

Commentary

Aramco's LNG strategy: Opportunities and Options

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Aramco signs a heads of agreement with Sempra Energy

Saudi Arabia has taken a major step into global gas markets with Saudi Aramco signing a heads of agreement (HoA) with Sempra Energy. The HoA includes a 20-year sales and purchase agreement (SPA) for 5 million tonnes per annum (MTPA) of liquefied natural gas (LNG) from phase 1 of the proposed Port Arthur LNG project in Texas. The agreement also includes a possible 25% equity stake from Aramco in the project. Although an HoA is an advanced stage of the contracting process, and one of the last steps before finalizing an SPA, it is still non-binding, and negotiations to finalize the SPA and equity participation are presumably ongoing.

The Port Arthur LNG project is a two-train liquefaction project with an estimated capacity of 11 MTPA. It has received almost all of the major regulatory approvals needed to take a final investment decision, including from the Federal Energy Regulatory Commission, the Department of Energy’s free trade agreement (FTA) and non-FTA export authorizations. So far, Sempra LNG has only signed a binding SPA with the Polish Oil and Gas Company (PGNiG) for 2 MTPA for 20 years. Similar to the HoA with Aramco, there is also a memorandum of understanding (MoU) with the Korea Gas Corporation (KOGAS) as a potential offtaker and equity investor.

The push for more gas has been evident in Aramco’s strategy since the Saudi government’s launch of its Vision 2030 plan. The plan called for the doubling of the Kingdom’s natural gas production and to boost its infrastructure network by 2030 (Kingdom of Saudi Arabia 2016). Saudi Aramco estimates its gas expansion strategy, to reduce the burning of liquid fuels in the power mix and meet the bulk of future power demand with gas, would cost \$150 billion and may include the possibility of exports (Reuters 2018).

Aramco has invested in and already operates refining and petrochemical complexes internationally. As Aramco’s business strategy shifts toward more gas-related activities in the Kingdom, it also looks to add overseas gas assets to its international energy portfolio. LNG is increasingly becoming

Table 1. Technical and commercial aspects of Port Arthur LNG.

Capacity	2 x 5.5 MTPA liquefaction trains
Developer	Sempra Energy
Announced start dates	2023-2024
Commercial LNG agreements	<ul style="list-style-type: none"> • SPA with PGNiG for 2 MTPA • HoA with Saudi Aramco for 5 MTPA and 25% equity • MoU with KOGAS regarding participation as a potential offtaker and equity investor – it is not known if this MoU is still valid

Source: Sempra Energy (2017) and (2019).

a key element of the growth in global gas markets. Between 2008 and 2018, LNG trade flows increased from 172 MTPA to 314 MTPA, averaging 6% annual growth (GIIGNL 2019). Aramco expects global demand for LNG to continue to grow at 4% annually, breaching 500 MTPA by 2035. While Sempra is by far the most advanced of all Aramco initiatives in this space, it is not the only one. Aramco is reportedly in the market for potential offtake and joint investments with other LNG players around the world (Reuters 2019).

Figure 1. Series of events and announcements leading up to Sempra's LNG agreement.

- *February 2018: Novatek and Saudi Aramco sign MOU to collaborate on international gas projects, including LNG.*
- *November 2018: Saudi Aramco signs a framework agreement with Abu Dhabi National Oil Company (ADNOC) LNG to explore global opportunities in natural gas and LNG.*
- *January 2019: Aramco CEO Amin Nasser announces the company's interest in investing in United States (U.S.) gas assets in an interview with Reuters.*
- *February 2019: Amin Nasser announces Aramco is in discussion with "Russia, Australia, America and Africa" for joint gas investments (Bloomberg 2019).*
- *April 2019: Saudi Aramco sells LNG cargo from its Singapore office, reportedly to India.*
- *May 2019: HoA with Sempra Energy.*

Sources: Reuters, Bloomberg, Saudi Aramco.

