Outlook and Policy in 2023

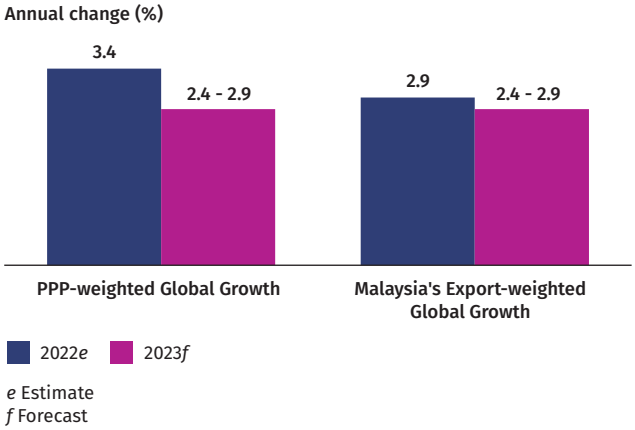
2023: MODERATE ECONOMIC GROWTH BUT UNCERTAINTY REMAINS

A challenging and uncertain global economic and financial market landscape

The global economy is expected to grow at a slower pace in 2023, with PPP-weighted global growth and Malaysia's export-weighted global growth[1] both projected to expand between 2.4% and 2.9% (Chart 2.1). Global growth will be supported by resilient labour markets, easing of supply chain disruptions, China's reopening and continued recovery in global tourism activity. However, the positive impact from the reopening of economies and pent-up demand experienced in 2022, while present, will likely wane in most economies. Tight monetary policy and elevated inflation will continue to pose headwinds to global economic activity. The tightening of monetary policy in advanced economies (AEs), could lead to spillovers to emerging market economies (EMEs) through tighter financial conditions and slower exports. Nevertheless, given moderating inflation and financial stability concerns, the pace of monetary policy tightening could be slower going forward, partially offsetting the pressure on EMEs.

The elevated inflation and tighter monetary policy in major economies such as the US and euro area are expected to weigh on consumption and investment activities. Despite overall easing amid the moderation in growth, labour markets remain tight. Resilient labour markets and modest strength in balance sheets would support household consumption in both economies. Euro area will continue to face high energy prices due to substitution away from Russian

Chart 2.1: Global Real GDP Growth



e Estimate
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Source: Bank Negara Malaysia

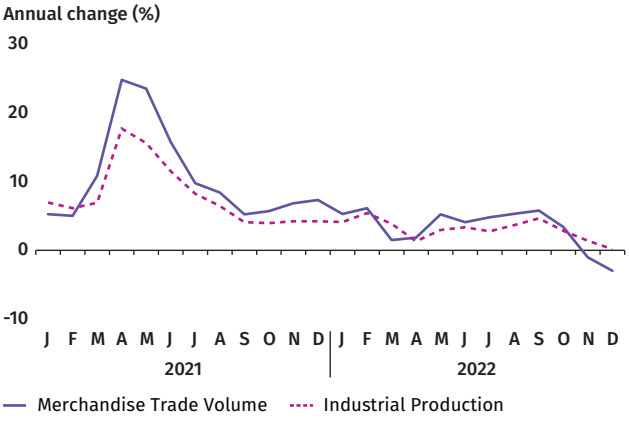
energy but its impact will be partially mitigated by significant measures to diversify energy supply and reduce energy consumption.

In contrast, economic growth in China is projected to be higher in 2023, following the withdrawal of its Zero-COVID policy in December 2022. Economic activity in China has begun to recover, with additional impetus from pent-up demand. These are expected to support growth throughout the year. Nevertheless, the property market will likely remain weak due to the credit crunch confronting developers and weak sentiments among potential homebuyers. Externally, the slower global growth would translate to weaker external demand for China's goods.

Global trade activity is expected to remain subdued, partially offset by the recovery in tourism activity. With most economies reopening in 2022, consumption of services strengthened, along with a moderation of production and trade of goods (Chart 2.2). This trend is expected to continue with a further acceleration in the recovery of tourism activity in 2023. Demand for goods will continue to be weak as growth remains soft in major economies.

[1] Aggregate growth of Malaysia's key trade partners, as weighted by their shares in Malaysia's exports. This measure of global growth is reflective of Malaysia's exports and growth prospects.

Chart 2.2: Global Merchandise Trade Volume and Industrial Production



Source: CPB Netherlands Bureau for Economic Policy Analysis

Inflation is expected to moderate in 2023 but remain elevated for many countries. The moderation reflects easing of supply chain disruptions, lower commodity prices and softening global demand. Nevertheless, inflation is projected to remain higher than the long-term average due mainly to tight supply in commodities particularly for energy, caused by the reduction of supply from Russia. In addition, tight labour markets in AEs will also contribute to wage pressures.

Monetary policy adjustments by major central banks, particularly the Fed, are expected to continue as one of the major factors influencing global financial market conditions in 2023. The pace of monetary tightening will be dependent on the evolving assessment surrounding inflation outlook and this would continue to be a source of volatility in the financial markets. Although the Fed has conveyed its resoluteness in bringing inflation down, the more recent data indicated a mixed signal regarding the strength of inflationary pressures. Investors' concerns on financial stability risks following the recent banking sector stress also adds another layer of uncertainty to market expectations regarding the path of global monetary tightening. Amidst this uncertain environment, investors' sentiment is likely to continue to be a key driver of volatility in financial markets going forward.

Beyond developments in global monetary policy, investor sentiments may be lifted amid the improvement in China's economic prospects due to the reopening of its economy. Moreover, should the ongoing uncertainty surrounding global monetary policy adjustments begin to abate, domestic economic fundamentals could become a more important factor influencing the financial markets and exchange rate developments.

Risks to global growth are tilted to the downside amid the challenging environment

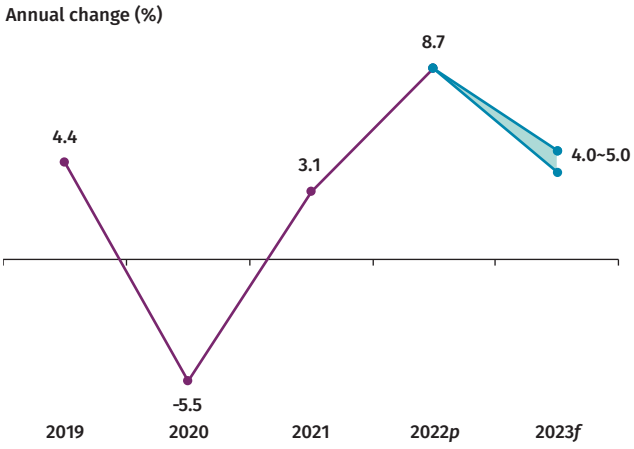
Downside risks to growth stem from escalations of geopolitical tensions which could disrupt global trade, supply chains and commodity markets. In addition, tighter-than-expected labour markets and higher commodity prices from China's reopening may keep inflation elevated for longer, necessitating tighter monetary policy. High borrowing costs, volatile exchange rate and disorderly capital outflows could lead to debt distress among vulnerable EMEs. Furthermore, tight financial conditions could exacerbate prevailing financial sector imbalances. In contrast, upside risks to global growth could arise from stronger-than-expected domestic demand. This stems from the lingering support from excess savings and resilient wage growth in several major economies.

The Malaysian economy is projected to grow between 4.0% and 5.0% in 2023, supported by firm domestic demand

For Malaysia, growth will moderate in 2023 (2022: 8.7%). The economy will continue to face challenges, particularly on the external front. Slowing global growth is expected to weigh on Malaysia's exports. Domestically, concerns remain on the elevated cost of living and input costs, and its impact on spending by households and businesses. Nonetheless, growth will be driven mainly by firm domestic demand, underpinned by further improvement in employment and income levels, continued implementation of multi-year investment projects and higher tourism activity.

In tandem with a more subdued global trade activity, as similarly observed in other economies, gross exports are expected to expand modestly at 1.5% (2022: 25.0%). Gross imports, which grew strongly in 2022, are also likely to moderate. This is attributable mainly to weaker manufactured exports and reduction of inventory build-up as global supply chain disruptions ease further.

Chart 2.3: Malaysia's GDP Growth



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Source: Department of Statistics, Malaysia and Bank Negara Malaysia estimates

As the economy normalises further, domestic demand is expected to be resilient. Private consumption is expected to record a growth of 6.1% (2022: 11.3%), underpinned by continued improvement in employment and income. Nevertheless, spending by lower-income households may continue to be impacted by the elevated cost of living. Meanwhile, private investment is projected to expand by 5.8% (2022: 7.2%), supported by the implementation of multi-year projects across all economic sectors. Ongoing efforts by firms to embark on automation and digitalisation, complemented by continued progress in large-scale transport and digital infrastructure projects would further support investment.

The gradual resolution to some of the frictions experienced in 2022 should accelerate recovery in previously underperforming sectors. The *mining* sector, whose output in 2022 was affected by plant closures for maintenance and maturing of existing oil fields, is expected to benefit from the operationalisation of new facilities. In the *construction* sector, building material costs are expected to stabilise albeit remaining at elevated levels. In addition, labour shortages are expected to ease further amid the continuing return of foreign workers. This will lend support especially to agriculture production and construction activities. Meanwhile, further recovery in international travel, including from the resumption in China's outbound tourism since 8 January 2023 is projected to boost growth in high-touch services sub-sectors.

Labour market conditions are expected to improve further in 2023, providing impetus to household spending. The strong increase in employment levels seen in 2022 is expected to continue in 2023. The pace of improvement, however, may moderate closer to the long-term average,[2] reflecting a normalisation of labour market conditions. Labour demand will remain favourable, supported by ongoing recovery in tourism-related activities and expansion plans by some manufacturers and retailers. Similarly, income prospects remain encouraging. Wages, which have begun to improve steadily in 2022, are expected to increase further in 2023. This is in line with continued expansion in employment and improvements in productivity. Wage growth will be further lifted by the wider coverage of overtime pay entitlements with the amendment to the Employment Act, and the implementation of the minimum wage hike. Of significance, policy measures remain in place, with targeted assistance such as cash transfers, various tax incentives, and social protection schemes remaining available for vulnerable households which will continue to support their spending.

The risks to Malaysia's growth projection are fairly balanced. Downside risks emanate primarily from external factors, mainly from weaker-than-expected global growth stemming from a sharp tightening in global financial markets amid tighter monetary policy or worsening sentiments. In addition, further escalation of geopolitical conflicts could dampen Malaysia's trade performance. On the domestic front, higher-than-expected inflation would lower the purchasing power of households, while a steep rise in input costs could affect firms' profits. Regardless, better-than-expected labour market condition, stronger pick-up in tourism activity, as well as the implementation of projects including from the recently re-tabled Budget 2023 would provide upside risks to the domestic growth outlook.

[2] Based on data by the Department of Statistics Malaysia, the average employment growth in 2015-2019 is estimated to be 1.7%.

Domestic demand continues to be the main driver of growth

In 2023, domestic demand, particularly private sector spending, will remain the anchor of growth for the Malaysian economy. Further improvements in labour market conditions will sustain household spending. Meanwhile, investment activity would be driven by the realisation of multi-year projects across key economic sectors. On the external front, export growth is expected to moderate in line with a slower global growth. Nevertheless, further recovery in inbound tourism and moderation in import growth will continue to provide support to net export growth.

Private consumption is projected to continue growing, albeit at a more moderate pace (2023f: 6.1%, 2022: 11.3%, long-term average 2011-2019: 7.1%). While households are expected to further adjust spending in response to elevated cost of living, consumption spending will be underpinned by continued improvements in labour market conditions. In 2023, the unemployment rate is expected to improve to ~3.5%, with more broad-based expansion in income. In addition, Government policy measures, including the implementation of a higher minimum wage by small firms,[3] the expansion in the coverage of employees entitled for overtime pay[4], the revision in individual income tax rates in Budget 2023, and cash transfers are expected to provide further support to household income.

Table 1

Real GDP by Expenditure (2015=100)

	2022*p*	2022*p*	2023*f*	2022*p*	2023*f*
	% of GDP	Annual change (%)		Contribution to growth (percentage point)	
Domestic Demand[1]	**93.1**	**9.2**	**5.4**	**8.5**	**5.1**
Private sector expenditure	75.6	10.4	6.1	7.8	4.6
Consumption	60.2	11.3	6.1	6.6	3.7
Investment	15.4	7.2	5.8	1.1	0.9
Public sector expenditure	17.5	4.3	2.7	0.8	0.5
Consumption	13.2	3.9	1.3	0.5	0.2
Investment	4.4	5.3	7.0	0.2	0.3
Gross Fixed Capital Formation	19.7	6.8	6.0	1.4	1.2
Change in stocks	**1.5**			**0.3**	**-1.2**
Net Exports of Goods and Services	**5.4**	**-1.8**	**9.7**	**-0.1**	**0.5**
Exports	71.7	12.8	2.7	8.9	1.9
Imports	66.3	14.2	2.1	9.0	1.4
Real Gross Domestic Product (GDP)	**100.0**	**8.7**	**4.0 ~ 5.0**	**8.7**	**4.0 ~ 5.0**

[1] Excluding stocks
p Preliminary
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Note: Figures may not necessarily add up due to rounding.

Source: Department of Statistics, Malaysia and Bank Negara Malaysia

Growth of private investment will be supported by the realisation of new and ongoing investment projects across key economic sectors. Further progress in key infrastructure projects such as the Malaysia Digital Economy Blueprint (MyDIGITAL) and continued drive for greater automation and digitalisation would also support investment activity. Of significance, construction work in both residential and non-residential subsectors continues to improve. Investment intentions also remain forthcoming with investment approvals in 2022 amounted to RM265 billion (2021: RM309 billion). Furthermore, ongoing efforts by the Government,

[3] Firms employing fewer than five employees.
[4] Under the new change, employees entitled to overtime pay will be those earning up to RM4,000 a month (Previously up to RM2,000 a month).

particularly through the various initiatives under the New Investment Policy to attract and facilitate the implementation of investment projects,[5] would provide additional support to investment activity.

Public investment is expected to expand further attributable to higher capital spending by both the General Government and public corporations amid continued progress of large-scale infrastructure projects, such as the East Coast Rail Link (ECRL), Light Rail Transit Line 3 (LRT3), and Pan Borneo Highway. The Government's fixed assets spending is expected to be channelled mainly towards transportation, education, public utilities, and healthcare projects. Moreover, investments by several major public corporations to support the transition to net zero carbon emission by 2050 is expected to provide additional lift to growth.

Public consumption is expected to grow at a slower pace. The moderation is due mainly to contraction in supplies and services spending due to the lapse in COVID-related expenditure. Emoluments spending, however, is expected to be higher driven by Special Additional Annual Salary Increment of RM100 for civil servants and the absorption of contract officers to permanent positions, particularly in the health and education services.

[5] The initiatives include the Project Acceleration and Coordination Unit (PACU), which provides end-to-end facilitation services for investors throughout the investment journey.

Continued expansion at a moderate pace

In 2023, most economic sectors are projected to expand at a more moderate pace amid the expectation of slower global growth and normalisation from the high growth recorded last year. Broadly, growth will be driven by continued expansion in consumer and tourism-related subsectors while export-oriented subsectors are expected to moderate in line with slower global growth. Meanwhile, the easing of supply chain disruption and resolution of labour shortages will also lend support to all economic activities.

Table 1

Real GDP by Kind of Economic Activity (2015 = 100)

	2022*p*	2022*p*	2023*f*	2022p	2023*f*
	% of GDP	Annual change (%)		Contribution to growth (ppt)[1]	
Services	58.2	10.9	5.0	6.2	2.9
Manufacturing	24.2	8.1	4.0	2.0	1.0
Agriculture	6.6	0.1	0.7	0.0	0.0
Mining and quarrying	6.4	3.4	2.0	0.2	0.1
Construction	3.5	5.0	6.3	0.2	0.2
Real Gross Domestic Product (GDP)	**100.0**[1]	**8.7**	**4.0~5.0**	**8.7**	**4.0~5.0**

[1] Figures may not necessarily add up due to rounding and exclusion of import duties component
p Preliminary
f Forecast
Source: Department of Statistics, Malaysia and Bank Negara Malaysia

Growth in the *services* sector is expected to be underpinned by consumer- and tourism-related activities amid further recovery in global tourism activity. Business-related services will remain supportive of growth, although at a slower pace, in line with the continued expansion in construction activity and external demand. Furthermore, sustained demand for data services, mainly in support of e-commerce and e-payment activities, is expected to provide further impetus to the information and communication subsectors.

Growth of the *manufacturing* sector is expected to be moderate. The E&E cluster is projected to grow below its long-term average of 6.2%[6] in tandem with the anticipated slowdown of global semiconductor sales. Growth in

[6] Average between year 2016 to 2019.

the consumer-related manufacturing cluster is expected to be lower amid normalisation in household spending activities. Meanwhile, the construction-related manufacturing cluster is forecasted to record a modest growth, supported by investment in structures. The primary-related cluster is projected to expand at a faster pace, partly supported by the higher capacity utilisation at a major oil refinery in Johor.

The *agriculture* sector will be supported mainly by higher oil palm production, as labour supply improves. Heavier rainfall in the early part of the year is also expected to improve soil moisture, thereby increasing oil palm yields in the later part of the year. Additionally, the gradual recovery in raw material supplies, especially fertiliser and animal feed, is anticipated to support growth in livestock and other agriculture subsectors.

The *mining* sector growth is projected to moderate. The operationalisation of new facilities located in Peninsular Malaysia and higher production in existing oil and gas facilities, including the Block SK320 located in offshore East Malaysia, will provide support to growth. This will offset the loss of output from maintenance-related closures in several facilities and maturing oil and gas fields.

The *construction* sector is expected to record a stronger growth in 2023, buoyed mainly by continued improvement in activities within the civil engineering and residential subsectors. Faster progress of existing large transportation and utility projects will lift growth in the civil engineering subsector. Meanwhile, higher new housing launches, in tandem with the expected expansion in demand following better income and employment prospects, will provide support to the residential subsector.

Potential Output and the Output Gap of the Malaysian Economy

Potential output is the highest non-inflationary level of output that can be produced in an economy. It indicates the economy's sustainable growth path, based on prevailing factors of production (i.e., labour, capital) and productivity.

In 2022, potential output[7] continued to expand at a faster pace of 6.4% (2021: 2.7%, 2011-2019 average: 4.9%). The expansion was driven by an improvement in labour force participation (2022p: 69.3%; 2021: 68.6%) and investment activity (2022: 6.8%, 2021: -0.9%), as well as the lower base effects in 2021. Expansion in investment activity has resulted in a stronger total factor productivity (TFP) growth as firms undertook more investments in productive capital (e.g., machinery and equipment, and information communications technology).

Despite the faster expansion in potential output, the negative output gap continues to narrow in 2022 (2022: -0.4%, 2021: -2.5%)[8] as actual output growth (8.7%; 2021: 3.1%) outpaced potential output growth. This was mainly underpinned by the higher utilisation of capital expenditure and labour following the lifting of containment measures and normalisation of economic activity. The narrowing slack in the economy had contributed to some signs of demand-driven price pressures, as indicated by the increase in core inflation of 3.0% in 2022 (2021: 0.7%) amid the high-cost environment.

Going forward, the negative output gap is expected to turn positive in second half of 2023, with actual output averaging close to the potential output for the year. The closing of output gap is driven by higher actual output growth of 4.0-5.0%, which is projected to outpace potential output growth of 3.5-4.5% following normalisation of the latter from its high base in 2022. Potential output is projected to revert to pre-crisis growth of 4.0-5.0% in the medium-term, supported by continued implementation of automation and digital infrastructure projects which will enhance productivity.

