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Dr. Emily Meierding
Assistant Professor, Naval Postgraduate School

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Hearing on China's Energy Plans and Practices
Panel II: China's External Energy Policies

China's Overseas Efforts to Strengthen Energy Security

Since becoming a net oil importer in 1993, China has taken numerous steps to enhance its energy security. These initiatives have primarily targeted the state's rising dependence on oil imports. Based on data from the International Energy Agency (IEA), China's oil import dependence has risen steadily over time, from less than 50% in 2007 to 72.5% in 2019.[1] The state reports that its import dependence was 73.6% in 2020 and 72% in 2021.[2] Even with last year's decline, which was likely exceptional, China is still estimated to import more than 10 million barrels per day (MMbpd) of oil.[3] It replaced the United States as the world's leading crude oil importer in 2017.[4]

Oil still constitutes less than 20% of China's energy consumption: a smaller share than in OECD countries.[5] However, oil is critically important to the state's military performance and transportation sector. Until recently, oil has also been non-substitutable as a transportation fuel. For these reasons, China's leading energy security concerns focus on stable access to oil supplies.

In the early 2000s, as the price of oil rose and expectations of "peak oil" intensified, one of China's leading energy security concerns was access to increasingly scarce oil resources. This concern has diminished since the United States' "shale revolution" dramatically increased U.S. oil and gas output, reducing its competition with China for energy imports. In contrast, the

[1] "Oil, gas and coal import dependency in China, 2007–2019," International Energy Agency (IEA) (last updated December 18, 2020), https://www.iea.org/data-and-statistics/charts/oil-gas-and-coal-import-dependency-in-china-2007-2019.
[2] Zheng Xin, "China's oil dependence on imports sees drop," *China Daily* (February 24, 2022), https://www.chinadaily.com.cn/a/202202/24/WS6216e135a310cdd39bc889be.html.
[3] "Covid-Zero policies and pollution curbs stunt China's oil demand," *Bloomberg* (December 14, 2021), https://www.bloomberg.com/news/articles/2021-12-14/china-s-oil-demand-hemmed-in-by-virus-pollution-and-probes. The decline in 2021 was caused by Chinese companies choosing to draw down their stocks rather than maintain previous purchase levels, in response to rising oil prices. Chen Aizhu, "China's annual crude oil imports drop for first time in 20 years," Reuters (January 13, 2022), https://www.reuters.com/markets/commodities/chinas-crude-oil-imports-post-first-annual-drop-20-years-2022-01-14/.
[4] U.S. Energy Information Administration (EIA), "China surpassed the United States as the world's largest crude oil importer in 2017," Today in Energy (December 31, 2018), https://www.eia.gov/todayinenergy/detail.php?id=37821.
[5] Based on author's calculations from IEA data, oil's share of China's primary energy consumption was 19.1% on 2019. Based on EIA data, it was 18.4% in 2019.

security of oil transportation from oil-producing states to China has remained a persistent, leading Chinese energy security concern. An intensifying energy security concern, over the last decade, has been China's ability to process oil-related financial transactions, in light of the United States' increasing use of sanctions as a foreign policy tool.

Secondary Chinese oil security concerns include high oil prices, inadvertent supply shutoffs caused by political instability or infrastructure attacks in its major supplier states, and deliberate, multilateral embargos by supplier states. Deliberate, unilateral embargos by a single supplier are a tertiary concern, unless they are enacted by one of China's leading suppliers and the oil market is tight.

Over the last two decades, China has pursued numerous strategies to moderate these oil security concerns. From the late 1990s to early 2010s, these efforts focused on securing access to overseas resources through upstream investments that produced "equity oil" and the use of "loans-for-oil." Additionally, China attempted to diversify its oil suppliers and energy transportation routes, and built up a domestic tanker fleet. Since the mid-2010s, China's approach to energy security has become more market-oriented, in response to the new oil abundance created by the U.S. shale revolution, domestic pressures on China's national oil companies (NOCs), and revealed shortcomings in China's original energy security strategies.

The initiation of the U.S.–China trade war in 2018 stalled this transition somewhat by underscoring the risks of relying on markets for access to strategic resources and technology. Recent international sanctions against Russia for its invasion of Ukraine have also underscored the risks to China's energy-related financial transactions, an area in which the state has made limited progress towards enhancing its oil security. That being said, China's peacetime oil security is currently high and the state has substantially reduced many threats to its wartime oil access.

Strategies for enhancing oil security

Over the last quarter-century, China has pursued a comprehensive approach to strengthening its oil security. Its strategies can be grouped into four categories: those focused on supply, demand, transportation, and financial transactions.

Demand

China has attempted to moderate its demand for oil in the transportation sector through efficiency gains and fuel substitution. The state has implemented high fuel efficiency standards for gasoline and diesel-fueled vehicles, although their efficacy in terms of reducing overall growth in China's oil consumption has been counteracted by the increased popularity of SUVs and pick-up trucks.[6] The use of alternative fuel vehicles ("electric vehicles, compressed natural gas vehicles, and trucks and trains running on liquefied natural gas") is also rising rapidly.[7] Between 2020 and 2021, China's electric car sales almost tripled, to 3.4 million. In December

[6] IEA, "Fuel economy in China" (December 13, 2021), https://www.iea.org/articles/fuel-economy-in-china.
[7] EIA, "Country analysis executive summary: China" (last updated September 30, 2020), https://www.eia.gov/international/analysis/country/CHN.

2020, they comprised 20% of the country's overall car market.[8] This shift is enhancing China's energy security by increasing the substitutability of transportation fuels.

Supply

China has attempted to secure its access to oil supplies through domestic resource development, stockpiling, investments in other countries' oil industries, loans-for-oil, and diversification of oil suppliers.

In the realm of domestic production, although China remains the world's sixth largest crude oil producer, its output peaked in 2015.[9] In July 2018, as the U.S.–China trade war intensified, President Xi instructed China's NOCs to increase their investment in domestic exploration and production in order to boost China's oil output and reduce the country's oil import dependence.[10] The government also attempted to revive domestic production by loosening restrictions on foreign and private investment in the upstream oil industry in 2020.[11] These policy shifts contributed to small domestic production increases in 2019–2020.[12] However, analysts are skeptical of China's ability to significantly boost domestic output over the long term, especially if oil prices fall.[13] As the U.S. Energy Information Administration (EIA) notes, "most of the country's production comes from legacy fields that require expensive enhanced oil recovery techniques."[14] Development of China's tight oil resources has also been stymied by these projects' complexity and costs.[15]

China's efforts to stockpile oil resources have been more successful. Although the state does not systematically release data on its holdings, the market intelligence firm Kayrros estimates that China held 950 million barrels of crude oil in government and commercial inventories in early 2022.[16] Other estimates are similar, suggesting that China currently exceeds the IEA's

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[8] Leonardo Paoli and Timur Gül, "Electric cars fend off supply challenges to more than double global sales," IEA (January 30, 2022), https://www.iea.org/commentaries/electric-cars-fend-off-supply-challenges-to-more-than-double-global-sales.

[9] Based on data from the EIA, IEA and the BP Statistical Review of World Energy (2021).

[10] Erica Downs, "High anxiety: the trade war and China's oil and gas supply security," Columbia SIPA, (November 2019), https://www.energypolicy.columbia.edu/research/commentary/high-anxiety-trade-war-and-china-s-oil-and-gas-supply-security.