Potential opportunities with LNG

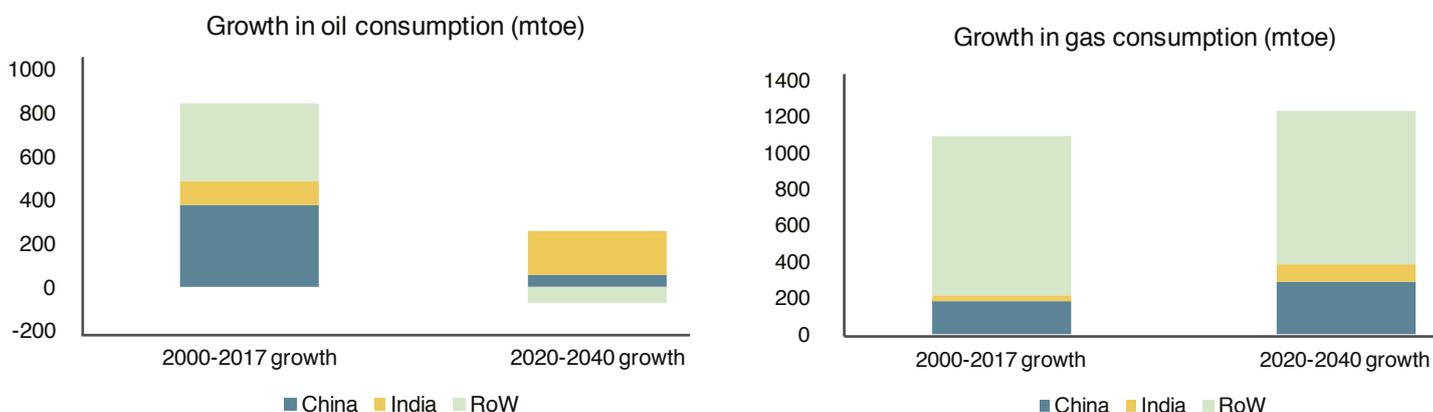
Diversifying Aramco's portfolio to include LNG opens up opportunities for the company, as many of the Kingdom's crude and products partners are also growing LNG consumers. This is especially important given that some of the Kingdom's largest gas consumers, namely China, Japan, and India, are rapidly moving toward gas and away from oil in their energy mixes. Since China and India are also forecast to be the fastest growing oil and gas markets, having LNG in Aramco's energy offerings ensures that Saudi Arabia retains its market share in these countries (Figure 2).

Aramco Trading Company (ATC), Saudi Aramco's trading arm, has announced plans to launch its LNG trading business from its Singapore office (Aramco Trading 2018). Since it started operations in 2012, ATC has emerged as the largest trading company in the Middle East. In 2018 it traded 4 million barrels per day of crude, petroleum products, and chemicals and utilized over 40 vessels. Its experience in shipping and trading would lend itself particularly well to including LNG in its portfolio. ATC has recently opened its second international office in Fujairah, the world's second largest bunkering port, to handle fuel oil and gasoline storage, and blending activities (Saudi Aramco 2019). This is timely, as having a foothold in the bunkering markets and hubs allows

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Figure 2. Series of events and announcements leading up to Sempra's LNG agreement.



Sources: BP (2019).

