

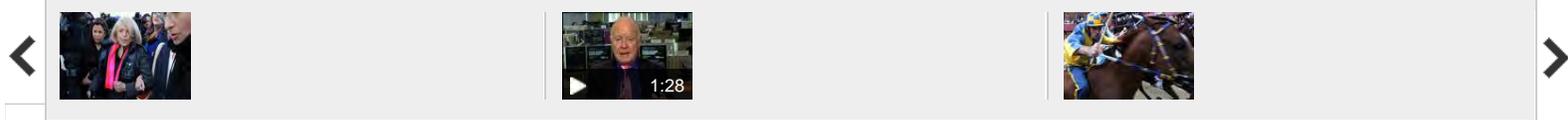
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## MARKET SNAPSHOT

	U.S.	EUROPE	ASIA
↓ DJIA	14,519.20	-40.43	-0.28%
↓ S&P 500	1,558.94	-4.83	-0.31%
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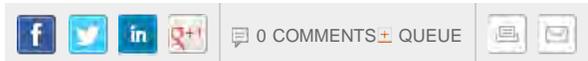
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## China Coal Imports to Fall With Domestic Prices, Bernstein Says

By Bloomberg News - 2013-01-14T02:38:43Z



China will cut coal imports this year as the cost of domestic supplies declines, Sanford C. Bernstein & Co. said in a report.

Net purchases from overseas will drop 47 percent to 150 million metric tons this year from 281 million in 2012, Bernstein said in the e-mailed note today. Average domestic benchmark prices will fall 7 percent, it said.

China, the world's largest consumer and producer of coal, is undergoing a structural slowdown in power-consumption growth just as the capacity for production and transport of coal increases, according to Bernstein. Domestic prices will slide through 2015, while still being susceptible to "seasonal bumps," Bernstein said.

"We believe that Chinese coal imports are likely to fall in absolute terms in 2013 as lower-priced domestic supply pushes out imports," Michael Parker, a Hong Kong-based analyst at Bernstein, said in the report. "Over that entire time, we expect coal prices to trend downward. There is plenty of supply available both domestically and from the seaborne market if coal prices creep back up."

The average price of coal with an energy value of 5,500 kilocalories per kilogram at the Chinese port of Qinhuangdao will slip to 650 yuan (\$105) a ton this year and in 2014, compared with 699 yuan in 2012, Parker predicted.

The fuel traded in a range of 620 yuan to 630 yuan a ton as of yesterday, according to data today from the China Coal Transport and Distribution Association.

To contact Bloomberg News staff for this story: Chua Baizhen in Beijing at [bchua14@bloomberg.net](mailto:bchua14@bloomberg.net)

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# China's Coal Market Not the "Promised Land" for International Suppliers

*Coal imports set to peak before end of the decade and decline, major new IHS study says*

**Category:** [Energy & Power](#), [Energy & Power Media](#)

Thursday, February 7, 2013 3:30 pm EST

**Dateline:**

CAMBRIDGE, Mass.



(February 7, 2013) – Chinese coal imports will peak before the end of the decade and enter a prolonged period of decline, challenging assumptions that the country's demand for internationally-traded steam coal could continue to rise inexorably, according to a major new IHS study. A moderation of demand combined with a rise in domestic supply and improved transportation will bring international producers into increased competition with domestic suppliers, the study says.

IHS analysis shows that imports have already peaked at 145 million tons of standard coal equivalent (SCE) in 2012. A gradual, long-term decline is expected ahead through 2035.

"Many companies that have targeted China as their strategic supply region in the long term may need to rethink that strategy," said Xiaomin Liu, associate director of IHS CERA in Beijing. "Some international suppliers will be able to compete effectively, but others will struggle to find a competitive edge as China's market becomes ever more liquid."

The study, *Coal Rush: The Future of China's Coal Market*, represents the most comprehensive research to date on the Chinese coal market, providing analysis on coal supply, demand and logistics. The study examines all aspects of the coal market structure in China, including coal resources, production trends, cost of production and coal quality at the national, regional and field levels.

China became a net coal importer in 2009 and a key driving force in the international seaborne coal market as the country's import volumes ballooned. However, several factors are combining to make China's recent dramatic growth in coal imports short lived, the study says.

China's coal demand growth is expected to decelerate due to moderating economic growth and fuel diversification, among other factors. Raw coal demand is expected to peak around 2025 around 5.1 billion metric tons (bt), up from 3.7 bt in 2011. This represents an annual average growth rate of 2.4 percent compared to a 10 percent average growth rate over the past decade, the study says. Steam coal demand is expected to peak shortly after (around 2027) at about 4.3 bt before gradually declining.

At the same time, new productive capacity has been continuously added in China as a result of the high price-driven investment in the mining sector that totaled RMB1,600 billion (\$250 billion) over the past five years, the study says. China's productive capacity for all types of coal has increased nearly four-fold over the past decade to more than 4 bt a year and is expected to grow further as demand rises.

More importantly, transportation bottlenecks between domestic coal fields and demand centers emerged as a result of the rapid rise coastal consumption, adding costs to delivered prices along the coast that helped make imports more competitive. These bottlenecks are now being addressed, the study says. (IHS expects 800 million metric tons of new coal-carrying railway capacity to come online in the next five years, releasing currently "stranded" productive capacity to the market.)

Domestic mining costs also have the potential to come down. Cost escalations as companies complied with safety, environmental and labor regulations following a government-commenced consolidation process begun in 2008 are coming

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**"Substantial fuel-switching in key coal-consuming sectors—such as power—could occur as natural gas supplies come online."**

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to an end and mines are achieving much greater scale of economy, the study says.

The combination of demand moderation, supply growth and improved transportation are expected to drive the drop of import volumes during 2015-2020 as the market enters the downward part of the current cycle. But an additional factor will prolong the downward trend beyond 2020, the study says.

"The early 2020s is when China's own shale gas revolution is expected to begin," Xizhou Zhou, director of IHS CERA in China said. "Substantial fuel-switching in key coal-consuming sectors—such as power—could occur as natural gas supplies come online."

For additional product information related to *Coal Rush: The Future of China's Coal Market* contact Sam Shoro, +44 203 159 3409 or sam.shoro@ihs.com

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## Indonesia Low-Grade Coal Prices Seen Falling on China Supply

March 15, 2013



Excavators operate in the open pit coal mine at the Eksploitasi Energi Indonesia operations in Asam-Asam, South Kalimantan, Indonesia, on Monday, Oct. 29, 2012. (Bloomberg Photo/Dadang Tri)

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[Serigala-Berbulu-Domba](#) 2:40pm Mar 16, 2013

*Not particularly uplifting news for the high-flying and other folks involved in all manner of ways in*

The price for low-grade power-station coal in Indonesia, the world's biggest exporter of the fuel, fell last week as Chinese stockpiles rose, according to a Bloomberg News survey.

Indonesian coal with a calorific value of 4,000 kilocalories a kilogram and 0.5 percent sulfur averaged \$39.62 a metric ton in the week ended March 8, down from \$42.93 a ton a week earlier, according to the median forecast of three traders in the survey.

Coal with a heating value of 4,500 kilocalories a kilogram and maximum 1 percent sulfur rose to an average \$54.32 a ton in the same week from \$51.25 a week earlier, the survey showed. Indonesian high-grade bituminous coal with a calorific value of 5,800 kilocalories a kilogram and as much as 2 percent sulfur averaged \$71.20 a ton, rising from \$71.10 a ton the previous week, according to the responses.

China's benchmark price for coal at Qinhuangdao, the nation's biggest port for the fuel, fell 5 yuan from the week before to a range of 615 yuan (\$98.93) to 625 yuan a ton as of March 10, the lowest in more than three years, according to data from the China Coal Transport and Distribution Association March 11. Stockpiles of the fuel at Qinhuangdao rose 3.6 percent to 7.45 million tons, the highest in a month.

### Gross-as-Received

All Indonesian prices are on a gross-as-received and free-on-board basis at Kalimantan or Sumatra, Indonesia's two main coal-producing regions.

They represent cargoes loaded on Supramax vessels, which can carry about 50,000 tons. Actual prices may vary from grade to grade, depending on moisture, ash and sulfur contents, loading point and rate.

Indonesian coal swaps fell for a second day, according to data from Ginga Petroleum Singapore Pte.

The contract for supplies of the fuel with 4,900 kilocalories per kilogram loading in the third quarter dropped 85 cents to \$63.80 a ton yesterday, Ginga reported in an e-mail today. The April swap declined 85 cents to \$63.40.