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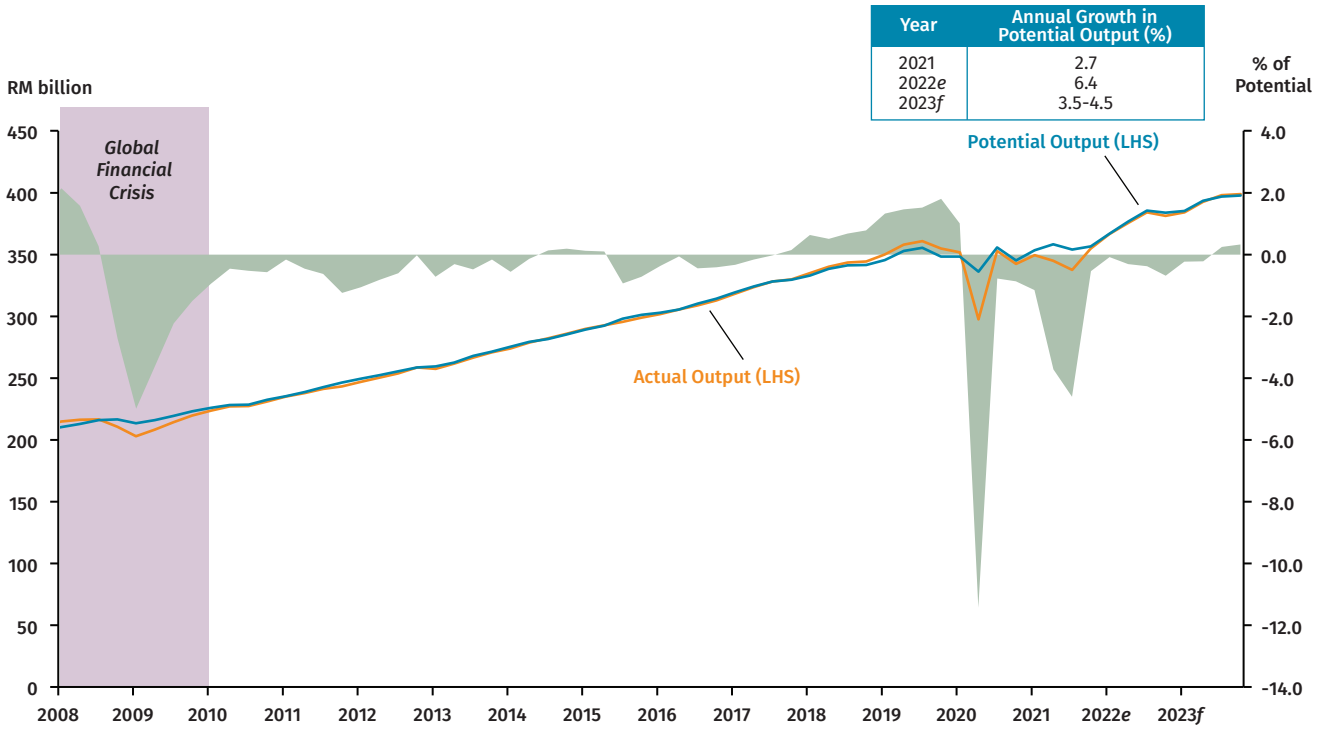
[7] Potential output is derived through an average of several methodologies including Production Function, Laubach-Williams model, Kalman Filter and DSGE model.

[8] The output gap is formally defined as $\frac{\text{(Actual output level - Potential output level)}}{\text{Potential output level}} \times 100\%$

Chart 1: Actual and Potential Output



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Source: Department of Statistics, Malaysia and Bank Negara Malaysia estimates

Export and import growth to moderate in 2023

Following two consecutive years of double-digit expansion, Malaysia's gross export growth is expected to register a modest growth similar to the trend in other economies. This is in line with the weaker global growth outlook, especially in Malaysia's key trade partners in the advanced economies. Nevertheless, the impact would partly be mitigated by the reopening of China's economy and continued growth in regional economies.

Manufactured exports, which contributed 84% of Malaysia's total exports, are projected to expand at a slower pace of 2.7% in 2023 (2022: 22.3%). This is due to broad-based moderation across the E&E and non-E&E segments. Slowing demand for consumer electronics is expected to weigh on global semiconductor sales.[9] This is corroborated by insights from the Bank's regional economic surveillance, which indicated that some E&E firms have started to experience lower order volume. However, the greater adoption of automation and digitalisation globally will continue to provide some underlying support to exports in 2023. Slower external demand would also weigh on exports of non-E&E manufacturing segment. Nevertheless, this would be partially cushioned by the ramp-up of production of a major oil refinery in Johor.

Commodities export is projected to decline by 5.0% in 2023 (2022: 41.7%), driven mainly by lower commodity prices. Crude palm oil prices are expected to ease after hitting record highs last year, weighing on agricultural exports. This more than offset improvement in oil palm output following receding labour shortages. Similarly,

[9] In November 2022, World Semiconductor Trade Statistics (WSTS) projected a decline of 4.1% for global semiconductor sales in 2023 (2011-2019 average: 4.1%).

lower mineral prices, in tandem with the slowdown in global oil demand, would weigh on mineral export growth in 2023.

Risks to export growth are tilted to the downside, stemming mainly from slower-than-anticipated external demand and further escalation of geopolitical tensions. Nevertheless, there are upside risks to export growth. These include faster recovery in China, which could provide support to global trade activity.

Gross import growth is projected to slow down to 1.1% in 2023 (2022: 31.3%), due to a more moderate increase in domestic demand and slower manufactured export growth. Intermediate imports are expected to record a smaller growth. This is following slower inventory build-up amid easing supply chain disruptions. Continued expansion in domestic demand, albeit at a more moderate pace, would provide support to import growth of consumption and capital goods.

Table 1

External Trade

	2015-2019 average	2022*p*	2023*f*
	Annual change (%)		
Gross exports *of which:*	**5.6**	**25.0**	**1.5**
Manufactured	7.6	22.3	2.7
Agriculture	-0.6	23.3	-8.6
Minerals	-3.1	67.6	-1.2
Gross imports *of which:*	**4.7**	**31.3**	**1.1**
Capital goods	1.2	15.8	1.6
Intermediate goods	3.1	29.2	0.2
Consumption goods	8.4	24.0	1.8
Trade balance (RM billion)	**109.5**	**255.5**	**265.3**

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Source: Department of Statistics, Malaysia and Bank Negara Malaysia

Current account to record continued surplus

The current account of the balance of payments is expected to register continued surplus of 2.5 – 3.5% of GDP in 2023 (2022: 2.6% of GDP). This is driven by continued goods surplus and lower deficit in services account.

The goods account is expected to remain in surplus, as moderation in export growth is offset by slower import growth. The services account is projected to register a smaller deficit, reflecting further recovery in the travel account. Of significance, the travel account is expected to turn around into a surplus position this year after recording a deficit for three consecutive years. This is in tandem with the continued recovery in tourist arrivals towards the pre-pandemic level. The reopening of China's international borders is also expected to provide further impetus to inbound tourist arrivals and expenditure. Nevertheless, the overall services account would remain in deficit. This reflects the continued reliance on foreign services particularly in the transportation segment.

The primary income account is projected to remain in deficit. This is attributable mainly to the continued income payment accrued to foreign investors in Malaysia. The secondary income account is expected to register a larger deficit, driven by the higher outward remittances by foreign workers.

Table 2

Current Account of Balance of Payments[1]

Item (Net)	2022*p*	2023*f*
	RM billion	
Goods	169.3	173.1
Services	-45.4	-33.6
Primary income	-63.6	-64.0
Secondary income	-13.1	-18.3
Current account balance	**47.2**	**57.2**
% of GDP	*2.6*	*2.5 ~ 3.5*

[1] In accordance with the Balance of Payments and International Investment Position Manual, Sixth Edition (BPM6) by the International Monetary Fund (IMF)

p Preliminary
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Note: Figures may not necessarily add up due to rounding

Source: Department of Statistics, Malaysia and Bank Negara Malaysia

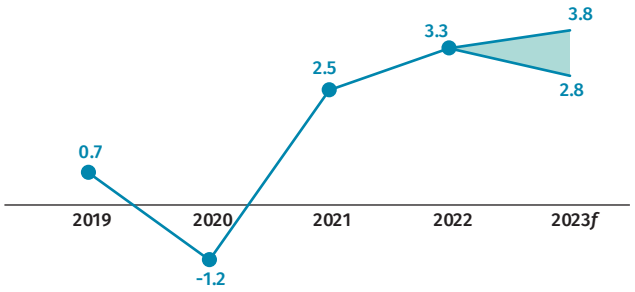
Both the headline and core inflation are projected to average between 2.8% and 3.8% in 2023

After increasing for most of 2022, headline inflation has begun to moderate since 4Q 2022, mainly reflecting the moderation in global cost factors. In 2023, the more moderate global cost environment is expected to prevail given improvements in supply constraints and softening global demand. Prices of key commodities such as oil and agricultural products are projected to average lower and contribute to lower headline inflation. Existing domestic price controls and subsidies will also continue to partly contain inflationary pressures. Consequently, headline inflation is expected to be on a moderating trend over the course of 2023.

Despite the moderation, headline inflation will, on average, remain elevated in 2023 due to several key factors. The continued strength in domestic demand and improvement in the labour market will keep core inflation elevated in the near term. The elevated core inflation will trend above headline inflation for a few months in 2023. In addition, gradual subsidy rationalisation effort[10] will also contribute to some upward impact to inflation. On balance, both headline and core inflation are projected to average between 2.8% and 3.8% in 2023.

[10] This refers to the upward revision in electricity surcharge applied to medium voltage and high voltage customers among industry participants, with a surcharge at the rate of 20sen/kWh, an increase from 3.7sen/kWh previously. It has been in effect since January 2023.

Chart 2.4: Malaysia's Headline Inflation, Annual Change (%)



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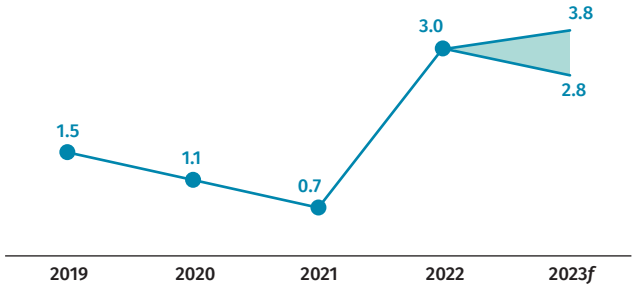
Source: Department of Statistics, Malaysia and Bank Negara Malaysia estimates

Chart 2.5: Malaysia's Core Inflation, Annual Change (%)



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Note: Core inflation is computed by excluding price-volatile and price-administered items. It also excludes the estimated direct impact of consumption tax policy changes

Source: Department of Statistics, Malaysia and Bank Negara Malaysia estimates

The outlook for inflation in 2023 is highly uncertain, with risks tilted to the upside. Global commodity prices, one of the major causes for the rise in domestic inflation in 2022, could again drive inflation higher should the geopolitical conflict in Ukraine worsen. Upside risks to inflation also stem from extreme weather conditions, stronger-than-expected demand from China, and higher input costs due to developments in global financial markets. The extent of inflationary pressures also continues to be highly subject to any changes to domestic policy on subsidies and price controls.

Amid prolonged cost pressures throughout the past two years,[11] prices going forward may continue to catch up to the significant cost increases that had already happened, which could cause greater persistence in inflation and delay the reversion of inflation to its long-term average. The expectations of stronger persistence may in turn affect employees' wage-bargaining and firms' price-setting decisions, which will drive additional rise in general price pressures. Currently, however, the risk of a wage-price spiral is assessed to be remote, with long-term inflation expectations remaining well-anchored. Furthermore, wage growth is not estimated to outpace productivity growth.[12]

Downside risks to inflation stem primarily from more subdued global commodity prices given the environment of weaker global growth. On the domestic front, if pent-up demand that had in part supported household spending in 2022 dissipates at a faster rate, inflationary pressures may abate.

Domestic monetary and financial conditions to remain supportive of financial intermediation activities

In terms of domestic financial conditions, against the backdrop of firmer economic recovery in 2022, the OPR was adjusted gradually with resulting pass-through to wholesale and retail rates. In 2023, notwithstanding these adjustments in interest rates, the demand for financing is expected to remain sustained by the continued expansion of economic activity and the improvement in labour market conditions. The strengthening of domestic labour market and income will also contribute to the improvement in the quality of prospective borrowers. Furthermore, the supply of credit remains forthcoming, enabled by banks' healthy capital, liquidity buffers and willingness to lend.

Meanwhile, developments of domestic financial markets and exchange rates will be influenced primarily by three key external risk factors. First, are the expectations surrounding the path of global monetary policy. Signs of more persistent global inflationary pressures could drive expectations of tighter monetary policy, leading to some volatility in domestic capital flows and exchange rate movements. Second, is the continued uncertainty surrounding geopolitical conflicts and global growth outlook, which could drive investor risk aversion. Third, is the impact from the reopening of China's economy, which could lift sentiments towards regional financial markets. Notwithstanding the positive effect, the reopening could lead to a higher-than-expected inflation that warrants tighter monetary policy responses by its central bank and induces greater volatility in its financial markets. Such volatility can have spillovers to Malaysia's financial markets but these are expected to remain manageable, reflecting the structural decline in the degree of financial market spillovers from China over the years particularly since the devaluation of the Chinese renminbi in 2015.[13] On the domestic front, progress on key reforms together with sound economic policies would provide impetus for sustained inflows and drive continued improvement in domestic financial markets. More recently, there has been increased global market volatility due to stress in the global banking sector, but this had minimal impact on the Malaysia's financial sector beyond some weaknesses in the equity market. The onshore bond market and the ringgit also continued to trade in an orderly manner.

[11] Price pressures were more pronounced for 'salient' items, particularly food items. 'Salient' items refer to those that are purchased frequently or take up a large share of consumption basket (De Fiore et al., 2022).

[12] For further details, please refer to the box article on 'Analytical Approaches to Assessing Labour Market Conditions and Implications to Monetary Policy'.

[13] The assessment was based on the methodology proposed by Diebold and Yilmaz (2012) to derive volatility spillover indices using daily stock prices, exchange rates and 10-year government bond yields data from Malaysia, China and the US. US assets were included to account for US' dominance in global financial markets. This approach enabled the measurement of the spillover impact of China's financial market volatility on Malaysia's financial market volatility.

In the face of these external challenges, Malaysia's resilient economic fundamentals and financial system will ensure that domestic financial intermediation activities continue to be smooth and orderly. Among others, the economy continues to post a net external creditor position and healthy balance of payments position with a current account surplus, which will buffer against adverse external shocks. The presence of domestic institutional investors, along with a strong banking system, will contain the impact of outflows and mitigate the spillovers to financial intermediation. Furthermore, adjustments in asset prices will remain supported by the healthy trading volume coupled with the participation of diverse types of investors in the market. The flexible and market-determined ringgit exchange rate will also facilitate the necessary macroeconomic adjustments in response to external shocks.[14] Importantly, the Bank remains committed to ensure orderly financial markets with liquidity and foreign exchange operations and tools ready in place to mitigate excessive market volatility in supporting continued financial intermediation.

Monetary policy will remain supportive of a sustainable economic growth while ensuring an environment of price stability

Similar to other economies, 2023 will be a challenging year for the Malaysian economy. A more moderate economic growth is projected, while inflation is expected to remain elevated. In this environment, monetary policy will focus on managing inflation risks while supporting a sustainable economic growth. The MPC will also continue to consider the cumulative impact of past OPR adjustments in formulating any future decisions, given the lag effects of monetary policy on the economy.

The risks surrounding growth are fairly balanced as downside risks particularly from external factors are offset by stronger domestic demand. Tighter-than-expected global monetary policy and escalation of geopolitical conflicts could result in weaker-than-expected global growth. While external demand may weaken, upside risks could arise from stronger-than-expected labour market and tourism activity as well as the implementation of projects including from the recently re-tabled Budget 2023.

Meanwhile, more persistent[15] domestic inflationary pressures continue to be a key risk to the inflation outlook. While global cost factors have shown signs of moderation, inflationary pressures continue to depend on global commodity price and financial market developments, as well as changes in domestic policies on subsidies and price controls. More fundamentally, amid risks from changes to price-setting behaviour, monetary policy will also need to consider the inflation dynamics that will prevail as shorter-term supply shocks abate.

Monetary policy is aimed at the path that is most consistent with keeping inflation low and stable and supporting a sustainable growth over the medium-term. However, the current environment remains uncertain and as such, the MPC's decisions will continue to depend on the evolving conditions and their implications on the overall outlook of domestic inflation and growth. Any potential adjustments to the degree of monetary accommodation will be carefully calibrated, taking into consideration the balance of risks surrounding inflation and growth.

[14] For further details, please refer to the box article in 2022 BNM Annual Report on 'The Exchange Rate and The Malaysian Economy'.

[15] Inflation persistence is defined as speed with which inflation returns to baseline after a shock (Willis, 2002).

Analytical Approaches to Assessing Labour Market Conditions and Implications to Monetary Policy

Analysis on the extent of slack or tightness in the labour market, and whether they are easing or increasing, are key assessments informing the growth and inflation outlook. In Malaysia, the strong economic recovery has contributed to the narrowing of slack in the labour market since the fourth quarter of 2021. Labour market developments and outlook are one of the many pieces of information that the Monetary Policy Committee (MPC) considers before arriving at its decision to raise the Overnight Policy Rate (OPR) in 2022. This article presents new indicators and analytical approaches the Bank has undertaken in assessing labour market conditions since the COVID-19 pandemic.[1] It also discusses nuances that shed light on how reports of labour shortages are viewed against the overall assessment of continuing slack.[2] Finally, this article provides insights on how labour market developments inform monetary policy considerations in balancing the risks to inflation and growth.

Assessment on labour market slack informs the degree of capacity utilisation[3] in the economy. During the pandemic, this was key in deploying adequate support to mitigate the impact of economic shocks

In assessing the strength of the economic recovery and developments in prices, labour market conditions provide crucial pieces of information. Workers' income is a key driver of private consumption, which makes up almost 60% of Malaysia's Gross Domestic Product (GDP). The strength of wage growth is also factored into inflation forecasts, as firms may pass on higher wage costs in the form of higher product prices, particularly if wage acceleration exceeds productivity. Labour utilisation, which measures the degree to which available labour supply is employed, also provides key insights. High labour utilisation (tight labour markets) may prompt employers to raise wages to attract labour supply. On the other hand, slack in the labour market may suggest prevalent labour underutilisation posing risks to growth. Taken together, the extent of slack in the labour market is a key consideration on whether monetary policy adjustments are needed to provide the appropriate conditions for sustainable growth, and low and stable inflation.

Slack in the labour market may be formally defined as the shortfall in demand for labour, relative to the supply of available workers in the economy. This happens when firms require fewer workers given lower demand for goods and services, compared to a relatively abundant labour force who are available and willing to work. When slack or 'spare capacity' prevails in the labour market, this would typically manifest in a high unemployment rate and low wage growth.[4] This, in turn, points to weaker GDP growth and downward pressure on inflation. Conversely, when the need for labour is higher due to stronger demand for workers beyond what is available, the labour market is said to be tight, with low unemployment and high wage growth. This would indicate stronger GDP growth and upward pressure on inflation. The labour market can be said to be at equilibrium when the demand for labour is roughly equal to the supply of workers. At equilibrium, economic demand matches the amount of goods and services that can be produced with available workers, while employment and wages sustain growth without increasing inflationary pressures. The economy can be said to be operating at 'full employment'.

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[1] Assessments contained within this box article are meant to provide insights on the approaches Bank Negara Malaysia has undertaken to assess labour market conditions. Discussions on outlook are limited to Bank Negara Malaysia's assessment on the likely path of improvement for the labour market. They are not intended as guidance and should not be taken to infer future MPC decisions.

[2] Throughout this article, comparisons are drawn mostly against the US, which has been featured prominently in international discussions on labour utilisation during the pandemic and recovery period.

[3] Capacity utilisation measures the intensity with which an economy makes use of its resources, namely labour and capital, to produce output.

[4] A possible situation in which slack prevails yet unemployment rate is relatively low is when slack manifests itself in the form of higher underemployment or labour force exits. This is discussed later in the article.

The unemployment rate is the most conventional measure of labour utilisation.[5] A more analytical approach to measuring slack compares the current state of labour utilisation to what it would be if the economy were operating at equilibrium. In this regard, a standard measure is the 'unemployment gap', which refers to the difference between the actual unemployment rate, and the estimated non-accelerating inflation rate of unemployment (NAIRU).[6] However, the COVID-19 pandemic called into question the reliability of unemployment gap estimates, as the economic shock led to a few measurement complications. Specifically, there is difficulty in estimating NAIRU, which is typically estimated using methods such as pure statistical filtering and the commonly-adopted Kalman filter.[7] Economic shocks, however, tend to result in significant revisions to these NAIRU estimates, rendering them less reliable for policy assessment. Such significant revisions are a common drawback of statistical filters, particularly around turning points in the business cycle.[8]

Measuring slack directly using the unemployment rate during the pandemic shock was also problematic. This arises from the direct and idiosyncratic impact of the pandemic and the impact of the containment measures on the labour market. Beyond increases in unemployment, pandemic-induced shocks led to other sources of labour underutilisation. Restrictions on economic activity and movements resulted in an unprecedented increase in underemployment.[9] Additionally, many individuals also exited the labour force during the height of the pandemic.[10] These workers would have worked full time under normal economic conditions and might quickly return when demand and hiring conditions improve as restrictions were lifted. Thus, they may still be considered as part of a broader 'potential' labour supply when assessing labour utilisation. The normal headline unemployment rate, which only measures the extent the available labour force is employed, does not capture these nuances. Therefore, the unemployment rate is not very descriptive of the true extent of labour market slack during this period.

