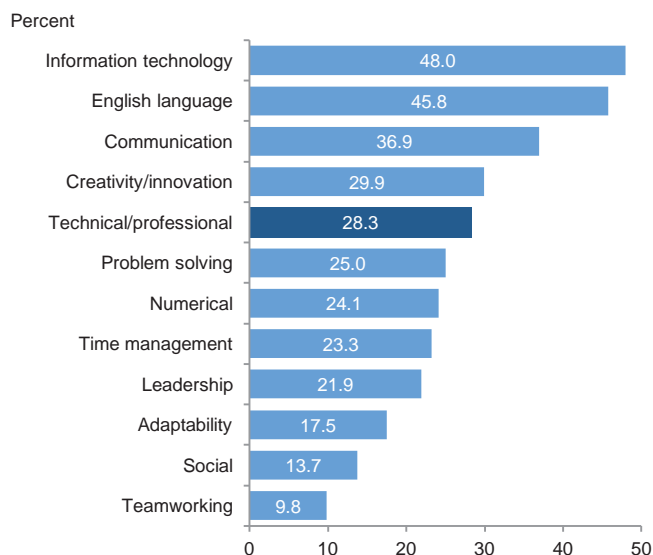
	2008 GDP/ capita in \$USD	Researchers per million population	Technicians per million population	GERD as % of GDP	English Language Scientific Articles 2009	SCI papers 1998-2008	Citations per paper 1999-2009	USPTO Registered Patents, 2000-2007
Australia	48,300	4231	993	2.17	28,313	207,944	11.62	1382
Indonesia	2,200	162	n/a	0.05	650	4,750	7.67	9
Malaysia	8,200	372	44	0.64	2,712	13,576	4.4	212
New Zealand	29,900	7084	894	1.26	5,236	42,491	10.42	136
Philippines	1,900	81	10	0.12	624	4,079	8.25	33
Singapore	39,400	6088	529	2.52	6,813	45,943	8.49	481
Thailand	4,200	311	160	0.23	4,134	21,001	7.02	28

Source: UNESCO (2010), Chapter 21.

Malaysia’s universities can also cater better to business needs and leverage their presence around industrial clusters. There is substantial evidence of mismatches between the skills produced by Malaysia’s universities and the skills demanded by the labor markets. Graduate employment rates appear less than optimal, with approximately 18 percent of university graduates reporting being unemployed 18 months after graduation (and proportions higher still at lower levels of certification). Moreover, about 25 percent of firms in the Investment Climate survey reported lack of skills as a major or very severe obstacle. In particular, a significant number of employers still feels that

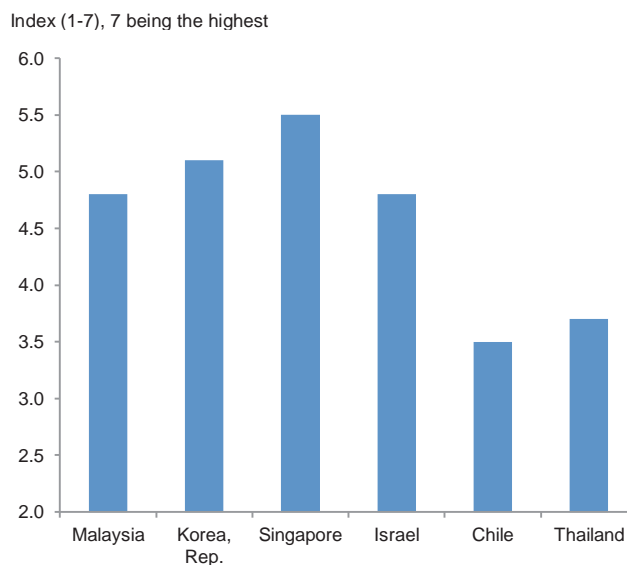
employees do not have the needed technical or professional skills (Figure 79). Universities are also not fully successful at nurturing other important skills such as creativity and communication. Existing measures of University-Company research collaboration show a more encouraging picture (Figure 80). One example of successful collaboration between businesses and universities is the case of Intel and Universiti Sains-Malaysia (USM) in Penang, described in Box 9 below.

Figure 79. A large number of firms identifies technical and professional skills as a key constraint.



Source: World Bank (2009a).

Figure 80. Malaysia appears to do well in university-industry collaboration



Source: World Bank Knowledge Assessment Methodology, available at www.worldbank.org/kam.

Box 9. Intel-USM Collaboration

USM took advantage of its proximity to Intel Malaysia and utilized the Intel Higher Education Program to support its objective of becoming a world class university. Intel started by supporting the implementation of a mix-mode master's program in Electronic Packaging. The program, which was initially conducted by Intel engineers, adopted a curriculum that was 50 percent industry-based, and 50 percent theory-based.

The collaboration expanded to include the following areas:

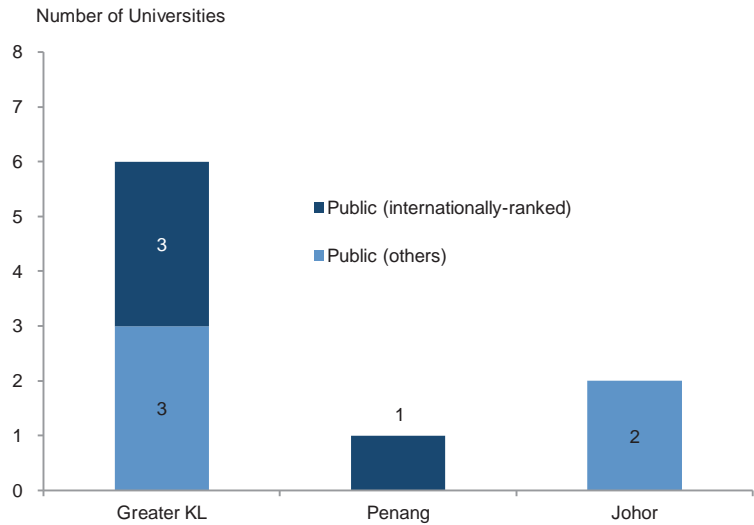
- **Technical lectures:** USM would initiate requests on the lecture topics, and the technical contributors prepared lecture materials with faculty members.
- **Curriculum design:** Intel and USM saw the need to update and enhance the university's technology curriculum to ensure relevance to the semi-conductor industry. However, introducing changes was not easy because it required the approval of the National Accreditation Board.
- **University research:** From researchers focused on solving routine operational problems, Intel asked USM to embark on more strategic, long-term research projects.
- **Establishment of the Center of Research and Teaching (CORT) in Materials Technology.** Established in 2003, the CORT was set up as a research and teaching center equipped with world-class knowledge on metallurgy and thermal interface materials.

Source: Decena and Alarilla (2009).

Malaysia's universities can be better integrated with the cities around them. High caliber universities are an essential feature of a smart city as they both produce and demand highly-skilled individuals. The greater Kuala Lumpur area benefits from the presence of six large public universities (Figure 81) and a number of private universities. Secondary

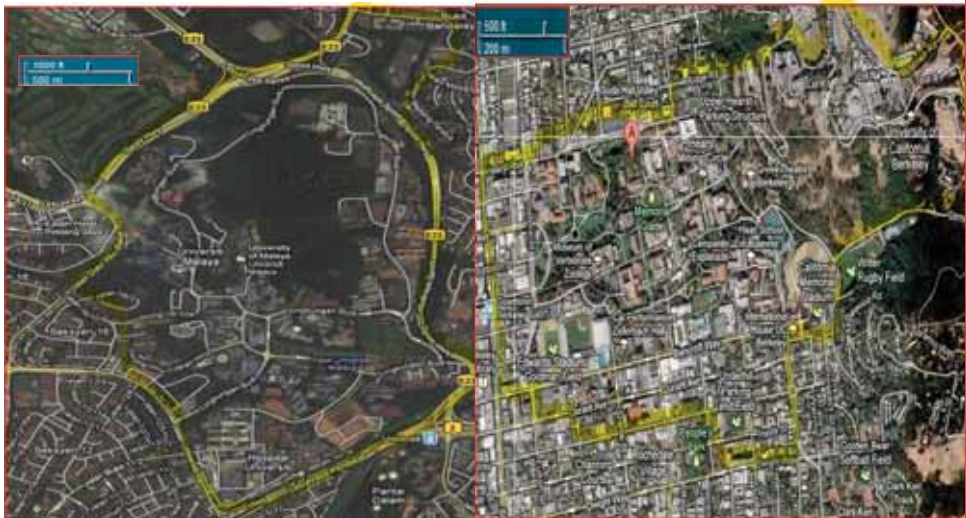
urban areas of Penang and Johor Bahru count with fewer public universities, although Penang for example counts with 32 mostly private higher education institutes (NHERI, 2010). In many cases campuses are distant from the city center and the integration between universities and the urban space is insufficiently leveraged. The campus of Universiti Sains Malaysia in Penang, for example, is distant from the heart of George Town and heavy traffic prevents city dwellers from easily accessing university amenities (Kharas and others, 2010). The University of Malaya (UM) is connected to central KL through a network of highways and the light rail transit. However, UM's sprawling campus reflects the broader sprawl in KL and is not as closely integrated with the city as other urban campuses such as the University of California, Berkeley (Figure 82). Successfully integrating the campuses of urban universities to the surrounding urban fabric can enhance the quality of life by leveraging on the universities' amenities and facilitating knowledge exchanges with other parts of the city (Irvin, 2007).

Figure 81. Most public universities in Malaysia are located in the Greater KL area



Source: MoHE, US News and World Report.

Figure 82. UM's sprawling campus is not as tightly integrated with the city around it
University of Malaya University of California, Berkeley



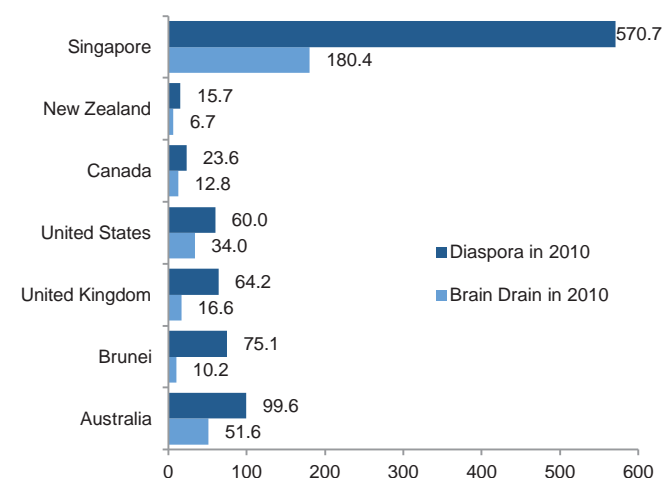
Source: Google Maps, University of Malaya, and University of California, Berkeley.

The city's ability to retain homegrown talent and bring in talent from elsewhere is essential. Although improving Malaysia's universities and stepping up their integration with the cities where they locate may support an increase in the supply of talent, it is important to retain such talent and, especially in the short-term, to aggressively attract foreign talent to Malaysian cities. As discussed in greater detail in the April 2011 *Malaysia Economic Monitor*, one out of ten Malaysians with a tertiary degree migrated in 2000 to an OECD country (Figure 83). Considering the

significant skills shortage reported by firms, this is a significant figure. Hong Kong and Singapore also have very high out-migration rates (Figure 84), but these outflows are compensated by large inflows of qualified migrants.

Figure 83. Approximately one million Malaysians are overseas, half of them in Singapore

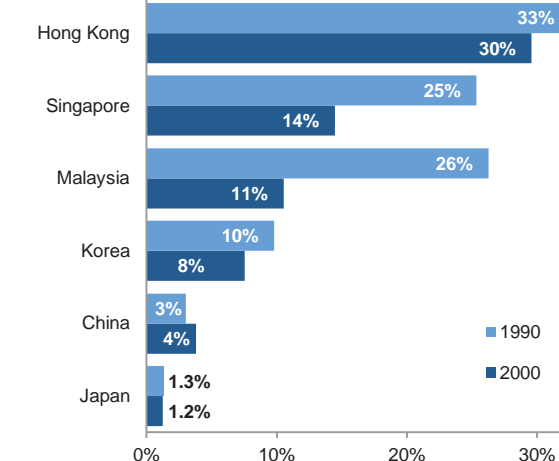
Diaspora (age 0+) and brain drain (age 25+) worldwide, thousands



Source: World Bank (2011a).

Figure 84. "Brain Drain" is higher in Hong Kong and Singapore, but so are compensating inflows

Gross emigration rate, OECD destinations only, percent



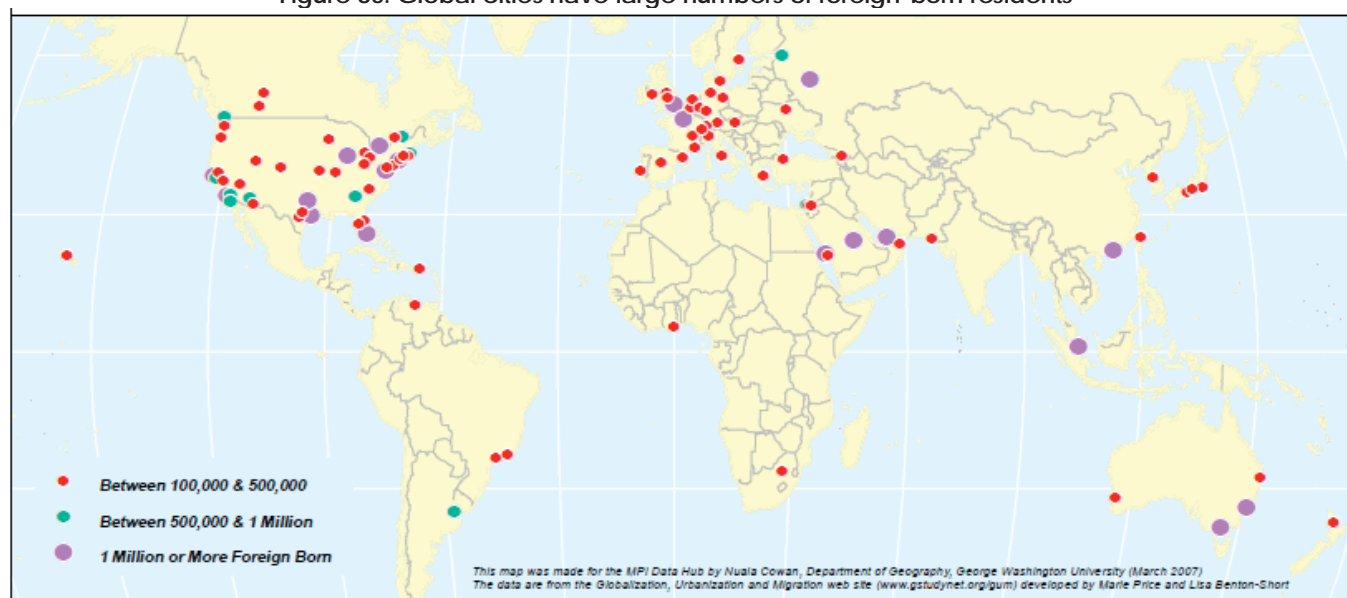
Source: Docquier, Lohest and Marfouk (2007).

The government has promoted a number of policies to address the "brain drain". To support the human capital requirements under the Economic Transformation Program (ETP), the government instituted Talent Corporation, which collaborates closely with relevant agencies to coordinate the implementation of the talent-related policies. These include the possibility for students under the Public Service Department scholarship program to serve their bond of service with a broader range of organizations, including Government-linked companies and private sector corporations in Malaysia. A Resident Pass is now offered to highly-qualified expatriates who wish to reside and work in Malaysia. In contrast to the Employment Pass, the Resident Pass will be issued for a longer tenure and will not be tied to a specific employer. Additionally, the Resident Pass will also be offered to Malaysian diaspora and their offspring, who no longer hold Malaysian citizenship.

While these are welcome initiatives, retaining local talent will require addressing broader structural issues. Many Malaysians have connections in Singapore and other advanced economies and therefore are well aware of the returns to their skills in these locations. Therefore, a key challenge to retain those talented Malaysians relates to ensuring that wages in Malaysian cities, adjusted for quality of life, are comparable to those of other countries. This will require improving productivity, but also ensuring that sufficient opportunities are available to the potential migrants. This relates to the government's inclusiveness policies as ethnic preferences in education and housing effectively raise costs to non-beneficiaries. These additional expenses are taken into account when adjusting the wages for existing amenities, reducing the attractiveness of Malaysian cities as choice destinations.

Inward migration of skilled talent is a characteristic of successful global cities and should be encouraged. Global cities are characterized by relatively large fraction of immigrants of different skill levels. As Figure 85 below shows, global cities such as New York, Hong Kong, Singapore, London and Paris count with over one million foreign-born residents. Malaysia has over 2 million legal foreign workers, but most are low-skill and dispersed throughout the country. Meanwhile, the high-skill expatriate base has shrunk by a quarter since 2004. Efforts to attract more foreign talent are therefore warranted. In addition to the introduction of the resident pass, the government has relaxed employment pass conditions, removing the need to advertise executive positions and the 10-year limit for key expatriate executive positions. Attracting high skilled foreigners requires some of the same efforts to retain talented Malaysians, notably the availability of employment opportunities and the availability of public services and amenities. The lack of English-language public education requires expatriates to enroll their children in private schools, which lowers amenity-adjusted wages.

Figure 85. Global cities have large numbers of foreign-born residents



Source: Migration Policy Institute, based on data from George Washington University's project on Globalization, Urbanization and Migration (GUM).

Malaysia can draw on a large pool of foreign students. Originating mainly from Southeast Asia, Iran, India, and Sub-Saharan Africa, currently close to 70,000 overseas students study in Malaysia, of which slightly over half are enrolled in private universities. In the public sector, the five Research Universities take a disproportionate share of foreign students, and these tend to be studying as Master's or Doctoral students. The Government presently has a goal of having 100,000 international students enrolled in Malaysian universities by 2015 and 150,000 by 2020. This is a potential pool of talent that can be tapped through the creation of an internship program that allows these educated foreigners to stay in Malaysia for a certain period beyond the completion of their studies.

Table 9. Quality of life rankings
Ranking

City	EIU	Mercer	ECA- International
Vienna	3	1	na
Singapore	53	28	1
Sydney	7	10	2
Tokyo	18	40	5
Melbourne	2	18	9
Hong Kong	31	71	8
Kuala Lumpur	78	74	62
George Town	na	na	62
Bangkok	101	118	62
Manila	107	128	142
Jakarta	125	141	191
Hanoi	123	151	123
Ho Chi Minh City		150	126
Phnom Penh	120	190	171

Source: EIU, Mercer, ECA-International.

