CHAPTER NINE

Pipelines versus Sea Lanes: Challenges and Opportunities for Securing Energy Resources

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Introduction

Chinese oil demand, growing rapidly, has reached 8.5 million barrels per day (mbtd) even amid the global recession. China became a net oil importer in 1993 and will likely become a net gasoline importer by the end of 2009. While still a very significant oil producer, China is now the world's second-largest oil user. It now imports half of its crude oil, with imports reaching a record 4.6 million bpd in July 2009. Seaborne imports, which overland pipelines will not reduce, constitute more than 80 percent of this total. At present, therefore, 40 percent of China's oil comes by sea.[2]

Chinese security analysts and policy makers worry about their nation's "excessive" reliance on seaborne oil shipments. Many believe that by investing in pipelines to deliver oil from neighboring oil producers and building additional lines to "bypass" the Malacca Strait, China can protect its oil imports from possible interdiction during a conflict.

A robust internal debate is being waged within China at multiple levels and across a number of disciplines regarding how to ensure access to oil supplies. At stake is the extent to which China should cooperate with international economic institutions versus seeking unilateral military solutions. Also at stake is: should China develop as a maritime versus continental power, or should it focus on defending against state, as opposed to non-state, actors? Despite this diversity of opinion, a wide variety of influential Chinese experts, including scholars, policy analysts, and members of the military, believe that the United States can sever China's seaborne energy supplies at will and in a crisis might well choose to do so. It is widely claimed, for

instance, that "whoever controls the Strait of Malacca effectively grips China's strategic energy passage, and can threaten China's energy security at any time."[3] Such views are widely cited to justify pipeline construction.

Yet as this chapter will demonstrate, China's overland oil supply plans may largely be unrealistic, driven by a combination of a misunderstanding of global oil market mechanisms, incomplete assessment of security issues, and the lobbying by local commercial and political interests of a massively overtaxed national energy policy-making apparatus. Some projects—such as the planned line from Russia and an existing line from Kazakhstan—are indeed economically viable overland projects that will bring at least limited diversity to China's oil supplies. Others, however, like the proposed lines through Burma and Pakistan, make much less economic and security sense.

In the end, pipelines are not likely to increase Chinese oil import security in quantitative terms, because the additional volumes they bring in will be overwhelmed by China's demand growth; the country's net reliance on seaborne oil imports will grow over time, pipelines notwithstanding. If we estimate Chinese oil-import demand growth conservatively at an average of 3 percent annually over the next five years, Beijing's imports will still increase by a total of roughly 500,000 barrels a day—the combined volume that the pipelines from Russia and Kazakhstan will likely be able to bring in by 2013. Of that total, the 300,000 bpd from Russia will not be "new" overland supplies, but rather, a transfer from rail to pipe as the crude volumes previously carried into China by rail are moved into the pipeline instead. The proposed Burma–China and Pakistan–China lines are simply "shortcut" routes, not true overland supply routes; oil will still have to be carried by sea in tankers to the pipelines' starting points.

A total figure for these two sources of 500,000 bbl/day may seem low, but it reflects the reality that China's neighbors have limited capacity to offset its seaborne oil imports. Their reserves are limited in key potential supply areas (e.g., eastern Siberia), and politics further complicate the picture. Kazakhstan, for its part, is pursuing a three-vector oil export policy. It entails shipping oil through the Caspian Pipeline Consortium line to the Russian Black Sea port of Novorossisk; to China through the Atasu–Alashankou line; and, soon, through the $1.5 billion Kazakhstan Caspian Pipeline System to a port on the Caspian Sea, from which it will be carried by tanker to Azerbaijan, there to enter the Baku–Tbilisi–Ceyhan pipeline. The third route may ultimately be able to pump up to fifty-six million tons a year of oil.[4]

Russia, meanwhile, may prioritize oil supplies to the East Siberia–Pacific pipeline, feeding the port of Kozmino, on the Sea of Japan near Nakhodka;

from there it can be exported to Japan, South Korea, China, the United States, and other Pacific Basin consumers, not China alone. A spur pipeline from Russia to China is now under construction and is scheduled to enter service in the second half of 2010.