[11] Kunfeng Zhu and Nick Sharma, "China further opens oil and gas upstream to foreign investors: how much impact can we expect?" IHS Markit (April 24, 2020), https://ihsmarkit.com/research-analysis/china-further-opens-oil-and-gas-upstream-to-foreign-investors.html.

[12] Based on data from the BP Statistical Review of World Energy (2021).

[13] Downs, "High Anxiety"; Zhe (Sheryl) Ruan, "The Chinese majors' responses to the collapse in global oil prices and the COVID-19 pandemic: an upstream perspective," Oxford Institute for Energy Studies (OIES) Energy Insight 79 (November 2020), https://www.oxfordenergy.org/publications/the-chinese-majors-responses-to-the-collapse-in-global-oil-prices-and-the-covid-19-pandemic-an-upstream-perspective/.

[14] EIA, "Country Analysis: China."

[15] Chen Aizhu, "PetroChina's Gulong shale project may bolster China's oil output," Reuters (September 30, 2021), https://www.reuters.com/business/energy/petrochinas-gulong-shale-project-may-bolster-chinas-oil-output-2021-09-30/; Wood Mackenzie, "Shale oil in China: the long journey ahead" (December 16, 2019), https://www.woodmac.com/news/opinion/shale-oil-in-china-the-long-journey-ahead/.

[16] Chen Aizhu and Dmitry Zhadannikov, "China boosts oil reserves, ignoring U.S. push for global release," Reuters (February 27, 2022), https://www.reuters.com/business/energy/exclusive-china-boosts-oil-reserves-ignoring-us-push-global-release-2022-02-25/.

recommended target of 90 days of import coverage.[17] The state's first auction of supplies from its strategic petroleum reserve (SPR), in September 2021, also indicates that it perceives its current reserves as sufficient and that it is capable of implementing an SPR release. China could choose to further expand its strategic stockpile, since the state's total storage capacity, including government and commercial tanks, is estimated to be 1.2 billion barrels.[18]

Turning to oil imports, China has adopted multiple strategies for ensuring stable flows of resource supplies. First, since the 1990s, China's three major NOCs—the China National Petroleum Corporation (CNPC), China Petrochemical Corporation (Sinopec), and the China National Offshore Oil Corporation (CNOOC)—have invested in overseas oil projects and companies, often under the auspices of China's "going out" strategy. By 1998, the CNPC had made large upstream investments in Sudan, Kazakhstan, Venezuela, and Iraq. Through these ventures, the company acquired "equity oil": a share of resource output that it could book as reserves and sell wherever it chose. In practice, the NOCs have often sold their equity oil to buyers outside of China for commercial reasons.[19] However, the state retains the option of directing the companies to ship these resources to China, if needed. Chinese NOCs purportedly overpaid for these early deals in order to enhance national energy security.[20] Additionally, as newcomers to overseas investments, with limited technological skills, the NOCs struggled to make their bids competitive. To increase their appeal, the Chinese government supported the NOCs' efforts with favorable loans, as well as high-level diplomatic visits and broader investment deals with host states.[21]

China's NOCs acquired their new assets through mergers and acquisitions (M&A), in which they purchased full or partial shares of existing energy companies, and through investments in specific oil blocks and oil fields.[22] The latter investments have often taken the form of joint ventures, in which the Chinese NOC holds a share of a project, while other foreign oil companies and/or the host state's NOC hold the remainder. Through these deals, Chinese NOCs have established partnerships with many of the world's leading international oil companies (IOCs), including ExxonMobil, Chevron, Total, BP, and Eni, as well as other countries' NOCs. After expanding their overseas investments some in the early 2000s, the NOCs went on a buying spree after the global financial crisis. The downturn created a window of opportunity for the NOCs, as other oil companies, which were more exposed to the crisis, divested themselves assets and

[17] Aaron Clark and Sharon Cho, "China's oil reserves are close to reaching storage capacity," *Bloomberg* (February 25, 2021), https://www.bloomberg.com/news/articles/2021-02-26/china-s-oil-reserves-are-close-to-reaching-storage-capacity.
[18] Michal Meidan, "China's SPR release: A test of mechanisms rather than a show of market might," OIES Energy Comment (September 2021), https://www.oxfordenergy.org/publications/oxford-energy-podcast-chinas-spr-release-a-test-of-mechanisms-rather-than-a-show-of-market-might/.
[19] Erica S. Downs, "The Fact and Fiction of Sino–African Energy Relations," *China Security* 3, no. 3 (2007): 42–68.
[20] Xiaoyi Mu, "Have the Chinese national oil companies paid too much in overseas asset acquisition?" USAEE Working Paper no. 20-430 (January 23, 2020), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3524134.
[21] Erica Downs, *Inside China, Inc.: China Development Bank's cross-border energy deals*, John L. Thornton China Center Monograph Series, no. 3 (March 2011); Michal Meidan, "The structure of China's oil industry: past trends and future prospects," OIES Paper: WPM 66 (May 2016), https://www.oxfordenergy.org/publications/structure-chinas-oil-industry-past-trends-future-prospects/.
[22] Monique Taylor, "China's evolving energy security strategy," *Asian Affairs* 52, no. 4 (2021): 890–913.

refrained from new investments, and host companies struggled to find international partners.[23] The NOCs also increased the share of their investments in less-risky locales, following reforms to China's "going out" policy in 2006, which prioritized the profitability of overseas investments and gave the companies greater autonomy in investment decisions.[24]

China's NOCs have continued to acquire equity oil through some of these upstream investments, but not all of them. In 2020, the CNPC reported that its equity holdings of oil and natural gas were over 2 MMbpd.[25] Chinese NOCs have also pursued investments that enable them to enhance their technological and managerial skills through collaboration with foreign partners, in areas such as deep-water and unconventional oil and gas development. China's NOCs are now active in every region of the globe and their investment choices are driven predominantly by commercial opportunities, not geopolitical strategy.[26] That being said, the NOCs have also seized economic opportunities created by international politics: in particular, strengthening their connections with countries that are targeted by American or multilateral sanctions and therefore have limited access to alternative sources of foreign direct investment (FDI) and international credit markets.

Chinese NOCs have also invested in downstream projects overseas: building or purchasing refineries, gas stations, pipelines, and storage facilities.[27] They have partnered with foreign NOCs and IOCs to develop upstream and downstream projects in China. Again, these decisions are driven primarily by commercial interests. However, they also expand China's economic ties with oil-exporting states and create additional incentives for these states to maintain stable oil flows to China.[28] The Silk Road Fund, a state-owned investment fund, and the China Investment Corporation (CIC), one of China's sovereign wealth funds, have also invested in some foreign oil and gas projects and companies.[29]

Second, China has attempted to secure its access to foreign energy supplies through loans-for-oil. In these agreements, a state policy bank—the China Development Bank (CDB) or, to a lesser

