Sino–Russian Energy Relations: Heading for a new era?

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Abstract

Sino-Russian energy relations have witnessed a series of drastic changes during the last ten years, but are set to experience a huge expansion in terms of both scope and degree in the coming ten years. Sino–Russian energy cooperation is being driven by China's necessity of taking the maximum crude supply from Russia, while the continuously delayed Sino–Russian gas price-deal became the main stumbling block for Sino–Russian energy cooperation. The scale of the bilateral energy cooperation will expand hugely once a compromise on the long-delayed gas price-deal is made. This price-deal breakthrough will usher in a new era of Sino–Russian energy cooperation. On top of this, Sino–Russian coal and electricity cooperation is gaining momentum, and the scope of Sino–Russian energy relations will likely broaden rapidly and its contribution to the trading volume of both countries will be significant. One thing certain is that the current boundaries of Sino–Russian energy cooperation will expand substantially in the coming years and the implications towards regional and global politics and energy trading will not be small.

Keywords: Russia; China; oil, gas and energy cooperation

1. Review of Sino–Russian Oil and Gas Cooperation during the 1990s and 2000s[2]

1.1. Oil Cooperation

Sino–Russian energy relations during the last two decades have witnessed many ups and downs. The preparation process that during the 1990s started to build the groundwork for bilateral energy cooperation continued until the first half of the 2000s, but Sino–Russian oil and gas cooperation during those periods produced very few concrete results. There were a number of meaningful deals in the middle years of the second half of the 2000s, and cooperation began to produce some tangible achievements, even though these were still not of the magnitude hoped for during the 1990s. The most tangible achievement was the completion of the first section of the Eastern Siberia–Pacific Ocean (ESPO) oil pipeline at the end of 2009, along with the spur pipeline to China at the end of August 2010. The second stage of the pipeline was completed at the end of 2012, and according to Nikolay Tokarev, CEO of Transneft, "the American market is receiving 35% of the oil through Kozmino, the terminal of the ESPO, Japan is receiving another 30%, China 25%–28%, and the rest goes to Singapore, Malaysia and South Korea" as of December 2012. In 2013, the total volume was projected to reach 36 million tonnes per year (mt/yr).[3]

Even if Russia manages to secure a 50-mt/yr crude supply for the ESPO, there is no guarantee that China would get a higher allocation of Russian oil exports from Kozmino because other Northeast Asian consumers such as Japan and the ROK are anxious to secure bigger volumes of Russian supply. However, the Sino–Russian summit in March 2013 and the subsequent meeting in St Petersburg in June 2013 gave the highest priority to the increase of the crude supply to China. Why?

Due to the decline of production from oil fields in the three northeastern provinces (Heilongjiang, Jilin and Liaoning) in China, particularly the decline of the Daqing field, the crude supply from Russia to Heilongjiang was China's highest priority. Even though the rate of decline in Daqing production had slowed somewhat, Chinese energy planners were anxious to maximize the volume of Russian imports in order to diversify Daqing's sources of oil supply. In view of China's heavy dependence on oil imported by sea, pipeline supplies became a matter of urgency for the Chinese planners as part of their diversification strategy.

Two factors have caused oil sector cooperation to receive the highest priority in Sino–Russian energy relations. First of all, China had no choice but to enter into negotiations on crude oil imports from Russia due to a sharp decline in production at the Daqing oil field. Even though the decline in the production rate was not as severe as the early projections, Beijing's planners had to find an alternative supply source and Russian crude supply by pipeline was an ideal option. Since some of the refineries in the northeastern provinces had already been refurbished to receive Russian crude oil, China had to secure at least a minimum volume of crude oil from Russia. Second, the price negotiations on the crude deal between China and Russia did not pose any major obstacles (even though there was a renegotiation of the original price agreement in the wake of the crude oil price increase). Since international oil pricing had already been accepted in China, there was no difficulty in finding a price formula that was mutually acceptable to both countries. From the Chinese leadership's viewpoint, the reliability of crude supply was the top priority and the authorities in Beijing were ready to take any steps necessary to increase the volume of imports from Russia. In short, Sino–Russian oil cooperation was driven by China's need to secure its crude supply from Russia. This will remain very strong in coming decades.