Pipelines are more vulnerable to sabotage and military interdiction than seaborne shipping is. Projects designed to help seaborne shipments bypass choke points (e.g., the Burma–China pipeline) are expensive, can be blockaded, and are vulnerable to weather and other physical disruptions. Seaborne shipping, by contrast, is very flexible and can be routed around disruptions. For this reason, pipeline plans predicated on the idea that bypassing the Strait of Malacca increases oil security are fundamentally flawed. Even if Malacca were completely sealed off by blockade or accident, tankers could be diverted through the Sunda, Lombok, or other passages with little disruption in deliveries and at an additional cost of as little as one or two dollars per barrel. Some Chinese analysts now share this conclusion, one noting that "SLOC security is much more important than pipeline transport lines."[5]

Finally, as Figure 9.1 demonstrates, pipelines are far more expensive than tankers in terms of what must be spent to move a given volume of oil a given distance. Certain pipelines—such as the Pakistan, and possibly the Burma, projects—will likely require substantial subsidies if they are to compete with seaborne imports. Much of the cost of supporting such uneconomical projects, which are driven more by politics than profits, will fall on the Chinese government, which already faces substantial energy-subsidy costs as well as the demands of its new four-trillion-RMB stimulus package, of which more than 25 percent may come from central government funds.

Mode	Route	Distance (km)	Cost (US$/bbl)	cost/US$/bbl/1000 km
Tanker[a]	Ras Tanura–Ningbo	7000	1.25	0.18
Pipeline[b]	Angarsk–Daqing	3200	2.41	0.75
Train[c]	Angarsk–Manzhouli	1000	7.19	7.19

Notes:
a. VLCC at $150k/day charter, 2 million bbl/day cargo.
b. Transneft tariff of 15.41 rubles/ton/100 km.
c. Based on weighted average of Russian Railway's oil tariffs to Zabaikalsk and Naushki.

Figure 9.1 Sample Oil Transport Costs to China

The first section of this chapter will examine operational and prospective pipelines oriented toward China. The projects are arranged chronologically in the order that they have, will, or might become operational. At present, the Kazakhstan–China pipeline is operating at partial capacity, a Russia–China line could become operational within eighteen months, the China–Burma pipeline project is now under construction, and a China–Pakistan pipeline remains entirely aspirational.

The second section will examine Chinese views of how pipelines might enhance China's oil security and assess the potential for, and utility and disadvantages of, a pipeline-centric oil-security strategy. The final, and concluding, section will suggest how China might enhance its energy security at lower financial and diplomatic cost.

Pipeline Options

In the outline that follows of current and possible pipeline projects, fear that non-state actors or foreign navies could interdict oil shipments to China will be prominent as a factor that impels the national government to support overland supply projects. Yet it should be noted at the outset that provincial and local level officials appear to be playing on that fear, the sense of oil insecurity among high-level decision makers, in order to secure projects that could create substantial local investment and jobs.

Indeed, if one averages labor-demand numbers for sample refinery expansion and new-build projects in the West and the developing world, the proposed 200,000-bbl/day refinery near Kunming could create ten thousand or more construction and engineering jobs while it is being built and at least several hundred permanent positions to run the plant thereafter. Building the pipeline itself and associated storage and pumping facilities would create additional temporary and permanent jobs.

Pipeline and associated refinery construction brings local governments tangible benefits; such local interests must be differentiated from overall Chinese national energy-security interests, which often diverge. In this sense, significant portions of China's push for pipelines mirror the "Going Out" oil security strategy, in which the state oil companies cultivated fears of oil insecurity in Beijing and then turned around and wrapped themselves in the flag as they sought overseas oil projects. These projects have boosted their incomes and reserves but have done little to enhance China's oil security on the national level; these firms have even damaged China's image abroad, through their dealings with Sudan and other pariah states.