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[23] Julie Jiang and Jonathan Sinton, "Overseas investments by Chinese national oil companies," IEA (February 2011), https://www.iea.org/reports/overseas-investments-by-chinese-national-oil-companies.
[24] Adam William Chalmers and Susanna Theresia Mocker, "The end of exceptionalism? Explaining Chinese National Oil Companies' overseas investments," *Review of International Political Economy* 24, no. 1 (2017): 119–143.
[25] China National Petroleum Corporation (CNPC) "2020 annual report," http://www.petrochina.com.cn/ptr/ndbg/dqbg_list.shtml. In 2019, the Chinese Ministry of Natural Resources reported that China's equity oil from all overseas investments totaled over 2 MMbpd. Yong Zhao, Xunpeng Shi, and Feng Song, "Has Chinese outward foreign direct investment in energy enhanced China's energy security?" *Energy Policy* 146 (2020): 1–8.
[26] Julie Jiang and Chen Ding, "Update on overseas investments by China's national oil companies: achievements and challenges since 2011," IEA (2014), https://www.oecd.org/publications/update-on-overseas-investments-by-china-s-national-oil-companies-9789264247505-en.htm.
[27] Ibid.
[28] Jennifer Lind and Daryl G. Press, "Markets or mercantilism? How China secures its energy supplies," *International Security* 42, no. 4 (2018): 170–204.
[29] Chen Dia, "Silk Road Fund to support Uzbek oil and gas projects, *China Daily* (June 9, 2018), https://www.chinadaily.com.cn/a/201806/09/WS5b1bd84fa31001b82571f188.html; Farah Elbahrawy, "Aramco closes $12 billion pipeline deal with China, UAE backing," *Bloomberg* (June 19, 2021), https://www.bloomberg.com/news/articles/2021-06-19/aramco-closes-12-4-billion-deal-with-beijing-abu-dhabi-backing.

extent, the China Export-Import Bank (China Exim Bank)—lends money to an oil-producing state's government or a state-owned enterprise. The recipient uses this money to finance oil projects or for other purposes. After a grace period, the recipient repays the loan through oil sales to a Chinese NOC. The loan terms specify a minimum amount of oil that the producer must sell to the Chinese NOC daily, over the course of the repayment period. The price that the NOC pays for this oil varies over the course of the repayment period, as market prices change. As a result, the total amount of oil the producer will sell to the NOC in order to repay the loan is indeterminate at the agreement's outset. China's loans-for-oil have been appealing to borrowers because they are offered at low interest rates, with longer repayment periods than many other loans. Chinese banks have also offered these loans during periods when oil producers have struggled to find alternative sources of funding, such as after the global financial crisis and after oil prices collapsed in 2014.[30]

Although data on China's loans-for-oil are incomplete, Venezuela is widely regarded as the largest recipient, borrowing at least $50 billion between 2008 and 2015.[31] However, after 2015, China's lending to Venezuela dropped precipitously, due to the state's inability to repay existing loans by supplying the oil that it had already promised to China.[32] Russia was the second largest recipient of loans-for-oil during this time period, receiving $33 billion. Most of that debt was incurred through a $25 billion agreement in 2009, in which Russian state-controlled companies, Rosneft and Transneft, agreed to supply the CNPC with 300,000 bpd of oil for the next twenty years.[33] In 2013, the CDB granted Rosneft another $2 billion loan-for-oil.[34] Other leading recipients of Chinese loans-for-oil, between 2004 and 2017, were Brazil ($30 billion), Angola ($11.5–$21.5 billion), and Ecuador ($7–$13.8). Bolivia, Chad, Equatorial Guinea, Ghana, the Republic of Congo, and South Sudan have also received loans-for-oil.[35]

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[30] Eugene Gholz, Umul Awan, and Ehud Ronn, "Financial and energy security analysis of China's loan-for-oil deals," *Energy Research & Social Science* 24 (2017): 42–50; Michal Meidan, "China's loans for oil: asset or liability?" OIES Paper: WPM 70 (December 2016), https://www.oxfordenergy.org/publications/chinas-loans-oil-asset-liability/.

[31] These loans-for-oil figures are much higher than the figures from the China's Global Energy Finance project because the loans finance a wide range of infrastructure projects, not just oil. David Mihalyi, Aisha Adam and Jyhjong Hwang, "Resource-backed loans: pitfalls and potential," Natural Resources Governance Institute (February 27, 2020), https://resourcegovernance.org/analysis-tools/publications/resource-backed-loans-pitfalls-potential.

[32] Stephen B. Kaplan and Michael Penfold, "China-Venezuela economic relations: hedging Venezuelan bets with Chinese characteristics," The Wilson Center (February 2019); Jeremy Page, "China counts the costs of its big bet on Venezuela," *Wall Street Journal* (February 1, 2019), https://www.wsj.com/articles/china-counts-the-costs-of-its-big-bet-on-venezuela-11549038825.

[33] Robin Paxton and Vladimir Soldatkin, "China lends Russia $25 billion to get 20 years of oil," Reuters (February 17, 2009), https://www.reuters.com/article/uk-russia-china-oil-sb/china-lends-russia-25-billion-to-get-20-years-of-oil-idUKTRE51G3S620090217. This agreement also financed the Daqing pipeline spur.

[34] Gholz et al., "Financial and energy security analysis of China's loan-for-oil deals." In 2013 and 2014, CNPC and Sinopec also agreed to prepay for substantial amounts of Russian oil. James Henderson and Tatiana Mitrova, "Energy Relations between Russia and China: Playing Chess with the Dragon," OIES Paper: WPM 67 (August 2016), https://www.oxfordenergy.org/publications/energy-relations-russia-china-playing-chess-dragon/.

[35] Figures are derived from Gholz et al., "Financial and energy security analysis of China's loan-for-oil deals," Mihalyi et al., "Resource-backed loans: pitfalls and potential," and Patricia I. Vasquez, "China's Oil and Gas Footprint in Latin America and Africa," *International Development Policy* 11, no. 1 (2019).

On paper, these oil-backed loans gave Chinese NOCs assured access to an estimated 1.6 MMbpd of oil by 2015.[36] Yet the state is unlikely to have ever received that much, primarily due to Venezuela's declining output. Chinese NOCs and oil trading companies also often choose to sell the resources they receive through loan repayments to other buyers, rather than ship them to China. The limited benefits derived from these loans, in terms of energy security and the returns on investments to policy banks, have likely contributed China's decreasing use of this instrument over the past few years. Whereas the CDB and China Exim Bank loaned oil-producing countries $75 billion for oil-related projects, specifically, between 2007 and 2017, after 2017, policy banks' financing for oil-related projects largely evaporated.[37] During the earlier time period, most of the banks' oil project financing went to Brazil ($26.6 billion), Russia ($25 billion), Angola ($10.2 billion), and Venezuela ($7.7 billion), through the recipients' state-controlled energy companies (Petrobras, Rosneft, Sonangol, and PDVSA). The CDB also financed the construction of the Daqing spur of the Eastern Siberian–Pacific Ocean (ESPO) pipeline in 2009.

In contrast, Chinese policy banks' financing for gas projects, including liquified natural gas (LNG) projects, has remained robust; between 2008 and 2020, the CDB and China Exim Bank committed almost $40 billion to these endeavors. The leading recipients of this financing were Russia ($17.3 billion), Turkmenistan ($7.1 billion), Uzbekistan ($3.4 billion), Nigeria ($3.2 billion), Pakistan ($2.7 billion), and Myanmar ($2.4 billion).[38] The fact that China's policy banks have continued to issue loans-for-gas, while cutting back on loans-for-oil, could reflect changing national energy security priorities, as natural gas becomes a larger share of the country's energy mix. Alternatively, gas-producing countries may currently be seen as more reliable borrowers or possess more promising energy projects than oil producers.