Sino–Russian oil cooperation in the 2000s can be summarised as follows:

- China, very much disappointed by the failure of the Angarsk–Daqing pipeline during the first half of the 2000s, did not fully understand the internal and external political dynamics which led Russia to take this decision;
- But a desperate oil supply need, and the lack of substantially large-scale alternatives (in Central Asia) forced China to commit herself to major investments, as well as financing supply and infrastructure, without being permitted to take any equity positions in Russia's upstream projects;
- China's proactive stance towards Sino–Russian oil cooperation did not reflect a genuine trust in Russia but expressed the urgency of the Chinese oil supply situation;
- In the end, the Russians have achieved most of what they wanted, which includes major infrastructure development in Eastern Siberia and more diversity in its oil exports to Asia;
- But China did not get the massive and secure quantities of oil which it had been aiming for.

1.2. Natural Gas Cooperation

Unlike Sino–Russian oil cooperation, cooperation in the natural gas sector showed very few tangible advances; some announcements during the second part of the decade turned out to be overly optimistic. Gazprom prioritized Altai (West Siberian) gas exports to west China. The development of exports from Altai was not regarded very positively by the Beijing authorities since they gave a much higher priority to the supply of East Siberian gas to northeastern China. Even though it was not Beijing's most favoured supply option, Beijing would not have hesitated to allocate Altai gas to the West–East Gas Pipeline (WEP) III, if the first Altai initiative had

been convincing and attractive enough. But since China has decided to prioritize Central Asian (in particular Turkmenistan) gas as an equity supply source, Altai gas no longer looks like a "must-have" option for China. The main obstacle for Sino–Russian gas cooperation was the price. While Gazprom was seeking the European border price for its gas exports to China, China National Petroleum Corporation (CNPC) was responding that there is no chance for China to accept the oil-related border price. Chinese planners find Gazprom's demand excessive because CNPC cannot increase domestic gas prices which are strictly controlled by the National Development and Reform Commission (NDRC)'s pricing department. As soon as it became clear that this gas pricing stalemate would continue, Beijing made the final decision to construct the WEP II pipeline in order to bring gas from Central Asia. The equity gas option offered by the Turkmenistan authorities was enough to compensate for the burden of the high border price for imports.

The Beijing energy planners were fully aware of the risks involved in Gazprom's strategy of prioritising Altai rather than East Siberian gas exports and they are very uncomfortable with Gazprom's "swing supplier" strategy. After the 2008 global financial crisis, the EU's appetite for Russian gas has contracted, which has driven Gazprom to a more aggressive Asian gas export policy. China had not bargained for a gas supply which was shared with the European gas market in accordance with Gazprom tactics. But, as long as East Siberia remained without a developed pipeline structure, Altai gas exports fitted neatly into Gazprom's strategy of switching its European gas exports to China. The concept is similar to the ESPO which allowed Russia to export its crude oil to the Asian market directly, not depending on European buyers only.

The Chinese planners have no wish to be blamed for "robbing" the Europeans of their gas when in fact they would prefer to buy Russian gas not from Altai, but from East Siberia. The key point is that the Chinese do not need Altai for the WEP system to work because they can obtain Central Asian gas. They need East Siberian gas because the regional gas capacity in the three northeastern provinces of China is relatively small and, without access to East Siberia or Sakhalin, the alternative is large-scale LNG imports. As discussed later, the Sino–Russian summit between Xi Jinping and Vladimir Putin in March 2013 confirmed that Russia's gas exports to China will be based on eastern-route exports first.

In summary, Sino–Russian gas cooperation in the first decade of this century was so limited because Russia tried to replicate its oil export strategy in natural gas, but found China unwilling to agree. This unwillingness was due to four main factors: first, Russia refused to allow equity in fields or pipeline projects, and therefore refused China any control in the value chain, which is what the Chinese wanted; second, Russia demanded unattractively high prices; third, China had alternative import options (the Central Asian republics, Myanmar, and LNG imports) as well as the potential to expand domestic production; and, fourth, there was a lack of trust on both sides. Russia did not want to depend completely on the Chinese market, while China wanted to avoid over-dependence on Russia as a source of supply. The failure of the price negotiations between the two countries is a reflection of all of these problems.

In short, Sino–Russian energy cooperation during the 2000s can be summarized as "half-full and half-empty".

