

Climate of Opinion

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Commentary

China in the Global Energy Sphere – Gulya Isyanova¹

China has followed an unprecedented trajectory since it decided to embrace market-oriented ideas and reforms in the late 1970s. Having experienced a ten-fold increase in GDP since 1978, China is now the second biggest economy in the world after the US in purchase power parity (PPP) terms. However, relatively speaking this is only the beginning for China. It may be an Asian powerhouse, but it is still a lower middle-income country and has a long way to go in terms of economic (and, needless to say, democratic) development.

A lot of raw energy is needed to power the 'world's workshop' and although China produces 3.68 million barrels of oil a day, currently most of its energy has to be imported. In fact, over the last few years China has become a major contender for the world's energy resources, competing not just with developed countries in North America, Europe and East Asia but also with the other newly-industrialised economies (NIEs). In its pursuit of fossil fuels, it has mainly concentrated on the purchase of coal and oil (with coal making up about 2/3 of its current energy consumption), although it does also use some gas and hydro-power.

This represents a change from a decade ago, when China was considering a complete shift to gas in order to improve air quality. Rising gas prices and security concerns, however, have led it to fall back on coal. Nuclear use is still negligible, although China is keen to expand this sector – it recently bought five third-generation nuclear power stations, for example, with the construction of the first one planned to start in March 2008. In recent years, it has also initiated a strong renewables drive, especially in hydro (the Three Gorges Dam is the largest hydro-electric power station in the world in terms of capacity) and solar power (China has become a world leader in solar PV cell production).

The shift from coal to gas is nonetheless inevitable in the foreseeable future, especially if China is to meet its environmental goals, in terms of both local pollution and global climate change, and its energy mix will have to start mimicking that of the US. This will require a massive increase in imports of oil, gas and uranium, and China has already started to move in this direction.

In order to ensure that it gets the energy imports it needs, China has been pursuing a number of policies. First, it has been trying to secure the imports it receives by sea by building up its naval capabilities and making its presence felt in the area, e.g. in the Strait of Malacca. Most of its major suppliers bring in imports through key maritime chokepoints, especially new favoured suppliers like Sudan.

Second, China has also been trying to diversify its options for gas imports by building the West-East pipeline to carry gas from Western China and eventually Central Asia and by building liquefied natural gas (LNG) terminals. Although China is concerned about maritime security, its growing gas consumption requires diversification of sources. LNG imports will allow China to buy gas from countries as far away as the US, Venezuela and Indonesia. China's gas vulnerability, however, is only set to get worse, because as it develops and seeks to address local pollution and global climate change, it will have to increase the share of natural gas in its energy mix while at the same time allowing its total energy consumption to grow.

Third, China is trying to reduce its dependence on vulnerable imports. In December 2007, for example, China announced that it is building up a strategic emergency oil reserve centre, and it has discussed housing Saudi Arabian oil storage on Chinese soil to give easy access to Saudi oil in the event of a supply chain disruption.

Fourth, it is trying to establish close relationships with resource holders, most notably in the Gulf, Latin America and Africa. The Chinese government and Chinese state energy companies have been trying to differentiate themselves from western oil companies and governments by being far less demanding regarding 'good governance'

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issues such as transparency requirements and sanctity of contract.¹ In addition, they have been providing their partners with soft loans, grants and offers to build up infrastructure, offering international support and finally, guaranteeing access to its markets.

Fifth, China is aiming for well-head to consumer ownership by developing capabilities along the value chain, both upstream and downstream. Rather than trusting the market to provide a product at each stage in the value chain, it is actually trying to achieve physical control of the same product from well-head to consumer.

Finally, in the longer term China may be aiming to break the oil market, whose current spot-price arrangement it believes is to its disadvantage. This it could try to achieve by re-establishing long-term price-bounded contracts, whether *de jure* or *de facto* which would offer supply security to China and demand security to producers.

However, despite developing a voracious appetite for energy resources and its flexible and appeasing strategy with suppliers, China has still not achieved a position in the international community that reflects its weight in the energy sphere. For example, it still does not have International Energy Agency (IEA) membership, largely because it has not pressed to join it. Given this background, Europe should pay more attention to China's energy posture both because China is changing the global terms of oil and gas production and because China is directly competing with Europe for physical supplies, especially in Eurasia and, increasingly in the future, in Africa. The key question looking forward is whether China will decide to pursue a place in the current energy system matching its size or continues to pursue a policy course that brings it into conflict with key components of the current system. The answer could prove crucial for the future direction of energy policy in Europe.