About 60 percent of Indonesia's coal is classified as

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*the Bumi plc fiasco, and their respective Indonesian coal operations. Yet more heat on the Bakrie Group's finances and a further distraction for the would-be-President, Aburizal Bakrie.*

**Serigala-Berbulu-Domba** 3:51am Mar 16, 2013

*Not particularly uplifting news for the high-flying and other folks involved in all manner of ways in the Bumi plc fiasco, their respective Indonesian coal operations. And yet more heat on the Bakrie Group's finances and a further distraction for the would-be-President, Aburizal Bakrie.*

sub-bituminous. Higher moisture levels and a lower carbon content reduce the heating value compared with better-quality stock. Sub-bit coal has fewer than 6,100 kilocalories per kilogram, according to the Indonesian energy ministry.

*Bloomberg*

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↓ S&P 500	1,554.26	-2.63	-0.17%
↓ NASDAQ	3,235.85	-9.15	-0.28%



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# China Coal Price Falls to Three-Year Low as Inventories Rise

By Bloomberg News - Mar 11, 2013 1:53 AM ET

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The benchmark price for [China's](#) power-station coal fell to the lowest in more than three years as increased imports of the fuel boosted stockpiles amid a slowdown in power generation.

Spot coal with an energy value of 5,500 kilocalories per kilogram at the port of Qinhuangdao was at a range of 615 [yuan](#) (\$98.85) to 625 yuan a metric ton as of yesterday, down 5 yuan from the week before, according to data today from the China Coal Transport and Distribution Association. That's the lowest price since Oct. 19, 2009, according to data compiled by Bloomberg. Stockpiles of the fuel at the port rose 3.6 percent to 7.45 million tons, the highest in a month.

China's [electricity output growth](#) slowed to 3.4 percent in the first two months of 2013 from December's 7.6 percent as industrial production had the weakest start to a year since 2009, data from the National Bureau of Statistics showed Mar. 9. The nation [imported](#) 53.85 million tons of coal in January and February, 34 percent higher than a year earlier, the General Administration of Customs said March 8.

"Relatively high stockpiles and weak power generation weigh on domestic coal prices," [Helen Lau](#), an analyst at UOB Kay-Hian Ltd. in [Hong Kong](#), said by phone. "The government's efforts in energy conservation and pollution reduction may also curb a recovery in prices."

The government plans to reduce the nation's carbon emissions and energy use per unit of gross domestic product by at least 3.7 percent in 2013, the National Development and Reform Commission, China's top economic planner, said in a report March 5. The country cut [energy intensity](#) by 3.6 percent last year, beating a target of 3.5 percent.

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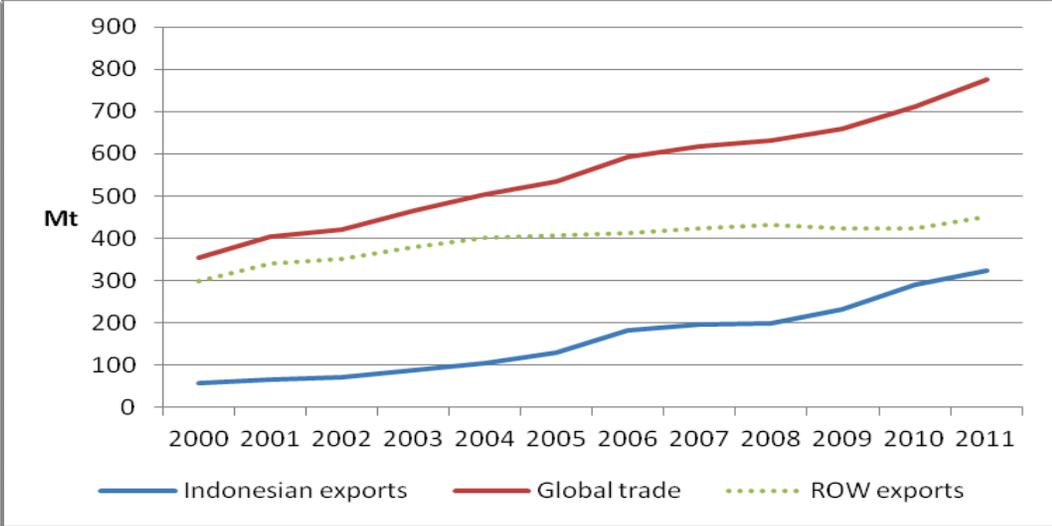
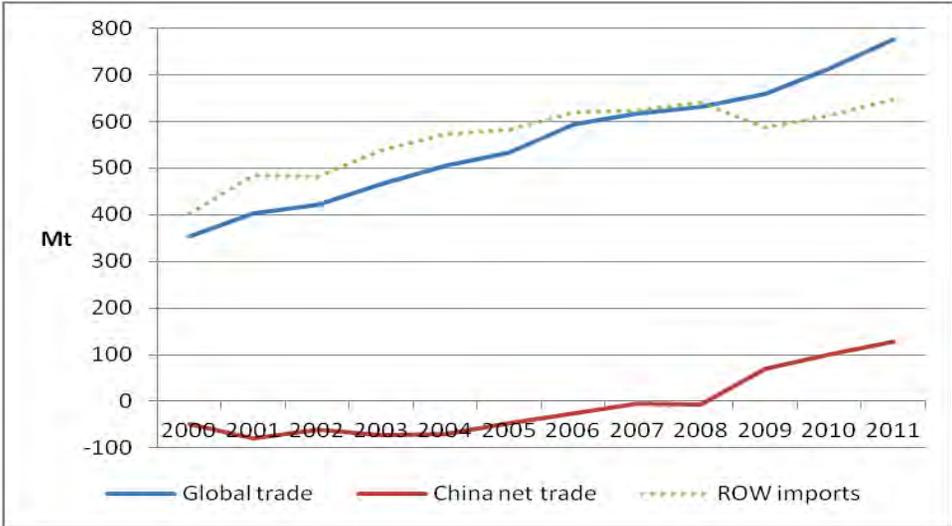
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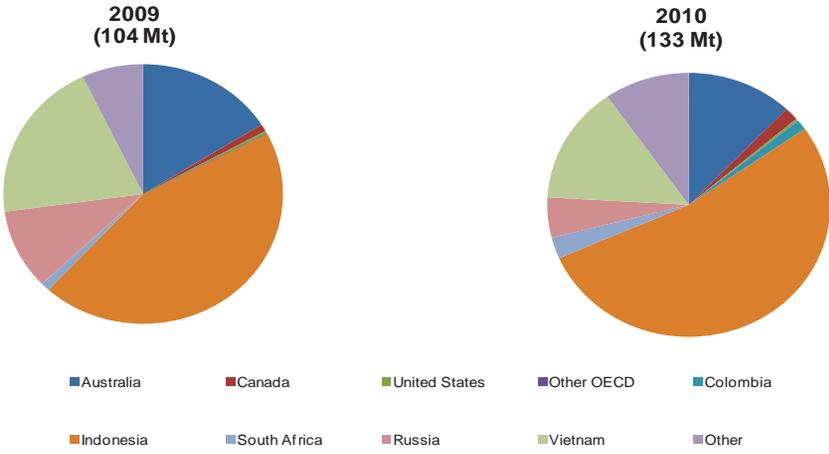
# Indonesia-China, a good partnership