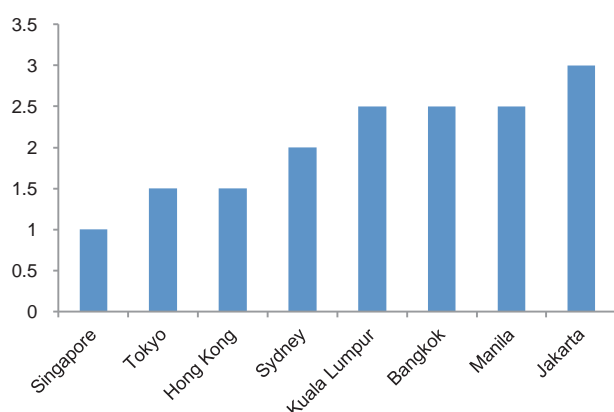
High quality of life in cities is essential to attract and retain talent. To attract talent, cities must provide for steady and incremental improvements in livability for the vast majority through environmental gains, affordable housing, better amenities, improved services, less inequality and lower crime. Green cities are not only a matter of sustainability, but they are also a matter of competitiveness, since the quality of the environment is a key factor in

determining livability. The performance of Kuala Lumpur and Georgetown in livability is middling. While Kuala Lumpur ranks better than other cities in Southeast Asia (except for Singapore), it is still distant from global cities such as Sydney, Tokyo or Hong Kong (Table 9 above).

Reducing crime rates is a crucial aspect of improving livability in Malaysian cities. Crime in Malaysian cities is considered to be a relatively more serious problem compared to high income cities such as Singapore, Hong Kong and Tokyo (Figure 86). Since crime tends to rise with urbanization (Figure 87), it could become an increasingly significant detractor to retaining and attracting talent if not adequately addressed. The government has targeted a reduction in crime as a national key result area (NKRA) in 2009, and the results between 2009 and 2010 have been promising, suggesting that overall crime declined by 15 percent. Smarter policing that concentrates resources in problem spots has been largely responsible for the reductions, although some critics have pointed to reduced incentives for crime reporting.

Figure 86. Crime is an obstacle to improved livability in Kuala Lumpur

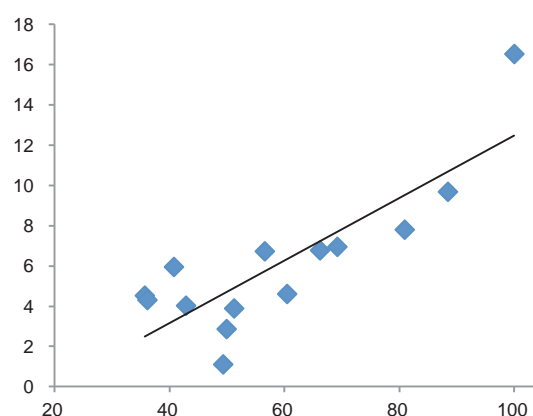
Qualitative rating; 1=acceptable; 5=intolerable



Source: Economist Intelligence Unit (EIU).

Figure 87. Crime rates increase with urbanization

Crime rate (incidents per 1,000 population, 2010) - y axis;
Urbanization rate (urban population as % of total, 2010), x axis



Source: Royal Police Department and Department of Statistics

Long-term reduction in crime is closely linked to the social agenda for urban areas. In the long term, reducing crime requires greater trust in the police, adequate employment opportunities for youth, and a reduction in urban poverty and inequality. Although urban poverty is low at less than 2 percent, further progress can be made, especially in the provision of social services such as affordable housing to the poor and the near-poor. Inequality levels within Kuala Lumpur, Penang and Johor, while slightly lower than the national average, are still relatively high for international standards. For example, the Gini coefficient for Kuala Lumpur is 0.45 as of 2008, well above those of European capitals (between 0.25 and 0.35), although below that of Hong Kong and Singapore (both above 0.50).

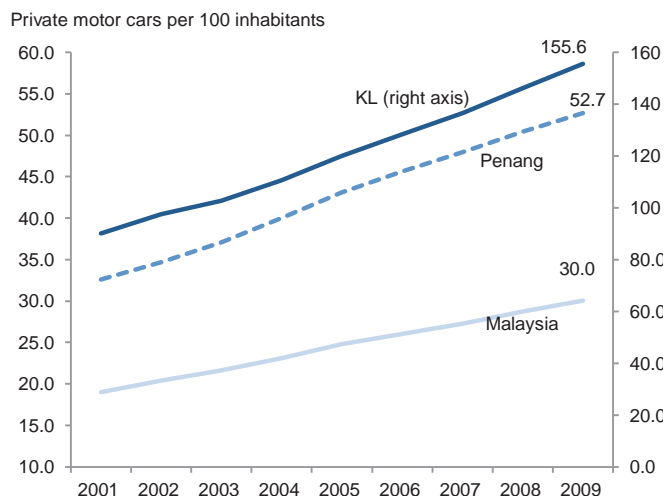
Congestion is another major obstacle to livability. Research on individual happiness by Kahneman and Krueger (2006) suggests that commuting to work is the most unpleasant routine activity that humans have to endure.⁴⁵ Traffic congestion has been on the rise in Malaysia's main cities as the number of cars has soared. Efforts to promote the domestic automobile industry through low-cost financing for the purchase of vehicles, as well as subsidies to petrol and road use were highly successful in increasing the number of cars – but at the same time deleterious to the development of public transportation options. Penang and KL have the highest per capita car ownership in Malaysia (Figure 88), and numbers have been growing rapidly, far above the national average. In Penang, private motor cars per capita more than tripled between 1990 and 2006, whereas they doubled in KL in just 8 years between 2001 and 2009.

Meanwhile, public transportation alternatives have been limited and underutilized. According to PEMANDU, the Klang Valley currently has a shortage of rail-based public transport coverage, with less than 20km of rail per million population. Public transport oriented cities such as Singapore, Hong Kong and London have more than 40km of rail

⁴⁵ Working and commuting back home rank, respectively, second and third among unpleasant activities.

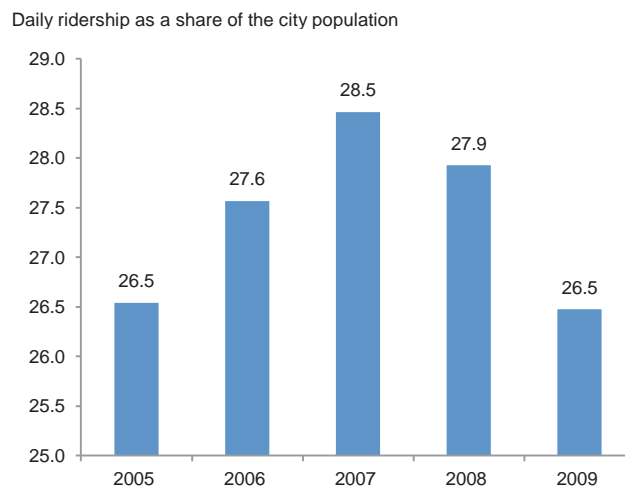
per million population. In addition, Kuala Lumpur's transit mode share declined from 35 percent in 1985 to 20 percent in 1997 and further to 12 percent in 2009 (Zegras and Gakenheimer, 2006 and EPU, 2010b). New public transportation systems are often intentionally isolated from the existing infrastructure and as a result systems are not integrated (e.g. Kuala Lumpur's LRT system). As a result, ridership has remained stagnant or even declined (Figure 89).

Figure 88. The number of cars in Malaysia has soared...



Source: Department of Statistics.

Figure 89. ... while ridership of public transportation stagnated



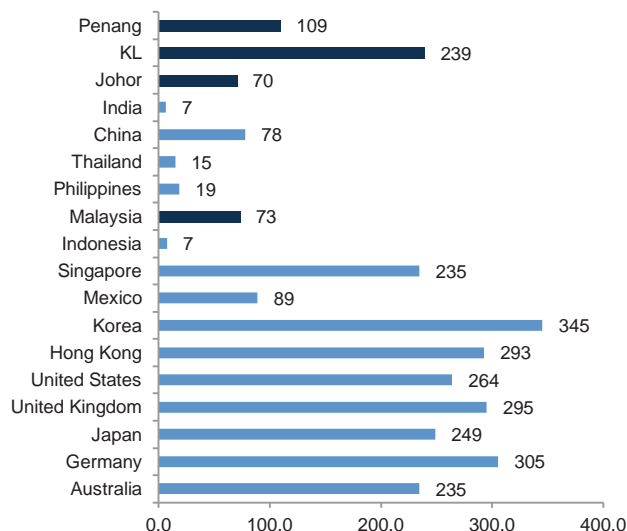
Source: Department of Statistics.

To become both physically and economically more connected Malaysian cities need more efficient multimodal transport systems, including inter-city transport and a state of the art Information and Communication Technology (ICT) infrastructure. Connectivity between individuals and their jobs is a key factor in quality of life. Urban transport infrastructure also allows more city residents to access city amenities, facilitates the delivery of services as well as that of goods to markets. Therefore, transport infrastructure includes both urban transport, but also the infrastructure that connects cities with other growth poles in Malaysia and around the world – this includes ports, airports and rail, such as the proposed high-speed train between Kuala Lumpur and Singapore. ICT infrastructure plays a similar role, facilitating the exchange of information and the efficient delivery of services (including public services). ICT infrastructure is also essential for disaster risk management, allowing business operations to continue even under unfavorable physical conditions.

The infrastructure for information and communication technologies (ICT) in Malaysian cities is generally adequate but can be further improved. Broadband penetration in KL has accelerated rapidly and as of end-2010 each household had on average 1.2 broadband subscriptions compared to 0.9 at end-2009 (as depicted in Figure 90 for comparability with other countries). In Penang, 3 in 4 households have broadband. In addition, at USD19 per month, the cost of broadband in Malaysia is competitive with European and Southeast Asian economies, although it remains above the cost of Singapore and Hong Kong. However, network speed is still lagging (Figure 91), and the implementation of the National Broadband Rollout will be important for Malaysian cities to catch up on this aspect of connectivity. The National Broadband Rollout (Figure 92) focuses on deploying broadband at speeds greater than 20 mbps to the key economic agglomerations of Kuala Lumpur, Johor and Penang.

Figure 90. Broadband penetration in KL is comparable to Singapore, but lags Korea and Hong Kong

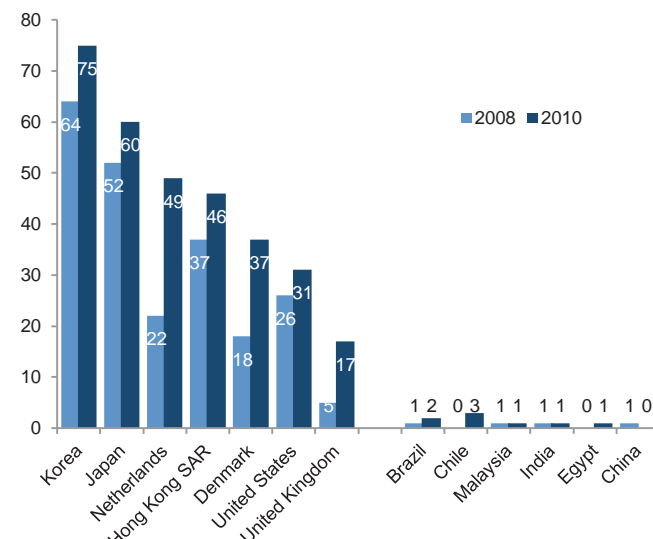
Broadband Penetration (per 1,000 population), 2009



Source: EPU, Malaysian Communications and Multimedia Commission (SKMM).

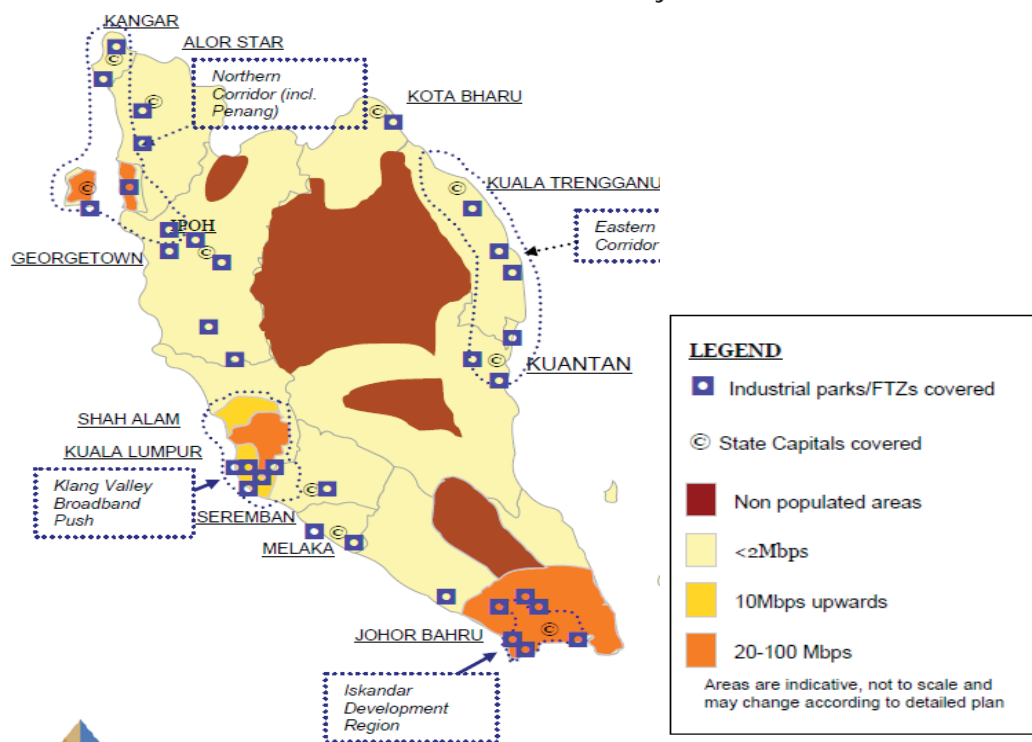
Figure 91. Connection speeds lag those in developed countries

Broadband Connections faster than 5mbps



Source: Akamai, 2010; Booz & Company analysis. Quoted in: WEF (2011).

Figure 92. The National Broadband Rollout Plan in Peninsular Malaysia focuses on concentrated urban areas



Source: Malaysian Communications and Multimedia Commission quoted in bin Zakariah (2007).

Benefits from agglomeration economies also require specialization and industrial concentration, including in knowledge intensive service industries. Cities facilitate the development of technological clusters, which exploit synergies and create networks linking firms in the urban region with other suppliers, buyers, sources of skills and markets for technology within the country and abroad. Although industrial clusters may form detached from urban centers, these tend to be logistical clusters where the agglomeration gains stem primarily from lowering logistics costs within firms in the supply chain. In contrast, technological clusters refer to agglomerations of firms that jointly

pursue product research and development or other complex tasks in both manufacturing and service industries. Such clusters have higher human capital and technology infrastructure requirements that are more easily provided by urban areas. Technological clusters do not exclude assembly manufacturing, as development (a knowledge-intensive task) needs to take place around a manufacturing core. But functioning technological clusters help extract higher value added of the overall industrial structure by promoting greater specialization in different parts of the production process of a given product or system.

A major policy initiative of the 9th Malaysia Plan was the creation of economic development corridors. Economic corridors were meant to support geographically balanced development based on the comparative advantage of the specific areas. A number of concerns emerged with this original formulation. First, the geographic area covered by the corridors was arguably too large and failed to create sufficient density to generate agglomeration economies. Most states are part of at least one corridor, and all of East Malaysia is part of two corridors (the Sabah Development Corridor and the Sarawak Corridor of Renewable Energy). Second, many of these corridors had overlapping targeted economic activities, with tourism and manufacturing focus industries in nearly all corridors.

The Tenth Plan brought a welcome reorientation of the development corridors to focus on narrower clusters and sectors. Under the Tenth Plan, the role of corridors has been refined to focus on clusters linked to NKEAs. While this is a welcome shift, challenges remain to maximize the corridors' effectiveness. High-end manufacturing and services require high-quality business support services (e.g. information technology, legal, and engineering firms) to serve them. Areas where the abundance and quality of these services firms are lagging do not support the development of knowledge intensive clusters. In addition, unlike inter-state competition for foreign investment in China, there is little competition among the corridors. This is something that could be encouraged and may help reduce the regional disparity in investment climate. Competition requires a degree of autonomy, however, and in this respect governance arrangements under the Northern Corridor Economic Region provide a helpful example (Box 10).

Box 10. The Northern Corridor Economic Region

The Northern Corridor Economic Region (NCER), implemented through the Northern Corridor Implementation Authority (NCIA) Act of 2008, is the expression of a new geographic development strategy that aims to achieve greater concentration in economic growth. The NCER encompasses four northernmost states of Perlis, Kedah, Penang and Perak into a single economic region specializing in E&E products (a historical comparative advantage of Penang), agriculture, tourism and biotechnology.

The Northern Corridor strategy rests on two pillars. First, the federal government is committed to a range of important investments in infrastructure. These include the expansion of Penang Bridge, construction of a second bridge (which is currently underway), the upgrading of the port and supporting infrastructure, double tracking of the railway and establishing Butterworth as the northern transport hub, upgrading of public transportation with the introduction of Rapid Penang, housing development, sewerage treatment, broadband infrastructure, industrial estate expansion, and improved air links and sea routes with the surrounding region.

The second pillar of the strategy is the development of new focus areas of business, along with strengthening the contribution of existing industries. The Northern Corridor plan calls for a focus on increasing the value-added in existing industries, along with the development of new industries.

A key feature of the NCER is that decision making on important policy issues is expected to take place locally rather than centrally—the offices of the NCIA are located in George Town, whereas in the past many decisions had to be routed back to Kuala Lumpur, complicating the task of timeliness, local participation and accountability.

Recent outcomes have been encouraging, with Penang attracting USD 1.2 billion in foreign direct investments in the first eight months of 2011—more than any other state.

Source: Kharas, Zeufack and Majeed (2010).

Green Cities

Green cities: an overview

Sustainable urban development can be understood as meeting today's needs without compromising the ability of future generations to meet their own needs, to take the established definition from the World Commission on Environment and Development (the Brundtland Commission) in 1987 (WCED 1987). In practical terms, sustainability is commonly discussed in relation to three pillars—economic, social and environmental. Sustainable urban development requires a balance among these three pillars, recognizing that they are interlinked. For example, a city with a highly polluted environment, or with serious social issues from crime and poverty, will be a less attractive place for business investments and for talented individuals; conversely, a green and safe city is more livable and more competitive economically.