In view of these issues, several central banks started complementing the conventional unemployment rate in their assessment of labour market slack with supplementary labour utilisation indicators. One approach is to widen the coverage of underutilised workers to include, first, a broader segment of the working age population beyond those who are actively seeking employment, and second, underemployed persons. This was particularly relevant with falling labour force participation and higher incidence of discouraged workers due to the adverse economic shocks. The US Bureau of Labor Statistics (BLS) produces the U-6 unemployment rate (Chart 1), which goes beyond the unemployed to include persons marginally attached to the labour force and part-time employment due to economic reasons.[11] Another example is the Eurostat's labour market slack indicator (Chart 2), which aims to measure the total sum of all unmet need for employment. The unemployment rate is supplemented by an extended labour force, which includes underemployed part-time workers, persons seeking work but are not immediately available, and persons available for work but not seeking work due to the economic downturn.

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5 The use of the unemployment rate as a measure of slack is underpinned by the Phillips curve relationship, which is the historically observed trade-off between inflation and unemployment. The intuitive explanation is that lower unemployment rates signal higher labour demand, which can put upward pressures on wages and inflation. However, there has also been growing evidence that this relationship has weakened (i.e., flattening Phillips curve) over time; example: Gali and Gambetti (2019).

6 Sometimes referred to as 'structural unemployment', the NAIRU is theoretically the lowest rate of unemployment that can be sustained (given prevailing economic conditions) without leading to wage increases and consequently inflation. True values of NAIRU are unknown and unobservable.

7 Kalman filter is an algorithm that enables estimation of unobservable variables, using a series of observed measurements over time. The estimation is conducted in state-space format, which consists of a 'signal' equation (which in this case, relates the unemployment gap and inflation as per the Phillips curve), and a 'state' equation (which generally models NAIRU as a random walk).

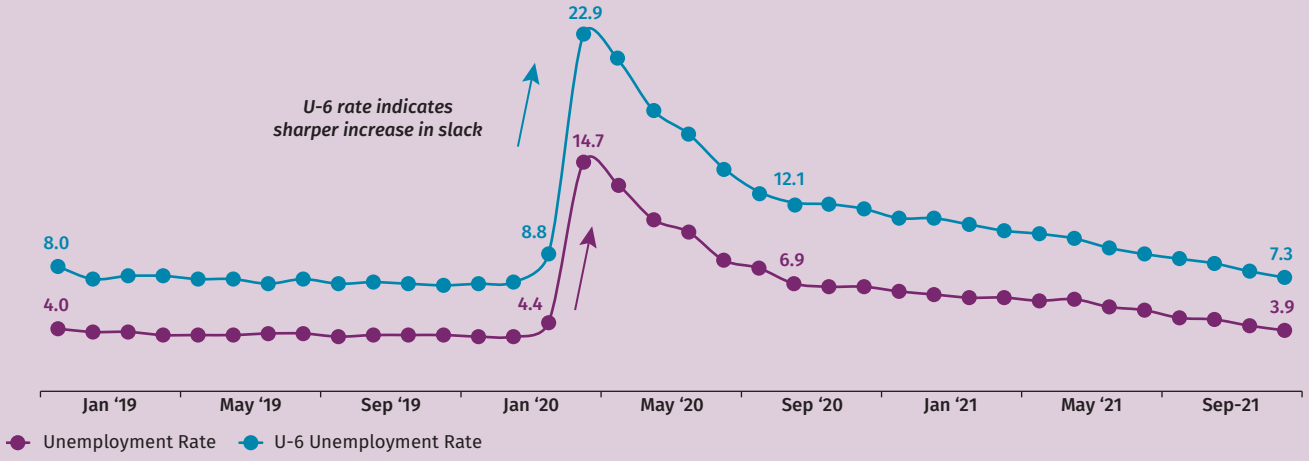
8 These issues have caused a rethinking of how to estimate NAIRU, such as incorporating other demand or labour market indicators, and introducing structural breaks. Examples: Ruberl et al. (2021); Guillemette (2021).

9 Time-related underemployment is defined as those who were employed less than 30 hours per week due to the nature of their work or because of insufficient work and were able and willing to accept additional hours of work. Source: Department of Statistics, Malaysia.

10 Likely discouraged by the lack of economic opportunities or inhibited due to increase in caregiving obligations. For further discussion on the impact of the pandemic on the labour market, please refer to "Getting the Great Reset Right: Structural Issues in the Labour Market in the Post-COVID-19 World" in Bank Negara Malaysia's Economic and Monetary Review 2020.

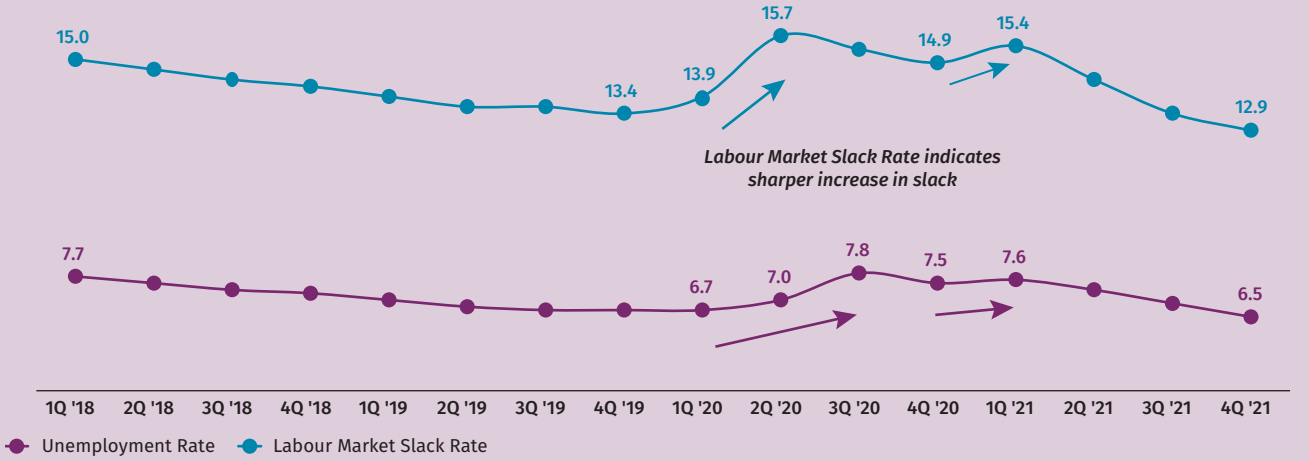
11 Persons marginally attached to the labour force are those who currently are neither working nor looking for work but indicate that they want and are available for a job and have looked for work sometime in the past 12 months. Meanwhile, persons employed part-time for economic reasons are those who want and are available for full-time work but have had to settle for a part-time schedule. Both measures are estimated from household survey data. Source: Employment Situation Summary, US Bureau of Labor Statistics.

Chart 1: US: Unemployment Rate vs. U-6 Rate



Source: Federal Reserve Economic Data

Chart 2: EU: Unemployment Rate vs. Labour Market Slack Rate

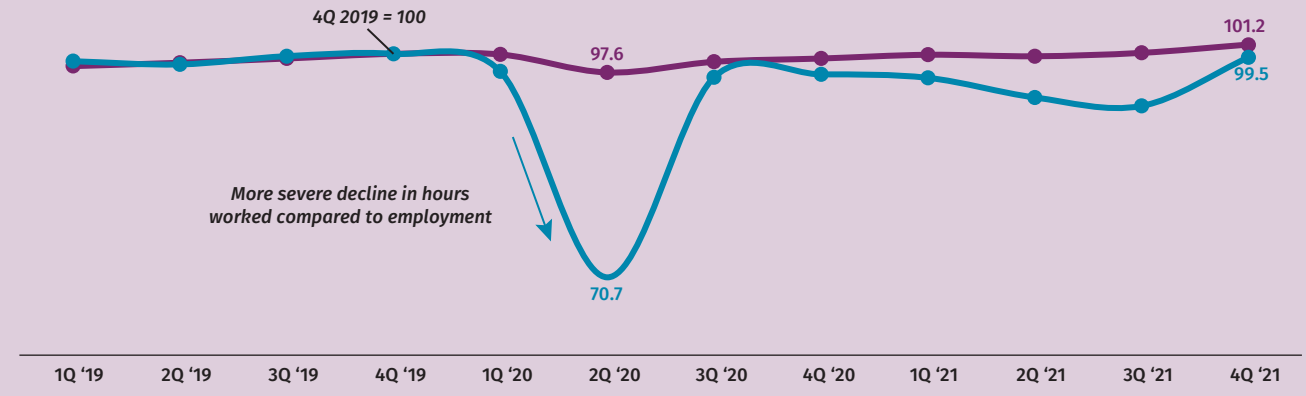


Source: Eurostat

In both cases, the broader measures of underutilisation showed that the impact of containment measures led to significantly greater slack in the labour market than suggested by the unemployment rate. In the second quarter of 2020, for example, while the unemployment rate increased by 10.3 percentage points (ppt) in the US, the U-6 increased more significantly, by 14.6 ppt. Similarly in the EU, the unemployment rate increased only by 0.3 ppt while the labour market slack rate jumped 1.8 ppt. As the pandemic progressed, differences in how these supplementary slack measures evolved demonstrated differing policy choices. In the US, an earlier economic reopening and resumption of economic activities led to steady and synchronised declines in both the unemployment rate and the U-6. Meanwhile, in the EU, re-impositions of containment measures amid the Delta wave led to a second and more pronounced increase in the labour market slack rate in the first quarter of 2021 compared to the unemployment rate. Subsequently, both rates declined steadily as European economies fully reopened.

For Malaysia, the onset of the pandemic resulted in a significant decline in hours worked, following the implementation of the first Movement Control Order (MCO 1.0) in the second quarter of 2020. This decline cannot be fully accounted for by the increase in unemployment alone (Chart 3). In fact, the labour force also suffered a decline, while the population outside the labour force (POLF) increased significantly during the same period

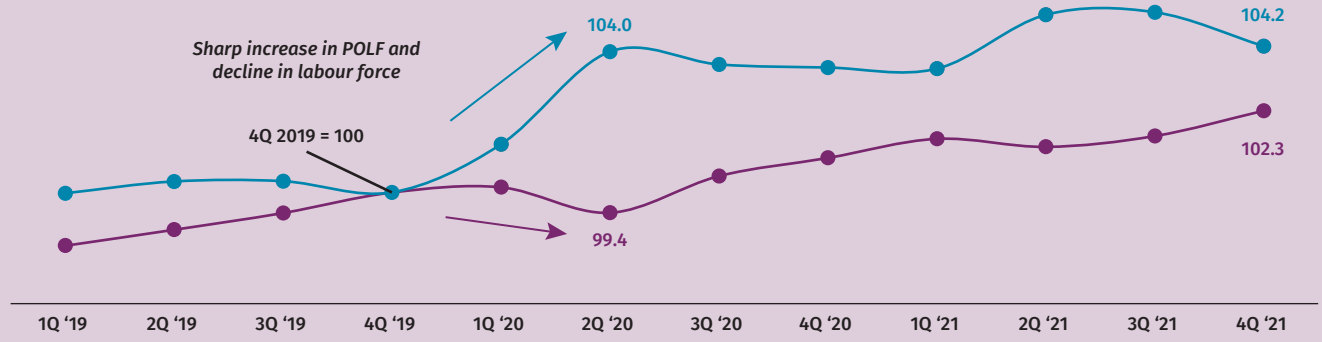
Chart 3: Malaysia: Employment vs. Hours Worked (Indexed, 4Q 2019 = 100)



Note: Y-axis = Indexed levels, with 4Q19 = 100. Indexed levels are estimated by Bank Negara Malaysia staff using data from Department of Statistics, Malaysia.

Source: Department of Statistics, Malaysia and Bank Negara Malaysia estimates

Chart 4: Malaysia: Labour Force vs. Population Outside the Labour Force (POLF) (Indexed, 4Q 2019 = 100)



Note: Y-axis = Indexed levels, with 4Q '19 = 100. Indexed levels are estimated by Bank Negara Malaysia staff using data from Department of Statistics, Malaysia.

Source: Department of Statistics, Malaysia and Bank Negara Malaysia estimates

Chart 5: Malaysia: Unemployed vs. Underemployed Workers (Indexed, 4Q 2019 = 100)

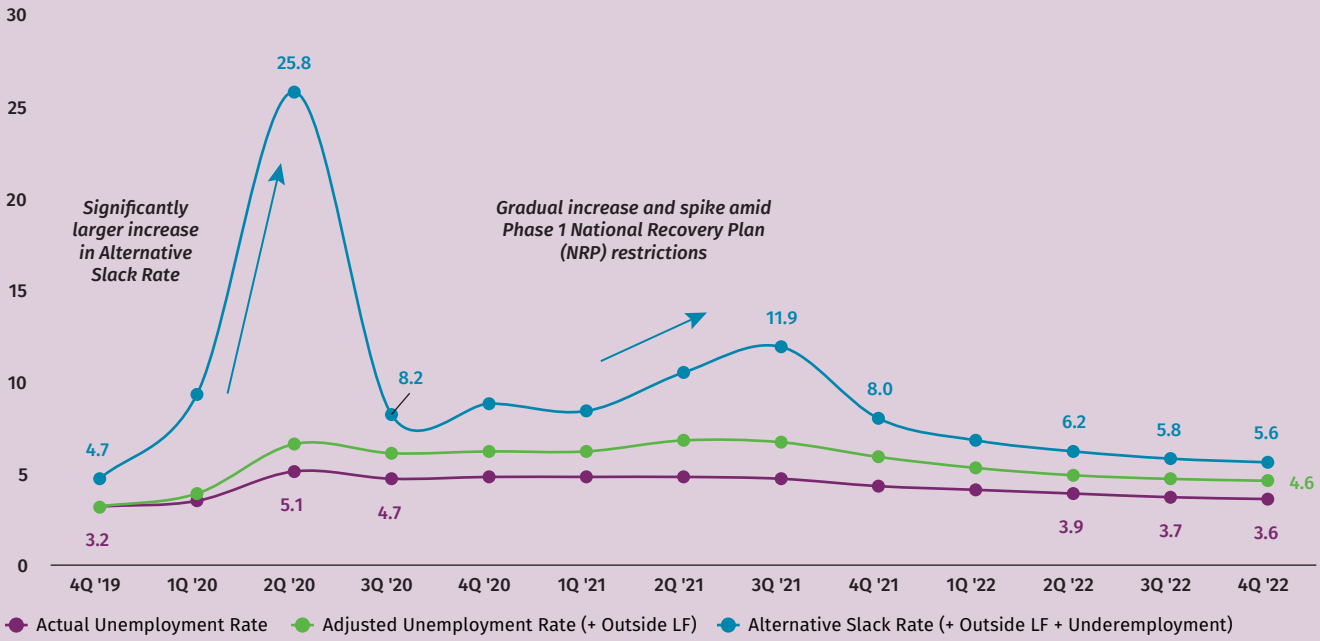
Note: Y-axis = Indexed levels, with 4Q19 = 100. Indexed levels are estimated by Bank Negara Malaysia staff using data from Department of Statistics, Malaysia.

Source: Department of Statistics, Malaysia and Bank Negara Malaysia estimates

(Chart 4). This likely reflects greater labour force exits, which add to the 'shadow labour force'.[12] Additionally, the pandemic resulted in a significant increase in underemployed persons among workers who remained employed (Chart 5). Such observations suggest that these groups should be included in broader labour utilisation measures to further account for potential spare capacity.

To better account for the situations described above, the Bank developed supplementary labour utilisation rates by adding to the pool of unemployed workers: i) workers who exited the labour force due to the pandemic to derive the 'adjusted unemployment rate', and; ii) workers who became underemployed to derive the 'alternative slack rate'. Both measures are expressed as a proportion of a 'potential' labour force[13] (Chart 6).

Chart 6: Malaysia: Unemployment Rate vs. Supplementary Labour Utilisation Rates



Note: Adjusted Unemployment Rate and Alternative Slack Rate are estimated by Bank Negara Malaysia staff using data from Department of Statistics, Malaysia. Bank Negara Malaysia estimates of underemployment include employed persons who were temporarily not working due to movement controls.

Source: Department of Statistics, Malaysia and Bank Negara Malaysia estimates

Similar to the advanced economies (AEs), these broader measures of labour utilisation suggest that slack increased much more significantly than indicated by the unemployment rate during the onset of the pandemic in the second quarter of 2020. When restrictions were progressively tightened beginning the fourth quarter of 2020 amid the Delta wave, the alternative slack rate rose steadily. It spiked further when containment measures were re-imposed under National Recovery Plan (NRP) Phase 1 in the third quarter of 2021. In both periods, the spikes were noticeable despite the relatively flat unemployment rate. Since the gradual lifting of restrictions in the fourth quarter of 2021 and full reopening of economic activities in the first quarter of 2022, the unemployment, adjusted unemployment, and alternative slack rates declined simultaneously. This was in line with improvements in other headline labour market indicators.[14] As the recovery continues and economic activity strengthens further, it is expected that all three measures of labour utilisation would improve and converge to pre-pandemic levels.

[12] The 'shadow labour force' is defined as persons who are not looking for work but may do so if the job market recovers. This group would not be accounted for in the unemployment rate under formal and internationally adopted standards. This is because by not looking for work, the 'shadow labour force' is not defined to be in the labour force, and therefore this group is not considered to be unemployed. The International Labour Organization (ILO) defines unemployment as the share of the labour force that is without work but available for and seeking employment.

[13] 'Potential' labour force = Labour force + 'Shadow labour force' (i.e., increase in population outside official labour force due to COVID-19)

[14] These include rising employment, labour force expansion, and decline in the population outside labour force.

For Malaysia, while slack is diminishing in 2022, labour market conditions are far from tight, as evidenced by forthcoming labour supply and relatively moderate wage recovery

Towards the end of 2021 and in 2022, the focus of labour market analyses globally shifted from establishing the extent of slack, towards assessing the extent of tightness in the labour market. This shift took place following the steady reopening of economies – first with the AEs beginning in mid-2021, followed by emerging market economies (EMEs) at end-2021 and early-2022. The pickup in economic activity and spending had led to strong labour demand amid labour shortages, leading to tightening labour markets and escalating wage growth, particularly in the AEs. Coupled with the on-going supply constraints[15] and escalating commodity prices, tight labour market conditions resulted in a quick rise in inflationary pressures globally.[16] In the US, as economic activities rebounded, strong demand and escalating consumer prices were accompanied by unemployment falling below pre-pandemic rates (Dec 2022: 3.5%; 2015-2019 average: 4.4%), increasing reports of labour shortages,[17] and heightened labour demand. Taken together with decades-high wage growth,[18] these developments indicate rapidly increasing labour market tightness. This is due mainly to constraints on labour supply, attributable to a surge in excess retirements[19] and decline in immigration to the US.[20] Labour force re-entries have been further constrained by health issues ('Long-COVID'[21]) and the so-called 'Great Resignation'.[22] This is evidenced by the labour force participation rate which has remained below pre-pandemic levels (62.3% in Dec 2022; 4Q 2019: 63.3%).[23]

In assessing the extent of tightness, the unemployment rate is complemented by measures to gauge the strength of labour demand and turnover, like the unemployment-to-vacancies and quits rates. In recovering from the crisis, these indicators demonstrated improvement in the labour market at varying paces, which is a departure from trends before the pandemic, when labour market indicators tended to move together relatively consistently. Differing recovery dynamics aside, another consideration is determining suitable thresholds beyond which a certain indicator signals slack or tightness. A simple example of such a threshold is comparing against the pre-pandemic level, such as the fourth quarter of 2019 or the 2015-2019 average. This is commonly used as a quick method to assess the extent of labour market recovery and by extension, the pace at which slack in the labour market is reducing. In the context of recovery, however, analysis has shifted from using simple averages to determining a range in which the labour market is roughly in balance. For this, a statistical threshold may be used, by comparing standardised measures of various indicators against a 'normal' range of historical observation. Thresholds for slackness or tightness would then border this 'normal' range, which typically aims to capture approximately 95% of historical observations.

Taking the case of the US labour market again (illustrated in Chart 7), the unemployed-to-job openings and quits rates exhibited faster improvement in 2021, approaching tightness thresholds earlier compared to the unemployment rate. Towards the end of the sample period, the quits and job openings rates breached the

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[15] Supply chains were disrupted by COVID-19 lockdowns restricting labour movement and production activity since mid-2020. Subsequently, these supply constraints were exacerbated by the military conflict in Ukraine through blockage of shipments from Ukraine and sanctions imposed on Russia, and the COVID-19 resurgence in China.