## Seaborne steam coal trade



## Steam coal imports to China

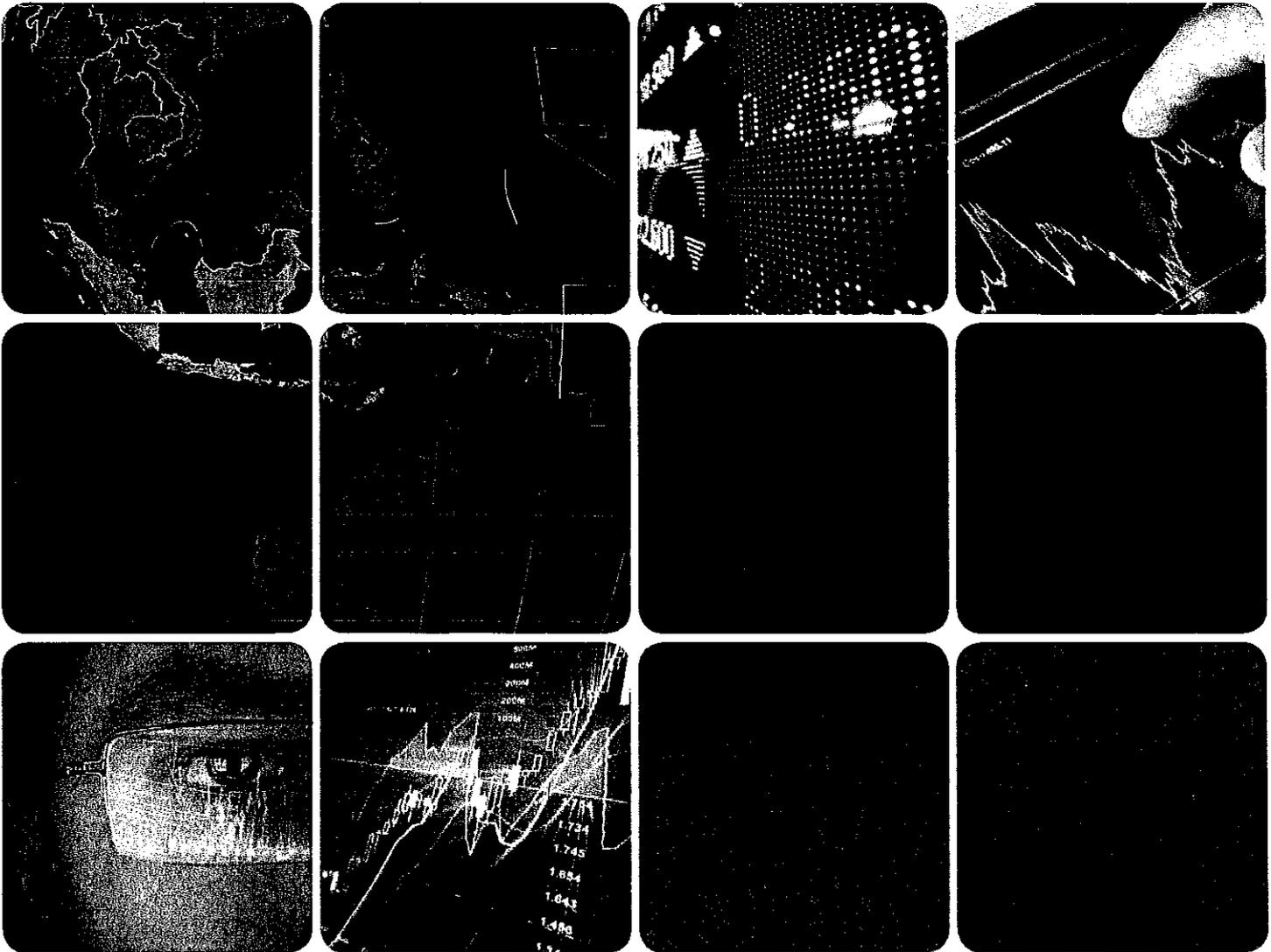


- Indonesia meets much of Chinese demand
- For Chinese utilities, Indonesian coal is a good option
- For low cost Indonesian producers, Chinese coal thirst was good business

# APPENDIX 19

Patersons Securities Limited  
Indonesian Coal Review - The short term option

ABN 69 008 896 311



16 January 2012  
Analyst: Andrew Harrington and Matthew Trivett

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# Highlights

**Indonesia is going to play a major role in the coal markets, particularly thermal, in the short to medium term. As other major producers such as Australia, Colombia, Russia, South Africa and the US battle infrastructure constraints, Indonesia is widely seen as one producer that can expand production to meet increasing demand.**

- Indonesia has been the one producer over the last 5 years that has been able to consistently expand production. It is also the largest contributor to the growth of global thermal seaborne trade. Indonesia produced over 300Mt of coal in 2010, an annual increase of 15%. The increase in coal production in 2010 continues the trend of expansion the Indonesian coal industry has achieved since 2000. Between 2000 and 2010, Indonesia's coal industry increased its output by 12% per annum from 76Mt in 2000.
- Bituminous and sub-bituminous coals account for the majority of Indonesia's coal production, totalling 120Mt and 137Mt respectively for 2010. Production of low rank coal has grown significantly over the last 5 years. Low rank coal production totalled almost 45Mt in 2010. Metallurgical coal production totalled 5Mt in 2010 with the majority being mined in the Murawai coking coal Basin on the northern Barito River, Central Kalimantan. We expect low rank and sub-bituminous coals will accounts for the majority of Indonesia's coal production and exports in the future as bituminous coals become more scarce.
- In 2010, Indonesia exported 260Mt. The five largest export destinations for Indonesian coal were China, South Korea, India, Japan, and Taiwan. China is now the largest export market for Indonesian coal closely followed by India. The strong growth in these export markets has been due to their rapidly increasing energy requirements.
- Potentially the biggest change in Indonesia for investing in the mining industry is the legal environment. The Indonesian Government passed the Mining Law on 12 January 2009 in an effort to provide regulatory certainty and to encourage new investment in the mining sector. This has been successful over the last 3 years but there are sections of the mining law that are starting to slow investment such as the Indonesian reference coal price (HBA). The new coal pricing regulation is causing some investors, such as Indian and Chinese power generators, to re-evaluate the operating parameters.
- End users, particularly in the energy sector are changing the way they buy and use thermal coal. This is similar in some ways to what we have seen in the metallurgical coal markets where blending and changing technologies are changing the coals used. The thermal coal markets in India and China are importing and utilising increasing volumes of lower ranked coals. Korea, Thailand, and Philippines are also looking to alternative lower grade coals and Indonesia is in a position to capitalise on these emerging markets.
- The vast majority of Indonesian coal producers, including the six largest producers, are listed on the Bursa Efek Indonesia (BEI). We do not cover any companies listed on the BEI however there are a number of juniors listed on the ASX. Our pick of these are Altura Mining (AJM), Cokal (CKA) and Realm Resources (RRP).

## Our preferred stocks

Company	ASX Code	Price Target	Analyst's View
Altura Mining Ltd	AJM	\$0.40	AJM is developing the Tabalong Coal Project in Indonesia, the Mt Webber Iron Ore Project and the Pilgangoora Lithium Project located in WA. There is a high probability that the coal and iron ore projects will be in production in 12-18 months and AJM is in a strong financial position, with \$29m in the bank.
Cokal Ltd	CKA	\$1.00	CKA has an opencut coking coal project in Kalimantan and is aiming to be in production in 12-18 months. It also has been expanding its search for quality metallurgical coal assets globally from Indonesia and Tanzania to now include Mozambique.
Realm Resources Ltd	RRP	\$0.17	RRP have completed the first stage of its acquisition of the Katingan Ria coal project in Central Kalimantan, Indonesia. A feasibility study is being conducted, it has a first mover advantage in a new coal province and could be in production within 12 months.

## Research summary

Company	Code	Market cap. (\$m)	Recommendation	Price (\$)	Target price (\$)	Forecast 12m total return (%)
Altura Mining Ltd	AJM	72.50	Speculative Buy	0.17	0.40	150
Cokal Ltd	CKA	165.00	Buy	0.44	1.00	127
Kangaroo Resources Ltd	KRL	481.00		0.14		
Pan Asia Corporation	PZC	12.30		0.11		
Realm Resources Ltd	RRP	21.50	Speculative Buy	0.08	0.17	113