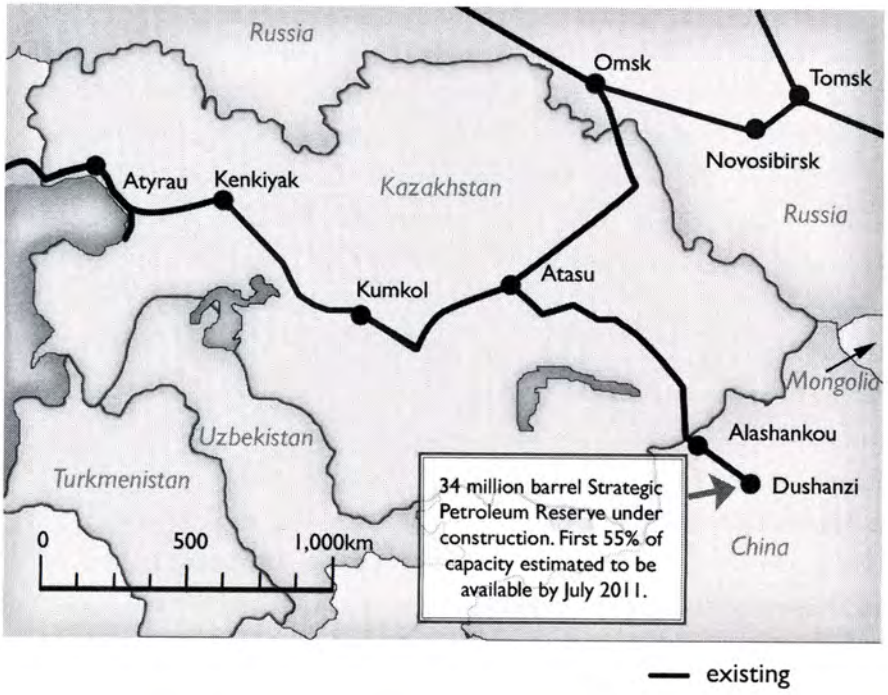
Kazakhstan-China Pipeline

The Kazakhstan–China pipeline is currently the PRC's only operational overland oil pipeline project. China previously imported Kazakh crude by rail through the entry port of Alashankou, Xinjiang Province. To move larger volumes and lower shipping prices, however, both sides desired a pipeline. In September 1997, the Chinese and Kazakh governments signed the General Agreement on the Project of Oil Deposits Development and Pipeline Construction.[6] The initial stage of the line was built from Kenkiyak to Atyrau during 2002–2004, the second stage during 2004–2006 from Atyrau to the Chinese border at Alashankou. The China National Petroleum Corporation (CNPC) funded the construction cost of $806 million for the thousand-km leg from Atasu to Alashankou, as well as a 252-km extension from Alashankou to the refinery at Dushanzi, also in Xinjiang.[7]

The pipeline is operated by a joint stock company called MunaiTas North-West Pipeline Company CJSC, which is backed by China National Petroleum Corporation and KazMunaiGaz. Its current capacity is approximately 200,000 bbl/day. In 2008, however, China imported an average of only 115,000 bpd of crude oil from Kazakhstan by pipeline and rail.[8] In December 2007, the pipeline carried an average of 102,600 bpd—only about half of its total capacity—due to pricing disputes and problems with supply availability that created gaps, only partially filled with Russian crude from western Siberia. Figure 9.2a–9.2b shows the current pipeline and future planned additions.

Now that the segment from Kemkiyak to Kumkol is completed, Kazakhstan's Caspian Sea production (in the Tengiz and Kashagan fields) can enter a pipeline network reaching deep into China. In August 2007, CNPC opened a 400,000-bbl/day capacity crude oil pipeline from Shanshan in Xinjiang to the refining center at Lanzhou, in Gansu Province.[9] This line, and a parallel oil products pipeline, will allow crude and refined products from Xinjiang to be shipped to Lanzhou and then into CNPC's existing network pipeline network serving central and southwestern China. This will permit Kazakh crude to penetrate deep into China, because as crude oil and products from the Dushanzi refinery can be shipped farther east, boosting oil supplies to the inland regions that will be a focus of Beijing's development program, meant to reduce regional economic disparities. The Kazakhstan–China pipeline will also be integrated with a new strategic petroleum reserve site under construction near Urumqi, which will store fifty-one million barrels of crude once completed.[10] The line could reach a maximum throughput

(a)



(b)

Figure 9.2a and 9.2b Kazakhstan–China Oil Pipeline

capacity of 400,000 bbl/day in 2011, if its final stage, from Kenkiyak to Kumkol, is finished and reaches its full capacity at that time.

While this pipeline project originated in part due to oil-supply security concerns, it is easily justifiable as the most economic way to bring Kazakh

crude oil into the western Chinese market. China wins, because it gains what it sees as "secure" oil supplies; Kazakhstan gains a crude export route independent of Russia and a new market for its oil; and Russian companies gain an additional route for getting West Siberian crude oil production into the Chinese market.

A Russia–China Pipeline

China views Russia as a rich and secure oil source capable of delivering crude overland, far from US Navy–patrolled sea routes. China and Russia first began discussing a pipeline in 1994. Yukos unveiled plans in 2001 to construct a pipeline from Angarsk to Daqing. These plans were suspended during the Kremlin's 2004–2007 assault on Yukos and have been superseded by Transneft's massive East Siberia–Pacific Ocean (ESPO) pipeline. The ESPO's first section, from Taishet to Skovorodino, is complete and can now pump crude, although as of September 2009 the line was running in reverse, moving crude into the existing West Siberian pipeline network. The second half of the line runs 2,100 km from Skovorodino to Nakhodka, on the Sea of Japan, and the entire line may not be fully operational until 2025.[11] Figure 9.3 shows oil pipelines existing, under construction, and planned from Russia.