[16] Headline inflation had been trending upwards from the first quarter of 2021 until the third quarter of 2022. This is especially apparent in the advanced economies and reflects the higher energy prices in Europe and more persistent core inflation globally.

[17] As of November 2022, the Federal Reserve Beige Book still notes that labour markets are tight, despite easing hiring and retention difficulties.

[18] As of the fourth quarter of 2022, growth in Employment Cost Index (ECI) is 5.1% (2010-2019 average: 2.2%). The Employment Cost Index is a quarterly measure of the change in price of labour, defined as compensation per hour worked. It is an indicator of cost pressures within companies that could lead to price inflation for finished goods and services.

[19] Montes et al. (2022) showed that more than half of the increase in retired share of population are 'excess retirements' that would likely not have occurred in the absence of the pandemic. According to the Federal Reserve (2023), potential factors behind the excess retirements are health concerns, difficulty in getting re-employed for older workers, and increases in wealth fueled by stock market gains.

[20] In 2020 and 2021, the number of immigrant visas issued at foreign service posts plummeted (2021: 285,069; 2020: 240,526; 2019: 462,422). This has since rebounded to 493,448 in 2022. Source: U.S. State Department.

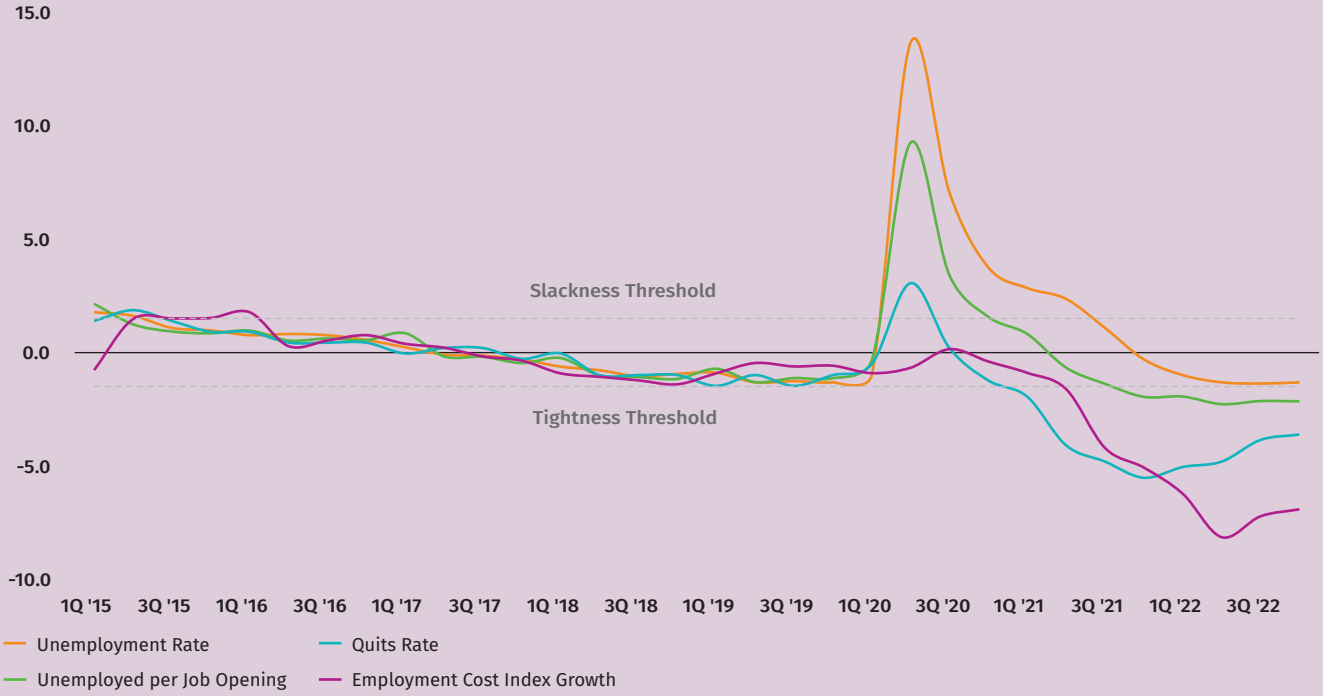
[21] Long COVID, otherwise known as Post-COVID conditions, is a wide range of new, returning, or ongoing health problems that people experience after being infected with the virus that causes COVID-19. Source: Centers for Disease Control and Prevention.

[22] The Great Resignation is the observed phenomenon in which a high volume of workers have quit or voluntarily resigned from their jobs. Empirical studies by the Federal Reserve Bank of Cleveland (Sahin and Tasci, 2022) and the US Bureau of Labor Statistics (Gittleman, 2022) reveal that while quits are typically higher during a recovery period, the recent quits rates in the US are higher than expected from the labour market tightness. Other than possibly contributing to higher labour force exits, this phenomenon is accompanied by higher job-to-job movements, which also affects stability of labour supply.

[23] While participation for prime-age (25 to 54-year-old) workers has mostly returned to pre-pandemic levels, further increases would likely only gradually reduce the overall labour force shortfall, as the reversal of excess retirements seems unlikely at the current juncture. Therefore, overall labour force participation rate is expected to remain below its pre-pandemic level. Source: The Federal Reserve (2023).

tightness threshold and were much more consistent with decades-high wage growth. These developments suggested the labour market was tighter than indicated by the unemployment rate alone. Thus, indicators like the quits and job openings rate should also be given due consideration in assessing labour market tightness going forward in addition to the unemployment rate, at least in the case of the US.

Chart 7: US: Indicators of Labour Market Tightness (Standardised, Z-scores)



Note: Higher value indicates more slack. Means and standard deviations are calculated based on 2015-2019 observations. Z-scores for the quits rate and Employment Cost Index (ECI) growth are inverted.

Source: Federal Reserve Economic Data, U.S. Bureau of Labor Statistics, and Bank Negara Malaysia estimates

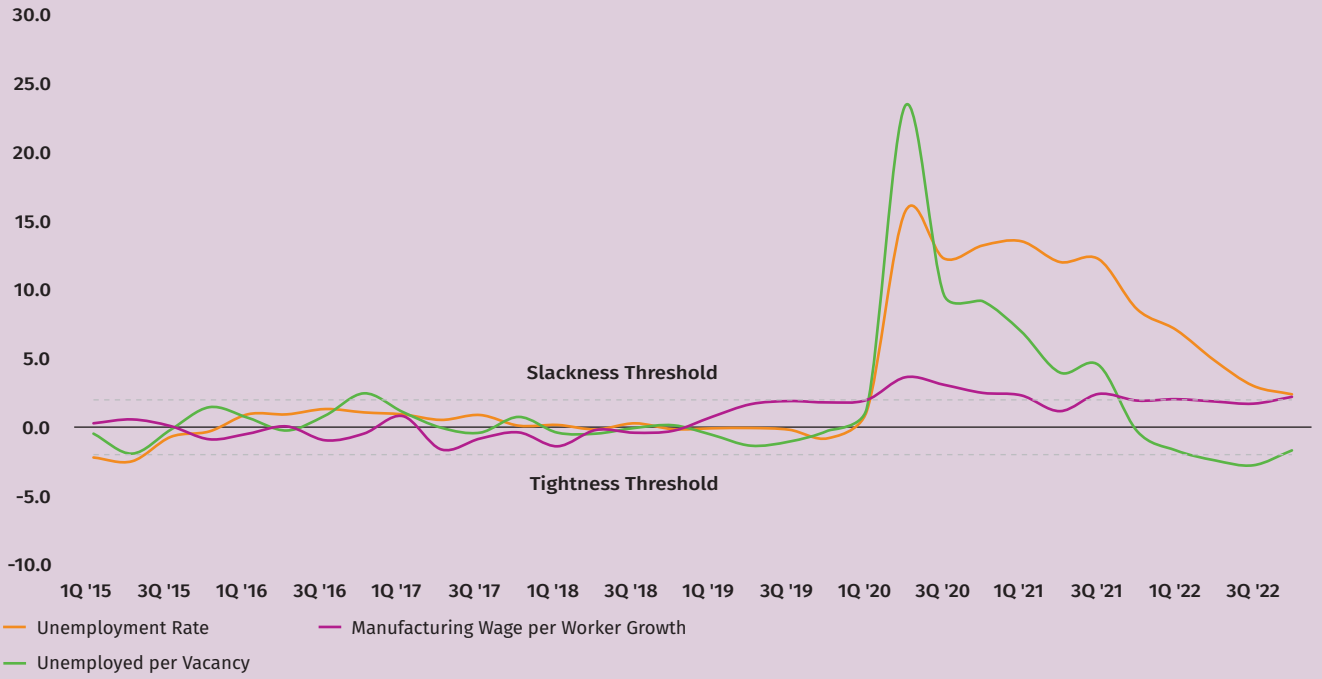
For Malaysia, since the economy was fully reopened and restrictions were lifted beginning fourth quarter of 2021, economic activity rebounded strongly. In the labour market, the unemployment rate declined steadily, amid strong employment recovery momentum.[24] Private sector wage growth[25] also started showing improvements, trending closer to and eventually exceeding pre-pandemic averages in the second and third quarter of 2022. Despite unemployment remaining above pre-pandemic levels, recovering demand conditions amid a robust employment recovery raised concerns over whether the labour market was tight and would fuel further inflationary pressures.[26] In particular, there were rising concerns over whether wage pressures would become excessive, amid factors such as the substantial hike in minimum wage,[27] reports of labour shortages, and strengthening labour demand.

Overall, the indicators do suggest that slack is lessening as the labour market strengthens and economic activity improves. Evidence suggesting tightness, however, is mixed (Chart 8). While the unemployment-to-vacancies ratio moves closer to the tightness threshold, the unemployment rate continues to suggest that slack prevails. A key factor underlying the difference between Malaysia and the US is labour supply. While the US faces labour constraints, labour supply in Malaysia has remained relatively forthcoming as evidenced by the labour

[24] Seasonally adjusted month-on-month employment growth was 0.25% on average between January and December 2022, while the pre-pandemic average is 0.15%.
[25] Refers to nominal aggregate wages in the *manufacturing* and *services* sectors. Average wages per worker growth remained below pre-pandemic averages except in the third quarter of 2022.
[26] Average inflation rate was 2.5% and 4.2% in 1H and 2H 2022 respectively (2015-2019 avg.: 1.9%).
[27] In 2022, the minimum wage was increased from RM1,100 (or RM1,200 in major urban areas) to RM1,500, which took effect on 1 May 2022 for large, medium, and small enterprises. For micro-enterprises, the order has been delayed to 1 July 2023.

force participation rate rising steadily to 69.5% of the working-age population in the fourth quarter of 2022, even exceeding the pre-pandemic rate (4Q 2019: 69.1%). Compared to the US where many of the labour force exits were driven by retirements, exits from the Malaysian labour force were mainly attributed to temporary factors, such as the lack of economic opportunities or increase in caregiving obligations[28] during the pandemic. As restrictions were lifted, many of these workers returned to the labour force as economic activity picked up. The more conclusive indicator, however, is wage growth itself. Although it improved in 2021, wage per worker growth has trended around slackness threshold for most of the year in 2022.

Chart 8: Malaysia: Indicators of Labour Market Tightness (Standardised, Z-scores)



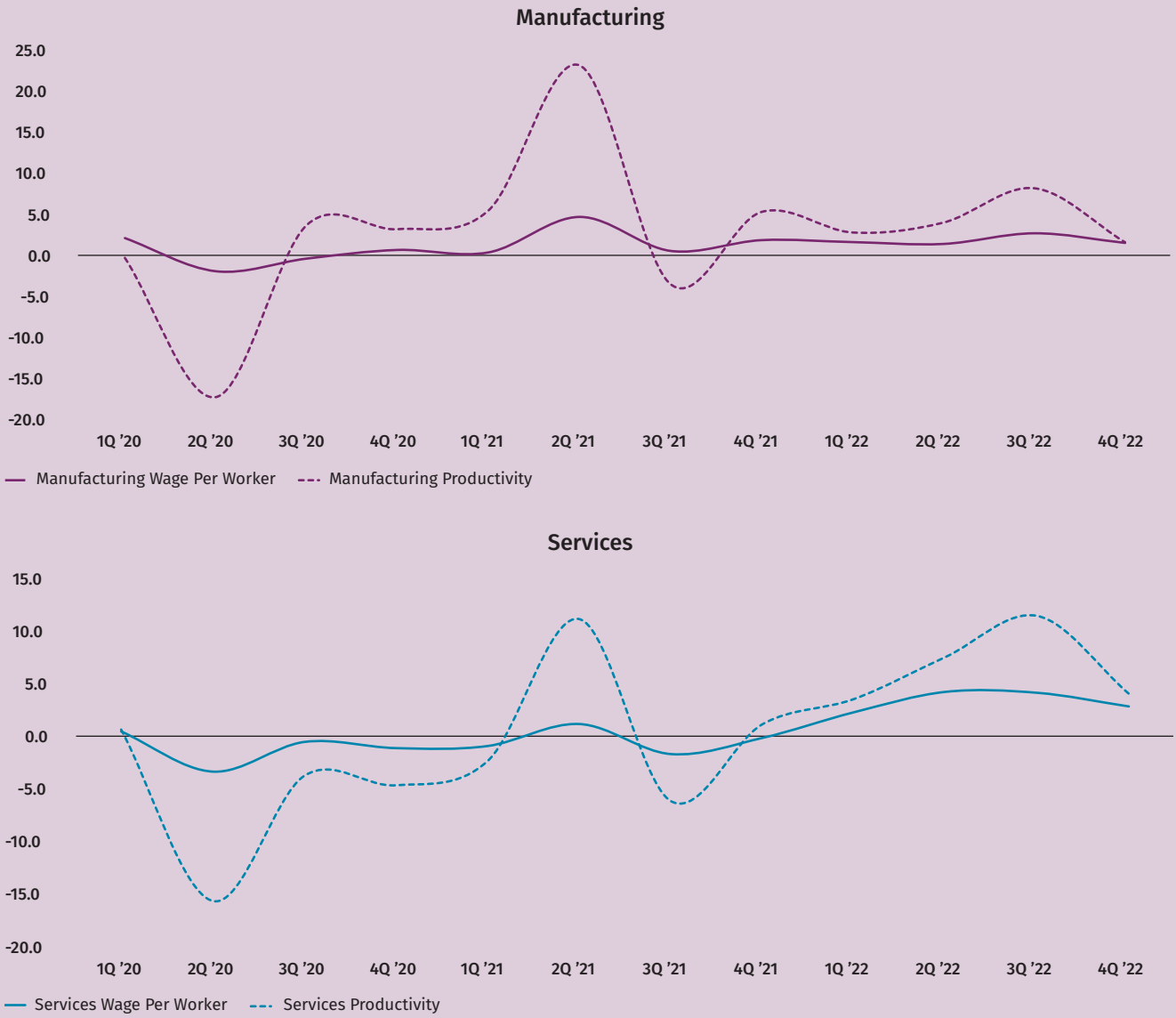
Note: Unemployed per vacancy is estimated by Bank Negara Malaysia staff using data from Department of Statistics, Malaysia and JobStreet. Means and standard deviations are calculated based on 2015-2019 observations. Z-scores for manufacturing wage per worker growth are inverted.

Source: Department of Statistics, Malaysia, JobStreet, and Bank Negara Malaysia estimates

Additionally, improvements to wages have been much less forthcoming compared to production (Chart 9). In the *manufacturing* sector, the translation from strong production performance since the fourth quarter of 2021 to aggregate wage growth has remained relatively muted throughout 2022. In June-September 2022, for example, despite production performance growing by 2-3 times of its pre-pandemic rate, aggregate manufacturing wage growth remained below the 2015-2019 average.[29] For the *services* sector, the more recent above-average aggregate wage growth has brought nominal wage to just exceed pre-pandemic level in the second quarter of 2022. Wage improvements seen thus far are assessed to be mainly driven by the robust employment recovery and strong production activity, while the risk of excessive wage growth momentum is assessed to be minimal.[30] Wages in the *services* sector also benefitted from the reopening of international borders and resumption of tourism-related activities, as employers sought to scale up their operations amid increasing demand.

[28] MCO 1.0 included the closure of all nurseries, kindergartens, government and private schools.
[29] On a year-on-year basis, manufacturing wages only grew by 5.4-7.5% in June-September 2022 (2015-2019 average: 7.3%), despite manufacturing production index growing by 10.4-15.2% (2016-2019 average: 4.7%).
[30] On a seasonally-adjusted quarter-on-quarter basis, private sector wage growth momentum slowed towards the end of the year (4Q 2022: -0.2%; 2015-2019 average: 1.3%).

Chart 9: Productivity vs. Wage Per Worker Year-on-Year Growth, Manufacturing and Services Sectors



Note: The dip in year-on-year productivity growth in the second quarter of 2020 was a result from the contraction in GDP following the imposition of MCO 1.0, which was significantly larger than the contraction in employment in the same period. The subsequent spike in the second quarter of 2021 reflects productivity improvements from the recovery in GDP, and also corresponds to the low base in the second quarter of 2020.

Source: Department of Statistics, Malaysia and Bank Negara Malaysia estimates

News reports and the Bank's engagements with industry players[31] suggested that employers were facing substantial hiring difficulties, particularly in the low- to mid-skilled occupations. This was due in large part to foreign worker shortages, mainly in the agriculture, construction, and selected manufacturing industries, as a large number of them exited the country during the pandemic. These shortages have affected firms' ability to fully meet the recovery in demand, and firms indicated that this situation had prompted them to advertise higher wages to attract local workers. Nonetheless, this has not led to any noticeable broad-based acceleration in the growth of individual wages.[32] These shortages are likely a result of frictions in certain labour market segments, amid the delay in foreign worker entries earlier in the year. A review of the Beveridge

[31] Direct engagements with the business community under Bank Negara Malaysia's Regional Economic Surveillance programme are built on mutual trust and insights gained are treated with strict confidentiality.

[32] In the third quarter of 2022, private wage per worker growth was 3.6%, which is only slightly higher than the 2015-2019 average of 3.3%. In the fourth quarter of 2022, it moderated to 2.4%.

Curve[33] showed an apparent outward shift (Chart 10), corresponding to higher unemployment rates for a given vacancy rate in the economy. Combined, these observations implied mismatches are elevated in the labour market, leading to hiring difficulties despite the pool of underutilised workers. Going forward, most of these shortages are expected to dissipate with the gradual re-entry of foreign workers and normalisation in labour demand. In the second half of 2022, the Bank's engagements with industry players indicated that hiring difficulties were easing upon the gradual return of foreign workers. This is also seen in the gradual inward drift of more recent observations in the Beveridge Curve, alluding to mismatches in the economy being progressively resolved.

Chart 10: Beveridge Curve (Job Vacancy Rate vs. Unemployment Rate), Jan-16 to Dec-22

Note: X-axis = Unemployment rate; Y-axis = Job vacancy rate. Job vacancy rate = ratio of vacancies to total labour demand. Total labour demand is estimated by Bank Negara Malaysia staff as the sum of job openings from JobStreet and private employment from Department of Statistics, Malaysia.

Source: Department of Statistics, Malaysia, JobStreet, and Bank Negara Malaysia estimates

At the same time, the direct impact felt from the minimum wage hike was relatively muted, as some employers had already adjusted wages due to labour shortages in some segments. Less than 15%[34] of employees were estimated to have been directly affected by the hike. Given that these workers are concentrated on the lowest end of the wage spectrum, the impact to aggregate wages is not likely to be large. Where cascading impacts from the minimum wage increase is concerned, engagements with industry players[35] suggests that this is also contained to selected groups, and the quantum is relatively modest.

[33] The Beveridge curve captures the inverse relationship between the job vacancy rate and the unemployment rate. Moving from upper left to lower right along the curve, higher vacancy rates and lower unemployment rates correspond to a tight labour market, and vice versa. Meanwhile, shifts to the entire curve reflect changes in job matching efficiency. An outward/right-ward shift, for instance, indicates a higher unemployment rate for a given vacancy rate. This, in turn, implies lower efficiency in allocating available workers to vacant job positions, or higher mismatches.

[34] Bank Negara Malaysia estimates based on limited-release data on the distribution of wages among private sector employees shared bilaterally by the Employees Provident Fund (EPF).

[35] Please refer to the mini-box titled "Industry Engagements: Insights on Key Labour Concerns" later in this section.