¹http://www.upi.com/International_Security/Emerging_Threats/Analysis/2008/02/01/analysis_china_beats_west_in_africa/8203/

Joint China-EU Initiatives Hold Key to Addressing Climate Change – Bernice Lee and Antony Froggatt²

Energy and climate security concerns are increasingly featuring in the decisions made by policy-makers and business leaders. And in the international arena two key players are increasingly featured: the European Union (EU) and China.

The EU has endeavoured to establish a leadership role in this area through the establishment of the Emissions Trading Scheme and ambitious targets on energy efficiency, reducing greenhouse gas emissions and the use of renewable energy.

China's choices about its infrastructure needs and consumption patterns will have a decisive impact on global efforts to stabilise and reduce greenhouse gas emissions. Choices made in China matter. But so do those made in the EU.

China and the EU together account for around 30% of global energy consumption and 30% of global emissions. Their common interests provide a foundation for deepening collaborative efforts on energy and climate security over the next quarter-century. The combined economic might of the EU, the world's largest single market, and China, the fastest-growing economy, can provide unprecedented opportunities to generate benefits of scale that will lower the costs of climate-friendly goods and services globally. By working together, China and Europe could and should become the *de facto* engine of global low-carbon transformation.

This process can be facilitated by a number of joint initiatives. The report *Changing Climates*, prepared by a team of researchers from across Europe and China and published by Chatham House, a UK think-tank, proposes ten initiatives which have been presented to European governments and officials in China. These initiatives cover a range of possible actions, but all

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will involve increased collaboration and cooperation between China and the EU.

Building 'low-carbon economic zones' (LCEZs) in China – one in the more prosperous East and the other in the less developed West – was one of the initiatives put forward. These LCEZs would be the testing grounds for policies promoting the economic transformation necessary for a low-carbon future. Their focus on attracting investment in research and high-end manufacturing will be consistent with the Chinese leadership's desire to shift away from simple processing and assembly. The LCEZs could be to China's next industrial revolution what Shenzhen was to the current one – and a powerful demonstration of the viability of the low-carbon economy. The EU could focus its energy and climate cooperation with China around these zones to demonstrate the real possibility of large-scale transformations to other regions and countries.

China currently uses coal to generate around 80% of its energy needs – a uniquely high percentage. Moreover, coal use is expected to increase in both China and the EU. Together, they could deliver an agreed set of benchmarks and practices for improving coal production efficiency and reducing the environmental impacts across the coal fuel chain. These measures could include enhancing cooperation on the development of carbon capture and storage (CCS) as a potential future energy option.

However, it is also of fundamental importance to develop truly sustainable energy sources and policies, which must be focused on the more efficient use of energy and on using renewable energy.

As China manufactures a vast array of goods designed for Europe, setting world-class standards for energy-efficient goods could bring benefits; for example, under the Eco-Design Directive the EU will soon be setting increasingly tight energy efficiency standards on a wide range of products. China and the EU could drive progress in both their markets by setting up a consultative committee to define challenging standards for energy-efficient low-carbon goods. This could be coupled with the introduction of an

EU–China Ultra-Efficiency Building Research platform to capture the joint technical and development opportunities in this very fast-growing sector and to enable energy efficiency measures to avoid lock-in of energy consumption.

In the field of renewable energy, tackling global supply constraints could help meet the two powers' shared targets on renewables and address the corresponding cost concerns. They could also establish a high-level joint commission to tackle production bottlenecks and facilitate advanced investment.

Security of supply also requires reduced dependency on imported oil from unstable regions. With more than 80% of vehicles manufactured in China through joint venture companies, many with European partners, a unique opportunity exists for China and the EU to work together to reduce import dependency through harmonising and increasing energy efficiency and pollution standards.

In the wider field of investment and technological cooperation, a number of steps should be introduced. A low-carbon investment regime could be introduced to help address the twin objectives of rapid diffusion of key technologies and ensuring competitiveness of domestic businesses for China and the EU. This could include relaxing Chinese restrictions on inward investment in return for access to carbon finance and enhanced technology cooperation. Coupled with this would be an agreement on practical steps to address structural issues in low-carbon technology cooperation around intellectual property rights. This could focus on practical mechanisms such as conditional or compulsory licensing, fair use rights, and guidelines for standardisation, to enhance technological diffusion. Other joint initiatives could include combining EU and Chinese public R&D budgets in strategic areas, using existing supply chain links to drive the creation and spread of technology, and setting up a China–EU climate technologies prize fund to encourage innovation in the field of energy-efficient and environmental friendly products.