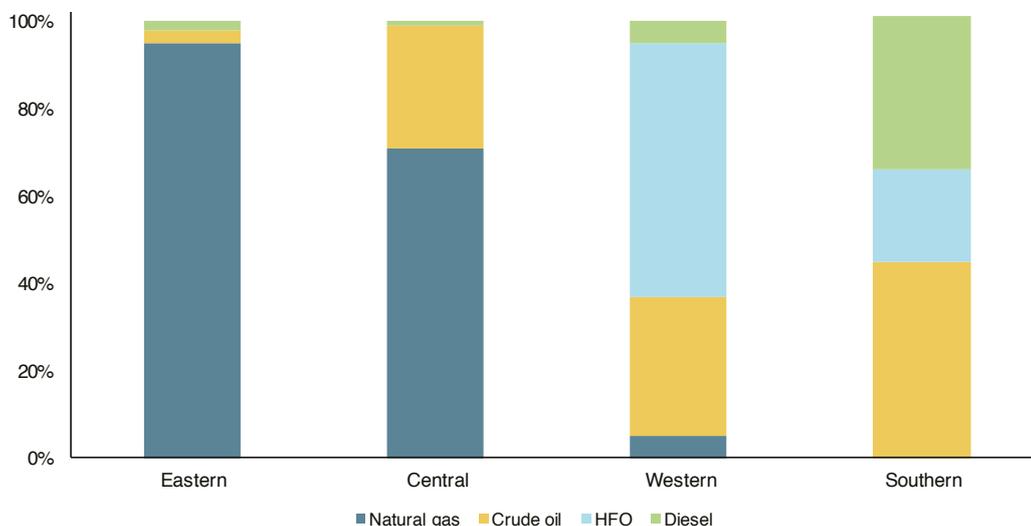
Domestic demand for natural gas in Saudi Arabia is expected to increase by 3.7% annually from 2017 to 2030

for first-hand knowledge of how shippers adapt to the International Maritime Organization (IMO) 2020 rule stipulating the use of low-sulfur marine fuels. LNG has been identified as a viable substitute to high-sulfur fuel oil as a bunker fuel. Given the impact of the IMO 2020 rule, Shell estimates that LNG used in maritime shipping will reach close to 40 MTPA by 2035 (Shell 2019).

Possibility of imports

Aramco's push to increase gas production is likely to come from non-associated and unconventional gas plays, which are costlier to produce. Thus, even though Aramco plans to increase its natural gas production significantly by 2030, it has not ruled out the possibility of importing gas. Aramco's bond prospectus, published in April 2019, points out that domestic demand for natural gas in Saudi Arabia is expected to increase by 3.7% annually from 2017 to 2030, and that the company may import natural gas if demand growth outpaces domestic supplies or "if doing so is more economical than producing additional gas domestically" (Saudi Aramco 2019, 9). If Saudi Arabia were to import LNG, it is more likely to do so into the gas-starved western region. As Figure 3 shows, the western and southern regions burn large volumes of liquid fuels as the eastern and central regions consume all the domestically produced gas. The unavailability of gas in the western and southern regions is also partly due to bottlenecks in the gas infrastructure used to transport supplies from the gas-rich eastern region to other parts of the country.

Figure 3. Fuel mixes in the power and seawater desalination sectors by region in Saudi Arabia, 2017.



Source: Electricity & Cogeneration Regulatory Authority.

LNG can provide an immediate and temporary solution to eliminate the use of liquid fuels from the power sector, as Saudi Aramco gradually ramps up gas production over the next decade. The flexibility offered by LNG contract terms and infrastructure, in the form of floating storage and regasification units, can allow LNG to be used for a transitional period without committing to fixed volumes of cargoes or having stranded importation facilities. Imported LNG could also provide insurance against delays in the expansion of domestic natural gas production and infrastructure projects. KAPSARC has tested a scenario importing LNG into the western region from 2022, using a 5 MTPA regasification terminal. As Figure 4 shows, most cargoes can be cost-effectively sourced from Egypt and Eastern Africa (Mozambique and Tanzania).