In summary, there is limited evidence from the data to suggest that Malaysia's labour market is tight, particularly when compared to the experience of other countries such as the US (Table 1). Overall, slack is assessed to still prevail in the Malaysian labour market, although the extent of slack is narrowing. While labour demand has strengthened amid the increase in economic activity, wage growth remains relatively moderate, as labour supply continues to remain forthcoming. Critical labour shortages are assessed to be limited to certain labour market segments. Additionally, structural factors in the labour market also contribute to reducing the flexibility of wages in adjusting to higher labour demand and prices (discussed in further detail in the next segment).

Table 1

Summary of Labour Market Developments, Malaysia vs. US

	Malaysia	US
Overall assessment	Declining slack in the labour market. There is limited evidence of tightness, however, as wage recovery remains relatively moderate, largely attributable to forthcoming labour supply.	Clear indications of tight labour market. The unemployment rate close to historical low (since 1950s) and wage growth at historical highs (since early 2000s), largely due to labour constraints.
Unemployment	While improving, as of December 2022, both the unemployment rate and alternative slack rate have remained above pre-pandemic average since its peak in May 2020.	Both the unemployment rate and U-6 rate have fallen below pre-pandemic 2015-2019 average since November 2021.
Labour force participation rate (LFPR)	Labour force reverted to pre-crisis levels as early as July 2020. LFPR exceeded the pre-pandemic level in November 2021 and has increased steadily since then.	Labour force recovery is on-going but constrained as many workers retired during the pandemic. Although labour force levels just returned to pre-pandemic levels in August 2022, the LFPR has not returned to its pre-pandemic rate since the trough in April 2020.
Wage growth	Wage growth has picked up but remains well within 'normal' range of historical observation. While wages are recovering, improvements to wage growth lag that of production and labour productivity.	Wage growth has trended higher and remains above the 'normal' range of historical observation. Additionally, year-on-year labour productivity growth has been on a declining trend.

Industry Engagements: Insights on Key Labour Concerns

During the pandemic, the Bank ramped up its efforts to engage with industry, to better understand how evolving developments affect economic agents on the ground, in the absence of real-time macro data on various issues.[36] Six cycles a year, the Bank's Regional Economic Surveillance (RES) team conducts field interviews and surveys with the business community. Insights gained from these engagements supplement analytical assessments and forecasts that are discussed at the Monetary Policy Committee (MPC) meetings. These included labour-related issues such as the extent of the labour shortages, the impact of these shortages and the minimum wage hikes on business operations, production and costs. These insights are summarised in Table 2.

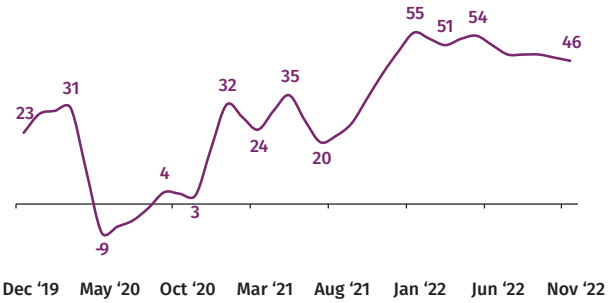
[36] For further details and examples on how the Bank's industrial engagements support surveillance and research activities, please refer to the box article titled "Taking the Pulse of the Economy during the Pandemic" in Bank Negara Malaysia's Annual Report 2021.

Table 2a: Insights on Labour Market Issues from Industrial Engagements

Hiring intentions and labour shortages

- Hiring intentions improved and remained favourable throughout 2022, despite increased hiring difficulties and labour costs (Chart 11).
- Hiring difficulties were mainly concentrated in the low- and mid-skilled occupations. Shortages in foreign workers were mainly in the *agriculture* and *construction* sectors, and selected manufacturing activities. As economic recovery picked up, shortages extended to mid-skilled services occupations as well, for example, sales associates and workers for food and beverages (F&B) and accommodation facilities.
- These difficulties led to various challenges including rerouting of orders, labour poaching, and inability to fully capitalise on the recovery in demand.
- In the absence of foreign workers, firms' primary coping mechanisms were to increase hours for existing staff, raise advertised wages, and automate production processes.
- These difficulties have started to ease towards the end of the year, as firms corroborated reports of gradual re-entries of foreign workers, with the reopening of borders (Chart 12).

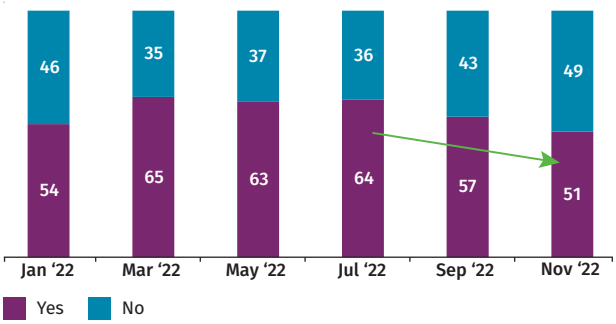
Chart 11: Hiring Intention Outlook Index



Note: Participants were surveyed on hiring intentions outlook for 3 months ahead. A higher value indicates greater hiring intentions.

Source: RES Industrial Engagements

Chart 12: Difficulty in Hiring (% of Respondents)



Note: Firms surveyed were asked whether they face any difficulties in getting workers.

Source: RES Industrial Engagements

Table 2b: Insights on Labour Market Issues from Industrial Engagements

Lack of high-skilled talent

- The pandemic resulted in more companies digitalising their businesses, adopting technological solutions and automating routine and repetitive processes.
- This has resulted in increased need for information technology (IT) and tech talent across a broad range of sectors.
- While shortages of high-skilled talent with specialised skills have been a key concern for some time, these shortages became more apparent during the period of recovery from COVID-19.

Impact of minimum wage increase[37]

- Most firms engaged were directly affected[38] by the minimum wage hike, but to varying degrees. Smaller firms in less urbanised areas had larger shares of their work forces earning less than RM1,500.
- The impact of the minimum wage hike may also extend to workers who were earning close to the new minimum wage. On this, larger firms in more urbanised regions reported they were more likely to undertake cascading wage adjustments.
  - Around half of the firms surveyed reported that they would conduct immediate cascading adjustments in 2022. This adjustment is expected to only affect a limited segment of workers.[39]
  - Among the remaining half, some firms indicated that adjustments would take place during the increment cycle in 2023 instead, if at all.
- Some firms opted to consolidate variable pay and allowances to comply with the new minimum wage requirements and expand workers' job scopes to improve productivity.

[37] The national minimum wage level was raised to RM1,500 beginning in May 2022, from the previous RM1,100 (RM1,200 for selected cities and municipalities).
[38] This meant that the firm had workers earning below RM1,500 prior to the minimum wage hike.
[39] The cascading adjustment is mainly concentrated among those earning below RM3,000. The quantum is expected to be a flat rate of RM100 to RM300, with those earning higher getting a lower adjustment.

Slack in the labour market is expected to narrow further in 2023, albeit at a more gradual pace as conditions normalise. Monetary policy would continue to support sustainable growth while managing risks to inflation

Improvement and lessening slack in the labour market alongside strengthening economic activity was a key consideration in the Bank's decision to gradually raise the OPR in 2022. In assessing the growth-inflation trade-off, risks to inflation must also be considered. Generally, a key inflation-related concern in an environment of both rising consumer prices and nominal wages is the risk of a wage-price spiral. This occurs when there is a self-reinforcing loop in which inflation leads to higher wage growth, fuelling even higher consumer prices through greater wage costs and demand for higher wages. However, the risk of a wage-price spiral for Malaysia is remote, due to a few key factors. Firstly, real private wage per worker growth has been negative throughout most of 2021 and 2022 (-3.7% and -0.1%, respectively, for the *services* and *manufacturing* sectors), indicating real wages remain below pre-pandemic levels for the individual worker. As such, a catch-up in wages is not likely to pose significant wage-price spiral risks. This is given the considerable gap between wages and prices, which allow nominal wages to catch up without leading to significant demand-driven pressures on wages.[40] Second, unit labour costs[41] have been on a declining trend throughout 2021 and 2022 (Chart 13), due to productivity outpacing wage growth. This reflects higher production efficiency, whereby lower wages are needed per unit of production.

Third, structural features restrain the risk of excessive wage growth. In particular, the relatively low wage bargaining power of workers slows the adjustments of wages to factors like inflation and productivity. For example, this includes the absence of wage indexation[42] practices, which reduces the flexibility of wages in adjusting to higher labour demand and prices. Additionally, unionisation and collective bargaining are limited in Malaysia. As of 2019, union membership across government, the private sector and statutory bodies comprises only around 6.3% of total employment.[43] This is in contrast to the 9.8% in the US, as well as other EMEs such as Indonesia (13.0%), India (19.8%), and Vietnam (49.6% in 2018).[44]

Chart 13: Unit Labour Costs

Note: Unit labour cost is estimated by Bank Negara Malaysia staff using data on salaries and wages and value added from Department of Statistics, Malaysia.

Source: Department of Statistics, Malaysia, Haver Analytics, and Bank Negara Malaysia estimates

[40] Recently, wage growth being more moderate relative to inflation has been a common observation in AEs besides the US. Source: Boissay et al. (2022). "Are major advanced economies on the verge of a wage-price spiral?", Bank for International Settlements Bulletin.

[41] Unit labour cost refer to the amount a business pays its workers to produce one unit of output. Mathematically, Unit Labour Cost = Compensation / Output = (Compensation / Worker) / (Output / Worker). In other words, this means that unit labour cost can also measure the relative movements of wage and productivity in per worker terms.

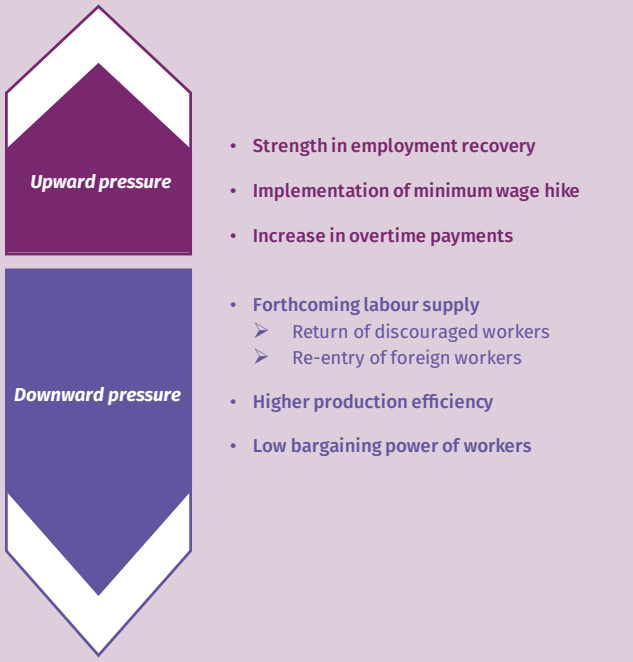
[42] Wage indexation refers to an explicit provision that automatically links changes in money wages to changes in a general price index (e.g., consumer price index).

[43] Source: Department of Trade Union Affairs, Ministry of Human Resources, Department of Statistics, Malaysia, Bank Negara Malaysia estimates.

[44] Source: ILOSTAT, International Labour Organization.

Going forward, continued expansion in economic activity is expected to take place, albeit at a lower rate compared to 2022. Slack in the labour market therefore is expected to reduce further as well, supported by continued strength in the employment recovery momentum. Nevertheless, Malaysia's labour market is still some way away from tightness. Specifically, there remains some degree of underutilisation, given the high labour force participation, as well as a small number of workers who have remained outside the labour force due to COVID-19 (i.e., 'potential' labour force). This is supported in part by the gradual re-entry of foreign workers alleviating residual labour shortages.[45] Moreover, there is some room for salaries and wages (and therefore, incomes) of Malaysian workers to increase before exerting significant pressure on prices. In fact, the ratio of Compensation of Employees (COE) to GDP declined in 2021 to 34.8%, a reversal of trends observed prior to the pandemic (2020: 37.1%; 2019: 35.9%). Moreover, the uneven recovery continues to impact vulnerable groups such as women, youth, and low-skilled workers.

Diagram 1: Factors Contributing to Slack or Tightness in 2023



Conclusion

To support monetary policy considerations, the COVID-19 pandemic necessitated the expansion of the Bank's surveillance tools in assessing labour market conditions. This article elaborated on a few of the most notable items, including the use of supplementary slack rates to provide a more nuanced assessment of labour underutilisation, beyond the unemployment rate. Additionally, the use of industry insights has allowed more timely on-the-ground feedback on key issues that are not directly observable from aggregate data, including reports of hiring difficulties and impact of the minimum wage hike. More comprehensive and nuanced assessments on overall labour market conditions contribute towards supporting evidence-based monetary policy decisions.

[45] Dynamics of foreign workers in the Malaysian labour market extend beyond their implications to slackness or tightness in the labour market. To ensure optimal functioning of the labour market, prudent and equitable management of foreign workers is warranted. For further discussion, please refer to "Low-Skilled Foreign Workers' Distortions to the Economy" in Bank Negara Malaysia's Annual Report 2017.

Although monetary policy is primarily a countercyclical tool, it is heavily interdependent with structural policies, which affect an economy's ability to withstand shocks. A sustainable recovery has a higher chance of being more enduring when it is further facilitated by complementary structural reforms. The COVID-19 pandemic represents a critical turning point and an opportunity to address structural issues inhibiting the Malaysian labour market since before the crisis. These include an over-reliance on the low-cost production model, the low creation of high-skilled jobs, and significant skills mismatches. Unaddressed, these issues will continue to constrain wage levels, and amplify the negative impact of shocks such as COVID-19 to households' incomes. Economic policies, therefore, should be geared towards creating high-skilled and high-paying jobs through quality investments, developing a dynamic and high-calibre workforce, accelerating adoption of technology and digitalisation, and strengthening the social protection system.[46] Ultimately, we must ensure that economic gains are translated to commensurate pay for workers. Notably, the wage-productivity linkage must be strengthened.[47] It is also recognised that considerable challenges remain including low worker bargaining power and frictions in enforcing labour contracts. The relatively muted recovery of wages observed post-pandemic emphasises the urgent need to overcome such challenges. The conclusion remains that Malaysia would need to accelerate reforms to ensure our long-term growth is sustainable and inclusive, in addition to building household and labour market resilience against shocks.

[46] For further details on structural labour market and social protection reforms, please refer to the box articles titled "Getting the Great Reset Right: Structural Labour Market Issues in the Post-COVID-19 World" and "A Vision for Social Protection" in Bank Negara Malaysia's Economic and Monetary Review 2020.

[47] For further details on the linkage between wages, productivity, and equity, please refer to the box article titled "Are Malaysian Workers Paid Fairly?: An Assessment of Productivity and Equity" in Bank Negara Malaysia's Annual Report 2018.

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Navigating Malaysia's Economic Transition towards a Decarbonised Future

"Climate change is the defining issue of our time - and we are at a defining moment."
António Guterres, Secretary-General of the United Nations

The long-term shifts in global temperatures and weather patterns, driven largely by fossil fuel burning, pose a major threat to humanity and the health of the planet. While some countries have seen economic growth no longer as strongly associated with greenhouse gas emissions in recent decades[1] (Cohen, Jalles, Loungani, & Marto, 2018), further progress has been slow. Even now, the physical risks stemming from a changing climate are already present and growing. This have threatened ecosystems, biodiversity and food security, and devastated infrastructure and people's lives and livelihoods. If climate change stays on its current course and emissions targets are unmet, the world could lose nearly 10% of GDP by 2050 (Swiss Re Group, 2021). Without clear action to build climate resilience, the fallout from the output loss would severely disrupt the global economy and financial system. Malaysia is not exempted from these risks.

At this juncture, Malaysia needs to move faster in managing a decarbonised future. A fundamental shift in national development planning and execution are therefore needed. The country must embark on a suite of adaptation measures by adjusting our behaviour and systems to increase resilience against the impact of climate change, as well as mitigation measures to reduce and prevent emissions from warming the planet even further. However, this shift is not without consequences. If not implemented properly, the transition risks will not be mitigated and could be detrimental to the economy. This article describes the current state of Malaysia's physical and transition risks and how it compares with other countries. It then analyses the key challenges for mitigation that could hinder an orderly transition and its effects on the macroeconomy. The implications of transition on the conduct of monetary policy, along with the role of investments in catalysing the transition are discussed. Finally, the article presents a potential policy roadmap to make mitigation more effective towards achieving our emissions targets.[2]

Malaysia's physical and transition risks associated with climate change

Climate-related risks stem primarily from two channels, namely physical and transition risks. Physical risks are associated with extreme weather events and gradual shifts in climate leading to property damage and business disruption. Meanwhile, transition risks occur from adjustments made in moving towards a low-carbon economy.

Malaysia faces rising physical risks from floods and sea level rise, which calls for urgent adaptation

Being a tropical and coastal[3] nation, Malaysia is not excluded from exposure to physical risks. According to the INFORM Risk Index,[4] relative to the global average, Malaysia is prone to acute risks stemming from event-driven natural hazards, namely floods, cyclones (Chart 2); and chronic risks driven by longer-term shifts in climate patterns particularly rising sea levels (Ercan, Mohamad, & Kavvas.M, 2012). Managing these adverse impacts calls for adaptation measures that are suited for local conditions. These include stormwater management, soil erosion prevention, reforestation, and building climate-resilient homes and infrastructure.

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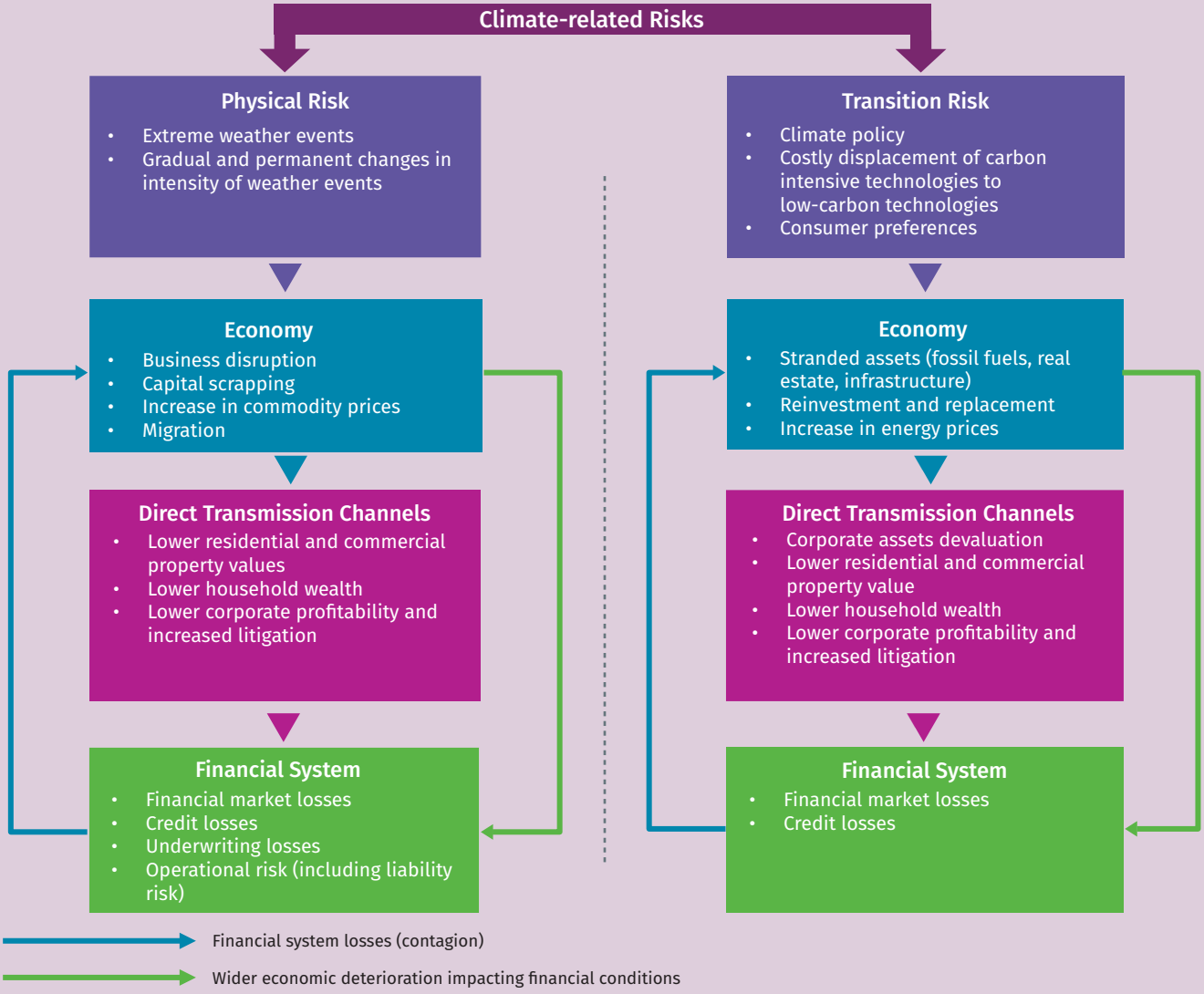
[1] The decoupling between economic growth and emissions are mainly due to the improving energy usage efficiency, decreasing cost of low- and zero-carbon energy sources and a growing number of countries introducing deliberate climate policies.
[2] Following the ratification of the Paris Agreement on 16 November 2016, Malaysia has submitted and revised its Nationally Determined Contribution (NDC) to the United Nations Framework Convention on Climate Change (UNFCC), where it intends to reduce its economy-wide carbon intensity against GDP by 45% in 2030, compared to 2005 levels. Beyond the Paris Agreement, the National Energy Policy (2022-2040) outlines Malaysia's target to become a net-zero emissions nation by as early as 2050.
[3] 13% of Malaysia's total land area is within 5km of a coast. About 70% of the total population lives in the coastal zones (Ehsan et. al., 2019).
[4] The INFORM Risk Index is a global, open-source risk assessment for humanitarian crises and disasters. INFORM is a collaboration between the Inter-Agency Standing Committee Reference Group on Risk, Early Warning and Preparedness and the European Commission.