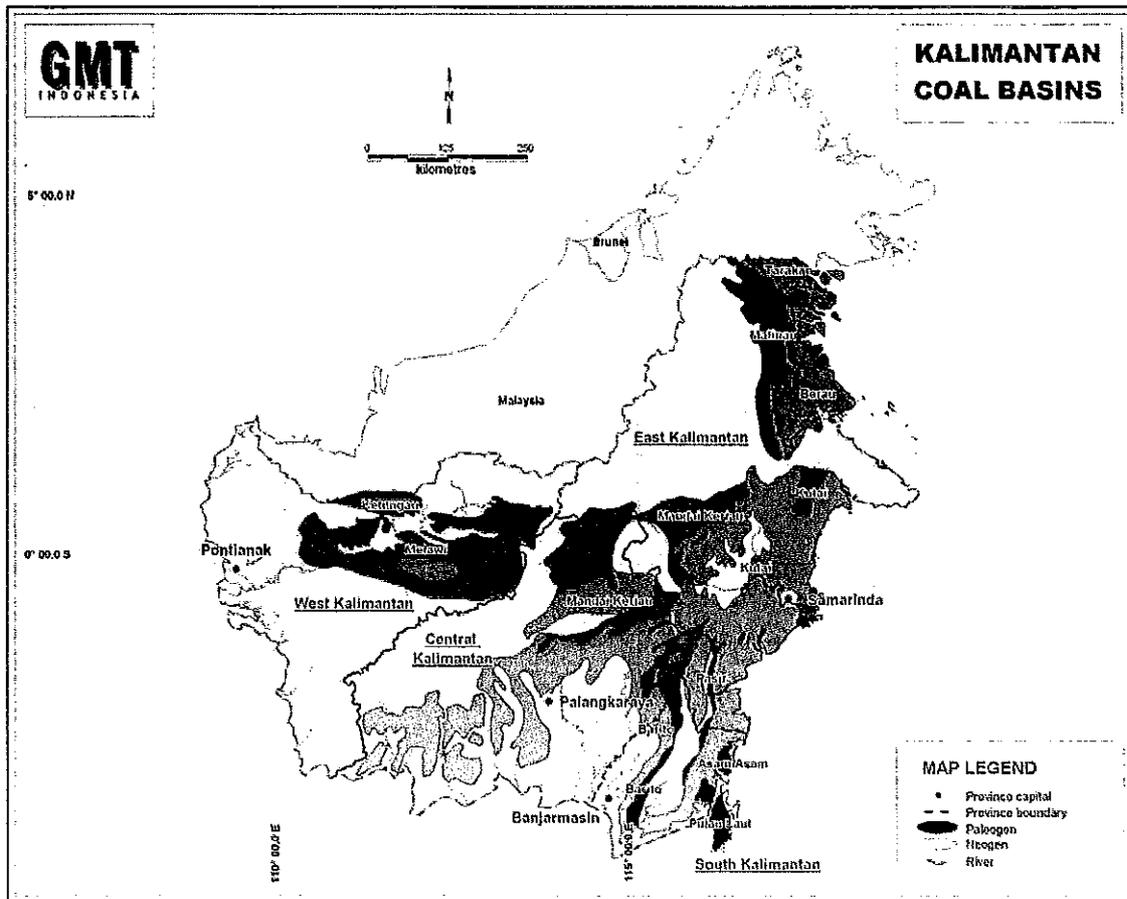
# Indonesian Coal

The Indonesian coal deposits are predominately found on the islands of Sumatra and Kalimantan. The sub-bituminous to bituminous tertiary coals of South East Asia are fundamentally different from the geographically close Permian Gondwana coals found in Australia, India and South Africa. In general, the majority of the coal is Paleogene in age but high sea levels during the beginning of this period resulted in deposition of mainly marine sediments and whilst the coal was formed during the Neogene period it tends to be of a lower rank. The existence of higher rank coals at the land surface is dependent on uplift or the presence of igneous intrusions.

## Kalimantan

Formerly known as Borneo, Kalimantan is the world's third largest island. The north and north-western part of the island are the Malaysian states of Sarawak and Sabah, with the independent state of Brunei Darusalam between them. The rest of the island is part of Indonesia, divided into 4 provinces – East Kalimantan, West Kalimantan, Central Kalimantan and South Kalimantan.

Figure 1: Kalimantan Coal Basins



Source: GMT Indonesia

Coal rank varies across Kalimantan, from lignite through sub-bituminous, high to low volatile bituminous and semi-anthracite to anthracite. Paleogene coals are commonly bituminous or higher in rank. The rank of Neogene coals, in normal geological conditions, is relatively low, except for heat-affected coal deposits. Therefore, the occurrence of high rank coal in Kalimantan is mainly controlled by the distribution pattern of the Paleogene coal measures, and to some extent is also affected by the occurrence of volcanic activity.

## Sumatra

Sumatra is the western-most island in the Indonesian archipelago. It is also Indonesia's second-largest island and the world's sixth largest island. Sumatra is divided into eight administrative provinces: Aceh, Bengkulu, Jambi, Lampung, Riau, North Sumatra, and West Sumatra.

The coal measures in the middle Palembang formation extend from central Sumatra to the south for more than 700km. There are three main coal seams that have an average aggregate thickness of about 30-40m. They have been mined for decades by Bukit Assam. In general, coals are lignite to sub-bituminous, although there is evidence the coal rank improves in zones where heating has occurred.

# Production

Indonesia is estimated to have produced over 300Mt of coal in 2010, an annual increase of 15%. The increase in coal production in 2010 continues the trend of expansion the Indonesian coal industry has experienced since 2000. Between 2000 and 2010, Indonesia's coal industry increased its output by 12% per annum from 76Mt in 2000.

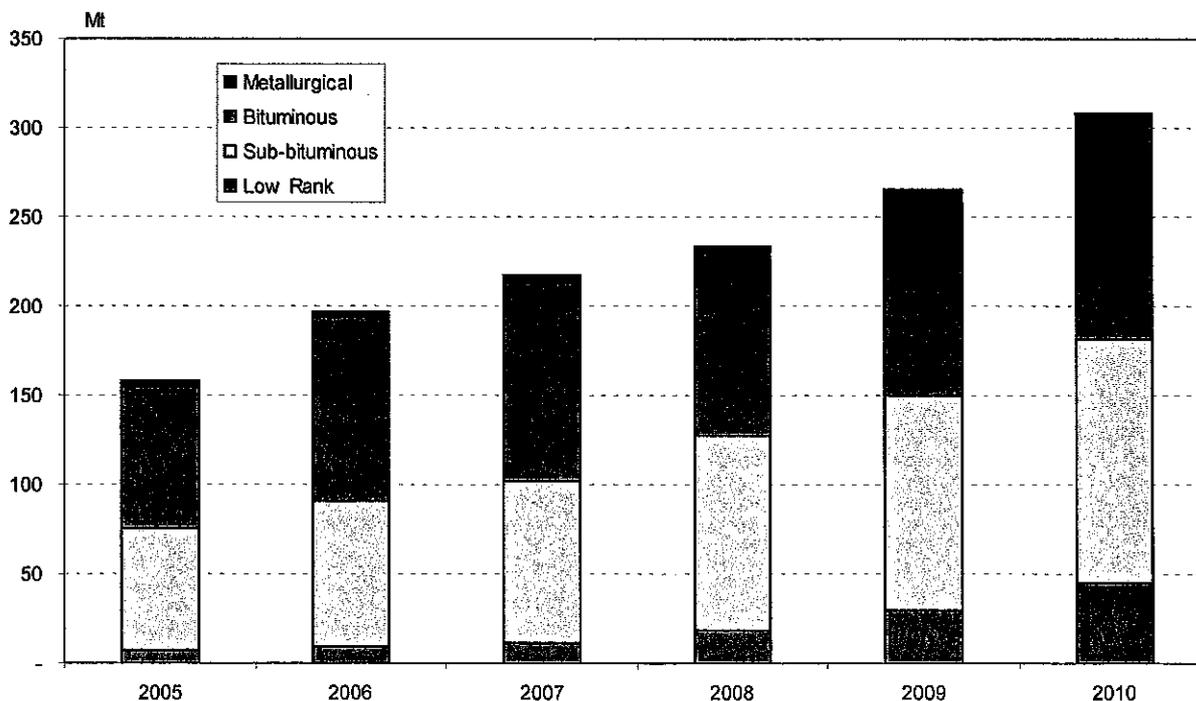
East Kalimantan is the most established mining area providing over 65% of Indonesia's total coal production in 2010. South and Central Kalimantan produced over 100Mt of coal in 2010. The region has very little transport infrastructure, mainly using rivers to barge coal from the mine gate to offshore transshipment or port facilities. Sumatra produced approximately 5% or 1.5Mt of low rank coal.

Indonesia's coal industry, in addition to being geographically concentrated on the island of Kalimantan, is also concentrated by producer. Indonesia's top six producers, Bumi, Adaro, Kideco, Berau, Banpu, and PTBA accounted for more than 75% of production and (except for PTBA) they are all located on Kalimantan.

Bituminous and sub-bituminous coals still account for the majority of Indonesia's coal production. However, low rank and sub-bituminous coal production have been the main areas of growth and it is expected that bituminous coals will increase in scarcity as current operating mines deplete known resources.

Production of low rank coal has grown significantly over the last 5 years totalling approximately 45Mt in 2010, sub-bituminous production was 137Mt and bituminous was 120Mt. Metallurgical coal production totalled 5Mt in 2010 with the majority being mined in the North Barito Basin in Central Kalimantan.

