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The U.A.E. Oil & Gas Sector

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U.S.-U.A.E. Business Council
505 Ninth Street, NW
Suite 6010
Washington D.C.
+202.863.7285
news@usuaebusiness.org
www.usuaebusiness.org

EXECUTIVE SUMMARY

The United Arab Emirates (U.A.E.), a member of the Organization of the Petroleum Exporting Countries (OPEC) and the Gas Exporting Countries Forum (GECF), has long been an important actor in international oil & gas (O&G) markets. Having consolidated its position in the global hydrocarbon sector, Emirati policymakers are now actively pursuing wide-ranging social, economic, and regulatory reforms with demonstrable impacts on the domestic O&G sector and key international markets.

U.A.E. policymakers have explicitly stated that the Emirates, particularly Abu Dhabi, will undertake major strategic investments in midstream and downstream infrastructure to bring domestic producers in line with the U.A.E.'s 2021 national development goals, and the contemporary global hydrocarbon pricing environment, through greater emphasis on high value-added refined and petrochemical products, rather than crude oil exports.[1]

In support, the Government of Abu Dhabi has already strategically reoriented its national oil company, the Abu Dhabi National Oil Company (ADNOC), to allow the firm's leadership to augment activities across the hydrocarbon value-chain through the optimization of its organizational structure, a more robust utilization of external funding, significant investments in new and preexisting assets, and the expansion of the company's strategic partnership frameworks.

Furthermore, the Government of Abu Dhabi has also folded three of its legacy sovereign wealth funds, the Mubadala Development Company (Mubadala Development), the International Petroleum Investment Company (IPIC), and the Abu Dhabi Investment Council (ADIC,) into a new entity, the Mubadala Investment Company (Mubadala). Post-merger, Mubadala has unified its disparate oil, gas, and petrochemicals holdings into a single Petroleum and Petrochemicals Platform, accruing operational and financial efficiencies across the hydrocarbon value-chain to benefit the long-term resiliency and sustainability of Abu Dhabi, and the U.A.E.'s economy.

TABLE OF CONTENTS

OVERVIEW

The U.A.E. Oil Sector

The U.A.E. is estimated to hold the world's seventh-largest proved oil reserves, equivalent to 97.8 billion barrels. 96% of these proved reserves are located within the Emirate of Abu Dhabi, with 2% of total proved reserves, equivalent to 2 billion barrels, located within the Emirate of Dubai. The remaining reserves, approximately 2% of the total, are spread between the Emirates of Ajman, Fujairah, Ras Al-Khaimah, Sharjah, and Umm Al-Quwain.[2]

Discovered in 1963, the Upper Zakum oil field offshore Abu Dhabi is the second largest offshore field in the world. Operated by ADNOC Offshore on behalf of its shareholders ADNOC, ExxonMobil and Japan Oil Development Company (JODCO), Upper Zakum was originally developed using traditional offshore platforms. However, following ExxonMobil's entry into the Upper Zakum partnership in 2006, the partners embarked on a new development plan, employing the first combination of artificial islands, extended reach drilling, and maximum reservoir contact well technologies in the world.

Between 2009 and 2016 the U.A.E.'s crude oil and natural gas liquid production increased by 28%, so that in 2016, petroleum and petroleum liquids production was roughly equivalent to 3.7 million barrels per day (B/D), including 2.97 million B/D of crude oil.[3] In 2016, the U.A.E. exported 2.5 million B/D of crude oil abroad, largely under long-term supply contracts, with 96% destined for Asian markets. Non-export capacity is primarily utilized to supply the local market, a substantial user, necessitating the import of additional heavy fuel oil, gasoline and diesel to meet rising domestic energy demand. The U.A.E. maintains significant midstream and downstream infrastructure, with a robust internal pipeline network supplying the country's four operational refineries, which have a total combined capacity of 1.1 million B/D. In 2012, the 1.5 million B/D capacity Abu Dhabi Crude Oil Pipeline (ADCOP) came online, connecting Abu Dhabi's onshore fields to the Gulf of Oman.[4]

The U.A.E. Natural Gas Sector

The U.A.E. natural gas sector utilizes the country's 215 trillion cubic feet (Tcf) of proved natural gas reserves, the world's seventh-largest.[5] In 1977, the U.A.E. became the first Middle Eastern producer to export liquified natural gas (LNG), sending its first cargo from the Das Island LNG plant to Japan's Tokyo Electric Power Company (TEPCO). As of 2015, the U.A.E. exported approximately 466 billion cubic feet (Bcf) of natural gas annually.[6]

Like many of the world's legacy petroleum exporters, the U.A.E. is disproportionately reliant on natural gas for domestic consumption. In 2015, the U.A.E. produced approximately 3,179 Bcf of natural gas.[7] Critically, Emirati gas production has not kept pace with increases in domestic demand; between 2005 and 2015 domestic gas consumption grew by approximately 5% annually, while production only grew by an average of 2.1% annually.[8] In 2015, 87% of the U.A.E.'s electricity supply was derived from gas-fired generation, while 26% of gross production was reinjected into domestic oil fields for use in enhanced oil recovery (EOR).[9]

Since becoming a net-importer of natural gas in 2008, the U.A.E. has deployed significant capital to augment its natural gas import capacity. The Taweelah Receiving Facilities, operated by Dolphin Energy, a joint venture between the Mubadala Investment Company, Occidental Petroleum and Total, is the U.A.E.'s most important natural gas import terminal, supplying all seven emirates with volumes roughly equivalent to a quarter of the country's overall natural gas demand.[10] Additionally, the U.A.E. utilizes two floating regasification LNG import terminals to receive foreign natural gas. The first of these terminals was commissioned in 2010 at Jebel Ali in Dubai by the Dubai Supply Authority (DUSUP), while the second came online in 2016 at ADNOC's Ruwais facility. Both floating regasification LNG import terminals are provided by strategic partner, Excelerate Energy via a floating storage and regasification unit (FSRU). These floating regasification LNG import terminals support enhanced supply diversity and security, and are considered to be strategic assets to the U.A.E., with a guaranteed regasification capacity of 1.3 Bcf/D or approximately 20% of the U.A.E.'s total natural gas demand in 2017.