Chart 1: Climate-related Risks Come from Two Channels - Physical and Transition Risks



Source: Network for Greening the Financial System (2020), "Guide for Supervisors: Integrating Climate-related and Environmental Risks into Prudential Supervision.

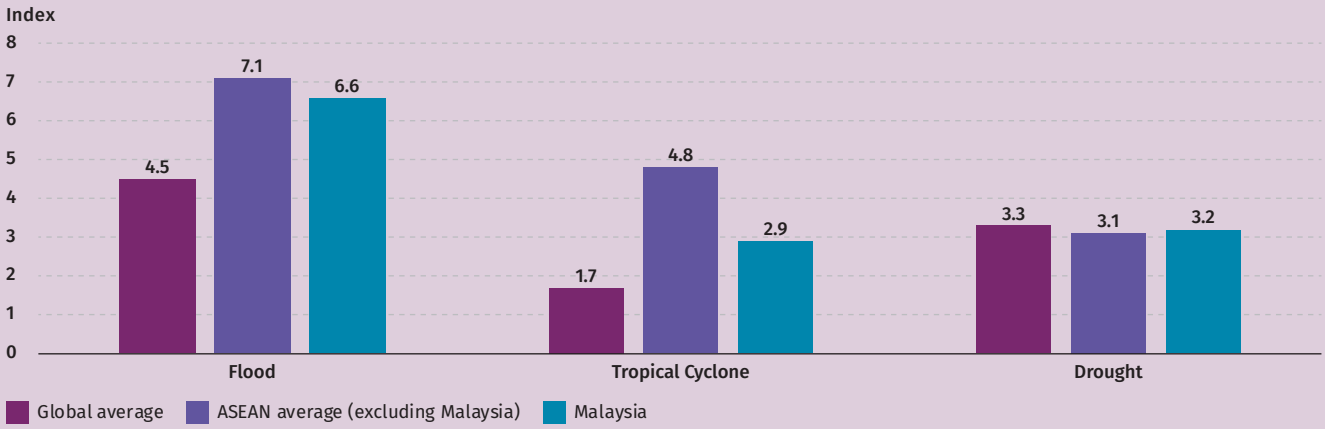
Malaysia appears relatively prepared against transition risks, but delaying mitigation efforts could compound physical risks

As climate policies, technology, consumer and market behaviour react to decarbonisation, certain economic sectors could face big shifts in operations, asset values or cost of doing business (Basel Committee on Banking Supervision, 2021). Based on a World Bank Study on the preparedness for a low carbon transition,[5] Malaysia is better positioned amongst the developing countries to decarbonise its economy. Malaysia is moderately exposed to trade-related climate policies imposed by other countries. It also has some degree of economic and institutional resilience[6] against the low-carbon transition of other countries (Chart 3), supported by its diversified economic structure and relative ease of doing business. Malaysia is well placed to leverage on this position by hastening mitigation efforts to reduce emissions. A delay in managing transition risks would on the other hand magnify physical risks and make adaptation costlier and less effective in the future.

[5] The score is a function of the degree to which countries are exposed to climate-related trade measures, the resilience of their economies and institutions to the external impacts of a low carbon transition, as well as their ability to diversify their asset bases and harness the opportunities presented by a low-carbon transition. The index uses Principal Component Analysis (PCA) to aggregate 4 indicators to measure "Exposure" and 11 indicators to measure "Resilience" respectively. More information can be found in Peszko et al. (2020).

[6] This is proxied by the Worldwide Governance Indicators (WGI) which captures the following 6 dimensions: voice and accountability, political stability and absence of terrorism, government effectiveness, regulatory quality, rule of law and control of corruption.

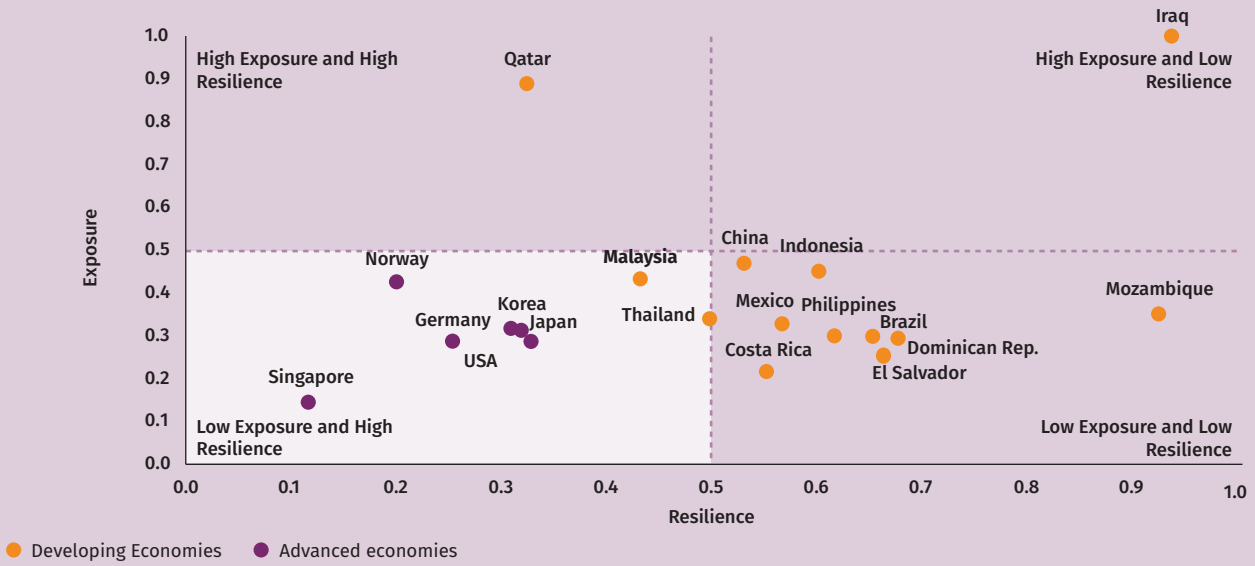
Chart 2: Relative to the Global Average, Malaysia is More Vulnerable to Physical Risks of Floods and Cyclones



Note: Index scaled from 0 to 10. The higher the index, the higher the climate risk

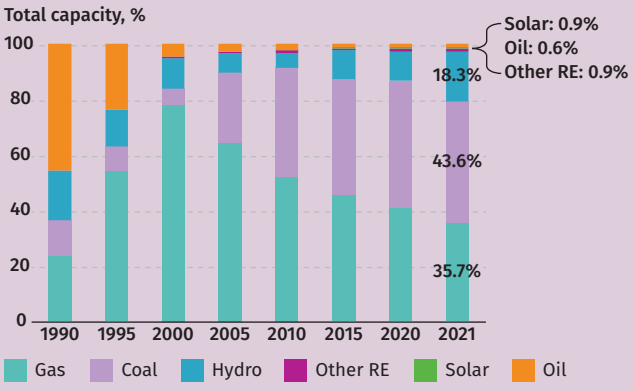
Source: INFORM Risk Index 2023

Chart 3: Countries' Preparedness for a Low-Carbon Transition



Source: Peszko et. al (2020), World Bank Group

Chart 4: Electricity Generation in Malaysia by Source



Source: Energy Commission

Chart 5: Energy Intensity in Selected Countries

Source: International Energy Agency

Key challenges to Malaysia's climate change mitigation

There is no one-size-fits-all approach to climate mitigation. Each country must therefore customise decarbonisation strategies by considering prevailing economic structures that would shape their transition pathways. For Malaysia, mitigation measures should address several key challenges to ensure an equitable and orderly transition.

a) High dependence on coal for power generation

Given the country's steady economic expansion, Malaysia burns more coal now than it did two decades ago, with 43.6% of electricity generated in 2021 (Chart 4). The high reliance on coal stems from it being the cheapest energy source relative to others. Yet, as the most polluting fossil fuel, this dependence is a major hurdle for an enduring low carbon transition. It also exposes the country to energy security risks from supply disruption and price volatility[7]. The Government has announced that it will phase out existing coal-fired power plants by 2040 and will no longer build new assets (Ministry of Economic Affairs, Malaysia, 2022). However, without aggressive capacity ramp-up in cleaner alternatives such as natural gas and other renewables, coal will remain a large part of our energy mix.

b) Low energy efficiency in the economy

Malaysia is among the relatively more energy-intensive economies, suggesting broad inefficiencies in energy consumption (Chart 5). Two main factors explain this. First, about 20% of the economy comprises of hard-to-abate sectors.[8] These are industries that rely heavily on fossil fuel as feedstock and for energy in their manufacturing processes. They also possess long-lived capital assets that are tightly integrated and complex. Decarbonising these sectors would be onerous. They cannot easily switch to renewables or be fully electrified due to technology constraints and prohibitive costs. These barriers require mitigation measures tailored to the circumstance inherent in each sector. Second, the prevalence of energy subsidies propagates inefficiency. Malaysia spends around 12% share of GDP on fossil fuel subsidies, much higher than several advanced economies and regional peers[9] (Chart 6). There are also direct subsidies on electricity usage through the Imbalance Cost Pass-Through (ICPT).[10] These subsidies artificially depress domestic energy prices, creating distortions by not penalising wasteful consumption. To illustrate, petrol consumption per capita in Malaysia rose by 45.1% over the last decade and is higher than in other regional economies (Chart 7). Initiating and sustaining energy price reforms that influence the behaviour of firms and consumers towards greater efficiency would therefore remove a key roadblock in transitioning to a green economy.

c) Significant reliance on fossil fuels for fiscal revenue and external competitiveness

Success in achieving climate pledges will inevitably result in a world that demands less fossil fuel. This trend would notably affect fossil fuel-producing countries, with ramifications on their fiscal position. For Malaysia, this shift poses an added significance given the declining crude oil production since 2004 (Chart 8) amid maturing oil fields (Bhattacharya & Hutchinson, 2022) and a lack of new large oil discoveries (United States Energy Information Administration (US EIA), 2021). The high reliance on petroleum-related taxes and royalties for the Federal Government revenue[11] needs to be addressed sooner rather than later. Designing a resilient tax system that generates new revenue streams and supports a green economy will be key in this transition.

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[7] Malaysia imports 90% of its coal supply, mainly from Indonesia (Source: National Energy Balance, and Malaysia Energy Statistics Handbook 2020, Energy Commission).

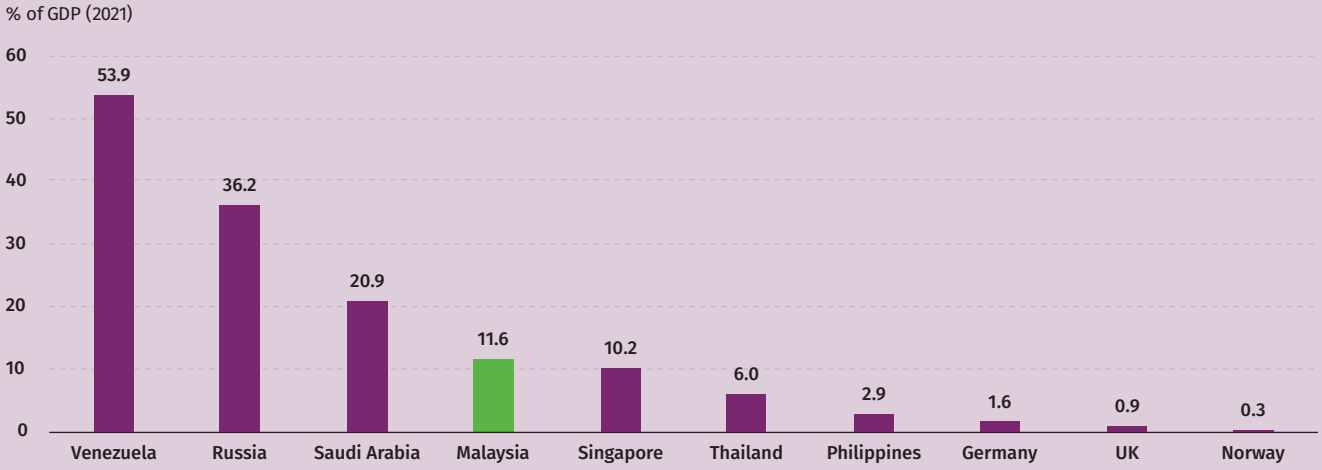
[8] Staff assessment based the three criteria by the International Energy Agency (IEA) to identify hard-to-abate sectors using 2021 national accounts data. These are: (i) long-lived capital assets; (ii) high temperature requirements for their production process; and (iii) trade considerations. For Malaysia, the sectors identified comprises oil and gas, palm oil, construction, steel, cement, and chemicals industries.

[9] These developed economies also shared the same trait of decoupling between economic growth and carbon emissions.

[10] The ICPT is a mechanism under the Incentive Based Regulation framework by Tenaga Nasional Berhad which allows electricity tariff charges to households and firms to reflect any changes (upward and downward) in fuel and other generation-related costs every six months in the form of either a rebate or a surcharge. Despite this, the government has provided subsidies in the form of rebates amounting to RM22.5 billion since 2015 through the ICPT mechanism to cushion the impact of high fuel prices. This includes the approved subsidy expenditure of RM10.8 billion for the period January to June 2023.

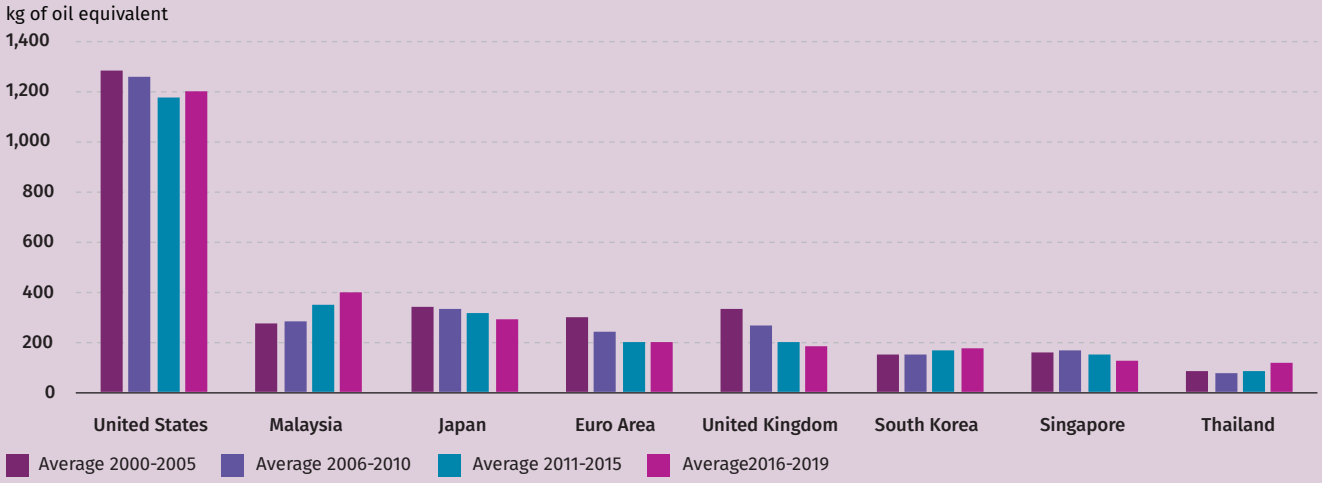
[11] Petroleum-related revenue is expected to contribute 27.3% to total government revenue in 2022, mainly supported by dividends from PETRONAS (Source: Ministry of Finance).

Chart 6: Fossil Fuel Subsidies in Selected Countries



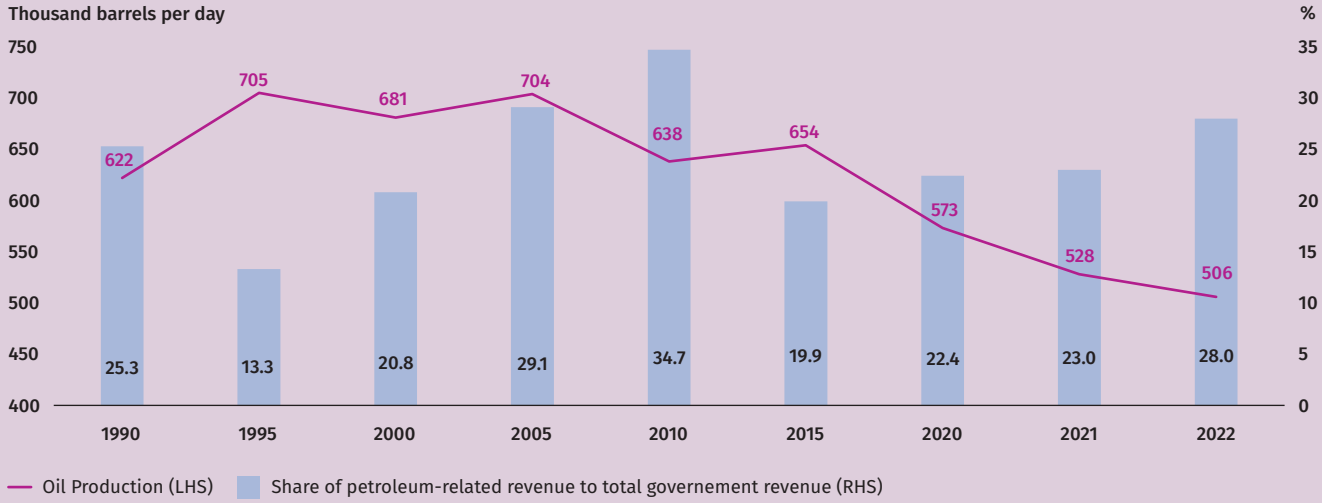
Source: International Monetary Fund (IMF)

Chart 7: Petrol consumption per Capita in Selected Countries



Source: US Energy Information Administration, World Bank, Bank Negara Malaysia estimates

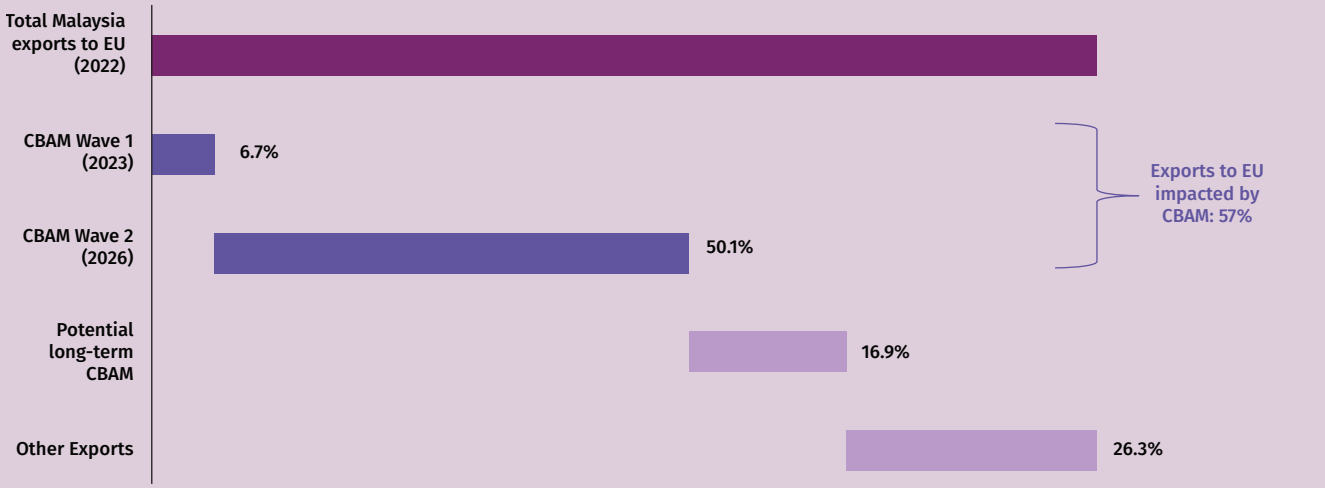
Chart 8: Malaysia's Oil Production and Petroleum-related Revenue as Percentage of Total Government Revenue



Source: Ministry of Finance, PETRONAS

Meanwhile, the phase-in of tariffs to address carbon leakages, namely the Carbon Border Adjustment Mechanism (CBAM)[12] could affect up to 57% of Malaysia's exports to the EU by 2026 if the equivalent emissions standards are not complied by domestic manufacturers (Chart 9). These exports include raw materials such as cement, iron and steel, and aluminum as well as consumer appliances. While this accounts for 5% of total exports, Malaysia's trade competitiveness and investment attractiveness would be further eroded should other countries impose similar regulations.[13] As global capital flows shift towards greater environmental, social and governance (ESG) compliance, this could lead to divestments and write-offs of stranded assets domestically, especially in the hard-to-abate sectors. Therefore, Malaysia must be cognisant of global decarbonisation developments when pursuing its own transition and manage the likely economic repercussions accordingly.

