Malaysia on oil and gas growth momentum

Malaysia produces almost 2% of the world’s natural gas. The country operates extensive liquefied natural gas (LNG) facilities and provides around 13% of the world’s LNG exports, sold largely to Japan, South Korea and Taiwan.

Malaysia’s oil reserves are currently ranked as the third largest in the Asia-Pacific region after China and India. Malaysia is a net exporter of oil and gas with nearly 40% of Malaysia’s total revenue derived from petroleum resources.

Malaysia’s future growth trajectory in oil and gas is supported by a range of government initiatives and incentives, as well as significant private sector investments in the oil and gas sectors and subsectors.

5 milestones

Key targets set for Malaysia’s oil and gas sectors to achieve its regional aspirations:

1. First liquefied natural gas (LNG) imports into Malaysia to substitute expensive fuel and create new industries
2. Reduce energy bill by 5% through energy efficiency practices
3. 10m tonne regional oil storage and trading hub
4. 5GW hydro, up to 1.25GW solar, 2GW nuclear power
5. Number 1 oil field services hub in Asia; regional headquarters of multinational corporations (MNCs)

5 growth spots

1. Malaysia, the regional oil storage and trading hub
   Malaysia is positioning to become an oil storage and trading hub for the Asia-Pacific region. A pilot project to develop an Independent Deepwater Petroleum Terminal (total storage capacity of 16.4 million cubic feet of petroleum) is being carried out in Pengerang, Johor.

2. Developing marginal fields and intensifying domestic exploration
   To meet domestic demand and to sustain crude oil exports, the Government has set a target for the oil and gas industry to increase production capacity of marginal oil fields by 5% per year up to 2020. To support oil and gas exploration and development, the Government has introduced new tax and investment incentives under the Petroleum Income Tax Act.

3. Enhanced oil recovery (EOR)
   Domestic oil and gas production is projected to decline by 1-2% yearly by 2020. To this effect, Petronas signed a number of production sharing contracts (PSCs) with various oil and gas companies to pursue EOR projects around Malaysia’s fields.

4. Refinery and Petrochemicals Integrated Development (RAPID)
   The RAPID project in Pengerang, Johor aims to capitalise on the growing need for specialty chemicals and to meet the demand for petroleum and commodity petrochemical products in the Asia-Pacific region by 2016. The refinery will have a capacity of 300,000 barrels per standard day and will supply feedstock as well as gasoline and diesel.

5. Major downstream petroleum and petrochemical projects
   There have been a number of significant petroleum and petrochemical projects. Among them is the RM4.5 billion ammonia and granular urea plant in Sipitang, Sabah.

Source: Ernst & Young analysis
Significant efforts are being made in upstream exploration, development and production. Future industry growth is expected to be derived from enhanced oil recovery (EOR) initiatives, innovative approaches to the development of marginal fields and intensification of exploration activities.

Of recent interest are five oil and gas discoveries, including the Cendor oil field which has been upgraded to be one of Malaysia’s largest oil fields with estimated recoverable resources of 200 MMstb (million stock tank barrels).

**Malaysia: oil and gas fields - new discoveries**

1. **Cendor, offshore Terengganu**
   - Cendor Graben-2 appraisal well (within Block PM304) - upgraded from a marginal field to be one of Malaysia’s biggest oil fields
   - Joint venture: Petrofac, Petronas Carigali, Kuwait Foreign Petroleum Exploration Company (KUFPEC) and PetroVietnam Exploration Production Company
   - Estimated recoverable resources - over 200 MMstb

2. **Block SK310 (B-14 well), offshore Sarawak**
   - Joint venture: Newfield Exploration Company, Mitsubishi Corporation and Petronas
   - Gas Initially In Place (GIIP) ranges from 1.5 – 3 Tcf (trillion cubic feet) of gas

3. **Telok A, offshore Terengganu**
   - First of two four-legged, unmanned satellite platforms
   - Joint venture: ExxonMobil and Petronas Carigali - under production sharing contract
   - Production will peak at 370 MMcfd (millions of cubic feet per day)