Figure 2: Indonesian coal production by type



Source: PSL

# Demand

## Domestic Consumption

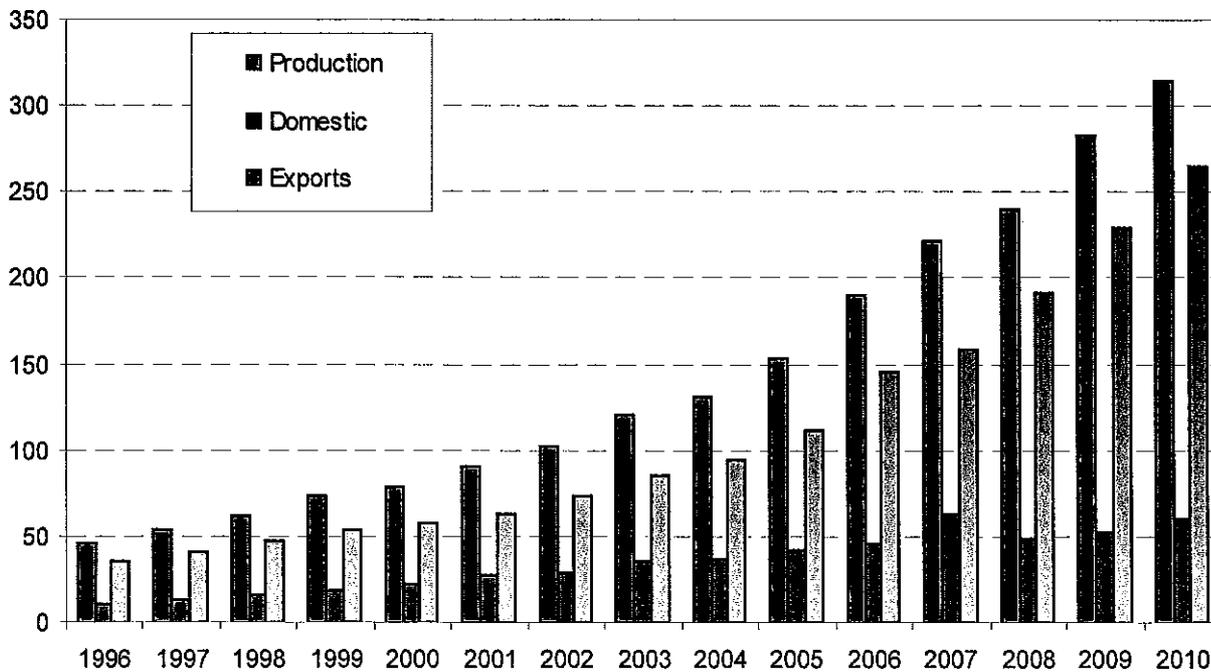
Indonesia is currently well positioned for sustained long term growth. GDP growth has been increasing due to the benefits of a commodity boom, a high savings rate, a growing manufacturing sector and a strong trade surplus with a relatively low exposure to the EU. Current power production is well below demand and the success of the economy will place increasing strains on power generation. Indonesia has one of the lowest per capita electricity consumption in Asia, marginally lower than India and significant new generating capacity is required particularly amongst the non-major island centres.

The Ministry of Energy and Mineral Resource's has identified coal as a logical fuel for new power generation capacity. The abundant resources of coal available make it the most cost effective solution and coal fired generators will reduce the heavy dependency on oil and gas. The Ministry forecasts domestic coal consumption will increase from the current levels of 60Mtpa to 300Mtpa by 2025. We see these goals as optimistic and more likely to be in the 200-250Mtpa range. But this is still a significant increase in domestic consumption and the type of coal used for this increase will predominantly be low energy sub-bituminous coals of less than 4,000kcal/kg.

This has been the main driver behind announcements that the government is seeking to keep this coal in Indonesia. The Ministry of Energy and Mineral Resource is planning to ban the export of low grade coal or coal with calorific value below 5700kcal/kg for the export market by 2014 but there is some doubt whether the proposed ban will be legislated.

It is possible for producers to upgrade lower grade coals to higher-value products for the export market by washing, crushing, and blending and there are a number of companies developing the technology such as White Energy (WEC). However, none of these are commercially viable at this stage.

Figure 3: Indonesian coal fundamentals

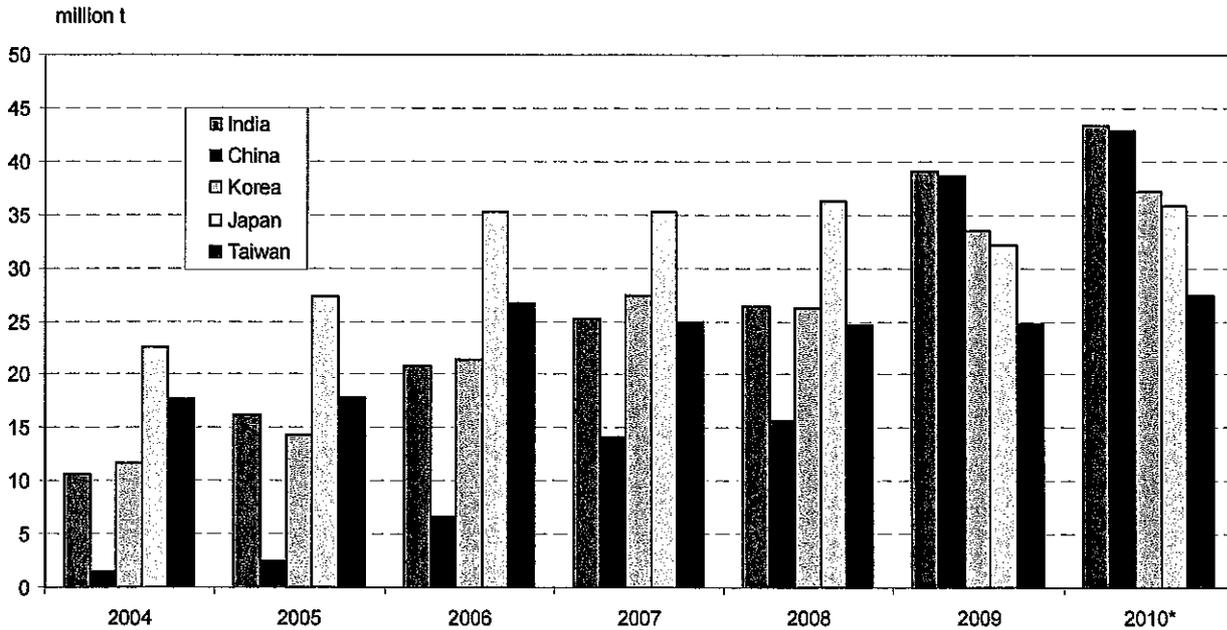


Source: ICMA and PSL estimates

## Exports

In 2010, Indonesia exported 260Mt. The 5 largest export destinations for Indonesian coal were China, South Korea, India, Japan, and Taiwan. India is now the largest export market for Indonesian coal closely followed by China. The strong growth in the Chinese and Indian export markets has been due to their rapidly increasing energy requirements and we expect Chinese import requirements to stabilise at current levels and Indian imports to continue to grow strongly. However the changing policy and regulatory environments in Indonesia and India could provide some headwinds to future growth.

Figure 4: Major Indonesian coal destinations



Source: BPS Statistics of Indonesia

One change in Indonesia is that all coal must now be sold at the Indonesian Coal Reference price or HBA which is based on international prices. This is having a significant impact on some of Indonesia's major customers who have invested in the development of the coal industry. The biggest impact is on Indian power utilities. They have operating margins based on set power tariffs and discounted coal prices. Combine these factors with a depreciating Rupee and some operators are being forced to re-evaluate operations and potentially defer future coal purchases.

Government intervention is a common theme in India and it was a significant step for the Government to partially deregulate the power industry. This has led to the private sector driving the expansion and investment in power generation. It is estimated that the private sector will fund and construct more than half of the growth in installed capacity and investment in coal production in countries such as Indonesia and Australia. However this trend could slow and potentially put imports at risk if there is no mechanism to adjust tariff rates in response to increasing coal prices.

The move to Indonesian Coal Reference (HBA) prices could also be an underlying driver of stagnating Chinese imports of Indonesian coal. This would be in addition to some problems power generators are having with the low-rank coal being imported from Indonesia.

