Making more of gas reserves

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KPC is aiming to increase Kuwait's gas output by almost 300 per cent over the next two decades

The Kuwait Petroleum Corporation (KPC) is spearheading a 20-year master plan to transform the Emirate's energy policy toward making better use of its gas reserves. Announced last year, KPC aims to spend up to US$340 billion up until 2030.

The state oil company is pursuing the aggressive capital programme to boost government revenues which, more than in any other GCC country, are derived from oil exports.

KPC is aiming to increase Kuwait's gas output by almost 300 per cent over the next two decades, compared with a 25 per cent targeted increase in oil production capacity.

But to achieve that, Kuwait will not only need to invest in the expansion of its oil production and refining capacity, but also spend heavily on gas development.

The gas programme will include producing more associated gas from Kuwait's oilfields as the emirate's oil output rises, and further reducing the amount of gas flared, or burnt off as waste; developing difficult gasfields in the north of Kuwait – deeply buried deposits that are heavily laced with toxic hydrogen sulphide; and developing gas reserves in the divided zone shared by Kuwait and Saudi Arabia.

Kuwait's estimated 63 trillion cubic feet (tcf) of proven natural gas reserves are not substantial, and KPC is pushing for an extensive drive in natural gas exploration. Vast discoveries of non-associated gas in the north of the country have attracted the interest of the international oil companies (IOCs). However, the new discoveries are more geologically complex, and require more costly equipment to exploit them.

All gas resources are owned by KPC. The Kuwaiti Constitution prohibits any use of production sharing agreements (PSAs) that allow for an equity stake by an IOC in development projects. As a result, Kuwait is using technical service agreements to bring in IOCs to develop more difficult projects. In February 2010, Shell signed an enhanced technical service agreement for the 2006 natural gas discoveries in the north, known as the Jurassic fields, amounting to 35 tcf.

Current natural gas output is around 1.17 bcf per day, up 8 per cent on the figure for 2009. Kuwait increasingly requires supplies of natural gas for electricity and water utilities. The country is shifting its exploration drive to focus on natural gas discoveries to offset LNG imports and decrease the proportion of oil used domestically. KPC has announced a production target of 4 bcf/d by 2030.

Oil production set for increase

Kuwait's current capacity stands at 3.2m barrels per day (bpd) and the government hopes to achieve actual capacity levels of 3.5mbpd by 2015 and 4mbpd by 2020. Over the last decade, Kuwait has slowly increased output, from 2.17m bpd in 2003 to current production levels of around 2.6m bpd. With reserves of some 104b barrels, Kuwait is currently the fifth-largest producer in OPEC, behind Saudi Arabia, Iran, Iraq and the UAE, contributing around 10 per cent of global supplies.

Historically, Kuwait has relied on its abundant reserves of light crude oil to serve its petroleum industry. The Burgan field has been the main source of Kuwait's oil since the 1940s, and is the second largest oil field in the world, only behind the Ghawar field in Saudi Arabia.

But like all Middle East producers, Kuwait faces the challenge of declining production from ageing oil fields, many of them over 60 years old. Kuwait's main field, Burgan, discovered in 1938 and commencing production at the end of World War II, has passed peak production. The country's other fields, in the north, are also being depleted: Ahmadi dates to 1952, Magwa to 1951. Raudhatain was discovered in 1955, and Sabriya in 1957. To maintain its place in OPEC, Kuwait must continue redevelopment of old fields.

The Kuwait Oil Company (KOC) said in 2010 that the Burgan field would have more oil resources than previously thought, identifying new oil resources with a capacity of 12 billion barrels. Kuwait, like other oil producers worldwide, is racing to bring new projects online and faces challenges in finding contractors and skilled labour, as well as buying technology and ensuring environmental standards.

Kuwait has for years been looking at allowing foreign firms to enter its hydrocarbons sector to carry out large exploration projects, mainly in the north of the country, which sits on around a tenth of the world's proven oil reserves.

