

Downstream overview



Mohammed Y. Al Qahtani
Executive Vice President, Downstream

“Aramco’s unwavering focus on operational excellence, reliability and safety paved the way for record-breaking Downstream profitability in 2022, capturing improved refining margins. Delivering on our Downstream transformation program, and the successful execution of strategic acquisitions, has further enhanced Aramco’s position as a leader in the global downstream sector.”

Aramco has a large and growing, strategically integrated global Downstream business. The Downstream segment’s activities consist of refining and petrochemicals, base oils and lubricants, retail operations, distribution, supply and trading, and power generation. These activities support Aramco’s Upstream and Downstream operations by enabling it to optimize crude oil sales and product placement through its significant infrastructure network of pipelines and terminals, and access to shipping and logistics resources.

The strategic integration of Aramco’s Upstream and Downstream segments provides opportunities for Aramco to secure and de-risk liquids demand and capture incremental value from the hydrocarbon supply chain by selling to its dedicated system of domestic and international refineries and petrochemical plants. In addition, the integration of Aramco’s refining and chemicals manufacturing assets provides an opportunity to capture additional value and continue to improve the balance of fuels and chemicals production. In 2022, the crude oil utilized by Aramco’s downstream operations accounted for 44% (2021: 43%) of the Company’s crude oil production.

Aramco’s downstream investments diversify its revenue and integrate its oil and gas operations to optimize value across the hydrocarbon chain, supporting crude oil and gas demand and facilitating the placement of its crude oil. Aramco’s net refining capacity was 4.1 mmbpd at December 31, 2022, (2021: 4.0 mmbpd), while the gross refining capacity at December 31, 2022 was 7.1 mmbpd (2021: 6.8 mmbpd).

Aramco also has an integrated petrochemicals business within its Downstream segment, which captures additional incremental value. Aramco’s chemicals business spans production of basic chemicals, such as aromatics, olefins and polyolefins, to more complex products, such as polyols, isocyanates, and synthetic rubber.

In June 2020, SABIC, a globally diversified chemicals company with manufacturing in the Americas, Europe, Middle East, and Asia Pacific, became an integral member of the Aramco group. Aramco’s majority interest in SABIC increases the proportion of petrochemicals production in Aramco’s Downstream portfolio and supports its downstream growth ambitions. The chemicals business continues to grow through capacity expansions and new investments, and operates in over 50 countries with a net chemicals production capacity¹ of 56.3 million tons per year as at December 31, 2022, (2021: 54.2 million tons per year).

Downstream competitive strengths

Captive downstream system

Ability to monetize upstream production into a high-quality external customer base and through a captive downstream system.

Reliable supplier

Strong track record of supply reliability.

1. Excludes SABIC Agri-Nutrients and Metals (Hadeed) businesses.

Key events in 2022

The Downstream segment began to implement a transformation program in 2021, seeking to realize incremental value from its portfolio through yield enhancements, stream integration and cost reductions. In support of this effort, a new Downstream operating model has been implemented, creating a more agile business. The ongoing transformation program has delivered estimated incremental EBIT of over SAR 7.5 billion (\$2.0 billion) in 2022.

Outlook for 2023

Aramco's Downstream segment will continue to integrate across the value chain with investments throughout its operations as it seeks to create additional value while diversifying the portfolio and mitigating the volatility of earnings.

To continue creating value, the Downstream segment aims to increase refining capacity, grow liquids-to-chemicals production, expand trading activities, and leverage the Downstream transformation program to further enhance its earning potential.

Successfully completed three landmark transactions with Polish refiner and fuel retailer PKN ORLEN, to grow its integrated refining and petrochemicals capacity.

Announced a partnership with the Aston Martin Cognizant Formula One™ Team to harness the shared commitment to engineering excellence and innovation.

Announced its final investment decision to participate in the development of a major integrated refinery and petrochemical complex in northeast China.

Signed an equity purchase agreement to acquire Valvoline Inc.'s global products business (Valvoline Global Products) for SAR 9.9 billion (\$2.65 billion) that closed in March 2023.

SASREF and SABIC Agri-Nutrients received the world's first independent certifications for production of blue ammonia and hydrogen.

Aramco, in collaboration with SABIC Agri-Nutrients, has completed the world's first commercial shipment of certified blue ammonia to South Korea.