# Regulatory Environment

Potentially the biggest change in Indonesia for investing in the mining industry is the changes to the regulatory environment. The Indonesian Government passed the Mining Law on 12 January 2009 in an effort to provide regulatory certainty and to encourage new investment in the Indonesian mining sector. The Mining Law and the mandated implementing regulations issued over the last three years have introduced significant changes to the mining regime. The most significant change is the abolition of the "contract" and "mining authorisation" regime and the adoption of a simplified licensing regime.

The Mining Law reduced the myriad of different licenses and mining authorisations required to get a mine to production. The Mining Law introduced a simplified licensing system in the form of mining business licence (IUP). These are available to both foreign and domestic investors and will be the most common license referred to by listed companies. The Mining Law only requires two licenses, one for exploration and one for production. New mining licences for coal and metallic minerals must be awarded through a competitive auction process and no longer through direct applications. However, once a company is awarded an IUP exploration, it is guaranteed the right to an IUP production without needing to go through a new tender as long as it has fulfilled the terms of its exploration permit.

In the past getting a mine to production depended on a number of things including whether the investor was domestic or foreign and the type of commodity. The different licenses included mining authorisations or KPs, Contract of Work (CoW) and Coal Contract of Work (CCoW). The old system also required a KP for each of six different mining activities. KPs, CoWs and CCoWs will continue to be honoured subject to certain adjustments being made. KPs must be converted into IUPs and holders of existing CoWs and CCoWs are required to enter into amendment agreements with the government.

Despite the changes the Mining Law has implemented there are still a number of concerns with the regulatory environment for the mining industry. These include the time between application and issuance of licenses and the clarity surrounding the regulations. Specifically for the coal industry, clarity in regard to the new domestic market obligations (DMO) is required.

The Indonesian regulatory process has always been fairly slow and it appears this has continued under the new regulations. Unfortunately the slow pace surrounding the issuance process is also accompanied by unclear wording of those regulations that have been issued.

There is also some ambiguity surrounding the DMO. A DMO is set for each calendar year as a percentage of total production that each coal producer must make available to domestic customers. The process requires domestic customers to be surveyed about their coal requirements for that calendar year. The minister is then required to issue a —DMO decree providing the DMO for the next calendar year along with the list of domestic customers and their requirements. Mining companies are then required to submit production plans showing how it intends to meet its fair share of that year's DMO.

It has been indicated that the DMO in any year will not exceed 35% of a producer's total production. However the main concerns surround the lack of contractual obligation on the part of buyers to take the DMO once offered and the lack of detail surrounding coal quality parameters such as CV, moisture, ash, and sulphur limits, which define the specifics of each customer's coal requirements.

The mining law 04/2009 and latest ministerial decree 17/2010 require a coal reference price to be established. The aim is to increase government revenue from coal royalties. The government of Indonesia has been publishing a monthly coal reference price (HBA and HPB) since January 2009 but coal had traded at a discount to this price until recently. Existing coal supply agreements are required to comply with new coal pricing regulation, which was fully implemented on 23 September 2011. The HBA is changing the cost dynamic for foreign investors and international purchases as the reference price is now linked to global prices and the traditional discount applied to Indonesian coal is no longer applicable.

The reference price is to be used by coal producers for all future spot and term contracts. This coal benchmark price is stated as using a formula based on the index average of ICI-1 (Indonesia Coal Index), Platts-1, Newcastle Export Index, and global Coal Index. The assessment basis of the coal price reference was calculated considering coal with GCV 6,322kcal/kg (GAR), Total Moisture (AR) 8.00%, Total Sulphur 0.8% (AR), Ash Content 15% (AR) and delivery Free on Board (FOB) Vessel basis.

Figure 5: Indonesian monthly coal price

Coal Brand	GCV (GAR)	TM (GAR)	Sulfur	Ash	Nov-11 (USD/t)	Dec-11 (USD/t)
Gunung Bayan I	7,000	10	1	15	125.55	121.24
Prima Coal	6,700	12	0.6	5	123.05	119.02
Pinang 6150	6,200	14.5	0.6	5.5	110.92	107.29
Indominco IM East	5,700	17.5	1.6	4.8	95.07	91.86
Melawan Coal	5,400	22.5	0.4	5	89.53	86.67
EnviroCoal	5,000	26	0.1	1.2	82.53	79.99
Jorong J-1	4,400	32	0.3	4.2	66.55	64.50
Eco Coal	4,200	35	0.2	3.9	60.31	58.49

Source: Indonesian Ministry of Energy and Mineral Resources

The Indonesian Government has also reported reference prices for the most commonly traded brands of Indonesian coal, an example is shown in Figure 1. Those eight brands act as the benchmark and are used to calculate other coal types with a quality similar to the main coal price markers. For barge sales, the reference price is reduced by the barging and trans-shipment costs from barge to vessel which makes up FOB prices.

## Infrastructure

Indonesian exports were not constrained by infrastructure bottlenecks in 2010 as most operations utilise their own coal logistics chain and do not rely on third party infrastructure. This is a significant competitive advantage relative to other major seaborne thermal coal export countries.

Coal transportation in 2010 was predominantly done using either coastal or river barging. There is some rail transportation but it is limited. It is currently estimated that 65% of exports are loaded onto vessels by trans-shipment facilities and the remaining 35% is loaded through coal terminals.

The river barging and transshipping logistic chain utilised in Indonesia has been the key to the growth of their industry. It will also provide the basis to increase capacity over the short to medium term. It will be of no surprise that trans-shipment usage will continue to grow faster than usage of coal terminals.

# Outlook

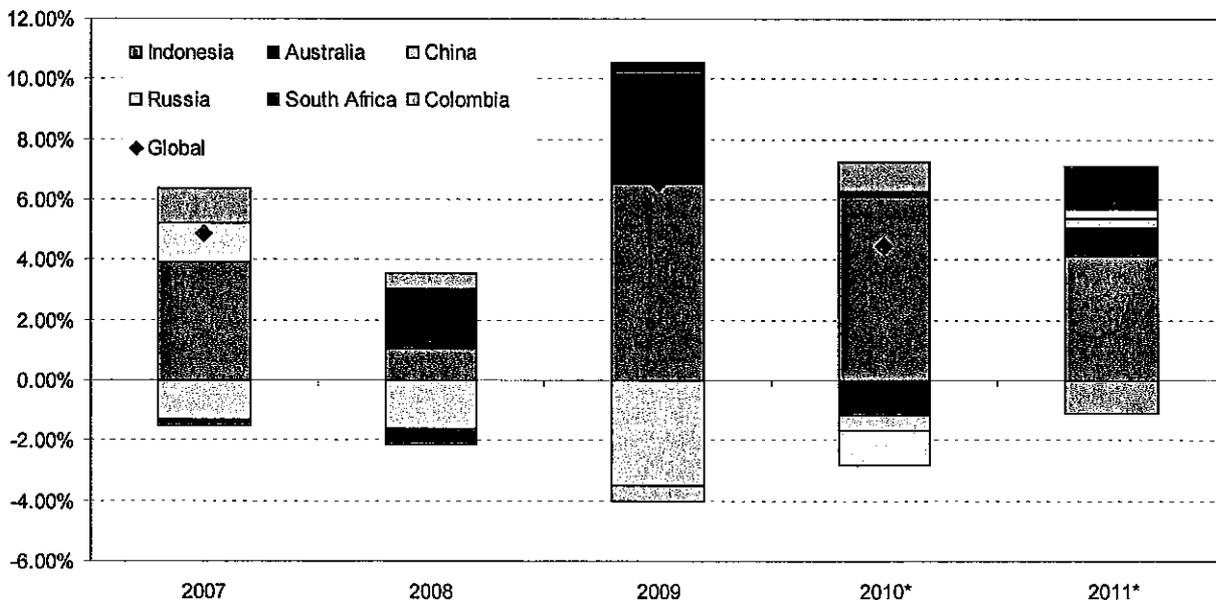
We expect Indonesian production to continue to expand over the next 5 years albeit at a slower rate than the last 5 years. The proposed growth of domestic coal fired generators has raised some questions about Indonesia's ability grow exports. However, we see the domestic growth profile as optimistic and the expansion of the Indonesian industry will be required to fill the predicted demand growth in major Asian market over the next 3-5 years.