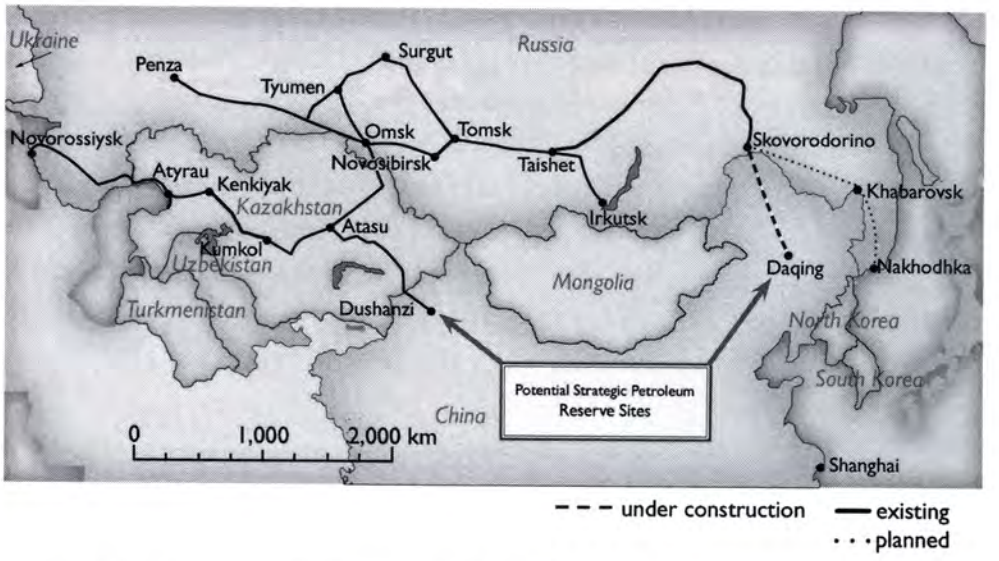


Figure 9.3 Russian and Eurasian Oil Pipelines

In the meantime, China has been importing increasing volumes of crude from Russia by rail (as well as smaller volumes through the Kazakhstan–China pipeline). In 2007 and 2008, China imported an average of more than 300,000 bbl/day of Russian crude.[12] Shipping crude by rail can cost twice as much as shipping it by pipeline, however.[13] Driven by this reality and by the fact that regional rail infrastructure likely cannot handle China's ultimately desired crude volumes, CNPC and Sinopec (the primary Chinese buyers of Russian crude) pushed for construction of a spur pipeline from Skovorodino to Daqing, in Heilongjiang Province. The entire spur line will run roughly a thousand km (70 km on the Russian side and 965 km on the Chinese side) and will cost around $436 million.[14] The Chinese side is financing the majority of the spur's length, as it lies largely on Chinese soil. Initial capacity is slated to be fifteen million tons per year (300,000 bbl/day), with the possibility of later expansion to thirty million tons annually (600,000 bbl/day).[15]

While the China–Russia pipeline deal is presently on track, there are still a number of potential friction points. Rosneft may still worry that near- and medium-term production from eastern Siberia cannot fill the spur line and ensure adequate supplies to the new 400,000 bbl/day refinery that the company plans to build near the Pacific port of Nakhodka.

Perhaps of greatest concern to Beijing, Moscow has and will have options to divert oil from China if it so desires. While the initial capacity of Russia's line to China will be 300,000 bbl/day, and could rise to 600,000 bbl/day, an alternative pipeline to the Pacific coast (perhaps available within ten years; and spurred by potential 400,000 bbl/day Rosneft refinery on the Pacific Coast near Nakhodka) could ultimately offer Moscow oil diversion alternatives that it might possibly use to pressure China. Russia can also move sufficient volumes of crude oil by rail to the Pacific Ocean to allow it to cut off a substantial portion of pipeline exports to China in the event of a dispute. Transneft does not operate under the normal economic incentives US and European pipeline operators do, meaning that if ordered by the Kremlin, the company will favor achieving political objectives over the need to keep capacity utilization high to maximize earnings and please shareholders.

A Burma–China Pipeline

The proposed Burma–China oil pipeline aims to reduce China's reliance on oil shipped through the Malacca Strait. The idea of the pipeline was first articulated publicly in 2004 by Yunnan University professor Yang Xiaohui. Yang argued that given Burma and Southeast Asia's historical collective role

as a "backdoor" supply line for China, a China–Burma line would reduce reliance on Malacca and help secure Chinese oil imports.[16]

National and local economic development interests then sought additional backing for the project. The Yunnan provincial government subsequently professed its support, and in early 2006 the Sino–Burma pipeline emerged on the national radar screen when the National Development and Reform Commission's (NDRC's) 2005 "Refining Industry Development Overview" named it one of four key oil import channels.[17] Figure 9.4 shows the proposed pipeline route and facilities that might be associated with the project.