Overall, since the mid-2010s, China has devoted less effort to securing access to oil supplies through loans-for-oil and upstream investments that produce equity oil. This shift has occurred for at least four reasons. First, the U.S. shale revolution created a global oil supply glut and removed the United States as a competitor for oil imports. Second, Chinese NOCs and policy banks learned from their early investments and loans, which often underperformed. Third, President Xi's crackdown on corruption in the oil industry in the mid-2010s increased scrutiny on NOCs' overseas investments. Fourth, after oil prices crashed in 2014, NOCs had to be more cautious with their capital expenditures.[39] Fifth, since 2018, President Xi has encouraged the NOCs to prioritize domestic resource development.[40]

[36] Meidan, "China's loans for oil."
[37] All data are from the China's Global Energy Finance project at Boston University's Global Development Policy Center, https://www.bu.edu/cgef/#/intro.
[38] All data are from the China's Global Energy Finance project at Boston University's Global Development Policy Center, https://www.bu.edu/cgef/#/intro.
[39] Ruan, "The Chinese majors' responses to the collapse in global oil prices and the COVID-19 pandemic"; Taylor, "China's evolving energy security strategy."
[40] Downs, "High Anxiety."

Transportation[41]

One major limitation of loans-for-oil and equity oil, as means of enhancing China's energy security, is that the resources acquired through these strategies must be shipped back to China, rendering them vulnerable to transportation interruptions. Since China became a net importer of oil, one of its leading energy security concerns has been the risk of interference with its sea-borne oil imports. In 2003, President Hu Jintao warned of the "Malacca Dilemma": the risk of interruptions to oil and gas shipments passing through the Strait of Malacca. These interruptions could arise from accidents or interference by local states and violent non-state actors. However, China's primary concern is that U.S. naval forces will attempt to interrupt oil shipments to China.

In actuality, even in the 2000s, it would have been difficult for the United States to physically interdict China's sea-borne energy deliveries. The United States cannot implement a distant blockade—intercepting Chinese energy shipments as they travel through chokepoints like the Strait of Malacca, Sunda Strait, or Lombok Strait—without also interrupting shipments to U.S. allies Japan and the Republic of Korea. While it is usually possible to determine oil and gas tankers' origins using tracking systems, these methods cannot ascertain their destinations. Nor can direct visual contact. Consequently, American sailors would need to board every tanker traveling through the maritime chokepoint and consult its documentation to determine which ones to seize. All tankers are required to carry bills of lading, stating their origin and destination. However, documents can be forged or resource cargoes can be resold during transit, enabling them to legitimately change their destination after passing through a blockade.[42]

Nonetheless, to counter this transportation threat, China has constructed a sizeable domestic tanker fleet, which it can insure through state-owned companies.[43] If Beijing compels these tankers to run a naval blockade, U.S. sailors would need to forcefully board or sink each tanker in order to intercept energy shipments, heightening the likelihood of environmental damage, international opprobrium, and Chinese retaliation.[44] The United States could simplify this interception process by implementing a near blockade closer to China's coastline, where tankers' destination would be evident. However, China's A2AD capabilities limit this approach's viability and heighten the risks of conflict escalation.

China is also attempting to diversify its maritime energy transit routes by encouraging development of the Northern Sea Route (NSR), along Russia's Arctic coast. By using this route, tankers can travel from export terminals in Murmansk and the Yamal Peninsula to China's Pacific ports without passing through maritime chokepoints, including the Suez Canal, Bab al-Mandab, and Strait of Malacca. The route also cuts shipping times nearly in half. The first LNG delivery from the Yamal Peninsula to China occurred in July 2018 and the first Russian oil

[41] Portions of the following two sections are adapted from Emily Meierding, "Weaponizing Energy Interdependence," in Daniel W. Drezner, Henry Farrell, and Abraham L. Newman (eds), *The Uses and Abuses of Weaponized Interdependence* (Washington, D.C.: Brookings Institution Press, 2021).
[42] Gabriel B. Collins and William S. Murray, "No oil for the lamps of China," *Naval War College Review* 61, no. 6 (2008).
[43] Andrew Erickson and Gabe Collins, "Beijing's energy security strategy: the significance of a Chinese state-owned tanker fleet," *Orbis* 51, no. 4 (2007): 665–684.
[44] Lind and Press, "Markets or mercantilism?"

shipment transited the NSR to China in September 2019.[45] Over the last three years, hydrocarbons have made up the bulk of international shipments along the NSR. Most of these shipments have traveled west towards Europe, but the share traveling east is increasing. In 2019, seventeen Yamal LNG carriers traveled to Asia via the NSR; in 2020, 35 transited the route; and in 2021, 34. PetroChina, the CNPC's flagship subsidiary, has contracted for 3 million tonnes per year (or, 4.1 billion cubic meters) of deliveries from the Yamal LNG project, an estimated 19% of Yamal's 2020 contracts.[46] If Russia's Arctic hydrocarbon production increases as planned—an uncertain prospect since the invasion of Ukraine—this volume is likely to increase. However, multiple additional factors could impose a ceiling on Russian LNG shipments to China along the NSR. The route remains ice-bound six months a year, regional support facilities are extremely limited, and delivery costs to China from Yamal are substantially higher than delivery costs from Australia, Indonesia, and Qatar, the state's leading LNG suppliers.[47] Moreover, oil shipments along the NSR are likely to remain a fraction of LNG volumes transiting the route.

China has also attempted to reduce its dependence on sea-borne energy transportation by building pipelines. Three international oil pipelines currently enter China: the Kazakhstan–China pipeline (400,000 bpd), the ESPO pipeline's Daqing spur (600,000 bpd), and the Myanmar–China pipeline (440,000 bpd). The combined capacity of these pipelines is 1.44 MMbpd. Additionally, the ESPO pipeline transports another 1 MMbpd to its terminus in Kozmino, from which it can be shipped by tanker to Chinese ports. These pipelines have therefore reduced the share of China's oil imports that travel long distances by sea. However, the pipelines could not replace China's sea-borne imports in the event of transportation interruptions, especially if they were already operating near capacity.

Financial Transactions

The leading contemporary threats to China's oil security pertain to financial transactions. To purchase oil imports, customers (usually refineries or oil trading firms) must be able to pay for them. Because most oil trades are denominated in dollars, these customers must have access to the U.S. financial system, either through American branches of their own banks or through correspondent banks in the United States. If sanctions block U.S.-located banks from engaging with oil-purchasing companies or their home countries' banks, these customers cannot complete their oil transactions using dollars. These financial sanctions are therefore an enormous impediment to oil purchases. Additionally—or alternatively—targeted banks may be blocked from the Belgian-based SWIFT financial messaging service. SWIFT handles the lion's share of

[45] "Russia's Novatek ships first LNG cargo to China via Arctic," Reuters (July 19, 2018), https://www.reuters.com/article/us-novatek-cnpc-lng/russias-novatek-ships-first-lng-cargo-to-china-via-arctic-idUSKBN1K90YN; Shu Zhang and Olga Yagova, "Russia's Lukoil sells rare Arctic crude oil to China," Reuters (October 2, 2019), https://www.reuters.com/article/us-russia-oil-china/russias-lukoil-sells-rare-arctic-crude-oil-to-china-sources-idUSKBN1WH165.

[46] Vitaly Yermakov and Anastasia Yermakova, "The Northern Sea Route: a state priority in Russia's strategy of delivering Arctic hydrocarbons to global markets," OIES Energy Insight: 105 (November 2021), https://www.oxfordenergy.org/publications/the-northern-sea-route-a-state-priority-in-russias-strategy-of-delivering-arctic-hydrocarbons-to-global-markets/. All conversions factors are taken from BP's Statistical Review of World Energy.

