



MALAYSIA PETROCHEMICAL COUNTRY REPORT 2022

**ASIA PETROCHEMICAL INDUSTRY
CONFERENCE (APIC 2023)**



New Delhi, India
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Chapter 1: Malaysian Economy

1.1 Overview of Malaysian Economy in 2022

According to the Bank Negara Malaysia (Central Bank of Malaysia) Annual Report 2022, Malaysia's economy recorded a commendable growth of 8.7% in 2022 (2021: 3.1%) despite the challenges faced throughout the year.

Malaysia's GDP Growth

Year	2019	2020	2021	2022 ^p	2023 ^f
Annual change (%)	4.4	-5.5	3.1	8.7	4.0~5.0

^f Forecast ^p Preliminary

(Source: Department of Statistics, Malaysia and Bank Negara Malaysia (BNM) estimates)

This was contributed by the full upliftment of containment measures, resilient growth in exports, particularly commodity exports, revival of tourism activity and continued policy support. Leisure-related services, mining and quarrying, agriculture and construction sectors remained below pre-pandemic levels. Activities were constrained by the more gradual recovery in tourist arrivals, oil and gas facility closures for maintenance purposes, labour shortages and higher input prices, respectively.

Growth in 2022 was largely driven by domestic demand, mainly from firm private sector expenditure. Improvements in labour market conditions and wage growth led to an increase in household spending. In line with the reopening of the economy, public and private investment improved significantly.

The improvement was contributed by public infrastructure projects, resumption of construction activity, as well as continued investments by firms to automate and digitalise their operations. Furthermore, external demand remained resilient and provided support to the economic growth in 2022.

Headline and underlying inflation trended higher in 2022 to 3.3% (2021: 2.5%), mostly contributed by higher prices of food-related goods and services. In addition, prices for other CPI services (rentals, restaurants and hotels) rose too. Upward price pressures arose from a combination of cost and demand factors. The cost factors included high global commodity prices, prolonged supply-related disruptions, sustained US dollar strength against the ringgit, domestic food supply shortages and seasonal factors. Demand conditions improved following the reopening of the Malaysian economy. These factors resulted in higher cost pass-through to consumer prices.

Monetary policy was recalibrated amid firmer domestic economic recovery. The Overnight Policy Rate (OPR) was gradually raised to 2.75% from a historical low of 1.75% through four consecutive adjustments beginning in May 2022. Adjustments were undertaken in a gradual and measured manner to ensure sustainable growth over the longer term while enabling the Bank to pre-emptively manage the potential risk of excessive demand on price pressures. Credit conditions remained supportive of the financing needs of households and businesses as the economy fully reopened.

The ringgit depreciated against the US dollar in 2022. The aggressive policy rate hikes in the US and concerns over a weakening global growth outlook led to investors preferring US dollar-denominated assets. The ringgit was relatively stable compared against the currencies of Malaysia's major trade partners, as assessed using the nominal effective exchange rate (NEER). The NEER recorded a marginal appreciation of 0.05% for 2022. This helped preserve our competitiveness. Malaysia adopts a flexible exchange rate regime, helping the Malaysian economy adjust optimally to global economic and financial shocks.

(* Source: Bank Negara Malaysia - Economic & Monetary Review 2022).

1.2 Trade Performance in 2022

According to the Malaysian External Trade Development Corporation (MATRADE), Malaysia's trade in year 2022 recorded a new milestone, surpassing RM2 trillion for the second consecutive year and registered the fastest growth since 1994. Trade grew with double-digit expansion of 27.8% to RM2.848 trillion compared to 2021.

Exports rose by 25% to RM1.552 trillion, exceeding the Twelfth Malaysia Plan projection for 2025, three years ahead of the target. Imports recorded another milestone by surpassing RM1 trillion mark for the first time, rising by 31.3% to RM1.297 trillion. Trade surplus increased by 0.6% to RM255.1 Bn, representing 25th consecutive year of trade surplus since 1998. Trade, exports, imports and trade surplus posted the largest value ever recorded.

The expansion in exports was driven by robust exports of E&E products, petroleum products, LNG, palm oil and palm oil-based agriculture products, crude petroleum as well as machinery, equipment and parts, each posted more than RM10 Bn increase with double-digit growth. All these products recorded the highest export value ever except for crude petroleum. Meanwhile, exports to major trading partners notably ASEAN, China, the US, the EU and Japan registered a new record high.

Trade with Malaysia's important and strategic trading partner, ASEAN, rose by 34% to RM772 Bn from the previous year. Trade with ASEAN accounted for 27.1% of Malaysia's total trade in 2022. Exports to ASEAN constituted 29.2% of Malaysia's total exports, posting the highest value at RM452.9 Bn, an increase of 31.8% from a year ago. This was contributed by higher exports of E&E products, petroleum products, crude petroleum as well as machinery, equipment and parts. Singapore, Thailand and Indonesia were the top three export destinations in 2022, accounting for 78.3% of Malaysia's total exports to ASEAN.

Exports to Singapore, the largest market in ASEAN with a share of 51.4% of total exports to the region, grew by RM58.59 Bn on strong exports of E&E products. Exports to Thailand (14.5% share) rose by RM13.68 Bn following higher exports of crude petroleum while exports to Indonesia (12.4% share) expanded by RM16.87 Bn on account of higher exports of petroleum products.

Imports from ASEAN edged up by 37.1% to RM319.1 Bn, with main imports comprising E&E products, petroleum products as well as chemicals and chemical products.

In 2022, China remained as Malaysia's largest trading partner for 14 consecutive years with 17.1% share of Malaysia's total trade, expanding by 15.6% to RM487.13 Bn compared to 2021. Exports surpassed RM200 Bn mark for the first time, expanding by 9.4% to RM210.62 Bn and was the highest value ever recorded. The expansion was driven by strong exports of E&E products, LNG as well as palm oil and palm oil-based agriculture products. China was also Malaysia's largest import source, accounting for 21.3% of total imports, climbed by 20.7% to RM276.5 Bn. Main imports were E&E products, machinery, equipment and parts as well as chemicals and chemical products.

Trade with Malaysia's third largest trading partner, the US, grew by 23.3% to RM267.59 Bn from the preceding year and constituting 9.4% of Malaysia's total trade in 2022. Exports to the US posted an all-time record high, rising by 17.5% to RM167.16 Bn. The expansion was supported mainly by strong exports of manufactured goods which increased by 18% to RM164.43 Bn and accounted for 98.4% of Malaysia's total exports to the country. The expansion was backed by higher exports of E&E products, petroleum products, iron and steel products as well as optical and scientific equipment. Imports from the US expanded by 34.4% to RM100.42 Bn comprising mainly E&E products, transport equipment as well as machinery, equipment and parts.

Trade with the EU in 2022 which represented 7.6% of Malaysia's total trade, grew by 20.1% to RM216.53 Bn from the previous year. Exports to the EU was up by 21.8% to RM126.31 Bn, the highest value recorded thus far due to strong exports of manufactured goods which accounted for 88.7% of Malaysia's total exports to the region. Higher exports was seen for E&E products, petroleum products, manufactures of metal, iron and steel products as well as palm oil-based manufactured products. Exports to all top 10 EU markets recorded increases notably the Netherlands which increased by RM10.91 Bn due to higher demand for E&E products, Germany (↑RM1.48 Bn, E&E products) and Belgium (↑RM2.59 Bn, iron and steel products). Imports from the EU increased by 17.7% to RM90.22 Bn. The main imports were E&E products, chemicals and chemical products as well as machinery, equipment and parts.

In 2022, Japan remained as Malaysia's fourth largest trading partner for eight successive years since 2015. Trade with Japan which represented 6.4% of Malaysia's total trade, rose by 21.2% to RM181.51 Bn compared to last year. Exports registered a double-digit growth for the second successive year, expanding by 29.6% to RM98.24 Bn and was the highest export value recorded. The growth was underpinned mainly by robust exports of LNG, crude petroleum, palm oil and palm oil-based agriculture products as well as E&E products. Imports from Japan increased by 12.6% to RM83.27 Bn. Major imports were E&E products, machinery, equipment and parts as well as manufactures of metal.

Trade with Free Trade Agreement (FTA) partners in 2022 recorded a double-digit growth of 26.4% to RM1.916 trillion from a year ago, accounting for 67.3% of Malaysia's total trade. Exports to FTA partners recorded the highest value at RM1.069 trillion, increased by 25.7% and absorbed 68.9% of Malaysia's total exports. Major export products were E&E products, petroleum products, chemicals and chemical products, LNG as well as palm oil and palm oil-based agriculture products which contributed 65.5% of Malaysia's total exports to FTA markets. Exports to all FTA partners recorded increases except Canada, Peru and Chile. Export expansions were recorded to Hong Kong SAR, by 24.6% to RM95.6 Bn and Mexico (↑44% to RM16.7 Bn), attributed to solid exports of E&E products. Exports to Turkiye rose by 22.9% to RM17.39 Bn and Pakistan (↑0.3% to RM6.02 Bn), boosted by strong exports of palm oil and palm oil-based agriculture products. Exports to Australia expanded by 41.5% to RM48.8 Bn and New Zealand (↑57.6% to RM6.98 Bn), led by robust exports of petroleum products. Meanwhile, exports to the ROK rose by 43.3% to RM54.78 Bn, driven by higher exports of LNG and India (↑21% to RM54.69 Bn, crude petroleum). Imports from FTA partners increased by 27.3% to RM847.06 Bn comprising mainly E&E products, petroleum products as well as chemicals and chemical products.

In 2022, exports of manufactured, agriculture and mining goods recorded the highest value thus far with double-digit growth. Increases in exports were seen for all products except rubber products as well as crude fertilisers and crude minerals.

In 2022, exports of manufactured goods accelerated by 22.3% compared to 2021 to RM1.307 trillion, making up 84.2% of total Malaysia's exports. E&E products held the biggest share of total exports at 38.2%, grew by 30.2% to RM593.49 Bn. The increase was driven by robust demand for semiconductors due to acceleration of global technology upcycle and business digitalization. E&E products that recorded significant export growth in 2022 were electronic integrated circuits, parts for electronic integrated circuits, apparatus for transmission of voice, images & other data, photosensitive semi-conductor devices and computers.

Other manufactured products that registered significant export expansion in 2022 were:

- Petroleum products, increased by 69.4% to RM163 Bn;
- Machinery, equipment and parts, ↑21.1% to RM60.45 Bn;
- Chemicals and chemical products; ↑14% to RM80.61 Bn;
- Optical and scientific equipment, ↑20.8% to RM56.69 Bn;
- Palm oil-based manufactured products, ↑26.5% to RM41.36 Bn; and
- Iron and steel products, ↑13.4% to RM33.35 Bn.

