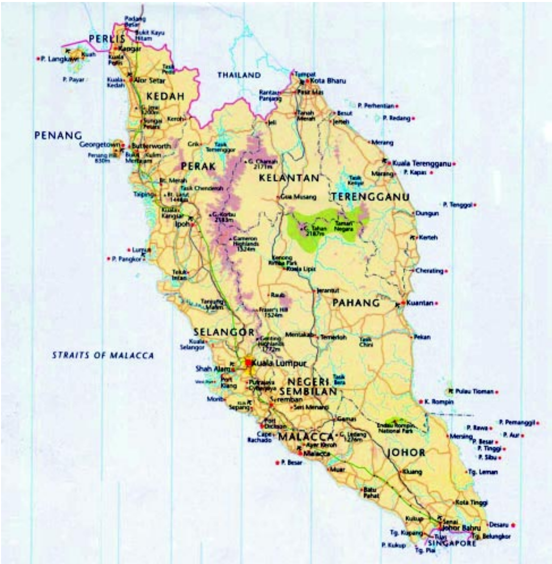
Malaysia's Downstream Outlook



The recent global financial crisis has taken a toll on Asia, and the Malaysian economy was not spared, as the US is one of Malaysia's main trading partners. The GDP growth of Malaysia is expected to slow down from 7.1% in the first half of 2008 to 3 – 4% in 2009. However it has to be said that compared to its neighbours Malaysia has coped well with the crisis.

This is partially due to the fact that certain sectors of the economy have proven to be more insulated and resilient to the economic downturn and the oil and gas industry is one of those sectors.

Local oil and gas industry players are relying on orders in hand to circumvent the bleak outlook, and these contracts in hand will be able to ensure the sustainability of the businesses for the nest few years.

However, that forecast is for the oil and gas industry as a whole. If one studies the landscape of the downstream sector the picture loses its rosy hue. Current indications are that the downstream industry has been badly affected by the economic downturn, especially the petrochemical industry.

Energy Overview

Minister of Energy, Water, and Communications	Dr. Lim Keng Yaik
Proven Oil Reserves (January 1, 2007E)	3.0 billion barrels
Oil Production (2006E)	798,000 bbl/d, of which 86% was crude oil
Oil Consumption (2006E)	515,000 bbl/d
Crude Oil Distillation Capacity (January 1, 2007E)	545,000 bbl/d
Proven Natural Gas Reserves (January 1, 2007E)	75 trillion cubic feet
Natural Gas Production (2004E)	2.2 trillion cubic feet
Natural Gas Consumption (2004E)	1.2 trillion cubic feet
Recoverable Coal Reserves (2003E)	4.4 million short tons
Coal Production (2004E)	0.3 million short tons
Coal Consumption (2004E)	7.3 million short tons
Electricity Installed Capacity (2004E)	20.1 gigawatts
Electricity Production (2004E)	78.2 billion kilowatt hours
Electricity Consumption (2004E)	72.7 billion kilowatt hours
Total Energy Consumption (2004E)	2.5 quadrillion Btus*, of which Natural Gas (49%), Oil (41%), Coal (8%), Hydroelectricity (2%), Nuclear (0%), Other Renewables (0%)
Total Per Capita Energy Consumption ((Million Btu) 2004E)	107.1 million Btus
Energy Intensity (2004E)	9,635.5 Btu per $2000-PPP**

Courtesy of EIA, correct as of 2007

Oil and Gas Industry

Organization	Malaysia's state-owned Petroleam Nasional Berhad (Petronas) dominates all aspects of the country's oil and natural gas sector.
Major Oil/Gas Ports	Kerteh, Johor, Sepangar Bay, Bintulu, Kuching, Miri
Foreign Company Involvement	BP, ConocoPhillips, ExxonMobil (Esso), Hess, Mitsubishi, Murphy Oil, Newfield Exploration, Nippon Oil, Shell, Talisman Energy
Major Oil Fields	Bekok, Bokor, Erb West, Bunga Kekwa, Guntong, Kepong, Kinabalu Pulai, Samarang, Seligi, Semangkok, Tapis, Temana, Tiong
Major Natural Gas Fields	Bedong, Bintang, Damar, Jerneh, Laho, Lawit, Noring, Pilong, Resak, Telok, Tujoh
Major Refineries (capacity, bbl/d)	Shell: Port Dickson (155,000); Petronas: Melaka I (92,832), Melaka II (126,000); ExxonMobil: Port Dickson (86,000)

Courtesy of EIA, correct as of 2007

Malaysia's oil and gas sector is anchored more by its strong upstream presence than anything else. In comparison, the downstream sector is very weak. As of 2009, Malaysia, together with Pakistan, ranks 5th in BMI's Upstream Business Environment rating. There are also no indicators that they face the danger of losing that position rather. In contrast, Malaysia is only 13th in BMI's Downstream Business Environment rating, exposing its limited refinery expansion plans among other factors.