This section on Green Cities focuses on specific selected topics of direct relevance to sustainable cities: greenhouse gas (GHG) emissions and solid waste management. Both of these areas are where a number of initiatives are already underway in Malaysia's cities, but also where significant needs for concerted action remain. It is important to recognize that cities are integrated systems that require holistic, integrated approaches that address multiple sectors. Thus, the section on greenhouse gas emissions discusses the issue in relation to urban form, energy efficiency, and urban transportation. At the same time, other issues that are also important for sustainable urban development in Malaysia include urban planning and its implementation, and management of water resources.

Reducing Malaysia's GHG emissions is a matter of good global citizenship but also competitiveness

Malaysia's greenhouse gas emissions are relatively high for a country at its level of income and development. Malaysia has gone from being a net emissions sink in 2000, to being a net emitter from as early as 2005. National per capita GHG emissions in 2000 were 9.5 t CO₂e (NRE 2011: 29). With the official estimate of national GHG emissions of 292.9 Mt CO₂e in 2007, per capita GHG emissions that year were 10.8 t CO₂e. According to UNDP, Malaysia's per capita CO₂ emissions in 2004 were 114 percent higher than the average for countries in East Asia and the Pacific, and 88 percent higher than the global average for all middle income countries (UNDP 2007: 69). Emissions intensity of GDP is also high: IEA reports 0.55 kg CO₂ of fuel combustion per US dollar of GDP (in PPP terms) for Malaysia in 2009, compared to the Asian average of 0.35, and surpassed regionally only by China (0.56), Brunei (1.00), Mongolia (1.62) and North Korea (1.63) (IEA 2011).

Reducing GHG emissions is an integral part of Malaysia's high income agenda. Programs that reduce GHG emissions generate downstream business opportunities, for example in the case of the solar panel industry, creating economies of scale and encouraging innovation. In addition, expectations of investors and consumers are changing with growing awareness of climate change. Anticipating the growing demand for "green" products and practices, as well as related regulatory changes, companies are increasingly disclosing the carbon footprints of their operations and products, for example through the Carbon Disclosure Project. In France, retailers' initiatives to include labels with carbon footprints have led to government plans to require all products (including imports) to have carbon labels (see Box 11). With a view to both address domestic GHG emissions but also support their industries in this new "green" competition, six countries in East Asia and the Pacific have already initiated carbon labeling programs (Table 10). Finally, there are opportunities for accessing attractive financing for projects related to GHG emissions reductions.

Table 10. Carbon-labeling schemes in East Asia

Country	Program	Year of Implementation
Japan	Carbon Footprint of Products	2009
Thailand	Carbon Reduction Label and Carbon Footprint Label	2009
Korea	Carbon Footprint Certification label	2009
	Low Carbon Product Certificate	2011
Australia	Carbon Reduction Label	2010
New Zealand	Carbon Reduction Label	2010
Taiwan (China)	Carbon Reduction Label	2010
Singapore	Singapore Carbon Label	Under development

Source: Shi (2010).

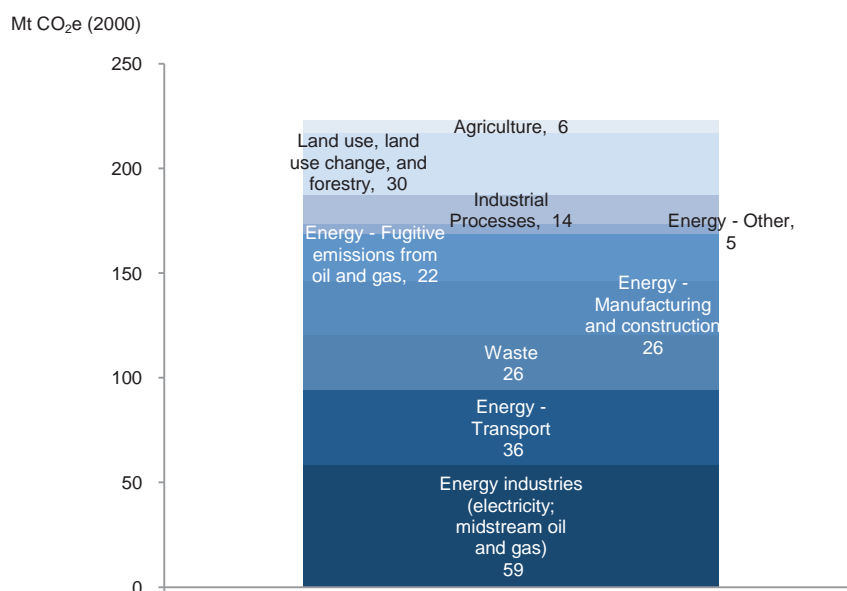
Box 11. Carbon Labeling in France

Casino, a French retail chain, introduced carbon labels on 100 of its own-brand products in 2008 and has since added labels to another 400 items. Its Carbon Index labels show the carbon footprint per 100g of final product (use-phase emissions are not included). E. Leclerc, another French retailer, has pioneered two novel twists on carbon labeling in a handful of its stores. It has fixed labels to store shelves showing the carbon emissions per kilogram of produce next to the usual price tags showing cost per kilogram. And by roughly estimating the carbon footprints of 20,000 of its products (by dividing them into 600 generic categories) it can produce a total footprint for an entire trolley of goods that appears on the store receipt. Signs show consumers how their trolley's footprint compares with the average.

These initiatives by French retailers are being backed by government action. A year-long experiment began in July, involving 168 firms in a range of industries, to apply carbon labels to products including clothing, furniture and cleaning products. This is a prelude to the planned introduction of compulsory carbon-labeling rules, possibly as soon as 2012, which will apply to imported goods as well as those made in France. The new rules, devised by AFNOR, the French Standards Agency, require labels to show more than just the carbon footprint. Depending on the product category, they must also include other environmental data, such as the product's water footprint and impact on biodiversity. Product-category rules have already been drawn up for shoes, wood, furniture, shampoo and fabric chairs. The project is the result of Grenelle 2, a law passed in 2010 which marks the first time a government has tried to make environmental labeling mandatory.

Source: The Economist (June 2, 2011).

Figure 93. Most of Malaysia's GHG emissions come from energy industries and transport



Source: NRE 2011.

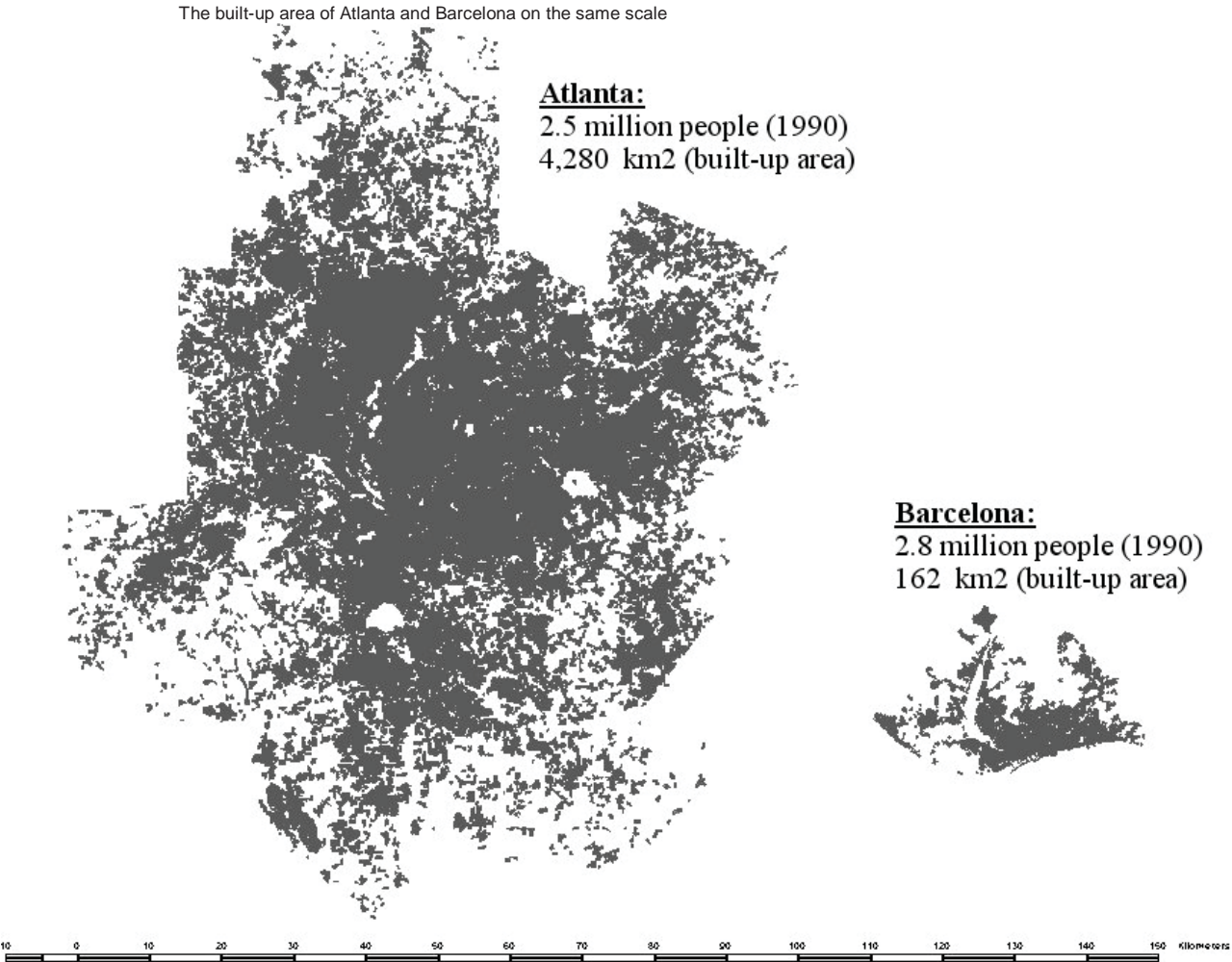
Reducing Malaysia's GHG emissions will require focused efforts in, and related to, its cities. At the United Nations Climate Change Conference in Copenhagen in 2009, Prime Minister Najib committed Malaysia to decrease the emissions intensity of GDP by 40 percent below 2005 levels, by 2020 (NRE 2011: xxvi). Figure 93 summarizes the source sectors and key categories for Malaysia's national GHG emissions in 2000. About two-thirds of Malaysia's emissions are from the energy sector, broadly defined. Importantly, more than half of total emissions are in areas related to cities and the urban space—specifically, electricity (up to 26 percent of emissions), transportation (16 percent) and solid waste (12 percent; see also next section). In several East Asian cities, energy consumption for

industrial activity accounts for a large part of GHG emissions (World Bank 2010), given the manufacturing activities located within these cities. On the other hand, in cities without significant manufacturing activities, buildings and transportation account for the bulk of emissions (Hoornweg and others 2011), as is the case with Putrajaya (UTM and others 2011). Effective measures in these areas, which are mostly related to urban management, would thus contribute substantially to progress in meeting Malaysia’s voluntary targets to reduce GHG emissions.

Urban sprawl poses significant obstacles to GHG emissions reduction in Malaysia

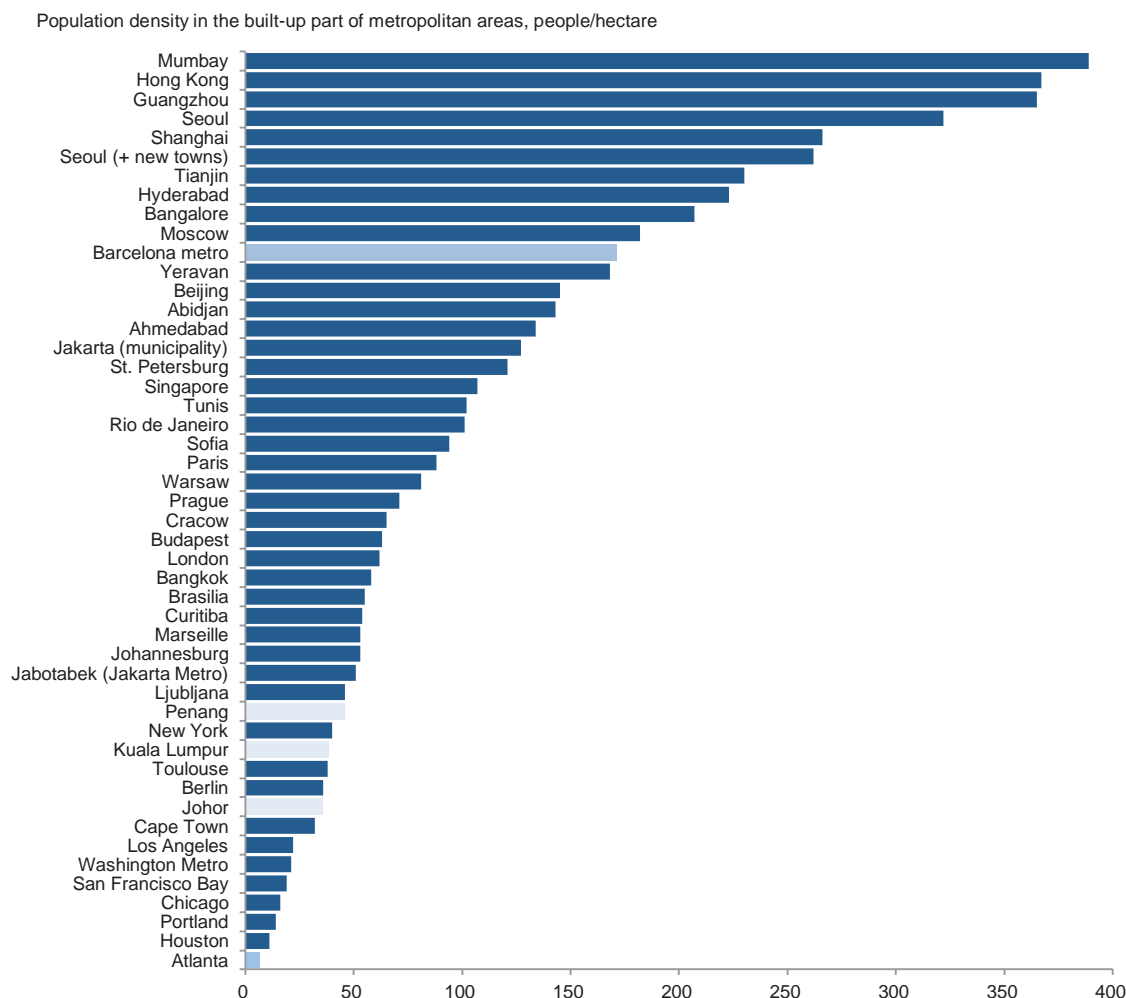
The built-up shape of cities is largely irreversible. A stark reminder of this fact is provided by an analysis for Atlanta (Figure 94) where the population density in the suburbs is too low to support public transit. It has been calculated that for the density to reach the threshold required, the current built-up area would have to shrink by 64 percent. This would mean that about two-thirds of the existing real estate stock would have to be destroyed, two-thirds of the built-up area would have to revert to nature and its population and jobs would have to be moved into the 36 percent of the urban area which would remain (Bertaud and Poole, 2007). Clearly, this is not a feasible choice for a city that became suburbanized in the era of inexpensive energy and rampant motorization prior to the full understanding of climate change. Atlanta is an extreme example, but it serves to illustrate the critical role of land use in the development of green cities.

Figure 94. Cities vary widely in density, as illustrated by Atlanta and Barcelona



Source: Bertaud (2004).

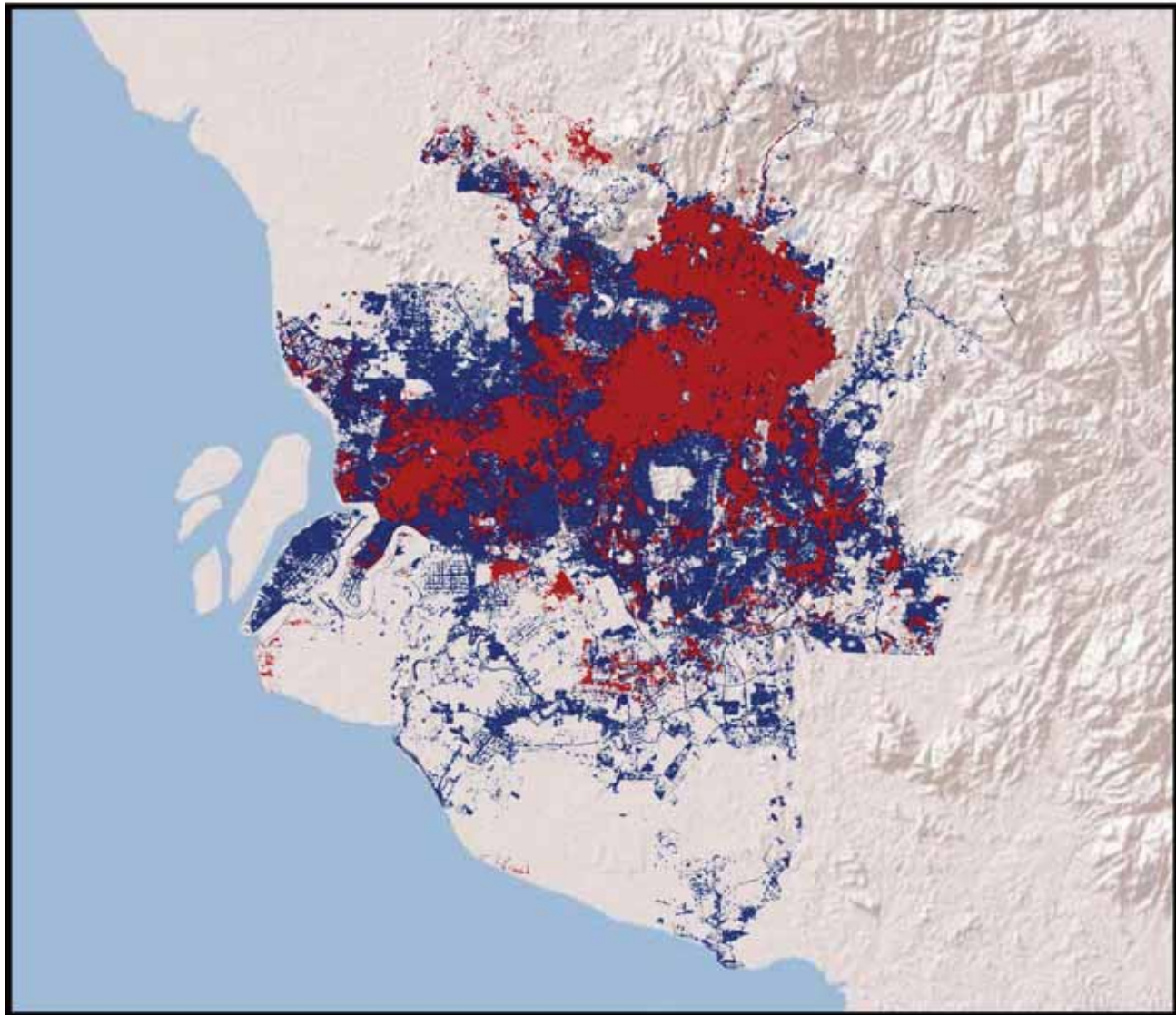
Figure 95. Malaysian cities are not as sprawling as Atlanta, but less than ¼ as dense as Barcelona



Source: Bertaud (2004) and World Bank staff calculations for Malaysian cities.