The U.A.E. Oil and Gas Firms

The U.A.E.'s domestic O&G sector notably includes multiple national oil companies (NOC), as well as Mubadala Petroleum, a wholly-owned subsidiary of the Government of Abu Dhabi's Mubadala Investment Company, and the privately-owned Crescent Group, the Middle East's oldest and largest private O&G firm.

The U.A.E.'s NOC's include the biggest local player, the Abu Dhabi National Oil Company (ADNOC), one of the world's largest oil and gas producers; the Emirates National Oil Company (ENOC), Dubai's NOC; Sharjah National Oil Company (SNOC); and RAK Gas, of Ras al Khaimah.

The U.A.E. also serves as a base for international oil companies (IOC) contracted with U.A.E. and regional firms for work across the hydrocarbon value-chain. These include, but are certainly not limited to, Occidental Petroleum, and the supermajors, BP, Eni, ExxonMobil, Royal Dutch Shell (Shell) and Total, which are active in exploration and production, and Chevron, which is active in storage, aviation fuel and lubricants distribution. More recent entrants include the European producers OMV and Compañía Española de Petróleos, S.A.U. (Cepsa), India's Oil and Natural Gas Corporation (ONGC), and the Chinese firms, China National Petroleum Corporation (CNPC), and China ZhenHua Oil Company.

SPOTLIGHT: IOCs IN THE U.A.E.

BP

- A BP predecessor company participated in the first concession in Abu Dhabi in 1939
- BP holds a 10% stake in ADNOC Onshore
- BP holds a 10% stake in ADNOC LNG
- BP holds a 10% stake in National Gas Shipping Company (NGSCO)
- Regional downstream businesses BP Middle East LLC and Air BP are based in Dubai
- Air BP is partnered with ADNOC Distribution in Abu Dhabi, and the Government of Sharjah on the Anabeeb pipeline and import storage
- Air BP is the sole provider of storage and into-plane refueling services at Sharjah International Airport
- Air BP has been active in Sharjah since the early 1930s
- Mubadala Investment Company holds a 1.7% stake in BP

ExxonMobil

- An ExxonMobil predecessor company participated in the first concession in Abu Dhabi in 1939
- ExxonMobil Abu Dhabi Offshore Petroleum Company has held a 28% stake in the Upper Zakum offshore oil concession since 2006. Upper Zakum is operated by ADNOC Offshore
- ExxonMobil previously committed to provide human capital and technology to increase Upper Zakum's production capacity to 750,000 B/D. In 2017, the Upper Zakum partners agreed to increase production capacity to 1 million B/D by 2024
- ExxonMobil set up the Abu Dhabi Technology Center in 2006 to provide training and resources to the Upper Zakum project
- ExxonMobil Middle East Marketing Corporation, which markets Mobil branded lubricants throughout the Middle East, has been based in Dubai since 1991
- ExxonMobil Chemical Middle East & Africa's regional chemicals headquarters has been based in Dubai since 1985

Occidental Petroleum

- Occidental has maintained a presence in the U.A.E. for more than 15 years
- Occidental holds a 40% stake in ADNOC Sour Gas, which produces approximately 10% of the U.A.E.'s natural gas supply, and 5% of the world's total sulfur production
- Occidental holds a 24.5% stake in Dolphin Energy, one of the region's largest energy initiatives
- Occidental is engaged in a technical evaluation for the development of the offshore Ghasha ultra-sour gas project
- Occidental is longtime supporter of the Emirates Foundation's efforts to identify and develop young Emirati talent in science, technology, financial literacy, and volunteerism

SPOTLIGHT: FIRMS IN THE U.A.E. O&G SECTOR

The U.A.E. is a regional base for firms providing manufactured goods, technologies, and services to domestic and international hydrocarbon producers. These include manufacturers such as McWane Gulf; the fire, security and HVAC technology provider Johnson Controls International (JCI); technology firms such as Honeywell and IBM; engineering, procurement and construction (EPC) contractors, notably AECOM, Bechtel, Fluor, Jacobs, Parsons, and TechnipFMC; and petrochemical firms like Honeywell UOP and DowDupont.

THE ABU DHABI NATIONAL OIL COMPANY

The New ADNOC

The Government of Abu Dhabi-owned Abu Dhabi National Oil Company (ADNOC) is the dominant market player in the U.A.E., and one of the largest oil and gas producers globally. Though ADNOC manages 95% of the U.A.E.'s proved crude reserves and 92% of its proved natural gas reserves it has historically acted with conservatism when facing changing market conditions.

In February 2016, H.E. Dr. Sultan Ahmed Al Jaber was appointed Chief Executive Officer of ADNOC. An engineer and economist, H.E. Dr. Al Jaber replaced Abdullah Nasser Al Suwaidi who had occupied the role since 2011. H.E. Dr. Al Jaber's appointment, and the Abu Dhabi Supreme Petroleum Council's approval nine months later of ADNOC's 2030 Integrated Strategy and Five-Year Business Plan, was an endorsement of the ongoing plans undertaken by H.E. Dr. Al Jaber to reorganize ADNOC, reshaping the firm's strategic orientation in service of the U.A.E. O&G sector's long-term sustainability.

ADNOC's 2030 Integrated Strategy identifies five fundamental ongoing shifts in world energy markets as the impetus for its strategic pivot. They include: a rise in world oil demand, projected to rise by 10 million barrels a day by 2040; a projected 60% increase in global petrochemical demand between 2016 and 2040; changing sources of demand growth, with non-OECD and Asia-Pacific markets displacing OECD economies as primary energy demand drivers; the ongoing increase in world natural gas demand, expected to increase 45% by 2040; and increased digitalization, allowing for upstream and downstream efficiency gains between 5% and 10%.