Aramco and SATORP obtained the International Sustainability & Carbon Certification Plus (ISCC+) credential for their joint waste plastic recycling initiative.

Saudi Aramco Base Oil Company, known as Luberef and a non-wholly-owned subsidiary of Aramco, listed its shares on the Saudi Exchange.

The Power and Water Utility Company for Jubail and Yanbu, known as Marafiq and an associate of Aramco, listed its shares on the Saudi Exchange.

Aramco and its affiliate, S-OIL, made a final investment decision to develop one of the world's largest refinery-integrated petrochemical steam crackers.

Aramco and TotalEnergies made a final investment decision for the construction of a large petrochemical complex in Saudi Arabia.

Maintained Aramco's strong reputation for dependable operations with 99.9%¹ reliability.

1. Applies to Saudi Arabian Oil Company (the Company).

Major integrated refiner
 Major integrated refiner with a global network of reliable assets in key regional markets and hubs.

Large global refining & petrochemical portfolio
 Scale advantage with one of the largest refining and petrochemicals portfolios globally.

World-class partners
 World-class partners that provide access to additional geographies, technological expertise, operational know-how, and marketing capabilities.

Integrated trading
 Integrated trading activities enable it to optimize the supply of its products to maximize returns.

Large downstream capital projects
 Ability to execute some of the world's largest downstream capital projects.

Downstream financial results

	SAR		USD*		
	Year ended December 31		Year ended December 31		
All amounts in millions unless otherwise stated	2022	2021	2022	2021	% change
Revenue and other income related to sales (including inter-segment revenue)	1,199,714	823,028	319,924	219,474	45.8%
Earnings before interest, income taxes and zakat	79,292	62,190	21,145	16,584	27.5%
Capital expenditures – cash basis	29,541	28,724	7,878	7,660	2.8%

* Supplementary information is converted at a fixed rate of U.S. dollar 1.00 = SAR 3.75 for convenience only.

Earnings before interest, income taxes and zakat (EBIT) for the year ended December 31, 2022, was SAR 79,292 (\$21,145), compared to SAR 62,190 (\$16,584) in 2021. These robust earnings reflect higher trading and improved refining margins, partially offset by lower chemicals margins.

Capital expenditures for 2022 were SAR 29,541 (\$7,878), in line with expenditures of SAR 28,724 (\$7,660) in 2021.

Refining

Overview

Aramco operates one of the world’s largest refining businesses, with gross refining capacity of 7.1 mmbpd as at December 31, 2022, (December 31, 2021: 6.8 mmbpd), and net refining capacity of 4.1 mmbpd (December 31, 2021: 4.0 mmbpd). Aramco’s refining operations are conducted in the Kingdom and internationally through wholly-owned and affiliated refineries. The refining operations allow Aramco to transform its crude oil and NGL into refined products for sale within the Kingdom and internationally.

Specifically, Aramco designs and configures its refining system to optimize production using the crude oil it produces. This helps reduce supply chain cost and improves efficiency in refining operations, and therefore the supply of refined products to its downstream customers.

Domestic refining

Aramco’s in-Kingdom refineries, both wholly-owned and affiliated, receive their crude oil supply from Aramco’s upstream production. These refineries accounted for 63% of Aramco’s net refining capacity in 2022 (December 31, 2021: 64%). Together with the local distribution system, this provides Aramco unique access to the large domestic marketplace to which it is the sole supplier.

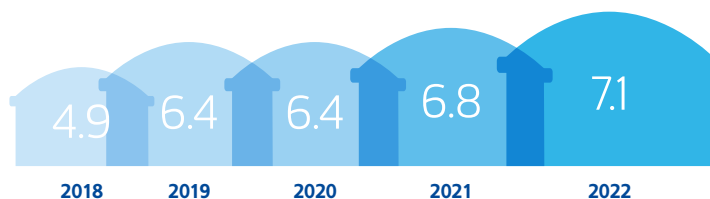
Strategy in action

Downstream integration



Expanding placement of Aramco’s crude oil in its downstream operations allows it to capture additional value, expand its sources of earnings, and provide resiliency to oil price volatility.

Gross refining capacity (mmbpd)



In 2022, Aramco placed 26% (2021: 27%) of its crude oil production to in-Kingdom wholly-owned and affiliated refineries. Aramco’s equity share of refined products and the refined products produced through its wholly-owned refineries located within the Kingdom are primarily distributed wholesale to domestic fuel retailers and industrial customers through Aramco’s pipelines, distribution and terminals system.

