December 2014

THE OXFORD INSTITUTE FOR ENERGY STUDIES

China's Coal Market:

Can Beijing Tame 'King Coal'?

Executive Summary

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Chinese coal imports have grown at a dramatic rate since 2009, when the country became a net importer. In 2011, China became the world's largest coal importer, outpacing Japan, while in 2013 China imported 327 million tons (Mt) of steam and coking coal and accounted for about a quarter of global steam coal imports. This reliance on international trade mainly stemmed from logistical constraints and commercial considerations. At the end of the last decade, the rapid growth in coal demand led to recurrent shortages, aggravated by transportation bottlenecks, which in turn led consumers in southeast coastal regions to turn to imports to secure their coal supply. Above all, however, Chinese coal imports have been driven by coal price arbitrage between domestic and international coal prices. As the world's largest coal producer, China has become the 'swing *buyer' of the coal market,* buying on the international market when international prices are lower than domestic prices and largely relying on domestic coal when imports are unattractive. China's domestic steam coal prices therefore set a price cap for international steam coal prices. For almost all of the past four years, imported coal has been cheaper than domestic supplies, burdened by high transportation costs and heavy taxes. Imports of all types of coal surged, but particularly lignite (low-calorific value coal) sold at a discount on other types of coal.

Given its dual role as the largest importer and the 'swing buyer', China has a considerable power on the international steam coal trade and a change in Beijing's energy and climate policy is set to create waves in the global coal market. A review of the coal supply chain and market trends in China shows that Beijing is working towards eliminating all logistical constraints that led to the surge in coal imports. Short, medium- and long-term market and policy developments, however, have different impacts on international steam coal trade.

Short-term: the key priority is to resolve the domestic oversupply issue

China's coal industry has been in crisis since 2012, with demand growth significantly weakened by the economic slowdown, the fight against air pollution, and the increasingly large role being played by clean energy sources. In fact, coal demand decreased in the first three quarters of 2014, its first decline since 1998. Growing imports and the expansion of coal production has turned the domestic market from tightness to oversupply and exerted downward pressure on domestic coal prices. Fierce competition has developed between foreign and domestic suppliers, leading to a downward spiral of coal prices. After a 16 per cent drop in 2012/2013, domestic steam coal prices at Qinhuangdao, the largest port in China, fell a further 16 per cent in the first half of 2014, reaching a six-year low. Weak prices have a detrimental effect on Chinese miners: in the first half of 2014, over 70 per cent of China's coal companies were reported to be making losses and more than half of them to be having difficulties in paying worker wages. This led the government to intervene to resolve the oversupply situation.

The government has implemented a series of measures on production, trade, taxes, and regulation aimed at stabilizing the coal industry. Key producing regions have been instructed to reduce their

production and large mining groups are cutting their output of the second half of 2014. Shenhua Energy Group, China's largest coal mining company, has announced its intention to cut production by 50 Mt or about 10 per cent of its original target for 2014. Other large mining groups, such as China Coal Group and Datong Coal Mine Group, have followed suit. The announced reductions, added to the closure of small mines, mean a significant reduction in coal output, exceeding 200 Mt from original targets for 2014, although this remains modest considering that China produced 3.7 billion tons (Gt) in 2013. Nevertheless, 2014 is expected to be marked by the first reduction in China's coal production since 1998. Solving the overcapacity issue, however, requires strict discipline among producers.

Furthermore, leading power groups have to reduce their coal imports in the last four months of 2014. The sudden reduction in Chinese imports, estimated at 50 Mt for 2014, comes at a time when the international coal market is still oversupplied despite cuts in production in several exporting countries. Coal exporters to China have difficulties in finding another buyer. This further depresses international steam coal prices, although prices are so low that they cannot fall much further.

In addition, since 15 October 2014, China has reintroduced a duty on coal imports, which makes domestic coal cheaper than international supplies. Furthermore, the ban on the production, imports, and sales of low-quality coal with high sulfur and high ash contents, under discussion since early 2013, will become effective on 1 January 2015. It is expected to have limited impact on international markets although interpretation of the regulation is not yet fully clear. For coal suppliers to China, these sudden changes highlight increasing uncertainty and risks.

On the Chinese market, in contrast, domestic prices are rising, but the increase will be limited as long as the overcapacity is not eliminated. With inventories of around 300 Mt across the country, China's supply needs to fall 7-8 per cent to restore market balance. The instruction given to major Chinese producers to cut their production should speed up the process.

Medium/long-term: a major restructuring and transformation of the coal sector

Beyond the short-term reshuffle, China's coal sector is in the midst of a radical transformation that will have far-reaching implications for the international coal trade. The ongoing restructuring and consolidation of the mining sector, structural changes in energy and coal markets, and massive investments in transportation and trading, all have the potential to change how coal is produced, traded, and consumed in China.

