

Asia's changing landscape

Global coal markets have witnessed an unprecedented decade of growth from 2000 to early 2011. Coal has been the fastest growing source of fossil fuel – faster than oil or natural gas – for the last 10 years. International trade volumes have nearly doubled since 2000. In fact, coal has added nearly as much energy to world supply as all other forms of energy combined since 2000: 2000 – 2010 was “coal’s decade”.

At the heart of this 10 year bull run is the macroeconomic ascendance of non-OECD energy demand, a trend one witnesses in countless market indicators: mining investment trends; new trading offices flocking to Singapore and Jakarta; the emergence of South China CIF benchmarks; coal overtaking oil as the

largest source of energy in non-OECD countries; and the fact that global coal prices have emerged relatively unscathed after both recession and multiple commodity sell-offs. This trend has been described previously in multiple publications.¹ However, both macroeconomic conditions and conditions on the ground in the fastest growing Asian markets are shifting rapidly. Market participants would be wise to think critically about what of the last 10 years can be extrapolated forward, and what cannot.

In the coming years, avoiding risks and capturing returns will require a deeper understanding of how each of the world’s major markets is developing. In this article, selected key “knowns and unknowns” emerging in Asian markets

will be discussed, highlighting elements of predictability in the market and contrasting them to key uncertainties that any coal market participant should be watching closely. What emerges is a view of the market that participants can use as they structure their own exposure to the markets, considering how to best strike that delicate balance between risk and return.

The knowns

Demand

The top five global importers of hard coal are now China, India, Japan, South Korea and Taiwan. Historically, Japan, South Korea and Taiwan have been the importing “coal tigers” in Asia, and their demand can be considered comparatively



assured. While China and India have joined the three “tigers” to enter the top five importers globally, their import behaviour is less of a “known,” predictable pattern. The authors consider the historical “coal tigers” in this section and return to India and China later in the article.

Japan

Despite the recent Fukushima nuclear disaster in Japan, the country is expected to remain one of the world’s top coal importers. The country has about 243 GW of installed power capacity, of which only 16% is coal-fired. In 2010, the country imported 129 million t of steam coal.

For many years, Australia has been the main supplier to Japan. The March 2011 earthquake and resulting tsunami hurt

both nuclear power generation and coal-fired generation, reducing electricity demand as a whole. More than 6 GW out of 39 coal-fired GW were shut down after the disaster, which is expected to reduce Japan’s import demand by 19 million t to about 110 million t in 2011.² The recent Fukushima crisis has also put a new strain on nuclear energy use in Japan, and policy is now focusing more on renewables and, quietly, even on coal. The authors’ view is that Japan’s coal imports will continue growing in a “Nuclear Replacement Scenario”, but at a modest pace, as policy will focus on replacing lost nuclear with renewables where possible. In 2012 and the following years, Japan is likely to again import 120+ million t. Despite the moderating import growth in Japan over the long term, the country will

likely remain one of the three main importers of thermal coal for at least another 10 years.

South Korea

Coal currently accounts about 44% of South Korean power generation, with the country importing about 90.9 million t in 2010 (IEA). Around 40 million t was imported from Indonesia. Despite the Japanese natural disaster and despite some European countries (e.g. Germany) seeking a complete substitution of all nuclear power, South Korea is expected to substantially increase its nuclear capacity in the years to come. As a result, coal- and gas-fired generation will most likely slowly decrease. The authors nevertheless predict that thermal coal imports will stay at about 90 million t until the mid-2020s.

Richard K. Morse, Stanford Program on Energy and Sustainable Development, US, and Dr Lars Schernikau, HMS Bergbau AG, Germany, weigh the risks of the next Asian coal decade, including a special report on the potential for US coal exports to Asia.