Aramco has five wholly-owned and four domestic affiliated refineries in the Kingdom, which help to meet domestic refined product demand. Through long-term supply agreements with these ventures, Aramco has the right to supply all crude processed at these refineries.

Refining continued

International refining

In addition to increasing its in-Kingdom refining capability, Aramco seeks to expand its strategically integrated Downstream business in high-growth economies such as China, India, and Southeast Asia, while maintaining its current participation in material demand centers, such as the United States and Europe, and countries that rely on importing crude oil, such as Japan and South Korea.

Aramco has invested in two refining and petrochemical joint ventures with PETRONAS, collectively known as PRefChem. These assets are located in Johor, Malaysia, adjacent to Singapore, Asia's refined products trading hub. Aramco will provide a significant proportion of PRefChem's crude supply under a long-term supply agreement. Aramco believes this presents an expansion opportunity in Southeast Asia and opens up new markets for its crude oil production.

In 2022, Aramco's weighted average ownership percentage in its international refineries was 41% (2021: 41%), but it supplied an average of 56% (2021: 54%) of the crude oil used by those refineries. This crude placement provides significant benefits to Aramco's operations, including a secure and reliable supply of high-quality crude oil, which helps to ensure a secure and reliable supply of refined products to its downstream customers.

The net refining capacity of Aramco's international wholly-owned and affiliated refineries was 1.5 mmbpd (2021: 1.5 mmbpd). Product sales by Aramco's international ventures are facilitated through multiple distribution channels, including systems owned by the respective affiliates through a network of approximately 17,000 branded service stations.

Performance and achievements



▲ Gdańsk Refinery, Poland

Aramco completed three landmark transactions with Polish refiner and fuel retailer PKN ORLEN to expand Aramco's presence in the European downstream sector and increase its crude exports to Poland through investments in Poland's refining, wholesale, and jet fuel marketing segments for total consideration of SAR 1.8 billion (\$0.5 billion). Aramco has acquired equity stakes of 30% in a 210 mbpd refinery, 100% in an associated wholesale business, and 50% in a jet fuel marketing joint venture.

Aramco announced its final investment decision to participate in the development of a major integrated refinery and petrochemical complex in northeast China. The Huajin Aramco Petrochemical Company (HAPCO) joint venture, comprised of Aramco, North Huajin Chemical Industries Group Corporation, and Panjin Xincheng Industrial Group, will develop a liquids-to-chemicals complex including a 300 mbpd refinery and petrochemical units. This presents an opportunity for Aramco to supply up to 210 mbpd of crude oil feedstock to the complex. The transaction is subject to finalization of transaction documentation, regulatory approvals, and closing conditions.

Aramco's Malaysia-based investment in refining and petrochemical joint ventures with PETRONAS, collectively known as PRefChem, has successfully restarted operations in May 2022, and is ramping up gradually with a continued focus on safety and sustainability. Aramco's investment in PRefChem provides an expansion opportunity in an important high-growth market and offers new geographies for placing its crude oil production.

Chemicals

Overview

Aramco's chemicals business represents an extension of the hydrocarbon value chain and strategically complements its refining operations. Aramco's chemicals business, including its interest in SABIC, operates in over 50 countries and produces a range of chemicals. Aramco's growing operations in chemicals include participation in high-growth chemicals markets with demand from industries such as packaging, automotive, and appliances.

Following the acquisition of SABIC, Aramco is a major global producer of petrochemicals with manufacturing in the Americas, Europe, Middle East, and Asia Pacific. The acquisition also expands Aramco's capabilities in procurement, manufacturing, marketing and sales. SABIC is an industry leader in multiple chemical segments, and produces a wide range of products, including olefins, methanol, MTBE, aromatics, glycols, linear alpha olefins, polyethylene, polypropylene, polyethylene terephthalate, polyvinyl chloride, polystyrene, polycarbonate, and engineering thermoplastics and their blends.

Since the acquisition of SABIC, Aramco has sought to achieve synergies in procurement, supply chain, marketing, feedstock optimization, stream integration, operations, and maintenance. Aramco estimates that it has generated incremental EBITDA synergies of approximately SAR 8.1 billion (\$2.15 billion) and is targeting the capture of approximately SAR 11.3 billion to SAR 15.0 billion (\$3.0 billion to 4.0 billion) in annual recurring EBITDA synergies by 2025.