1.3 Investments

In 2022, Malaysia recorded approved investments totalling RM264.6 Bn. This translates to 4,454 projects, with 140,370 job opportunities to be created, according to the Malaysian Investment Performance Report 2022. The services sector is the major contributor with RM154 Bn, followed by a RM84.3 Bn boost in manufacturing sector, and RM26.3 Bn in the primary sector. Foreign Direct Investment (FDI) remained the major contributor to the total approved investments at 61.7% or RM163.3 Bn, while Domestic Direct Investment (DDI) contributed 38.3% or RM101.3 Bn (USD23 Bn).

The People's Republic of China (PRC) dominated foreign investments totalling RM55.4 Bn (USD12.5 Bn) or 33.9% and followed by The United States of America (17.9%) The Netherlands (12.5%), Singapore (8.3%) and Japan (7%).

The services sector attracted the largest portion of approved investments in 2022, accounting for 58.2% of the total approved investments. The approved investment for the primary sector shows an increase by 52% as compared to 2021. Major projects in the Information and Communications industry as well as the oil and gas industry contributed to the outstanding growth in approved investments for primary and services sector in 2022.

Malaysia's attraction as a top investment destination in the region remains strong, with a steady influx of high-quality investments in the manufacturing sector. This sector contributed RM84.3 Bn, or 31.9% of total approved investments in various economic sectors. FDI accounted for 78.3% of total approved investments, totalling RM66 Bn, with DDI contributed for the remaining 21.7% (or RM18.3 Bn).

Electrical and electronics (E&E) are the top-performing industries in the manufacturing sector (RM29.3 Bn), followed by machinery and equipment (RM8.4 Bn), transport equipment (RM8 Bn), chemical and chemical products (RM7.4 Bn), petroleum products (including petrochemicals) (RM5.9 Bn), non-metallic mineral products (RM5.8 Bn), scientific and measuring equipment (RM4.7 Bn) and rubber products (RM3.6 Bn). These industries comprise for RM73.1 Bn, or 86.7% of total approved investments in this sector.

Top 10 FDI Contributors for 2022 in the manufacturing sector were Singapore (RM9.61 Bn), China (RM9.55 Bn), Japan (RM9.18 Bn), The Netherlands (RM8.78 Bn), Germany (RM8.76 Bn), while added with the other 5 (ROK, HK, USA, Switzerland & UK with a combined value of RM17.38 Bn) accounted for 69.54% of total foreign investments.

However, in terms of Capital Investment Per Employee (CIPE), the contribution by petroleum products (incl petrochemicals) tops the list as follows: Petroleum Products (incl Petrochemicals) (RM7.36 mil), Chemicals & Chemical Products (RM2.57 mil), Transport Equipment (RM2.11 mil), Non-Metallic Mineral Products (RM1.82 mil), Machinery & Equipment (RM1.72 mil), Scientific Measuring Equipment (RM1.40 mil), Electrical & Electronics (RM1.08 mil), Basic Metal Products (RM0.69 mil). Food Manufacturing (RM0.66 mil), Rubber Products (RM0.47 mil).

There has been an increase in demand for chemicals and chemical products in 2022 and the industry is well on the road to recovery from the impact of the COVID-19 pandemic on the supply chain, logistics and foreign labour. Increasing demand can be seen in industries ranging from healthcare, cosmetics, personal care, and pharmaceuticals to E&E and transportation. The tremendous growth in global oleochemical demand is because of the increasing need for green products in industries such as personal care, pharmaceuticals, and cleaning products including soaps and detergents. The Malaysian market remains one of the largest global markets in the oleochemical sub-sector (*the second-largest market for Malaysian palm oil since 2019*). Additionally, it remains one of the largest producer and exporter of oleochemical products worldwide, contributing approximately 20% to global capacity.

As one of the leading industries in Malaysia, the petroleum products including petrochemicals industry is highly developed, as the nation is a major exporter of petrochemical goods including olefins, polyolefins, aromatics, ethylene oxides, glycols, and polystyrene. Many petrochemical players have pledged to decarbonise, recycle, and recover resources. PETRONAS, Malaysia's national oil company, declared its aspiration to achieve net-zero carbon emissions by 2050. Other new and innovative technologies that prospective investors are welcome to implement in Malaysia include green hydrogen; carbon capture, storage, and utilisation (CCSU); and advanced chemical recycling.

The production of 'green' hydrogen from renewable energy (RE) sources, which currently accounts for just approximately 0.1 % of all hydrogen production, becomes more realisable as the cost of renewable electricity and electrolyser technology continues to decline. Hydrogen is used in the production of fertilizer and can replace the use of fossil fuels in transportation, heating, and electricity generation. 'Turquoise' hydrogen is an additional area worth considering. Carbon capture, transport, storage, and utilisation using CCSU technologies are applicable throughout the whole energy value chain, with one such mechanism being to inject captured carbon dioxide into depleted offshore reservoirs for storage. The stored carbon dioxide can then be converted into useful chemicals and fuels, or for enhanced oil recovery.

Petrochemical companies in Malaysia have also ventured into advanced chemical recycling, such as the recovery of oil from plastic waste through pyrolysis instead of conventional recycling of plastic waste to produce recycled resin/plastic. Pyrolysed oil can then be used to produce virgin-quality polymers, which can be marketed as certified circular polymers.

Moving forward from 2023 and beyond, there are significant investment opportunities in terms of diversifying into high-end plastic products and engineering plastics, considering undertaking plastics recycling (coupled with high-technology waste management infrastructure) can improve the overall sustainability of the industry, especially in terms of ESG compliance. Molecular recycling, which includes purification, depolymerisation, and conversion technologies that can process a wide range of plastic waste including packaging, textiles, healthcare plastics, and wind turbine blades, help to recirculate plastics that currently do not have end-of-use recovery solutions. The recycling of plastic waste is a promoted activity under the Promotion of Investments Act 1986, and investors may be eligible for either Pioneer Status or Investment Tax Allowance.

The rubber products industry in Malaysia is well-established. Malaysia is the world's seventh-largest producer and eighth-largest consumer of natural rubber. Malaysia manufactures rubber products for use in three major categories: tyres, industrial custom rubber products, and consumables such as gloves and shoes. Domestic-grown natural rubber mostly goes to tyre applications hence, Malaysia is a major importer of natural rubber from Thailand.

Malaysia is a major global contributor in the production of synthetic rubber and medical gloves (examination and surgical gloves), condoms, and catheters. 65 % of gloves are exported globally. Demand for rubber products remained promising in 2022 from the glove and catheter producers. Rubber automotive components, engineering applications, consumer products and the emergence of rubberwood for biomass purposes, is predicted to rise. Overall rubber demand (including natural rubber and synthetic rubber) was estimated to have grown by only 1.8 % in 2022 (IRSG). In 2023, however, Malaysia's global exports of rubber and rubber products are expected to double from the RM71 Bn achieved in 2021, or reach approximately RM140 Bn.

For intrepid companies venturing into new and niche growth areas like the automotive parts, household products, engineering rubber products, industrial products, rethreading materials, tyres, and construction materials (seismic bearings for use in earthquake-prone countries) that are needed for constructing and assembling finished products, will undoubtedly involve additional R&D activities with sophisticated production technology related to automation and Industry 4.0.

1.4 Economic Outlook for 2023

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. Export growth is expected to moderate in line with a slower global growth. Recovery in inbound tourism and moderation in import growth will continue to provide support to net export growth.

Domestically, concerns remain on the elevated cost of living and input costs, and its impact on spending by households and businesses. Domestic growth will be driven by firm domestic demand, improvement in employment and income levels, continued implementation of multi-year investment projects and higher tourism activity.

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, mainly due to weaker manufactured exports and reduction of inventory build-up as global supply chain disruptions ease further.

As the economy normalises further, domestic demand is expected to be resilient. Domestic demand, particularly private sector spending, will remain the anchor of growth for the Malaysian economy in 2023, according to the Central Bank (*BNM*). Private consumption is projected to continue growing, albeit at a more moderate pace at 6.1% in 2023, from 11.3% in 2022. 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.

Unemployment rate is expected to improve to 3.5%, with a more broad-based expansion in income.

In addition, government policy measures, including the implementation of a higher minimum wage by small firms, the expansion in the coverage of employees entitled for overtime pay, the revision in individual income tax rates in Budget 2023, as well as cash transfers, are expected to provide further support to household income.

Meanwhile, the growth of private investment, which is projected to slow down to 5.8% this year from 7.2% last year, will be supported by the realisation of new and ongoing investment projects across key economic sectors. Public investment is expected to expand by 7% in 2023, compared with 5.3% in 2022, attributable to higher capital spending by both the general government and public corporations amid the continued progress of large-scale infrastructure projects, such as the East Coast Rail Link (ECRL), the Light Rail Transit Line 3 (LRT3), and the Pan Borneo Highway. 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 for public investment.

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% in tandem with the anticipated slowdown of global semiconductor sales. Growth in the consumer-related manufacturing cluster is expected to be lower amid normalisation in household spending activities. 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 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.

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. Higher new housing

launches demand following better income and employment prospects, will provide support to the residential subsector.

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, in line with the weaker global growth outlook, especially in Malaysia's key trade partners in the advanced economies. The impact would partly be mitigated by the reopening of China's economy and continued growth in regional economies.

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. Continued expansion in domestic demand would provide support to import growth of consumption and capital goods.

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. 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. 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. Risks to export growth are tilted to the downside, stemming mainly from slower-than-anticipated external demand and further escalation of geopolitical tensions. 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. Continued expansion in domestic demand would provide support to import growth of consumption and capital goods.

The outlook for inflation in 2023 is uncertain and remains tilted to the upside. The upside risks include higher global commodity prices due to worsening of geopolitical conflict, extreme weather conditions, stronger-than expected demand from China, and higher input costs due to exchange rate developments, and changes to domestic policy on subsidies and price controls.

The risks to Malaysia's economic growth are fairly balanced: Globally, with weaker-than-expected growth, tighter monetary policy by major central banks, further escalation of geopolitical conflicts could have an adverse impact on the global economy and trade. While domestically, higher-than-expected inflation would weigh on households' purchasing power and affect firms' profits impacting their spending and investment decisions. Better-than-expected labour market conditions and tourism activity as well as implementation of multi-year projects, including as outlined in Budget 2023, would provide upside risks to the domestic outlook.