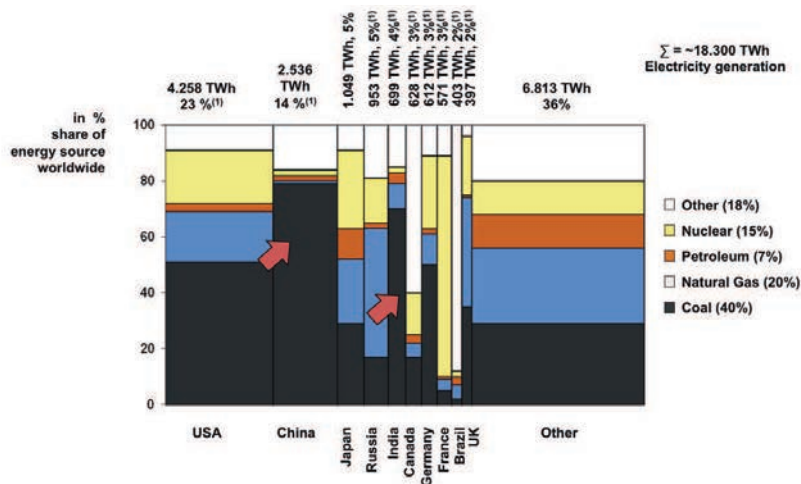


Figure 1. China and India drive the increase of global coal use. Source: IEA - Statistics: Schernikau (Dissertation; 2009).

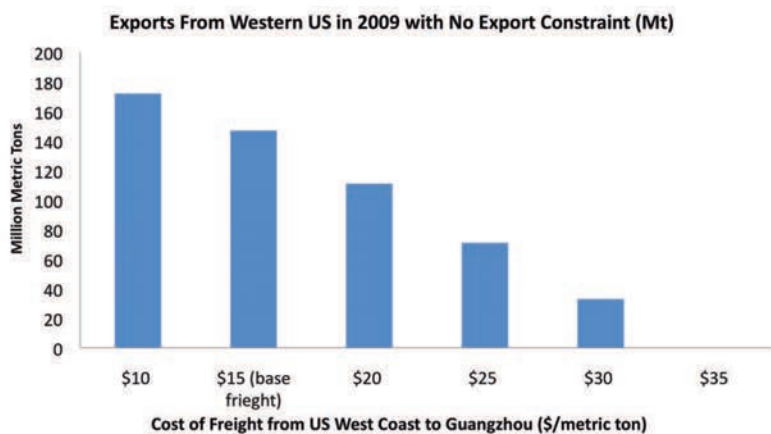


Figure 2. Powder River Basin exports are highly sensitive to freight: exports from the US West Coast in 2009 with no export constraint. Note: this modal run allows the US to switch to gas as PRB prices escalate.

In the meantime, South Korea is among the first major Asian importers to search for new suppliers, including contracting several million tonnes of US coal for 2011 delivery.³

Taiwan

Of its 43 GW installed capacity, 28% is coal-fired, which accounts for 41% of Taiwanese power generation. Power demand is expected to increase over 40% within the next 10 years.⁴ Parting from its Japanese and South Korean peers, Taiwan will further increase its coal-fired generation base and, as a result, increase its imports substantially. For example, Tai Power alone will likely import about 45 million t in 2021 compared to 27 million t in 2011.⁴

Supply

The Asian market is mainly supplied by Indonesia, Australia and Russia, in that order (though South Africa is also increasingly sending coal into the Pacific Basin).⁵ Recent developments in each country are summarised briefly below.

Indonesia

The country produced over 320 million t in 2010, of which almost 280 million t were exported. About 50 million t were used for local demand.⁶ The absence of logistical constraints to expanding imports, which can plague Australia and Russia, contribute to the country's strategic advantages as the world's largest thermal coal exporter.⁷ Coal is close to the rivers and is barged to

offshore anchorages where coal terminals are not near. The country has been the largest thermal coal exporter in the world since 2004, and its importance will continue increasing due to another strategic advantage: proximity to the large importers such as China and India. For instance, according to the Verein der Kohlenimporteure (VDKI), almost 75 million t of coal was exported to China in 2010 alone and Indonesia now exports twice as much thermal coal as Australia.

However, Indonesia does suffer from one disadvantage relative to its competitors: in terms of coal quality, Indonesia cannot compete with Australia or Russia. But new flexible power plants and a trend in global demand towards lower quality coals assists Indonesia's low quality export growth. While the authors cannot discuss the governmental and regulatory issues in Indonesia here, suffice it to say that Indonesia remains a relatively risky supplier because of the unpredictability of its Government.