Aramco also conducts petrochemical manufacturing through affiliates located in the Kingdom, China, Japan, South Korea, Malaysia, the United States, and the Netherlands, with other key industry players, including Dow (Sadara), Sumitomo (Petro Rabigh), TotalEnergies (SATORP), PETRONAS (PRefChem), and Sinopec (YASREF and FREP). Through these affiliates and joint ventures, Aramco produces a wide range of commodity and differentiated petrochemicals.

Aramco's chemicals business continues to grow through capacity expansion and new investments. Including SABIC, Aramco had a net chemicals production capacity¹ of 56.3 million tons per year as at December 31, 2022, (2021: 54.2 million tons per year).

1. Excludes SABIC Agri-Nutrients and Metals (Hadeed) businesses.

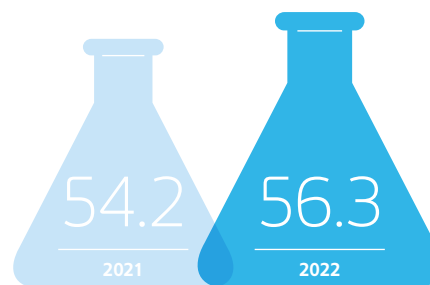
Strategy in action

Downstream
integration



Changing patterns of demand, including forecasted growth in chemicals, is driving Aramco's decision to favor investments in facilities with high liquids-to-chemicals conversion rates.

**Net chemicals
production capacity¹
(million tons per year)**



Performance and achievements

Marking yet another significant step in SABIC establishing itself as the primary chemicals arm and an integral member of the Aramco group, Aramco completed the transfer of its PRefChem polymers and mono-ethylene glycol offtake rights to SABIC.

Aramco and SATORP have obtained the ISCC+ credential for their joint waste plastic recycling initiative. The two entities join SABIC in holding this certification, a global standard for recycled and bio-based materials. The initiative aims to establish the first petrochemical circular value chain in the Kingdom to produce polymers from plastic waste, reducing the impact of single-use plastic on the environment.

SASREF and SABIC Agri-Nutrients received the world's first independent certifications for production of blue ammonia and hydrogen. The certifications, granted by a leading independent agency, verify that a significant amount of the CO₂ associated with the manufacturing process of blue ammonia and hydrogen has been captured and utilized in downstream applications instead of emitted. Aramco, in collaboration with SABIC Agri-Nutrients, has completed the world's first commercial shipment of certified blue ammonia to South Korea.

Aramco and TotalEnergies have made a final investment decision for the construction of a large petrochemical complex in Saudi Arabia. The complex, known as Amiral, will be owned, operated, and integrated with the existing SATORP refinery located in Jubail, Saudi Arabia. The petrochemical complex will enable SATORP to help advance Aramco's liquids-to-chemicals strategy. The investment decision is subject to customary closing conditions and approvals.

Aramco and its affiliate, S-OIL, have made a final investment decision to develop one of the world's largest refinery-integrated petrochemical steam crackers in line with the Company's strategy to maximize the crude-to-chemicals value chain. The SAR 26.3 billion (\$7.0 billion) Shaheen project will be located at S-OIL's existing site in Ulsan, South Korea, with a planned capacity to produce up to 3.2 million tons of petrochemicals annually.

Base oils and lubricants

Overview

In keeping with Aramco's strategy to capture incremental value across the hydrocarbon chain, Aramco's growing presence in the Kingdom's domestic lubricants market offers consumers a new line of lubricant products. These products are engineered to the highest of standards that meet the latest lubricant specifications required by original equipment manufacturers.

Aramco's three major producers and marketers of base oils, Luberef, Motiva and S-OIL, continue to deliver high-quality and technically differentiated products to its global customer base. Aramco markets its base oil products using the official Aramco brands: aramcoDURA® (Group I), aramcoPRIMA® (Group II), and aramcoULTRA® (Group III).

Performance and achievements



▲ Valvoline research and development, United States

Aramco signed an equity purchase agreement to acquire Valvoline Inc.'s global products business (Valvoline Global Products) for SAR 9.9 billion (\$2.65 billion). This strategic acquisition is expected to complement Aramco's line of premium-branded lubricant products, optimize its global base oils production capabilities, and expand Aramco's own R&D activities and partnerships with original equipment manufacturers. The transaction closed in March 2023.

