Pipe dream

China seeks land and sea energy security

Beijing is pursuing a two-pronged strategy to secure its energy, using the navy to protect maritime supply and building new pipelines. ***Andrew Erickson*** *examines whether this approach will be sufficient for its expected future increase in demand for oil.*

KEY POINTS

- China is seeking to reduce its dependence on seaborne oil shipments.
- This involves the construction of new pipelines, some of which are more economically viable than others.
- However, this will be insufficient to supply China's expected growth in demand, leaving it dependent on sea shipments.

This article was first available online at jir.janes.com on 16 July 2009.

China's growing reliance on seaborne oil shipments has led to an increasing willingness to secure vulnerabilities to its sea lines of communication. As a result, the People's Liberation Army Navy (PLAN) has developed a major naval base at Sanya on the southern island of Hainan, and sent a two-destroyer mission to the Gulf of Aden in January to protect its shipping.

Concerned about its ability to ensure maritime energy security in the near term, Beijing is also working simultaneously to secure its oil supplies through diversification of supply routes. By delivering oil from neighbouring producers such as Russia and Kazakhstan and building additional pipelines to bypass the Strait of Malacca, China believes it can protect its oil imports from possible interdiction during a conflict. At present, a Kazakhstan-China pipeline is operational; a Russia-China line could become operational within 18 months; a China-Myanmar pipeline project is slated to begin construction in 2009; and a China-Pakistan pipeline remains entirely aspirational.

Economic viability

Two pipelines appear to be viable projects that will improve China's energy security. The first is the Kazakhstan-China pipeline, which is currently China's only operational overland oil pipeline. The initial stage of the line was built from Atyrau to Kenkiyak during 2002-04 and a second stage during 2004-06 from Kumkol to the Chinese border at Alashankou, via a spur at Atasu. China National Petroleum Corporation (CNPC) funded the total construction cost of USD806 million for the 1,000 km leg from Atasu to Alashankou and also the cost of the 252 km extension from Alashankou to the refinery at Dushanzi in the Xinjiang Uighur Autonomous Region (XUAR).

This has effectively created two unconnected pipelines in different parts of Kazakhstan. However, CNPC expects to unite the two disparate lines with a further segment, currently being built from Kemkiyak to Kumkol and scheduled for completion by October 2009.

In addition, CNPC opened a 400,000 barrel per day (bpd) crude oil pipeline from Shanshan in the XUAR to the refining centre at Lanzhou in Gansu province in August 2007. This line will allow crude and refined products to be shipped into CNPC's existing pipeline network serving central and southwestern China.

The second viable project is the planned Russia-China pipeline, which will likely replace oil transhipment currently accomplished via rail. The first section of Russian company Transneft's massive East Siberia-Pacific Ocean (ESPO)

Current and planned oil pipelines are likely to be insufficient to meet China's rapidly expanding energy demand.

IHS Janes/David Playford/1350564

pipeline from Taishet to Skovorodino is complete and slated to begin full operation in the second half of 2009. The second half of the line runs 2,100 km from Skovorodino to Nakhodka on the Sea of Japan (East Sea) and the entire line may not be fully operational until 2015 or later.

Both of these pipelines are useful and secure projects for China. The Kazakh pipeline is easily the most economical way to bring Kazakh crude oil into the western Chinese market. China gains what it sees as secure oil supplies, while Kazakhstan gains a crude oil export route independent of Russia and a new market for its oil. For the Russian pipeline, Russian companies gain an additional route for selling west Siberian crude oil production into the Chinese market.

In addition, neither pipeline runs through very unstable areas. Despite a low-level separatist insurgency in the XUAR, pipelines have never been targeted and the heavy security force presence is sufficient to ensure security.

Myanmar-China pipeline

By contrast, the planned pipelines through Myanmar and Pakistan are likely to suffer from both economic and security constraints. Parallel oil and gas lines from the Myanmar coast into Yunnan are scheduled to begin construction later this year. From the economic perspective, a China-Myanmar pipeline may make sense, as the cost of piping crude to inland refineries in southwest China and then distributing refined products through the expanding pipeline network is likely to approximate the cost of shipping crude by tanker to southeast China, refining it there and then shipping products by pipe or rail to southwest Chinese consumers.

