Speciality Chemicals and Oleochemical Industries in Malaysia

Innovation spurs growth

The thriving specialty chemicals sector promises boundless opportunities

Malaysia is a major chemicals player within the ASEAN region where it is one of the largest producers and exporters of petrochemicals. The petrochemicals industry in Malaysia began to grow rapidly in the 1990s. This growth is mainly attributed to the availability of oil and gas as feedstock, a well-developed infrastructure, a strong base of supporting services, cost competitiveness, and Malaysia's strategic location. Many large petrochemical companies, including BASF, Kaneka, Polyplastic, and Shell, established production facilities in Malaysia during this period.

The major petrochemical zones in Malaysia are Kertih, Gebeng, and Pasir Gudang where the core petrochemical products range from basic, intermediate, and various petrochemical derivatives were produced. Meanwhile, Labuan, Bintulu and Gurun which are currently producing methanol, ammonia and urea derivatives, have the potential to grow as another petrochemical hub. Bintulu has the infrastructure to become a regional hub for petrochemical industries. It is already home to three LNG plants and gas-to-liquids (GTL) plant.

The newly established integrated petrochemical area, Pengerang Integrated Petroleum Complex (PIPC) which is developed by the government of Malaysia as a major petrochemical hub, which including the Pengerang Integrated Complex (PIC) project is a game changer to position Malaysia as a chemical hub in ASEAN.

Malaysia holds the 4th largest natural gas reserves and 5th largest oil reserves in Asia Pacific. Currently, Petronas dominates the Malaysian petrochemicals industry, operating Malaysia's three petrochemical hubs and now is the driving force behind the PIC project.

Feedstock at competitive prices has made Malaysia a viable chemical hub in the ASEAN region. There are immense opportunities in the chemical and speciality chemicals sector in Malaysia as the industry provides strong linkages and supports almost every other sector in the manufacturing economy. Malaysia is known for bulk production of basic chemicals; however, the country is aiming to move further up the value chain to producing specialised chemicals. Speciality chemicals by its nature is to serve other industries with niche or specialty markets and more knowledge-based chemical portfolio which will contribute to a higher value for its finished products.

The Covid-19 pandemic that spread rapidly during 2020 has had a profound and unprecedented impact globally. The chemicals industry plays a significant role in the personal care, health and sanitation products. The specialty chemicals are widely used in various industries such as paints, coatings, pharmaceuticals, cleaning agents, detergents, flavours and fragrances. Therefore, the requirement in the manufacture of pharmaceuticals, cleaning agents, detergents, flavours and fragrances and plastics has gone up during the pandemic.

The Malaysian Investment Development Authority (MIDA), as the principal investment promotional agency, provides comprehensive support to the investors to establish operations in Malaysia including attracting the right technology providers for the development and innovation of specialty chemicals products. 'Specialty Chemicals Products' are listed as one of the products or activities eligible for consideration of tax incentives in the form of Pioneer Status and Investment Tax Allowance under the Promotion of Investment Act (PIA), 1986. Recently, the government had announced several tax incentives to spur investment activity, including a 10-15 year tax exemption for new FDI in the manufacturing sector with capital investment of RM300 million(USD72.8 million) and above.

As the central player of the RCEP Agreement, Malaysia offers global businesses to Indian companies to tap into the largest free trade agreement ever. RCEP with a market of 2.2 billion people and a combined GDP of USD26.2 billion will provide new opportunities for growth and innovation to Indian companies. Therefore, Indian companies should leverage the entire chemical ecosystem in Malaysia to develop new business models, explore new markets and increase innovation to expand their business into the region.

Booming Oleochemicals Industry

THE OLEOCHEMICALS INDUSTRY IS WITNESSING AN ASTONISHING GROWTH GLOBALLY. THE KEY DRIVING FORCE FOR THIS PHENOMENAL GROWTH IS ITS RELIANCE ON SUSTAINABLE CHEMICALS

The production of sustainable, bio-based chemicals has increased as consumers become better educated about the environmental and cost- benefits oleochemicals can provide. To meet the demands of their consumers, manufacturers are looking to oleochemicals as renewable, sustainable alternatives in the chemical sourcing industry.

The demand for oleochemicals is expected to increase more and more as the movement for environmentally-friendly products progresses and as the cost of oil continues to rise steadily.

According to a recent report, the global oleochemicals market size was valued at a staggering USD 20.1 billion in 2019. This market size is expected to grow at a compounded annual growth rate of 5.8 % from 2020 to 2027.

The shifting global trend towards sustainable chemicals is one of the reasons cited by experts for this growing market size.