China and Energy Security – Hongyi Lai¹

China's dynamic economic growth continues to require ever-increasing levels of energy consumption. From 1980 to 2006 China's energy consumption grew accordingly by 5.6% per annum. By 2005 coal remained the primary energy source, accounting for nearly 69% of all energy consumption. At 21% oil was the second most-consumed energy source, followed by natural gas at 2.9%, with hydro, nuclear, and wind power accounting for 7.2% combined.

However, while demand for oil has been growing exponentially China's domestic production is increasingly lagging behind this demand. As domestic oil production stagnates and consumption soars, oil imports are increasingly necessary to satisfy demand arising from China's booming auto and aviation markets. While in the early 1990s China was still self-sufficient in oil, by 2004, it imported 123 million tons of crude oil, up by 35% from 2003 alone. China's dependence on net imports of oil (imports minus exports) reached 40% in 2004.

So how is China trying to ensure it gets the oil imports that it needs? In the past decade it has launched a number of external initiatives to secure overseas oil supplies, specifically strengthening its ties with oil producing nations in the Middle East, Africa, Central Asia, and Latin and North America. These initiatives have noticeably altered the make-up of its partners. In 1995, for example, South-East Asia and the Middle East were the two largest sources of oil imports for China. Africa ranked a distant third, while imports from Europe, Russia and Central Asia and the Americas were negligible. By 2000, however, the Middle East's share had increased to a whopping 54%, whereas Africa had emerged as the second largest source, with South-East Asia falling to third place and Russia and Central Asia to fourth.

China has therefore intensified its energy cooperation with the Persian Gulf oil producers,

especially Saudi Arabia and Iran. It has also tapped new oil supplies in Africa, including Angola, Sudan, Congo, Nigeria, and Gabon. Some of these African states, such as Angola and Congo, are recovering from civil wars, and China's strategy has been to provide aid for the rebuilding efforts. In addition, China has also successfully embarked upon energy cooperation with Russia and the Central Asian countries. Russia has therewith increased its oil exports to China and although at the moment this has to be transported via rail, there are prospects for a trans-Siberian pipeline. A pipeline from central Kazakhstan to Xinjiang in China was completed in 2005, facilitating transport of oil from the Central Asia oil producer. Finally, China has planned to invest heavily in Latin America, especially in energy related sectors. More recently, it has also obtained agreement from Canada to extract Canada's oil sands.

With these measures in place, China has fulfilled a number of objectives. First, it has sustained an increase in oil imports that can meet its domestic consumption. Second, it has set up cooperation with major oil exporters in the world, especially Saudi Arabia, Iran, Russia, Venezuela and Angola. Third, while China has successfully tapped the major oil exporting market in the Middle East, it has also to some extent diversified its external oil supplies. While it still relies heavily on the Middle East, China is also drawing on oil supplies from Africa, Southeast Asia, Australia, Russia and Kazakhstan. In other words, it might have intensified its energy ties with the Gulf states but China is not putting all its eggs in one basket. It has thus partially cushioned itself from the disruptive effects of potential political risks in the Middle East.

However, China's conduct of oil diplomacy is not without its controversies. The biggest criticisms from the West have targeted China's cooperation with Sudan and to a lesser extent, Iran and Venezuela. Sudan is viewed unfavourably in the West with respect to the humanitarian crisis in the Darfur region, while the issue with Iran is its nuclear programme and with Venezuela, its strong anti-Western stance.

China's oil diplomacy toward these nations, however, follows a rationale different to the

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Western one. First, China has long promoted diplomacy without interference in the sovereign affairs of its partners. Until recently China has taken pride in this tradition, especially as it sees itself as having been a victim of Western intrusion into its domestic politics for the past 170 years. Thus it feels that its avoidance of domestic politics of its oil partners in energy cooperation is legitimate and historically grounded.

Second, China's oil firms face a situation where the existing oil markets around the world have been largely explored and saturated by leading oil corporations which are mainly from the West. The only places that are left are exactly those from which Western firms shy away, due to political or humanitarian reasons as well as negative public perception in the West.

Nonetheless Western criticisms seem to have been taken on board, and China has started to adjust its policies toward these 'problematic' oil suppliers. First, China has shown subtly its concerns for the humanitarian crisis in Darfur in Sudan. Liu Guijin, China's special envoy to Africa visited Khartoum at the end of February. Second, China has stated its opposition to Iran's nuclear weaponry program. Third, China has clarified that its energy cooperation with Venezuela does not have any political objectives, especially one of countering the U.S. It is a strictly economic deal.