Chart 9: Impact Estimation of CBAM on Malaysia's Exports to EU



Note: Malaysian exports affected under CBAM are based of existing primary imports by the EU that is subject to the EU ETS Market. Exports affected by Wave 1 are based on EU's initial list of products at most risk of carbon leakage (e.g. cement, iron and steel, and aluminum). Exports affected by Wave 2 are based on the remaining products covered by the EU ETS (e.g. E&E, machinery, and rubber products). Meanwhile, the potential long-term CBAM affected exports are items planned to be covered by the EU ETS (e.g. vegetable oils).

Source: Bank Negara Malaysia estimates based on World Wide Fund for Nature (WWF) Malaysia, Boston Consulting Group (BCG), using data from Department of Statistics Malaysia and EU Commission

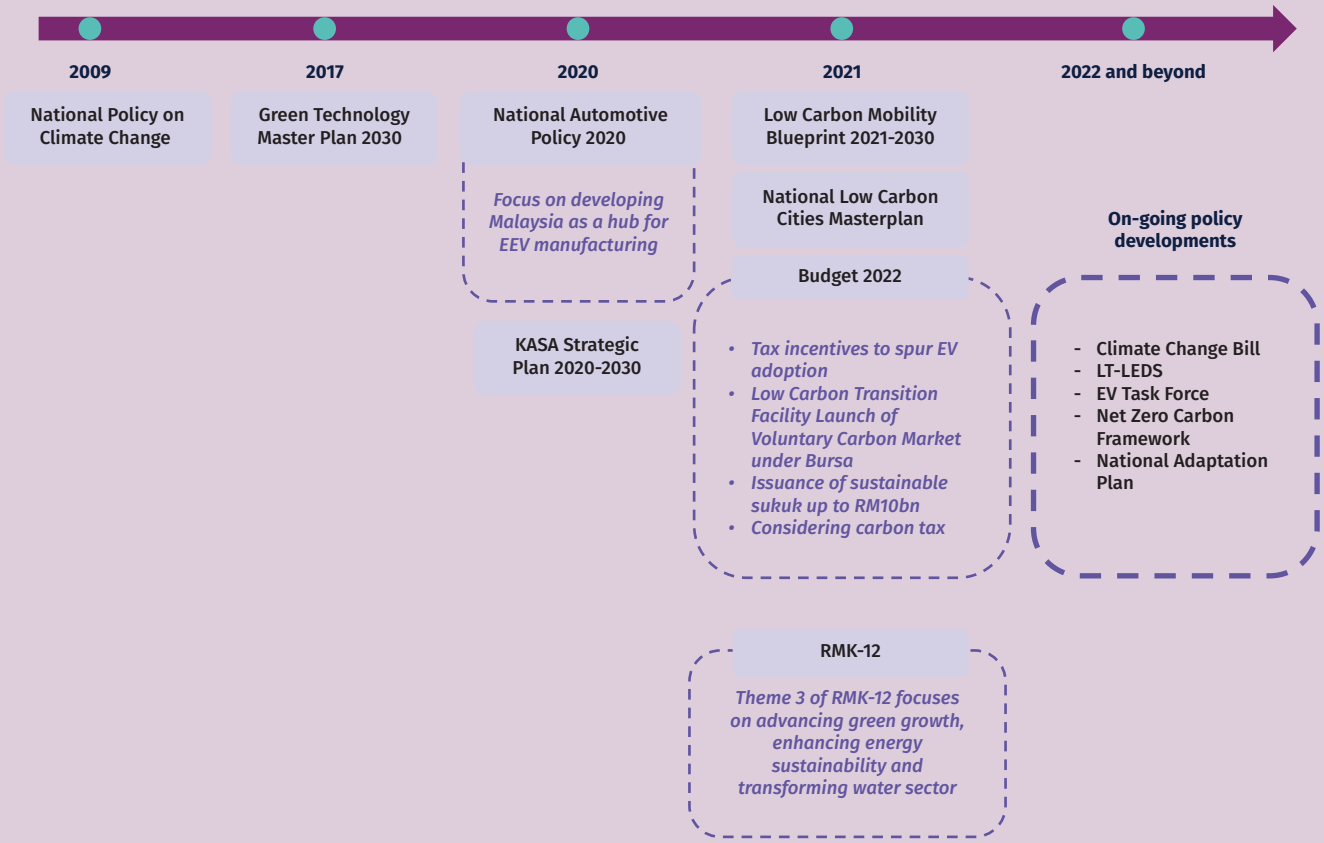
d) Climate policies are fragmented and not sufficiently ambitious

Climate action in Malaysia started in 2009 and have gathered pace since 2020 (Chart 10), with the setting of selected targets on mitigation. A range of sustainability-related regulations is in the pipeline. This includes the Climate Change Bill, Long-Term Low Emission Development Strategy (LT-LEDS), Net Zero Carbon Framework and National Adaptation Plan.

However, other countries are carrying out their climate action at a faster and broader pace. This is evident in Malaysia's low ranking (54th) under the climate policy category of the 2023 Climate Change Performance Index[14], even relative to regional peers (Chart 11). When comparing similar mitigation strategies within ASEAN (Table 1), most strategies in Malaysia are still not in place, notably on legislation. Climate legislation is a vital pillar of climate governance, as successful climate action requires a legal basis. Pledges are not credible unless the measures enacted to achieve them are rooted in law (Eskander, Fankhauser, & Setzer, 2021). In this regard, the passing of the Climate Change Bill is paramount in facilitating an orderly transition by laying the groundwork for effective mitigation.

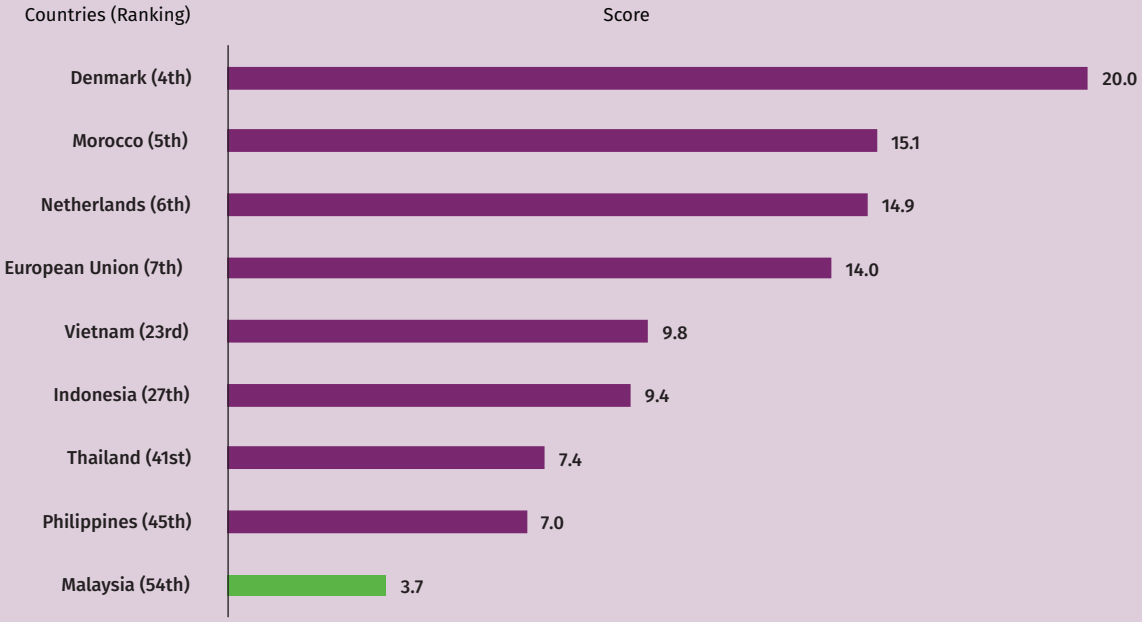
[12] CBAM will be implemented through carbon tax in phases (or "waves") starting from 2026, with prior mandatory emissions reporting starting from 2023.
[13] Include Singapore, China, USA, Japan, Hong Kong, Thailand, and Vietnam.
[14] The Climate Change Performance Index (CCPI) aims to enhance the comparability of global climate protection efforts and progress. It weighs the climate performance of 59 countries (which collectively account for more than 90% of emissions) in the aspect of GHG emissions, renewable energy, energy use and climate policy. The 'climate policy' category, which accounts for 20% weightage in the index, covers a qualitative assessment on the most recent climate policy framework developments at the national and international level.

Chart 10: Timeline of Climate Mitigation Policies in Malaysia



Source: Various policy announcements and policy documents

Chart 11: 2023 Climate Change Performance Index: 'Climate Policy' Category



Source: Climate Change Performance Index (CCPI) as at February 2023

Table 1: Comparison of Mitigation Strategies in ASEAN

	National Net Zero target	*Net-Zero Policy Framework & Legislation*	*Coal power phase out*	*Carbon market mechanism*	*Carbon tax*
Singapore	By 2050	Carbon Pricing Act (2018) and Supply Act (2022)	🟡	🟢	🟢
Indonesia	By 2060	Law 32/2009 Environmental Protection and Management	🟢	🟡	🟢
Vietnam	By 2050	Law on Environmental Protection (2014)	🟢	🟡	🔴
Thailand	By 2065	Constitution of Thailand (2017)	🔴	🟢	🔴
Malaysia	By 2050	🟡	🟡	🟢	🟡
Philippines	Reduce emissions by 75% below BAU by 2030	🟢	🟢	🔴	🔴

🟢 Policy already in place

🟡 Policy currently under planning

🔴 No policy in place

Source: Various news flows, Grantham Research Institute on Climate Change and Environment

Macroeconomic effects of a low-carbon transition

Decarbonisation at both the global and domestic levels, with the attendant climate policies, technology development, and shift in preferences, could pose shocks to Malaysia's development path, growth prospects and potential output, through material impact across economic sectors and labour conditions.[15] This will lead to fundamental changes in modes of production, demand patterns, income levels, trade dynamics and competitiveness (Organisation for Economic Co-operation and Development (OECD), 2017). If not managed well, these changes could lead to considerable dislocations such as rising cost pressures, job losses and a hollowing out of investments (Chart 12).

Global decarbonisation policies could influence the demand and prices for major commodities. As more countries adopt carbon pricing, the eventual lower global demand for fossil fuel products could adversely affect Malaysia's petroleum-related exports and investment activities.[16,17] Furthermore, the prospect of rising prices of key metals and minerals in coming years may also weigh on terms of trade and contribute to imported inflation. This may occur as global demand for renewable energy surges while supply plays catch up in a scenario of concerted efforts to meet emissions targets (Boer, Pescatori, Stuermer, & Valckx, 2021).[18]

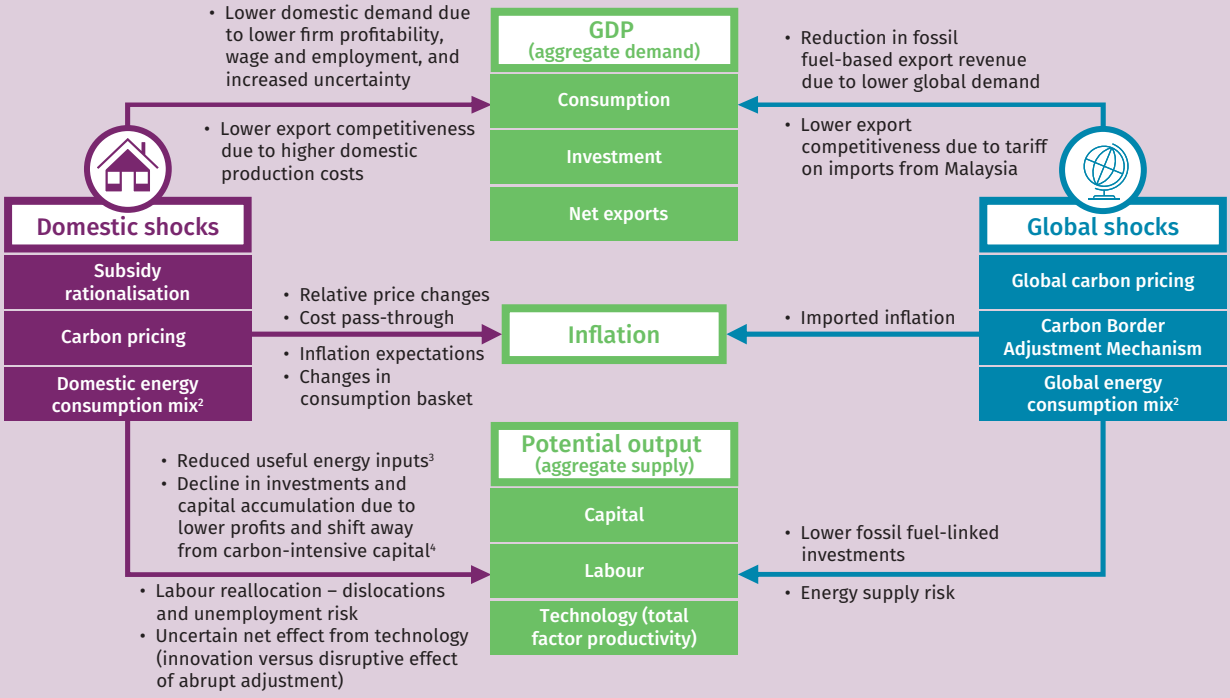
[15] The transition away from fossil fuels and carbon-intensive production and consumption will likely impact all sectors to varying degrees with sectors that are more difficult to decarbonise affected more than others.

[16] While lower petroleum-related exports reduce fiscal revenue, subsidy rationalisation and carbon pricing would potentially increase the fiscal space through reduced spending and additional revenue generation. The impact on the macroeconomy via fiscal policy would then depend on the net impact to revenue, and how the Government utilises its revenues to manage the decarbonisation process.

[17] The trajectory of pre-tax fossil fuel prices, however, is highly uncertain. Prices could remain relatively high and even increase over time despite falling demand in scenarios of stringent climate policy action, if it remains relatively cost-effective to use fossil fuel in the near term (compared to renewable energy sources) and given increasing marginal extraction costs over time (Network for Greening the Financial System (NGFS), 2021).

[18] There may also be indirect spillovers from global climate policy action more broadly via global inflation (for instance, as production costs rise in other countries).

Chart 12: Potential Transmission Channels of Transition Risks to the Macroeconomy[1]



Note:

[1] Transition risks stem from climate policies, technology development, and shifts in consumer preferences. These risks are not mutually exclusive. The chart depicts key channels of the transitions risks but these are not exhaustive. Financial sector feedback, monetary and fiscal policy considerations are excluded. For example, how revenue from carbon pricing is recycled, and the fiscal policy stance (whether budget neutral) will have demand and supply implications.

[2] Alongside climate policies, technology development (for example, in relation to energy efficiency, renewable energy or other low-carbon technologies) and shifts in consumer preferences could influence the global and domestic energy consumption mix and the speed of shift towards less carbon-intensive goods and services.

[3] Reduced useful energy inputs is in the absence of offset from efficiency gains or substitution with clean energy when carbon-based energy inputs decline.

[4] Additionally, risk of stranded assets. Green investments and capital accumulation provide partial offset (not expected to match capital intensity of high-carbon sectors).

Source: Bank Negara Malaysia illustration nominally based on Andersson, Baccianti, and Morgan (2020) and Drudi, Moench, Holthausen, and Weber (2021)

On the domestic front, the literature predicts that the implementation of carbon pricing could cause production costs to rise and profits to decline over the short-to-medium term. This negative wealth shock could lead firms to curtail investments to lower their long-term desired capital stock (International Monetary Fund (IMF), 2020) and reduce their carbon-based energy inputs. This reallocation of capital will also trigger a reallocation of labour, with possible dislocations and wage effects in sectors most affected by carbon pricing. Consumption could be lower, thus affecting growth. Potential output growth could be constrained in the absence of offsetting adjustments in the factors of production and technology, which are costly and may take a long while.[19] Energy components in the headline inflation basket will likely experience price increases especially as carbon pricing progresses over time.[20] The pass-through of costs associated with carbon pricing

[19] These adjustments include energy efficiency gains, substitutions in the energy mix towards green energy, the accumulation of green capital stock, and appropriate enhancements to human capital. If the necessary technology for the generation, storage and transmission of clean energy alternatives cannot keep up with the pace of transition, energy prices would likely be systematically increased (Drudi, Moench, Holthausen, & Weber, 2021).

[20] These are final goods, namely fuel for transportation, and electricity and gas for household consumption. The duration and extent of the direct impact on headline inflation would depend on innovation in renewable energy. This could lower prices and increase energy efficiency, and reduce the expenditure share, if there is no offsetting demand increase (Andersson, Baccianti, & Morgan, 2020). More generally, as production and consumer preferences gradually shift toward less carbon-intensive goods and services (which may also occur without accompanying climate policies) and as these items enter the consumption basket, this will help moderate inflationary pressures (Network for Greening the Financial System (NGFS), 2020).

to consumers could also raise inflation.[21] These potential inflation effects could occur subsequent to subsidy rationalisation, which would involve the removal of blanket subsidies and price ceilings.

The extent of impact from the global and domestic transmission channels described above would depend on three inter-related elements:

First, the initial characteristics of Malaysia's carbon dependence will influence the response to mitigation policies. These include energy intensity in the economy, encompassing the relative proportions of carbon-based energy and renewable energy use, as well as the initial size of the fossil fuel trade balance. In general, countries that have carbon-intensive production structures are more exposed to higher inflation and factor input adjustments, while those that rely on fossil fuel export revenue are susceptible to adverse terms-of-trade shocks. The capacity and speed for structural transition towards low-carbon industry and domestically produced renewable energy sources will influence the impact of the shocks (Holland, Hurst, Kara, & Liadze, 2021). Further, as both carbon-intensive and fossil fuel revenue-dependent countries are expected to experience disproportionate declines in investment (including via lower capital inflows), real exchange rate depreciation plays a shock absorber role that facilitates expenditure switching and current account balance adjustments (IMF, 2022a).

Secondly, the design and phasing of mitigation measures matter greatly for whether the expected economy-wide shifts remain manageable and produce equitable outcomes. An orderly approach to climate policies – *prompt and gradually more stringent* – helps keep Malaysia coordinated with other countries.[22] It is also conducive for capacity building by the private sector, including adjusting factors of production and managing the risk of stranded assets. Based on global level scenarios, an orderly approach represents the best chance of effectively managing both physical and transition risks over the long run (Network for Greening the Financial System (NGFS), 2022). Conversely, a disorderly approach – *delayed and uncoordinated* – will risk greater policy spillovers from policy divergence across countries, and more abrupt and aggressive climate policies, that may require strong counter responses by other domestic economic policies. Climate policies have been shown to disproportionally impact certain vulnerable groups,[23] thus a critical aspect is to design mitigation policies which ensure that the costs and benefits of transition are distributed equitably. This may include compensation measures in the form of cash transfer programmes, tax exemptions, enhancement to social security payments as well as employment programmes (Feng, Hubacek, Liu, Marchán, & Vogt-Schilb, 2018; United Nations Development Programme (UNDP), 2021).