Beijing will likely finance the bulk of the line's construction costs, in addition to supporting infrastructure. By 2010 CNPC may construct an oil wharf capable of berthing tankers of 300,000 deadweight tonnage, as well as storage facilities capable of holding more than four million barrels of crude.[18] The project will be a key element of China's plans to promote inland economic development, as its southwest provinces often have difficulty receiving stable fuel supplies from the refining centers at Lanzhou and Guangzhou.[19]

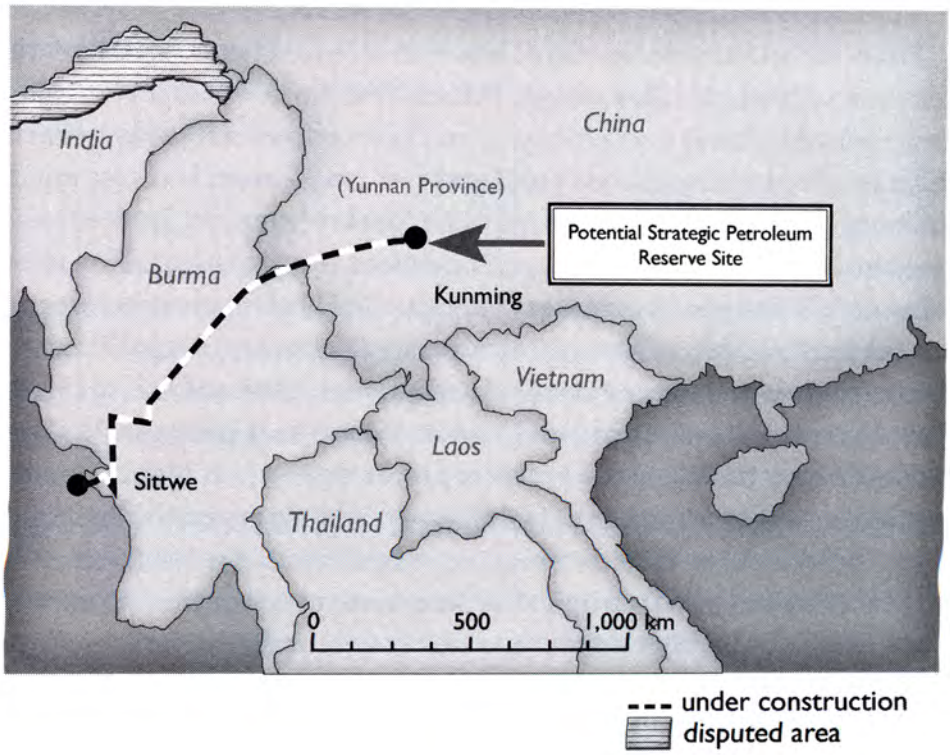


Figure 9.4 Burma–China Oil Pipeline

One proposal includes constructing a 400,000 bbl/day refinery and a colocated million-ton-per-year ethylene plant near Kunming, Yunnan Province.[20] Chongqing Municipality, with the support of Sinopec, has also proposed extending the line to Chongqing and building refining facilities there.[21] The pipeline's initial capacity is slated to be 200,000 bbl/day, but if it is expanded to 300,000 or 400,000 bbl/day both Kunming and Chongqing could build refineries of significant size.

From the economic perspective, a China–Burma pipeline may make sense, as the costs of piping crude to inland refineries in southwest China and then distributing refined products through the expanding pipeline network likely approximate those of shipping crude by tanker to southeast China, refining it there, and then shipping products by pipe or rail to southwest Chinese consumers. The Sino–Burma pipeline would also provide an impetus for enhancing crude and product supplies by building more regional refineries and expanding the area's product pipeline networks. Oil-product demand in southwest China is forecast to grow by 8 percent annually from now until 2010, reaching yearly consumption of 22.56 million tons, 21.81 million of which will have to be imported from other areas unless southwest China's refining capacity expands.[22] Expanding regional oil-processing capacity will also create significant employment, through construction work and, later, for manning the facilities.

From the security perspective, however, a Sino–Burma pipeline largely fails the test. It would allow around 200,000 bbl/day of oil imports to bypass the Malacca Strait, yet it would be exposed to major security risks in Burma, which is ruled by a capricious junta and still struggles with ethnic separatism in regions through which the pipeline would likely pass. Separatism still smolders in Burma's hinterlands, as evidenced by the August 2009 clashes in Burma's Kokang region that sent at least 30,000 refugees streaming into Yunnan Province. Transit countries hosting pipelines gain significant strategic leverage, as manifested in calculated strategic moves or in disputes over other factors, such as pricing and transit payments. China would also be seen as directly financing the Burmese junta's rule and its repression of the population, since an operational oil line would likely generate direct transit payments of at least fourteen million dollars a year. Furthermore, in the event of conflict, the oil port/pipeline terminus at Sittwe would be a concentrated target set, highly vulnerable to blockade or precision strike.