[47] Vitaly Yermakov and Jack Sharples, "A phantom menace: is Russian LNG a threat to Russia's pipeline gas to Europe?" OIES Paper: NG 171 (July 2021), https://www.oxfordenergy.org/publications/a-phantom-menace-is-russian-lng-a-threat-to-russias-pipeline-gas-in-europe/.

interbank messaging, so removal from the network is a significant inconvenience. However, there are other, more costly and less efficient work-arounds for the system, such as encrypted telegrams or email. In contrast, there are currently no viable substitutes for access to the U.S. banking system. If Chinese oil customers or their banks were blocked from the system, they would not be able to purchase nearly enough oil to cover national import needs.

Although China could adopt a number of strategies to reduce its vulnerability to blocking sanctions, there are obstacles to large-scale adoption of each of them. First, Chinese customers could denominate oil transactions in currencies other than dollars. The state's most recent gas deal with Russia, in February 2022, will be settled in euro.[48] However, denominating in euro or pounds does not fully eliminate this insecurity, as European countries could block Chinese banks' access to their financial systems, preventing these transactions. Chinese customers have also paid for some Russian, Venezuelan, and Iranian resource shipments in yuan.[49] Yet, most oil producers are likely to resist the de-dollarization of oil sales. Oil has historically been traded in dollars because they are abundant and reliable. The yuan cannot presently compete in terms of liquidity or stability.[50] It currently accounts for only 3% of all international payments, in contrast to the 40% of the world's payments transacted in dollars.[51] It also has yet to become a leading global reserve currency, despite its addition to the IMF's special drawing rights basket in 2016.[52]

Second, China could reduce its vulnerability to blocking sanctions by establishing barter-based agreements with oil producers. It has already pursued this strategy with Venezuela; the state has supplied oil to China in exchange for food staples.[53] However, barter-based oil trade is not practical on a large scale. Third, Chinese customers could funnel their oil transactions through third-party banks that are not under sanctions. Yet, this strategy is still vulnerable to secondary sanctions, which penalize actors that do business with targeted financial institutions.

To accelerate the yuan's internationalization and create an alternative to the SWIFT system, in 2015, China's central bank launching the Cross-Border Interbank Payment System (CIPS). The system's primary purpose is to settle yuan-denominated cross-border payments with international financial institutions. However, CIPS also functions as a financial messaging service. At present, CIPS is far smaller than SWIFT; 11,000 institutions across 200 countries are connected to SWIFT, whereas 1280 financial institutions in 103 countries are reportedly connected to CIPS. Over 500 of the latter are in mainland China and only a small number of international banks are

[48] Aizhu, "Russia, China agree 30-year gas deal via new pipeline, to settle in Euros."
[49] Maha Kamel and Hongying Wang, "Petro-RMB? The oil trade and the internationalization of the renminbi," *International Affairs* 95, no. 5 (2019): 1131–1148.
[50] The liquidity and reliability issues also precludes crypto-currencies from being a viable alternative to U.S. dollars or euro; they are not attractive enough to recipients or traded in large enough volumes to cover a substantial share of China's energy transactions.
[51] David Brancaccio, Erika Soderstrom, and Alex Schroeder, "Could China's payments system be a SWIFT workaround for Russia?" NPR Marketplace (aired March 1, 2022), https://www.marketplace.org/2022/03/01/could-chinas-payments-system-be-a-swift-workaround-for-russia/.
[52] "China's yuan joins elite club of IMF reserve currencies," Reuters (September 30, 2016), https://www.reuters.com/article/us-china-currency-imf/chinas-yuan-joins-elite-club-of-imf-reserve-currencies-idUSKCN1212WC
[53] Corina Pons and Mayela Armas, "Venezuela in talks with China over support amid pandemic, oil price drop," Reuters (March 25, 2020), https://www.reuters.com/article/us-health-coronavirus-venezuela-china-ex/exclusive-venezuela-in-talks-with-china-over-support-amid-pandemic-oil-price-drop-sources-idUSKBN21C2LB.

directly connected to CIPS. Banks that are not directly connected to the system must still communicate with CIPS using SWIFT.[54] As another indicator of SWIFT's dominance, in one day (March 1, 2022), the system handled over 40 million messages, while CIPS handled approximately 11,500.[55] CIPS is likely to face considerable growing pains, as long as the yuan remains a less attractive global currency than the dollar or euro. Financial institutions that are connected to SWIFT also have limited incentive to participate in an additional system, unless they expect their SWIFT access to be endangered in the future.

Over the next five to ten years, further internationalization of the yuan and de-dollarization of oil transactions are likely to be Chinese energy security policy priorities. To increase the attractiveness of the latter, China is likely to couple these efforts with other diplomatic, economic, and military overtures to oil-producing states. That being said, these initiatives are still likely to be a tough sell, other than for countries with restricted access to the U.S. financial system, such as Iran, Russia, and Venezuela. A leading risk of the United States' increased use of sanctions as a foreign policy tool is that it will push these countries together, creating an energy-based network of U.S. competitors and adversarial states.

China's Relationships with Specific Oil Suppliers

China's top ten suppliers of crude oil in 2021 were Saudi Arabia, Russia, Iraq, Oman, Angola, the UAE, Brazil, Kuwait, Malaysia, and Norway. Table 1, at the end of this document, identifies the volume of crude oil that China imported from each supplier and the share of China's crude oil imports that came from each. Collectively, these ten states accounted for almost 84% of China's crude oil imports.[56]

Several countries' shares of China's crude oil imports have declined significantly over time. Angola's contribution to China's imports has more than halved over the last decade. During the same time period, Kazakhstan's contribution to China's imports also fell substantially. Iran's share of China's imports has been declining for the last two decades; it dropped further from 2018–2019, after the reimposition of U.S. sanctions and cancellation of waivers granted to Iran's major oil importers. Sudan and Venezuela's shares of China's imports have also fallen since 2012: the former due to South Sudan's independence and ongoing instability, and the latter reflecting the deterioration of the state's oil industry and intensification of U.S. sanctions from

[54] "Factbox: What is China's onshore yuan clearing and settlement system CIPS?" Reuters (February 27, 2022), https://www.reuters.com/markets/europe/what-is-chinas-onshore-yuan-clearing-settlement-system-cips-2022-02-28/; Peng Qinqin, Denise Jia, and Kelsey Cheng, "Analysis: China's CIPS cannot rescue Russian banks from SWIFT ban," *Nikkei Asia* (March 3, 2022), https://asia.nikkei.com/Spotlight/Caixin/Analysis-China-s-CIPS-cannot-rescue-Russian-banks-from-SWIFT-ban.

[55] Christian Shepherd, "China not emerging as lifeline for sanction-slammed Russian economy," *The Washington Post* (March 2, 2022), https://www.washingtonpost.com/world/2022/03/02/russia-economy-sanctions-china-support-ukraine/.

[56] Import data are from China's General Administration of Customs, reported in Oceana Zhou, "CHINA DATA: Iranian crude inflows seen in Dec for first time in 2021, at 62,000 b/d," S&P Global (January 20, 2022), https://www.spglobal.com/commodity-insights/en/market-insights/latest-news/oil/012022-china-data-iranian-crude-inflows-seen-in-dec-for-first-time-in-2021-at-62000-bd; Oceana Zhou and Wendy Wells, "China's 2020 crude imports from US surge 211% to 396,000 b/d, valued at $6.28 bil," S&P Global (January 20, 2021), https://www.spglobal.com/commodity-insights/en/market-insights/latest-news/oil/012021-china-data-2020-crude-imports-from-us-surge-211-to-396000-bd-valued-at-628-bil.