**Source: BNM Economic & Monetary Review 2022.*

1.5 Malaysia – Key Economic Indicators

Malaysia - Key Economic Indicators

	2020	2021	2022p	2023f
Population (million persons)	32.4	32.6	32.7	33.1
Employment (million persons)	15.1	15.3	15.8	-16.1
Unemployment (as % of labour force)	4.5	4.6	3.9	-3.5
Per Capita Income (RM)	42,823	46,163	52,819	55,186
(USD)	10,187	11,142	12,001	12,678 ⁴
NATIONAL PRODUCT (% change)				
Real GDP at 2015 prices	-5.5	3.1	8.7	4.0-5.0
(RM billion)	1,345.1	1,386.7	1,507.3	1,573.0
Agriculture, forestry and fishery	-2.4	-0.2	0.1	0.7
Mining and quarrying	-9.7	0.3	3.4	2.0
Manufacturing	-2.7	9.5	8.1	4.0
Construction	-19.3	-5.2	5.0	6.3
Services	-5.4	1.9	10.9	5.0
Nominal GNI	-5.7	8.2	14.7	5.8
(RM billion)	1,389.5	1,503.8	1,724.6	1,824.9
Real GNI	-5.0	2.7	7.7	4.5
(RM billion)	1,331.4	1,367.7	1,472.9	1,539.3
Real aggregate domestic demand ¹	-5.5	1.7	9.2	5.4
Private expenditure	-5.9	2.0	10.4	6.1
Consumption	-4.2	1.9	11.3	6.1
Investment	-11.9	2.6	7.2	5.8
Public expenditure	-4.0	0.6	4.3	2.7
Consumption	5.0	5.3	3.9	1.3
Investment	-21.2	-11.3	5.3	7.0
Gross national savings (as % of GNI)	24.4	26.8	27.5	25.6
BALANCE OF PAYMENTS (RM billion)				
Goods balance	137.5	170.6	169.3	173.1
Exports	780.5	977.1	1,181.4	1,210.6
Imports	643.0	806.5	1,012.1	1,037.5
Services balance	-47.2	-60.7	-45.4	-33.6
Primary income, net	-28.5	-41.6	-63.6	-64.0
Secondary income, net	-2.7	-9.6	-13.1	-18.3
Current account balance	59.1	58.7	47.2	57.2
(as % of GDP)	4.2	3.8	2.6	2.5 - 3.5
Bank Negara Malaysia international reserves, net ²	432.3	486.8	503.3	-
(in months of imports of goods and services) ³	6.6	6.1	5.0	-
(in months of retained imports)	8.4	7.7	6.3	-
PRICES (% change)				
Consumer Price Index (2010=100)	-1.2	2.5	3.3	2.8 - 3.8
Producer Price Index (2010=100)	-2.7	9.5	7.8	-

¹ Exclude stocks.

² All assets and liabilities in foreign currencies have been revalued into ringgit at rates of exchange ruling on the balance sheet date and the gain/loss has been reflected accordingly in the Bank Negara Malaysia's audited accounts.

³ For further details, please refer to "Expansion of the Measure on Reserves Coverage of Imports – from Retained Imports to Imports of Goods and Services" article in BNM's Quarterly Bulletin for the Fourth Quarter of 2021.

⁴ Based on average USD exchange rate for the period of January-February 2023.

p Preliminary

f Forecast

Note: figures may not necessarily add up due to rounding.

Source: Department of Statistics, Malaysia and Bank Negara Malaysia



Chapter 2: Petrochemical Industry in Malaysia

2.1 Overview

Petrochemical Plants in Malaysia

JOHOR		MELAKA		PAHANG	
PASIR GUDANG & TANJUNG LANGSAT LOTTE		TANJUNG KLING RECRON		GEBENG IPC TORAY - BASF RESIN	
Olefins	1,414 ktpa	Polyester	76 ktpa	PBT (Toray)	30 ktpa
Polymer	1,205 ktpa	Fabric	400 mil metres	PBT (BASF)	30 ktpa
Aromatics	499 ktpa				
IDEMITSU		PAHANG		KUANTAN RPCM	
Styrene Monomer	240 ktpa	GEBENG IPC PETRONAS		PTA	
HIPS	110 ktpa	Olefins	380 ktpa	610 ktpa	
PENGERANG INTEGRATED COMPLEX PETRONAS - SAUDI ARAMCO		MTBE	300 ktpa	NEGERI SEMBILAN	
Olefins	2,640 ktpa	BASF PETRONAS CHEMICALS		NILAI RECRON	
Polymer	1,650 ktpa	Chemicals	780 ktpa	Polymerisation	432 ktpa
Glycol	808 ktpa	BP - PETRONAS		PET Chips (Bottle)	108 ktpa
Aromatics	230 ktpa	Acetic Acid	500 ktpa	Polyester	672 ktpa
PETRONAS				Others	78 ktpa
INA	250 ktpa			Fabric	414 mil metres
TERENGGANU		SABAH		PENANG	
KERTIH IPC PETRONAS		PC METHANOL, LABUAN PETRONAS		PRAI FZ TORAY PLASTICS (M)	
Olefins	1,465 ktpa	Methanol	2,345 ktpa	ABS/MABS	
Polymer	555 ktpa	PC FERTILISER, SABAH PETRONAS		350 ktpa	
Glycol	380 ktpa	Urea	1,200 ktpa	KEDAH	
Aromatics	688 ktpa	Ammonia	740 ktpa	PC FERTILISER KEDAH, GURUN PETRONAS	
Chemicals	410 ktpa			Methanol	70 ktpa
Ammonia	450 ktpa			Urea	683 ktpa
SARAWAK				Ammonia	400 ktpa
ABF, BINTULU PETRONAS					
Urea	750 ktpa				
Ammonia	450 ktpa				

Source: MPA Handbook 2018

Malaysia has a sizeable petrochemical industry, with over 100 companies¹ producing a wide range of chemical products. The country has been attracting increased foreign investments in the last few decades, mainly attributed to the availability of oil & gas feedstock, a well-developed infrastructure, a strong supporting services sector, and a strategic location to serve key markets in Asia and the Middle East.

Malaysia's current petrochemical production is primarily driven by a strong base for olefins, polymers, and aromatics, and there are strong ambitions to expand beyond the commodity products as industry players develop more complex, specialty downstream chemicals.

Chemical sector output has increased steadily over the last decade at a CAGR of 3.6%² and represented ~0.7% of total global chemical output as of 2022². The start-up of the Pengerang Integrated Complex will further boost the industry's gross output value, currently estimated at USD32 Bn².

According to the MIDA Investment Performance Report 2022, despite the challenges from COVID-19, as well as slower demand growth, increasing capacity due to expansion, and a declining value pool, the worldwide petrochemical market was expected to be worth US\$725.4 Bn in 2022, increasing to US\$950.1 Bn by 2028 with a CAGR of 4.6% over the forecasted period. The Malaysian Petrochemicals Association (MPA) expected the industry to record an average CAGR of between 5 % - 6%, which is higher than the country's GDP, despite numerous external economic uncertainties.

Malaysia's broader economic development provides a positive environment for the growth of the domestic chemical industry. According to the World Bank analysis³, Malaysia's real GDP per capita is projected to increase, setting Malaysia on course to achieve a developed nation status between 2024-2028, in line with Malaysia's Shared Prosperity Vision 2030 (SPV 2030). Malaysia is expected to continue to increase its chemical consumption as income grows in line with global trends.

Malaysia performs well in comparison with peers across several factors. However, there are opportunities to expand on this performance and leverage greater value moving forward, in line with the ambitions laid out by strategic plans such as SPV 2030, Twelfth Malaysia Plan, 2021-2025 (RMK-12), and Malaysia Industrial Master Plans (IMPs).

Malaysia accounts for 1.1%⁴ of global chemical-derived exports by value, below Thailand (1.6%) and Singapore (2.2%). With Malaysia's well-established industry and abundance of chemical feedstock as well as raw materials, there is a strong potential to further develop and expand its global share.

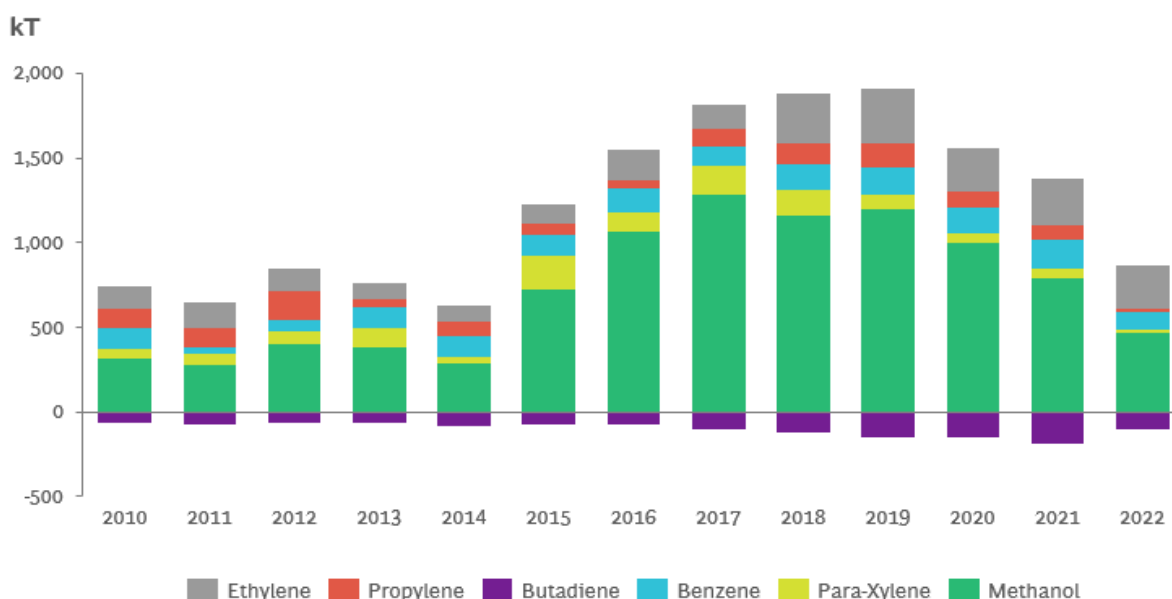
Malaysia's net equivalent trade in primary petrochemicals, i.e., olefins, aromatics, and methanol, is at a net surplus of ~760 kT in 2022. The region has remained a net exporter of primary petrochemicals and their derivatives over the past decade. In Asia, Malaysia is the only country holding a net export position for methanol, which also accounts for most of its export volume. The onstream of PETRONAS' RAPID complex is expected to further boost production and trade.

