Eurasian Pipelines: From Beijing to Berlin

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Turkmenistan's gas flows east to China, north to Russia and south to Iran. In the past Turkmen gas has reached as far west as Germany and, there are serious plans for it to do so again. From one field alone, South Yoloten, it has the capacity to supply large volumes of gas from Beijing to Berlin, from Amritsar to Zagreb.

But there is a whole series of paradoxes concerning the development of the vast span of pipelines that stretch from one end of Eurasia to the other. One is that Russia, the world's biggest gas producer and the holder of the world's largest gas reserves, is now focusing at least as much on developing new 'bypass' pipelines – lines that essentially replace existing pipeline systems across transit countries that Russia now prefers to avoid – as on development of actual fields to ensure that new lines carry new gas to market.

Another is that Iran, holder of the world's second largest gas reserves, remains a net importer, its export ambitions thwarted as much by its own internal consumption as by international sanctions. A third is that Turkmenistan, owner of the world's largest onshore gasfield, considers that it is for others to develop the pipelines that might carry its output to international markets. Turkmen gas, says Ashgabat, should simply be sold at Turkmenistan's borders.

The net result is that companies or consortia seeking to develop pipelines in Eurasia have to be incredibly determined to overcome a welter of political and commercial obstacles. And of these, the China National Petroleum Corporation (CNPC) is clearly the most determined. In 2012 gas from Turkmenistan is scheduled to reach Hong Kong. To get there, it will have to pass through a complex set of interlocking systems, notably the Trans Asia Gas Pipeline (TAGP) from Turkmenistan to Western China, the newly revamped and enlarged West-East pipeline in China; then its spur to the south-east of the country; and finally the 29.3 km sub-sea line from the mainland to the Special Administrative Region of Hong Kong, currently under construction.

All these have been or are being developed by CNPC. Indeed, ever since it began building the West-East system a decade ago, CNPC has been at the heart of some of the biggest pipeline projects in the world. In July 2007 it signed an agreement to build the 2,200-km TAGP from Turkmenistan through Uzbekistan and Kazakhstan to Urumchi in Xinjiang. In December 2009, less than 30 months later, the first Turkmen gas entered China. By 2015, the TAGP's twin 20 bcm/y (billion cubic metres a year) lines are expected to be carrying close to 40 bcm/y of gas from Turkmenistan, Kazakhstan and Uzbekistan to China. In addition, plans are in hand for a third 20 bcm/y string.

But Turkmenistan is not CNPC's only focus, and CNPC is not alone in focussing on Turkmenistan. CNPC is also developing the twin oil and gas pipelines intended to link the Burmese port of Kyaukphyu (Sittwe) in the Bay of Bengal with Kunming in China's Yunnan province at a cost of around US$2.5bn. These lines have the advantage that as well as enabling China to tap into Burma's own gas resources, notably the offshore Shwe field, it can also by extension use Burmese ports to bring oil from the Middle East and Africa to south-west China without passing through the Malacca or Sunda straits. Pipeline construction officially began in October 2009. The 771-km, 12 mt/y (240,000 b/d) oil pipeline will terminate at Kunming, Yunnan's capital, while the 12 bcm/y, 2,800-km gasline will extend much further into the heart of China, to Guangxi.

The Chinese projects may yet be matched by the emergence of a new pipeline system intended to carry gas from the Caspian to Europe. At the time of writing there was no indication as to which of the contenders seeking to secure Azerbaijani gas for their various pipeline projects would actually win the approval of the developers of Azerbaijan's giant Shakh Deniz gas field and of the Azerbaijani government itself.

But the very fact that a connection is to be made to Europe reopens the question of whether Turkmenistan will find a way to plug its gas resources into such a system. Ashgabat has always viewed the opening of the TAGP as one stage in a process of developing what it terms a multi-vector policy for its gas exports. It needs such a policy because of South Yoloten, a field which is now thought to contain at least six trillion cubic metres (tcm) and – quite probably – around three times that amount. At the time of writing, fresh audit figures for the field were still awaited. But at 18 tcm, only the 34.6 tcm reserves in the giant offshore North Field/South Pars resource shared by Qatar and Iran in the Gulf would be bigger, while South Yoloten would come close to accounting for one-tenth of the world's total gas reserves.