4. **Adong Kecil West-1 well, onshore Sarawak**
   - Third onshore discovery by Petronas, after a lapse of 24 years (in Block SK333)
   - Joint venture: JX Nippon Oil & Gas Exploration Ltd and Petronas Carigali
   - Drill-stem tests achieved flow rates of about 440 barrels of crude oil per day and 11.5 MMscf/d (million standard cubic feet of gas per day)

5. **Kuang North, offshore Sarawak**
   - Petronas is developing two exploration wells, Kuang North-1 and Kuang North-2 (in Block SK316).
   - GIIP - estimated to be about 2.3 tscf (trillion standard cubic feet)

### Asia-Pacific oil reserves

<table>
<thead>
<tr>
<th>Country</th>
<th>% Total world oil reserves</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>1.38</td>
</tr>
<tr>
<td>India</td>
<td>0.39</td>
</tr>
<tr>
<td>Malaysia</td>
<td>0.27</td>
</tr>
</tbody>
</table>

*Source: Energy Information Administration (EIA)*

*Note: Total oil reserves are as of 2011*
The Global Incentive For Trading (GIFT) programme is to encourage international trading companies, specifically those that trade in petroleum-related products, to use Malaysia as their regional base for storage and trading operations. The programme also aims to develop and strengthen the downstream value chain of the oil and gas industry in the country.

Requirements:

- Minimum annual revenue of US$100 million
- Minimum annual local expenditure of RM3 million
- Employ minimum three professional traders
- Encouraged to use and engage local support services

Notes:
1. As per the Budget 2013 speech, the GIFT programme will be extended to cover new commodities such as agriculture, refined raw materials and chemicals.
2. 0% tax rate for the first 3 years of their operation applies to LNG companies that sign up for this programme before 31 December 2014.

On 29 March 2013, three new incentives were introduced to develop marginal oil fields in Malaysia. Two other incentives, announced in Budget 2013, are aimed to encourage the transformation of Malaysia from a producer to a global integrated trading hub for oil and gas.

### Development of marginal oil fields

   - An accelerated 15% capital allowance for a 5-year period
   - Bonus allowance of 25% in the year of acquisition of qualifying plant machinery and equipment incurred for the purpose of carrying out petroleum operations in qualifying marginal fields to be written off over a period of 5 years.
   - The Rules apply to qualifying plant expenditure incurred in the years of assessment 2010 through 2024.
   - Malaysian taxpayers who operate in a marginal field may amend their returns to claim accelerated capital allowances.

2. Petroleum (Income Tax) (Investment Allowances) Regulations 2013 [P.U. (A) 120]
   - 60% annual investment allowance on qualifying capital expenditure incurred in conjunction with a qualifying project, such as projects in respect of enhanced oil recovery, high carbon dioxide gas, or an infrastructure asset as determined by a Minister in a 10-year period
   - The investment is in addition to the normal 8% annual capital allowance and 20% of the bonus allowance.

   - Petroleum income tax exemption on qualifying statutory income derived from petroleum operations in a qualifying marginal field
   - Amount of exempt statutory income is determined in accordance with a formula provided in this Order to arrive at the effective tax rate of 25% vs the 38% rate that applies to income from petroleum operations

### Malaysia as oil and gas hub

4. 100% income tax exemption for a period of 10 years, exemption of withholding tax and exemption of stamp duty

5. Investment in the refinery activities of petroleum products - Investment Tax Allowance of 100% for a period of 10 years will be provided to qualified companies
   - Investments totaling US$20 billion in oil and gas projects have been implemented in 2012. Projects include the Petronas RAPID project, oil and gas storage terminal in Johor, regasification plant in Melaka, as well as the oil and gas terminal in Sipitang, Sabah.

Notes:
1. Equivalent to depreciation
2. Qualified marginal field is a specific area determined by the Minister, and is a field in a petroleum agreement area that has potential crude oil reserves not exceeding 30 million stock tank barrels or natural gas reserves not exceeding 500 billion standard cubic.
3. Normal annual capital allowance rate is at 8% for a 10-year period and the bonus allowance is 20%.
4. Financial years ending in 2010 through 2024
5. It is not yet confirmed which Ministry will become an approving authority.