¹AICHE, The Malaysian Chemicals Industry: From Commodities to Manufacturing, November 2015

²Oxford Economics

³World Bank, Aiming High Navigating, the next stage of Malaysia's development, March 2021

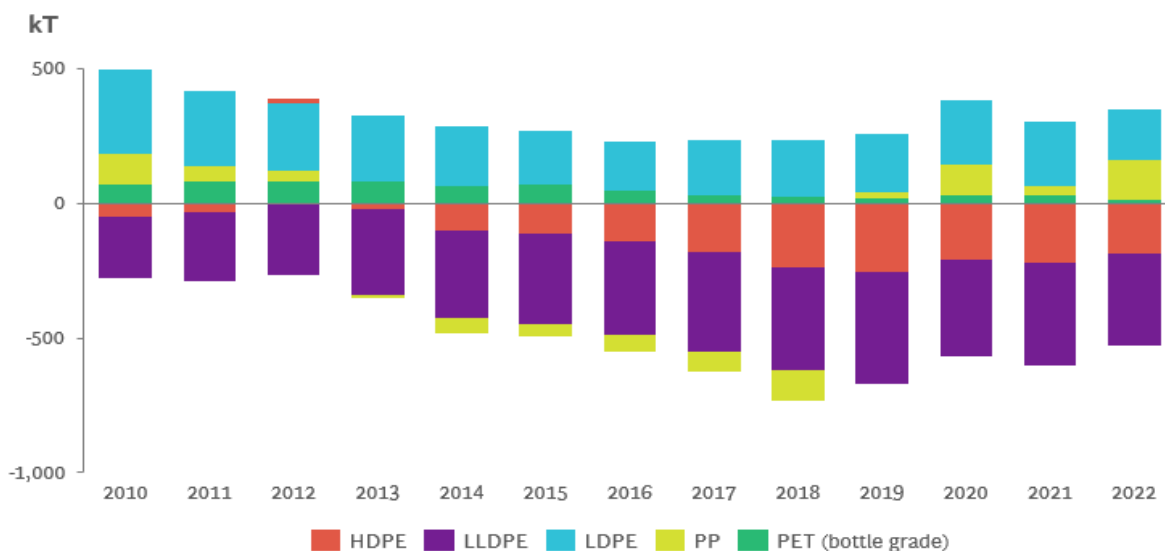
⁴UN Comtrade data; BCG analysis; Department of Statistics Malaysia (DOSM)



Source: Nexant; Company Press Releases; BCG ChemCom

FIGURE 1: Malaysia Net Equivalent Trade (Net Exports) in Primary Petrochemicals

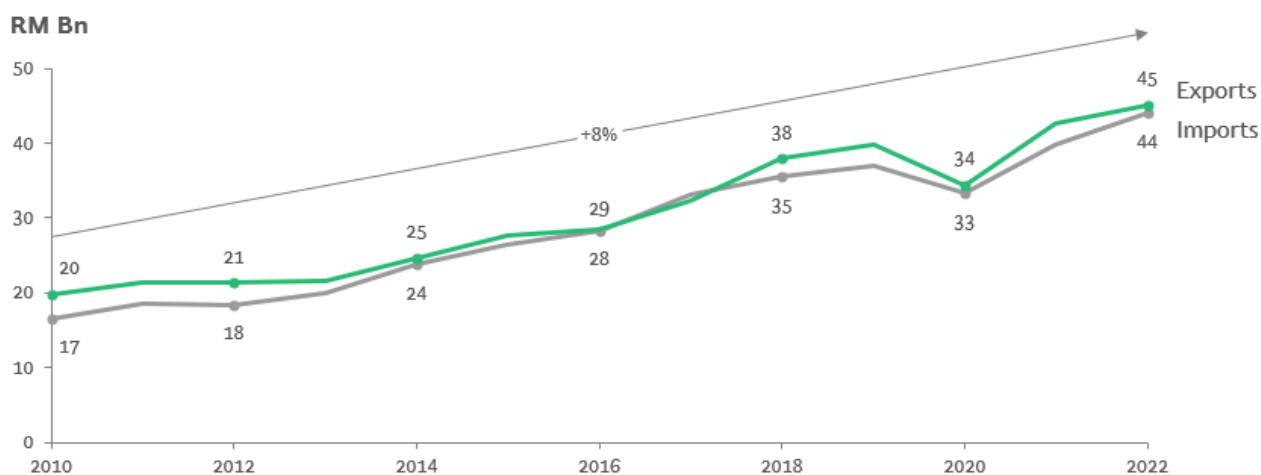
Over the past decade, Malaysia has continued to remain a net exporter of plastics (and articles thereof). The country was a net importer of polypropylene (PP) before 2018, i.e., prior to the commencement of Lotte Chemical Titan’s PP production unit. The new capacity addition from PRefChem (900 ktpa of PP) is expected to further strengthen Malaysia’s net exports position in the coming years.



Source: Nexant; Company Press Releases; BCG ChemCom

FIGURE 2: Malaysia Net Equivalent Trade (Net Exports) in Key Polymer Resins

Malaysia has been a net importer of HDPE and LLDPE, with net imports reaching 530 kT in 2022, primarily from Singapore, Saudi Arabia, Thailand, and Indonesia to meet domestic demand. In coming years, Malaysia is expected to balance polyethylene (PE) with the start of the PRefChem plant (annual HDPE capacity of 400 kT), which will ease its capacity crunch and trade deficit.



Note: Trade data for HS Code 39 (Plastics and Articles Thereof)
Source: Malaysia External Trade Statistics

FIGURE 3: Malaysia Plastics Trade Performance

2.2 Plastics Industry

Plastics and polymers offer the opportunity for broad downstream applications. The top five applications include consumer packaging, automotive, electronics, construction, and textile industries, with the industries consuming a range of commodity, engineering, and high-performance plastics. Packaging is the largest end-use sector, accounting for ~50% share⁵ to produce plastic bags, containers, films, plates, sheets, foil, strip bottles and boxes.

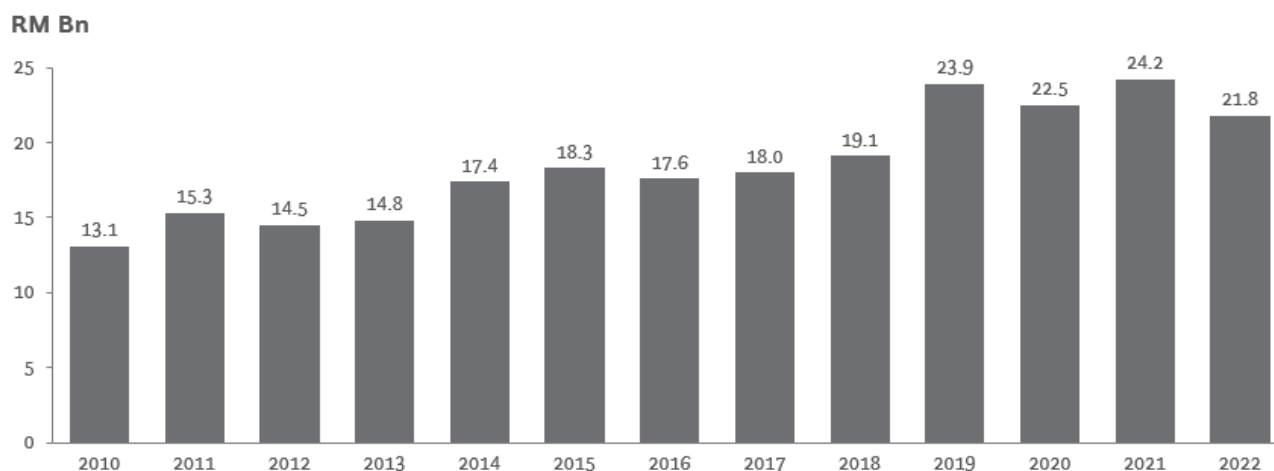
Established producers of plastic resins in Malaysia include Lotte Chemical Titan, PETRONAS Chemicals Group (PCG), Kaneka, Petrochemicals Malaysia (Idemitsu), Toray and Recron Malaysia (Reliance group). These companies focus largely on commodity plastics (~4 mtpa⁶) such as PP, PE, PS and PET as well as certain niche products within engineering plastics such as ABS and high-performance plastics such as PPS.

The plastics industry reported strong growth in 2021 amid recovery from the COVID-19 pandemic and robust demand from both the consumer and industrial sectors. Sales turnover⁷ increased 8% YoY, from RM22.5 Bn in 2020 to RM24.2 Bn in 2021. However, the industry witnessed a 10% decline in 2022 in the wake of weak downstream demand amidst uncertainty in global geopolitical and macroeconomic conditions arising from the Russia-Ukraine war.

⁵Malaysian Plastics Manufacturers Association

⁶IHS Markit; Nexant; Company websites

⁷Department of Statistics Malaysia



Source: Department of Statistics Malaysia

FIGURE 4: Malaysia Plastics (in primary forms) Industry Turnover

From a trade standpoint, Malaysia is an overall net exporter of key commodity plastics (esp. LDPE and PET), but a net importer of some engineering plastics and high-performance plastics. Plastic products industry remained ebullient throughout 2022, maintaining its growth trajectory from previous years. This is in line with the industry's outlook globally, which is expected to expand at a CAGR of 3.7 % from 2022 to 2030.

Exports of plastic products reached RM17.3 Bn in 2022, compared to the RM15.9 Bn achieved in 2021, an increment of 8.8 %. Meanwhile, total trade reached RM32.8 Bn, an increase of 11.6 % compared with 2021's figure of RM29.4 Bn. This excludes the indirect export of plastics as parts and components of E&E products, automotive components, building materials, textiles, and other products.

Higher value-add plastics are commanding strong growth within the plastics ecosystem, with the product segment forecast to grow at 4.8% CAGR⁷ in the next 5 years globally. Similarly, demand for engineering plastics will continue to increase at a higher rate than the current projections of 4.5% CAGR⁸. Global engineering plastic producers, such as BASF, Toray, SABIC, and Avient Corporations have established their own compounding facilities in Malaysia, which further strengthens the demand potential for higher value-add plastics.

The trend towards circular supply chains both globally and domestically is inspiring recent shifts in focus, with Malaysia taking initial steps into recyclable products. The country has introduced plastic waste reduction regulations/policies to curb plastics waste in the country. In 2018, Malaysian government launched a roadmap to eliminate and replace single-use plastics with biodegradable and compostable products. Key action plans include a nationwide ban on plastic bags by 2030, restriction on the use of plastic straws, and implementation of a pollution charge for single-use plastic bags at a minimum of \$0.05 in 2021.

The nation achieved a 24%⁹ recycling rate in 2019, with targets to achieve 40% by 2025 as defined in various initiatives and roadmaps such as Malaysia's Plastics Sustainability Roadmap 2021-2030. In parallel, the National Biomass Strategy 2020 targets an increased production of bioplastics, in an effort to strengthen the circular economy.

⁸IHS Markit

⁹World Bank, Market Study for Malaysia: Plastics Circularity Opportunities and Barriers, March 2021

Improvements to recycling ecosystems and technologies are being driven by global companies such as Indorama, BASF, Shell, as well as start-ups like Agilyx. These companies are testing efficient mechanical and chemical recycling technologies to achieve their sustainability goals and continue to drive the growth of the plastic recycling market. For example, efforts are underway to develop economically feasible depolymerization technologies.

Secondly, bioplastics, which account for less than 1%¹⁰ of the total plastics market, are being explored as a sustainable feedstock for both food and non-food packaging. Major consumer brands such as Unilever have pledged to use 25% recycled content for their packaging needs by 2025. Asia currently produces ~1.3 mtpa of bioplastics with more than 40% going into the packaging industry. Malaysia has already initiated pilot projects generating more than 10 ktpa of production and is currently working on plans to scale up.

Plastic product design has also seen some significant improvements in sustainability in recent years. For example, upstream stakeholders (i.e., petrochemical companies, specialty chemical companies, and packaging suppliers) are developing recyclable mono-material structures to replace non-recyclable multi-material structures and other plastics. Companies such as Nestle are using thinner, innovative materials to reduce plastic use in packaging.