In December 2022, Saudi Aramco Base Oil Company, known as Luberef and a non-wholly-owned subsidiary, successfully executed its IPO of 29.7% of its shares and the listing of its shares on the Saudi Exchange. Luberef is among the largest base oil producers in the Kingdom, and Aramco continues to own 70.0% of Luberef following the IPO.

Aramco announced a partnership with the Aston Martin Cognizant Formula One™ Team to harness the shared commitment to engineering excellence and innovation. Through the partnership, Aramco aims to drive development of high performance more sustainable fuels and advanced lubricants, grow awareness of its high-quality products, and support its ambition to supply premium fuels and lubricants to the global automotive sector.

In 2022, Aramco sold 4.6 million tons (2021: 4.5 million tons) of base oils, maintaining its position as one of the leading marketers of base oils globally.

Retail operations

Overview

Aramco has developed a retail strategy that focuses on establishing its own brand presence in the Kingdom as part of its long-term goal to be a primary global retail player. This includes offering consumers a new line of automotive services, coupled with branded finished lubricant products, as part of its commitment to diversify its Downstream portfolio.

Performance and achievements



▲ Khobar, Saudi Arabia

Aramco and TotalEnergies continue to grow their joint network of retail service stations throughout the Kingdom. This follows the signing of a joint venture agreement between Aramco and TotalEnergies in 2019, with plans to significantly upgrade a network of more than 200 service stations and expand the range of quality retail services available across the Kingdom. This network will comprise Aramco and TotalEnergies-branded stations, providing motorists with premium fuels and retail services.

Aramco has continued to grow its fuel retail presence through its affiliates, with approximately 17,000 service stations worldwide with more than 5,200 located in the United States, more than 5,300 in China and South Korea, more than 6,100 in Japan, and more than 200 in Saudi Arabia.

Pipelines, distributions and terminals

Overview

Aramco's Kingdom-wide distribution network includes pipelines, bulk plants, air refueling sites, and terminals that deliver crude oil, NGL, natural gas, and refined products. The pipelines and bulk plants network, and the terminals on the east and west coast, enable the transportation of hydrocarbons for export and for delivery to customers across the Kingdom. Further, Aramco's East-West Pipeline links oil production facilities in the Eastern Province with Yanbu' on the west coast, providing flexibility to export from the east and west coasts of the Kingdom.

Aramco's MGS, an extensive network of pipelines that connects its key gas production and processing sites with customers throughout the Kingdom, is currently undergoing an expansion. The system's current capacity is 9.6 bscfd of natural gas and supplies eastern, central, and western industrial complexes. The MGS Expansion Phase II will increase overall gas supply capacity from 9.6 bscfd to 12.5 bscfd to accommodate the increase in the Kingdom's natural gas demand, including expansion of the East-West MGS to ultimately deliver 5.2 bscfd to the central and western regions to support future utility and industrial development.

In addition, Aramco has a 15% equity interest in the Arab Petroleum Pipeline Company (Sumed Company), a joint venture which operates the Sumed pipeline. The pipeline runs from the Red Sea to the Mediterranean Sea through Egypt and provides an alternative to the Suez Canal.

Performance and achievements



▲ Yanbu South Terminal, Saudi Arabia

In February 2022, the Company completed a SAR 58.1 billion (\$15.5 billion) energy infrastructure deal with a consortium of investors led by BlackRock Real Assets and Hassana Investment Company to sell a 49% interest in a newly formed subsidiary, Aramco Gas Pipelines Company (AGPC). Aramco will continue to retain full legal ownership and operational control of its gas pipelines network, and the transaction does not impose any restrictions on Aramco's gas production volumes. This transaction represents significant progress in Aramco's asset optimization program, unlocks additional value from its diverse asset base, and underscores Aramco's commitment to long-term value creation.

In 2022, the operational resilience of the Company's infrastructure was demonstrated with hydrocarbons continuing to be delivered to customers safely and on time. The well-established emergency response systems and contingency plans aim to prepare the Company to respond effectively to potential incidents.

Supply and trading

Overview

Aramco manages crude oil sales operations, along with a large and growing portfolio of refining and chemicals facilities in Asia, Europe, and North America. As part of its strategy to unlock additional value, Aramco is expanding its crude oil, refined products and chemicals trading to significantly grow total traded volumes over the next few years.