Re-orientation of the energy policy

The serious aggravation of local pollution and persistent smog in major cities since the beginning of 2013 have contributed to reinforce environmental policies aimed at fighting local pollution and one of its major causes: coal burning. Since the middle of 2013, the central government has introduced new measures and initiatives to re-orient the nation's energy policy. The priority is to reduce the contribution of coal in the energy mix and combat air pollution and climate change. Alongside the overriding objective of guaranteeing secure energy supply, the new energy strategy aims at reforming energy production and consumption patterns, restructuring the energy mix towards cleaner energy sources, driving energy sector reforms, diversifying power sector energy sources, and cutting emissions from coal plants.

Coal demand to peak, move westwards, and be increasingly used in the power sector

The slowdown in economic activity and the rebalancing of the economy towards a more balanced and sustainable growth path have already moderated the increase in energy and coal consumption. While coal consumption has grown so far in absolute terms, this growth has decelerated significantly and even stopped in 2014. The new energy development strategic action plan (2014-2020), issued by the State Council in November 2014, caps coal consumption at 4.2 Gt by 2020 and the share of coal in the energy mix at 62 per cent. The cap in coal consumption is needed to achieve the recent pledge by China to peak CO_2 emissions around 2030, with the intention to try to peak earlier.

The Chinese government has adopted a series of new policy measures that led to an eventual peak in coal demand. These include efforts to combat air pollution, the acceleration of the development of clean energy sources, the implementation of pilot carbon trading schemes, and the reform of the coal

resource tax. In September 2013, the State Council released a plan to curb air pollution mainly by capping coal consumption in the most polluted eastern regions, accelerating the development of low- or non-carbon energy sources, raising energy efficiency standards in key industrial sectors, and limiting the number of vehicles. The plan introduces stricter emission performance standards for coal-fired power plants and moves to eliminate use of small-scale coal boilers. Six provinces have pledged to reduce their coal consumption by increasing their power imports from other regions, natural gas supply, and the use of non-fossil fuels. The number of provinces capping their coal use is growing alongside rapidly rising public concern about air quality, extension of stringent air pollution reduction targets to more provinces, and as enforcement rules are becoming stricter. Total coal consumption now covered by strict air pollution regulation amounts to half of total coal consumption, mainly in East China.

Coal will also see a significant reduction in its share of the national energy and electricity mix following the acceleration of the development of non- or low-carbon energy sources. China is the world's leading investor in clean energy and also in the building of nuclear power plants. The country is also accelerating the development of its gas supplies with the signing of mega contracts with neighboring countries such as Russia and global LNG suppliers, and by further developing its domestic supplies, including shale gas, coal bed methane, and SNG (synthetic natural gas).

However, coal will continue to play a dominant role in the energy mix for many years, despite its decreasing contribution in the energy and electricity mix. Industrialization in Western China and urbanization of the country still require large amounts of energy and electricity, spurring China's overall energy demand, although total energy demand is controlled at 4.8 billion tons coal equivalent by 2020. Moreover, two developments will increase coal use in Western China.

Nine large-scale coal-power bases are being developed, alongside major transmission power lines to deliver electricity to the east. The government expects that the efficient development and the centralized management in the coal-power bases will reduce pollution and emissions and bring down the total environmental cost for the whole country. To reconcile the use of coal and environmental issues, China promotes the use of advanced clean coal technologies and stricter environmental admittance criteria for coal-fired power plants.

China is also building advanced coal conversion plants (coal-to-gas, or CTG; coal-to-chemicals, or CTC; and coal-to-liquids, or CTL) which are a source of potentially large demand growth. Most of the projects are located in northwest water-scarce regions (Inner Mongolia in particular), which has stirred great controversy about the water and carbon footprint of these projects. Following numerous projects announced at local level, the central government is to control the development of this new industry and has imposed stricter environmental conditions on the projects. Furthermore, the government has given priority to the use of coal by the power sector, making the removal of air pollutants easier.

Coal production moves westwards and becomes more efficient and sustainable

China's coal mining industry is still developing, but the development model is changing, with the sector being restructured into large-scale production bases dominated by major state-owned energy groups. Fourteen large modern coal bases are being built, integrating the in-situ conversion of coal into lucrative value-added products: electricity, SNG, CTL and CTC. Production is increased in northwestern regions while it is restricted in other regions. The development of Xinjiang coal resources, in particular, is the focus of future expansion. The Autonomous Region holds 40 per cent of China's coal resources, is also well-endowed with other energy sources, and intends to become a strategic energy base for the rest of the country. At the same time, China continues to close thousands of small, unsafe, or unprofitable coal mines. Production is also more concentrated, as integration between coal mining groups, as well as between coal and power, is promoted to create large-scale global energy groups, such as Shenhua Energy Group, with strong management, financial, and technological capabilities.