We forecast that the growth in thermal demand from both the domestic and export markets will be met largely from the sub-bituminous and low grade Indonesian coals. In the seaborne trade Indonesia enjoys a significant geographic and freight advantage over competitors into major markets in Asia. Indonesian coals are also generally low ash, low sulphur and low phosphorus making them suitable for blending. Lower grade coal is gaining acceptance in global thermal coal markets. International coal trading platform globalCOAL recently announced it is investigating the development of a new product to trade lower CV, higher ash Newcastle thermal coal, which would have formerly been off-spec. However, low quality coal can cause difficulties in older boilers that are not designed to burn these types of coal.

Any additional metallurgical coal produced in Indonesia will undoubtedly be quickly absorbed by the market. It is also showing some complementary qualities to Australian metallurgical coals providing potential blending opportunities. New Indonesian metallurgical coal is typically low ash, high vitrinite coking coal while new Australia production is moving to higher ash lower vitrinite.

Indonesia has been the one producer over the last 5 years that has been able to rapidly expand production. Figure 6 shows that Indonesia is the only country to not only expand production but also be the largest contributor to global growth of the thermal coal industry. We see this trend continuing as other major producers such as Australia, Colombia, Russia, South Africa and the US will be battling infrastructure constraints.

**Figure 6: Thermal coal export market growth and major suppliers**



Source: PSL estimates

Beyond the 5 year time horizon equipment shortages, rising stripping ratios and more challenging logistics for new mines will make bringing on new capacity increasingly difficult and costly. Growing domestic demand will also start to impact exports. The increasing demand for Indonesian coal could potentially harden the political attitude towards the DMO and limit exports.

Political risk is a risk that needs to be considered when investing. However, we see it as unlikely that the Government would adopt a coal policy that favoured the use of its coal resources for domestic purposes and restricted exports. This would counter the work done by the current government in implementing the new Mining Law and opening the Industry to foreign investment. Furthermore we think that the power station expansion programme is unlikely to achieve the ambitious targets despite the obvious need, further limiting domestic coal demand.

# ASX-listed Indonesian Coal Resources Companies

Indonesia is going to play a major role in the coal markets, particularly thermal, over the next few years at least. As other major producers such as Australia, Colombia, Russia, South Africa and the US battle infrastructure constraints, Indonesia is widely seen as one producer that can expand production in the short term.

The vast majority of Indonesian coal producers, including five of the largest producers, Bumi, Adaro, Kideco, Berau, and PTBA, are listed on the Bursa Efek Indonesia (BEI). We do not formally cover any companies listed on the BEI however there are a number of juniors listed on the ASX. These include the following companies:

**Altura Mining (AJM)** - is a junior exploration company that is generating revenue from drilling and exploration services. AJM is developing three key projects; the Tabalong Coal Project in Indonesia, the Mt Webber Iron Ore Project and the Pilgangoora Lithium Project located in Western Australia. The Tabalong Coal Project will be a small operation with relatively good thermal coal for Indonesia. We see the main hurdle being the transport of coal 100km to the Barito River. AJM is actively looking to expand its asset base in Indonesia and seeking a well established local partner to develop Tabalong and other potential assets. We rate AJM as a speculative BUY with a price target of \$0.40/share.

**Cokal (CKA)** - has been expanding its search for quality metallurgical coal assets globally from Indonesia and Tanzania to now include Mozambique. Despite the expanded search the focus is still on developing the Indonesian assets which CKA aims to bring into production by 2013. The most progressed of these Indonesian assets is Bumi Barito Mineral (BBM) and CKA recently announced its 60Mt maiden resource on the project. The coal is a mix of coking coal and PCI with very low in impurities, phosphorus and sulphur. CKA is attractive as a pure play metallurgical coal company with a strong board and management team and a strong cash position with \$34m in cash. We rate CKA a BUY with a price target of \$1.00/share.

**Kangaroo Resources (KRL)** - KRL has completed an all script deal with Bayan that will see KRL acquire the large scale low rank thermal coal Pakar project in East Kalimantan plus \$18m in cash for 2.3bn ordinary shares in KRL or approximately 57% of outstanding shares. Bayan has nominated 4 directors to the board. KRL now has 3 projects in the development/production stage and another 5 exploration concessions all on Kalimantan. 4 of the projects have metallurgical coal potential and the remaining have varying qualities of thermal coal. KRL has the assets to become a sizable coal producer in Indonesia with a significant partner however we see a lot of the value already priced in the \$515m market cap of KRL and Bayan will be in court with WEC over damages for breach of a Joint Venture Deed.

**Pan Asia Corp (PZC)** - 75% interest in the TCM project in South Kalimantan. The concession is immediately adjacent and down dip to the PT Arutmin open cut thermal coal mine. An 114Mt JORC compliant resource of high calorific thermal coal has been delineated on the concession. PZC is proposing an underground mine with a mechanized longwall. A feasibility study on the underground operation producing 1.5Mtpa saleable coal with an initial LOM of 15 years is underway and it is scheduled to be completed this quarter.

**Realm Resources (RRP)** - has successfully completed the first stage of its acquisition of the Katingan Ria coal project in Central Kalimantan, Indonesia. A feasibility study is being conducted and positive economics from the study will require RRP to increase ownership to 75%. RRP will need to raise additional funds to achieve this next stage but we believe that RRP will benefit from the growing demand for low rank coal, it has a first mover advantage in a new coal province and could be in production within 12 months. We rate RRP as a speculative BUY with a price target of \$0.17/share.

## Investment Ideas

In addition to these brief descriptions we have attached research notes on our preferred stocks Altura Mining (AJM), Cokal (CKA) and Realm Resources (RRP).

# Altura Mining Limited AJM (\$0.17)

**Recommendation: SPECULATIVE BUY**

*Diversified portfolio*

Analyst: Matthew Trivett

## OUR VIEW

Altura Mining (AJM) is a junior exploration company that is generating revenue from drilling and exploration services. AJM is developing three key projects; the Tabalong Coal Project in Indonesia, and in Western Australia, the Mt Webber Iron Ore Project and the Pilgangoora Lithium Project. There is a high probability that the coal and iron ore projects will be in production in the next 12-18 months and AJM is in a strong financial position, with \$29m in the bank, to fund these projects. The Tabalong Coal Project will be a small operation with relatively good thermal coal for Indonesia and the main hurdle will be transporting the coal 100km to the closest river. The Mt Webber Iron Ore Project is majority owned and managed by Atlas Iron. We value Mt Webber \$600m and AJM's 30% share equates to \$0.40/share. The Pilgangoora Lithium Project currently has a JORC compliant resource of 13.29Mt at 1.21% Li<sub>2</sub>O (contained lithium oxide 161kt) which is marginally smaller than resources developed by RDR and GXY. Considering the cash position and resources developed on AJM's three key projects we rate AJM a speculative buy with a price target of \$0.40/share.

## Investment Highlights

- Tabalong Coal Project** - comprises two 100% owned mining permits, IUPs. Operation and production approval has been received and the final remaining approval process, Forestry Land Use Permit, has commenced. AJM would like to develop the project with a well established Indonesian partner. Potential partnerships could expand the holdings in the region and provide access to further coal resources. It would also solve the issue of the mandatory 20% divestment to a local business after 5 years of production.
- Standalone operation** - AJM is planning on developing a simple open pit operation that is 110km to river ports on the Barito River (West) or Kuaro River (East). A 13.4Mt JORC compliant resource has been defined on one area that would be enough for an annual production rate of 500-750ktpa of thermal grade coal. The Initial mining area contains a shallow seam that is up to 18m thick. Coal qualities include a relatively high calorie thermal coal (6,300kcal - as received) with low ash and moisture. A second area is currently being explored. Field mapping and sampling is underway and drilling will commence after the receipt of the required permits.
- Mt Webber Iron Ore** - Located 150km south-southeast of Port Headland, AJM owns 30% and Atlas Iron (AGO) is the majority owner and manager with 70%. Mt Webber has reserves of 25.2Mt at 57.5% Fe with a resource base of 41.9Mt at 57.1% Fe. Infill drilling is expected to continue to upgrade existing resources to ore reserves. AGO are likely to build a hub at Mt Webber to produce at a rate of 3Mtpa by the end of 2012.
- Pilgangoora Lithium Project** - metallurgical testing has been completed and the ongoing drilling program to date has identified five mineralised pegmatite zones. The total Pilgangoora Mineral Resource estimate is currently 13.29Mt of mineralised spodumene pegmatites at 1.21% Li<sub>2</sub>O (contained lithium oxide 161kt). The deposit is characterised by thick mineralised pegmatites outcropping at surface. AJM will decide on committing to a feasibility study, before the end of 2012.
- Strong cash position** - AJM received more than \$18.6m in funds through the exercise of its listed options with an exercise price of \$0.15 and expiry on 31 August 2011. This places AJM in a strong position with a cash balance of approximately \$29m to fund the majority of the development of its near-term projects - Tabalong Coal and Mt Webber Iron Ore.