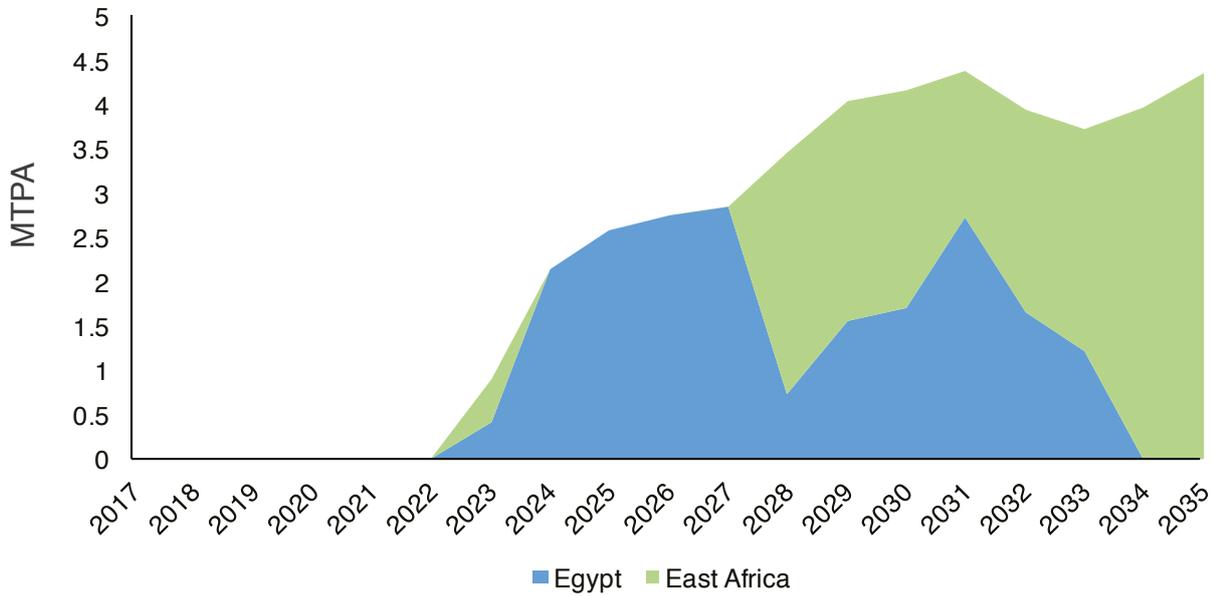
Note that in this scenario, LNG from the U.S. is not included in the optimal Saudi portfolio and the proximity of Egypt and the Rovuma Basin to the Kingdom’s western region dominates imports. However, U.S. LNG does make its way into Saudi Arabia in the high import scenario (22 MTPA), as shown in Figure 5.

Signing destination-flexible U.S. contracts does not necessarily imply that these cargoes will arrive in Saudi Arabia. Aramco could use a variety of tools to optimize its delivery strategies via time swaps, destination swaps and shipping optimization. A clear precedent in this case is GAIL, India’s state-owned gas marketing and transmission company. GAIL currently has two long-term LNG offtake contracts in place with U.S. LNG producers totaling 5.8 MTPA, one with Cheniere (Sabine Pass) and another with Dominion Energy (Cove Point). These



