

Competitive advantage in energy

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High oil revenues have in turn driven rapid import growth

Among the most important oil and gas producers in the world, the UAE's 97.8 billion barrels of proven oil reserves contribute 7 per cent to the global total. Over the last three years, the UAE has been steadily increasing output, which has risen to 2.6 million barrels of crude oil a day, exported mainly to Asian markets.

In April 2013, UAE Energy Minister Suhail Al-Mazrouei said the Emirates are seeking to increase production capacity to 3.5 million barrels per day of crude oil by 2018; a move he said would contribute to the stability of global markets.

High oil revenues have in turn driven rapid import growth. Despite the slightly lower level of oil prices seen for the next two years, export growth is expected to remain solid and GDP growth is forecast to pick up in 2013-14, with the non-oil economy continuing to recover as construction, tourism and trade flows generally continue to recover.

Around 94 per cent of the UAE's oil reserves are located in Abu Dhabi, with the other six emirates of Sharjah, Fujairah, Ras Al-Khaimah, Umm AlQuwain, Ajman, and Dubai accounting for the remainder, led by Dubai with approximately four billion barrels. As a major oil exporter, the UAE's growth and trade performance has been boosted by high world energy prices in the last few years, which saw exports growing by more than 30 per cent in 2011 and by about 15 per cent in 2012.

Much oil production in the UAE is from the Zakum oil system, a collection of oil fields that together make up the third largest oil zone in the world. The Upper

Zakum field is run by ZADCO, 60 percent owned by ADNOC with the Japanese Oil Development Company (JODCO) and ExxonMobil holding the remaining stakes. International oil majors operating in the UAE include BP, Shell, Total, ExxonMobil, Petrofac, and Partex.

Abu Dhabi's participation in the oil and gas sector covers all activities, including exploration, production, transport, and refining. The Abu Dhabi National Oil Company (ADNOC) operates 14 subsidiaries that are involved in all of the oil and natural gas sectors. Its contract structures are on a long-term, production-sharing basis, often through joint venture companies.

The UAE holds around 214.4 trillion cubic feet (Tcf) of proven natural gas reserves, the seventh-largest natural gas reserves in the world after Russia, Iran, Qatar, Saudi Arabia, Turkmenistan, and the United States. The majority of these reserves are located in Abu Dhabi (198.5 Tcf), with marginal amounts found in Sharjah (10.7 Tcf), Dubai (4 Tcf), and Ras al-Khaimah (1.2 Tcf).

ADNOC is working to increase natural gas production via the development of technically-challenging sour gas reserves, as well as the potential substitution of carbon-dioxide and nitrogen to replace significant volumes of natural gas that are currently being reinjected into the Emirate's oil fields to maintain production pressure. Such solutions, particularly carbon-dioxide injection, will create important synergies with other energy-related undertakings within Abu Dhabi, such as the Carbon Capture and Sequestration (CCS) project, which is part of the Masdar initiative being led by the Abu Dhabi Future Energy Company.

Domestic consumption of gas outstrips production, and the use of natural gas for injection into mature oil fields further compounds the strain on natural gas supplies. Despite the UAE's large natural gas reserves, capital costs and high sulphur content present major impediments to development. In 2008, Qatar, with its partner Shell, and Dubai agreed to a long-term LNG supply contract. In December 2010, the first of these LNG shipments arrived in Dubai.

The Integrated Gas Development (IGD) is the largest natural gas project currently in development. GASCO is working with Abu Dhabi Gas Liquefaction Company Ltd. (ADGAS) to develop a new facility at the Habshan oil field, called Habshan-5. In January 2012 Occidental announced it had been selected by

Abu Dhabi Crude Oil Pipeline, known as Adcop, at Fujairah port in Fujairah



the Government of Abu Dhabi, through ADNOC, to participate in the development of Abu Dhabi's Shah gas field, one of the largest gas fields in the Middle East.

Production at the Shah Field will be an important future resource to fill the rapidly expanding regional demand for natural gas. The Shah gas project involves development of high-sulphur content reservoirs within the Shah field, located onshore approximately 110 miles southwest of the city of Abu Dhabi.