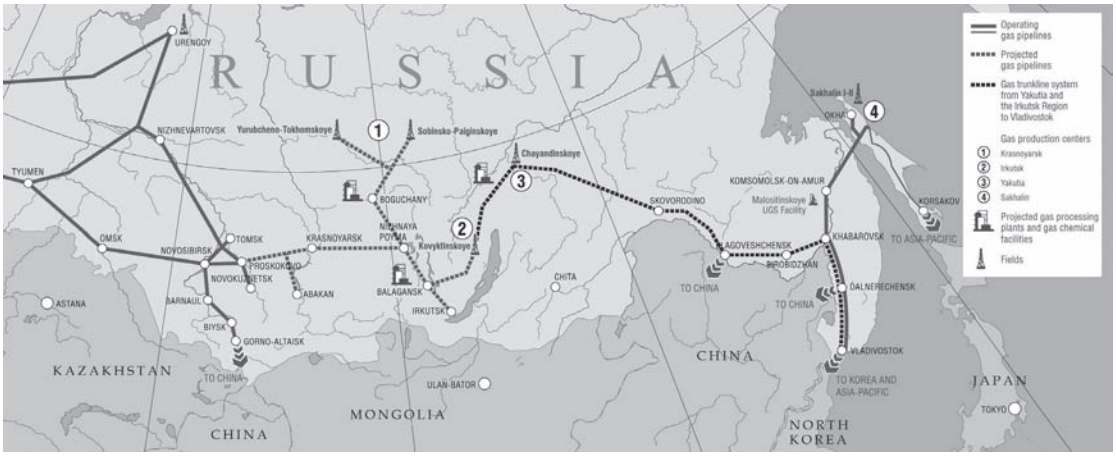
2. Update of Sino–Russian Oil and Gas Cooperation: The 2010s[4]

Since the 2006 spring announcement of a gas supply to China of up to 68 billion cubic meters per year (bcm/yr), the most important attempt to strike a gas price-deal was made during the St Petersburg Investment Forum in June 2011. However, both sides failed to narrow the gap, despite negotiations and preparations between deputy premiers Igor Sechin and Wang Qishan, in parallel with the negotiations between Gazprom and CNPC.

Immediately following the Russian presidential election in March 2012, Putin urged Gazprom not to ignore the exploration and development of gas resources in East Siberia and Russia's Far East, and said that Russia should try to gain a significant share of the global LNG market, focusing first on supplies to promising Asian markets.[5] Accordingly, Gazprom stated that it planned to draw up an investment study for Vladivostok LNG in the first quarter of 2013, and considered 2017–20 the "most favorable period" to target Asia.[6] However, Russia's dilemma was that the price of Vladivostok LNG based on Sakhalin-III gas would not be competitive.

It took almost a year to witness a renewed effort from China to Russia on a gas price-deal. During the World Gas Conference held in Kuala Lumpur, Malaysia, during 4–8 June 2012, Gasexport CEO Alexander Medevdev said that "in an attempt to find a solution, the Chinese side has proposed an integrated approach–to consider the possibility of jointly transporting gas to target markets and marketing together. We have agreed to consider whether it will somehow bring in additional revenue, adding that work on the markets of end consumers is part of our strategy."[7] This was when China's offer of a very large-scale upfront payment without interest was made to narrow the target border price gap.

Figure 1 : The "Power of Siberia" Gas Pipeline Map



Source: Gazprom (2012)

The major step taken by Gazprom in autumn 2012 was a surprise. On 29 October 2012, Gazprom CEO Miller informed President Putin that after having started pre-development operations on Sakhalin Island and the Kamchatka Peninsula, Gazprom set itself the task of starting the second stage of the Eastern Gas Program, and established new gas production centers. First of all, these are the Yakutia and Irkutsk gas production centers. Mr. Miller said that "having started operations at the Chayandinskoye field, we are planning to construct a gas pipeline from

Yakutia to Vladivostok via Khabarovsk (the gas pipeline length will be 3,200 kilometers). After that, along with the Kovyktinskoye field pre-development, we are planning to start construction of a gas pipeline that will serve as the second part of an 800-kilometer gas pipeline from Yakutia." He added that the Investment Rationale for the Yakutia–Khabarovsk–Vladivostok gas pipeline construction had already been adopted. The gas pipeline will be constructed by the end of 2017.[8]