A proposed canal across Thailand's Kra Isthmus, now stalled, appears unrealistic. Zhang Xuegang, a scholar at the China Institutes of Contemporary International Relations, maintains optimistically that it "could . . . provide a strategic seaway to the Chinese navy" through which "fleets could . . .

more easily protect the nearby sea-lanes and gain access to the Indian Ocean."[23] But a canal across the isthmus could cost twenty billion dollars or more to build and, like the Burma–China pipeline, would simply concentrate the target set for potential blockaders.

A Pakistan–China Pipeline?

Chinese analysts have also suggested the possibility of building an "energy corridor," including oil pipelines, from Pakistan into western China to diversify China's oil import routes and avoid the Malacca Strait.[24] Yet Chinese analysts increasingly recognize that geographic and security barriers render a Pakistan–China oil pipeline unfeasible in the near and medium terms.[25]

These Chinese analysts express grave reservations about the security situation in Pakistan in light of the country's perpetual violence and rising political instability, along with the rise of Islamic fundamentalism and terrorist attacks against outsiders. Indeed, Chinese workers have been kidnapped and killed in at least three separate incidents in western and northwestern Pakistan, the regions that would be traversed by a Pakistan–China pipeline.[26] In addition to security problems, there would also be serious financial barriers, since oil transport costs could run to at least ten dollars a barrel to achieve payout plus a 10 percent rate of return.

Even at prices above a hundred dollars a barrel, a transport cost of nine to ten dollars a barrel is very high compared to that of seaborne shipping. If a Chinese oil company chose to move 200,000 bbl/day of crude through the Burma–China pipeline and 250,000 bbl/day through the Pakistan–China line, it could lose roughly a billion dollars a year compared to what it would have earned moving the oil by sea to eastern China. Beijing would likely have to subsidize such operations, either directly or indirectly. A billion dollars is roughly 6.8 billion RMB at today's exchange rates and exceeds by 30 percent the Chinese government's total of 4.9 billion RMB in subsidy payments to refiners in 2007.

If the Chinese government allowed fuel to be sold at market prices, companies might have a much higher incentive to build pipelines into remote areas like western and southwestern China; regional fuel deficits could allow them to charge premium rates for fuels produced by refineries at the end of the pipeline. Under these conditions, pipeline plans might be more financially attractive than they are now, with Chinese oil product prices lagging international market prices by 15–20 percent during times of high crude oil prices, such as those of mid-summer 2008.

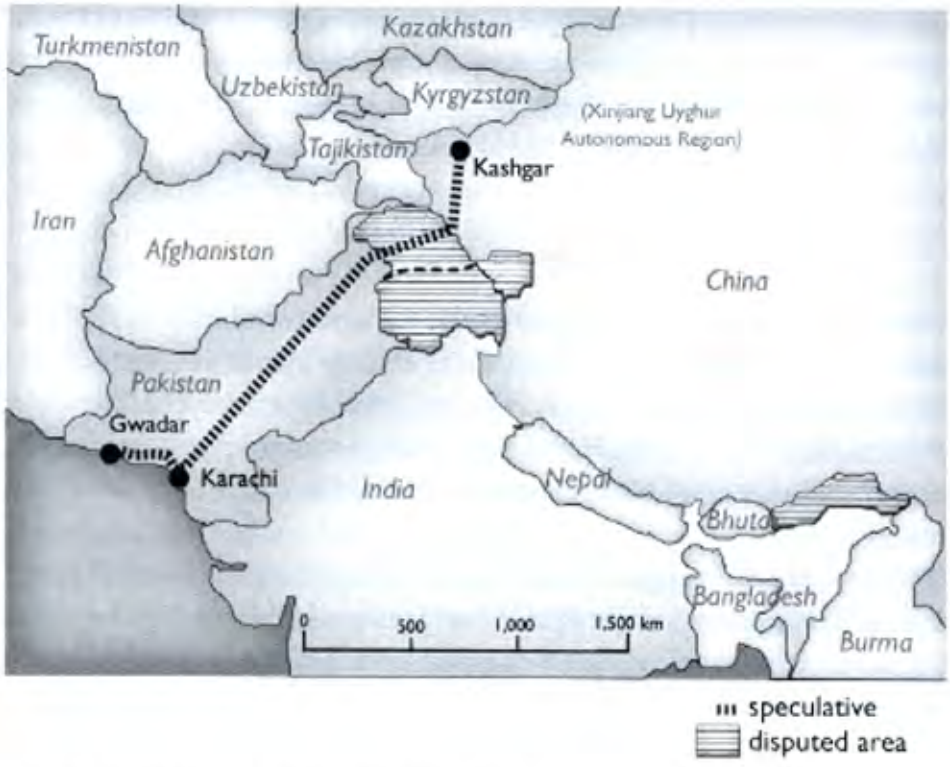


Figure 9. 5 Pakistan–China Oil Pipeline

Geography and cost alone would pose major challenges, however, even under the best of conditions. The pipeline would have to be constructed in some of the world's most challenging terrain and lift oil from sea level at Gwadar up to the 15,400-foot-high Khunjerab Pass, over 6,000 feet higher than the world's highest existing pipeline. This would require massive pumping power and steady electrical supplies in remote areas vulnerable to insurgent activity. Figure 9.5 shows the currently proposed route of a Pakistan–China oil pipeline.