GLOBAL SCENARIO:

■ The world has witnessed a significant expansion in the production of fatty acid and fatty alcohol capacities in the Asia region in the last five years.

■ Asia Pacific led by Indonesia, China, and Malaysia, with an advantage of feedstock and markets, account for nearly 70% of global markets and 60% of total capacity.

■ Increasing demand for oleochemicals in key end-user applications such as cosmetics and personal care is expected to drive the growth of the oleochemicals market.

■ Oleochemicals producers have installed more value-added capacity and are increasingly adding derivative capacities and capturing a bigger proportion of the value chain.

PRODUCTS BREAKDOWN

■ Oleochemicals products are derived directly from naturally occurring fats and oils from animal and vegetable sources. In Malaysia, oleochemicals are mainly derived from palm oil.

■ Basic oleochemicals constitute 99 per cent of the palm oil used in non-food downstream production. The breakdown of the products are as follows:

* Basic oleochemicals including fatty acids, fatty alcohols, methyl esters and glycerine.
* Oleochemical derivatives including fatty amides, fatty amines, vegetable-oil based polyol, palm mixed carotenoids/tocotrienols, methyl ester sulphonate, ethoxylates and soap noodles.

■ Demand for oleochemicals is expected to increase in line with the continuing trend towards the use of natural or plant-based products, biodegradable chemicals and growing affluence of global economies especially China where demand is estimated to grow at 8-10% over the next five years.

OLEOCHEMICALS INDUSTRY IN MALAYSIA

Malaysia is currently one of the world's primary oleochemical producers and exporters, taking advantage of its productivity, innovations, and competitiveness in palm oil-based products. There were various factors contributing to the rapid development of the Malaysian oleochemical industry. The most significant is the abundant supply of raw materials and low production cost.

In addition, the Malaysian government is providing huge support to grow the industry.

Malaysia enjoys an abundance of palm oil and since the early 1980s, the industry has expanded rapidly. Despite being overtaken by Indonesia as the world's largest producer of palm oil, the Malaysian oleochemical industry remains very strong.

Malaysia is a world leader in the production and export of oleochemicals derived from the country's vast oil palm plantations. In Malaysia, the oleochemicals industry is mainly driven by the availability of palm oil. The oleochemicals produced in the country contributed about 20% to the global capacity.

Currently, Malaysia is one of the largest producers of basic oleochemicals in the world (fatty acids, fatty alcohols, fatty methyl esters) and home to some key players in the sector such as FGV, Sime Darby, IOI and KLK.

The oleochemical industry in Malaysia is not only dominated by local companies but also attracting foreign companies such as Oleon, Evyap and Wilmar. Evyap, a Turkish company has chosen Malaysia as its first oleochemical manufacturing facility to penetrate the ASEAN market. Malaysia has been chosen due to ease of doing business, developed infrastructure and strategic direction of the company to diversify into oleochemicals.

Most of these oleochemical companies have state-of-the-art technologies for the production of basic oleochemicals like fatty acids, fatty alcohols, fatty esters. There are producers of oleochemicals derivatives such as fatty amines, amides, stearates, oleates, food emulsifiers, plasticisers, sulfonates, sulfates.

According to a report published by the Federation of Asian Chemical Societies (FACS), oleochemicals derived from palm oil and palm kernel oil can be divided into two groups of products - basic oleochemicals and oleochemical derivatives. Since palm oil and palm kernel oil contain between them almost the entire range of fatty acids, practically all the oleochemicals can be produced from them.

Malaysia's primary focus is on producing basic oleochemicals (e.g. fatty acid, fatty alcohol, methyl esters, and glycerine), oleochemical derivatives (e.g. fatty esters, fatty amines, soap noodles, and metallic soaps), and palm-based constituents (e.g. tocotrienols and carotene).

- The oleochemical industry in Malaysia started in 1979/1980, which comprises basic oleochemicals and oleochemical derivatives sub-sectors.
- Malaysia produces about 20% of global capacity.
- Currently, there are 21 oleochemical plants established in Malaysia. Some of these companies are vertically integrated (i.e. active in both upstream and downstream activities, from oil palm plantation management to the actual manufacturing of oleochemicals) such as IOI, KLK, Sime Darby, and FGV.
- Production capacity of both basic and specialty oleochemicals in Malaysia

2014	2015	2016	2017	2018	2019
2.66 million tonnes	**2.70** million tonnes	**2.73** million tonnes	**2.67** million tonnes	**2.67** million tonnes	**2.68** million tonnes

Source: MPOB

Being one of the world's largest oleochemical producers of fatty acids, glycerine, soap noodles, fatty esters and specialty downstream oleochemical derivatives, Malaysian companies are involved in both the manufacturing and export these products to more than 60 countries worldwide, including to India, Japan, China and Europe.