At the end of 2012, Gazprom made China a new price offer for gas supplies along the Altai route. Gazprom CEO Miller said that "we did some rigorous work in the space of a few months, involving design institutes in cost optimization. The main purpose of this was on one hand to preserve the principle of net-back parity in gas prices with Europe and on the other to lower the base price for gas supplies to China somewhat. The new price offer is based on this optimization." However, Mr. Miller did not say how much the base price had been lowered. An interesting point was that in early December, Deputy Premier Arkady Dvorkovich confirmed that Russia was reviewing the Chinese proposals on advance payments under contracts.[9]

The outgoing Chinese leadership (President Hu Jintao and Premier Wen Jiabao) gave the huge homework task of a Sino–Russian gas price-deal to the incoming leadership, President Xi Jinping and Premier Li Keqiang. President Xi did not hesitate in highlighting the importance of the Sino–Russian relationship. Indeed, on 22 March 2013, Xi Jinping arrived in Russia on the first stop of his maiden overseas tour as President of China. At a press conference, Xi called Russia China's "friendly neighbor", and said that the fact that he was visiting so soon after assuming the presidency was "a testimony to the great importance China places on its relations with Russia". He added that "China–Russia relations have entered a new phase in which the two countries provide major development opportunities to each other".[10]

Ahead of the visit, Vice-Foreign Minister Cheng Guoping outlined that a highlight of the trip will be "breakthroughs" on major projects of strategic significance, including energy, aviation, space flight and investment. He added that the two neighbors are complementary in their overall and local development plans. For example, Russia's exploration in the Far East and Siberia, and China's blueprint to revive the Northeast and develop the western regions presented huge opportunities for cooperation.[11]

A brief note by the Brookings Institution summarized the results of the March 2013 China–Russia summit very clearly. The summit sets the stage for dramatically increasing flows of oil, coal, and natural gas from Russia to China. First, Rosneft pledged to triple its oil deliveries to China from 300,000 barrels per day (b/d) to as much as 1,000,000 b/d, which is double the amount of oil that Russia exported to China in 2012 and equal to the amount of oil that Saudi Arabia, China's top crude oil supplier, delivered to China in 2012. Second, China's Shenhua Group and Russia's En+ Group agreed to develop coal resources and related infrastructure in East Siberia and the Russian Far East with an eye to expanding Russian coal exports to China. Third, Gazprom and CNPC signed a memorandum of understanding for the delivery of 38 bcm of natural gas to China over a 30-year period starting in 2018, with the option of expanding deliveries to 60 bcm. The note highlighted the role of the China Development Bank (CDB). The increased volumes of oil that Rosneft pledged to deliver to China reportedly are being used to support a US$2 billion loan from the CDB. The bank also agreed to extend a US$2 billion line of credit to Shenhua Group and En+ Group for the development of coal resources and the infrastructure to transport them to markets.[12]

The two most important points that should be highlighted from this March 2013 summit

are the following: first, that Russia agreed to allocate a maximum for crude for China, which will affect the role of ESPO crude in the Asian market; and second, that Russia finally accepted China's preference for the eastern-route gas supply, even though the Russian preference was for Altai-route exports. The crude supply deal reconfirms that the driving force of Sino–Russian oil cooperation is China's dire necessity. A big question is whether Russia can balance the volume of crude supply to China and Nakhodka, and time will tell how the balancing is performed. The eastern route based on gas supply to China also confirms the importance of a market for the gas stranded in the middle of East Siberia. In this context, Russia's dream of imposing Russian terms and conditions on the gas supply to China was a mere pipe dream.

In May 2013, China's financial media group Caixin reported that "over the years, the biggest obstacle for the countries to reach an agreement has been price. A source close to CNPC said the company wanted the price to be cheaper than the gas it imported from Turkmenistan, while Russia wanted China to pay the same price European countries did… The average cost, insurance and freight (CIF) price that China paid for gas imported from Turkmenistan in 2012 was 2.5 yuan per cubic meter, data from the CNPC Economics and Technology Research Institute shows. However, Germany was paying Russia about 3 yuan in 2012. Meanwhile, the Chinese government told CNPC to sell gas from the West–East Gas Pipeline that was intended for industrial use for 1.19 yuan per cubic meter… CNPC has been losing money even on the gas imported from Turkmenistan, the source close to the company said… In 2012, CNPC's imported gas segment posted a loss of 42 billion yuan and it expects to record a deficit for this segment of 60 billion yuan this year. CNPC could not pay the price that Russia asked for."[13] This coverage indirectly explains why China had to develop the formula of equity gas for the Turkmenistan gas imports, and indicates that China needs to find a compromise formula that can satisfy the expectations of both sides.

