

For Saudi Arabia, the Threat of Stranded Reserves has Spawned a Climate Strategy

BY JIM KRANE

For Saudi Arabia's absolute monarchy, climate action represents a combined threat and opportunity in retaining the oil export revenues¹ that underpin domestic political institutions and the kingdom's international influence. Saudi Aramco, the largest source of greenhouse gas-emitting fossil fuel among all firms worldwide, is exposed to risks around regulations on fossil fuel use. However, Aramco is also the producer with the world's lowest production costs and lowest intensity of greenhouse gas emissions per barrel produced. These attributes suggest that oil from the kingdom should retain a prominent, even favored, role in oil markets, particularly under climate constraints.

The 2019 Saudi Aramco bond prospectus outlines the company's risks and future challenges with climate action. The prospectus also provides responses that, when examined alongside the public statements of its executives, offer a road map of Saudi oil marketing strategy in the era of climate change.

For Saudi Arabia, the scale of hydrocarbon reserves – and the time required to monetize them – necessitate a marketing strategy that differs from those of its smaller competitors, including shareholder-owned international oil companies, or IOCs. Saudi 2018 proven reserves of 260 billion barrels were more than five times larger than those of any of the five major IOCs, ExxonMobil, Shell, Chevron, Total and BP. Saudi Aramco retains at least 52 years of production from domestic reserves at current rates (~11 million barrels per day). Given the strong likelihood of further additions to its reserves, the Saudi government has made allowances for Aramco to maintain its monopoly over the Saudi oil concession for as long as 100 years – until the year 2117. By contrast, IOCs' proven reserves of just over 200 billion barrels would be collectively depleted in nine to 15 years based on current rates of output.²

The principle of "intergenerational equity" in reserves depletion has been influential in Saudi Arabia. It implied a constrained approach to production that tended to stimulate global market prices for oil, which, in turn, underwrote generous social benefits for Saudi citizens. Constraints on production are supposed to lengthen the lifespan of the Saudi oil economy and the duration of rule by the al-Saud family. In 2008, King Abdullah noted that he had ordered Saudi Aramco to deliberately leave viable fields untapped on behalf of future generations.³ In this way, geologic, economic and political factors converged to reinforce Aramco's long-term depletion horizon and underproduction relative to its reserves base.

Shareholder-owned oil companies, by contrast,

produce from smaller resource bases at much higher depletion rates. If IOC executives decided to recast their business models, they could run down reserves while shifting investment toward new types of business.

Many IOCs have already demonstrated their ability to transform when their foreign oil concessions were nationalized, mainly in the 1970s. The companies shifted oil exploration and production to new parts of the globe, or moved into services and technology businesses, and remained viable. For them, climate change appears like a slow-moving reprise of prior disruptions, rather than a threat to their existence. Significant progress in transitioning to new area of business might be accomplished over a decade or two.

For a large national oil company, a decade is the short term. Given the intensifying pace of climate change – the physical effects as well as public demands for drastic action – multi-generational depletion horizons like those of Aramco face considerable uncertainty.

Climate risk appears to be altering Saudi Aramco's calculations. The statements of the company and its executives have taken on an expansion-oriented flavor, with terms "growth strategy" and "expansion strategy" appearing frequently, even during periods when oil markets were oversupplied. Operating costs and competitiveness have been accorded increased attention, given the possibility of slower oil demand growth and lower prices. There is a sense that the kingdom's actions to rein in the growth of social welfare provision is, in part, to prepare Saudi society for an era of uncertain rents and potential difficulty in meeting the "social breakeven" costs that depend on inflated oil prices.

At the same time, the kingdom's intense summer climate faces the potential of being warmed into intolerability by century's end.⁴ Despite the implied climate damage to its homeland, Saudi Aramco is moving to expand, streamline and protect its system of oil monetization, so that the Saudi NOC can produce and market the kingdom's prodigious below-ground reserves "for generations to come," as its prospectus states. The company's statements seek to convey the message that neither oil, nor Saudi Aramco, is going away anytime soon.

"The Company intends to maintain its position as the world's leading crude oil producer by production volume," states the company's bond prospectus of April

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See footnotes at end of text.

2019. "Its reserves, operational capabilities and spare capacity allow it to increase production in response to demand."⁵

The kingdom's energy minister, Khalid al-Falih, said in 2019 that no other oil producer would survive longer than Saudi Aramco. "Saudi Arabia is the most prolific basin for oil and gas. We have the best resources and the best capabilities and we are going to produce the last drop of oil," al-Falih said.⁶

Saudi Aramco has been preparing for the "long game" in oil by backing investment strategies that seek to bolster its advantages.

