Iran Plans to Make Its Oil Industry More Resilient

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Brief Analysis

To counter U.S. sanctions, Tehran is pursuing a three-pronged strategy of diversifying its export outlets, bumping up fuel production, and creating a strategic storage network.

On November 5, the U.S. Treasury Department published an expanded set of sanctions against Iran with the intention of bringing the country's oil export activity—and, by extension, its oil-dependent economy—to a standstill. As with previous sanctions, Tehran is expected to push back against these measures by exploiting its geographical advantages and relations with neighboring countries, and by drawing on its long experience at running a "resilient economy."

Although this economic strategy will depend almost entirely on the very activity that Washington is targeting—crude oil exports—the differences this time around could prove crucial. In addition to nearing fuel self-sufficiency, Iran is building a strategic storage network for oil, oil products, and natural gas, with two goals in mind: stocking the equivalent of fifty to sixty days' worth of domestic consumption, and influencing regional and international markets in order to export its supplies at the optimum time and price.

WORKING TOWARD GASOLINE SELF-SUFFICIENCY

Iran has one of the highest per capita fuel-consumption rates in the world—six times the global average, and increasing by 9 percent annually. Among other factors, this problem can be attributed to the country's heavy subsidies and low fuel prices, which have spawned a lucrative smuggling business that sends an estimated 8 percent of Iranian gasoline to neighboring states. During the last Persian year (which ended on March 21), Iran imported over 12.3 million liters of gasoline per day, or 4.5 billion liters per year. So far, this year's rate has decreased somewhat but is still high: about 9 ml/d, or 3.2 bl/y.

To rectify this vulnerability, the government has invested considerably in its refining sector over the past few years, especially high-octane gasoline production. It reportedly reached a record rate of 90 ml/d last summer and is expected to hit 107 ml/d by March 2019, assuming the third phase of the Setareh-ye Khalij-e Fars (Persian Gulf Star) condensates refinery in Bandar Abbas overcomes delays and comes online. That facility's projected capacity of 360,000 barrels per day (kb/d) would result in a total gasoline production rate of 36 ml/d.

If Iran does in fact hit that target, it would be less vulnerable than it was during the previous round of energy sanctions (2012-16), when it had to import fuel at a much faster rate. Current trends indicate that average production and consumption are almost evenly matched at around 80 ml/d.

STRATEGIC OIL AND GAS RESERVES

For years, Iran has placed a sizeable amount of its excess oil and condensates into floating storage in the Persian Gulf, peaking at 53.7 mb in summer 2015. In October 2018, the International Energy Agency estimated the country's floating capacity at around 6-8 mb, though it reportedly picked up again in recent weeks in anticipation of the new oil sanctions. Generally, however, Iran believes that maintaining a robust land and underwater strategic stock is safer and more efficient than chartering a fleet of foreign storage tankers or holding up one's own fleet—especially at a time when Tehran needs its tankers to move as much crude oil to China as possible. In addition, underground stocks cannot be monitored by satellites.

Spurred by its National Passive Defense Organization (NPDO), Iran launched a grand project in 2011 to create a network of strategic aboveground and underground storage sites, intending to reach a capacity of 15 bl of oil products, 100 mb of crude oil (including 10 mb in strategic reserves), and 15 billion cubic meters of natural gas by 2017. Although many of those projects are underfunded, marred by delays, and several years away from completion, those that are already completed can be expected to have an immediate impact.

IRAN'S CRUDE AND CONDENSATE STORAGE FACILITIES

LOCATION	CAPACITY	RESOURCE	STORAGE TYPE	NOTES
Ahvaz	2 mb	Crude	Aboveground metal	Three 500 kb tanks, two 250 kb tanks.
Maroun	3 mb	Crude	Underground concrete	—
Gorreh	4 mb	Crude	Underground concrete	Four 500 kb tanks and two 1 mb tanks. Delayed by financing problems.
Omidiyeh	3 mb	Crude	Aboveground concrete	Two 1 mb tanks and two 500 kb tanks. Delayed by financing problems.
Kharg	28 mb	Crude	Aboveground metal	Includes 4 mb added in recent years.
Genaveh	10 mb	Crude	Aboveground metal	—
Assalouyeh	1.2 mb	Condensates	Aboveground metal	—
Sirri	4.5 mb	Crude	Aboveground metal	—
Lavan	5 mb	Crude	Aboveground metal	—
Bahregan	7.2 mb	Crude	Aboveground metal	—
Qeshm	6.5 mb	Crude and condensates	Aboveground metal	Eleven 540 kb tanks and two 270 kb tanks, under construction in three phases (each 6.5 mb). Delayed by financing problems.
Jask	30 mb	Crude	Aboveground metal	Valued at $686 million. To be completed in two phases (10 mb, then 20 mb).
Neka	1.5 mb	Crude	Aboveground metal	Used in Caspian swap operation.