In June 2013, when Vice Premier Zhang Gaoli attended the St Petersburg International Economic Forum, Professor Zhu Feng, Deputy Director of the Center for International and Strategic Studies at Peking University pointed out that for the first five months of 2013 bilateral trade had fallen 2.6% on the previous year, with Chinese imports from Russia dropping 15.2%, even though the trading record between the two countries reached US$88.2 billion in 2012. He said that the drop was mainly caused by an economic slowdown in China which has sapped demand for commodity imports, and added that China's economic restructuring calls for deeper and wider cooperation between the two economies. Currently, Sino–Russian economic cooperation is mainly focused on the energy sector.[14]

Based on its massive foreign reserves (as of June 2013, US$3.5 trillion[15]), China has played the money card very skilfully and effectively. On 21 June Rosneft agreed on a US$270 billion deal to double oil supplies to China. Rosneft's CEO Sechin said his firm will supply China with 300,000 barrels per day (b/d) over 25 years starting in the second half of the decade, on top of the 300,000 b/d already committed to China. The deal, one of the biggest ever in the history of the global oil industry, will bring Rosneft US$60–70 billion in upfront prepayments from China (but it is not an interest free deal). It will also allow Rosneft, the world's biggest publicly listed oil firm, to steeply cut its heavy debts and develop new remote Arctic fields. According to Standard and Poor's, Rosneft faces large debt maturities in 2013, 2014, and 2015 of US$6.6 billion, US$15.9 billon, and US$16.2 billion, respectively. Prepayment from China would allow Rosneft to lighten the burden on its balance sheet by reducing its debts to banks.[16]

This massive money injection from China to Russia allowed China to be protected from

the continuous delay of gas price negotiations with Gazprom. On the same day, President Putin made the announcement of the gradual end of state-controlled Gazprom's monopoly on exports of natural gas, which opens the way for rivals Novatek and Rosneft to compete for the huge new Asian markets, and immediately after Novatek signed a deal to supply at least 3 million tonnes of liquefied natural gas annually to China. CNPC also agreed to buy a 20% stake in Novatek's US$20 billion Yamal-LNG project in northwest Siberia.[17] This was a fatal blow to Gazprom whose Asian export policy was a complete failure, as it had produced no tangible results since the big announcement of 2006. After the working group meeting with CNPC right before the St Petersburg Investment Forum in June 2013, Gazprom CEO Miller said that "the price of gas to be supplied to China won't be linked to the US Henry Hub Price",[18] and announced that Gazprom expects to sign an agreement in September on the basic terms of a deal to provide gas supplies to China and aims to conclude the deal by the end of this year.[19] It was another excuse for a price-deal failure.

Interestingly, in August 2013, Interfax reported that field operator LLC Gazprom Dobycha Irkutsk's materials show that the development of field infrastructure at the Kovykta gas condensate field in the Irkutsk Region will begin in the third quarter of 2013 and be completed in the third quarter of 2016.[20] It was also reported that Gazprom plans to start producing gas at the South Kirinskoye field on the Sakhalin shelf in 2018. At the moment, South Kirinskoye's C1+C2 reserves total 560 billion cubic meters (bcm) of gas. According to Mr. Vsevolod Cherepanov, Gazprom hopes that these two wells will help boost C1 proven reserves. The project involves constructing an LNG plant on the Lomonosov Peninsula (Perevoznaya Bay), comprising three processing trains, each with a capacity of 5 million tonnes of LNG a year. The first train will be commissioned in 2018.[21] It was quite unusual to see this type of report on Gazprom's activity in the Far East during the summer-break period. It indicates Gazprom was getting real pressure to show President Putin tangible results without any further delay, and in fact the business environment is becoming very unfavorable for Gazprom to work in.