The next frontier of Indonesian growth is developing in Sumatra. With large resources currently held back by inland logistical constraints, the authors predict that this region will account for significant future growth in coming years.

Australia

Australia exported nearly 300 million t of hard coal in 2010, including 155 million t of metallurgical coal, of which over a third went to Japan alone.⁴ The most significant limit to the country's export growth potential are rail and export terminal constraints.⁸ It is at the forefront of international exporters in terms of environmental and productivity optimisation of its coal production operations. The authors predict that Australia will continue to be the most important metallurgical coal exporter, but that it will cede some market share to Indonesia and Russia.

Russia

In 2010, Russia exported approximately 95 million t of thermal coal and 14 million t of metallurgical coal. Exports have been stagnant driven by an increase in domestic demand and domestic logistical constraints.⁶ Over 30 million t went east to China, Japan,

South Korea and Taiwan (in that order). The first Russian-sourced capesize vessels have even been sold to India, though whether this supply arrangement is sustainable over the long term is questionable. Exports from Russia into the Asian markets will continue to grow but, similarly to Australia, it is important to note that rail and export terminal capacity are key constraints.

Disruptive unknowns

Will the US disrupt Asian trade patterns?

The US has long been an exporter of metallurgical coal, but its thermal coal exports have been more volatile, as the US typically functions as a high-cost “swing supplier” into European markets. But crucially, this historical position is based on the fact that exports have almost entirely come from eastern or gulf ports. As a result, the US has only infrequently sent significant volumes of thermal coal into the Pacific Basin over the last 20 years. But if US producers have their way, these historical patterns are about to be upended.

US companies are now attempting to pave the way for shipping large volumes of Powder River Basin (PRB) thermal coal out of US West Coast ports into Asian markets. If this happens, Asian trade patterns in the Pacific Basin could be dramatically altered.

The PRB has an abundance of cheap, low-sulfur coal. But the combination of cheap domestic natural gas, which is shifting the merit order and driving coal-gas switching, and new environmental regulations around NO_x, SO_x, and CO₂, which are likely to force retirements and constrain new investment in coal-fired plants, are creating a confluence of bearish factors for US domestic coal demand. In Q1 2011, US coal generation hit a 30 year low. With the US coal demand outlook bearish and Asian demand soaring, the arbitrage trade seems clear: send PRB coal to Asian markets.

Peabody Energy and Arch Coal envision exporting up to 100 million tpa through ports in Washington state into Asian markets. The entry of 100 million t of new, low-cost thermal coal might shift the competitive dynamics of the Asian coal trade.

But this potentially disruptive development is far from the simple arbitrage

trade it first seems. Both the logistics of accessing sufficient port capacity and the economics of US coal competing against Indonesia and Australia in Asian markets are far from assured. Coal markets observers would be wise to pay close attention to the factors that will make or break this dramatic new entry of PRB coal into Asia.

First, Arch and Peabody will have to secure new port capacity. Fred Palmer, senior vice president for Government relations at Peabody, has said Peabody alone would like to eventually send 50 million tpa from the West Coast.⁹ Arch and partner Ambre Energy are targeting similar export capacities. Several initial port projects have been targeted, but resistance from local communities and environmental advocates is formidable and not to be underestimated. Expect contentious litigation and local politics to make or break the PRB coal’s ability to access west coast ports.

Second, even if the port capacity can be obtained, the economics of exporting PRB coal – which is geographically farther from Asian demand than Indonesian, Australian and Russian competitors—is not without significant market risks. Foremost among them is PRB’s freight exposure compared to its competitors when delivered into Asian markets. Figure 2 shows the results from Stanford’s Global Coal Model that estimate the freight sensitivity of sending PRB coal into Guangzhou, China, showing how changes in freight prices impact the competitiveness of PRB exports (the baseline scenario used assumes 2009 market conditions). In tight freight markets, PRB exports with unhedged freight exposure will have trouble pricing into Asia. Given the PRB’s low cost base, the combined price of domestic rail transport and dry bulk shipping is likely to decide whether PRB will be an abundant, low cost supply source, or a “swing supplier” pricing in only at the margin.