So it is no wonder that the Turkmens are also keen to develop a variety of new export pipelines. Their immediate priority is development of the 1,760-km, 33 bcm/y Turkmenistan-Afghanistan-Pakistan-India (TAPI) pipeline, a project being jointly developed by the four countries concerned. The Asian Development Bank is providing significant technical backing but actual implementation has to await an improvement in security conditions in

Afghanistan. Security issues are also likely to impact on both Iranian proposals for a major new gas pipeline to cross Iraq and Syria and on Iraqi plans for both oil and gas pipelines to reach new export terminals on the Mediterranean and to link up with the existing Arab Gas Pipeline that carries Egyptian gas to Jordan and Syria.

What happens to Iranian and Iraqi gas has an impact on plans for Caspian gas exports to Europe – and thus on proposals for major pipeline projects to Europe. The biggest of these projects, Nabucco, was originally predicated on the concept that it would carry gas from both Azerbaijan and Iran through Turkey and the Balkans to the Central European gas hub at Baumgarten in Austria, although in recent years Iran was replaced by Iraq as a prospective supply source. Azerbaijan's choice concerning export routes for its gas was not known at the time of writing, but what was clear was that whatever choice Baku made to carry gas from the giant second stage of the Shakh Deniz Gas field to market, its implementation would raise the question that if Azerbaijan could export large volumes of gas to Europe without passing through Russia, then why could Turkmenistan not follow suit?

Possible Trans-Caspian pipeline

For Turkmenistan to achieve this goal requires construction of a trans-Caspian pipeline, and that is exactly the goal that Turkmenistan and the European Commission hope to achieve negotiations planned for the autumn of 2011.

The reason the Turkmens require the development of a large scale – say 30 bcm/y – Trans-Caspian Gas Pipeline is because the country is still suffering from the loss of most of its exports to Russia in the wake of what can only be described as the engineered explosion of 9 April 2009 on the main line carrying Turkmen gas to Russia. Russian technicians, wanting to reduce the flow of Turkmen gas exports to Russia, gave their Turkmen counterparts insufficient time to close down input, resulting in a build-up of gas that caused an entirely predictable explosion. The long term consequence was that when Turkmen exports were eventually resumed nine months later, it was at a rate of around 10-11 bcm/y, in contrast to annual rates of around 30-40 bcm anticipated by Ashgabat. So Turkmenistan, whose gas in Soviet days fuelled the first giant pipelines to western Europe, now faces a real prospect that it could wind up selling less gas to Russia than it does to China or even Iran – and thus needing a trans-Caspian line to reach European markets if it cannot reach agreement with Moscow on access to the Russian pipeline system for access to markets beyond Russia.

As for Russia itself, it is pressing ahead with both its Nord Stream and South Stream projects. The first string of Nord Stream, a 1,200-km pipeline through the Baltic from Russia to Germany, is already operational although not carrying anything like its 27.5 bcm capacity. But it does fulfill a major function for Russia in providing it with direct access to the EU without having to transit other countries, an important issue in the wake of major disputes with Ukraine in 2006 and 2009.

In 2011 Gazprom has been busy setting up a formal corporate structure for South Stream which has still to signify specific routes, costs or projected volumes for a system intended to link Russia with Southeastern Europe and Italy. In 2009 the CEO of Eni, the Italian partner in South Stream, put the cost of the project at €25bn and said it was intended to carry 63 bcm. Since then, Marcel Kramer, South Stream's CEO, has been more cautious concerning potential costs, whilst noting that only one-third of the line's capacity would likely come from new fields.

Although Eurasian pipelines are often seen in terms of big projects for lines extending for thousands of kilometres, a key element is the massive development of a host of distribution lines at either end of the Eurasian landmass. These are the internal systems that serve the giant Chinese and European Union markets, epitomised by the link to Hong Kong and the multiplicity of small-scale interconnectors and regional lines in central and southern Europe intended both to bring gas to wholly new markets and to ensure that, in a crisis, no EU member state is solely reliant on just one single supply system.

There is one last peculiarity of Eurasian pipeline proposals that is worth considering. Pipelines are usually considered the alternative to plans for maritime transportation in the form of liquefied natural gas (LNG). Eurasian producers may be changing this paradigm using pipelines to carry gas from fields located in one country to LNG facilities in another. Azerbaijan is considering doing this with an LNG facility on Georgia's coast, and a shuttle fleet of LNG tankers in the Black Sea to carry the gas to Europe. Turkey has proposed the construction of LNG facilities at Ceyhan, with feedstock coming from both Azerbaijan and Russia – and possibly even Iran. For the time being, pipelines remain the preferred choice for evacuating gas from the landlocked states of Central Asia. But it is just possible that at some future date they may also come to serve LNG terminals that would enable Caspian gas to access an even wider range of markets than is possible through current and prospective Eurasian pipelines alone. ■