Right after the G20 meeting, the Gazprom website announced that "Alexey Miller, Chairman of the Gazprom Management Committee and Zhou Jiping, Chairman of China National Petroleum Corporation (CNPC) signed today in Saint Petersburg an Agreement outlining the major terms and conditions of pipeline gas supply from Russia to China via the eastern route in accordance with the accords reached previously. The document is legally binding... All the major terms and conditions of future Russian natural gas supplies to the Chinese market via the eastern route were agreed on, namely, the export volume and starting date, the take-or-pay level, the period of supply buildup, the level of guaranteed payments, the gas delivery point on the border as well as other basic conditions of gas offtake. The price conditions will not be linked to the Henry Hub index."[22]

However, the announcement hid the failure to reach a Sino–Russian gas price-deal. One day earlier, the Russian business daily Vedomosti reported that "Gazprom delayed the start of the construction of its Power of Siberia gas pipeline to transport gas to China from November [2013] to the first quarter of 2014", citing sources close to Gazprom and its affiliates.[23] China's influential monthly Caijing also reported the gas deal announcement had no substance on the price deal.[24] Despite the failure of a final price breakthrough, CNN highlighted Sino–Russian relations during the G20 meeting in St Petersburg, by reporting that President Xi Jinping, who calls the Sino–Russian relationship the "best" among major countries, says they will always be good neighbors who aspire to "never be enemies".[25]

Diplomacy is merely diplomacy, however. What President Xi said in Moscow is one thing and what President Xi really emphasized in Turkmenistan is another thing. On 4 September, President Xi Jinping and his Turkmen counterpart Gurbanguly Berdymukhamedov celebrated the completion of the first phase of the Galkynysh gas field, and reconfirmed another 25 bcm/yr of gas supply from the Galkynysh field. Both presidents said a total of 65 bcm/yr of gas will be supplied to China through the world's longest gas pipeline.[26] The super-giant gas field's development has provided huge comfort to the Chinese leadership, and the strengthened relationship between China and Turkmenistan was a big reminder of the Russian wisdom of blocking equity gas options for the East Siberian gas development.

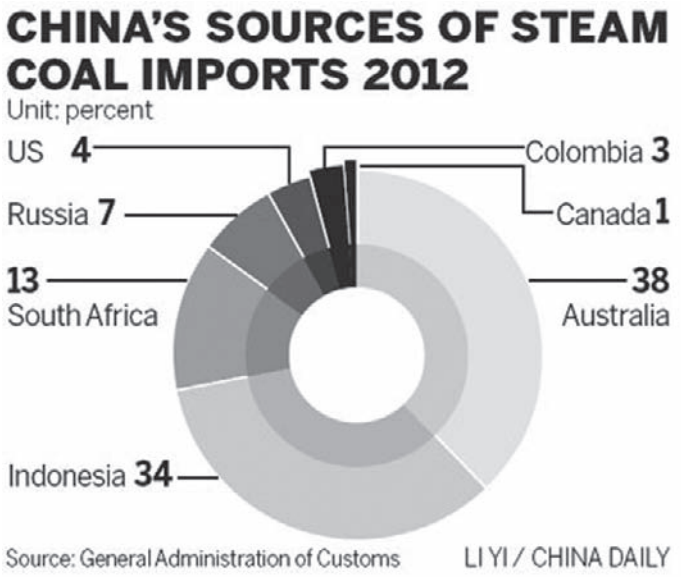
3. Sino–Russian Coal and Electricity Cooperation

In parallel with oil- and gas-sector cooperation, Russia and China have been widening the boundaries of cooperation in the coal and electricity sectors during the last few years. The coal sector cooperation since 2009 has been expanding very rapidly, but steady growth has not been comprehensively shown. Electricity supply from Russia to China is also expanding, but the trading scale is still confined to the provincial level.