Since issuing its 2030 Integrated Strategy, ADNOC has embarked on a far-reaching plan to increase profitability and efficiency across its value-chain. ADNOC has outlined four major new strategic priorities, and the clearest pathways for enhanced value creation across its asset portfolio. Specifically, ADNOC looks to create (1) a more profitable upstream; (2) a more sustainable and economic domestic gas supply; (3) a more valuable downstream; and (4) more proactive and adaptive marketing activities, via optimized capital allocation, portfolio diversification, operational capabilities, and partnership activity, as well as through the recapitalization of legacy assets.

Furthermore, the SPC has continued to support ADNOC in its efforts to transform itself into "a more commercially minded organization, [focused] on creating long-term, sustainable value to enable the U.A.E.'s economic transition."[11] In November 2018, the SPC approved the issuance of ADNOC's new Integrated Gas Strategy, as well as its plans for capital investment of $132.33 billion between 2019 and 2023, and to increase oil production capacity to 4 million B/D by 2020, and to 5 million B/D by 2030.[12]

Corporate Structure

ADNOC has streamlined its corporate structure, merging and rebranding subsidiaries, complimentary business lines, and preexisting joint venture shares into a new, simplified corporate structure (detailed below) meant to enhance operational efficiency and capital markets access.

ADNOC GROUP CORPORATE STRUCTURE

Exploration & Production	Processing & Refining	Marketing & Distribution
ADNOC Onshore	ADNOC Gas Processing	ADNOC Distribution
ADNOC Offshore	ADNOC Sour Gas	ADNOC Logistics & Services
ADNOC Drilling	ADNOC LNG	Abu Dhabi National Crude Oil Pipeline (ADCOP)
Al Yasat Petroleum	ADNOC Refining	
Al Dhafra Petroleum	ADNOC Industrial Gas	
	Abu Dhabi Polymers Company (Borouge)	

ADNOC has also undertaken meaningful steps to increase gender diversity amongst its executive ranks, following up on pledges made in honor of the 2016 Emirati Women's Day, to increase female representation in the U.A.E.'s O&G sector. As of April 2018, women now lead ADNOC subsidiaries ADNOC LNG and Al Yasat Petroleum, and the company is well-positioned to exceed its stated goal of having women fill 15% of its senior management roles by 2020.[13]

Corporate Finance

Under H.E. Dr. Al Jaber's leadership, ADNOC has better monetized and leveraged its portfolio assets in support of enhanced value creation, greater financial flexibility, and a five-year (2019-2023) $132.33 billion capital expenditure program that includes $45 billion earmarked expressly for downstream investment.[14] In 2017, ADNOC's Abu Dhabi Crude Oil Pipeline (ADCOP) subsidiary issued the firm's first foreign currency bond, a $3 billion dual-tranche offering that was more than three times oversubscribed. Importantly, ADCOP's issuance marked the first time that ADNOC had accessed international capital markets.[15] At the time it was one of the largest non-sovereign bonds issued in the Middle East region.

While ADNOC has publicly signaled a lack of interest in an initial public offering (IPO) or private placement deal for the parent company,[16] it is actively pursuing increased external investment in its subsidiary companies. In December 2017, ADNOC sold a 10% stake in ADNOC Distribution, the U.A.E.'s largest fuel retailer and convenience store operator, in an IPO on the Abu Dhabi Securities Exchange (ADX). The offering raised $851 million in the largest ADX IPO of the past decade, making ADNOC Distribution the fourth-largest listed firm in Abu Dhabi.[17] The IPO, which initially valued ADNOC Distribution at $8.5 billion[18] has fueled talk that ADNOC plans to float an additional five to ten percent of ADNOC Distribution on the ADX, allowing the firm to join the MSCI Emerging Markets Index and thereby increase its number of international equity investors. In support, ADNOC Distribution has quietly embarked on a series of international non-deal roadshows to gauge investor appetite for a seasoned equity offering.[19]

In October 2018, ADNOC and Baker Hughes (BHGE), the world's second-largest oil services company, announced that BHGE would acquire a five percent stake in ADNOC's subsidiary, ADNOC Drilling, for $550 million. The deal, which values ADNOC Drilling at approximately $11 billion, marks the first time that a foreign company has taken an ownership stake in an ADNOC subsidiary. According to H.E. Dr. Al Jaber, the tie-up "will allow ADNOC Drilling to be not only a local player but a global specialist in the drilling and oil service business."[20] This follows reports from summer 2018 stating that ADNOC was "reviewing offers from potential partners who could buy as much as 40 percent of its refining business, ADNOC Refining.[21]

In comments provided to the *The National* ahead of November 2018's inaugural ADNOC Investor Forum, H.E. Dr. Al Jaber stated, "we are actively seeking long-term, value-adding partners to invest and grow alongside us. Over the last two years, we have developed a substantial pipeline of attractive and innovative partnership and co-investment opportunities, covering both equity and debt, and including opportunities in our infrastructure portfolio, service and support businesses, and key operating business."[22]

Oil Upstream

ADNOC's 2030 Integrated Strategy seeks to enhance the profitability of the firm's upstream assets, as well as provide the company with the crude resources necessary to meet projected increases in global crude oil demand. Consequently, ADNOC announced in November 2018 that it plans to augment its daily crude production capacity to 4 million B/D by 2020, and to 5 million B/D by 2030,[23] joining the United States, Russia and Saudi Arabia as the only producers capable of producing 5 million B/D.