In support of the ESG agenda, the Malaysian Government has also developed a Circular Economy Roadmap to manage poorly managed plastic waste on a national level. The Malaysia Plastic Sustainability Roadmap, 2021-2030 was released in December 2021 by the Ministry of Natural Resources, Environment and Climate Change (NRECC).

¹⁰European Bioplastics, Bioplastics market data

Chapter 3: Committee Reports

3.1 General Matters & Raw Materials Committee

Malaysia is abundant in petrochemical building blocks, with the advantage of reliable access to cost-competitive feedstock, which also enables downstream opportunities. Currently, the market has less integration to downstream derivatives and thereby low domestic demand, which puts it in a surplus position and makes it a net exporter of key petrochemicals. The recent new capacity additions across the value chain, especially downstream, are anticipated to provide balance and further strengthen Malaysia's export competitiveness.

The restart of PETRONAS' Pengerang Refinery and Petrochemical (PRefChem) Complex in 2023 is likely to significantly boost ethylene and propylene consumption through the production of derivatives in the complex. The plant has the capacity to produce 1.3 mil metric tons per annum (mtpa) of ethylene, along with PE and MEG. However, despite this upstream capacity addition, Malaysia is expected to remain a net importer of ethylene derivatives, particularly HDPE and LLDPE, on the back of higher demand growth.

Malaysia has a slight surplus of propylene; historically, the operating rates have remained lower than the regional average due to less integration downstream. The new PRefChem complex is expected to improve domestic demand—the propylene capacity of the plant is 1.2 mtpa, where three-quarters of the output¹¹ will be consumed captively to produce PP and the remaining will be supplied to the merchant market.

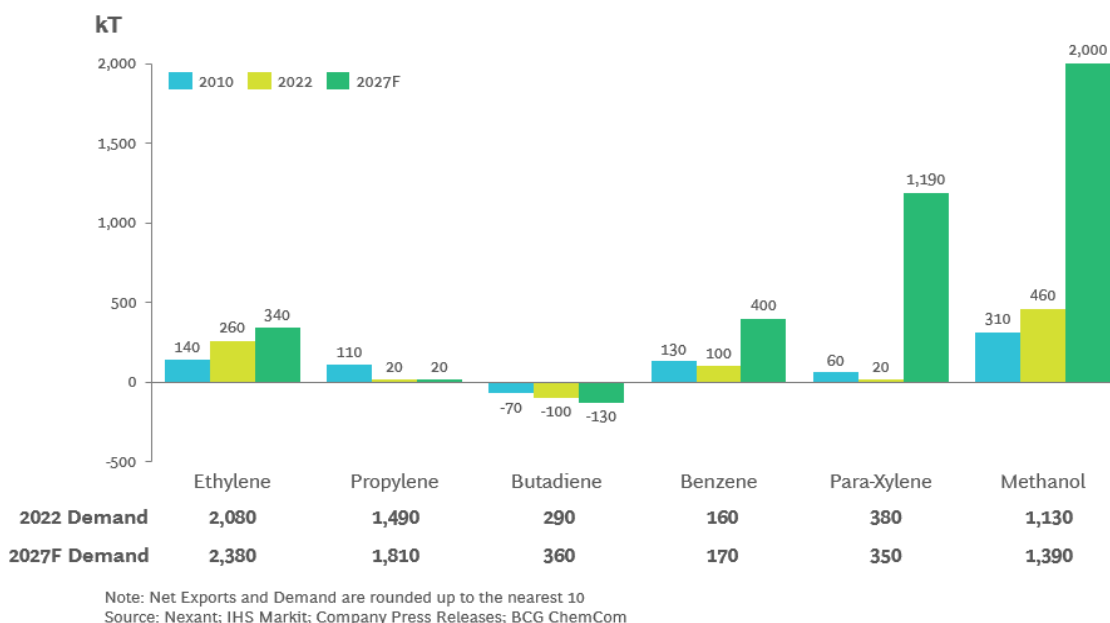


FIGURE 5: Malaysia Net Equivalent Trade in Primary Petrochemicals

¹¹Nexant; BCG ChemCom; Press Releases

Malaysia is the only major butadiene-consuming country in South East Asia (SEA) with a net import position. The import reliance is due to limited capacity additions and relatively higher demand, primarily from nitrile rubber latex which is the key raw material for manufacturing nitrile gloves. Malaysia is the largest supplier of natural rubber and NBR gloves and has a 60-65% share¹² of the global glove market. The PRefChem complex will add 183 ktpa butadiene in 2023; however, higher demand growth will not significantly displace import volumes and Malaysia is anticipated to remain a net importer of butadiene in the near future.

Aromatics Malaysia is the only paraxylene producer in the country. Its capacity has been constant for more than a decade at 540 ktpa. The PRefChem complex does not include any paraxylene capacity, however, a new refinery complex has been announced. Pengerang Energy Complex (PEC) has announced plans to set up an integrated aromatics complex consisting of 1.5 mtpa paraxylene and 655 ktpa of benzene. The plant will come on-stream by mid-2026 and is expected to significantly improve Malaysia's export position.

Malaysia is the only country in the Asia Pacific that holds a net export position for methanol. It has the largest capacity in South East Asia (SEA), accounting for ~80% share, along with a demand of 1.1 mtpa in 2022. Currently, the country operates 2 facilities owned by PETRONAS Chemicals Group (PCG) with a combined capacity of 2.4 mtpa. The new Sarawak Petchem plant is scheduled to come into operation in 2024-25 and add 1.7 mtpa of new capacity, which will significantly boost exports.

Malaysia is also a major producer of urea from the three urea complexes owned by PETRONAS Chemicals Group (PCG) producing approximately 2.6 mtpa of urea, and 1.3 mtpa of ammonia. PETRONAS Chemicals Fertiliser Sabah with a nameplate capacity of 1.2 mtpa of urea and 0.7 mtpa of ammonia, is the largest single-train ammonia and urea plant in South East Asia, and the third largest urea plant in the Asia-Pacific. In addition, PETRONAS Chemicals Ammonia produces 0.4 mtpa of on-purpose ammonia in Kertih Integrated Petrochemical Complex.

Malaysia, via INEOS PCG Acetyls, is also one of the largest single producer of acetic acid in Asia, producing approximately 0.5 mtpa. Acetic acid plays an important part in the manufacture of items such as fibres, fabric, washing powder, bottles and food packaging. Acetic acid is an important raw material in the production of PTA (used to produce PET and polyester fibres) and VAM (used in coatings and plastics).

¹²Nexant; IHS Markit; Press Releases



3.2 Polyolefins Committee

Polyethylene (PE) and Polypropylene (PP) are high-volume commodity thermoplastics together accounting for 13.8 mtpa¹³ demand in South East Asia in 2022. Because of their broad range of properties, they find applications in several end-use industries such as consumer goods, construction, automotive, and electronics.

The global PE market has witnessed several structural changes over the past few decades, mainly on unprecedented capacity buildup in China, the Middle East (ME) and the US as the regions pushed to improve their self-sufficiency (China consumes 35%+ of global PE production)¹³ and exports competitiveness on the back of low-cost feedstock advantage (the ME and the US are the largest PE exporters).

South East Asia is a net exporter of PE—has a significant surplus in LLDPE but is deficit in HDPE and LDPE. The region is the largest producer of HDPE films and sheets after mainland China, consuming ~1.6 mtpa (or ~47%) of HDPE resin to produce films in 2022¹³. The demand is expected to rise, especially from Indonesia and Vietnam, however, relatively limited capacity expansions planned in these countries to drive imports.

Malaysia is a net importer of PE, primarily HDPE and LLDPE, led by high demand for films and sheets. Within South East Asia, Malaysia holds the 3rd largest position in HDPE with a 15% capacity share (0.6 mtpa) and is expanding significantly. The onstream of PRefChem will add 0.4 mtpa of HDPE and 0.3 mtpa of LLDPE capacities.

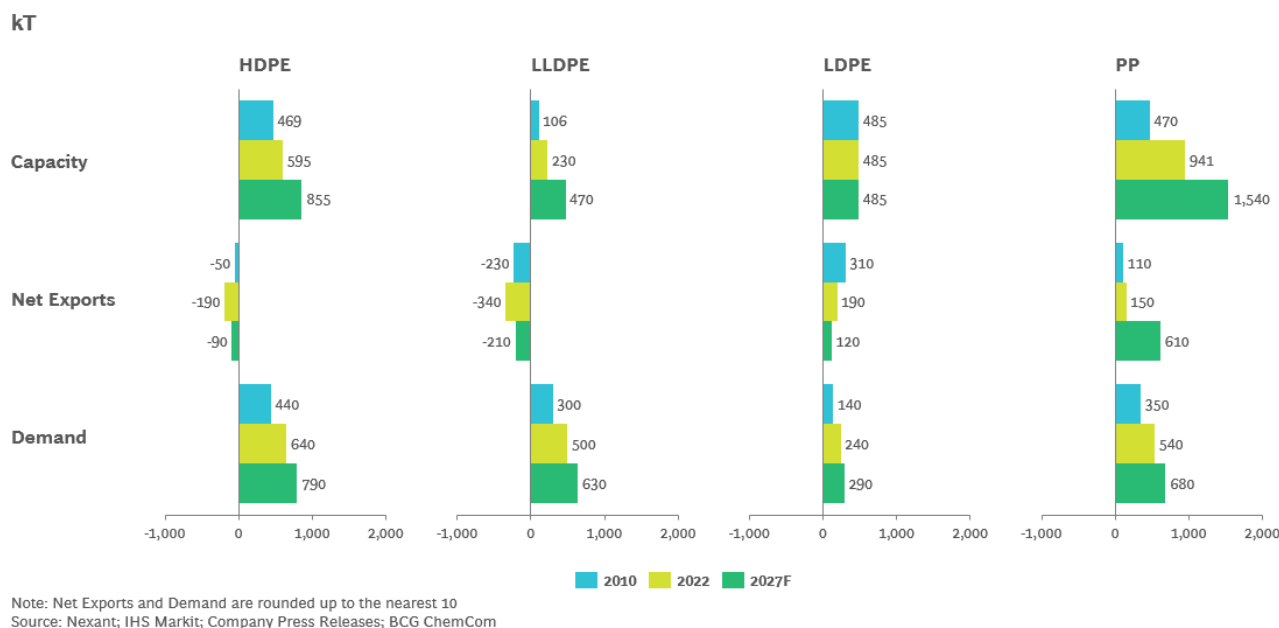


FIGURE 6: Malaysia Polyolefins Market Dynamics

¹³Nexant; IHS Markit; BCG ChemCom; Press Releases

Malaysia is the 2nd largest producer of LDPE in South East Asia, with two producers adding a total capacity of 0.5 mtpa¹³. No new LDPE capacity additions are expected in the near term, and Malaysia will continue to maintain its net export position. The major producers are PETRONAS Chemicals Group and Lotte Chemical Titan.