Historically, China has been a net coal exporter. In 2003, China's coal exports peaked at 94 million tonnes (mt) with coal imports at 11 mt. Since China produced 1,835 mt of coal and consumed a similar amount in the same year, imports had very little impact on China's overall coal balance at the time. In 2008, however, China's coal situation markedly changed when China's imports and exports equalized. In 2009, China imported 126 mt of coal and became a net coal importer for the first time. Based on this background, a quality study by the Carnegie Endowment for International Peace pointed out that several factors could be contributing to China's sudden entrance into coal import markets, including transportation bottlenecks, environmental and safety considerations, economic factors, and concerns about depleting coking coal reserves.[27]

The coal imports from Russia in 2009 were recorded at more than 12 mt.[28] In 2010, China agreed to increase imports of Russian coal in return for a US$6.0 billion loan. According to the Russian energy ministry, Russia will raise shipments to China to at least 15 mt annually in the next five years and more than 20 mt in the subsequent 20 years.[29] The import figure rose to 19.3 mt in 2012 when China imported 290 mt of coal. As shown in the figure below, coal supply from Russia accounts for roughly 7%, while Australia and Indonesia account for 38% and 34%, respectively). According to the China Daily, "a decade ago, China produced about 1.4 billion tonnes of coal annually at an average cost of $11 a ton. Last year, its annual output reached 3.7 billion tonnes, but the cost for each ton of coal rose to $37… The unit cost for Indonesian coal production is currently about $30, according to Platts… As Chinese coal-fired power generation companies benefit from increasing amounts of cheaper imported coal, the domestic coal industry is suffering serious overcapacity, weak demand and a huge decline in profits".[30]

Figure 2 : China's Sources of Steam Coal Imports 2012



Source: Du Juan, "China coal imports to continue affecting global prices: Platts", China Daily, 22 May 2013. http://www.chinadaily.com.cn/bizchina/2013-05/22/content_16518558.htm

Russia's coal supply to China looks very likely to expand. According to the estimate of Russia's Ministry of Energy released in April 2013, Russian coal supplies to China in 2013 should rise to 20 mt, as against 19.3 mt in 2012. During the first half of 2013, a number of coal supply deals between Russia and China were signed. In March, Mechel and China's Baosteel Resources (a Baosteel Group subsidiary) announced a deal for the supply of 960,000 tonnes of coking coal a year. In April, Russia's En+ group, owned by the billionaire Oleg Deripaska, has signed a US$2-billion deal with China's Shenhua Group. (As discussed earlier, the framework agreement was signed in late March during a visit to Moscow by the Chinese leader, Xi Jinping.) In June, Russia's coal giant Mechel signed its third long-term agreement of the year for coal supplies with Chinese Shasteel Group with a volume of from 40,000 to 80,000 tonnes of coal a month via ports in the Far East.[31] Like Sino–Russian oil cooperation, it is fair to say that Sino–Russian coal cooperation is driven by China's necessity. Once Russia's infrastructure in the Far East is improved, the expansion of coal supply will be accelerated.

Beijing is a big fan of large-scale hydropower developments. They are clean, and based on long-proven technology with low operating and maintenance costs. Unlike wind or solar power, it is less dependent on the weather and can be switched on to meet demand. Beijing plans to double its current capacity as part of a plan to generate 15% of its energy from renewable sources by 2020. China aims at building hydropower generating capacity of 250 gigawatts by 2015, but it requires a massive investment. By taking advantage of Russia's abundant hydroelectricity in East Siberia, the financial burden to construct new hydro-dams can be reduced. Russia is already the world's fifth-largest generator of hydropower, and only 20% of its potential has yet been realized, with an even lower proportion in the great river basins close to the Chinese border. In this context, the surplus hydroelectricity from East Siberia to Heilongjiang Province can deliver mutual benefit to both sides.

The first electricity supply from Amur Oblast to Heilongjiang Province was made as early as 1992 when the first high voltage (110kV) power grid (25.75 km long) was put into service.[32]

Then in 1997 a governmental agreement was signed for natural gas and electricity supply from East Siberia to China. The US$1.5 billion electricity deal over 25 years envisaged a supply of 20 billion KW/h of electricity from Irkutsk to either Shenyang or Beijing.[33] Based on these initiatives in the 1990s, Heihe began receiving electricity from Russia in 2004. The volume increased after the State Grid Corporation of China took over the business from a local private-sector company in 2009. Inter RAO, Russia's largest power exporter, set up Eastern Energy Company, a subsidiary for exports to China, in 2007. In 2012, the company installed a high-voltage 500-kilovolt power transmission line over the Amur River, in addition to the existing 110-kilovolt and 220-kilovolt lines. China has also completed a new substation in Heihe, giving the city the capacity to receive 2.6 billion kilowatt-hours of electricity a year from Russia, more than twice that in 2011.