This development prepares the foundation of a modern coal industry based on advanced clean coal technologies for both production and use of coal; a prerequisite to the sustainable development of the sector. In this scenario, sustainable criteria are the limiting factor to the growth of coal production and

more generally to the development of the sector. In particular, some sectors in the coal industry are highly water intensive, and water shortages are a major barrier to further development.

Transportation bottlenecks to ease

While transportation bottlenecks have been a major driver of coal imports, rail tension is easing gradually, with the opening of major rail projects that link mines in Inner Mongolia and Shanxi to ports in the northeastern Bohai Bay – where capacity is also expanding. As most of these projects are to be completed in 2014/2015, imported coal will soon face fiercer market competition from domestic suppliers. Moreover, China is expected to see a fundamental change in the rail transportation of coal in the future, as new coal-dedicated railways built from north to south and west to east will allow coal to be brought in from more remote provinces, such as Xinjiang.

The decision to build 12 new ultra high voltage (UHV) power lines from west to east is also a key strategic component of the future development of coal and renewables. The power lines will enable the transition from a system based on fossil fuels with clean energy as a supplement to a clean-energy system with fossil energy as backup. As the transmission channels will transport power and not fossil fuels, they will ultimately allow different energy sources to compete on costs, carbon emissions, and dispatchability. Price signals would then determine technology winners.

Coal prices: the fall is over

The decline in coal prices in China has allowed the central government to push forward key reforms in the coal sector, such as the liberalization of the price of coal sold to power companies and the further restructuring of the mining sector. However, the fall has reached a point where it creates concerns about the viability of the sector and economic growth and stability in some mining regions. As such low coal prices do not fit with the environmental policy of the new leadership, nor the need to invest in clean energy sources (including clean coal), we can expect current efforts to stabilize the market to continue. The objective of the new policy is to reach parity between coal and wind prices in the power sector by 2020, which will require massive development of wind to decrease costs or an increase in coal prices. Reform of the coal resource tax and the implementation of a national carbon trading scheme will reduce the price gap between coal and new energy sources.

Coal imports will decrease, but not vanish

Coal imports will be reduced as coal consumption in the main importing coastal regions is expected to weaken, but they will not vanish as the government encourages the import of high-quality coal. As long as foreign coal meets the new quality standards, and as soon as the domestic market rebalances, the arbitrage between domestic and international prices will again play a key determining role. Furthermore, Chinese companies are encouraged to invest in mines overseas to secure coal supplies. After a pause in China's investment abroad, the low price of coal has allowed Chinese companies to restart their buying spree in overseas coal mines. Large coal mine development projects are planned in a growing number of coal-producing countries, such as Australia and Indonesia. Major coal contracts signed recently with Mongolia and Russia indicate the increasing role of neighboring countries in China's future coal supply.

Concluding remarks

Another key change is at work: increasing Chinese exports. The government is expected to adapt its export policy in a timely manner with domestic and international market circumstances. Considering the dramatic changes that take place on the domestic market, China may again become an important exporter in the Pacific Basin, not only selling its surplus production, but also as a global trading player from its portfolio of overseas mines.

These moves signal a more market-based approach to coal trading in China, with an optimization of resources taking into account not only domestic coal but also overseas resources ('the two markets, two resources' concept). If China's coal demand peaks sooner than expected – from the viewpoint of China's producers and foreign coal exporters – ASEAN coal demand still registers a strong growth, offering an opportunity for China's major mining groups to expand their presence overseas and increase their source of revenues. Current massive investment in coal-dedicated railways, expansion

of port capacity, improvements in mine productivity, development of coal trading platforms, trading exchanges, and the launch of the first swap contracts priced in renminbi, may well serve this vision.

About the author

Sylvie Cornot-Gandolphe is an independent consultant on energy and raw materials, focussing on international issues. Since 2012, she has collaborated with the Energy Centre of the French Institute of International Relations (IFRI) as a research associate, with CyclOpe, the reference publication on commodities, with CEDIGAZ, the international centre of information on natural gas of IFPEN, and since 2014 with the Oxford Institute for Energy Studies (OIES). Sylvie Cornot-Gandolphe has a long and proven experience in global gas and energy markets, gained during her past positions at IFPEN/CEDIGAZ, the UN/ECE, the IEA and ATIC Services. She is the author of several reference publications on energy markets. Her latest publications include reports on gas and coal: Japan's new energy policy (CEDIGAZ Insight, November 2014), China's Gas Strategy (IFRI, November 2014), Coal and Coal Competition in the EU Power Sector (CEDIGAZ, June 2014), Shale gas development in Europe (IFRI, January 2014), The impact of the U.S. shale gas revolution on Europe's petrochemical industries (IFRI, November 2013), Underground gas storage in the world (CEDIGAZ, June 2013), Global coal trade: from tightness to oversupply (January 2013).