ADNOC is a leader in the application of new and emergent enhanced oil recovery (EOR) techniques, and the firm expects to derive 500,000 of these new barrels from EOR. In 2016, the firm in partnership with the Abu Dhabi Future Energy Company (Masdar), completed construction of Al Reyadah, a carbon capture, utilization and storage (CCUS) project, through which captured carbon is used for field reinjection. The success of the Al Reyadah JV has shaped ADNOC's decision to include exponential increases in CO_2 reinjection and an envisioned 70% field recovery rate in its 2030 Integrated Strategy, as well as to buyout Masdar's equity in Al Reyadah in early 2018.[24]

An additional 100,000 barrels of daily capacity may also be derived from the operating, onshore Bu Hasa field. In November 2018, ADNOC Onshore announced that it had issued an EPC contract to Tecnicas Reunidas for approximately $1.4 billion worth of enhancements to Bu Hasa. Once complete, ADNOC expects Bu Hasa's oil production capacity to increase from 550,000 B/D to 650,000 B/D by the end of 2020.[25] Moreover, Abu Dhabi's Supreme Petroleum Council announced in November 2018 that new discoveries had been made of 1 billion barrels of oil in place. [26]

ADNOC also plans to further augment its upstream oil operations through concession agreements for new exploration and production. ADNOC has traditionally engaged foreign partners via negotiated joint ventures, however in April 2018, the Government of Abu Dhabi announced the launch of its first competitive licensing round for six onshore and offshore concessions. Based on existing data from detailed petroleum system studies, seismic surveys, log files and core samples from hundreds of appraisal wells, estimates suggest these new blocks hold multiple billion barrels of oil and multiple trillion cubic feet of natural gas. The first exploration and production licenses are expected to be awarded in the first quarter of 2019.

Natural Gas Upstream

The U.A.E. boasts the world's seventh largest proved natural gas reserves, as well as a robust domestic natural gas market. However, the U.A.E.'s domestic natural gas market is characterized by major supply-side constraints, most notably the high level of sulfur found in most of Abu Dhabi's gas reserves, which has historically made natural gas imports more economical than expanding domestic production.[27] Critically, "gas pricing reforms introduced in 2016, [as well as] more advanced technology and ADNOC's growing and industry leading experience in developing sour gas reservoirs are making it possible for ADNOC to unlock more gas resources and increase value extraction."[28]

The 2030 Integrated Strategy shows a major shift in corporate strategy as it regards the deployment of the firm's natural gas assets, emphasized by the November 2018 announcement of the firm's new Integrated Natural Gas Strategy, and 15 TcF of new natural gas discoveries. In the words of H.E Dr. Al Jaber, "The substantial investments [ADNOC] will make, in the development of new and undeveloped reservoirs, gas caps and unconventional resources, will ensure [ADNOC] can competitively meet the UAE's growing demand for power generation and industrial use while maintaining [LNG export contracts until 2020] and seizing incremental LNG and gas-to-chemicals growth opportunities."[29]

ADNOC has already undertaken significant steps to develop the ultra-sour fields comprising its Ghasha offshore ultra-sour gas concession, awarding Eni (25%),[30] Wintershall (10%)[31] and OMV (5%)[32] with stakes in late 2018, as well as contracting Bechtel and TechnipFMC for front-end engineering and design work (FEED) and KBR for project management services (PMC) during the FEED phase of development.[33] Based on the agreements, Bechtel will complete FEED work for the Hail and Ghasha fields, with TechnipFMC doing the same at the Dalma field. In Oil & Gas Journal's estimation, sour gas from the Hail, Ghasha, and Dalma fields could cover up to 20% of the U.A.E.'s domestic gas demand by 2025.[34]

Additionally, ADNOC has also expanded its longstanding partnership with Total into unconventional resources and gas cap development. ADNOC and BHGE first began testing hydraulic fracturing (fracking) technology at the Diyab formation in 2016,[35] and in November 2018 ADNOC awarded Total a 40% interest in the Ruwais Diyab Unconventional Gas Concession.[36] Importantly, this compliments another 2018 concession agreement between Total and ADNOC, that will allow ADNOC to utilize Total's technical expertise to exploit the Umm Shaif gas cap, one of the largest in the Middle East. According to H.E. Dr. Al Jaber, "ADNOC has recently seen encouraging results from the first gas cap production pilot well at Umm Shaif, which will play an important role in delivering [ADNOC's] 2030 smart growth strategy and a sustainable and economic gas supply."[37]

Downstream

The expansion of ADNOC's downstream activities will be critical to the success of the 2030 Integrated Strategy. It is imperative that producers like ADNOC respond to changes in the energy landscape as markets begin to adjust to new cost competitive renewable energy and natural gas, as well as increased global interest in climate-change mitigation. As such, ADNOC has embarked on an ongoing $45bn effort to upgrade its downstream operations, leveraging preexisting assets and new downstream investments to strengthen market share and enhance corporate sustainability.

Central to ADNOC's pivot into downstream is the ongoing expansion of the Ruwais refining and petrochemicals complex, meant to double refining capacity and triple petrochemicals production by 2025 as detailed below.[38]

- New Refining Capacity: ADNOC seeks to build a new 600,000 B/D refinery to increase the Ruwais complex's feedstock flexibility and augment its refined products output beyond its current maximum capacity of 817,000 B/D.[39]
- New Business Lines: ADNOC has signed a project development agreement with Cepsa to build and operate a new facility capable of producing 150,000 tons/year (t/y) of linear alkylbenzene (LAB) and 225,000 t/y of normal paraffin (N-Paraffin). In December 2018, Tecnicas Reunidas was awarded a FEED contract for the facility.[40] According to Cepsa,

the partners expect to reach a final investment decision (FID) on the project in mid-2019.[41] In addition, ADNOC has engaged in talks with Borealis to jointly develop a plastics recycling facility utilizing Ruwais generated industrial waste.[42]

- Expanded Borouge Joint Venture: ADNOC plans to grow its joint venture with Borealis, the Abu Dhabi Polymers Company Ltd. (Borouge). Plans are currently underway to construct one of the world's largest mixed-feed crackers at Borouge's integrated polyolefins facility, projected to expand production capacity from 4.5 million t/y in 2016 to an estimated 14.4 million t/y by 2025.[43] Separately, in September 2018, ADNOC signed an EPC contract with the Maire Tecnimont Group for the construction of a fifth polypropylene plant (PP5) with a 480,000 t/y production capacity.[44] Construction is already underway on the PP5 unit, which will grow Borouge's polypropylene capacity by 25% to 2.24 million t/y upon its expected completion in late 2021.[45]