Malaysia's largest urban areas have grown significantly in the past two decades, with significant urban sprawl and declining densities. Although Malaysian cities are not as sprawling as Atlanta, they are closer in density to American cities than Barcelona or other Asian cities (Figure 95). Rimmer and Dick (2009) indeed refer to Kuala Lumpur as a "mini-Los Angeles": "Kuala Lumpur abandoned [Singapore's] tight fitting, 'heritage house style' city and sprawled to accommodate unrestrained motorization. As a result, Kuala Lumpur provides a special case: a planned, road-based and low-density city resembling a mini-Los Angeles" (page 81). Figure 96, Figure 97 and Figure 98 show urban growth in the Greater Kuala Lumpur (KL), Penang, and Iskandar Malaysia Region/Johor Bahru areas, respectively, during the two decades to 2009. In-migration into these cities during this period resulted in higher population growth than the national average. At the same time, the growth in built-up areas exceeded the growth in population, resulting in an overall decrease in population density in all three cities. The physical form of urbanization in Malaysia's three largest cities is consistently one of sprawl and reduced density. Underlying this sprawl is the established approach to urban land use and development in Malaysia – the 'opening up' of new areas of mostly rural land for new, low-density housing and industrial estates. Although several examples exist of the 'in-filling' of urban cores with higher density, mixed-use developments (such as KLCC, KL Sentral, and Mid-Valley), the overall trend in urban development has been one of sprawl.

Figure 96. Urban Growth in the Greater Kuala Lumpur Area, 1990-2009



0 5 10 20 30 40 Kilometers

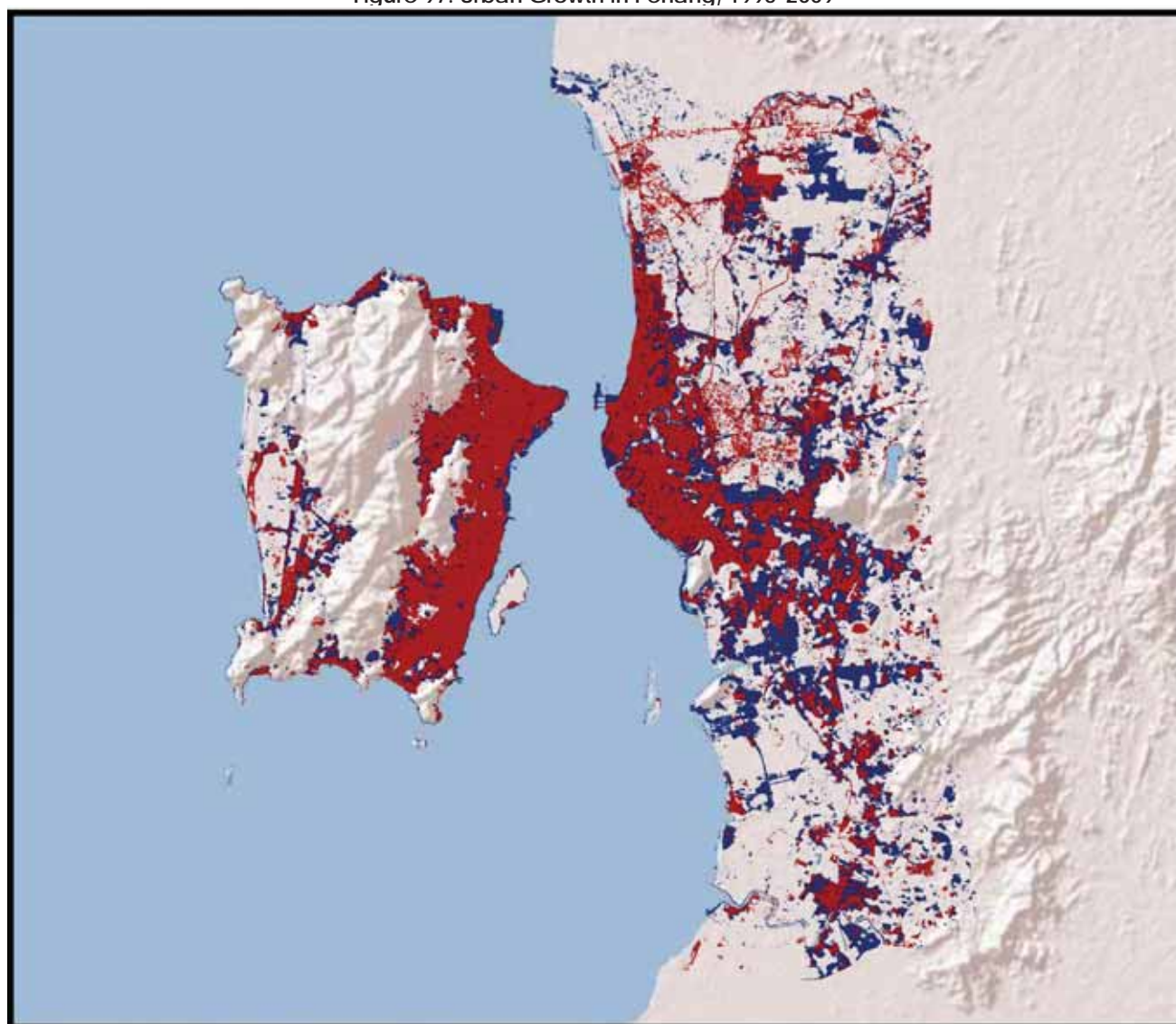


	1990	2009	Compound Annual Growth Rate (%)
Population	3,079,200	5,969,300	3.55
Urban Area (sq km)	621.01	1555.23	4.95
Population Density	4,958	3,838	-1.34

Key	
■	Built-Up Area, 1990
■	Built-Up Area, 2009

Sources: Classification of urban area: World Bank analysis, based on Landsat imagery; Population data: Department of Statistics, Malaysia.

Figure 97. Urban Growth in Penang, 1995-2009



0 3 6 12 18 24 Kilometers

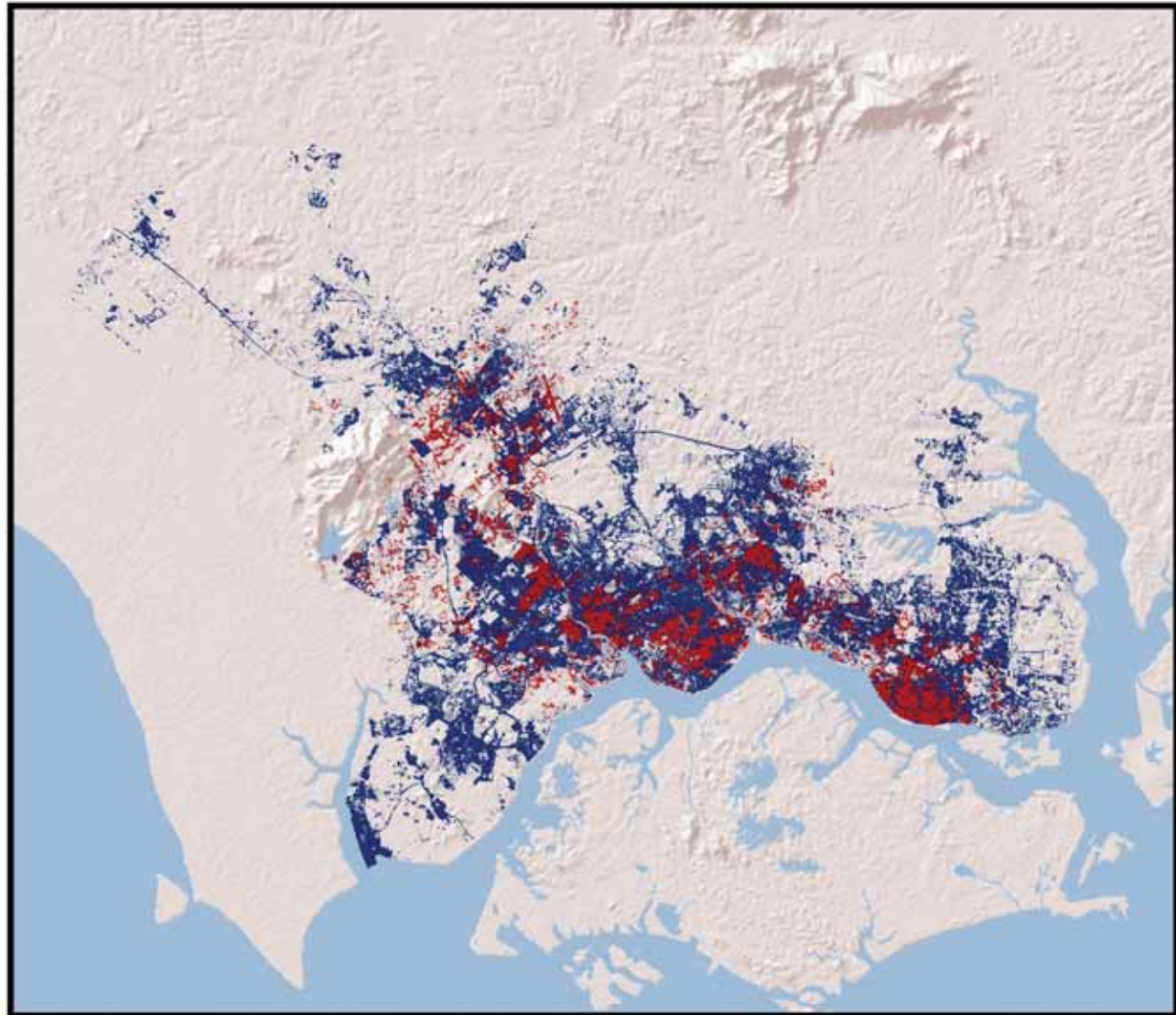


	1995	2009	Compound Annual Growth Rate (%)
Population	1,216,600	1,579,900	1.88
Urban Area (sq km)	212.78	346.37	3.54
Population Density	5,715	4,561	-1.60

Key	
■	Built-Up Area, 1995
■	Built-Up Area, 2009

Sources: Classification of urban area: World Bank analysis, based on Landsat imagery; Population data: Department of Statistics, Malaysia.

Figure 98. Urban Growth in the Iskandar Malaysia Region/Johor Bahru Area, 1989-2009



0 3 6 12 18 24
Kilometers



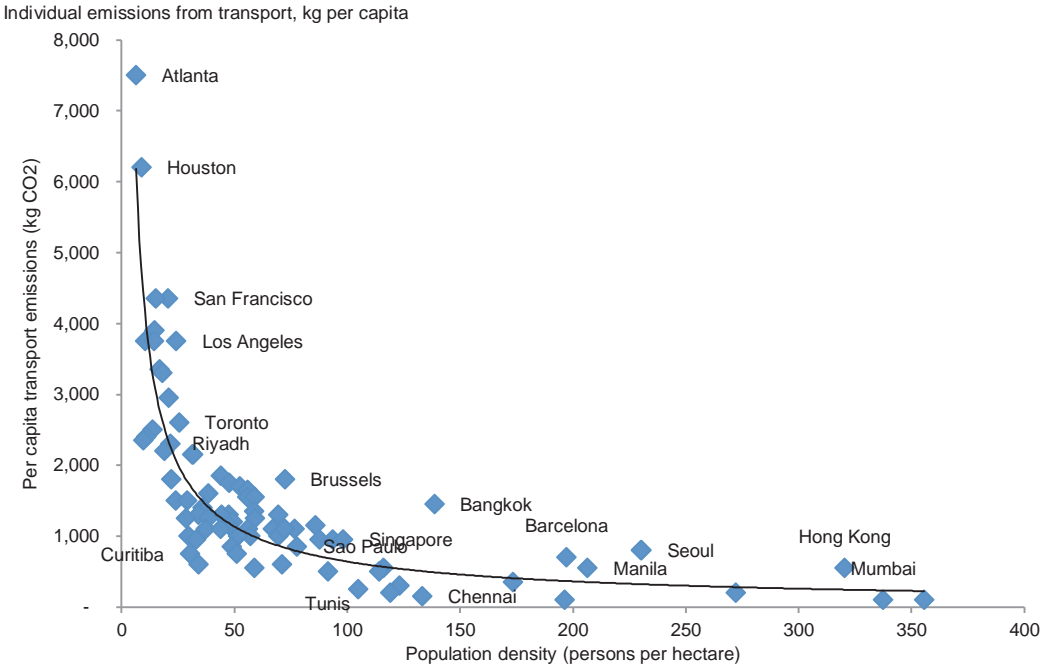
	1989	2009	Compound Annual Growth Rate (%)
Population	560,200	1,444,500	4.85
Urban Area (sq km)	96.60	410.21	7.50
Population Density	5,799	3,521	-2.46

Key	
■	Built-Up Area, 1989
■	Built-Up Area, 2009

Sources: Classification of urban area: World Bank analysis, based on Landsat imagery; Population data: Department of Statistics, Malaysia.

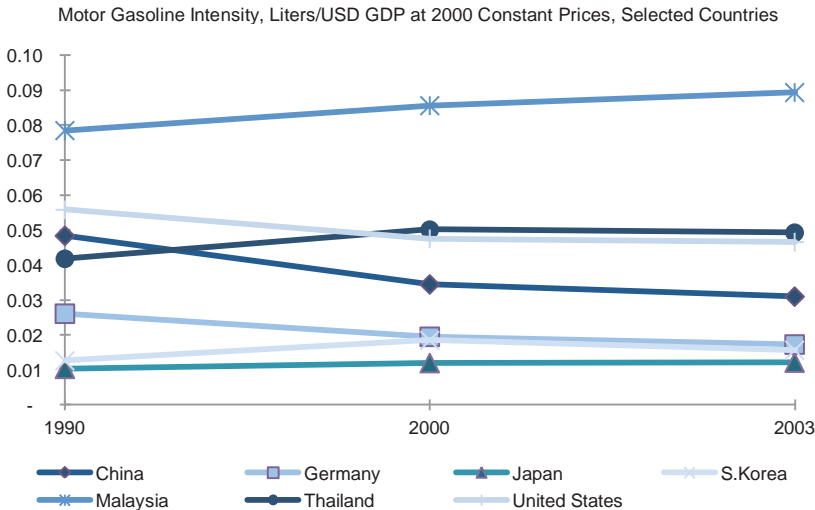
Given low urban densities, all available evidence suggests that Malaysian cities have moderately high per capita GHG emissions. Denser cities tend to have lower per capita energy consumption and thus lower per capita emissions (Newman and Kenworthy 1989). Within cities, per capita emissions are lower in the denser parts of the city (Hoorweg and others 2011). Available data also illustrates the relationship between transportation emissions and density, with higher density associated with lower per capita emissions (Figure 99). Malaysia’s motor gasoline intensity (liters consumed per US dollar of GDP) is also high relative to several other countries sampled (Figure 100). However, comprehensive GHG emissions inventories are not yet available for Malaysian cities. Figures have been reported so far are estimates based on modeling – the Economist Intelligence Unit (EIU) estimates per capita energy-based CO₂ emissions in the Federal Territory of Kuala Lumpur at 7.2t in 2007 (EIU 2011); the corresponding figure for the Iskandar Malaysia Region in 2005 has been estimated at 9.3t (Ho and others 2009). A recent study of Putrajaya models per capita GHG emissions at 8.7t CO₂e in 2007 (UTM and others 2011).

Figure 99. Per capita transport emissions decline with urban density



Source: World Bank analysis based on Kenworthy 1998, Kenworthy and Laube 2001.

Figure 100. Malaysia’s motor gasoline intensity is high and rising



Source: IEA and World Bank staff calculations.

Based on current trends, GHG emissions from Malaysian cities are a serious concern for long-term sustainability – and competitiveness. City GHG emissions are influenced by a variety of factors, including urban form, climate, building design and technology, transportation modes, and income levels (Hoorweg and others 2011). Thus, per capita emissions from cities also vary widely across the globe (Table 11). Although the existing estimates for Kuala Lumpur, Iskandar Region and Putrajaya are mid-range in relation to the figures reported in Table 11, the performance of these three Malaysian cities can be construed as being relatively weak. The estimates for Kuala Lumpur and Iskandar cover only energy-based CO₂, and the figures for all three cities are not the results of comprehensive city GHG inventories based on actual data. The results would very likely be higher when other sources of GHG emissions, including solid waste, are included. Kuala Lumpur's overall emissions are also likely to be higher because the reported number is for the Federal Territory only, and does not reflect the higher per capita emissions from the lower density of the Greater KL area. To the extent that the bulk of emissions are energy related, and Malaysia's economy and transportation sector are relatively energy-intensive, long-term trends of rising global energy prices pose a particular challenge. Existing trends such as increasing sprawl and growing incomes will continue to put upward pressure on emissions into the future.

Table 11. Malaysia's cities appear middling in per-capita emissions, but lack of reliable data suggests caution in making comparisons.

	Per capita GHG emissions (t CO ₂ e)	Inventory year
<i>Kuala Lumpur (F.T.)</i>	7.2	2007
<i>Iskandar Region</i>	9.3	2005
<i>Putrajaya</i>	8.7	2007
Amman, Jordan	3.3	2008
Bangkok, Thailand	10.7	2005
Beijing, China	10.1	2006
Geneva, Switzerland	7.8	2005
Madrid, Spain	6.9	2005
New York City, USA	10.5	2005
Paris, France	5.2	2005
Seattle, USA	13.7	2005
Shanghai, China	11.7	2006
Stockholm, Sweden	3.6	2005
Tianjin, China	11.1	2006
Tokyo, Japan	4.9	2006

Note: Figures for KL, Iskandar and Putrajaya are estimates based on models, whereas the figures for other global cities are based on actual GHG inventory data. KL and Iskandar figures are for energy-based CO₂ only.