One is an investment push into non-combustion uses for crude oil and natural gas, particularly production of petrochemicals. For rentier states overseeing large reserves, such "climate compliant" uses for oil and gas look like a revenue lifeline. Oil and gas are mainly used as feedstocks that are converted to plastic resins and polymers, which, as long as they are unburned, retain the carbon content of the fossil fuels within final product.⁷

Another climate-driven strategy is Aramco's ongoing downstream investment in markets, particularly in developing Asia, where policymaking prioritizes GDP growth over environmental concern. It is in these countries where oil demand is likeliest to grow in coming decades, even as it falls away elsewhere. Aramco's downstream investments are aimed at ensuring that Saudi oil has preferential footprints through "captive" ownership and configuration of refining capacity around Saudi oil grades.⁸

Another survival strategy is the "competitive decarbonization" of Saudi crude oil. The idea is to enhance the attractiveness of Saudi oil in a world coping with climate constraints, but where oil remains too useful to eliminate. Upstream decarbonization is partly a facet of fortunate geology. It is being pushed further through reductions in flaring and methane emissions, and through CO₂ reinjection. Recent research, partially supported by Saudi Aramco, has determined that the kingdom's crude has the lowest carbon intensity in the world.⁹ If future carbon taxes were designed to differentiate among crude oil by carbon content, Saudi oil products would receive a pricing discount relative to competing grades.

Climate change is beginning to shift energy systems.

In oil's case, the shift is taking place in a slow and uneven way. Oil consumption will fall away in some sectors, stagnate in others, and continue to grow in still others. Producer states have ample warning and opportunity for response, and, with oil prices relatively high at the time of writing, some also have ample financial resources to prepare.

The kingdom's case is an important one, but far from unique. Saudi Aramco's competitors are equally motivated and convinced by their own exceptionalist rationales for retaining long-term roles in oil supply. The scale of revenues earned by Saudi Aramco is so large and the level of profitability so high that protecting and retaining the business is a strategic and economic imperative for the kingdom and its ruling family, even at the risk of alienating the kingdom in international relations.

Footnotes

¹ Saudi Aramco, "Base Prospectus: Saudi Aramco Global Medium Term Note Programme" (Saudi Aramco, April 1, 2019); pp. 31, 87-88.

² Reuters, "Saudi King Says Keeping Some Oil Finds for Future," Reuters Oil Report, April 13, 2008, online edition, <https://uk.reuters.com/article/saudi-oil/saudi-king-says-keeping-some-oil-finds-for-future-idUKL139687720080413>.

³ Jeremy S. Pal and Elfatih A. B. Eltahir, "Future Temperature in Southwest Asia Projected to Exceed a Threshold for Human Adaptability," *Nature Clim. Change* 6, no. 2 (February 2016): 197-200.

⁴ Saudi Aramco, "Saudi Aramco Bond Prospectus," 89.

⁵ Anjali Raval and Ed Crooks, "Oil Groups Face Dilemma on Climate Change," *Financial Times*, March 13, 2019, Online edition, <https://www.ft.com/content/ec42c3d8-4540-11e9-b168-96a37d002cd3>. Emphasis added.

⁶ Jim Krane, "Climate Strategy for Producer Countries: The Case of Saudi Arabia," Working Paper (Houston: Baker Institute for Public Policy, Rice University, 2018), <https://scholarship.rice.edu/bitstream/handle/1911/1102798/ces-krane-climate-strategy-082818.pdf?sequence=1>; Jim Krane, "Decarbonization in the Oil Kingdom: Saudi Arabia's Energy Policy and Climate Strategy," in *Energy Policy-Making in a Cross-National Comparison: Energy Resources, Policy Processes and Law*, ed. Patrice Geoffron, Lorna A. Greening, and Raphael Heffron (New York: Springer US, 2019).

⁷ Jim Krane, "A Refined Approach: Saudi Arabia Moves beyond Crude," *Energy Policy* 82 (2015): 99-104.

⁸ Mohammad S Masnadi et al., "Well-to-Refinery Emissions and Net-Energy Analysis of China's Crude-Oil Supply," *Nature Energy* 3, no. 3 (2018): 220; Garvin A Heath et al., "Global Carbon Intensity of Crude Oil Production," *Science* 361, no. NREL/JA-6A20-70554 (2018).



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