According to Rasim Khaziakhmetov, Director of Technical Policy at RusHydro, Russia's largest hydroelectric power company, only 5% of the potential hydroelectric power generation capacity in the Far Eastern region is utilized. The proportion for Siberia is 20%. In February 2012, Eastern Energy Company clinched a contract with the State Grid Corporation of China to supply 100 billion kilowatt-hours of electricity over the coming 25 years. The company plans to increase power exports to China from the Far Eastern region and Siberia to 60 billion kilowatt-hours a year by 2020. The volume represents only about 1% of China's electricity demand in 2011, but is almost equivalent to the amount sold annually by Chugoku Electric Power Company.[34]

It is also worth noting that the booming energy trade between Russia and China has triggered environmental protests and legal action against a new hydropower scheme in Eastern Siberia. Alexander Kolotov, director of the environmental group "No to Dams" in the eastern city of Krasnoyarsk and others sued EuroSibEnergo and RusHydro for constructing the dam without environmental controls or measures to save cultural heritage lost in the flooded area.[35] Kolotov argues that basically East Siberia's surplus hydroelectricity export to China is good for China, but of no benefit to Russia. Despite the protest, it looks certain the supply of hydroelectricity to China will go ahead.

4. Conclusion

It is clear that there is a major difference between oil and gas in the way they affect China, Russia, Sino–Russian relations, and the rest of the world. First, Russian oil supplies from Eastern Siberia and the Russian Far East are significant but will not fundamentally change either Chinese dependence on Middle East oil supplies or global oil supply trends, unless new oil discoveries are so abundant that they can justify a second ESPO pipeline. During the first half of 2013, Russia took a major step by agreeing to increase the volume of its crude supply to China from 15 mt/yr to 30 mt/yr, even though the increased supply to China could affect the ultimate volume of ESPO crude to Asian buyers. Under any circumstances, however, this will not fundamentally change the global oil situation. The decision was a real blessing for China, but consequently Russia's ambitious target of making ESPO the benchmark price had been compromised. Until comprehensive exploration in East Siberia maximizes the export volume to other Asian buyers, China will be the biggest beneficiary of Russia's changed crude supply priority in 2013. It remains to be seen how this priority will be protected and honored by the Russian authorities.

Second, Russian gas reserves in Eastern Siberia and the Far East are so huge and stranded

(that is, without nearby markets) that they could transform the gas industry in China. Russia could export 50–60 bcm/yr to China by pipeline from fields which otherwise will continue to be stranded for many decades. Large-scale Chinese pipeline imports could expand with little delay because fields and pipeline routes have been extensively studied and China has the investment capital to finance such projects. This will not happen either on the same scale or at the same speed if both countries decide to rely on LNG.

The current outlook is that much of the oil potential will be fulfilled, but this will not make a huge difference to China or to the global oil market. During 2013, there were some signs of a negative outlook where the gas potential will largely not be fulfilled and therefore the Chinese gas market will be much smaller than it otherwise could be, as well as where large Russian gas reserves will remain stranded for many decades. However, such signs were not solid enough. If the current outlook changes and the potential is more completely realized, it could make a huge difference to the global gas market. Failure to achieve large-scale gas pipeline imports from Russia will force China to significantly expand LNG imports. This will increase the competition for LNG supplies not only amongst LNG importers in Northeast Asia (Japan, the ROK and Taiwan) but also amongst other buyers of LNG in regions as far away as Europe. It is worth noting that four shale gas-based LNG export projects have already been approved by the US Department of Energy, and two or three more approvals look very likely. The total volume of US LNG exports could have a major impact on global LNG trading, in particular for the supply to Asia. A failure of the Sino–Russian gas relationship will therefore deprive both countries of a potential win–win solution to their energy and development problems, and increase future global rivalries in the market for LNG.

Sino–Russian coal and electricity cooperation will be accelerated and strengthened, but the scale and volume of trade driven by coal and electricity will not be substantial enough to trigger Chinese domestic price reform. The trading itself is an indirect confirmation that Sino–Russian oil and gas cooperation during the last two decades has opened the door for acceleration of Sino–Russian coal and electricity cooperation. Again China's imperative of increasing its imports of Russia's quality coal as well as Russia's need to export its abundant hydropower in East Siberia to China's Heilongjiang Province have reconfirmed the huge potential for Sino–Russian energy relations in the coming years and decades.

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