Malaysia's national oil company, Petroleam Nasional Berhad (PETRONAS), dominates upstream and downstream activities in the country's oil sector. PETRONAS is the only remaining wholly state-owned enterprise in Malaysia, and is the single-largest contributor of government revenues. PETRONAS holds exclusive ownership rights to all exploration and production projects in Malaysia, and all foreign and private companies must operate through Production Sharing Contracts (PSCs) with the national oil company. ExxonMobil (through its local subsidiary Esso Production Malaysia Inc.) is the largest oil company by production volume, and there are numerous other foreign companies operating in Malaysia via PSCs. PETRONAS is a major player in the retail and marketing sector, but faces competition from Shell, Chevron, and BP.

As of January 2007, Malaysia held 75 trillion cubic feet (Tcf) of proven natural gas reserves as of. While much of the country's oil reserves are found off Peninsular Malaysia, much of the country's natural gas production comes from Eastern Malaysia, especially offshore Sarawak.

Natural gas production has risen steadily in recent years, reaching 2.2 Tcf during 2004, up 47% since 2000. Domestic natural gas consumption has also increased substantially, with 2004 consumption at about 1.2 Tcf, or about 61% higher than 2000 levels. Malaysia is a significant net exporter of natural gas, primarily in the form of liquefied natural gas (LNG). In 2005, Malaysia exported just over 1 Tcf of LNG, mostly to Japan, South Korea, and Taiwan.

As in the oil sector, Malaysia's state-owned PETRONAS dominates the natural gas sector. The company has a monopoly on all upstream natural gas developments, and also plays a leading role in downstream activities and LNG trade. Most natural gas production occurs from PSCs operated by foreign companies in conjunction with PETRONAS s.

Natural gas has many uses in the homes, industries, power stations and even in vehicles. With gas reserves three times more than oil, Malaysia is increasingly turning to natural gas, not only as a source of energy but also as a raw material in the manufacture of various petrochemical products.

In line with Malaysia's energy diversification strategy, PETRONAS is promoting the utilisation of natural gas with the implementation of its three-phase Peninsular Gas Utilisation (PGU) project which started in 1984. In December 1997, the final phase of the PGU project was completed. The PGU project has become the backbone for Malaysia's industrialisation process.

To promote the use of gas in the transportation sector, PETRONAS has embarked on the Natural Gas for Vehicles (NGV) programme where NGV dispensing facilities are available at selected PETRONAS service stations located in high traffic density areas.

PETRONAS has also introduced the gas district cooling (GDC) system using natural gas as an energy source to produced chilled water for air conditioning together with co-generation in an integrated energy system. The GDC system is used at few locations, including the Kuala Lumpur City Centre, where the PETRONAS Twin Towers are located, the KL International Airport and the Government complex in Putrajaya.

Malaysia is one of the world's leading exporters of LNG. In 2005, the country exported 21.2 million metric tons (MMt) of LNG, or about 1,031 Bcf of regasified natural gas, accounting for 15 percent of total world LNG exports. The majority of Malaysia's shipments went to Japan, South Korea, and Taiwan, although small amounts of LNG were also sent to the United States and Spain. LNG is primarily transported by Malaysia International Shipping Corporation (MISC), which owns and operates 23 LNG tankers, the single largest LNG tanker fleet in the world by volume of LNG carried. MISC is 62 percent-owned by PETRONAS and also has significant involvement in oil shipping activities.

Malaysia has three LNG processing plants, all located in a massive complex at Bintulu (East Malaysia) and supplied by

Malaysia's LNG Infrastructure

Plant	Ownership	Capacity (MMt/y)	Start-up
MLNG	PETRONAS (65%), Shell (15%), Mitsubishi (15%), Sarawak local government (5%)	8.1	1983
MLNG Dua	PETRONAS (60%), Shell (15%), Mitsubishi (15%), Sarawak local government (10%)	7.8	1996
MLNG Tiga	Petronas (60%), Shell (15%), Nippon Oil (10%), Sarawak local government (10%), Diamond Gas (5%)	6.8	2003
	Total Liquefaction Capacity at Bintulu Complex	22.7	

Source: Petronas

the offshore natural gas fields at Sarawak. The Bintulu facility is the largest LNG complex in the world, with a total liquefaction capacity of 22.7 MMt (1.1 Tcf) per year. PETRONAS holds majority equity stakes in all three LNG plants at Bintulu: Malaysia LNG Sdn Bhd (MLNG), MLNG Dua, and MLNG Tiga.