VARIETY OF APPLICATIONS

The versatile oleochemical products are used in a wide variety of applications, including the manufacturing of detergents, surfactants, shampoos, soaps, cosmetics, pharmaceutical products, food additives and plastics.

The oleochemicals industry in Malaysia is benefitting from an uninterrupted supply of palm oil and palm kernel oil for downstream expansion and sustainability, being the second-largest palm oil producer, after Indonesia.

The COVID-19 pandemic will likely see demand for oleochemicals spike and global oleochemicals markets are bracing for potential shocks to the supply chain. This is due to higher demand for production of cleaning products, disinfectants and sanitizers. In addition to this, food and beverage demand will see surges in the continued spread of the pandemic.

PHOTO COURTESY: PETRONAS

PETCHEM facilities

PIPC: A Game changer for Malaysia

Being host to many world-class facilities, Malaysia prides itself in another - The Pengerang Integrated Petroleum Complex (PIPC) that sits on a 22,904-acre area in Pengerang, to the south-east of Malaysia's Johor state. The PIPC is designed to accommodate downstream oil and gas industrial facilities such as refineries and petrochemical plants, deep-water terminal and storage tanks, naphtha crackers, regasification plants and supporting facilities, as well as manufacturing plants and industrial parks. Included in the PIPC master plan are designated areas for related support services such as a plastic and fine chemicals park, a light and medium industrial park, a waste management center, an emergency response center, a logistics hub, a commercial hub and others.

PIPC has an upper hand in the downstream oil and gas sector in the region owing to its strategic location. It gives access to major international shipping lanes between the Middle East and China. The proximity of Pengerang to Singapore is another plus point. The refinery hub sits close to the world's commodity traders that are mostly based in Singapore. With a water depth of more than 24 metres and having no breakwater, it enables very large crude carriers and ultra large crude carriers to operate.

The Malaysian government has established Johor Petroleum Development Corporation Berhad (JPDC), a dedicated federal government agency under the Economic Planning Unit, Prime Minister's Department, mandated to plan, coordinate, facilitate and promote the overall development of the PIPC. The JPDC covers the depth and breadth of a project manager role in making sure the development of the PIPC is on track, according to plan and with sufficient funds. At the same time, JPDC performs an investment promoter role, providing guidance to potential parties seeking to invest in the PIPC.

INVESTMENT OPPORTUNITIES AND INFRASTRUCTURES IN PIPC

In 2021, the Government of Malaysia will be completing 25 packages of infrastructure and public amenities in PIPC to support downstream oil and gas industry growth at a development value of RM2.47 billion (USD598.8 million). The Malaysian government offers various incentives to investors, both local and foreign. These include investment tax allowances, import duty exemptions, reinvestment allowances and others. These incentives may vary between plans and structures, depending on the status of companies investing in Malaysia or the PIPC. JPDC, being the appointed organization to oversee the overall development of the PIPC, collaborates with the Malaysian Investment Development Authority (MIDA) to actively guide investors to the applicable incentives.

To date, JPDC has been organising and coordinating a series of re-skilling and upskilling training programs for 4,728 local manpower, aimed at creating a downstream oil and gas industry workforce.

PIPC MILESTONE

The PIPC covers both core and non-core downstream activities and is planned to be developed over four phases started from year 2012 until 2037. Its first development phase (2012-2019) has been completed, which witnessed two significant, world-class catalytic projects completed - Pengerang Deepwater Terminals (PDT) and Pengerang Integrated Complex (PIC).

PDT developed by DIALOG Group Berhad and its investment partners, is a deepwater terminal with 3.83 million cubic metre oil storage facilities developed on a 1,300-acre area with an investment value of USD2.5 billion. It has been operational since April 2014.

PIC developed by PETRONAS is an integrated downstream petroleum facility covering an area of 6,303 acres with an investment value USD27 billion. The PIC comprises an integrated refinery and petrochemical complex, and is further supported by associated facilities namely a co-generation plant, an LNG re-gasification terminal, a raw water supply plant, a deepwater terminal, and air separation unit, as well as centralised and shared utility facilities. The construction of PIC, which began in 2015, has been completed and it is in the final stages of preparation for commercial operations in 2021.

Pengerang Deepwater Terminals in PIPC provide up to 3.83 million cubic metres of oil storage facilities with 3 jetties.