Third, whether US exporters can diversify their customer base in Asia beyond China will be crucial. While many US environmental groups are fixated on China’s imagined “insatiable appetite” for PRB coal imports, energy analysts understand that Asian coal demand is a more complex picture. While recently massive, China’s import demand will be fickle. China is an arbitrage importer, and import demand will be volatile as price spreads between Qinhuangdao and

international markets shift. Thus, whether PRB suppliers can compete with the other Asian exports to break into Japanese, Korean and Taiwanese markets is another key unanswered question.

Lastly, PRB may not be the only new exporter in the Americas eyeing Asian market share. Colombia, too, has indicated it plans to expand port capacity to enable Pacific exports. Colombian coals typically have a higher calorific value (CV) than PRB coal, which means their exposure to freight risk on an energy basis will be much lower. Arch and Peabody will be wise to watch their southern neighbors closely.

If PRB does enter Asian markets on a large scale, there will be likely to be clear winners and losers. Figure 3 shows how the competitive dynamics of the Asian coal markets might be altered by the entry of the PRB, demonstrating initial modeling results from a “PRB Exports Scenario” run in the Stanford Global Coal Model (this model run makes a number of assumptions and does not show Korean or Taiwanese demand; full details available through the Stanford Program on Energy and Sustainable Development website).

Capped power prices in India and China

In the coming years, many producers will count on import demand from China and India to bolster prices and profits. The statistics certainly point in that direction. China and India are on their way to becoming two of the world’s top three coal importers (Japan is the third). China imported 128 million t of thermal coal in 2010, while India imported 60 million t in 2010. Coal India Ltd’s (CIL) domestic production continues to fall far short of demand, forcing imports to fill the gap. Projections now estimate that imports could reach 400 million t by 2017.

But the unique structure of the power sectors in both countries may hold some surprises for future import behaviour. Power prices in both countries are controlled by the Government and capped, making it difficult if not impossible for power generators to pass high coal costs through to the end consumer. This issue, while often overlooked, is poised to have significant impacts for coal import behaviour in both countries. But those effects on coal imports will be radically different in each country. This factor will increase China’s import appetite and

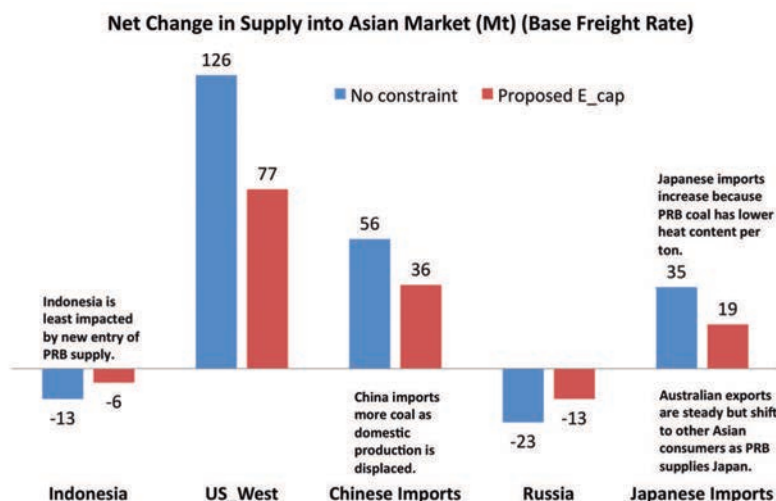


Figure 3. This chart shows two scenarios for PRB exports: the blue “no constraint” scenario assumes port capacity can meet export demand; the “proposed E-cap” scenario assumes 86 million t of export capacity.