As China's oil consumption continues to expand, China will continue to actively search for supplies overseas, while China's state oil companies will actively seek to invest in overseas energy ventures. The international attention and scrutiny of its oil diplomacy and energy endeavours is therefore likely to continue.

China's Effects on European Natural Gas Supply Security – Gabe Collins¹

China's growing demand for clean fuels is set to have a major impact on European natural gas supply security. Chinese gas needs could affect supply and prices in two ways – by taking pipeline supplies from Central Asia, and by targeting liquefied natural gas (LNG) supplies more globally. In addition, Chinese energy facility and infrastructure construction activities will inflate raw material and labour prices and help drive up LNG and pipeline project costs worldwide.

Pipeline Supplies

Gazprom is Europe's main pipeline gas supplier (~25% of total gas needs). Yet ability to export gas has stagnated as Russian internal demand recovers and Gazprom purchases rights to other companies' production instead of focusing on developing new gas projects that would expand Russian exportable supplies. Gazprom's stopgap remedy thus far has been to capitalise on its virtual monopoly on gas lines out of Central Asia, paying Turkmenistan and Kazakhstan cut rate prices for gas and reselling it at mark-ups of more than 50% in Europe.

Yet this arrangement may soon unravel. China and Turkmenistan recently signed a 30-year supply deal that, beginning in 2009-2010, would send 30 billion cubic meters/year of Turkmen gas to China. This is roughly 2/3 of the total volume of exportable gas currently available from Turkmenistan, so if the country cannot dramatically boost production, it will be forced to prioritise customers. PetroChina will pay \$195/1000 cubic meters, while the highest Gazprom has thus far been willing to pay is \$150/1000 CM. Thus, whether Turkmen supplies to Europe fall or Ashgabat re-opens bidding between PetroChina and Gazprom, European consumers are likely to face higher prices until

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Gazprom can bring major new fields online 3-4 years from now.

Liquefied Natural Gas (LNG)

China also matters in the LNG market, an important point as Europe considers reducing direct reliance on Russian gas by building more LNG import terminals. Utilities in Southeast China see LNG as a way to cleanly meet residential, power generation, and industrial fuel needs. Guangdong and the surrounding Pearl River Delta are economic powerhouses with some of China's fastest growing electricity demand. Gas-fired power is competitive in these regions because rail bottlenecks raise coal delivery costs and cause supply interruptions for coal-fired power plants. Gas-fired plants also gain from demands for production flexibility, since unlike coal-fired plants, gas-fired combined cycle turbine plants can rapidly adjust their output. Finally, oil-fired power plants in Guangdong are being shut down as China struggles to restrain rapid oil demand growth.

China prefers SE Asian and Australian supplies for cost and security reasons and will prioritize LNG imports from these producers. Thus, China is already directly competing with Japan and South Korea for increasingly scarce SE Asian LNG supplies.

Shifting LNG Supply Sources

As Chinese, Japanese, and Korean demand grows in conjunction with projected drops in net LNG exports from Indonesia, Brunei, and Malaysia, they may seek increased supplies from Middle Eastern and African LNG projects, which will also be supplying European and North American consumers. Thus, Chinese demand for SE Asian LNG supplies could force Japan and South Korea into more frequent and direct competition with European and North American consumers who are also hungry for supplies.

By introducing more bidders, this could drive up LNG spot prices, a significant effect given that some analysts (Cambridge Energy Research Associates, for example), estimate that as much as 40% of new liquefaction projects are uncommitted and could be traded. Global LNG

spot prices are increasingly interlinked and influenced by events as disparate as nuclear plant outages in Japan, drought in Spain, or unrest in Nigeria. Higher spot trade may also fuel greater LNG tanker demand.

China's entry into the LNG market will likely force Asian importers toward the Middle East and Atlantic Basin markets to secure supplies. On top of this, future Chinese LNG terminals may also draw on Middle Eastern supplies, which European projects will also demand. PetroChina has signed a letter of intent with Qatargas Operating Co. to supply its Dalian LNG terminal with 3 million tons of LNG/year. The terminal has been approved by the China's National Development and Reform Commission, and would likely enter service after 2010. Also, terminals built by Sinopec (China Petroleum and Chemical Corporation) could be supplied with Iranian LNG if tensions over the nuclear program ease and the National Iranian Gas Company can hire appropriate contractors to build liquefaction facilities.