Third, uncertainty about the direction in climate policy and operating environment could bring about more adverse effects. Doubts regarding the commitment to progressive carbon pricing, in particular, increase the likelihood of a temporary period of higher inflation, even if transition has an overall depressive effect on economic activity. This is because a future fall in income is not anticipated and thus inflationary pressures from higher production costs dominate deflationary demand effects (Ferrari & Nispi Landi, 2022).[24] More generally, uncertainty regarding the trajectory and effective management of future policies leads to higher risk aversion. This raises investment risk premia, resulting in more volatile global commodity prices and financial markets, and reduced FDI and capital spending domestically, lowering potential output. Households' precautionary savings may rise, dampening expenditure. Hence, a credible climate policy path with gradual and progressive commitments is necessary to enable economic agents to adjust and adapt without being too negatively impacted by the transition.

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[21] This is the indirect effect on inflation from carbon taxation which could potentially feed through firms' cost structure based on their emissions, and cost spillovers given linkages across sectors.

[22] Given that countries are increasingly implementing climate policies to match their climate ambitions, early action puts Malaysia in an advantageous position to mitigate climate policy spillovers (for example, via CBAM). There is also a case for an internationally coordinated approach via carbon price floors that are differentiated according to countries' development level and contribution to emissions. This could enhance the transparency of countries' actions, address competitiveness concerns and achieve long-term temperature goals (International Monetary Fund (IMF), 2019).

[23] Higher energy prices from carbon taxes and removal of fossil fuel subsidies will have a greater direct impact on firms and workers in energy-intensive sectors. Indirect impacts via increases in prices of goods and services with large energy inputs, such as public transportation, electricity, and food, will hurt poorer households the most (Feng, Hubacek, Liu, Marchán, & Vogt-Schilb, 2018; Eurofound, 2021).

[24] If the temporary period of higher inflation driven by the lack of credibility of future carbon taxes contributes to a de-anchoring of inflation expectations, the transition can become inflationary in the long term too.

Implications of transition on the conduct of monetary policy

While decarbonisation can be thought of as primarily emanating from the supply side, there are key differences against traditional supply shocks. Namely, it is anticipated, permanent, and generates revenues that can be channelled back to the economy (Bank of England (BoE), 2022; International Monetary Fund (IMF), 2022b).[25] The transition process would necessitate permanent resource reallocations and relative price adjustments across sectors. Hence, there is a case for monetary policy to accommodate these developments[26] amid the presence of downward nominal rigidity.[27] For instance, accommodating higher inflation allows wages in the expanding sectors to increase thus setting the right price incentives for the movement of labour towards these sectors. Relative price adjustments across sectors will also favour the reallocation of factors of production towards expanding sectors (Guerrieri, Lorenzoni, Straub, & Werning, 2021),[28] which in turn can support sustainable growth.

On the other hand, the energy price shocks are salient[29] and progressive in nature. This increases the risk of more generalised and persistent inflation, which could subsequently affect inflation expectations and heighten the risk of second-round effects and wage-price spirals. In balancing the upside risks to inflation and downside risks to growth, how climate shocks may evolve will be an important consideration for the central bank to maintain the credibility of its monetary policy framework. Communicating the potential economic consequences, both in terms of growth and the nature and drivers of inflation, and how this will weigh on monetary policy action would be equally important.

The monetary policy response will depend on how decarbonisation evolves, particularly whether it remains orderly. This will involve taking into account interactions with climate and fiscal policies, and, as a small open economy, exchange rate effects.

An orderly transition will require careful consideration of the phasing in of subsidy rationalisation and carbon pricing. These policies should also be accompanied by attendant support policies such as incentives for green investment, and protection for the most vulnerable segments of the economy. The orderliness of transition will have a bearing on the effectiveness of monetary policy responses via the transmission mechanism. For instance, if changes in climate policies, market behaviour and technology are particularly disruptive, the resulting stranded assets can impair the financial system and consequently weaken the transmission mechanism (Drudi, Moench, Holthausen, & Weber, 2021).

The monetary policy response will vary according to the Government's revenue recycling choices which can have different macroeconomic impacts,[30] and thus underlies differentiated paths for macroeconomic stabilisation that are consistent with the monetary policy mandate (Darracq-Pariès, Dees, Hurst, & Liadze, 2022). In addition, these choices as well as the credibility of fiscal and climate policies could influence monetary policy space as captured by the natural rate of interest. Revenue recycling that fosters innovation and enhances productivity could raise the natural rate of interest. However, policy uncertainty could reduce it, given lower investment and higher savings (Drudi, Moench, Holthausen, & Weber, 2021).

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[25] Generally, carbon tax revenues can be recycled via public investment, tax reduction, transfers to households and reimbursement of public debt.

[26] Namely the reallocation of capital and labour to less carbon-intensive economic activities, and the higher relative price for carbon-intensive goods and services.

[27] A situation where nominal wages are resistant to reductions, despite changes in the broad economy that suggest a lower wage is optimal (Case, Fair, & Oster, 2012).

[28] In contrast, when nominal wages are rigid downwards, monetary policy action which lowers spending and inflation may not facilitate reallocation, but instead further increase unemployment, especially in sectors that are contracting. This therefore imparts a degree of inflationary bias to optimal monetary policy (Guerrieri, Lorenzoni, Straub, & Werning, 2021).

[29] Price changes which are more important for consumers, and potentially have a larger bearing on the overall price trend (Bank for International Settlements (BIS), 2022). The saliency of energy prices is due to their pervasive role in production chains.

[30] Among the revenue recycling options, public investment leads to the most beneficial effects on GDP and higher short-term inflationary pressures. It also contributes to long-run potential output via capital stock expansion (Darracq-Pariès, Dees, Hurst, & Liadze, 2022).

Under normal conditions, the exchange rate reinforces the desired effect of monetary policy (Drudi, Moench, Holthausen, & Weber, 2021). A disorderly transition, however, increases the risks of real exchange rate effects which amplify rather than absorb shocks, and the weakening of the exchange rate channel of the transmission mechanism. This could become important in informing monetary policy strategy, especially if exchange rate effects amplify rather than buttress the disruptive impacts on the economy.

Role of investment in catalysing the low carbon transition

The world must invest massively in climate adaptation and mitigation to meet the Paris Agreement targets. Between 2022 and 2050, over USD270 trillion is required to decarbonise the global economy, mostly in the transport, energy, building and industry sectors (Swiss Re Group, 2022). For Malaysia, it is estimated that investments worth RM350 billion to RM450 billion will be needed over the next three decades to achieve its emissions targets (World Wide Fund for Nature (WWF) Malaysia; Boston Consulting Group (BCG), 2021). The significant capital expenditure not only supports an orderly transition, but also unlocks new opportunities in the green economy.

Reallocating resources to fund green investments on a large scale is, however, inherently challenging. Embarking on green infrastructure projects and low-carbon technologies typically involves high upfront capital outlays, long gestation, technical limitations, and unproven commercial viability (Georgieva & Adrian, 2022). Such constraints are particularly prevalent in the private sector in emerging market economies due to the lack of reliable market intelligence on green economy, macroeconomic fluctuations, and policy uncertainties.

Exploring existing and new economic opportunities

To insulate against physical and transition risks, capital formation in Malaysia will need to increasingly pivot toward assets that support climate adaptation and mitigation. The potential impact of CBAM is a case in point, in which raising domestic capacity in cleaner production methods along the supply chain would safeguard trade competitiveness. Moreover, Malaysia can leverage on its unique advantages to seize latent opportunities arising from decarbonisation. For instance, the country produces around 20% of global palm oil output,[31] which also generates large quantities of effluent and biomass waste. This calls for more investment that would deeply integrate circular economy practices within the oil palm industry and broaden the research in biofuel development.

Investment in new and emerging technologies is also key to unlocking new opportunities in the low-carbon transition. More capital is therefore needed to support innovative green energy solutions especially at the commercialisation phase. Namely, carbon capture, utilisation and storage (CCUS) technology would help decarbonise the hard-to-abate sectors, while developing hydrogen as an alternative to fossil fuels would improve Malaysia's energy mix.

Improving investment climate and funding mechanisms to drive green investments

Making Malaysia's investment climate more conducive and attractive to the private sector, including foreign players, to invest in or acquire green technology assets is equally crucial. This includes setting a clear transition roadmap, ensuring adequate supply of green talent, and providing attractive incentives which can alleviate the cost burden of asset acquisition. Reducing information asymmetries and improving the risk-return profile of prospective investments is critical in spurring private sector involvement, including the financial institutions. Towards this end, the Bank introduced the Climate Change and Principle-based Taxonomy[32] to facilitate financial institutions in assessing and classifying economic activities that contribute to adaptation and mitigation strategies.

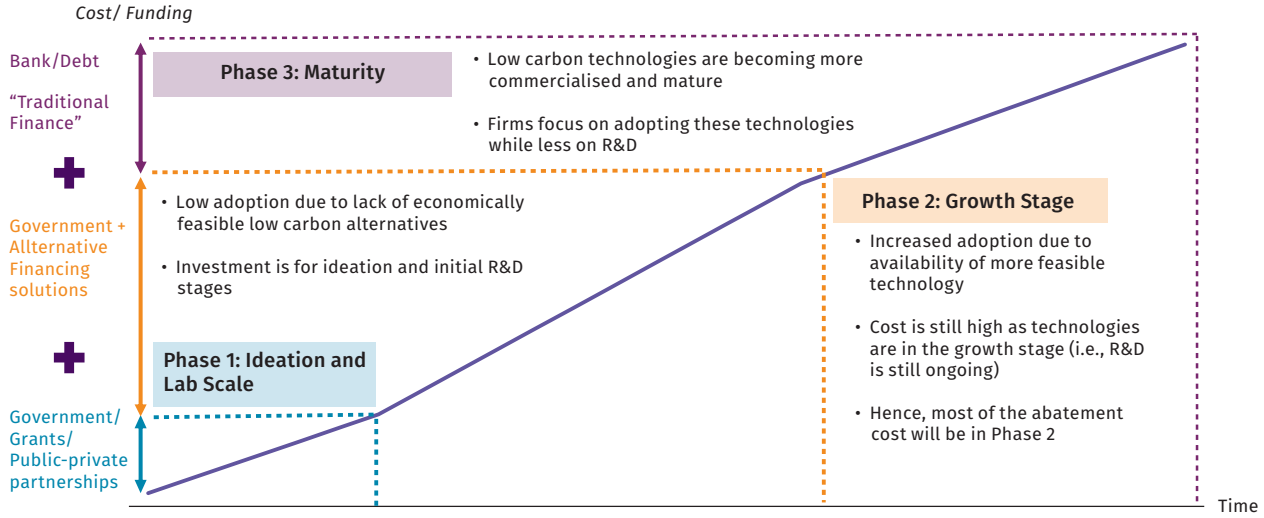
[31] Malaysia Palm Oil Council, 2022

[32] For further information, please see "Climate Change and Principle-based Taxonomy" document (link: https://www.bnm.gov.my/documents/20124/938039/Climate+Change+and+Principle-based+Taxonomy.pdf).

Various strategies towards promoting green investment have been identified under the New Investment Policy (NIP), in line with ESG being the overarching theme for the National Investment Aspirations (NIAs). Effective implementation of these strategies is crucial in creating a conducive investment ecosystem and attracting high quality investment to catalyse the green transition.[33]

In addition, overcoming financing barriers and attracting investors are key in increasing green investments. Specifically, **enhancing the funding mechanisms** would ensure that adequate capital is available across all phases of technological feasibility and commercial viability (Chart 1A). Funding for the ideation, research and development stage should be mainly sourced from the Government and public-private partnership, given the large upfront outlay and the need for technical assistance from public institutions. Equity-based and alternative financing are more effective in the growth stage, given the long gestation and higher risk-return trade-off. Finally, traditional financing typically plays a larger role at the maturity phase to ensure business continuity.

Chart 1A: Green Technologies Funding Phase



Note: 60% of the technology is expected to be feasible today/in the near future, 5% which would require public financing and 35% which depends on implementation of carbon pricing *(BCG: Securing our future: Net Zero Pathways for Malaysia 2021)*

Source: Bank Negara Malaysia, adapted from American Energy Innovation Centre

[33] For further information, please see the New Investment Policy, 2022

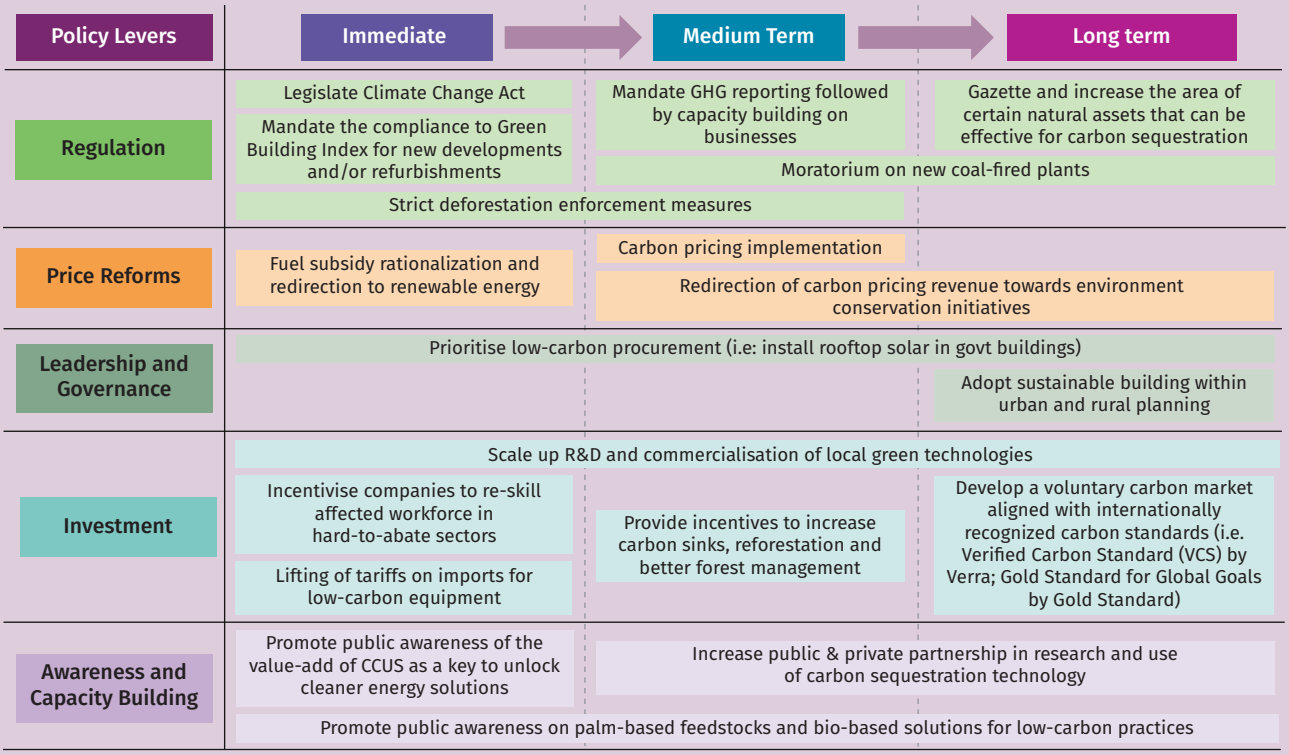
Full steam ahead: Building blocks to galvanise climate mitigation towards a greener economy

With the economic and financial effects of climate change steadily affecting our lives and livelihoods, Malaysia needs to step up its own adaptation and mitigation efforts. This requires a whole-of-nation approach towards climate mitigation with inclusive participation and strong commitment from all stakeholders. From the top, the Government plays a crucial role to enable a conducive ecosystem for orderly transition. A high degree of clarity on the country's vision, strategies, plans, timelines and milestones is therefore paramount. This would provide strong market signals that would spur firms to adjust towards low-carbon practices and encourage households to live more sustainably. Chart 13 shows a roadmap that captures some of the key of measures that the Government could consider in making mitigation more effective towards reducing emissions. These measures are grouped into five broad levers comprising *regulation, price reform, leadership and governance, investment as well as awareness and capacity building*. They are also prioritised according to immediate actions as well as medium and long-term reforms.

Under the lever of *regulation*, there is a pressing need for a regulatory framework aimed at controlling emissions and polluting activities. Here, enacting the Climate Change Bill is key towards laying the legislative foundation for effective climate action. Equally important is mandating Green Building Index compliance in the construction sector and stricter enforcement to protect Malaysia's carbon sinks.

The next lever is implementing *price reforms* to address the problem of externalities when market players do not internalise the economic costs and benefits of decarbonisation. Chiefly, the rationalisation of fossil fuel subsidies could shift firm and household behaviour towards greater energy efficiency. The savings from rationalisation could then be rechannelled to hasten renewable energy development. This would reduce the associated green premiums and promote wider usage of sustainable alternatives.

Chart 13: Potential Policy Roadmap towards Decarbonisation



Source: Bank Negara Malaysia assessment based on OECD climate policy solutions

Meanwhile, establishing a carbon accounting framework[34] is crucial in preparing the private sector towards adopting carbon pricing. This can take the form of either a carbon tax or emissions trading scheme (ETS). These instruments are empirically shown to induce countries to decarbonise, where the average annual growth rate of emissions are two percentage points lower compared to countries without carbon pricing.[35] However, carbon pricing implementation needs to be carefully designed to achieve the intended outcome and prevent negative spillovers. For example, while the EU area has managed to reduce their emissions by an average of 2.2% annually since its ETS started in 2005, the cap[36] for rate of emission reduction needs to be raised to at least 4% of emissions annually for 2021-2023 to achieve the Paris Agreement target (Zaklan, 2021). The appropriate carbon price level[37] must also be considered as the global average price of USD6 per tonne of emissions based on IMF's estimations is too low to curb global warming in line with the Paris Agreement. Hence, the Government would need to balance between an appropriate initial price and its subsequent increments that provides sufficient time for firms to adapt, while at the same time reflect the actual cost and appropriate incentives to effectively reduce emissions.

[34] For further details on carbon accounting framework, please refer to the Box Article on 'Measuring the Journey Towards a Low Carbon Economy' in Chapter 2.2, BNM Annual Report 2022.
[35] This is based on *Carbon Pricing Efficacy: Cross Country Evidence* (Best, Burke, & Jotzo, 2020) which uses 142 countries over a period of 20 years .
[36] An ETS cap is the limit placed on the emission rights to trade within the region.

Equally important is for the Government to 'walk the talk' in spearheading the decarbonisation agenda. The Government could *lead by example* by advancing low carbon procurement practices and adopting sustainable urban and rural development as green technologies and building materials become widely available.

Catalysing green *investments* is key. Lifting the tariffs on imports of green technologies could jumpstart the transition. Providing incentives to spur domestic development of such technologies not only reduces reliance on imports over time but raises Malaysia's knowledge and productive capabilities and creates high-value green jobs. These are jobs that promote sustainability and decrease waste, energy use and pollution.

Lastly, strategies are needed to step up *awareness and capacity building* initiatives to deepen public-private partnerships in research and inspire stakeholders to act collectively towards managing climate risks. Together, this will reinforce the effectiveness of the other policy levers in ensuring an orderly transition.

Conclusion

For Malaysia to achieve substantial emissions reductions, embarking on the necessary adaptation and mitigation will be vast in scale and complex in execution. Yet the consequences from its delay could be far greater with lasting implications on Malaysia's growth prospects, potential output and livelihoods. Hence, navigating the economic transition is critical, and would entail tailored solutions such as to wean off coal and decarbonise the hard-to-abate sectors. Equally crucial is the adept balancing to manage the ensuing costs and dislocations, while seizing the opportunities to create green jobs and attract investments that help our emissions targets. Above all, the climate pledges must be matched by concrete, measurable action. While the Government leads the way in setting the green agenda, its implementation is ultimately the collective responsibility of all stakeholders. The pace, breadth, and impact of decarbonisation on the wider economy will consequently determine the degree of monetary policy response. An equitable and orderly transition to a green economy will allow Malaysia's growth and development to be more resilient, sustainable, and inclusive, thereby securing a cleaner and liveable future for the next generation.

Moving forward, the Bank will continue with its engagements with key stakeholders, involvement at international platforms such as the NGFS, and capacity-building to better understand and analyse climate risk effects to act pre-emptively. The Bank will also continue to prepare the banking sector to be more resilient in the face of climate change and continue to support the transition process within its operational mandate.[38]

[37] Based on IMF's estimations, the recommended carbon price is USD75 per tonne of carbon emissions by 2030 as to curb emissions in line with the Paris Agreement (Black, Parry, and Zhunussova, 2022).

[38] Challenges remain given the lack of availability and liquidity ESG instruments and investments. To facilitate and support the development of a deeper domestic ESG bond market, the Bank has worked with the Malaysian Government to issue Ringgit-denominated Sustainable Development Goals (SDG) sukuk in September 2022. This inaugural issuance is expected to pave the way for more regular SDG government and corporate bond issuances in the future, which will be critical in developing the benchmark to spur private sector issuances.

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