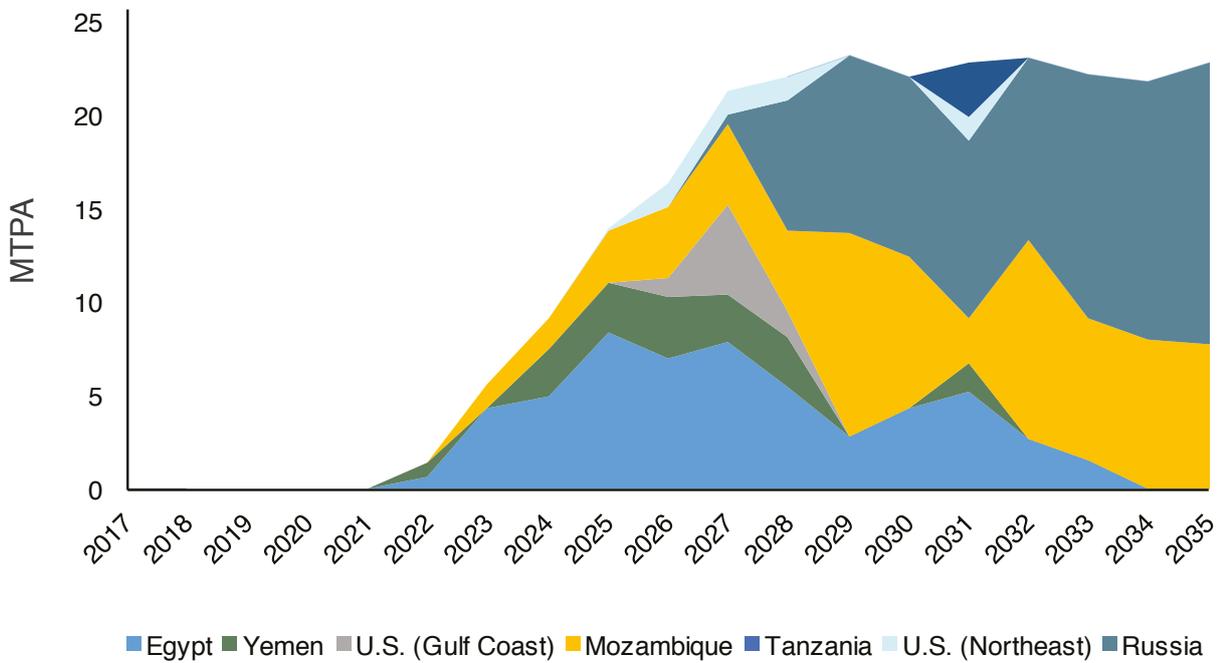
LNG can provide an immediate and temporary solution to eliminate the use of liquid fuels from the power sector

Figure 4. Simulation of LNG imports into Saudi Arabia’s western region under a 5 MTPA scenario.



Source: (Shabaneh and Schenckery 2019).

Figure 5. Simulation of LNG imports into Saudi Arabia’s western region under a 22 MTPA scenario.



Source: (Shabaneh and Schenckery 2019).

were signed in 2011 and 2013, respectively, and became operational in 2018. The dramatic transformation of the LNG market between 2011-2012 and now, a period which has seen a sharp fall in spot LNG prices in Asia and the increasing oversupply of LNG molecules, resulted in GAIL having to restructure its LNG strategy.

This restructuring was two-fold: it resold cargoes to other players, including a resale agreement with Shell for 1 MTPA, and established time swap agreements with pure-play LNG traders. Under one such swap, Gunvor delivered 15 cargoes — roughly 0.8 million tonnes (Mt) of LNG — to GAIL at India's west coast from April to December 2017 at oil-linked prices. In exchange, GAIL supplied 10 cargoes — roughly 0.6 Mt of LNG — from Sabine Pass to Gunvor in 2018 on a free on board (FOB) basis, at a premium to GAIL's Sabine Pass pricing formula. In essence, this reduced the transportation costs of the Sabine Pass volumes for GAIL. The company has reportedly executed another two such swap agreements and has issued a tender for the sale of 24 LNG cargoes sourced from Cove Point LNG in the U.S. for delivery in 2019 and 2020. Overall, GAIL has indicated that roughly 32-35 of the 85-90 contracted U.S. LNG cargoes from Sabine Pass and Cove Point that it expects to offtake every year will go to India.

For Saudi Arabia, the shipping distance from Mozambique to the Kingdom's west coast is just a third of that from the U.S. Gulf Coast, where these new LNG projects are located, to the Kingdom's west coast. In addition, as described in detail in (Shabaneh and Schenckery 2019), gas demand in Saudi Arabia peaks during the summer, the low season for LNG demand, especially in Japan and China, the largest LNG consumers in the world.

The use of the mechanisms outlined above is indicative of an increasingly liquid and evolving LNG market, which makes Aramco's investment in LNG very timely. The Sempra deal is a clear step by Aramco toward building a more diversified energy portfolio, as it seeks to increase the share of gas in Saudi Arabia's energy mix and maintain its global influence. This diversification will be a significant part of Aramco's transformation into a global energy supplier.

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