Despite the major challenges, Chinese strategists and policy makers appear enthusiastic about the latent strategic value of the new port at Gwadar, in western Pakistan along the Arabian Sea, a likely starting point for any Pakistan–China oil pipeline. Yet barring a major shift by the Chinese side, it appears that the main impetus for establishing an "energy corridor" is coming from the Pakistani side.[27] President Pervez Musharraf pushed the idea in June 2006 and raised the issue again during talks with President Hu Jintao during the April 2008 Boao Forum.[28]

Disadvantages

The enthusiasm with which some Chinese analysts contemplate these pipeline projects is based, as we have seen, on a conviction that they will reduce China's reliance on seaborne oil imports, which, they fear, may be easily interdicted in time of crisis. Too many of the (relatively few) analyses of these issues produced thus far have, however, failed to consider the physical and economic realities of oil transshipment, which greatly complicates seaborne oil blockade operations.

Transport and Construction Costs: High

Importing oil into southwest China through a Burma–China pipeline rather than through an expanded pipe network serving existing oil ports at Maoming and elsewhere in South China will be very costly. Pipelines are expensive to build in frontier regions like Burma, and new deepwater oil-import jetties and associated storage facilities will have to be constructed at the pipeline start point on the Burmese coast. Pipeline shipping will also be very expensive relative to maritime shipping, as pumping oil through the planned Burmese line could cost more than four dollars a barrel, assuming that CNPC seeks at least a 10 percent internal rate of return in operating the line.

In contrast, shipping oil by sea from the Persian Gulf to South China can cost as little as US $1.00 per barrel for transport costs, and piping it to interior refineries in areas likely to be served by the Burma–China line would cost an additional two or three dollars a barrel. This represents a substantial cost savings over moving crude through the proposed Burma–China line to refineries in Yunnan. To lower "stated" project costs, the NDRC might subsidize project financing or take other measures to reward CNPC, any of which would cost the Chinese government more than if it relied on seaborne imports to South China for supplying pipelines to the interior.

At today's new-build prices for very large crude carriers (VLCCs), roughly $140 million per vessel, one could build fourteen ships for the two-billion-dollar estimated price of the Burma–China pipeline. Given that each VLCC carries roughly two million barrels of crude and that the round-trip from the Persian Gulf to Southeast China takes thirty total days, fourteen additional supertankers could deliver an average of 666,000 bbl/day of crude, versus 200,000 bbl/day for the planned pipeline. The cost disparity between maritime and pipeline shipping would be even greater for the Pakistan–China

line, which could cost up to 10 dollars to move a barrel of oil to Ürümchi in western China. After reaching Ürümchi, the oil would have to be piped an additional three or four thousand km to reach major east coast demand centers, meaning that transport costs from the Persian Gulf to Chinese end users could exceed fifteen dollars a barrel, as opposed to closer to US $2.00/bbl for oil transported from the Gulf to Eastern China on supertankers as of March 2009 (the peak equivalent approached $4–5/bbl in July 2008; during this time, however, pipeline operators raised rates as well).[29]

Demand in Pipeline Terminus Region: Low

A Burma–China pipeline would not be feeding into a major demand center. One might argue that building pipelines into southwest China could ensure stable oil supplies in the region, which lags coastal China in economic growth and does not have access to a pipeline network so developed. Driven by earthquake reconstruction in Sichuan, the rapid development of Chongqing, and other regional growth, oil product demand in interior Southwest China is on the upswing and will continue to grow strongly as the government promotes further growth of domestic consumption. Building more local refining capacity and expanding the domestic pipeline system into underserved areas would be a safer and cheaper way of ensuring oil and product supplies while still creating jobs.

Physical Security Risks: High

Pipelines face substantial physical security risks. In fact, with the Burma and Pakistan pipelines, there would be a twofold vulnerability. First, oil would have to be brought by sea to the pipeline terminus via long sea-lanes, concentrating the target set for an enemy force. Then, it would have to be pumped through a long line traversing remote terrain in potentially insecure areas.