In addition, Chinese companies will make more forays into the LNG spot market, which will magnify the global price effects of increased Chinese LNG demand since many of these cargoes will come from Middle Eastern and Atlantic Basin suppliers who sell to Europe. The Dapeng terminal has taken 7 spot cargoes in the past year from Algeria and Oman. The spot purchases show that Chinese LNG consumers are increasingly willing and able to pay world prices for their supplies.

The next step will be to see whether or not future Chinese projects secure supplies at the prevailing long-term world LNG contract price of \$9-11/MMBtu. Dapeng now gets contract gas from Australia's Woodside at roughly \$3/MMBtu and the Shanghai and Fujian projects will receive Malaysian and Indonesian gas for \$5-6 MMBtu.

Chinese LNG Demand Growth and 'X-Factors'

In its 18 months of operation, the Dapeng Terminal has taken 3.67 million tons of LNG. Yet by 2015, LNG demand in Southeast and East China and Shanghai could equal between 15 and

20 million tons/year (225-300 cargoes/year). Major 'X-factors' that will affect Chinese LNG demand growth include:

- Domestic gas production in China. Can it continue to grow at 13-19% per year, as it has over the past several years?
- Pipeline projects bringing gas from Central Asia and Russia.
- Whether or not the now-Ministry level State Environmental Protection Agency is granted real enforcement powers.
- The state of rail bottlenecks, which raise coal prices in coastal markets (Beijing plans to invest \$41 billion in rail infrastructure improvements beginning in 2008).
- Whether or not the government begins implementing meaningful emissions taxes on coal use in coastal areas.
- Sustainability of Chinese coal production, which has grown by 80% since 2002 to 2.52 billion tons in 2007. If coal production cannot keep pace with demand, gas demand could grow rapidly.
- Global coal contract and spot prices relative to LNG prices (China is now a net coal importer).
- Chinese nuclear power development. Nuclear power will compete for 'non-coal' power generation share in coastal China. Early forecasts called for 40 GW in nuclear generation capacity by 2020, but this could hit 60 GW. Even at the low end, if this eroded 10% of the 'non-coal' power, it could displace 8.5 million tons/year of LNG demand.
- Consumers' willingness and ability to pay world market prices for LNG supplies.

Conclusion

In short, while the exact growth rates are still uncertain, China's hunger for pipeline gas and LNG will likely significantly expand in coming years. The broad point for European energy policymakers and gas consumers is that China's influence on Europe is not just as a supplier of inexpensive consumer goods. It is also increasingly a competitor for gas supplies in a globalising market and will likely come to substantially affect European pipeline gas and

LNG supplies and prices within the next 2-5 years.

Microclimates – Top Stories in Energy and Environment

Bundle of nerves

Led by France and Germany, EU member states that oppose sweeping energy liberalisation have persuaded the European Commission to rethink a forced split of companies' production and distribution assets. This undoubtedly poses significant harm to European consumers. Only full-scale ownership unbundling will put an end to the obstacles to energy trade across borders within the EU, unnecessary restrictions European consumers face in their choice of supplier and the uncompetitive energy prices that result from these constraints.

http://www.ft.com/cms/s/0/37c75f34-e635-11dc-8398-0000779fd2ac.dwp_uuid=70662e7c-3027-11da-ba9f-00000e2511c8.html

No EU is an island

A report prepared for an EU summit this week, which is the EU's first in-depth study of the impact of global warming on its foreign and security policies, identifies several regions where climate change appears all too likely to threaten the EU's security or damage its political and economic interests.

<http://www.ft.com/cms/s/0/51fd345c-ef0c-11dc-97ec-0000779fd2ac.html>

Nabucco No Go?

President Putin and Hungarian Prime Minister Gyurcsány signed an agreement that will see a stretch of the \$10 billion South Stream pipeline running across the south-eastern European country. Hungary seems to be opting for the South Stream at the expense of the competing Nabucco pipeline. In the same month it was also joined by Serbia.

<http://www.themoscowtimes.com/stories/2008/02/29/041.html>

Springing to Life

The European Union is to send a team of senior policymakers to Beijing next month for talks on climate change, the EU's trade deficit with China and other economic issues. The delegation will be led by José Manuel Barroso, the European Commission president, and is likely to include five to eight other commissioners, notably those responsible for trade, energy, the environment and external relations. One purpose of the April 25 talks is to raise Sino-European links to the level set by the US and China, which in 2006 launched a strategic economic dialogue that brings together both sides in twice-yearly cabinet-level meetings.

<http://www.ft.com/cms/s/0/1456aac4-ebca-11dc-9493-0000779fd2ac.htm>