South East Asia has witnessed several major PP expansions in the last few years, doubling its capacity since 2010. Malaysia, in particular, has expanded its PP capacity fourfold with the commissioning of a 0.9 mtpa plant at Pengerang. The new capacity is expected to significantly boost exports, with net exports projected to reach 0.5-0.7 mtpa annually.

In 2022, PETRONAS Chemicals Group (PCG) and ExxonMobil signed an MoU to assess the potential for a large-scale advanced plastics recycling technology in Malaysia with the objective of a circular economy for plastics. The companies are also evaluating opportunities to support improvements to plastic waste collection and sorting in the country.



3.3 Styrenics Committee

Styrene is a crucial intermediate chemical used in the production of a wide range of high-value polymer derivatives, including commodity and engineering plastics, as well as synthetic rubber. These derivatives find applications in various industries such as electronics, household goods, automotive, construction, healthcare, and packaging. Styrene is also one of the highly traded commodities with almost a quarter of production transported globally.

South East Asia has been a net exporter of styrene and is expected to continue to be so in the near future, driven by surplus capacity and positive demand growth for derivatives worldwide. The Malaysian styrene market, which represents 10-12% of the South East Asia’s capacity¹⁴, has been structurally deficient with only one producer, Idemitsu SM, catering to the market. Approximately 40% of Idemitsu’s output¹⁴ is used captively for High Impact Polystyrene (HIPS) production, while around ~30% is supplied to the domestic merchant market, and the rest is exported to Asian countries, primarily India and other South East Asian countries.

Toray Plastics is the largest styrene consumer in Malaysia, primarily sourcing intermediate chemical from the Middle East. Although there are no anticipated capacity additions in near future, Malaysia is anticipated to remain a net importer due to growing demand in the end-use markets.

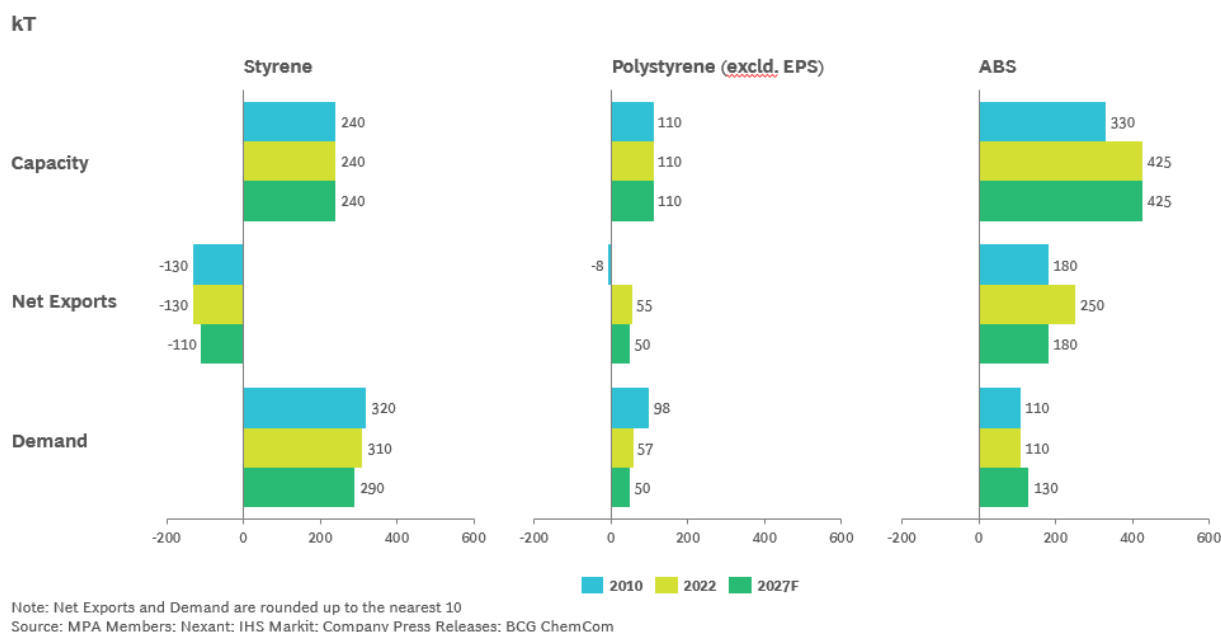


FIGURE 7: Malaysia Styrenics Market Dynamics

Polystyrene (PS), a thermoplastic polymer, is the largest end application of styrene globally; more than 40% of styrene (~ 0.6 mtpa) in South East Asia was consumed for PS production in 2022¹⁵. However, in Malaysia, PS is the second largest application segment, with 90-95 mtpa (or 30%) of styrene used for its production. The demand is evenly spread across consumer goods, electronics, and packaging sectors.

¹⁴Nexant; IHS Markit; BCG ChemCom; Press Releases

¹⁵Nexant; IHS Markit; BCG ChemCom; Press Releases

HIPS accounts for 60% of the Malaysian PS market, while the remaining portion goes into General Purpose Polystyrene (GPPS), which is mainly used to produce food packaging. The majority of PS imports in Malaysia are of GPPS grade due to absence of local production.

HIPS is expected to lead demand growth due to the presence of many electronics and appliances OEMs, such as Panasonic, Sony, Samsung, and Electrolux located in Malaysia and South East Asia. However, the application of PS in the food packaging sector is facing the threat of substitution from polyolefins and paper, as the government has introduced policies to reduce the use of non-biodegradable packaging.

ABS, an engineering thermoplastic resin, is the largest end-user of styrene (~65% or 200 kT in 2022) in Malaysia. Key application industries are electronics and consumer goods, accounting for ~75% of the domestic demand. Malaysia represents more than half of the South East Asia ABS capacity and is a net exporter; the investments in the segment are driven by rapid demand growth globally and within the region. In 2022, the Malaysian ABS plants operated at 85% capacity and exported ~70% of the production¹⁵.

The South East Asia Acrylonitrile Butadiene Styrene (ABS) market faces competition from PP in the thermoformed packaging segment. Additionally, HIPS has been replacing ABS in the refrigerator liner market due to cost considerations. However, ABS resin consumption in South East Asia is expected to grow at an average annual rate of 6-8% in the next 5 years, with Malaysia maintaining its export competitiveness.

3.4 PVC Committee

Polyvinyl chloride (PVC) is the third largest consumed plastic globally, after PE and PP. Its versatile performance characteristics, such as mechanical strength, water resistance, inherent fire retardancy, and electrical insulating properties, make it a suitable choice for a wide range of applications, from rigid pipes used in the construction sector to thin, crystal-clear films for packaging. PVC is also preferred over commodity plastics, such as polyolefins, in certain applications due to ease of processibility. The major uses of PVC are in the construction sector, including pipes, fittings, and sidings, and its demand tends to track the regional GDP growth.

Over 60% of PVC's composition is based on chlorine, which is derived from salt and is co-produced with caustic soda. Hence, factors such as transportation constraints related to chlorine, demand for caustic soda, cost of energy, availability of ethylene, etc., are considered while determining the setup of a manufacturing plant for the feedstocks, i.e., ethylene dichloride (EDC) and vinyl chloride monomer (VCM).



Note: Net Exports and Demand are rounded up to the nearest 10
Source: Nexant; IHS Markit; Company Press Releases; BCG ChemCom

FIGURE 8: Malaysia PVC Market Dynamics

In Malaysia, all the demand for EDC and VCM is met through imports as there are no producers of these feedstocks. Kaneka Paste Polymers is the sole PVC producer in Malaysia, producing emulsion PVC with a capacity of 60 ktpa. The company sources VCM from Japan and Indonesia.¹⁶

Malaysia primarily exports emulsion PVC, while suspension PVC is imported from China, Indonesia, and Thailand. Domestic demand for PVC is expected to grow at a 3% CAGR in the next 5 years, but no new capacity additions are anticipated due to the lack of upstream integration.¹⁷

¹⁶Nexant; IHS Markit; BCG ChemCom; Press Releases

¹⁷Nexant; IHS Markit; BCG ChemCom; Press Releases

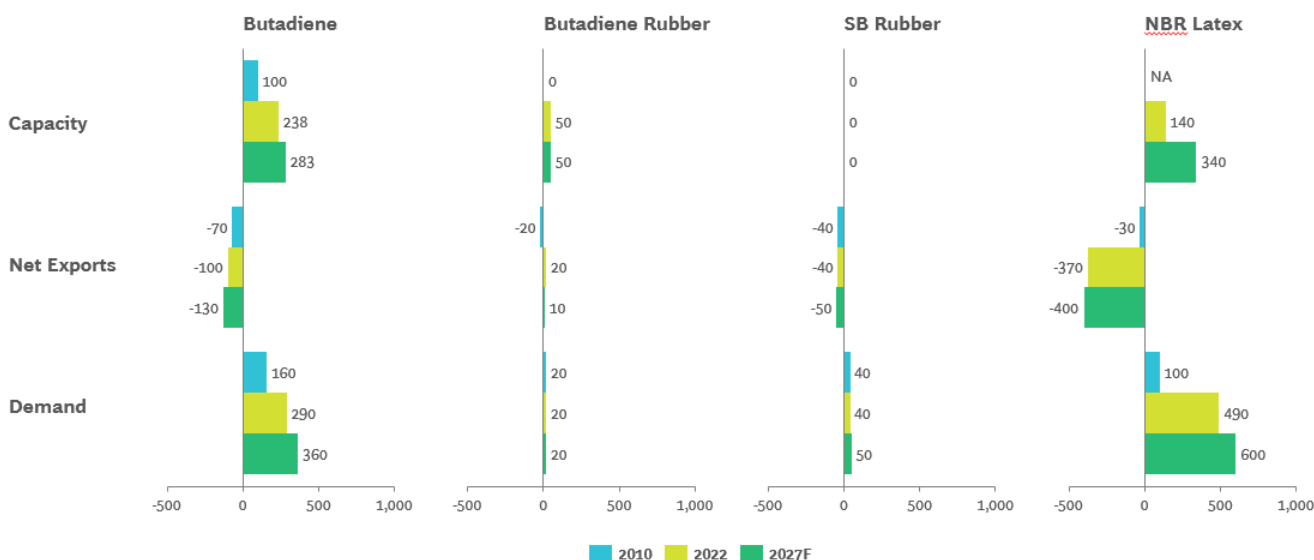
3.5 Synthetic Rubber Committee

Synthetic rubber has a wide range of applications in Malaysia, including in the automotive industry for tyre production, construction for pipes, healthcare for gloves and sports venues for floor coverings. The downstream applications of synthetic rubber are expected to contribute approximately ~RM170 Bn to Malaysia’s cumulative GDP, encompassing all four major types of rubbers: Styrene Butadiene Rubber (SBR), polybutadiene, nitrile elastomers, and polyisoprene.