Source: Hoorweg, Sugar and Trejos Gomez 2011, EIU 2011, Ho and others 2009, UTM and others 2011.

Transitioning Malaysian cities to low-emissions development paths

To reduce city GHG emissions in Malaysia, efforts should focus on compact urban form; clean energy and enhanced energy efficiency; and transforming urban transportation. Table 12 below summarizes the main options for low-emissions development in Malaysian cities. Issues related to urban form and transportation are cross-cutting and addressed in greater detail in a subsequent section. This section considers policies to increase energy efficiency and to promote clean energy.

Table 12. Options for low-emissions development in Malaysian cities

Focus Area	Options for Action
Compact urban form	<ul style="list-style-type: none"> • Fundamental shift in urban planning approaches to favor density over sprawl, including higher floor area ratios, and promoting mixed-use and transit-oriented developments • In-filling of low-density/under-utilized plots of land in existing urban areas • En-bloc redevelopment of brownfield sites
Clean energy and energy efficiency	<ul style="list-style-type: none"> • Mandatory building codes for new buildings that include energy efficiency measures • Mandatory retrofitting of existing buildings to increase energy efficiency • Green building certification that emphasizes energy efficiency • Energy efficiency standards and labeling for household appliances • On-site renewable energy generation, e.g. solar panels and rooftop PVs • Rebates and tax credits to encourage individual measures above • Landfill gas to energy • Purchase of electricity generated from renewable sources
Urban transportation	<ul style="list-style-type: none"> • Greater density of rail transit • Bus rapid transit • Fuel economy standards for new vehicles sold • Phase-out of fuel subsidies and introduction of fuel taxes • Additional incentives for hybrid / electric vehicles • Road pricing / congestion charging

Clean and efficient energy solutions in Malaysian cities need to focus on both the demand and supply side.

Although there are a number of renewable energy and energy efficiency initiatives led by the government, most incentives are focused on the supply side, i.e. business and industry (KeTTHA 2010). There are as yet no comprehensive, targeted programs that reduce demand by incentivizing individuals to increase energy conservation and efficiency in homes. There are numerous examples of such programs from around the world, such as compact fluorescent light bulb (CFL) exchange, rebates and tax credits for more efficient household appliances and for structural improvements to the home, appliance standards and labeling, and credits for reducing household energy consumption. Clean energy supply options for cities would include a combination of on-site renewable energy generation, such as rooftop PV panels, solar water heaters, and landfill gas, as well as encouraging the purchase of green electricity generated from further afield.

In the buildings sector generally, the most notable initiative is the Green Building Index (GBI) certification scheme (Box 12), under which around three dozen buildings in the country have been certified so far in the two years since its launch (GBI 2011a). However, as energy efficiency is only one out of six criteria for scoring under GBI, developers and building owners would seek to maximize the overall score at the lowest possible cost, without necessarily seeking to maximize energy efficiency. Experience from other countries in Asia, Europe and North America suggests that mandatory building codes for new buildings, and mandatory requirements for retrofitting inefficient existing buildings, are more effective than certification schemes.

In urban areas building densities are often regulated through a flexible instrument known as the Floor Area Ratio (FAR) of buildings. The FAR is computed by dividing a building's total floor area by the area of the land parcel on which it sits, and an upper bound on this ratio effectively puts a limit on the allowable height of the building. Cities such as New York and Curitiba (Brazil) have used FAR successfully to promote transit-oriented growth and enhanced mobility. Indeed, the new transport hub being built as part of the reconstruction of lower Manhattan is a good example of smart land use and FAR policies. In Curitiba, the FAR has been used to direct growth along the Bus Rapid Transport arteries which ensure access while avoiding congestion and sprawl. Enhanced use of approaches employed in New York and Curitiba – among other good practice – can reinforce smart land use in Malaysian cities.

Box 12. Malaysia's Green Building Index (GBI)

GBI is Malaysia's rating tool for buildings to promote sustainability in the built environment, developed for the unique circumstances of Malaysia's tropical climate and its social and development contexts. Launched in 2009, GBI ratings are based on six main criteria: energy efficiency, indoor environment quality, site planning and management, materials and resources, water efficiency, and innovation. The GBI system is regulated by an Accreditation Panel comprising leading green building professionals, and includes a network of Certifiers and Facilitators that enables buildings to be certified.

In its 2010 Budget, the Malaysian government provided incentives to promote GBI certification, until the end of 2014. Tax exemptions are offered for qualifying expenditures – those additional expenditures incurred in construction or modification to obtain certification – on buildings used for business. Stamp duty exemptions are offered for both business and residential properties purchased from property developers, on the additional cost incurred in obtaining certification.

Sources: GBI 2011b, KeTTHA 2010.

Setting targets and assessing progress toward lower GHG emissions for Malaysian cities require a baseline and regular monitoring, but data issues currently present a substantial challenge. In preparing this report, the World Bank team initially aimed to develop GHG emissions inventories for the largest Malaysian cities, in line with the existing standard advanced by the Bank with UNEP and UN-Habitat. However, lack of data (on electricity and fuel consumption at the state or lower levels, for example) meant that this could not be achieved within the timeframe of this report. City performance will be difficult to manage unless it can be measured in a timely manner, at the appropriate spatial scale. Improving data availability will have wide benefits for Malaysian cities and the country at large, beyond the reduction of GHG emissions.

Waste management a growing challenge for Malaysian cities

Waste management has increasingly become a major concern for city administrators as the quantity of waste generated keeps growing while the city is facing more constraints. The main objective of waste management is protection of public health and environment primarily by controlling and eliminating air and water pollution. With greater emphasis being put on low carbon and sustainable urban management, the conservation of materials and energy resources are becoming another important aim of well-designed management systems.

Malaysia faces a variety of challenges in managing solid waste. Rising incomes and increasing urbanization, resulting from rapid economic development, have driven growth in the quantity and diversity of solid waste. As is typical for an upper middle-income country, waste collection is generally comprehensive, but landfills are mostly non-sanitary, much recycling is still informal, composting and incineration are limited, and around half of municipal budgets are spent on solid waste. As part of Malaysia's drive to become a high-income economy, efficient solid waste management is essential to ensure the sustainability and livability of its cities.

This section focuses on key municipal solid waste (MSW) issues in Malaysia, including waste generation, treatment, and disposal into landfills. The institutional framework for MSW management – specifically the federalization of household waste collection and transport services – is also discussed. Issues related to scheduled and hazardous wastes, and street cleaning, are beyond the scope of this section. Some basic definitions used in this sector in Malaysia are given in Box 13.

Box 13. Basic Definitions in the Solid Waste Sector in Malaysia

The National Solid Waste Management Department (NSWMD), which is a under the Ministry of Housing and Local Government, defines solid waste as:

"Any scrap material or other unwanted surplus substance or rejected products arising from the application of any process;

Any substance required to be disposed of as being broken, worn out, contaminated or otherwise spoiled; or

Any other material that is required by the authority to be disposed of, but does not include scheduled wastes [...], sewage [...] or radioactive waste [...]." (NSWMD 2011)

Household waste represents one of the eight categories of solid waste defined by NSWMD:

"Any solid waste generated by a household, and of a kind that is ordinarily generated or produced by any premises when occupied as a dwelling house." (NSWMD 2011)

The definitions above are fairly consistent with the definitions of solid waste and household waste used globally. The general working definition of solid waste is:

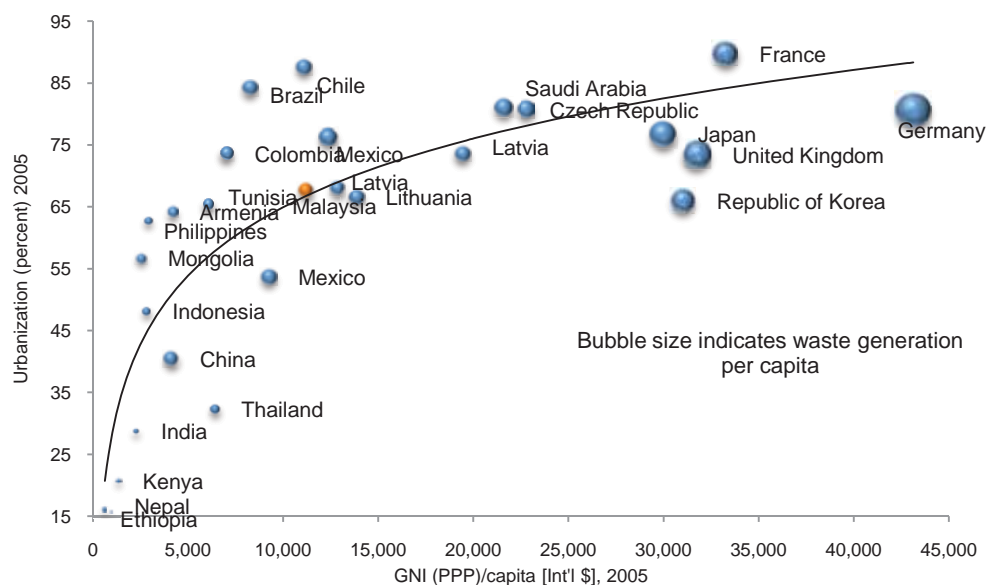
"Any unwanted material intentionally thrown away for disposal. [...] MSW includes wastes generated from residential, commercial, industrial, institutional, construction, demolition process, and municipal services." (World Bank 1999)

Waste generation and composition in Malaysia

Waste generation and composition in Malaysia are typical of a country at its level of income and urbanization.

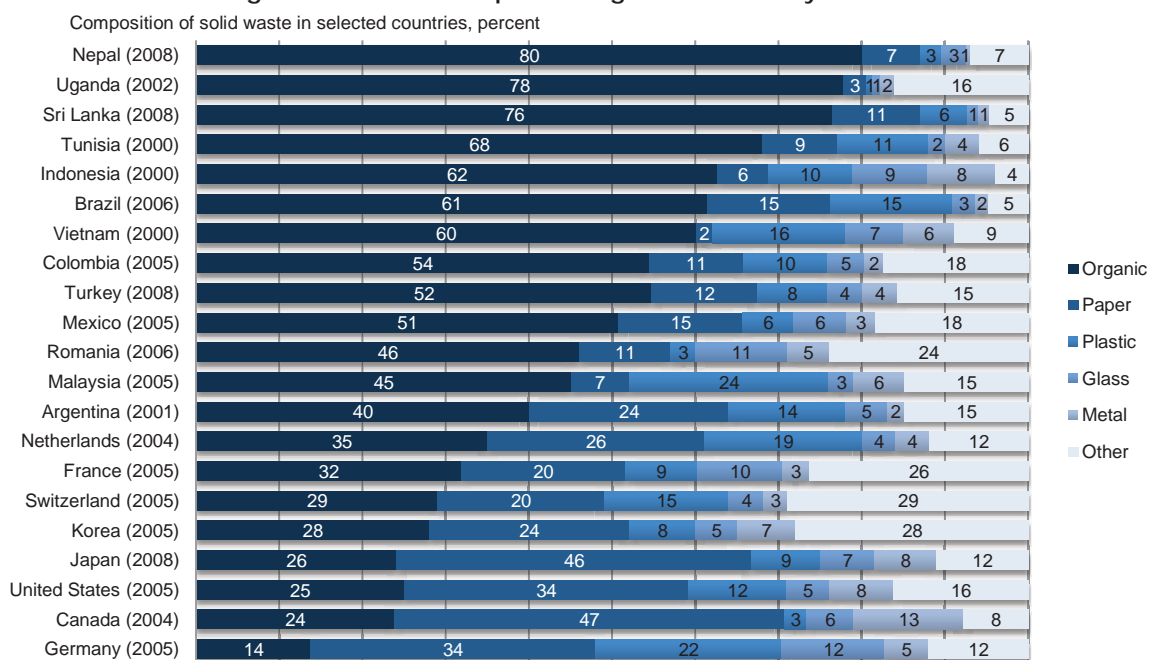
Globally, waste generation – as well as urbanization – tends to increase with income levels, and Malaysia is no outlier in this respect. At 0.99 kg per capita in 2005, waste generation is comparable to other countries with similar income levels (Figure 101). Waste composition also changes as incomes rise: the principal waste component in lower income countries is organic and food waste, while the proportion of paper and recyclables is significantly larger in high income countries. At 45 percent, the organic waste fraction in Malaysia is lower than in countries such as Sri Lanka and Indonesia, yet higher than in countries such as the United States, Japan, or Germany (Figure 102).

Figure 101. Waste generation is likely to increase as Malaysia becomes wealthier



Source: World Bank forthcoming (Note: Waste generation data from countries from years 2000-2008); World Bank World Development Indicators; UN Population Division.

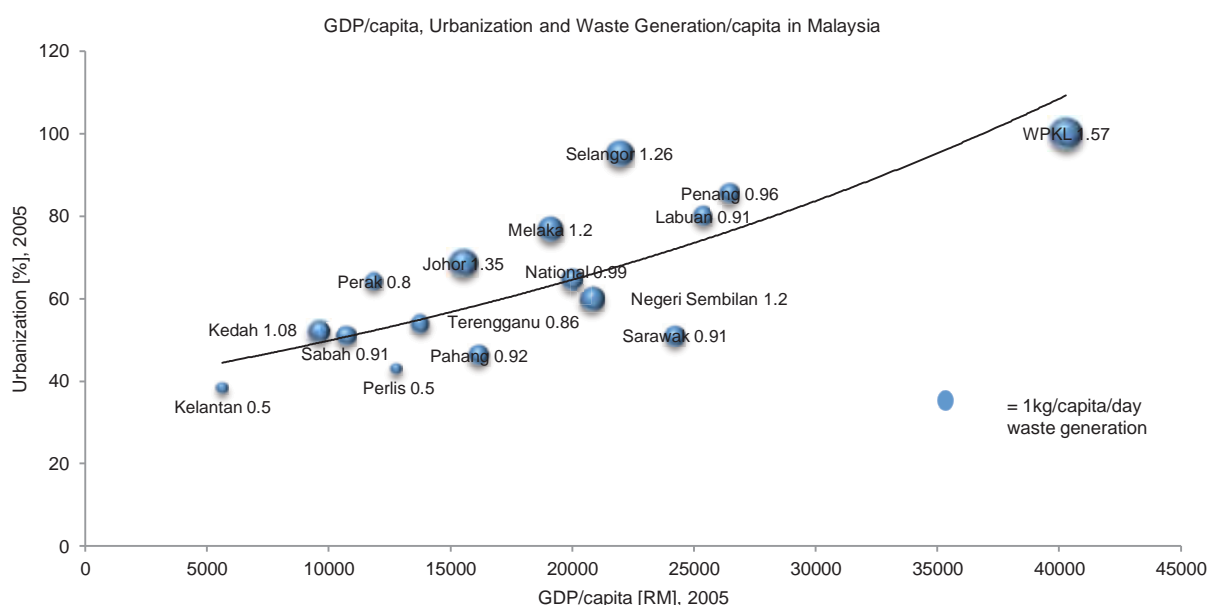
Figure 102. Plastic comprises a high share of Malaysia's waste



Source: World Bank forthcoming.

Within Malaysia, higher income levels are also generally associated with greater urbanization, but the relationship with waste generation is less clear. Per capita waste generation in most states is within 20 percent of the national average of 0.99 kg. Kuala Lumpur (1.57 kg), Johor (1.35 kg) and Selangor (1.26 kg) have the highest per capita waste generation rates. While Kuala Lumpur and Selangor are highly urbanized and have relatively high per capita income, Johor's waste generation appears to be high for its level of income and urbanization. On the other hand, waste generation is only half the national average in Kelantan (0.5 kg) – the state with the lowest per capita income – and in Perlis (0.5 kg), where per capita income is almost double that of Kelantan (Figure 103). This varied pattern of waste generation across the different states of the peninsula likely reflects the underlying variation in economic activities and waste generation sources.

Figure 103. The relationship between waste generation and urbanization in Malaysia is complex



Source: Department of Environment 2008; Department of Statistics. (Note: Urbanization rate estimated for 2005, based on 2000 and 2010 data from the Department of Statistics, Malaysia.)

As Malaysia moves towards high-income status, increased waste generation represents a major challenge for sustainability in its cities. At 0.99 kg/capita/day, total daily waste generation in 2005 was 25,376 tons (MHLG 2005). According to estimates by UNDP, solid waste generated in the peninsula alone will increase to over 30,000 tons by 2020, as a result of a growing population and higher income levels (UNDP 2008). Based on Malaysia's GNI per capita projections to 2020 as outlined in the 10th Malaysia Plan (EPU 2010a), and an expected population of 32 million in 2020 as projected by the UN Population Division, this report estimates total waste generation of 36,800 tons per day, or over 13.4 million tons annually, by 2020 – a 45 percent increase over 2005.

Federalization of solid waste management in Malaysia

The federalization of household waste collection and transportation in peninsular Malaysia is innovative and groundbreaking, but hitherto no country has successfully centralized these essentially local functions. Through the Solid Waste and Public Cleansing Management Act of 2007, the federal government has taken over the management of all solid waste and public cleansing from local authorities, including municipal, industrial, commercial and institutional waste. The motivation for doing so was to establish a coherent, streamlined system that avoids the pitfalls of variable financial and technical capacities among local authorities. Box 14 briefly describes the legislation passed in 2007, and how it has been implemented so far. Notably, the concession agreements that the federal government has entered into cover only household solid waste and public cleansing, while the regulations for other types of solid waste have yet to be made effective.

Box 14. The Solid Waste and Public Cleansing Management Act of 2007

Act 672 was passed by the Malaysian parliament in 2007 “to provide for and regulate the management of controlled solid waste and public cleansing for the purpose of maintaining proper sanitation and for matters incidental thereto”. The act addresses solid waste management in a comprehensive manner, from waste generation to collection, treatment and disposal, with emphasis on the 3Rs (reduce, reuse and recycle).

The act provides for executive authority for matters relating to solid waste management and public cleansing to be exercised by the federal government, with these functions accordingly removed from the local authorities. Two new federal agencies, namely the National Solid Waste Management Department, and the Solid Waste Management and Public Cleansing Corporation, have been established under the Ministry of Housing and Local Government. The National Solid Waste Management Department is tasked with establishing a national sustainable solid waste management system to safeguard public health, protect and conserve the environment and preserve natural resources.