Sources:
- Ernst & Young International Tax Alert (18 April 2013)
- Inland Revenue Board of Malaysia
- Ministry of Finance - Budget 2013
The oil and gas sectors, marked as a National Key Economic Area (NKEA), have been investors’ focal point. To date, there are 12 Entry Point Projects (EPPs) estimated to generate RM47.1 billion to Gross National Income (GNI).

<table>
<thead>
<tr>
<th>EPP no.</th>
<th>EPPs</th>
<th>KPI</th>
<th>Target (FY)</th>
<th>Actual (YTD)</th>
<th>Jobs generated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rejuvenating existing fields through enhanced oil recovery</td>
<td>Additional resources - million stock tank barrel (MMstb)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Developing small fields through innovative solutions</td>
<td>Production from marginal field - thousand barrel of oil equivalent per day (kboed)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Production from marginal field (gas) - million standard cubic feet per day (MMscfd)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Intensifying exploration activities</td>
<td>Number of explored wells</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Building a regional oil storage and trading hub</td>
<td>Additional committed amount of land-based oil storage capacity (million cubic metre)</td>
<td>3,000,000</td>
<td>3,000,000</td>
<td>790</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Number of oil trading companies based in Malaysia</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Unlocking premium gas demand in Peninsular Malaysia</td>
<td>Number of additional confirmed gas requirements (MMscfd)</td>
<td>100</td>
<td>100</td>
<td>27,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Note: Additional confirmed gas requirement for 2012 is an additional 100 MMscfd, making the total 240 MMscfd = Regasification plant capacity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Attracting MNCs to bring their global oil field service and equipment operations to Malaysia</td>
<td>Amount of investments made by OFSE MNC (RM million)</td>
<td>400</td>
<td>1,503</td>
<td>20,000</td>
</tr>
<tr>
<td>7</td>
<td>Consolidating the domestic fabricators</td>
<td>Number of successful mergers of fabricators</td>
<td>2</td>
<td>2</td>
<td>5,000</td>
</tr>
<tr>
<td>8</td>
<td>Developing engineering, procurement and installation capabilities and capacities through strategic partnerships and joint ventures</td>
<td>Number of MNCs or JVs between local OFSE companies with global MNCs</td>
<td>3</td>
<td>6</td>
<td>15,000</td>
</tr>
<tr>
<td>9</td>
<td>Improving energy efficiency</td>
<td>Reduction in electricity bills through energy management in all government offices (%)</td>
<td>10</td>
<td>10.4</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Market share of 5-star appliances (refrigerator) (%)</td>
<td>25</td>
<td>40.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Market share of 5-star appliances (air-conditioner) (%)</td>
<td>20</td>
<td>21.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Market share of 5-star appliances (chiller) (%)</td>
<td>39</td>
<td>39.2</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Building up renewable energy and solar power capacity</td>
<td>Amount of grid-connected renewable energy plants installed capacity (MW)</td>
<td>110</td>
<td>100.5</td>
<td>1,906</td>
</tr>
<tr>
<td>11</td>
<td>Developing nuclear energy for power generation</td>
<td>tba</td>
<td>-</td>
<td>-</td>
<td>2,637</td>
</tr>
<tr>
<td>12</td>
<td>Tapping Malaysia’s hydroelectricity potential</td>
<td>tba</td>
<td>-</td>
<td>-</td>
<td>590</td>
</tr>
</tbody>
</table>

Source: ETP Annual Report 2012, Pemandu, as of 21 May 2013
## EPCIC approved projects

Set out below are the major EPCIC (Engineering, Procurement, Construction, Installation and Commissioning) projects, both upstream and downstream, for Malaysia's oil and gas industry:

### Downstream

<table>
<thead>
<tr>
<th>EPCIC</th>
<th>Participants</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petronas’ Refinery &amp; Petrochemical Integrated Development and other multinationals</td>
<td>Dialog, SapuraKencana, Muhibbah Engineering, Ranhill, KNM</td>
<td>RM120b</td>
</tr>
<tr>
<td>LNG Regasification plants</td>
<td>Dialog, Muhibbah Engineering, Ranhill</td>
<td>RM12b</td>
</tr>
<tr>
<td>Tank terminal projects for crude oil, petrochemicals, LNG</td>
<td>Dialog, MMC, Benalec, Muhibbah Engineering, Ranhill</td>
<td>RM10b</td>
</tr>
<tr>
<td>Malaysia LNG Train 9</td>
<td>JGC Corporation, Chiyoda-Saipem</td>
<td>RM10b</td>
</tr>
</tbody>
</table>