Malaysia is set to fully capitalize on the large feedstock availability, with around 180 ktpa of butadiene produced locally by PRefChem in Johor. Other major producers of synthetic rubber in Malaysia include Lotte Ube (a subsidiary of Lotte Chemical), which is a main producer of polybutadiene, and Synthomer, which is the main producer of nitrile elastomers.

Currently, Malaysia relies heavily on imports of synthetic rubber across all key types, with a significant dependence on imports of nitrile elastomers, amounting to 430 ktpa in 2022¹⁷. The majority of these imports are sourced from Asia Pacific countries such as South Korea and Japan.

kT



Note: Net Exports and Demand are rounded up to the nearest 10
 Source: Nexant; IHS Markit; Company Press Releases; BCG ChemCom

FIGURE 9: Malaysia Synthetic Rubber Market Dynamics

Malaysia’s trade position in synthetic rubber is similar to other South East Asian countries, with most of them being net importers of synthetic rubber. However, there are ongoing efforts to expand domestic production capacity to meet the growing demand.

For example, PETRONAS and LG Chemical have commenced the construction of a new NBR latex plant in Johor, Malaysia which is expected to start operation in 2023. The new plant will have a capacity of 200 ktpa¹⁸ (wet basis) and aims to meet domestic demand for glove manufacturing.

¹⁸Nexant; IHS Markit; BCG ChemCom; Press Releases



Despite the capacity addition, the domestic demand for NBR latexes in Malaysia is growing at an average annual rate (ARR) of ~5%, which indicates that a significant portion of the demand would still need to be met through imports. This suggests that while the new plant will contribute to enhancing domestic production capacity, Malaysia may continue to rely on imports to meet the increasing demand for NBR latexes in the country.

Globally, three major trends are influencing market growth. Firstly, the downstream tyre and automotive sectors are requiring higher quality synthetic rubber. Secondly, the demand for synthetic rubber has structurally increased post-pandemic, with major shifts in consumer attitudes towards health driving increased demand for synthetic rubber for glove production beyond healthcare settings. Thirdly, rising sustainability concerns are also incentivizing the development of eco-friendly synthetic rubber and promoting circular economy practices through the recycling and recovery of useful chemicals from both dry and latex rubber waste.

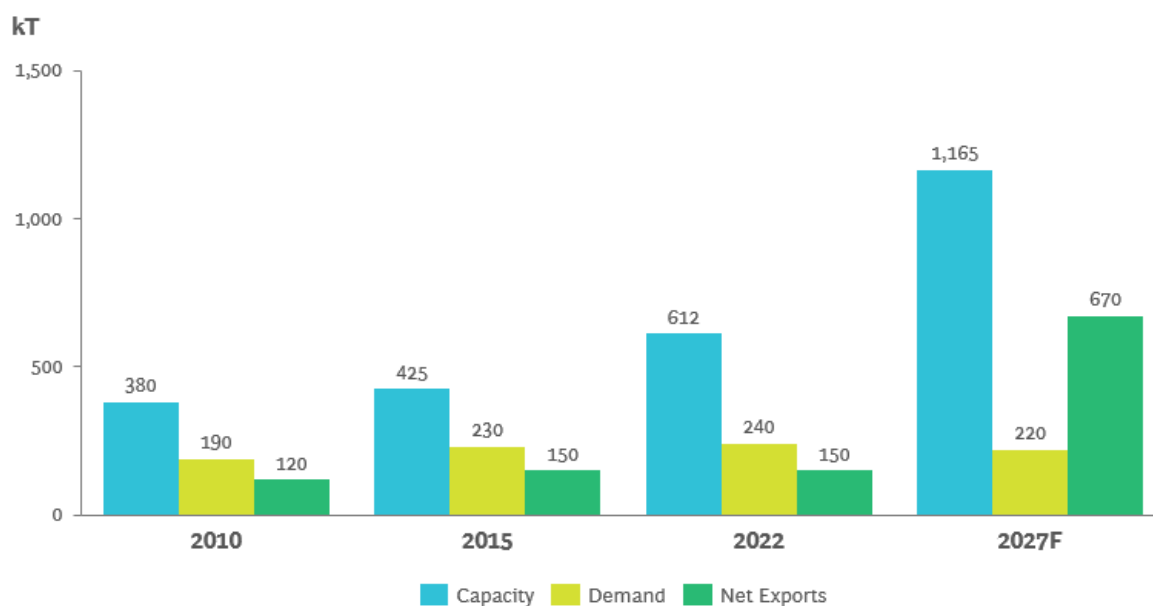
3.6 Synthetic Fibre Raw Materials Committee

Monoethylene Glycol (MEG) is a highly traded organic compound accounting for over 90% of the volume share in the Ethylene Glycol market¹⁸. Its demand primarily tracks polyester as almost 90% of its production goes into it, which is subsequently used in the manufacturing of fibres, films, solid-state resins, etc., Most of the plants produce around 10% of Diethylene Glycol (DEG) and approximately of 1% of Triethylene Glycol (TEG) per ton of MEG produced. As MEG demand heavily outpaces that of DEG and TEG, the co-products are largely sold at a discount to MEG. Most of the new export-oriented glycol projects are using improved processes, such as Shell's OMEGA process that provide MEG yield of more than 99%.

In South East Asia, Vietnam is the main demand driver for MEG due to heavy expansion in its PET capacity. The MEG consumption in South East Asia is forecasted to grow at a 4% CAGR in the next 5 years, driven by new PET capacity in Vietnam and speculative PET expansion in Thailand¹⁸.

In Malaysia, MEG demand has been under pressure due to declining fibre production, resulting in limited domestic consumption growth is expected in near future. Currently, PET melt phase demand is evenly split between PET bottle resin production and PET fibre. Due to relatively stable domestic demand, the market has majorly been export-oriented with plants operating at 85-90% capacity¹⁸, heavily catering to the regional demand. The new PETRONAS cracker project includes a large MEG plant with a capacity of 740 ktpa¹⁹ and is expected to occupy a large portion of the regional supply.

PETRONAS Chemicals Olefins Sdn Bhd (a subsidiary of PETRONAS) is the sole producer of Ethylene Oxide, a precursor of MEG, in Malaysia. The new PETRONAS complex will add 592 ktpa of EO capacity¹⁹.



Note: Net Exports and Demand are rounded up to the nearest 10
Source: Nexant; IHS Markit; Company Press Releases; BCG ChemCom

FIGURE 10: Malaysia MEG Market Dynamics

¹⁹Nexant; IHS Markit; BCG ChemCom; Press Releases

Terephthalic acid (PTA) is another crucial feedstock that is reacted with MEG and then polymerised to produce PET/polyester fibre. The PTA market in Malaysia is relatively small compared with Thailand and Indonesia, due to stagnant growth in fibre production caused by high costs relative to imports. Limited growth is expected in the near future due to the highly competitive export market.

The synthetic fibre raw materials industry in Malaysia is a significant contributor to the country's economy, producing a range of synthetic fibres such as polyester, nylon, and acrylic, which are used in various industries including textiles, automotive and packaging. The industry is well-established and has shown steady growth over the years. It is supported by the Malaysian government through various initiatives aimed at promoting innovation and sustainability.

The synthetic fibre raw materials industry in Malaysia is divided into two main categories: petrochemical-based fibres and bio-based fibres. Petrochemical-based fibres are derived from petroleum or natural gas, while bio-based fibres are derived from renewable resources such as corn and wood pulp. The industry's major petrochemical-based products are polyester and nylon, while bio-based products include polylactic acid (PLA) and lyocell.

The synthetic fibre raw materials industry in Malaysia is dominated by two major players: Recron and Toray.

Recron Malaysia is amongst the largest integrated polyester and textile companies with manufacturing facilities in Nilai and Melaka. Recron is part of the Reliance Group and offers a wide range of innovative products that include polyester, fibres, yarns, fabrics and top quality PET chips.

Toray Industries (Malaysia) Sdn Bhd in Penang, is a subsidiary of Toray Industries, Inc., a Japanese company that specializes in advanced materials, including synthetic fibres. The company produces a range of polyester fibres, including high-tenacity fibres used in industrial applications such as automotive and geotextiles, as well as fibres used in apparel and home textiles.

3.7 Chemicals Committee

The chemicals industry is a major contributor to the Malaysian economy, with petrochemicals and oleochemicals the primary products of this sector. Malaysia's chemical sector represents a critical engine of national growth, contributing 7% in total (RM101 Bn) to the national GDP in 2021 (including petroleum, chemical, rubber and plastic products)²⁰. This contribution has been relatively stable at around 4% since 2015.

The sector accounted for 9% of total export value in the same year, with a contribution valued at approximately RM108 Bn²⁰. The chemical sector also remains a major source for FDI, accounting for about 11% of Malaysia's total FDI over the five years from 2015-2019²⁰. Malaysia also accounts for 1.1% of global chemical-derived exports by value, below Thailand (1.6%) and Singapore (2.2%). With Malaysia's well-established industry and abundance of chemical feedstock as well as raw materials, there is a strong potential to further develop and expand its global share.

The chemical sector is also a major catalyst for national socio-economic development. The industry directly employed 425,000 people in 2021, representing 3% of the total workforce²¹, and delivering a positive ecosystem impact across other industries. A vibrant domestic chemical industry is paramount to competitive downstream industries within Malaysia. The automotive, construction, electrical and electronics, as well as agriculture, are among the many industries that benefit from the adjacent success of Malaysia's chemical industry, with access to high-quality chemicals and solutions that drive global competitiveness. For example, the chemical industry's plastics and synthetic rubber sub-sectors provide products that are utilized for a range of applications within the automotive industry. Malaysia's key manufacturing industries also benefit from the presence of a strong domestic chemical industry, which acts as a critical raw material provider, sustainability enabler, and technology and innovation partner.

Malaysia's investment landscape compares favorably to its regional neighbors in terms of support for FDI, with a number of established incentive levers in place designed to stimulate foreign investment. This includes corporate income tax exemptions for qualifying investments, import duty exemptions on raw materials, and research and development incentives. The presence of Pioneer Status incentives offers a five-year 70% to 100% tax exemption on statutory income to enable early growth for promising companies. Investment allowance offers further tax relief for qualifying companies in order to encourage investment. Malaysia's intellectual property incentives also set it apart in the region, with a full tax exemption on intellectual property income for a ten-year period.

Between 2010-2020, Malaysia's chemical industry attracted USD9.1 Bn²¹ in inflows with a significant proportion of these investments attributed to megaprojects such as the Pengerang Integrated Complex (PIC). This value was about three times the inflows of Thailand (USD3.2 Bn) across the same period and compared favorably to established chemical-producing countries such as Germany (USD6.0 Bn) and Netherlands (USD6.5 Bn).