The act came into effect in peninsular Malaysia on September 1, 2011, except for the states of Penang, Perak and Selangor, which were not participating at the time of writing. The entire peninsula has been divided into three regions, with a private concessionaire responsible for household waste collection and transportation within each zone: e-Idaman in the northern region, Alam Flora in the central region, and SWM Environment in the southern region. What used to be annual agreements between various local authorities and individual concessionaires has now been replaced with 22-year contracts between the federal government and the three concessionaires. The estimated total cost to pay all three concessionaires is RM2.4 billion, based on a fee of RM8 per household each month, which will increase to RM14.80 per household upon implementation of a new collection system with improved capital equipment. The concessionaire fees will be renegotiated every seven years.

Source: Loh 2011; NSWMD 2011; Nadzri & Larsen 2008.

A priori, it is not obvious that federalization is the ideal solution for solid waste management in Malaysia. First, there are limited economies of scale to be found in waste collection and transportation. Significant costs are being incurred in establishing a functional presence for the Solid Waste Management and Public Cleansing Corporation throughout the peninsula. Second, alternative approaches could have been used to address the problem of limited financial and technical capacities of local authorities in managing MSW. One such alternative could have

been to provide federal support in the form of capacity-building and fiscal transfers, complemented by a nationwide policy framework with federal regulations and guidelines. Given that a few states in the peninsula are not participating in the new federalized system, a comparison of outcomes in these states and in the rest of the peninsula in the coming years will offer useful lessons and insights.

The long-term success of federalized solid waste management will require holding concessionaires fully accountable for performance, and ensuring a sustainable financing model for MSW. The system of over 50 primary and secondary key performance indicators (KPIs) that has been built into the concession agreements is comprehensive and sophisticated. But it will only be effective if implemented as intended, where failure to meet performance standards in any given local area is punished with specified fines or prompt replacement with another concessionaire. At the same time, attention needs to be paid to the longer-term strategy for cost recovery and the introduction of direct user fees. For the time being, households continue to pay property assessment fees (the rates of which have remained unchanged for years) to local authorities. Local authorities, in turn, continue to pay for MSW expenditures, the difference being that the recipient is now the federal government instead of private concessionaires. It is estimated that the amounts paid by local authorities will not cover the total cost of the federalized system, including concessionaire fees and operation of the Solid Waste Management and Public Cleansing Corporation. As a result, the federal government will have to cover any shortfalls and increases in costs, which is not, however, a sustainable financing model for the long-term.

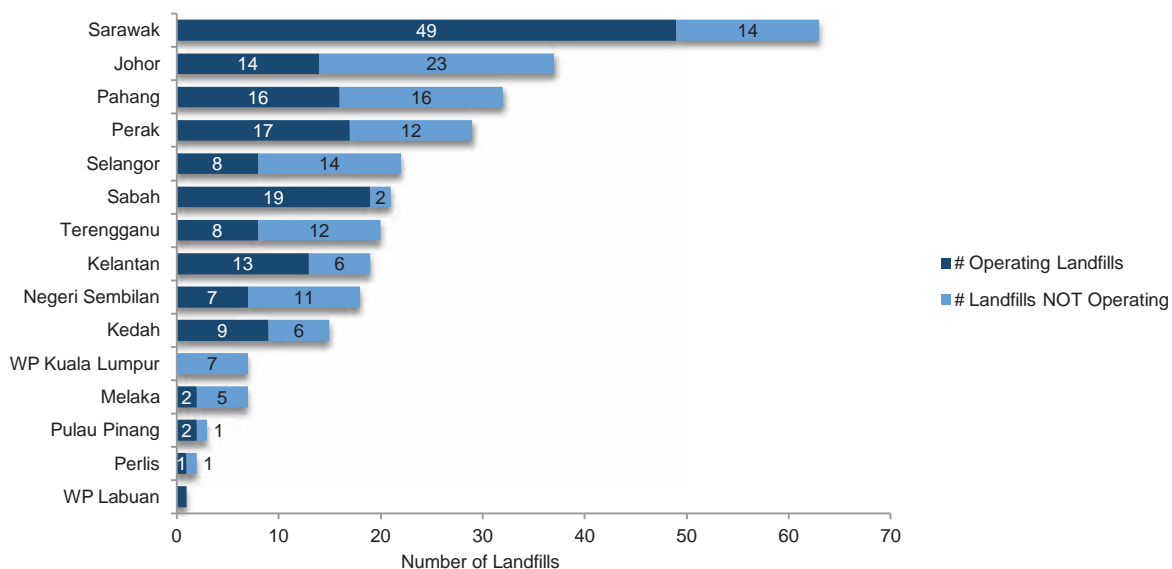
Introducing more flexibility and elements of competition should also be considered in any future revisions of the federalized system. The existing 22-year contracts for the three concessionaires, including fixed payment rates for a period of seven years, have been justified on the basis that these long durations are necessary to enable sufficient investment in fixed assets and equipment. However, these considerations should be balanced against the advantages of having medium to long-term flexibility, and fostering competitiveness, from having contracts of shorter durations. Another option for introducing more competition among the three concessionaires would be a variant of the existing federalized system, where all three concessionaires would operate throughout the peninsula, rather than assigning an entire region to one concessionaire alone. Under this scheme, any given city would be divided into zones, with each of the three concessionaires allocated different zones within that city. In this way, the performance of all three concessionaires can be directly compared within the same city.

Landfills: the weak link in the Malaysian solid waste chain

The most common waste disposal method in Malaysia is landfilling. It is estimated that 95-97 percent of the waste collected nationwide is disposed in landfills, with the remaining waste being sent to incinerators, recycled, or dumped illegally (Nadzri 2007). As of January 2011, the total number of landfill sites for MSW in Malaysia was 296 (Figure 104). 130 of these sites are no longer in operation; of the 166 sites still operating, only eight are considered to be sanitary landfills – including, for example, the relatively new sanitary landfill at Bukit Tagar in Selangor (NSWMD 2011). The life expectancy of operating landfills is critically low – it is estimated that 42 percent of landfills have already surpassed their design capacity, or are expected to exceed capacity within the next five years (Nadzri & Larsen 2008).

Malaysia cannot continue with ‘business-as-usual’ indefinitely, by disposing ever increasing waste quantities into landfills. The nationwide cycle of landfills reaching capacity with limited room for expansion in growing urban areas, followed by the establishment of new landfill sites further away from urban centers, is clearly visible in Figure 105 and Figure 106 which map all landfills in Kuala Lumpur/Selangor and in the Iskandar Malaysia region. The widespread distribution and poor management of landfills across the country reflects fragmented ownership and operation of landfills that span multiple states and local authorities. Non-sanitary landfills can give rise to environmental and public health hazards, such as from leachates that contaminate surface and ground waters. This is clearly not sustainable in the long-term, especially since waste generation will increase to an estimated 13.4 million tons annually by 2020. In addition, emissions of methane – a potent greenhouse gas – from landfills are a major concern in the area of climate change, adding to the sustainability challenge for landfills. Yet, the new federalized system has yet to adequately address this urgent need to optimize the network of disposal facilities, in order to improve environmental performance while harnessing economies of scale and minimizing costs.

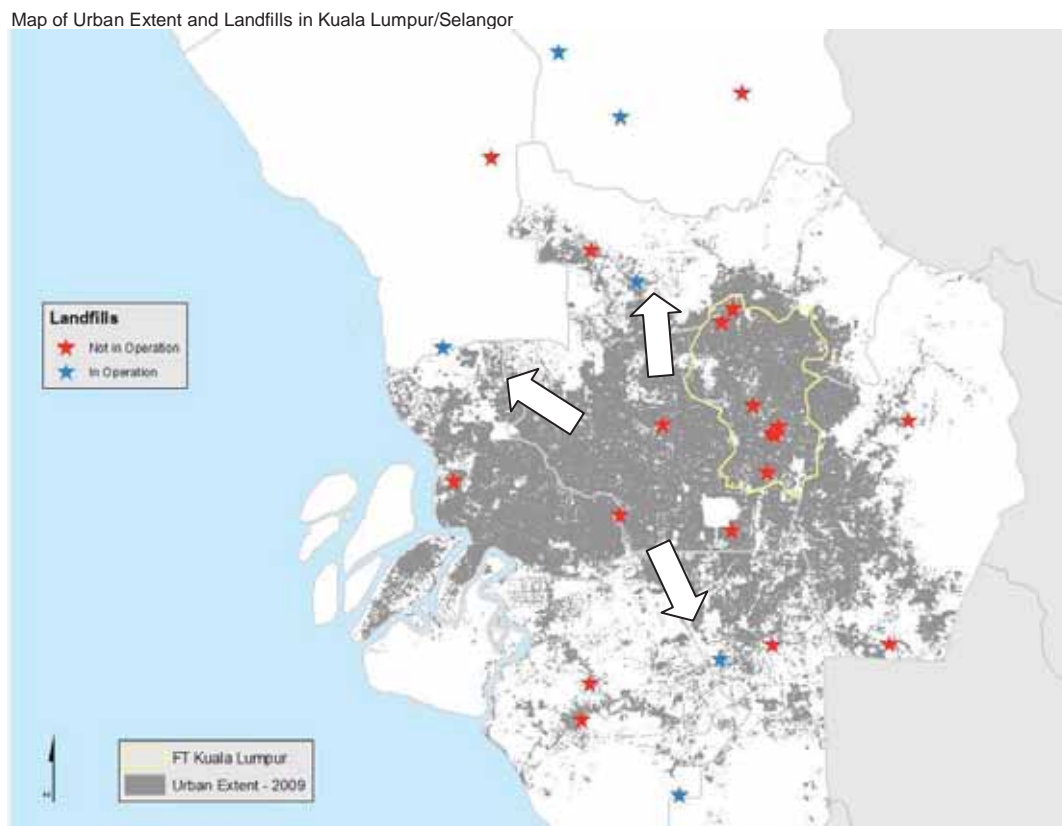
Figure 104. Almost half of Malaysia's landfills for municipal solid waste are no longer in operation



Source: NSWMD 2011.

Note: The figure above includes municipal solid waste landfill sites only, and does not include sites for industrial, commercial, and institutional wastes.

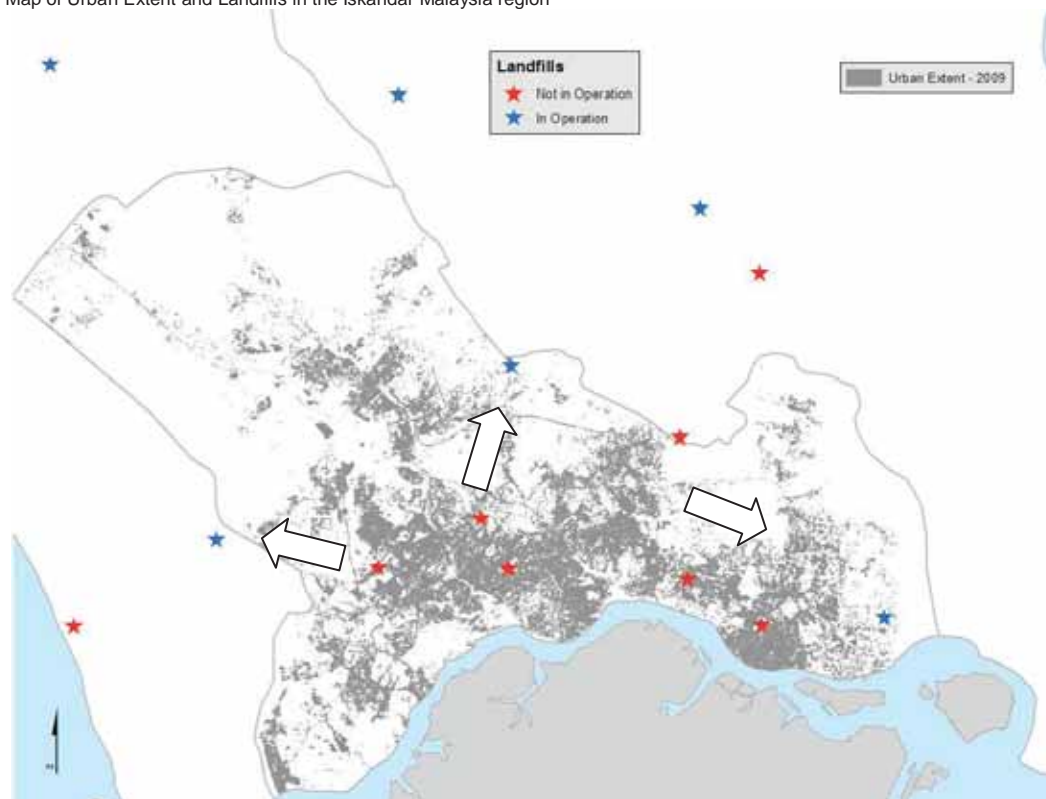
Figure 105. Landfills in KL/Selangor have moved outward with sprawl



Source: World Bank analysis based on list of landfill locations from NSWMD.

Figure 106. Landfills in Iskandar Malaysia have moved outward with sprawl

Map of Urban Extent and Landfills in the Iskandar Malaysia region



Source: World Bank analysis based on list of landfill locations from NSWMD.

A landfill strategy for Malaysia can enforce the regulatory framework for operating landfills, and seek economies of scale by reducing the total number of landfills through consolidation. The initial land acquisition and construction costs of landfills are high. However, larger landfills can hold more waste per unit area than smaller landfills, and maintenance, remediation and operation costs do not increase proportionally with landfill size. Other actions that should be pursued include:

- Closing or remediating open dumpsites and non-operating landfills;
- Upgrading existing landfills to become sanitary landfills;
- Reducing the quantity of organic waste disposed in landfills, and reducing methane emissions by flaring, direct gas use or electricity generation; and
- Implementing adequate monitoring, management, and rigid regulatory enforcements to punish malpractices, such as improper disposal of hazardous materials and illegal dumping.

Box 15 describes one of the few landfill gas Clean Development Mechanism (CDM) projects under development in Malaysia, which has yet to be registered.

Box 15. Carbon Finance for Composting at the Kayu Madang Landfill

A collaboration between the state of Sabah and MS Smart Recycling, a private sector company working in MSW treatment and recycling, is preparing the first commercial-scale composting plant at the Kayu Madang Landfill site, which is owned and operated by the Kota Kinabalu City Hall. Located near the town of Telipok, approximately 30 km northeast of Kota Kinabalu, the plant will be implemented on the basis of a design, build and operate (DBO) contract by MS Smart Recycling, with no tipping fees paid to the operator.

The project objective is to avoid methane emissions from the Kayu Madang Landfill by diverting 500 tons/day of collected and sorted MSW to a composting plant, which will convert the highly biodegradable portion of the waste into marketable compost. Aerobic decomposition of the organic portion of MSW into reusable compost generates

carbon dioxide instead of the methane that would have been generated from anaerobic decomposition in a landfill. This will also contribute to extending the lifespan of the landfill three-fold.

This project is the first of its kind in Malaysia in the MSW sector using composting technology at commercial scale. Without the carbon finance revenues, the private operator would face major difficulties in the viability of the composting plant, due to the lack of a mature compost market in Malaysia, as well as the high costs of operation and maintenance of the facility. The wheels of an innovative Emission Reduction Purchase Agreement (ERPA) between the World Bank and MS Smart Recycling are now in motion, giving the latter a new stream of revenues from the sale of Certified Emissions Reductions.

Source: World Bank Carbon Finance Unit.

Towards solid waste management for a high-income country

In the medium- to long-term, various other aspects of solid waste management in Malaysia need to be addressed in order for the sector to support the nation's high-income aspirations. In this regard, a fundamental need and priority is in waste prevention and minimization, where waste generators reduce, reuse and recycle waste (the "3Rs"; see, for example, Box 16). Source separation of waste, and the greater use of composting and recycling, will be important elements of a sustainable approach to solid waste. Recycling rates in Malaysia are already fairly high, due to the wide network of informal recyclers that collect paper and other recyclables from households and other sources. In Penang, for example, the reported recycling rate in the year 2010 was above 25 percent (Penang State Government 2010). As income levels rise, a more formal recycling system will become increasingly important. The new federalized system provides for weekly collections of recyclables from households. At the same time, the needs and livelihoods of informal recyclers should not be neglected as Malaysia moves to a more formal recycling system.

Box 16. Waste Reduction Through 3R in Yokohama, Japan

Yokohama has taken effective action to reduce the demand for waste treatment (incineration) and disposal. In 2003, the city launched the G30 Action Plan (G=gabage; 30=30 percent reduction in waste generation by fiscal year 2010). The program targeted residents, businesses, and government and focused on the 3Rs (reduce, reuse, and recycle). The program has greatly exceeded its goals. By fiscal year 2007, waste had been reduced by 38.7 percent, or 100,000 tons per year. The reduced waste enabled officials to close two incinerators, yielding savings in operating expenditures of USD 30 million per year. Taking into consideration the USD 24 million in operating expenditures for the additionally required operations, such as separating waste and subcontracting recycling, the city realized net savings of USD 6 million per year. The closing of the two incinerators also obviated the need for USD 1.1 billion in capital expenditures that would have been required to renovate the incinerators.

Source: Suzuki and others 2010.

Numerous waste minimization projects are already underway, not just by the federal government, but also by local authorities and various civil society organizations. Box 17 describes the initiative on food waste reduction in Malaysia. In the Greater KL conurbation, initiatives to be implemented in the next few years are aimed at raising recycling rates, managing the costs of solid waste disposal, technologies to treat generated solid waste at waste treatment facilities to minimize the usage of landfills, and treatment of organic waste through composting or anaerobic digestion facilities. However, the long-term success of such initiatives requires raising the level of public awareness on solid waste issues. Table 13 summarizes some options for strengthening MSW management in Malaysia.

Box 17. Initiative for Food Waste Reduction in Malaysia

Almost half of Malaysia's total solid waste stream is organic – mostly food waste. Decomposed anaerobically in

landfills, this waste generates methane, a potent greenhouse gas. Proper management of food waste is thus a 'low hanging fruit' that also helps to reduce the emissions of greenhouse gases in Malaysia. To this end, a collaborative project between the Malaysian Ministry of Housing and Local Government and the Japanese Ministry of Environment was initiated in November 2010, focusing on the development of a National Strategic Plan for Food Waste Management in Malaysia. This three-year project aims to set clear targets for food waste reduction and recovery, with emphasis on various action plans toward effective management models for food waste from different generating sectors. To date, a baseline study of the amount of food waste generated, and on the existing practices of food waste management among waste generators, has been completed. In addition, the two governments have exchanged information on the legal framework for food waste management. Pilot projects will be conducted to further explore appropriate models for effective management of food waste in Malaysia.

Source: Dr Theng Lee Chong.