As part of its efforts to better utilize its sour gas assets, ADNOC plans to grow its joint venture with Occidental Petroleum, ADNOC Sour Gas. In late 2016, ADNOC Sour Gas, then known as Al Hosn Gas, awarded a FEED contract to Amec Foster Wheeler to expand its sour gas processing capacity at the onshore Shah facility.[46] ADNOC Sour Gas is also in the process of building a new 11km pipeline able to ship liquid sulfur from Shah to ADNOC's Ruwais facility for granulation.[47] Further in support of enhanced sour gas deployment, ADNOC has engaged Morocco's OCP Group in a joint venture designed to utilize ADNOC's sour gas and downstream expertise, and OCP's phosphate assets to create a new formidable player in international fertilizer markets.

Also in natural gas processing, ADNOC subsidiary ADNOC LNG has announced the award of an EPC contract for Phase II of its Integrated Gas Development Expansion (IGD-E) project. According to the *Emirates News Agency (WAM)*, Phase II of the IGD-E project "will add 245 million cubic feet per day of associated gas to the 1.4 Bcf/D of offshore gas sent from Das Island to ADNOC Gas Processing's Habshan gas facilities to be processed for use in power generation."[48]

In keeping with the 2030 Integrated Strategy, ADNOC LNG seeks to secure its natural gas supply, and diversify its customer base in service of long-term sustainability. In November 2018, ADNOC announced an agreement with its partners in ADNOC LNG, Mitsui, BP and Total, to supply ADNOC LNG with natural gas until 2040.[49] At the same time, ADNOC LNG also disclosed that it had inked term contracts with seven buyers for the sale of LNG. "The contracts, which cover the supply of LNG on a mid-term basis starting April 2019, have been signed with various international well-established LNG buyers, including Japan's JERA Co., which announced, in August, it plans to purchase up to 8 cargoes per annum of LNG from ADNOC LNG, for a period of three years, starting in April 2019." [50]

ADNOC is also engaging new international partners to help expand downstream market share and access to critical Asia Pacific growth markets. In November 2018, ADNOC and Wanhua Chemical Group of China signed a ten-year contract, for the supply of 1 million metric tons of liquified petroleum gas (LPG) annually, to Wanhua.[51] ADNOC's work with Wanhua compliments its earlier strategic cooperation framework agreement with China National Petroleum Corporation (CNPC). The comprehensive agreement mentions multiple areas of envisioned technical collaboration, as well as that "CNPC will explore potential Chinese investment in a number of planned downstream projects [in the U.A.E. and China], including an aromatics plant, a mixed-feed cracker, and a new refinery."[52]

In 2018, ADNOC notched several notable successes in its efforts to upgrade its engagement with the Indian market. In the U.A.E., ADNOC agreed to sell a 10% stake in the Lower Zakum concession to an Indian consortium led by Oil and Natural Gas Corporation (ONGC).[53] While in India, ADNOC became the "only foreign oil and gas company to invest, by way of crude oil"[54] in the Indian Strategic Petroleum Reserves (ISPRL), shipping 5.86 million barrels of crude oil for storage at ISPRL's Mangalore facility and signing a preliminary agreement to potentially store millions of additional barrels at ISPRL's Padur facility.[55] Also in India, ADNOC entered into an agreement with Saudi Aramco for a shared 50% stake in Ratnagiri Refinery and Petrochemicals Limited (RRPCL), a joint venture with plans to build a $44 billion, 1.2 million B/D capacity mega-refinery on India's western coast.[56]

New Approaches to Strategic Partnership

A major objective of ADNOC's 2030 Integrated Strategy is the enhancement of ADNOC's partnership activities. In support of these goals, ADNOC has undertaken several key initiatives signaling a demonstrable desire for more robust, mutually beneficial partnerships with foreign O&G firms. According to Oil & Gas Journal, "the company said it [is seeking] partners able to secure access to the world's fastest-growing markets for ADNOC products, to contribute technical expertise and develop new technologies alongside its own capabilities, and to invest alongside ADNOC 'strategically across different parts of a more-integrated ADNOC value chain.'"[57]

ADNOC IN-COUNTRY VALUE (ICV) PROGRAM

ADNOC has also embarked on an extensive In-Country Value (ICV) program in line with U.A.E. government strategic priorities to diversify and increase the quantity and quality of local (Emirati) human capital. In November 2018, ADNOC announced that its 2018 ICV spend would be in excess of $4.9 billion. As envisioned, augmented ICV requirements will add value to ADNOC operations and the greater O&G sector through long-term cost savings and efficiencies accrued in the following areas:

- Increased employment and development opportunities for Emirati nationals
- Decreased dependency on foreign workers for critical skilled labor
- Lower capital outflows, due to decreased employment of skilled foreign labor
- Enhanced domestic market competition and cost-competitiveness for Emirati contracting and services firms, covered by ADNOC's international partners
- Augmented collaboration between local and global suppliers
- Growth in local supplier's implementation of international best practice
- Greater domestic capture of revenue generated by foreign partner expenditures

In addition to opening six new concessions for competitive bidding, ADNOC has also for the first time, significantly reconfigured preexisting concessions to better allow for the engagement of new minority partners. In 2017, ADNOC Offshore announced that the former ADMA-OPCO operated Lower Zakum, Umm Shaif, Nasr, Umm Lulu and Satah Al Razboot (SARB) fields would be split into multiple new concessions with new partnership terms. Since February 2018, ADNOC has announced new agreements with ONGC, INPEX, CNPC, Total and Eni for interests in the new Umm Shaif/Nasr and Lower Zakum concessions, as well as with OMV and Cepsa for interests in the new Umm Lulu/SARB concessions. Moreover in December 2018, the Supreme Petroleum Council also approved the sale of CEFC China Energy Company's 4% stake in ADNOC's onshore concession to the Government of China-owned, China ZhenHua Oil Company.[58]