2017–2019. However, some of China's reported imports from Malaysia may actually be transshipments from Venezuela and Iran.

In contrast, Russia's share of China's crude oil imports rose dramatically over the last decade. China's imports from Iraq also climbed substantially after 2012. Brazil's share of China's imports has more than tripled since 2014, and the shares from Kuwait and the UAE have also risen. The United States became one of China's top ten oil suppliers in 2019. However, this trade declined significantly after Beijing retaliated for the Trump administration's trade restrictions by increasing tariffs on U.S. energy imports in 2018–2019. American oil sales to China recovered some in 2020, after the states' Phase 1 trade deal, only to fall again in 2021.

The Persian Gulf

Over the last two decades, China has diversified its oil imports by increasing the number of countries from which it purchases crude. However, China remains heavily dependent on Middle Eastern suppliers, receiving 50% of its oil imports from the region in 2020.[57] These flows have also continued to increase in volume year-on-year, as China's total oil import levels continue to rise. China has become the leading purchaser of many Gulf states' oil, including Iraq (34%), Kuwait (28%), Oman (83%), and Saudi Arabia (24%). It purchases 22% of the UAE's crude oil exports, behind Japan, which purchases 27%.[58]

Energy cooperation has been the core of China's approach to the Persian Gulf: the "1" in its "1+2+3" regional policy framework.[59] In addition to purchasing large shares of the region's oil, Chinese NOCs have invested in oil projects. Since 2009, they have invested almost $12 billion in redeveloping Iraq's oil industry, based on data from the American Enterprise Institute's China Global Investment Tracker.[60] In 2017 and 2018, the CNPC purchased stakes in multiple oil exploration and development projects in the UAE.[61] Chinese NOCs have also been partnering with Saudi Aramco, Saudi Arabia's NOC, to construct refineries and other downstream facilities in China and Saudi Arabia for over a decade. The Chinese refineries are supplied with Saudi crude.[62]

The relationships between China and the Gulf states have expanded beyond energy. China became the largest source of foreign investment in the Middle East in 2016, partly through its energy investments, but also through extensive construction projects financed by Chinese lenders

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[57] Based on data from the BP Statistical Review of World Energy (2021).
[58] All data with the exception of Oman are from BP Statistical Review of World Energy (2021). The Oman figure is from Robert Mogielnicki, "Growing China–Gulf economic relations have limits," The Arab Gulf States Institute in Washington (February 16, 2022), https://agsiw.org/growing-china-gulf-economic-relations-have-limits/.
[59] Government of the People's Republic of China, "China's Arab Policy Paper" (January 2016), http://english.www.gov.cn/archive/publications/2016/01/13/content_281475271412746.htm
[60] Jiang and Ding, "Update on overseas investments by China's national oil companies."
[61] Anthony Di Paola and Aibing Guo, "China's CNPC pays $1.18 billion to pump oil in Abu Dhabi," *Bloomberg* (March 20, 2018), https://www.bloomberg.com/news/articles/2018-03-21/cnpc-is-said-to-be-poised-to-win-stakes-in-abu-dhabi-oil-fields; Anthony Di Paola and Mahmoud Habboush, "China wins big with stakes in $22 billion Abu Dhabi oil deal," *Bloomberg* (February 19, 2017), https://www.bloomberg.com/news/articles/2017-02-19/abu-dhabi-awards-china-s-cnpc-stake-in-main-onshore-oil-deposits.
[62] Jiang and Ding, "Update on overseas investments by China's national oil companies."

and often undertaken by Chinese firms.[63] In 2020, China replaced the EU as the GCC's largest trading partner.[64] The UAE and Qatar have both established currency swaps with China to facilitate cross-border trade and investment, and the UAE established a clearing center for yuan-denominated transactions.[65] Under the auspices of the Belt and Road Initiative, China has established Comprehensive Strategic Partnerships or Strategic Partnerships with all of the region's oil-producing states. China has also recently expanded its arms sales to Persian Gulf states, although these are still dwarfed by U.S. sales.[66]

The Gulf states have welcomed China's increasing engagement in the region, both for the economic opportunities it offers and as a hedge against declining U.S. engagement, precipitated by the United States' falling imports of Middle Eastern oil and its withdrawal from Iraq. That being said, there is little indication that the Gulf's oil producers prefer partnership with China over partnership with the United States. Instead, they are likely to strategically exploit the great powers' competition for regional influence in order to extract advantageous deals from both countries.

China's relationship with Iran is a greater U.S. security concern. China has been the leading purchaser of Iranian oil exports since the United States reimposed sanctions on the country in 2018, and continued these purchases after waivers expired in May 2019. To evade sanctions enforcement, China does not accurately disclose the volume of oil it imports from Iran. However, commodity analysts indicate that, after declining significantly in 2019, China's purchases rose some in 2020 and increased to an average of at least 590,000 bpd in 2021.[67] Chinese buyers have concealed these deliveries partly through transshipment of Iranian oil through Oman and Malaysia.[68] In March 2021, China and Iran also signed a deal (drafted in 2020) for an estimated $400 billion of Chinese investments in numerous areas, including "banking, telecommunications, ports, railways, health care and information technology," over the course of the next 25 years. This financing would be repaid with steeply discounted oil deliveries.[69]

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[63] "China is largest foreign investor in Middle East," Middle East Monitor (July 24, 2017), https://www.middleeastmonitor.com/20170724-china-is-largest-foreign-investor-in-middle-east/.
[64] Frank Tang, "China meets Gulf oil bloc with sights set on free-trade agreement and energy security," *South China Morning Post* (January 12, 2022), https://www.scmp.com/economy/china-economy/article/3163121/china-meets-gulf-oil-bloc-sights-set-free-trade-agreement-and.
[65] Jonathan Fulton, "China's growing presence in the Gulf," East Asia Forum (March 26, 2019), https://www.eastasiaforum.org/2019/03/26/chinas-growing-presence-in-the-gulf/.
[66] Camille Lons, Jonathan Fulton, Degang Sun, and Naser Al-Tamimi, "China's great game in the Middle East," European Council on Foreign Relations (October 21, 2019), https://ecfr.eu/publication/china_great_game_middle_east/.
[67] "China ramps up Iran oil purchases after getting new quotas," *Bloomberg* (December 16, 2021), https://www.bloomberg.com/news/articles/2021-12-16/china-teapots-boost-iran-oil-imports-after-getting-new-quotas; Benoit Faucon, "Iran seeks closer ties with China as nuclear talks drag on," *The Wall Street Journal* (January 14, 2022), https://www.wsj.com/articles/iran-seeks-closer-ties-with-china-as-nuclear-talks-drag-on-11642155508.
[68] "China may be taking rebranded Iran oil amid increased scrutiny," *Bloomberg* (March 22, 2021), https://www.bloomberg.com/news/articles/2021-03-22/china-may-be-taking-rebranded-iran-oil-amid-increased-scrutiny.
[69] Farnaz Fassihi and Steven Lee Myers, "China, with $400 billion Iran deal, could deepen influence in Mideast," *The New York Times* (March 29, 2021), thttps://www.nytimes.com/2021/03/27/world/middleeast/china-iran-deal.html.