Table 13. Options for strengthening MSW management in Malaysia

Area for Action	Description
<i>Federalized Collection and Transport of Household Waste</i>	
Key Performance Indicators (KPIs)	<ul style="list-style-type: none"> Fully apply the system of KPIs as designed and intended, with non-compliance by concessionaires punished with fines and/or prompt replacement by another concessionaire.
Flexibility and Competition among Concessionaires	<ul style="list-style-type: none"> Shorten the current contract period from 22 years, to introduce more flexibility while balancing against capital investment horizons. Foster competition and allow for direct comparison of service delivery, by having all three concessionaires operate throughout the peninsula, rather than assigning one concessionaire to each region.
User Fees	<ul style="list-style-type: none"> Introduce direct user fees for cost recovery and to ensure financial sustainability of the federalized system.
<i>Landfill management</i>	
Consolidation and upgrading of landfills	<ul style="list-style-type: none"> Review all operating landfills to identify those that should be closed, with a view to consolidating the number of landfills. Upgrade remaining operating landfills to become sanitary landfills, and ensure adequate monitoring, management and regulatory enforcement. Review conditions at non-operating landfills, and implement remediation measures where needed to minimize environmental and public health hazards.
Methane emissions from landfills	<ul style="list-style-type: none"> Separate organic wastes from the waste stream disposed into landfills. Capture methane emissions from landfills for flaring, direct gas use or electricity generation.
<i>Public awareness and participation</i>	
Waste generation at the individual and household level	<ul style="list-style-type: none"> Raise public awareness and educate citizens on the unsustainable path of current waste generation patterns, to encourage a change in mindsets and individual behaviors. Promote the 3Rs (reduce, reuse and recycle) among individuals and households. Promote and provide facilities/incentives for waste separation at source, including for recyclables and organic waste where feasible.

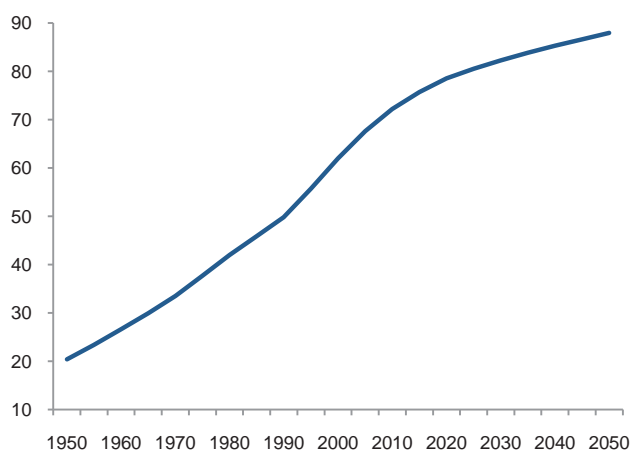
Resilient Cities

Malaysia's urbanization and its risks

The risks of natural hazards and climate change threaten Malaysia's quest for continuous rapid growth. To reduce risks that the recurrent floods and landslides pose to long-term sustainability of economic growth, Malaysia would benefit from environmental restoration and integration of risk reduction into development planning.

Malaysia is one of the most rapidly urbanizing countries in Asia. Nearly continuous economic growth since independence has been associated with fast urbanization, most of which has taken place on the west coast of peninsular Malaysia. According to the 2010 Census, the proportion of urban population in 2010 had reached 71 percent, whereas in 2000, 62 percent of the population was urban (Figure 107). Malaysia's total population was 28.3 million in 2010, compared to 23.3 million in 2000. It is predicted that by 2050, 88 percent of Malaysia's population will live in cities (United Nations 2009).

Figure 107. Nearly 90 percent of Malaysians will live in cities by 2050

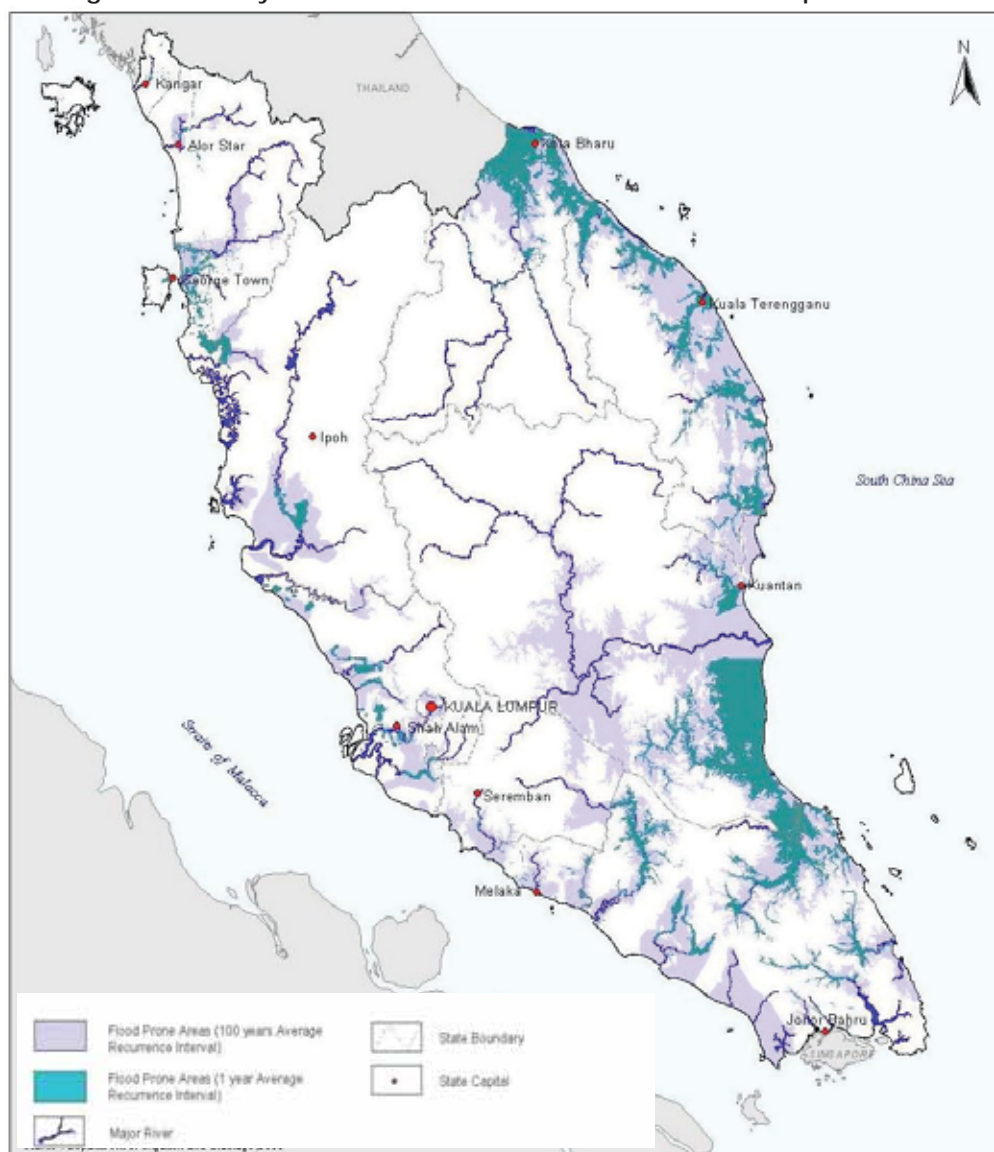


Source: The 2009 UN Revision Population Database.

The potential for losses from natural hazards are particularly high in urban areas. Concentration of population and infrastructure in cities contribute to increased exposure to natural hazards. In Malaysia, urban centers are heavily concentrated in risky locations – in flood plains and along the coast where natural disasters frequently occur. Kuala Lumpur and Shah Alam, which are home to many industrial estates, are situated in flood-prone areas (Figure 108). Although large-scale flooding of Malaysia's economic hubs of the magnitude that Thailand has witnessed in October 2011 is unlikely⁴⁴, the Thai experience illustrates how natural disasters can cause serious damage to the country's economy. In Thailand, over 900 industrial plants in Ayutthaya, including Honda and Toyota, and 200,000 workers, have been impacted by the floods. Integrating risk reduction measures into urban planning, especially for critical infrastructure with long economic life, is a cost-effective way to reduce risks. Unless proactive measures for disaster risk reduction are mainstreamed into urban development processes, any new investments could translate into heavy loss of life and property.

⁴⁴ The Klang river basin, and adjacent basins in the Greater Kuala Lumpur area (Langat and Selangor rivers) are relatively small, and runoff in those basins is from rain that falls in the relatively small areas of the upper catchments to the east. This is unlike in Thailand as the Chao Phraya basin is much larger than that of the Klang, having in particular a vast catchment area covering most of northern Thailand.

Figure 108. Malaysian urban centers are concentrated in flood-prone areas



Source: Department of Irrigation and Drainage, 2000. Reproduced in the National Physical Plan (2005).

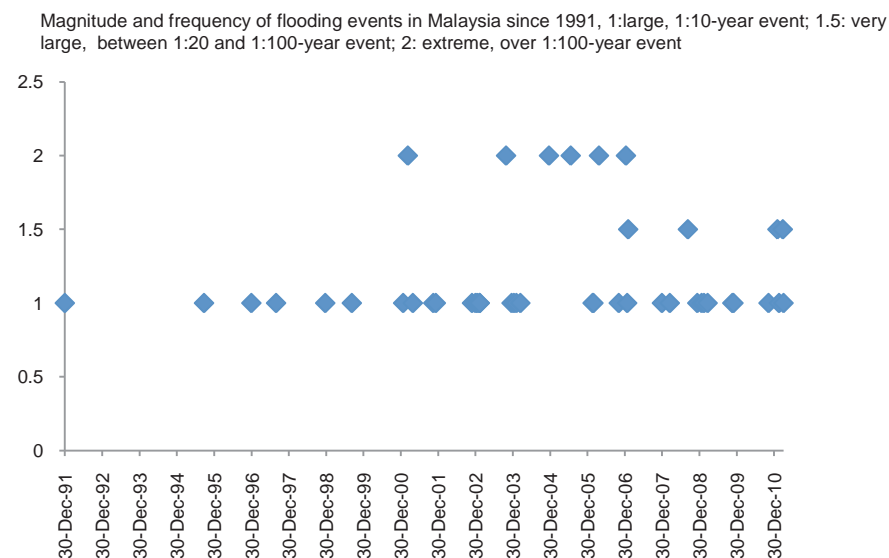
Floods are the dominant risk for Malaysian cities, followed by landslides. Yearly, an estimated 29,800 km² are flooded, affecting nearly five million people and causing physical damages of almost USD 300 million (ASEAN 2011). Flooding generally occurs during the monsoon season, particularly on the coasts of Peninsular Malaysia. Flash floods are a common occurrence in urban areas. Between 1990 and 1996, over 100 incidents were reported in the Klang Valley alone, where Kuala Lumpur is located (Pereira and Komoo, 2004). The country also experiences landslides, especially since the onset of economic growth and expansion into hilly areas, mainly in the highland areas such as Hulu Kelang, Cameron Highlands and Genting Highlands. Earthquake risk in Malaysia is low but the fact that Malaysia borders with countries on active tectonic plates increases the chances for Malaysia to be affected by a quake (ASEAN 2011). Despite its proximity to the epicentre of the earthquake that caused the 2004 Indian Ocean Tsunami, Malaysia was less impacted than other affected countries since the Indonesian Island of Sumatra acted as a shield. The Tsunami nevertheless caused 80 casualties and economic losses of USD 500 million in Malaysia (ASEAN 2010). In January 2011, rains associated with strong La Niña conditions caused heavy flooding in the Southern state of Johor Bahru, making 31,000 people homeless and disrupting palm oil shipments.⁴⁷ Floods returned to Johor in February, forcing 50,000 people to evacuate.

⁴⁷ Source: Reuters (2011).

Rapid development and environmental degradation have caused worse and more frequent occurrence of floods and landslides, especially in urban areas. While heavy rainfall in Malaysia is linked to climatic patterns, man-made factors aggravate the impact of floods. Rapid development in densely populated flood plains, flood-prone areas or hill-slopes, together with environmental degradation, particularly deforestation, increase the vulnerability to floods and landslides. In the city of Penang, for example, rapid economic growth in the last decades through industrialization and tourism has resulted in environmental degradation. The lack of comprehensive plans, hill cutting on the north coast for hotel and condominium development, and soil erosion increase dangers in the form of landslides and floods, which have taken place along the north coast and inland areas around Air Itam and Paya Terubong. Building permits are still being approved and a comprehensive environmental plan is not yet in place (Kharas et al. 2010).

Climate change is likely to have a significant effect on Malaysia, increasing sea levels and hydrologic extremes. According to the government's report on Climate Change Scenarios in Malaysia (Malaysian Meteorological Department 2009), in the recent years, the occurrence of extreme events, including flash floods, strong winds and waterspout, has increased (Figure 109). For instance, the winter monsoon of 2006/2007 and 2007/2008, as well as rains in 2010/2011 caused heavy rainfall and severe floods. Localized climate predictions indicate a substantial increase in rainfall over the North East Coastal region, and a decrease in the West Coast of Peninsular Malaysia. Simulations of future river flows indicate extreme high flows and low flows in the east coast of Peninsular Malaysia when compared with historic levels (National Hydraulic Research Institute 2006). Higher flows might lead to more floods and landslides.

Figure 109. The frequency and severity of flooding in Malaysia has increased in the 2000s



Source: G.R.Brakenridge, "Global Active Archive of Large Flood Events", Dartmouth Flood Observatory, University of Colorado,
<http://floodobservatory.colorado.edu/Archives/index.html>

Disaster Risk Management in Malaysia

The National Security Council (NSC) of the Prime Minister's Department is the principal policy making and coordinating body for disaster risk management. Other departments have responsibilities in risk reduction. For example, the Department of Drainage and Irrigation oversee flood risk management. Together with the Federal Department of Town and Country Planning, the Department of Drainage and Irrigation produced several risk-related guidelines, including the Urban Stormwater Management Manual (MSMA) in 2000 and Land Use Planning Appraisal for Risk Areas (LUPAR) in 2005, both of which are implemented by local authorities. The Malaysian Meteorological Department has developed a National Tsunami Early Warning System to provide early warning on

tsunami threats. The Public Works Department issued the National Slope Master Plan 2009-2023 which gives guidance for slope management and risk reduction on landslide hazards. The plan is a comprehensive and well-designed guideline which would need to be translated into policies and legislation to be most effective.

The main guideline for disaster management is the National Security Council Directive No. 20, which includes a structure for post-disaster emergency management systems. It is complemented by other sectoral legislation, including the Land Conservation Act; Environmental Quality Act; Town and Country Planning Act; and the Irrigation and Drainage Act. Legislation for risk reduction is currently rather limited but the government is exploring the formulation of comprehensive legislation and law enforcement that would emphasize prevention strategies and minimize disaster impacts.

The Government has spent substantial amounts to reduce flood risks. From 2001 to 2005, a total of USD 580 million was spent on structural flood mitigation measures. Under the Ninth Malaysia Plan (2006-2010), the allocation for structural flood control works had increased to nearly USD 2 billion. Particularly flood mitigation projects around Kuala Lumpur have been given priority. In Budget 2012, towns in Perlis, Perak and Johor will be targeted for flood mitigation projects.⁴⁸ Apart from conventional flood mitigation projects, the Stormwater Management and Road Tunnel (SMART) was constructed as an innovative solution to alleviate the problem of flash flooding in the Kuala Lumpur city centre (ASEAN 2011). The nearly 10 km tunnel integrates both storm water management and motorway with the same infrastructure. To increase resilience of cities, Putrajaya, Kuala Lumpur and Melaka have been chosen by the government as role model cities in the resilient cities campaign to be emulated nationwide. The Putrajaya Masterplan includes the use of wetlands; and the Kuala Lumpur City Plan 2020 – Flood Mitigation includes both structural and non-structural solutions.

Building Resilient Cities: Possible Ways Forward

Step 1: Understanding Risks

Understanding local risk is the first step to build urban resilience. Risk assessments are powerful tools to review potential hazards, find out who and what is at risk, and identify vulnerabilities of different urban communities and sectors. A comprehensive risk assessment serves as a basis for prioritizing different risk reduction measures. Malaysia has conducted risk assessments at the national level. However, more research is needed to better understand risk and its drivers at the local level and in cities. Collected information on risks and vulnerabilities is most useful if it is integrated in an information management system, which offers applications, such as hazard assessment reports for territorial planning or cost-benefit application risk reduction projects. Malaysia would benefit from efforts to help decision makers to understand, appreciate, and act upon risk assessment. This would include creating effective linkages between disaster risk management specialists, planners, engineers, and decision makers to increase the awareness of the essential contribution of hazard assessments to sound planning.

Step 2: Finding risk reduction and adaptation options

For effective flood risk management, a combination of structural and non-structural measures is necessary. Risk is a combination of hazard, exposure, and vulnerability. In order to effectively reduce and manage risk, measures have to be taken to reduce any or all of these three elements. Examples are given in Table 14.

⁴⁸ In the 2012 budget, the Government announced the implementation of the Flood Mitigation Plan (RTB) in Perlis, Perak and Johor at a cost of RM 1 billion. In Perlis, two RTB projects will be undertaken – namely upgrading of Timah Tasoh Phase Two dam as well as widening and deepening of Sungai Arau. In Perak, three RTB projects will be implemented in Sungai Kerian, Sungai Kurau and Kolam Bukit Merah. Meanwhile, in Johor RTB projects will be implemented in the town of Sungai Segamat.

Table 14. Options to reduce flood hazard, exposure and vulnerability

Hazard	Exposure	Vulnerability
Retention and storage of water upstream	Development control	Build critical infrastructure in low risk zones
Land use control	Upgrade infrastructure	Emergency/ contingency planning
Greening of urban space	Flood defenses	Increase awareness / preparedness/ adaptability
Improved drainage	Barriers and	Plan to prioritize vulnerable people
Groundwater management	barragesWarning and evacuation	Building codes
	Relocation	Better maintenance and management
		Solid waste management
		Planned recovery
		Insurance and aid

Source: Adapted from Jha and others, 2011.

Sustainable urban drainage systems and storm water practices provide cities with opportunities to use excess water in an environmentally conscious way. Traditionally, cities in Malaysia have disposed of excess storm water by channeling water rapidly downstream through a network of concrete drains and existing river systems. However, fragmented drainage networks in combination with large non-permeable surfaces worsened the impact of flash floods. In recent years, Malaysia has started to incorporate sustainable urban drainage systems (SUDS) which make use of techniques that incorporate pervious concrete, storm water retention, infiltration and evapo-transpiration (for example from green roofs). Storing water by means of vegetation, soil, ground and wetlands, all of which are capable of retaining water, should have priority over swift water run-off. A study by the Universiti Sains Malaysia (USM), the Department of Irrigation and Drainage and the River Engineering and Urban Drainage Research Center (Ghani and others 2008) concluded that SUDS would help solve not only flash flood problems but also water quality issues. Progress in implementing SUDS is still limited, however, and more remains to be done.