In November 2018, ADNOC also upgraded long-standing strategic relationships with Saudi Aramco, and the Mubadala Investment Company through two new framework agreements. As part of the new ADNOC-Mubadala agreement, the companies "will explore the potential for the processing of crude oil and other hydrocarbons supplied by ADNOC, as well as potentially utilizing technologies owned by Mubadala with product offtake by [ADNOC subsidiaries]." [59] While the agreement with Saudi Aramco will allow the two firms to partner on "techno-economic feasibility studies and exchange knowledge and experience in LNG growth markets," [60] as well as jointly assess investment opportunities, in support of both firm's respective efforts to increase market share and revenue growth across the natural gas value chain.[61] Also in November 2018, ADNOC announced the signing of its first framework agreement with Uzbekneftegaz, a key player in Uzbekistan's nascent extraction industry looking to utilize ADNOC's upstream and downstream experience as a template for the development of Uzbekistan's own hydrocarbon resources. [62]

In the area of technology, ADNOC has also enhanced its engagement with the global technology firm, IBM, which inaugurated a state-of-the-art Innovation Center in Abu Dhabi in early 2018. In December 2018, it was announced that ADNOC and IBM are currently piloting a blockchain-based automated system to integrate oil and gas production across ADNOC's entire value chain. According to ADNOC and IBM, the collaboration will provide a secure platform for tracking, validating and execution of transactions at all stages, right from the production well to the end customer.

THE MUBADALA INVESTMENT COMPANY

<u>The New Mubadala</u>

In January 2017, several years into a prolonged downturn in international energy pricing, the Government of Abu Dhabi formally announced the merger of two of its largest sovereign wealth funds, the Mubadala Development Company (Mubadala Development) and the International Petroleum Investment Company (IPIC), creating a new entity, the Mubadala Investment Company PJSC (Mubadala), which became operational in May 2017. [63] [64] Subsequently, in March 2018, the Government of Abu Dhabi also merged the Abu Dhabi Investment Council (ADIC), another Abu Dhabi sovereign wealth fund, into Mubadala, bringing the firm's total assets under management (AUM) to $226 billion.[65] It has been indicated that the merger and reorganization of many of Abu Dhabi's most significant portfolio assets into a single entity will aid international expansion and continued diversification, supporting enhanced value creation across the hydrocarbon value-chain, most notably in upstream oil and downstream in petrochemicals.

Post-mergers, Mubadala is better positioned to enhance Abu Dhabi's overall financial agility through the careful exploitation of operational and financial synergies within the new asset portfolio,[66] as well as augmented international capital markets access derived from greater scale. Thus, the decision to create Mubadala may be interpreted as a significant action by the Government of Abu Dhabi to increase overall economic resiliency, lowering exposure to potentially adverse macroeconomic trends, including a sustained drop in global pricing or collapse in regional demand.

Corporate Structure

Mubadala has reorganized the combined Mubadala Development Company, IPIC, and ADIC portfolio assets into four investment platforms: Petroleum & Petrochemicals; Technology, Manufacturing & Mining; Aerospace, Information & Communications Technology, & Renewables; and Alternative Investments & Infrastructure.[67]

Mubadala's Petroleum & Petrochemicals platform includes a variety of controlling and minority stakes in upstream, midstream and downstream ventures with operations in over 40 countries, with a total value in excess of $40 billion.[68] It is led by CEO of Petroleum & Petrochemicals, Mr. Musabbeh Al Kaabi, formerly the head of its subsidiary, Mubadala Petroleum.

While Mubadala Development and IPIC's former energy and petrochemical holdings differed in quality and type,[69] their combination has allowed for the creation of a fully integrated hydrocarbon value-chain, better positioned to attain full operational efficiency and resiliency than under the previous ownership structures.[70] According to Mr. Al Kaabi, "The new petroleum and petrochemicals business is uniquely positioned to leverage its relationships, unlock synergies among its asset companies and deploy its financial strength to take advantage of new investment opportunities."[71]

Corporate Finance

One justification for folding Mubadala Development, IPIC, and ADIC assets into a single entity is the Government of Abu Dhabi's interest in increasing its access to international capital markets.[72] Through increased scale, Mubadala, its subsidiary companies, and potentially the Government of Abu Dhabi itself, will likely be able to enjoy greater leverage and lower borrowing costs from international lenders, with the potential for enhanced value creation and return on investment.[73] Post-merger, the Petroleum & Petrochemicals platform has committed around $12.5bn in upstream and downstream investments through its asset companies, suggesting that Mubadala is already taking advantage of its scale to augment investment capacity.[74]

Additionally, Mubadala's scale and engagement across the petroleum value chain may also decrease market risk perception of equity investment in Mubadala-controlled assets, theoretically raising the value of equity in subsidiary firms and supporting higher return on investment to the parent company.

Oil Upstream

Mubadala is eager to retain new and legacy international strategic partners for ventures across the hydrocarbon value-chain. While the firm is looking to engage partners to augment the overall quality, quantity, and geographic diversification of its asset portfolio, it is known to be actively pursuing upstream deals, particularly for low-cost oil.[75] In the words of Mr. Al Kaabi, "A strategic decision [has been taken] to invest in low-cost oil, which means that regardless what oil prices will look like in the future, [Mubadala's] portfolio will remain resilient and profitable under any scenario going forward."[76]

Mubadala Petroleum

In September 2018, Mubadala Petroleum completed its first Russian oil and gas investment, purchasing 44% of Gazprom Neft's equity in Gazpromneft-Vostok LLC, the operator of 13 oil fields in Western Siberia. The joint venture, which includes the Russia Direct Investment Fund (RDIF), adds additional oil production capacity to Mubadala's asset portfolio, supporting sustainable growth, while providing the firm with new co-investment opportunities and technical expertise in exploration and innovative process technologies.[77]