However, construction of a Myanmar-China pipeline will be costly. Pipelines are expensive to build in frontier regions, while new deepwater oil import jetties and associated storage facilities will have to be built at the pipeline start point on the Myanmar coast. Pipeline shipping will also be expensive relative to maritime shipping, as pumping oil through the planned pipeline could cost more than USD4 per barrel, assuming that CNPC wants to turn a 10 per cent profit on operating the line. By contrast, piping it from southern China to interior refineries in areas likely to be served by the Myanmar-China line would cost an additional USD2 to USD3 per barrel. At its cheapest, this represents an overall 25 per cent cost savings after original shipment costs over moving crude through the proposed Myanmar-China line.

Moreover, from the security perspective a Sino-Myanmar pipeline largely fails the test. It would be exposed to non-state and diplomatic security risks in Myanmar, whose junta still struggles with ethnic separatism in regions through which the pipeline would pass, such as Chin and Mon territory. Any entity financing the line, which would be likely to have a 20- to 25-year payback period, would (if state-sponsored) want either assurances that the insurgency risk was low, or preferential government support and other incentives. Alternatively, if capital came from outside lending, the lender would charge a much higher capital cost to compensate for the risk of attacks on the line. Higher interest rates would then require the line operators to either accept a longer payback period or pass on additional costs to, or require subsidies from, Beijing. The pipeline could also have geopolitical ramifications. China could be seen as directly financing the junta's rule, since an operational oil line is likely to generate direct transit payments of at least USD14 million per year. Furthermore, in the event of conflict, the oil port/pipeline terminus at Sittwe would be a concentrated target that would be highly vulnerable to blockade or precision strike.

Pakistan-China pipeline

A further pipeline project likely to be hampered by security concerns is one that would transit Pakistan, where geographic and security barriers may render it unfeasible in the medium term.

For oil to pass through a Pakistan-China line, it would first need to be shipped to the port at Gwadar. Subsequently, oil would need to be transported from sea level at Gwadar up to altitudes of 4,600 m in the Khunjerab Pass, requiring massive pumping power and steady electrical supplies in remote areas. These factors would likely raise the cost of moving oil to Ürümqi in the XUAR to at least USD9 per barrel. After reaching Ürümqi, the oil would have to be piped to major east coast demand centres, meaning that transport costs to Chinese end-users could exceed USD15 per barrel, as opposed to closer to USD2 per barrel for oil transported from the Persian Gulf to eastern China on supertankers, as of March 2009.

Like the Myanmar pipeline, the proposed Pakistani line would face a two-fold security vulnerability. First, oil must be brought by sea, thereby negating some of the perceived security benefits of using a pipeline. It must then be pumped through a long line traversing remote terrain in insecure areas. Pipelines offer a wealth of targeting options to non-state actors and opposing militaries. Destroying or damaging the pipeline itself is relatively simple, as an attacker simply needs to know where the line is, dig down to it if necessary, and use explosives to rupture it.

The potential threat to pipelines in Pakistan is demonstrated by the Sui natural gas pipeline. According to Jane's Terrorism and Insurgency Centre data, 20 attacks have occurred in 2009 alone on the Balochistan line. Although each breach is quickly repaired, the explosions demonstrate that pipelines remain easy targets for militants, and raise the costs of maintenance and security.

CONCLUSION

Pipeline development is likely to be insufficient to check, let alone reduce, increases in China's seaborne oil import demand.

China's likely overall growth in oil demand in coming years will very likely outstrip overland supply additions under even the most optimistic scenarios.

While the Myanmar and Pakistani pipeline proposals offer little benefit from a national oil security perspective, the fields filling the Kazakh and planned Russian lines are so far from the sea that an overland line is the most effective and efficient way to transport that oil into the Chinese market.

However, the flexibility of relatively inexpensive maritime oil transport confers far greater oil supply security benefits than expensive pipelines supplied by sea and/or traversing unstable regions. Oil cargoes in normal commerce may change hands 10 or more times while a vessel is at sea, which reduces the effectiveness of a distant blockade as it is challenging to identify a cargo's final destination. Implementing a close blockade of the Chinese coast would solve the destination identification problem, but would bring the blockader's forces within range of numerous and capable Chinese access denial systems.

As a result, the PLAN will continue to find a reason to project its power to protect sea lines of communication, bringing China into closer contact with other regional and extra-regional militaries. Moreover, in pursuing its pipeline projects, even where they appear unviable, China is building stronger relationships throughout the region and expanding its soft power, helping to consolidate its regional hegemony. ■

RELATED ARTICLES
WWW.JANES.COM

1. Over a barrel – China's problems with oil
2. Kazakhstan's delicate balancing act
3. Sentinel: Natural resources/China

Author
Andrew Erickson is a professor in the China Maritime Studies Institute at the US Naval War College.

Search for these articles at www.janes.com