Malaysia has started to complement defensive action and structural flood controls with non-structural measures but more comprehensive approaches are needed. Traditional engineering, which can easily create false security, is decreasingly seen as a sufficient solution. In Malaysia, soil erosion, river sedimentation, proliferation of solid waste in rivers and a lack of integrated river basin management have aggravated the flood and landslide control problems, despite a number of structural efforts that have been implemented. In some cases, structural flood control systems have exacerbated rather than reduced the extent of flooding, for instance when levees lead to increased development in flood plains but fail in flood events. Integrated flood risk management means planning at a catchment level and aims at preventing human loss and minimizing economic damage, while making use of natural resources in a sustainable way. Cities worldwide are applying these principles. New York City is one example of a city that approaches flood risk management in an integrated manner.

Step 3: Mainstreaming into Development Plans

Malaysia has increasingly recognized the need to “mainstream” disaster risk reduction—that is, to consider and address risks emanating from natural hazards in strategic frameworks and institutional structures, in country and sectoral strategies and policies, and in the design of individual projects in hazard-prone countries. If not planned carefully, the urban development process can unwittingly create new forms of vulnerability and exacerbate existing ones, for example through building in hazard prone zones or failing to apply building codes. Solutions are best derived by integrating disaster risk reduction strategies and measures into the different sectors and viewing disaster risk reduction as an integral component of infrastructural and economic growth rather than as an end in its own right. Malaysia's National Physical Plan, State Structure Plan or the Local Plan offer opportunities to highlight the urgency of risk reduction and climate change adaptation (Pereira and others 2010).

Land use planning is an important tool for disaster risk reduction. Integrating land use planning into disaster risk management is an effective means for reducing floods. Zoning, maintaining wetlands and forests and restricting development in flood plains are crucial elements in any flood risk reduction strategy. Land use planning can be complemented with resettlement of people from the most hazardous areas. The 2005 German Water Act is a good example of an act that takes a spatial planning approach to flood risk management (Box 18).

Box 18. Case Study: 2005 German Water Act

The 2005 German Water Act obliges provincial governments and individuals to manage flood risk. Under the Act, flood protection is defined as an issue of spatial planning and the main underlying principle of the Act is “Give our rivers more space”. The associated legal framework requires German provincial governments to: i) conduct risk assessments, ii) draw up risk reduction plans, iii) designate more areas as flood plains and flood retention areas, iv) prohibit new housing development in flood plains, and v) mark 100 year flood zones in all land use plans. The Act also made provisions to reduce damages, for example by disallowing computing centers and oil-fired heating systems to be located in the building basements in flood zones.

Smart management for smart cities

Smarter urban growth: compact and mixed

Malaysian cities must emphasize smart urban growth characterized by a more compact urban form and mixed use developments. Compact urban design aims to counter urban sprawl by concentrating city growth in denser urban centers. Mixed use development allows access to employment, commerce and basic public services (such as education and health) within urban areas. Compactness and mixed use are related, as a higher concentration of residents in a given area creates economies of scale for more businesses. Compact urban design reduces the vehicle kilometers traveled to find services and employment, enables citizens to rely on district and integrated energy systems, and increases the convenience and cost-effectiveness of transportation by walking, bicycling or public transit, thus reducing congestion and energy use. In particular, a compact city allows for better public transportation since density shapes transit frequency and the same cost can be expended into providing more services to a more limited area.

The need for compact and efficient cities is already recognized in Malaysia, but progress in addressing urban form will require sustained effort over the long-term. Investments in urban infrastructure and the built environment ‘lock in’ the structure and shape of cities for decades. Malaysian cities are no exception in this regard, and the urban development patterns that have emerged in Malaysia’s recent past (as shown in Figure 96, Figure 97 and Figure 98) can be addressed only over time and with significant investments. Various principles for attaining compact and efficient cities are already well identified in 10MP; these include developing multiple vibrant urban cores, en-bloc redevelopment of brownfield sites, limits to urban growth, and mixed-use and transit-oriented developments. Numerous examples of the application of these principles exist worldwide – including those featured through the World Bank’s Eco2 Cities framework, and the “sprawl repair” movement that has emerged in the United States (see, for example, Tachieva 2010). On the other hand, few good examples exist within Malaysia, and will require a radical shift in mindset and approach – indeed, although Putrajaya was designed as a ‘green city’, its urban form does not reflect the principles of compact cities that have now become a priority in the 10th Malaysia Plan.

In order to provide the right incentives to reduce urban sprawl in Malaysia it is necessary to transform urban and regional land management with an explicit objective to promote compact urban spatial structure and urban form. Countries with efficient urban land use implement variations of the floor-area ratio (FAR) framework as key policy tools to define green spatial strategy. In this context, the FAR variations need to be consistent with consumer demand for accessibility and efficient operation of the public transport network. To support the growth of strategic urban arteries, cities can channel land development to these areas by using transferable development rights from slower-growing areas outside the urban arteries. In this context, it is important to foster the availability of citywide zoning maps showing the permissible FAR variations by zone to provide accurate valuation guides to developers.

The FAR regulation could be used to channel growth to desired locations and enable the emergence of high density nodes. By using FAR regulations to discriminate between land with different location premiums, cities can create the variations in the value of land that would encourage efficient use. Thus locations in the proximity of mass transit stations can be allowed higher FAR values to encourage densification. This could then lead to the coordination of land use and public transit investments

Smarter transportation policies focus on public transport

Successful transformation of urban transportation in Malaysian cities will not only reduce GHG emissions, but also offer a host of economic and social benefits, from the reduced costs of congestion. As described in earlier sections, improvements in public transport are important for many reasons – to improve livability by reducing commute times; approximating citizens to jobs, amenities and public services; and also to reduce GHG emissions and energy use. Both demand and supply management policies are required, however, for improving public transport.

On the supply side, transforming urban transportation in Malaysia requires increasing the role of public transportation while improving efficiency of the vehicle fleet. Three important initiatives have been launched to address shortages in public transportation. The main initiative is the KL MRT, which is expected to run 51km between Sungai Buloh and Kajang – an area with a population of about 1.2 million. The KL MRT will have exchange stations with the KTM Komuter and the LRT, as well as 13 stations with “park-and-ride” facilities with a view of integrating it with existing transportation infrastructure. Implementation of the KL MRT is progressing rapidly, but not without controversy among property owners and civic groups. The Tenth Malaysia Plan (10MP) targets to increase the modal share of public transport in Greater KL from 12 percent in 2009 to 30 percent by 2015 (EPU, 2010a). The 10MP also identifies bus rapid transit (BRT) as an option for the Iskandar Region (see also Box 19 on BRT in Mexico City, below). Johor’s rapid transit system (RTS) may link up with the Thomson MRT Line in Singapore, which is likely to be completed in 2018. Since 60,000 to 70,000 people travel from Malaysia to Singapore on a daily basis, a good rapid transit system to link and connect the two countries is a necessity. Finally, Rapid Penang is an improved bus service that started operations in mid-2007. Buses are modern and GPS-equipped, but do not have dedicated lanes.

Box 19. Metrobus: Bus Rapid Transit (BRT) in Mexico City

Metrobus is a 50-kilometer BRT system that runs through the main transport arteries of Mexico City. Beginning with an initial BRT corridor along Mexico City’s central Insurgentes avenue, new and larger buses were introduced, using 60 percent less fuel than the older, smaller buses that had lower passenger capacities. The new buses now make more than 450,000 trips per day. By introducing cleaner, more efficient buses, and convincing many commuters to leave their cars at home, Metrobus has reduced carbon dioxide emissions from Mexico City traffic by an estimated 60,000 to 80,000 tons a year. In addition, the project removed 800 polluting minibuses from the road and encouraged greater use of sidewalks and bicycles throughout the city.

Metrobus was supported by two World Bank projects (Introduction of Climate Friendly Measures in Transport Project and Mexico City Insurgentes Bus Rapid Transit System Carbon Finance Project) financed with GEF grants totaling USD 8.2 million, and carbon finance purchases in the amount of USD 2 million until 2013. Metrobus was the world’s first carbon finance project in the transport sector. Metrobus received the 2009 Roy Family Award for Environmental Partnership from Harvard University, in recognition of the outstanding public-private partnerships that enhanced environmental quality in Mexico City.

In Malaysia, Bus Expressway Transit (BET) services have been introduced under the National Key Result Area (NKRA) for Urban Public Transport, which is being implemented by various agencies under the Ministry of Transport, RapidKL and SPAD. Studies were also commissioned on the possibility of implementing dedicated bus rights of way such as bus lanes and Bus Rapid Transit systems similar to the one described above.

Sources: World Bank (2009c), Schipper and others (2007), PEMANDU.

Demand-side measures to reduce incentives for private vehicle use are essential

Efforts at promoting clean energy public transportation and compact cities will be ineffective in the presence of policies that subsidize the use of private vehicles. Continuing subsidies for transportation fuels, road usage and car ownership (through ease in accessing financing for vehicle purchases) maintain an environment that greatly limits individual and business incentives to shift away from private transport and distant commutes. Therefore, focusing only on the supply side will not result in the desired outcomes. For example, the Government’s initiative to lower

taxes on imported hybrid/electric vehicles will have little effect in encouraging motorists to switch to such vehicles given the existing fuel subsidies.

Removing fuel and road use subsidies – and perhaps eventually introducing fuel taxes – will be necessary to curb demand for private vehicle travel. Fuel prices in Malaysia are among the lowest in the world due to generous government subsidies. Whereas in other countries fuel is subject to taxes, in Malaysia the government subsidizes gasoline by 31 percent of the actual price and diesel by 32 percent of the actual price (Budget Speech, 2011). Fuel subsidies are poorly targeted, and could be replaced through a rebate system that is neutral to the government's budget but better focused on those households who need it most. Box 20 summarizes the mitigation measures used by Iran and Indonesia in reducing fuel subsidies.

Box 20. Subsidy Reform: Examples of Mitigation Measures in Indonesia and Iran

Indonesia increased domestic fuel prices in both March and October 2005 (more than doubling prices) and again in May 2008 (prices of fuel products were increased by 25–33 percent).

- A temporary cash transfer program to 19 million poor families, with targeting relying on existing databases, was implemented in 2005 to mitigate the impact of fuel price increases. A similar cash transfer accompanied the fuel price increases in 2008 for a period of seven months.
- Some budgetary savings from reducing subsidies were reallocated to existing education, health and infrastructure programs that benefit low- and middle-income households.
- The subsidies on kerosene are being reduced in conjunction with a program to increase the use of LPG as an alternative fuel source.

Iran eliminated all subsidies in December 2010

- Flat rate compensation is received by 80 percent of households. All households could register to receive compensation, although there was information campaign to discourage better off households to register. The compensation is deposited bimonthly on special accounts opened for the purpose of receiving compensation.
- 19 million additional accounts were opened in the preparation for the reform and ATMs were made available across Iran. The first round of compensation was deposited on the accounts a month before the reform, but the money became available only when the reform began.

Source: World Bank (2011c).

Malaysia should also consider eventually introducing congestion pricing in the major cities of KL and Penang. Box 21 below summarizes the experience of Singapore in introducing congestion pricing. Congestion pricing for Kuala Lumpur has been mulled in different occasions (most recently in 2008), but remains highly unpopular as the city is caught in a vicious circle of insufficient public transport, limited use of existing public transport, and therefore high reliance on vehicle transport. However, as Malaysia invests on expanding the MRT, it may consider imposing congestion pricing in areas that are adequately served by public transport networks.

Box 21. Congestion Pricing in Singapore

Singapore's congestion price scheme started as a World Bank project in 1975 under the name Area License Scheme (ALS). The scheme required all passenger cars entering a "congestion price zone" during restricted hours to purchase a license that was displayed on the vehicle's windscreen. The congestion price zone included the downtown business and financial district as well as the commercial, hotel, and shopping districts in the center of the city. The intent of the ALS was to reduce traffic by 25 to 30 percent but traffic reductions exceeded expectations and there is evidence that the ALS reduced peak-period traffic flow as much as 50 percent.

In 1998 the ALS was replaced with the Electronic Road Pricing (ERP) system. The ERP imposes a congestion toll on

vehicles passing through a road without requiring them to slow down or stop. Since ERP allows the toll to vary for different roads at different times of the day depending on the prevailing level of congestion, it is able to manage traffic demand in a more targeted and flexible way, to optimize the use of the road

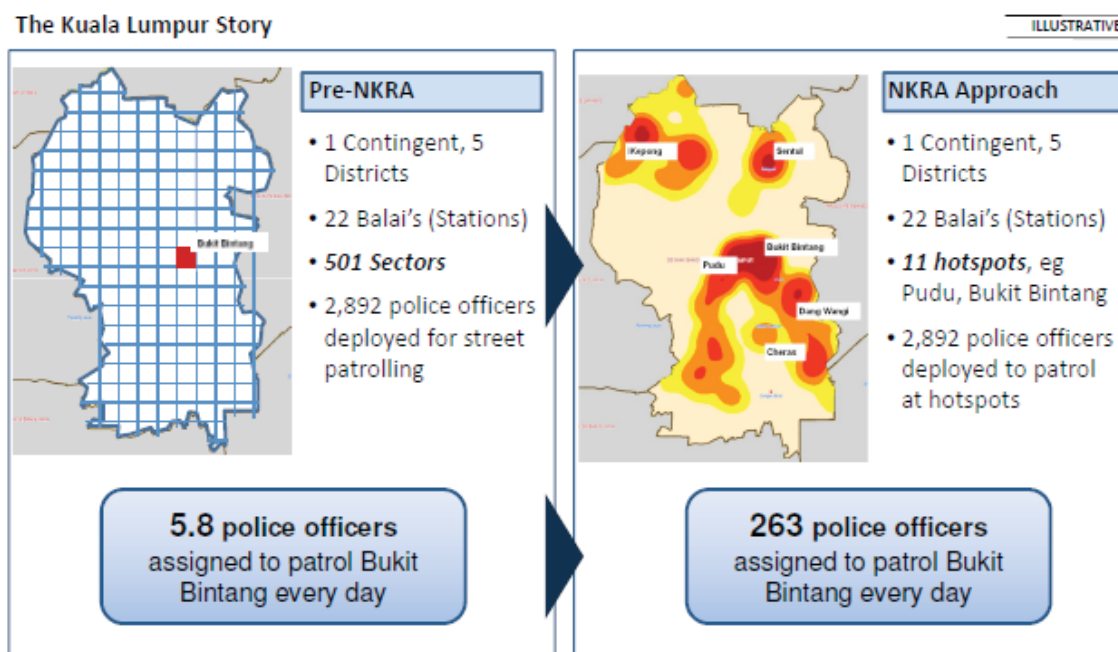
Singapore's scheme has reduced congestion but its success has been linked to continuous upgrading of the public transport system to compensate for the welfare loss of commuters, highlighting the role of both demand and supply-side policies for addressing urban congestion and mobility challenges.

Source: Goh (2002) and McCarthy (2001).

Smarter use of data

Smart cities make effective use of the huge amount of data that is collected every day. For example, San Francisco has instrumented 1,000 miles of water pipes and reduced its ratio of preventative/corrective expenditures by 11 percent. The Washington DC Water Authority has extended the life of its infrastructure with a ROI of 629 percent by smarter use of data. There are numerous other examples of the better use of data, analytics to deliver urban services like policing, education, traffic management, etc. In Malaysia, one area where smart use of data appears to be yielding good results is in crime reduction (Figure 110). To achieve the objectives under the National Key Result Area (NKRA) on crime, data collected on crime prevalence in different locations was analyzed and used to concentrate police resources in hotspots. Partly as a result of this analysis, crime was down 15 percent in Malaysia in 2010 as discussed earlier.

Figure 110. Smart use of data helped reduce crime in Kuala Lumpur



Source: PEMANDU.

Lack of data constrains policy formulation on smart growth. For example, in 2010 researchers in Malaysia used advanced GIS techniques to model urban land use changes in Penang Island from 1990 to 2005, covering the period during which the Island has experienced rapid urban growth due to in-migration from adjacent areas (Shariff and Talib, 2010). The study identified spatial variables describing environmental, physical and socioeconomic factors which influence the change in the land use. In the course of the research it was found that spatial information of urban land use change is largely lacking. Indeed, it was concluded that further studies with large number of data would be required in order to make more reliable predictions about changes in urban land use in the region.

Smart governance

Smart governance balances local decision making and inputs with a coordinated approach. Successful urban regions are effective at framing a strategic vision, at creating mechanisms to facilitate a coordinated approach to realizing desirable objectives and settling inter-jurisdictional disputes, and building the region-wide administrative capabilities to implement projects quickly and with relatively little waste. Smart governance requires moving from planning exclusively at the central level to greater collaboration with local authorities and reliance on markets. The New Economic Model recognizes these requirements and aims to promote a more consultative approach to planning and design, with the voice of citizens and businesses forming an important input. The NCIA presents another useful example where decision making and important policy decisions take place in George Town rather than Putrajaya, ensuring responsiveness to local needs and timeliness.

Some degree of inter-jurisdictional competition between cities – such as through the introduction of city-level KPIs - can lead to faster progress towards transformation of Malaysian cities. In China, fierce competition between different regions has arguably helped promote foreign direct investment, improve efficiency of public resource allocation, and foster economic growth (Lin and Liu 2000). In the Investment Climate Survey (World Bank, 2009a), firms reported that “relocating to a more business-friendly region could markedly enhance a firm’s cost advantage. For example, firms in the East estimated that moving to Klang Valley would lower their production costs by nearly 20 percent. Across regions, the mean value is about 13 percent in 2007.” (p. 78) Malaysia could consider fostering inter-jurisdictional competition by introducing KPIs to measure cities’ performance and publishing a matrix with KPIs periodically. KPIs could measure city-level performance on environmental sustainability, GHG emissions, congestion, crime and other indicators linked to their transformation into smart cities. Among other KPIs, cities could also undertake sub-national Doing Business surveys, with the aim of enhancing the overall business environment in Malaysia through greater competition.

Competition requires a degree of autonomy to local-level decision makers. This is in fact fully equivalent to implementing the New Economic Model (NEAC, 2010), which advocates “Localised autonomy in decision-making (by) empowering state and local authorities to develop and support growth initiatives, and encourage competition between localities” (NEM, page 101). The NEM recognizes that giving greater autonomy to local authorities will involve a fundamental cultural change and require performance-based accountability.

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