Mubadala's search for new low-cost barrels has been further supported by Cepsa and portfolio company OMV, both of which increased oil production capacity in 2018. In Abu Dhabi, the two firms were awarded minority stakes in the SARB and Umm Lulu concession.[78] Meanwhile, "In Algeria, Cepsa signed a new concession agreement for the operation and redevelopment of the Rhoude el Krouf (RKF) oilfield, [and] increased its stake in the Bir el Msana (BMS) oilfield."[79]

Furthermore, Mubadala is also actively pursuing enhanced cost-savings at its deployed upstream oil assets. Mubadala Petroleum has renegotiated its service contract with Petrofac for work at the Jasmine Field offshore Thailand, reducing drilling costs by 55% and significantly extending field life. Mubadala expects that Jasmine will now continue to produce, "Well beyond 2022 with a total production target of more than 100 million barrels, compared to original expectations that the field would be depleted by 2015 having recovered only 10 million barrels."[80]

Natural Gas Upstream

Within the last two years Mubadala has also made major strategic investments in the natural gas upstream. In March 2018, Mubadala Petroleum and minority partners Petroliam Nasional Berhad (PETRONAS) and Shell reached a final investment decision (FID) on the $1 billion Pegaga project offshore Malaysia.

Mubadala has contracted Sapura Fabrication, a division of Malaysia's Sapura Energy, to perform EPC work at Pegaga.[81] Within months of taking FID on Pegaga, OMV also purchased 50% of Sapura Upstream, another division of Sapura Energy holding offshore acreage in Malaysia, New Zealand, Australia, and the Gulf of Mexico.[82]

Elsewhere in Southeast Asia, Mubadala Petroleum signed a production-sharing contract (PSC) with the Government of Indonesia for a 100% stake in the Andaman I license, and a 30% stake in the Andaman II license, operated by Premier Oil.[83] According to Mubadala, "The PSCs have the potential to unlock a new material gas play for domestic consumption in North Sumatra and indeed long term export to regional markets."[84]

Also in 2018, Mubadala Petroleum expanded its presence into the Eastern Mediterranean natural gas upstream, purchasing a 10% stake in the Shorouk Concession, and a 20% stake in the Nour Concession, both offshore Egypt, from Eni. Mubadala Petroleum's investment in Shorouk is particularly notable, as the concession contains the supergiant Zohr Field, to date the Eastern Mediterranean's largest.[85] Commenting on the Nour share purchase, Mr. Al Kaabi noted that Nour "complement's [Mubadala's] existing investment in Zohr, supports [its] growth strategy in Egypt and holds the potential to unlock an additional resource base that could add to [Mubadala's] business in the longer term."[86]

Downstream

In Pakistan, Mubadala looks to grow its longstanding joint venture with the Government of Pakistan, Pak-Arab Refinery Ltd. (PARCO), with the construction of a new 250,000 B/D refinery.[87] In May 2018, PARCO announced the award of a contract with TechnipFMC "to carry out the management of pre-EPC activities for a grassroot, fully integrated, deep conversion refinery [supported by associated marine loading facilities] to be constructed at Hub near Karachi, Pakistan."[88] Mr. Al Kaabi has stated that the project will likely utilize Abu Dhabi crude,[89] with FID expected in late 2019.[90]

Mubadala also aims to expand its reach into the North American downstream through two announced deals. "In February [2018], Total and two of Mubadala's subsidiaries (Austria's Borealis and Canada's Nova Chemicals, together 'Novealis Holdings') agreed to form a JV to produce petrochemicals on a 50:50 basis."[91] The project, which includes Total's existing polyethylene 400 kt/y facility, and a new 625 kt/y Borstar® polyethylene unit, both located in Bayport, Texas, as well as a 1 million t/y ethane steam cracker, under-construction in nearby Port Arthur, takes advantage of very competitive feedstock prices in the U.S., alongside the proprietary technology, operational capabilities and market knowledge of the partner companies.

Earlier in 2017, Nova paid $2.1 billion to purchase the Geismar olefins complex outside Baton Rouge, Louisiana, capable of producing 885,000 tonnes of ethylene per annum.[92] Mubadala is also closely watching the U.S. LNG market and has made what Mr. Al Kaabi describes as "A small investment in shale or unconventional gas." [93]

RESOURCES

The U.S.-U.A.E. Business Council stands ready to help U.S. firms navigate the U.A.E. O&G Sector. Other resources include:

U.S. Government Contacts in the U.A.E.

Regional Senior Commercial Officer for the Gulf and Commercial Counselor: Thomas Bruns
U.S. Embassy in Abu Dhabi, Commercial Section
P.O. Box 4009, Abu Dhabi, U.A.E.
Tel: +971-2- 414-2665 Fax: +971-2- 414-2228

Commercial Attaché: Rachel Duran
U.S. Embassy in Abu Dhabi, Commercial Section
P.O. Box 4009, Abu Dhabi, U.A.E.
Tel: +971-2-414-2530 Fax: +971-2-414-2228

Principal Commercial Officer: Shakir Farsakh
U.S. Consulate General in Dubai, Commercial Section
P.O. Box 121777, Dubai, U.A.E.
Tel: +971-4-309-4963 Fax: +971-4-309-4841

Commercial Attaché: Thomas Meade
U.S. Consulate General in Dubai, Commercial Section
P.O. Box 121777, Dubai, U.A.E.
Tel: +971-4-309-4984 Fax: +971-4-309-4841

U.S. Government Contacts in Washington, D.C.