PETRONAS, through its joint venture company, Malaysia LNG Sdn. Bhd., also produces liquefied natural gas (LNG) for export market. Its three integrated natural gas plants within the PETRONAS LNG Complex in Bintulu, Sarawak have a total capacity of 23 million tonnes per annum (mtpa). The Complex is now world's largest LNG production facility at a single location. The LNG is sold to Japan, Taiwan and Korea for the power, industrial and residential sectors.

Malaysia's abundant gas reserves and the implementation of the Peninsular Gas Utilisation (PGU) project have opened up vast opportunities for PETRONAS to embark on various large-scale gas-based petrochemical projects with its joint venture partners. Besides adding value to the natural resources, the development of these projects is also in line with PETRONAS' aspiration to transform the country into a regional petrochemical hub.

PETRONAS is actively pursuing the development of integrated petrochemical complexes (IPCs) with all the necessary common infrastructural facilities and ancillary utilities to maximise synergy and to ensure a well-planned development of the industry.

Two IPCs located in Kertih, Terengganu and Gebeng, Pahang have been developed to meet the growing demand for petrochemical products in the region.

As of January 2007, Malaysia had about 545,000 bbl/d of refining capacity at six facilities. PETRONAS operates three refineries (259,000 bbl/d total capacity), while Shell operates two plants (200,000 bbl/d), and ExxonMobil one (86,000 bbl/d). Malaysia invested heavily in refining activities during the last two decades, and is now able to meet the country's demand for petroleum products domestically, after relying on the refining industry in Singapore for many years. Even so, its downstream sector is still lagging behind its upstream sector.

Malaysia has not been unresponsive to the problems faced by its downstream sector of the oil and gas industry. Several projects are either underway or have been completed in the last year, all with the aim of increasing Malaysia's refining capabilities.

Gulf Petroleum Corporation has pledged $5 billion towards the construction of an Oil & Petrochemical complex in Manjung, Perak. This project was initially supposed to be financed and implemented by a Chinese consortium but when that plan did not take off the Middle Eastern company jumped at the opportunity. This goes to show the economic feasibility of being part of the Malaysian refining industry.

The Malaysian Refining Company is also in the process of revamping its refinery in Melaka. The multi-million dollar PSR-2 Refinery Revamp project is aimed at de-bottlenecking to increase production capabilities. This will no doubt aid the downstream sector in increasing its capabilities. PETRONAS has also been active in the downstream sector with its Labuan Methanol Plant project. The Kertih Plastics Park which was launched last year at great cost and already attracted more than $1 billion (RM) worth of investments, and which is developing at a fast rate, also holds abundant promise for the downstream and petrochemicals sector. These are a few examples of how the Malaysian downstream oil and gas and petrochemicals sectors are attempting to increase their output, as there is great scope for profitability thanks to the readily available feedstock.

PETRONAS Labuan Methanol Plant

Kertih Plastics Park investors Hi-Essence Cable Sdn Bhd exchanging documents with Taiwan's Hua Eng Wire & Cable Co. Ltd. From left: CEO of ECER Development Council, Dato' Jebasingam Issace John; Managing Director of Hi Essence Cable, Tuan Haji Mohd Nor Abu Bakar; Prime Minister of Malaysia, Dato' Seri Abdullah Ahmad Badawi; President of Hua Eng Wire & Cable, Mr. Wu Hsien Ming; Menteri Besar of Terengganu, YAB Dato' Ahmad Said; and Minister in the Prime Minister's Department, Tan Sri Amirsham A Aziz.

Another Malaysian downstream sector that is looking to expand is biofuels. Due to the strength of its palm oil industry Malaysia is one of the world's leaders in biofuels. Two major projects are underway which will go some way to strengthen the sector. One of the projects is the 400 million (RM) Palm Oil Processing Center that IOI Corporation is constructing in Pasir Gudang, Johor. The other is the ASSAR Senari Group's $75 million Oil, Gas and Palm Oil Complex which is being constructed in Tanjung Manis, Sarawak. This goes on to show that despite being a global leader in the biofuels sector Malaysia has no intention of easing up on expansion plans.

In summary it is undeniable that the Malaysian downstream sector is lagging behind its upstream counterpart. However, considerable effort is being made to arrest this situation and it is clear that Malaysia is aiming to reach a stage where it will be able to meet the entire processing needs of the country, while being able to meet all the refining requirements of its upstream economy. HA