There are nonetheless reasons to question the degree to which China's engagement is actually undermining U.S. sanctions' effectiveness against Iran. Although China has thrown the state an economic lifeline through its oil purchases, Iran is not receiving foreign exchange for these sales; instead, they are denominated in yuan or consist of barter-based arrangements.[70] The CNPC withdrew from its investment in Iran's South Pars gas field in 2019, in response to U.S. sanctions, and Sinopec's plans to develop the Yadavaran oil field stalled.[71] The 2021 investment agreement is very unlikely to be implemented in full. More broadly, China does not want to endanger its financial relationship with the United States or its growing partnerships with other Gulf states by drawing too close to Iran.

Russia

China has also expanded its energy engagement with Russia. In addition to significantly increasing its Russian oil and gas purchases over the last decade, as well as granting the state loans-for-oil and loans-for-gas, often connected to international pipeline projects, Chinese NOCs and financial institutions have invested in Russia's Arctic energy projects. The CNPC acquired a 20% stake in the Yamal LNG project in January 2014. The project's majority owner, Novatek, was sanctioned six months later, after Russia's initial interference in eastern Ukraine. These sanctions prohibited western energy companies from investing in projects in the Russian Arctic, creating another window of opportunity for Chinese actors. In 2015, the Silk Road Fund acquired a 9.9% stake in Yamal LNG and loaned the project $804 million.[72] The CDB and China Exim Bank then loaned the project an additional $12 billion, denominated in euro and yuan.[73] In 2019, CNOOC and a CNPC subsidiary, CNODC, purchased a 20% stake in the Arctic LNG 2 project.[74] These investments and loans have been critical to the projects' development.

The widespread withdrawal of western oil companies from Russia since its invasion of Ukraine in February 2022—a group that now includes BP, Shell, ExxonMobil, and Equinor (Norway's NOC)—may create significant new opportunities for China. Russia will need foreign investment in its energy industry to maintain current levels of oil and gas production. If western companies do not return, Chinese NOCs and financial institutions will be some of its few sources of capital. Recognizing this bargaining advantage, they are likely to push for highly favorable contract terms, including substantial discounts on resource prices and denomination of loans and resource payments in yuan. However, China is unlikely to pursue these deals or significantly increase its Russian oil and gas purchases in the near term, in order to avoid provoking international censure

[70] Faucon, "Iran seeks closer ties with China as nuclear talks drag on."
[71] "Iran says China's Sinopec might not develop Yadavaran oilfield," Reuters (May 2, 2019), https://www.reuters.com/article/us-iran-china-oil-idUSKCN1S8192; Arsalan Shahla and Verity Ratcliffe, "CNPC quits flagship Iran gas project as U.S. sanctions bite," *Bloomberg* (October 7, 2019), https://www.bloomberg.com/news/articles/2019-10-06/iran-says-china-s-cnpc-is-no-longer-part-of-giant-gas-project.
[72] "Russia's Novatek completes deal to sell Yamal LNG stake to China's Silk Road," Reuters (March 15, 2016), https://www.reuters.com/article/russia-novatek-china-yamal-idAFR4N0ZC01H.
[73] "China lenders provide $12 bln loan for Russia's Yamal LNG project-sources," Reuters (April 28, 2016), https://www.reuters.com/article/russia-china-yamal/china-lenders-provide-12-bln-loan-for-russias-yamal-lng-project-sources-idUKL2N17V2MI.
[74] Katya Golubkova and Maria Kiselyova, "Russia's Novatek to sell 20 percent in Arctic LNG 2 to China," Reuters (April 25, 2019), https://www.reuters.com/article/us-russia-gas-novatek-cnodc/russias-novatek-to-sell-20-percent-in-arctic-lng-2-to-china-idUSKCN1S11WY.

or secondary sanctions while Russia's energy transactions are under heightened scrutiny.[75] China is likely to strengthen integration between CIPS and Russia's financial messaging system, SPF. It may also become more supportive of Russia's proposed Power of Siberia 2 pipeline project, which would transport natural gas from Yamal to northeastern China.

Venezuela

Over the last decade, China has also been an economic lifeline to Venezuela, another state facing U.S. sanctions. As noted above, Venezuela was the leading recipient of Chinese policy banks' loans-for-oil between 2005 and 2017. In conjunction with these loans, the CNPC and Sinopec acquired stakes in exploration and development projects in the Orinoco extra-heavy oil belt.[76] However, these loans and investments proved to be a cautionary tale for China's later overseas energy engagements.[77] Insufficient reinvestment of resource revenue into Venezuela's NOC, PDVSA, coupled with low oil prices after 2014 and President Maduro's failure to implement economic reforms, sent the company into a tailspin. With its oil production falling rapidly, PDVSA could not fulfill its resource repayment commitments to China. To expand production from CNPC–PDVSA joint ventures, in 2016, Venezuela was allowed to tap a new $2.2 billion Chinese credit line.[78] Two years later, it received access to another $5 billion credit line, again for the purpose of boosting oil production. The CNPC also purchased additional shares of its Sinovensa joint venture with PDVSA.[79]

None of these initiatives reversed Venezuela's production decline, which was subsequently exacerbated by the imposition of tighter U.S. sanctions, starting in 2017. After the United States sanctioned PDVSA itself in January 2019, China became Venezuela's largest crude oil importer, receiving an average of 350,000 bpd. When the United States tightened sanctions further that August, the CNPC formally halted direct purchases of Venezuelan oil. However, China continued to import oil through other purchasing companies, using various means of disguising the oil's origins, including ship-to-ship oil transfers and "doping" of Venezuelan crude. Using these mechanisms, between mid-2019 and 2021, China likely imported between 250,000 and

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[75] Shepherd, "China not emerging as lifeline for sanction-slammed Russian economy"; Nathaniel Taplin, "Can Russia's sanctions pain be China's gain?" *The Wall Street Journal* (March 1, 2022), https://www.wsj.com/articles/can-russias-sanctions-pain-be-chinas-gain-11646144467.

[76] Marianna Parraga, "Venezuela approves Chinese role in Orinoco oil block," Reuters (October 11, 2020), https://www.reuters.com/article/venezuela-oil-china/venezuela-approves-chinese-role-in-orinoco-oil-block-idUSN1115418820101011; Daniel Wallis, "CNPC to help develop Junin 10 project in Venezuela," Reuters (September 18, 2013), https://www.reuters.com/article/venezuela-cnpc-idCNL2N0HE13520130918; Jonathan Wheatley, "Lawsuit shows China losing patience with Venezuela," *Financial Times* (December 6, 2016), https://www.ft.com/content/d627460a-da8e-11e7-a039-c64b1c09b482.

[77] Jeremy Page, "China Counts the Costs of Its Big Bet on Venezuela."

[78] Alexandra Ulmer, "Venezuela taps China credit line for $2.2 billion oil output push," Reuters (November 17, 2016), https://www.reuters.com/article/us-venezuela-oil-cnpc/venezuela-taps-china-credit-line-for-2-2-billion-oil-output-push-idUSKBN13D031.

[79] "Venezuela sold 9.9 percent of joint venture to China oil firm: Maduro," Reuters (September 18, 2018), https://www.reuters.com/article/us-venezuela-china/venezuela-sold-9-9-percent-of-joint-venture-to-china-oil-firm-maduro-idUSKCN1LY2NN; Kaplan and Penfold, "China-Venezuela Economic Relations."