To increase Malaysia’s LNG liquefaction facilities by 3.6 million tonnes

### Upstream

1. **25 marginal field projects - New risk sharing contract (RSC) by Petronas**
   - Under the first and second rounds of RSC licensing, 3 RSCs were awarded:
     - Berantai field off Terengganu to Petrofac and SapuraKencana
     - Balai-Bentara Cluster off Sarawak to Australia-listed RocOil, Dialog Group and Petronas Carigali consortium
     - Kapal, Banang and Meranti Cluster off Peninsular Malaysia to United Kingdom-listed Coastal Energy and Petra Energy
   - Under the third RSC licensing round, 10 marginal fields offered include Bunga Pelaga, Rompin, Endau, Lada Hitam, D41 and A21 off Sarawak; Rusa Timur, Multiara Hitam and Kuda Terbang off Sabah; and Ophir off Peninsular Malaysia.
   - **RM52.5b**
   - Bidders: SapuraKencana, Dialog Group, Petra Energy, Scomi Marine, Puncak Niaga, UMW Oil & Gas, Bumi Armada

2. **Shell Malaysia’s EOR projects**
   - **RM38b**
   - Bidders: MMHE, SapuraKencana, Wah Seong, Bumi Armada, Alam Maritim

3. **Carigali-Hess’s North Malay basin gas project (fast track basis)**
   - Central processing platforms, 8 well head platforms, 200km pipeline
   - **RM16b**
   - Bidders: MMHE, SapuraKencana, Wah Seong, Bumi Armada, Alam Maritim

4. **Exxon-Mobil’s EOR**
   - Central processing platforms, gas compression systems, process equipment, mobile offshore production units, tender rigs, offshore vessels
   - **RM10b**
   - Bidders: MMHE, SapuraKencana, Wah Seong, Bumi Armada, Alam Maritim

5. **Murphy Oil, 1.5 million tonne floating liquefied natural gas (FLNG)**
   - Second FLNG carrier
   - **RM9b**
   - Bidders: JGC Corporation, Toyo Engineering

Source: Ernst & Young analysis, 3 June 2013
Oil and gas outlook

Given the strong demand forecasts for oil within the Asia-Pacific region, Malaysia's oil production will continue to be buoyant. Production growth is set to outpace consumption growth in the Malaysian oil sector due to positive demand forecasts for oil within the Asian region. Domestic demand for oil will be negated with the removal of fuel subsidies and the switch towards coal-fired power plants.

In contrast, the growth trend is reversed for gas, where consumption growth will outpace domestic production growth. Malaysia's gas price continues to be the lowest in ASEAN, and gas remains the preferred energy fuel by power companies.

In the medium term, world oil demand is expected to grow moderately at 1.5% p.a., propelled by demand from developing countries. Consumption growth in developing countries is expected to moderate in the longer term as their economies mature, as subsidies are phased out, and as other fuels penetrate their fuel mix, notably natural gas. Global growth in oil demand will remain well below GDP growth, reflecting efficiency improvement in vehicle transport - partly induced by environmental pressures to reduce emissions, especially in OECD countries.

On the supply side, non-OPEC oil supply is expected to continue its upward climb, driven by high prices and advances in upstream technology opening up new frontiers, e.g. deep water offshore and shale liquids.

Malaysia

![Graph: Malaysia Demand, supply and net exports of crude oil](source: BMI: Malaysia Oil & Gas Report Q2 2013)

![Graph: Malaysia Demand, supply and net exports of dry gas](source: BMI: Malaysia Oil & Gas Report Q2 2013)

Note: Prices are according to Europe Brent Spot Price FOB

Sources: EIA website (as of 3 June 2013)

Note: Prices are monthly averages

Sources: Ernst & Young analysis (April)

Note: NGL – Natural gas liquids
Other - refinery gas, liquefied petroleum gas (LPG), solvents, petroleum coke, lubricants, bitumen, wax, other refined products and refinery fuel and loss

Source: Energy Outlook 2030
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