U.A.E. Desk Officer: James Cramer
U.S. Department of Commerce
U.S. and Foreign Commercial Service
International Trade Administration
14th St. & Constitution Avenue, N.W.
Washington, D.C. 20230
Tel: +1 (202) 482-0879 Fax: +1 (202) 482-0878
Email: James.Cramer@trade.gov

U.A.E. Desk Officer: Eugenia W. Davis
U.S. Department of State
Bureau of Near Eastern Affairs
Office of Arabian Peninsula Affairs
2201 C St. NW
Washington, D.C. 20520
Tel: + (202) 647-6562
Email: Davisew2@state.gov

U.A.E. Government Contacts in the United States

Commercial Counselor: Saud H. Al Nowais
U.A.E. Embassy, Trade & Commercial Office
3522 International Court, NW

Washington, DC 20008
Tel: +1 (202) 243-2425
Email: trade@uaeembassy-usa.org

Consul General of the U.A.E. in Los Angeles: His Excellency Abdulla Alsaboosi
1999 Avenue of the Stars, Suite 1250
Los Angeles, CA 90067
Tel: +1 (310) 551-6534
Email: protocol.la@mofa.gov.ae

Consul General of the U.A.E. in New York: His Excellency Majid Al-Suwaidi
535 5th Ave., 32nd Floor
New York, N.Y. 10017
Tel: +1 (212) 419-7670
Email: nycon@mofa.gov.ae

Consul General of the U.A.E. in Boston: His Excellency Salem Alshamsi
One International Pl, Suite 2901
Boston, MA 02110
Tel: +1 (617) 948-8800
Email: consboston@uaeembassy-usa.org

Consul General of the U.A.E. in Houston: His Excellency Saeed AlMheiri
7505 South Main Street, Suite 510
Houston, TX 77030
Tel: +1 (832) 956-6666
Email: houstoncon@mova.gov.ae

U.A.E. Trade Associations/Chambers of Commerce

Federation of U.A.E. Chambers of Commerce & Industry
P.O. Box 3014, Abu Dhabi, U.A.E.
Tel: +971-2-621-4144 Fax: +971-2-633-9210
Email: info@fcciuae.ae
Website: www.fcciuae.ae

Abu Dhabi Chamber of Commerce and Industry
P.O. Box 662, Abu Dhabi, U.A.E.
Tel: +971-2-621-4000 Fax: +971-2-621-5867
Email: contact.us@adcci.gov.ae
Website: www.abudhabichamber.ae

Dubai Chamber of Commerce & Industry
P.O. Box 1457, Dubai, U.A.E.
Tel: +971-4-228-0000 Fax: +971-4-202-8888
Email: customercare@dubaichamber.com
Website: www.dubaichamber.com/

Sharjah Chamber of Commerce & Industry
P.O. Box 580, Sharjah, U.A.E.
Tel: +971-6-530-2222 Fax: +971-6-530-2226
Email: scci@sharjah.gov.ae
Website: www.sharjah.gov.ae

Ajman Chamber of Commerce & Industry
P.O. Box 662, Ajman, U.A.E.
Tel: +971-600-595-959 Fax: +971-6-747-1222
Email: info@ajmanchamber.ae
Website: www.ajmanchamber.ae

Fujairah Chamber of Commerce and Industry
P.O. Box 738, Fujairah, U.A.E.
Tel: +971-9-223-0000 Fax: +971-9-222-1464
Email: chamber@fujcci.ae
Website: www.fujcci.ae

Ras Al Khaimah Chamber of Commerce and Industry
P.O. Box 87, Ras Al Khaimah, U.A.E.
Tel: +971-7-207-0222 Fax: +971-7-226-0112
Email: info@rakchamber.ae
Website: www.rakchamber.ae

Umm Al Quwain Chamber of Commerce & Industry
P.O. Box 436, Umm Al Quwain, U.A.E.
Tel: +971-6-765-1111 Fax: +971-6-765-5055
Email: uaqcci1@eim.ae
Website: http://www.uaqchamber.ae/

Relevant U.A.E. Government Organizations

Ministry of Climate Change and Environment
P.O. Box 213, Abu Dhabi, U.A.E.
Tel: +971-2-444-4747 Fax: +971-2-449-0444
Website: http://www.moccae.gov.ae/
The Minister: H.E. Dr. Thani Al Zeyoudi

Ministry of Economy
P.O. Box 901, Abu Dhabi, U.A.E.
Tel: +971-2-613-1111 Fax: +971-2-626-0000
P.O. Box 3625, Dubai, U.A.E.
Tel: +971-4-314-1555 Fax: +971-4-358-1811
Website: www.economy.ae
The Minister: H.E. Sultan Bin Saeed Al Mansouri

Ministry of Energy & Industry
P.O. Box 59, Abu Dhabi, U.A.E.
Tel: 800-66367 Fax: +971-2-619-0001
Website: www.moei.gov.ae
The Minister: H.E. Suhail Bin Mohammed Faraj Al Mazrouei

Ministry of Finance
P.O. Box 433, Abu Dhabi, U.A.E.
Tel: +971-2- 698-7500 Fax: +971-2-698-7414
P.O. Box 1565, Dubai, U.A.E.
Tel: +971-2-698-7500 Fax: +971-4-393-9724
Website: www.mof.gov.ae

The Minister: H.H. Sheikh Hamdan Bin Rashid Al Maktoum (also the Deputy Ruler of Dubai)

Ministry of Human Resources and Emiratization (MOHRE)
P.O. Box 809, Abu Dhabi, U.A.E.
Tel: +971-2-7418-3888 Fax: +971-2-449-4293
Website: www.mohre.gov.ae
The Minister: H.E. Nasser Bin Thani Juma Al Hamli

Ministry of Infrastructure Development
Al Qusais 1, Dubai, U.A.E.
Tel: +971-4-261-0001 Fax: +971-4-212-5544
near The Emirates Center for Strategic Studies and Research-Dusit Thani Hotel, Abu Dhabi, U.A.E.
Tel: +971-2-626-0606 Fax: +971-2-626-0026
Website: www.moid.gov.ae
The Minister: H.E. Dr. Abdullah Bin Mohammed Belhaif Al Nuaimi

Ministry of Presidential Affairs (MOPA)
P.O. Box 280, Abu Dhabi, U.A.E.
Tel: +971-2-222-2221 Fax: +971-2-622-2228
Website: www.mopa.ae
The Minister: H.H. Sheikh Mansour Bin Zayed Al Nahyan

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