325,000 bpd of Venezuelan crude oil. Most of this was purchased by China's "teapot" refineries, which are less exposed to the United States' secondary sanctions.[80]

Chinese government representatives maintain that their country's Venezuelan and Iranian oil imports are all perfectly legal. Beijing has not imposed trade restrictions on either country and opposes the United States' unilateral sanctions, including the punishments that U.S. secondary sanctions inflict on Chinese entities that do business with Venezuela or Iran.[81] Most Chinese actors have nonetheless complied with the sanctions in order to avoid being blocked from the U.S. financial system. While China has therefore flouted U.S. sanctions through its oil purchases, its sanctions-busting, beyond this area, is more limited. It is also unclear whether, in the absence of Chinese oil purchases, targeted states would have changed their behaviors, to comply with U.S. demands.

Conclusion

Although actors outside of China often view the state's efforts to strengthen its oil security with concern, one of the most striking features of most of these activities is their normalcy. Many other countries and oil companies have implemented fuel efficiency standards, championed diversification of energy sources, attempted to increase domestic oil output, pursued overseas upstream and downstream investments, acquired equity oil, strengthened relationships with oil-producing states, offered loans-for-oil, and diversified transportation routes. The scale of China's loans-for-oil from 2007–2017 is exceptional, as is the level of state support that the Chinese government and policy banks provided for Chinese NOCs' overseas acquisitions, especially before the 2014 oil price crash. These are nonetheless quantitative, not qualitative differences in behavior. It is also notable that China's NOCs have regularly sold most of their equity oil and loan repayment oil wherever it can generate the greatest profits, rather than shipping it back to China, suggesting a strong market orientation, instead of an exclusively mercantilist one. Additionally, over time, Chinese NOCs have become increasingly profit-oriented and, relatedly, more risk-averse, in their overseas acquisitions. In short, they now behave very much like other international oil companies.

China's construction of a domestic tanker fleet is unusual, as is its establishment of an alternative clearing and settlement, and financial messaging system. However, these activities are also unsurprising for a country that consumes very large volumes of oil, depends on imports for over 70% of its oil consumption, is ruled by a regime whose legitimacy depends on strong economic growth, has experienced a history of deliberate oil supply shutoffs by producer states, and believes that it may be in the cross-hairs of the international system's leading actor. Under these circumstances, robust efforts to enhance national energy security, focused on neutralizing the

[80] Luc Cohen and Marianna Parraga, "Special Report: How China got shipments of Venezuelan oil despite U.S. sanctions," Reuters (June 12, 2020), https://www.reuters.com/article/us-venezuela-oil-deals-specialreport/special-report-how-china-got-shipments-of-venezuelan-oil-despite-u-s-sanctions-idUSKBN23J1N1; Lucia Kassai, "Doctored and rebranded oil blacklisted by U.S. winds up in China," *Bloomberg* (January 21, 2021), https://www.bloomberg.com/news/articles/2021-01-22/china-imports-oil-doctored-to-skirt-u-s-sanctions-on-venezuela; Jonathan Saul, Chen Aizhu, and Marianna Parraga, "China's CCPC takes centre stage in Iran, Venezuela oil trade-sources," Reuters (July 22, 2021), https://www.reuters.com/business/energy/exclusive-chinas-ccpc-takes-centre-stage-iran-venezuela-oil-trade-sources-2021-07-22/.

[81] Saul et al., "China's CCPC takes centre stage in Iran, Venezuela oil trade-sources."

domains in which the United States is most dominant—naval power and financial transactions—are national strategic imperatives. The United States should therefore not assume that China's oil-related activities are an indication of malign intent. They are hedging strategies, implemented by a vulnerable state.

For this reason, the United States' energy engagements with China should focus on enhancing the country's energy security, rather than undermining it. This could include helping China develop its shale oil and gas resources, as was attempted under the Obama administration. It might include promoting China's continued diversification of its energy sources, especially in ways that decrease its reliance on sea-borne oil shipments. It could also include further integration of China into the IEA's governance structure, especially for decisions about SPR releases. Most importantly, the United States should refrain from explicitly or implicitly threatening China's oil access. As observed in the historical cases of Japan in 1941 and Iraq in 1990, rising powers that believe they are facing existential threats to their oil imports or exports can respond very aggressively.[82] Even if China does not yet feel backed into a corner, further U.S. pressure will accelerate the state's efforts to develop alternative means of processing energy transactions and strengthen its relationships with oil producers that are hostile to the United States. In short, aggressive U.S. action is likely to undermine the remaining oil weapons that the United States has at its disposal against China.

The greatest obstacle to U.S. restraint in this area is China's continued oil engagements with countries that the United States has sanctioned: currently, Russia, Venezuela, and Iran. From Chinese actors' perspective, American and multilateral sanctions constitute an opportunity; they can pick up resources, investments, and influence on the cheap, since oil producers have few other partners to turn to. Collaborating with sanctioned countries is therefore a rational activity—and a legal one, from Beijing's standpoint. From the United States' perspective, this engagement appears to undermine U.S. sanctions efforts. As a result, there seem to be strong incentives for the United States to crack down hard on China's activities. However, before taking action, it is important to accurately assess the significance of the lifeline that China's oil engagements are actually providing to sanctioned states. If impeding these activities will not change the targeted states' behavior—a distinct possibility, given international sanctions' uneven track record—then strongly enforcing secondary sanctions will merely antagonize Chinese actors, without advancing U.S. foreign policy goals.

The United States can also endeavor to maintain its own positive relationships with oil-exporting states. The United States remains many producers' preferred security partner, on the basis of its military capabilities and technological expertise. The United States' diplomatic clout, which appears to be rising as a result of Russia's invasion of Ukraine, will also reinforce its status as a preferred partner. The United States will have greater difficulty competing with China in the economic domain, given the latter's expansive trade ties and the amount of financing that it deploys overseas, especially in developing countries. The United States can nonetheless play to its comparative advantages through initiatives like the Build Back Better World (B3W).

[82] Emily Meierding, *The Oil Wars Myth: Petroleum and the Causes of International Conflict* (Ithaca, NY: Cornell University Press, 2020).

Table 1: China's Top-10 Crude Oil Suppliers (2021)[83]

Supplier	Volume (MMbpd)	Import share
Saudi Arabia	1.8	17.1%
Russia	1.6	15.5%
Iraq	1.1	10.5%
Oman	.9	8.7%
Angola	.8	7.6%
UAE	.6	6.2%
Brazil	.6	5.9%
Kuwait	.6	5.9%
Malaysia	.4	3.6%
Norway	.3	2.6%

[83] Import data are from China's General Administration of Customs, reported in Oceana Zhou, "CHINA DATA: Iranian crude inflows seen in Dec for first time in 2021, at 62,000 b/d," S&P Global (January 20, 2022), https://www.spglobal.com/commodity-insights/en/market-insights/latest-news/oil/012022-china-data-iranian-crude-inflows-seen-in-dec-for-first-time-in-2021-at-62000-bd; Oceana Zhou and Wendy Wells, "China's 2020 crude imports from US surge 211% to 396,000 b/d, valued at $6.28 bil," S&P Global (January 20, 2021), https://www.spglobal.com/commodity-insights/en/market-insights/latest-news/oil/012021-china-data-2020-crude-imports-from-us-surge-211-to-396000-bd-valued-at-628-bil.