Pipelines are typically more vulnerable to sustained disruptions than are ships. Tankers at sea can be rerouted, while pipelines are fixed links between a producer and consumer. Pipelines offer a wealth of targeting options to non-state actors and opposing militaries.

During an interstate conflict, however, the dynamics would be quite different. Modern military forces equipped with precision-guided munitions could target pump stations and other vital points and rapidly disable pipelines carrying oil or gas into China. A maritime blockade, on the other hand, would be extremely difficult to conduct effectively. Oil cargoes in

normal commerce may change ownership ten or more times while a ship is at sea, which reduces the effectiveness of a distant blockade since it is challenging to identify a cargo's final destination. Moreover, if implementing a close blockade of the Chinese coast would solve the destination identification problem, it would bring the blockader's forces within range of numerous and capable Chinese access-denial systems, including aircraft, supersonic anti-ship cruise missiles, mines, and submarines.[30] In short, the flexibility of modern maritime oil transport confers far greater oil-supply security benefits than would pipelines supplied by sea or traversing unstable regions.

An Indicator of China's Overall Security Approach?

Pipeline development will likely be insufficient to offset China's rising seaborne oil import demand. A simple comparison of planned oil pipeline supply additions to China's likely overall demand growth in coming years bears this out, as demand growth will very likely outstrip overland supply additions under even the most optimistic scenarios.

Some projects (e.g., the Burma line) make sense from local and corporate perspectives but not that of national oil security. The Burma line will be expensive to build. The numbers can be "massaged" to ensure that officially stated project costs remain near the stated figure of two billion dollars, but the real costs could be much higher. Also, given Burma's high political risk and the fact that placing a pipeline terminus along the poorly defensible Burmese coast might invite interdiction during wartime, relying on shipments through the Burma line would not enhance China's oil security.

A more sensible and more secure approach might entail building a more comprehensive pipe grid connecting southern Chinese oil ports in Guangdong to the interior southwest provinces. Construction costs will likely be similar (possibly lower, without the political and security risks inherent in Burma). In addition, the immediate and long-term economic benefits could be high, since enhancing China's internal oil and products transportation grid will boost and stabilize fuel supplies to Guangxi and other relatively impoverished inland provinces in which Beijing hopes to catalyze development.

Other lines are simply unviable from nearly all perspectives. The Pakistan line, with its formidable geography, regional instability, and absence of a major demand center at its terminus exemplifies this chimera. That is not to say that there is no logical role for pipelines in China's oil import portfolio. Some pipeline projects are driven by geographic reality (e.g., the line from

Kazakhstan and the planned line from Russia). The fields filling these lines are so far from the sea that an overland line is the most effective way to transport their oil into the Chinese market. Pipelines move oil much more cheaply than rail can. But, as happened in the early years of China's "Going Out" strategy, special interests are apparently playing the security card to benefit themselves in the face of more rational, comprehensive calculations of national interest.

Conclusion

A continued quest for higher overland oil deliveries will not enhance China's oil supply security substantially but will represent a barometer of Chinese trust in global oil markets and maritime oil transport security. As this chapter has demonstrated, however, Chinese decision makers will ultimately have to face the fact that their nation's dependence on seaborne oil imports is likely only to increase. This reality and China's other growing overseas interests have already stimulated debate concerning the extent to which China should develop a blue-water navy to defend its commerce on the high seas.

Before Beijing commits firmly to such a substantial investment, which is likely to have tremendous geopolitical ramifications—some of them likely to involve counterbalancing by regional nations discomfited by such ambitious Chinese naval growth—it would be wise to see if China and the United States can reach a better understanding of their respective roles in the Asia-Pacific as well as work to clarify areas ripe for mutually beneficial energy security cooperation. Such strategic dialogue will be difficult to carry out, and it would not in itself resolve the substantial differences in national interests. But the economic interdependence between the two nations and the potential costs of miscommunication are so high that repeated efforts must be made.

This is a critical time in China's naval development, and the events of the next few years will have disproportionate influence. A good first step would be to encourage Beijing to join two related international organizations. Washington should take the lead in bringing Beijing into the International Renewable Energy Agency (IRENA); as well as the International Energy Agency (IEA), as it meets the requirement to store 90 days of import reserves, so that SPR inventories can be tracked and reported.

The October 2007 issuance of a new maritime strategy by the US sea services suggests that Washington is eager to support cooperative, collective approaches to maritime energy security. Discussion between China, the

United States, and other key energy market stakeholders may facilitate adoption of energy security measures far more effective and mutually beneficial than expensive, limited, and vulnerable pipelines.

Notes

1 The ideas expressed in this chapter are those of the authors alone. They do not represent the official policies or estimates of their respective employers. Unless otherwise specified, calculations were performed by the authors, and are available upon request.
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