The Malaysian Government has also developed the Chemical Industry Roadmap (CIR) 2021-2030 which sets out the vision for the chemical industry as a continued engine of growth for the Malaysian economy over the next decade. The CIR is positioned to propel the chemical industry in increasing its value contribution to the Malaysian economy, driving growth in key economic indicators such as gross domestic product (GDP), investments and employment, as well as in strengthening its commitment to sustainability. To achieve the CIR aspirations, 11 chemical sub-segments have been prioritised across three categories: base chemicals and intermediates; plastics and polymers; and specialty chemicals.

²⁰Department of Statistics Malaysia

²¹Department of Statistics Malaysia

3.8 Sustainability & Circular Economy

Sustainability is an increasingly vital part of both the national and industrial agendas. It is a critical pre-requisite for nations as they seek to future-proof the global economy, reflecting both persistent changes in consumer expectations, and the responsibility to provide socio-economic growth while mitigating the impact on the planet.

The accelerating pace of sustainability efforts driven by regulation and consumer expectations is changing the demand landscape. At the same time, the supply chain is shifting towards sustainable, low-carbon operations that are altering the existing industry dynamics. The chemical industry is already shifting towards a more circular and integrated ecosystem in response to these challenges, with recyclability, amongst other topics, becoming an increasingly pressing concern for investors. Bio-based feedstocks may also play a crucial role for the chemical industry in responding to these sustainability demands.

The chemical industry accounted for 15%²² of the global share of industrial CO₂ emissions in 2021. The industry's sustainability impact is also highlighted by the projected 973mil tonnes²³ of plastic waste in the world's oceans by 2050. Without intervention and adoption of appropriate measures, the growing demand for chemicals in everyday life will lead to an even greater impact on the planet through an expanding chemical industry footprint. The CO₂ intensity of the industry grew by 4.4% CAGR²⁴ between 2013-2017, and energy intensity grew by 2.9% CAGR over the same period. The use of water resources is also a major area of concern, growing at 0.2% CAGR, while waste intensity grew at 1.2% CAGR. A dramatic response is needed to improve the sustainability of our economies.

While investing in a transition to enhance sustainability undoubtedly comes with initial upfront costs, it will ultimately unlock significant long-term economic value²⁵ for companies and the country, particularly those that move quickly to capture market opportunities. Companies that achieve sustainability targets ahead of regulations could benefit from a ~5% revenue equivalent uplift, avoiding potential carbon tax costs at an assumed USD 50/tonne of CO₂. Increasing the reuse and recycling of plastics could also provide a pathway to extracting significant value, with an estimated USD60 Bn profit pool over the next 10 to 15 years generated in the petrochemical sector by investing in circular plastic practices.

Enhancing sustainability credentials also places businesses in favorable positions with investors, who are increasingly looking for more socially, environmentally, and economically positive investment opportunities, offering a potential 12% value premium for chemical companies with lower carbon intensity. These sustainability credentials also influence changing customer demand in growing markets, with ~15% CAGR expected in 2016-2050 for recovered and recycled plastics, far above the 1% expected in virgin plastic products.

Investing in adaptability has a further ecosystem benefit of boosting flexibility through innovation, generating significant potential R&D benefits. There is an estimated five-fold cost-benefit ratio through investing in more resilient infrastructure and water management, aside from the broader benefits around competitiveness and market attractiveness.

Malaysia has a strong history of supporting the sustainability agenda, with a number of present and planned policies aimed at tackling the resource intensity of the economy. The new National Energy Policy identifies the optimization of energy resources and enhancement of the energy sector's contribution to environmental sustainability as two of four key strategic thrusts. It sets out a vision to boost macroeconomic resilience and

²²International Energy Agency

²³World Economic Forum, The New Plastics Economy Rethinking the future of plastics, January 2016

²⁴Refinitiv

²⁵AISI; BCG

energy security while enhancing social equitability and affordability, all while respecting environmental sustainability. Other contemporary efforts are outlined in KASA's (now NRECC) Plastics Sustainability Roadmap 2021-2030 and Roadmap Towards Zero Single-Use Plastics 2018-2030. These roadmaps offer a positive vision of a greener Malaysia, working to reduce the resource burden of the economy and ensure sustainable growth for the benefit of all.

Malaysia's commitment to the sustainability agenda is also apparent in its Nationally Determined Contributions to the Paris Climate Agreement, in which it committed to a reduction of greenhouse gases by 35% by 2030 relative to the emissions intensity of 2005, or up to 45% conditionally to international support²⁶. In August 2021, Malaysia increased its ambitions under this agreement, targeting unconditional reductions of 45%²⁷, once again demonstrating its commitment towards the sustainability agenda. Malaysia also further announced its goal to become carbon neutral as early as 2050.

Major companies based in Malaysia have also taken proactive steps to improve sustainability in line with this agenda. PETRONAS recently pledged to achieve net-zero carbon emissions by 2050. Similarly, Tenaga Nasional Berhad (TNB) launched its sustainability pathway setting out its ambitions to expand the installed capacity of renewable energy within its energy portfolio. It is clear that the sustainability agenda is one which is actively being adopted by both private and public organizations.

PETRONAS, in collaboration with the Education Ministry and the Malaysian Plastics Manufacturers Association (MPMA) also developed the Plastic, Sustainability & You Education (PSYE) module - Secondary School Edition in late 2019 to equip teachers with the right information for dissemination on plastics, proper waste management and what students can do to play a role to address issues such as global warming and marine litter.

The industry will seek opportunities to improve sustainability through the modernization of the chemical value chain and industry operations, alongside the adoption of innovative new methods, processes, and technologies, while strengthening commercialization. The successful development of the circular economy will continue to require stronger regulatory support and enhanced incentive mechanisms, backed by an ecosystem of innovative players.

At the association level, the Malaysian Petrochemicals Association (MPA), organized the inaugural Petrochemicals Sustainability Conference (PSC) which was held alongside the 18th Oil and Gas Asia (OGA) from September 13 -15, 2022 at the Kuala Lumpur Convention Centre. The PSC 2022 conference which was specially curated together with knowledge partners, Boston Consulting Group and ERM International, as a standalone event itself, attracted 660 delegates from local and international shores, and showcased 13 event sponsors such as PETRONAS Chemicals Group, LOTTE Chemical Titan, KANEKA Corporation and BASF, amongst others. The theme for PSC2022 was "Future Ready Petrochemicals" and it featured two special industry leaders' addresses, one executive leaders' forum, six sessions and 32 speakers and moderators covering three key topics – decarbonization of operations, circular economy practices and enablers to support the transition. At the PSC2022, MPA also made a pledge that each member would have their baseline data by the time MPA organizes the next PSC2024 sometime in Quarter 3 of 2023.

²⁶United Nations Framework Convention on Climate Change

²⁷The Edge Markets, Malaysia updates NDC to reduce intensity of unconditional greenhouse gas emissions by 45%, August 2021: <https://www.theedgemarkets.com/article/malaysia-updates-ndc-reduce-intensity-unconditional-greenhouse-gas-emissions-45>

Chapter 4: Malaysian Petrochemicals Association (MPA)

MALAYSIAN PETROCHEMICALS ASSOCIATION (MPA)

The Malaysian Petrochemicals Association (MPA) was officially formed on March 19, 1997 and it is a formal association registered with the Registrar of Societies, Malaysia. MPA has 26 members engaged in the manufacture and trading of petrochemicals and plastic resins.

The main objectives of MPA are as follows:

- To provide a forum to discuss and resolve common problems of the petrochemical industry.
- To provide a focal point for the petrochemical industry to liaise with the public and government and to make recommendations on relevant issues.
- To advance the philosophy of Responsible Care, its implementation and compliance throughout the industry.
- To represent the petrochemical industry within Malaysia to interface with similar groups on international basis.
- To compile and disseminate information of common concerns and provide facilities for consultation and exchange of views between members.



4.1 MPA Members:

- | | |
|--|---|
| 1. Air Liquide Global E&C Solutions Malaysia Sdn Bhd | 14. Optimistic Organic Sdn Bhd |
| 2. Ancom Kimia Sdn Bhd | 15. Pengerang Petrochemical Company Sdn Bhd |
| 3. Aramco Overseas Malaysia Sdn Bhd | 16. Petrochemicals (M) Sdn Bhd |
| 4. BASF (M) Sdn Bhd | 17. PETRONAS Chemicals Derivatives Sdn Bhd |
| 5. BASF PETRONAS Chemicals Sdn Bhd | 18. PETRONAS Chemicals Ethylene Sdn Bhd |
| 6. Dairen Chemical (M) Sdn Bhd | 19. PETRONAS Chemicals Group Berhad |
| 7. Excel Provisions Sdn Bhd | 20. PETRONAS Chemicals LDPE Sdn Bhd |
| 8. Exxonmobil Chemical Malaysia Sdn Bhd | 21. PETRONAS Chemicals MTBE Sdn Bhd |
| 9. Idemitsu Chemicals (M) Sdn Bhd | 22. Poratha Corporation Sdn Bhd |
| 10. Kaneka (Malaysia) Sdn Bhd | 23. Recron (Malaysia) Sdn Bhd |
| 11. KOPETRO Trading & Services Sdn Bhd | 24. Satake Technologies Sdn Bhd |
| 12. Lotte Chemical Titan (M) Sdn Bhd | 25. Technip Energies (M) Sdn Bhd |
| 13. Mitsubishi Corporation Kuala Lumpur Branch | 26. Toray Plastics (M) Sdn Bhd |

4.2 Secretariat

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 E-mail: mpa@fmm.org.my / info@mpa.org.my
 Website: www.mpa.org.my
 Facebook: www.facebook.com/mpa.org.my

4.3 MPA Council Members (2021-2023)

 <p>Mr. Akbar Md Thayoob President PETRONAS Chemicals Group Berhad</p>	 <p>Mr. Phillip Kong Chock Hoon Vice President LOTTE Chemical Titan Holding Berhad</p>
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President





Vice President

 <p>Mr. Shakeel Ahmad Khan PETRONAS Chemicals Derivatives Sdn Bhd</p>	 <p>Mr Lim Boon Hoe Petrochemicals (M) Sdn Bhd</p>
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Honorary Secretary

Treasurer

Council Members:

 <p>Mr. Marko Olavi Murtonen BASF PETRONAS Chemicals Sdn Bhd</p>	 <p>Mr. Edmund Tan Teck Boon BASF (M) Sdn Bhd</p>	 <p>Tuan Syed Ahmad b Syed Idrus Alhabshi Kaneka (Malaysia) Sdn Bhd</p>	 <p>Mr. Shazali bin Wosnin PETRONAS Chemicals LDPE Sdn Bhd</p>
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 <p>Ms. Filzah Aini Saad Pengerang Petrochemical Company Sdn Bhd</p>	 <p>Mr. Ambrish Kumar Maheswar Optimistic Organic Sdn Bhd</p>	 <p>Mr. Hermant Kedla Recron Malaysia Sdn Bhd</p>	 <p>Mr. Sabri Awang Rahim Toray Plastics (M) Sdn Bhd</p>
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Prepared by:



Knowledge Partner:



May 2023