Note: This list comprises storage facilities that are either already built or currently under construction. It excludes refinery and local storage.

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According to an April 2018 report by GlobalData, Iran's oil storage capacity is expected to grow to over 87 mb by 2022, compared to 55 mb in 2017—a 58 percent increase. That would give it the second-fastest storage growth rate in the Middle East after Oman.

Tehran has also built two large, heavily fortified underground storage sites at Sarajeh and Shourijeh in order to secure natural gas supplies for the cold season, with a designed capacity of 3.7 and 4.6 billion cubic meters, respectively. The Shourijeh gas field is located about 100 kilometers east of Mashhad in northeast Iran, while Sarajeh is 165 km south of Tehran, and just southeast of the Fordow nuclear site. The main contractors for these projects are the Khatam al-Anbia Construction Headquarters (KACH) and the NPDO, both controlled by the Islamic Revolutionary Guard Corps.

Such efforts gained further momentum when the government unveiled its "resilient economy" plan in 2012. The main purpose of this strategy has been to find ways of alleviating the adverse effects of slower crude production and export, and circumventing "unexpected foreign influences."

A related plan is the proposed construction of around twenty underwater oil storage tanks by Kerman University and KACH. Boasting a combined capacity of 10 mb, these tanks will purportedly be placed along Iran's coastline at depths of 60-100 meters, though the project is unlikely to secure enough funding anytime soon.

EXPORT DIVERSIFICATION

In 1986, soon after Iraq escalated the "Tanker War," Iran contemplated moving its permanent oil export operations from the embattled island terminal of Kharg in the northern Persian Gulf down to Jask just east of the Strait of Hormuz. Called "Project Muharram," this plan included the proposed construction of a 1,000 km pipeline between Gachsaran and Jask, via the Gorreh pumping station north of Kharg.

Although that project was never completed due to high costs, Iran now seems much more willing to complete a similar one: the $2 billion effort to establish an oil export terminal 65 km west of Jask. Construction of components for a 1,100 km, 42 inch pipeline from Gorreh to Jask is already under way. This project could eventually see up to 1 mb/d of light and heavy crude loaded onto supertankers using three offshore single-point mooring units near Jask. The Rouhani government has reportedly prioritized the endeavor and wants it operational by 2021.

Equally important is the planned 10 mb storage tank farm in this area, which has an option to expand to 30 mb. In September, a $226 million contract was awarded to complete the project within three years. The tank farm will bring a portion of Iran's strategic reserve closer to oil markets, and future swap initiatives could eventually link it to Central Asian producers via a projected (but not yet financed) 1,680 km pipeline between Neka and Jask.

CONCLUSION

Tehran has announced numerous projects as part of its quest to reduce the country's vulnerability to market fluctuations and other outside interference. Yet many of these projects are still years from completion and will not affect current regional developments.

Likewise, Iran's quest for fuel self-sufficiency has finally achieved some results in recent years and could theoretically reduce the country's vulnerability to fuel sanctions. Yet the continued rise in domestic fuel consumption will counterbalance this effort, perhaps even forcing the government to consider subsidy adjustments, price increases, and rationing.

Iran's high inherent surplus capacity presents a similarly mixed picture. The growth in oil transportation and loading facilities reduces its strategic vulnerability while increasing the system's elasticity against disruption, but the network is in dire need of investment. More important, there are limits to how much oil Iran can produce if it cannot sell, and those limits extend to local floating storage and outsourced storage (in China for example). In any case, the government can be expected to accelerate its construction of slow-moving domestic crude storage projects, especially cheaper high-capacity concrete tanks.

At the same time, by opening a new export terminal at Jask and reducing its dependence on the Kharg terminal, Iran will likely seek to diversify its export outlets and decrease its dependence on the Strait of Hormuz. In theory, this would allow it to exert more leverage over foreign oil flowing out of the strait.

Finally, Iran is seeking new means of delivering oil to its traditional markets and expanding to new markets. For example, it could push for a reversal of the Caspian swap program—namely, instead of (or in addition to) refining Central Asian crude, it may try to convince Russia to buy highly discounted Iranian crude using existing infrastructure, which is being expanded. Tehran is also trying to increase its energy ties with Iraq, offering Baghdad numerous swap schemes.

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