The project will involve development of several gas-gathering systems, construction of new gas and liquid pipelines and processing trains to process 1 billion cubic feet of high-sulphur content gas. This is anticipated to produce approximately 500 million cubic feet per day of network gas and a significant amount of condensate and natural gas liquids. ADNOC is already in the process of developing the Shah field with the majority of project engineering procurement and construction contracts already awarded. Production from the field is scheduled to begin in 2014.

Investment opportunities

There are excellent opportunities for growth in Abu Dhabi's oil and gas sector, including in the areas of exploration, production, refining, and transport.

As mentioned, ADNOC is leading a number of initiatives to increase production; these include the redevelopment of currently producing fields, as well as the development of smaller fields that had not previously been placed into production. Such developments will require significant capital investment, but promise commensurately high rates of return on that investment.

Abu Dhabi entities, including Mubadala Development Company, The International Petroleum Investment Company (IPIC), and the Abu Dhabi National Energy Company (TAQA) are also pursuing exploration and production opportunities beyond the borders of the UAE, including in North Africa, Central Asia and the North Sea.

Refining

The Abu Dhabi Oil Refining Company (TAKREER) and IPIC are pursuing new projects in the refining sector that will nearly triple the Emirate's current refining capacity of 485,000 barrels per day. These projects, which include the expansion of the existing Ruwais refinery in Abu Dhabi, as well as the construction of a new refinery within the Emirate of Fujairah, illustrate the application of Abu Dhabi's future strategy of expanding its participation along the entire hydrocarbon value chain. As with the upstream oil and gas sector, Abu Dhabi, led by IPIC, is also making significant investments in refining facilities outside the emirate, including in Asia, North Africa and Europe.

Transportation

In 2012, Abu Dhabi started exporting its first crude from a US\$4.2 billion, 263-mile pipeline that bypasses the Strait of Hormuz, shipping the fuel from the neighbouring sheikhdom of Fujairah to a refinery in Pakistan. Abu Dhabi built the export route, capable of carrying 1.5 million barrels of crude a day, to avoid the Straits of Hormuz, a narrow waterway carrying a fifth of the world's traded oil that Iran has threatened to block in retaliation for sanctions targeting the country's nuclear programme.

Petrochemicals

With its large reserves of natural gas and associated liquids, Abu Dhabi is well positioned to increase its participation in petrochemicals.

As with Abu Dhabi's refining expansion, the growth of the Emirate's petrochemical industry represents another way in which Abu Dhabi can capture a larger share of the hydrocarbon value chain. Such expansion will also assist the UAE to develop the necessary inputs for expanded domestic industries utilizing basic plastics and industrial chemicals, thus contributing to the overall objective of economic diversification.

Export growth

Most of the UAE's oil shipments are destined for Asian markets such as India, Korea, and Singapore. With China also becoming an increasingly important destination, UAE exports to Asia will continue to grow more strongly than those to other regions, expanding by 8 per cent a year between 2013-15 and then accelerating to about 10 per cent a year in 2016-20, according to ADNOC. Exports to Europe (excluding Russia) are forecast to increase by about 5 per cent a year between 2013 and 2015 despite the subdued economic performance in the eurozone, before picking up to 8 per cent a year in 2016-20.

Exports to other regions are expected to be more subdued, but continuing to show positive growth in 2013-15, and then accelerating in 2016-20 as the world economy picks up more strongly. Exports to Latin America are expected to accelerate significantly in 2016-20.

Hydrocarbons have formed the backbone of the UAE's economy for more than three decades, and crude oil exports will remain the largest source of foreign earnings. Natural gas exports, primarily to Asian markets, have also made an important economic contribution, while domestic natural gas supplies have been leveraged to feed numerous industrial activities, as well as Abu Dhabi's utilities, which must supply power and water to a growing population. Given its vast oil and gas reserves, the UAE possesses and will maintain an exceptionally strong competitive advantage in this sector. **E**

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