Aramco is pursuing a globally integrated business model to capture additional value through greater market access and coverage as it seeks to grow its worldwide trading activities.

Aramco's trading activities are conducted primarily through Aramco Trading Company (ATC) and its subsidiaries. In addition to its expanding trading activities in crude oil, refined products and chemicals, Aramco sees the potential to grow its trading activities and has progressed a number of initiatives to offer products with a lower-carbon footprint including the trading of biofuels. In 2022, ATC concluded its first biofuel transaction after obtaining the ISCC certification to trade products with a lower-carbon footprint.

Aramco is well positioned to use its production and distribution network to optimize its supply and trading capabilities. By optimizing the production, refining and distribution processes and integrating them with its trading business, Aramco seeks to ensure that customers receive reliable service and consistent products. In addition, there is the potential to optimize product flows on a domestic and international basis across regional and global supply chains to maximize value.

These operations support Aramco's upstream and downstream activities by enabling it to optimize crude oil sales and product placement through its significant infrastructure network of pipelines and terminals, and access to shipping and logistics resources. Aramco also maintains flexibility to respond to fluctuations in demand through its five crude grades and MSC.

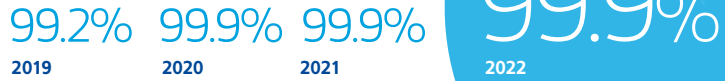
Strategy in action

Downstream integration



Aramco seeks to maintain its position as one of the world's most reliable crude oil suppliers.

Reliability



Performance and achievements

Aramco advanced its strategy to expand and integrate its global trading operations by agreeing to an internal reorganization of its U.S. trading business, which closed on January 3, 2023. ATC, through its subsidiaries, acquired Motiva's U.S. trading business, which provides ATC with the platform to supply Motiva with crude oil and feedstocks and to offtake and trade refined products and chemicals generated by Motiva. The acquisition will provide ATC with access to incremental volumes and markets that are expected to strengthen its trading capabilities.

In 2022, Aramco traded an average of 6.7 mmbpd (2021: 5.7 mmbpd) of crude oil and refined petroleum products, and 2.7 million tons of liquid chemical products (2021: 2.4 million tons). In 2022, Aramco's total crude oil exports averaged 7.1 mmbpd (2021: 6.3 mmbpd).

The Company continued to demonstrate its strong operational flexibility and supply reliability by delivering crude and other products in a timely manner with 99.9% reliability in 2022 (2021: 99.9%).

Power

Overview

As at December 31, 2022, Aramco's power operations comprised 17 captive power plants (2021: 17) and associated transmission and distribution assets located across the Kingdom. These assets are primarily designed to provide electricity and steam to Aramco's oil and gas production facilities, gas processing plants and wholly-owned refineries in a safe, reliable and efficient manner. Some of these power assets are wholly-owned while others are owned by joint ventures in which Aramco has an ownership interest. Aramco also enters into offtake arrangements with independent power producers.

In addition, Aramco currently owns a 6.9% stake in the Saudi Electricity Company (SEC), the Kingdom's national electricity utility company, and an effective 29.8% (2021: 42.2%) stake in Marafiq, a domestic utility company that serves the industrial areas of Jubail and Yanbu'.

The Company also remains committed to the global energy transition and views renewable energy as a complement to its own energy products, supported by vast solar and wind resources in-Kingdom.

Performance and achievements



▲ Abqaiq Plants, Saudi Arabia

In 2022, Aramco generated 4.8 GW (2021: 5.2 GW) of power, of which 3.5 GW (2021: 3.3 GW) were used to meet internal demand, and 1.3 GW (2021: 1.3 GW) of spill power was transferred to the national grid. In 2021, the Fadhili Power Plant joint venture supplied 0.6 GW to SEC.

In November 2022, The Power and Water Utility Company for Jubail and Yanbu (Marafiq), an associate of Aramco, successfully executed its IPO of 29.2% of its shares and the listing of its shares on the Saudi Exchange. The IPO was comprised of shares offered by the majority shareholders of Marafiq, including Saudi Aramco Power Company and SABIC, in proportion to their shareholding. Following completion of the IPO, the effective equity ownership of Aramco's subsidiaries in Marafiq was reduced from 42.2% to 29.8%.