Project Kuwait, which dates back to 1998, aims to create the incentives for attracting increased foreign participation in the country's oil and gas industry. But Kuwait's National Assembly has ruled the contract structure outlined in Project Kuwait to be unconstitutional. Kuwait's constitution bars foreign ownership of the country's natural resources, which precludes PSAs that normally provide the incentive for investment. To allow IOC involvement, an 'incentivised buyback contract (IBBC)' was created, which does not involve production sharing or concessions. The structure of the IBBC agreements allows the Kuwaiti government to retain full ownership of oil reserves, control over oil production levels, and strategic management of the ventures. Foreign firms would be paid a 'per barrel' fee, along with allowances for capital recovery and incentive fees for increasing reserves. In May 2007, the Kuwaiti ruling family conceded the responsibility to approve each related IBBC for Project Kuwait to Parliament.

Project Kuwait aims to increase the country's oil production capacity from the northern fields of Raudhatain, Sabriya, al Ratqa, and Abdali, which KOC recognises will require the help of the IOCs. The Royal Dutch Shell agreement of February 2010 is an indication of progress in this regard.

Downstream activities

KPC also aimed to expand Kuwait's annual domestic refining capacity to 1.4 million bpd from about 950,000 bpd and was widening its global network of oil refining and petrochemical partnerships.

Before last year, KPC frequently fell short of its development targets because Kuwait's parliament often opposed major oil projects or spending plans – especially those involving foreign partners. One of the biggest blows came at the end of 2008, when the government cancelled a US$17.4bn joint venture between KPC and the US chemical producer Dow.

Kuwait is also planning to build two olefins plants as part of its development programme over the next 20 years. Of that investment, US$81bn is allocated for the next five years and is to be split evenly between production, refining and distribution. There are currently three refineries in Kuwait – Mina Abdulla, Mina Ahmadi and Shuaiba – with KNPC serving as the refining arm of KPC.

Kuwait is a large exporter of refined products, with refining capacity about three times the level of domestic demand for petroleum. Kuwait Petroleum International, also known as Q8, manages KPC's refining and marketing operations internationally. It's operations include around 4,000 refining and marketing operations across Belgium, Spain, Sweden, Luxembourg, and Italy. An important office is located in London.

Kuwait wants to cultivate downstream interests in markets with high potential demand growth, and in particular China, Vietnam, and Indonesia. Kuwait Petroleum Company (KPC), China Petroleum, and Chemical Corporation (Sinopec) will build a refinery complex with an estimated investment of US$9bn on China's Donghai Island, near Zhanjiang City in Guangdong Province, as a joint venture. The new refinery is expected to be operational from 2014-15. It will process 100 per cent Kuwaiti crude oil, supplied by KPC, with a refining capacity of 300,000 bpd, equivalent to 15m tonnes per annum.

Nuclear and renewable energy

In the long term, Kuwait plans to embark on a nuclear energy programme. In March 2009, the government said it was setting up a nuclear commission. In January 2010, the head of the National Nuclear Energy Committee announced a 20-year cooperative deal with the French Atomic Energy Commission to develop nuclear power in Kuwait. Kuwait says that it is considering four nuclear power plants, set to become operational by 2022.

Kuwait has an average insolation of 5.2 kWh/m^2/day. The country has a high potential for uptake of solar energy, with an estimated 73 ktoe of energy potential daily from utilising 10 per cent of Kuwait's total land area for photovoltaics.

With an estimated 4.4 full-load wind hours per day, Kuwait also has good wind energy potential. A cooperation agreement has been signed between the Kuwaiti Institute for Scientific Research (KISR) and the Dar Saleh Al Qallaf engineering consultancy for the design of sustainable buildings with integrated renewable energy systems, in particular, wind power.

Investment

In May, Kuwait's national oil company committed US$500m to fund the redevelopment of Britain's first producing, but now abandoned, North Sea oilfield in a deal endorsed by the UK government. The foreign investment arm of KPC is to acquire a 35 per cent interest in the Alma and Galia oilfield developments operated by UK-listed explorer EnQuest.

The re-entry of Kuwait into backing North Sea oil developments follows changes in tax allowances announced in the Budget aimed at encouraging a renaissance of investment in marginal fields in the maturing basin.

The Alma field, previously known as the Argyll field, was the first oilfield to be developed in the North Sea but was abandoned because of the high water content of output. New technology has made retrieval of oil from the dormant field more economic. It is estimated to contain as many as 29m barrels of oil.

That announcement came a week after measures announced in the Budget that industry lobby group Oil & Gas UK said would help a new wave of investment and unlock the stalled sale of many maturing assets to small operators by larger energy groups. F

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