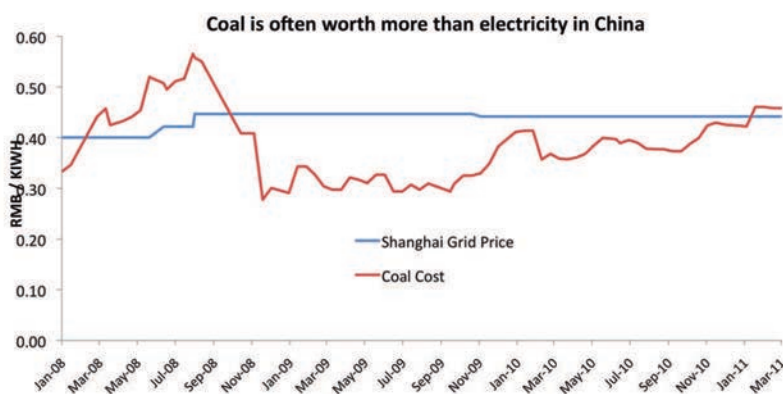


Figure 4. China’s power market cannot bear the cost of coal: coal is often worth more than electricity in China.

restrain India’s. To understand why this is the case, one has to examine the coal and power sectors in both countries.

In China, in certain years, raw coal has actually been worth more than wholesale electricity in recent markets (Figure 4). This is due to the fact that, while the power price is capped, Chinese domestic coal prices are not. In fact, over the last year they have been some of the highest coal prices in the world. This contributed to a dramatic power shortage in summer 2011, when generation margins suffered. Some were even negative. In such conditions, Beijing has typically resorted to two short-term strategies (other longer-term reform strategies are also underway).¹⁰

First, the Chinese Government attempts to cap or limit coal prices on

long-term contracts in the domestic market. Second, and crucially for the international thermal coal market, Beijing encourages generators near the coast to turn to imports, which are cheaper than domestic coal. In fact, industry sources have recently speculated that the Chinese Government will cancel the import VAT in order to further promote imports (this was done for LNG in August). In short, the combination of high Chinese coal prices with capped domestic power prices will tend to increase incentives for Chinese firms to import, and for policy to provide additional support for increased imports (all else equal). Note, however, that the capped power prices could also put a cap on import prices over the long term if domestic prices fall below import

prices.

In India, the reverse is true. Power prices are also capped below market value but, unlike in China, domestic coal prices are far below import prices. Indian generators can afford domestic coal: the issue is just that CIL and captive mines cannot produce enough of it and the quality is low (high ash). The Confederation of Indian Industry projects that the Indian coal deficit will increase from the current 83 million t to 400 million t by 2017.

As a result, when generators need to import, there are limited policy mechanisms to pass the cost of higher-priced import coals through to rate payers, which means capped power prices could restrain Indian generators’ ability to pay for imports and will make them much more sensitive to price.¹¹ Recent reports indicate that this problem is becoming more acute after tariff reductions. Platts reports that a tariff reduction from Rs 5 to Rs 3.81 in Karnataka has led traders to “sit on their hands” despite large coal stockpiles, and that generators have simply shut down rather than buy expensive coal.¹² If power sector reforms do not allow Indian generators to pass through the cost of imported coal, import demand could grow more slowly than it otherwise would.

This makes electricity pricing policy – and possible power market reform – a key issue that will impact coal import behaviour in both countries, directly impacting demand and prices in the international markets.

Other markets

Many people have spoken about Vietnam and its shift from a major coal (mostly anthracite) exporter to a major thermal coal importer. In recent discussions with Vinacom and PetroVietnam, the authors have learnt that Vietnam will soon import double digit (million t) thermal coal and retreat from exports all together. Other developing markets are Thailand and the Philippines and the growing Indonesian domestic demand.

Conclusions

This article has tried to point some of the elements of stability, as well as the not so obvious risks in the Asian market. The

authors are confident that Asia will continue fuelling the growth in trade of international thermal coal markets, on the demand side driven by India and China, as well as some smaller new markets such as Vietnam. However, market participants will have to learn to deal with increasing risks resulting from price and quantity volatility far beyond what has been experienced in the past decade. The new Asian coal business is simply different than the “traditional Pacific” coal business, which is also experienced in other industries. 

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11. India’s many efforts to acquire overseas coal assets are an effort to reduce this exposure to imports at spot prices.
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Notes

Dr Lars Schernikau is a main shareholder in the international coal trading, logistics and mining company HMS Bergbau AG, where he is in charge of South African and Asian marketing. Richard Morse is director of research on coal and carbon markets at the Stanford Program on Energy and Sustainable Development (PESD).