## Management & Shareholders

Name	Position
James Brown	Managing Director
Paul Mantell	Executive Director
Allan Buckler	Non Executive Director
BT Kuan	Non Executive Director
Dan O'Neill	Non Executive Director

Substantial Shareholders	Shares (m)	%
Allan Buckler	83.1	18.3
Max Smith	83.0	18.3
Farjoy Pty Ltd	29.5	6.5
John Caldron	22.3	4.9
Paul Mantell	9.2	2.0

## Company Statistics & Performance

Shares on Issue	453.5m	Daily Vol.	471,845
Market Cap.	\$72.6m	Debt	\$0.0m
52 Week Range	\$0.135 - \$0.22	Cash	\$29.0m

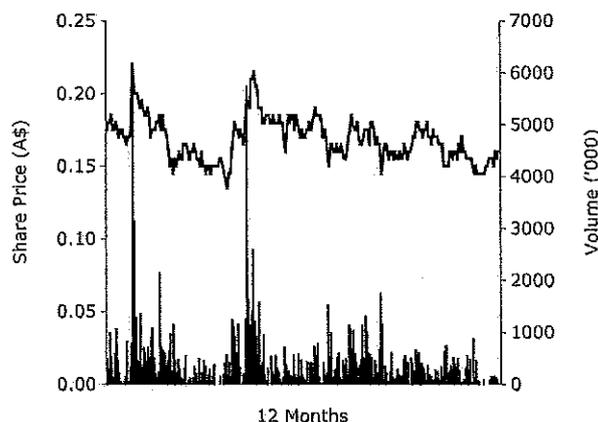


Figure 1: Tabalong location map

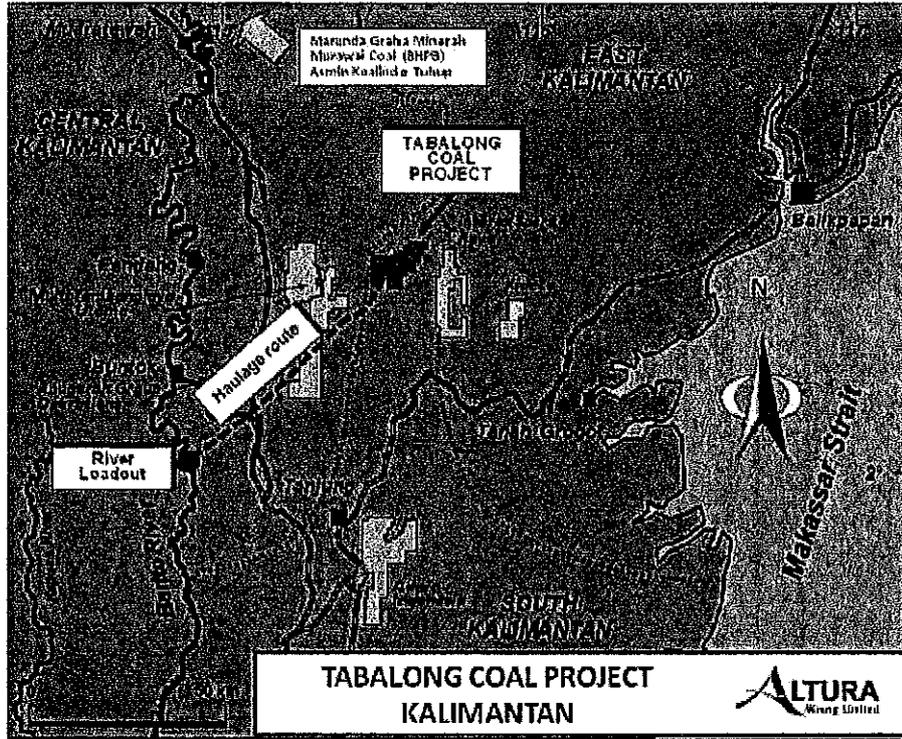


Figure 2: Pilgangoora drill locations

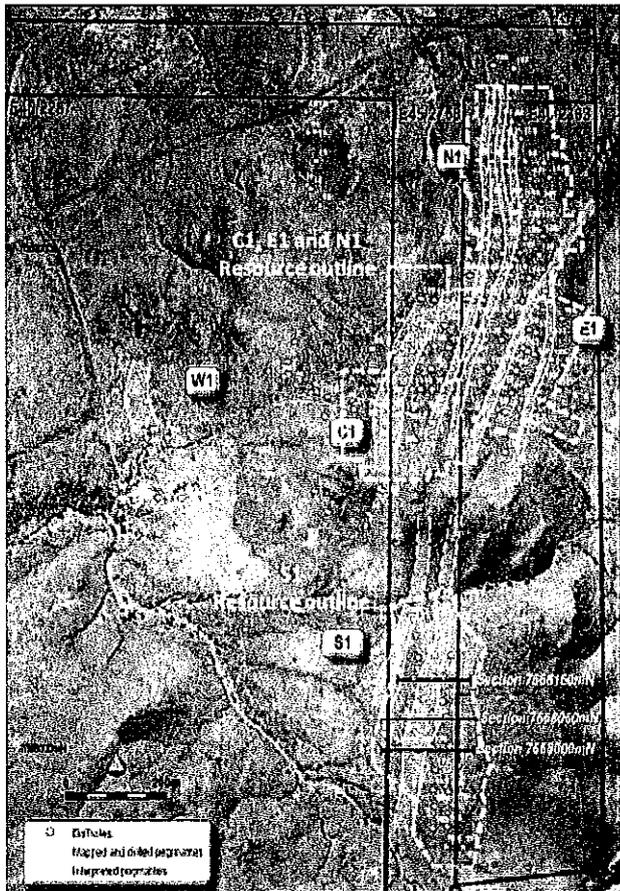
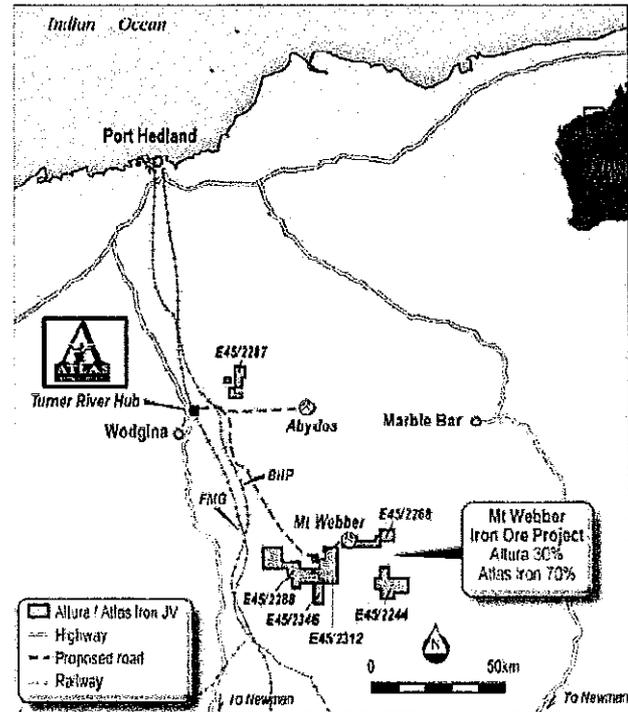


Figure 3: Mt Webber location map



Disclosure: Patersons Securities Limited acted as Lead Manager and partial underwriter in July 2010 to Altura Mining Limited's Rights Issue to raise \$16.9m. Patersons received a fee for this service.

# Realm Resources Limited RRP (\$0.08)

## Recommendation: SPECULATIVE BUY

### Over the first hurdle

Analyst: Matthew Trivett

#### OUR VIEW

Realm Resources (RRP) has successfully completed the first stage of its acquisition of the Katingan Ria coal project in Central Kalimantan, Indonesia by raising \$15m. This has secured 51% of the project and financed the feasibility study required to take Katingan Ria to the next stage and into production in 2012. Once the feasibility study is completed RRP will essentially be at the decision to mine stage and will need to raise additional funds to increase ownership to 75% and develop the project. RRP has done significant work to develop the project to date including receiving all the permits required to explore Katingan Ria and lodged the remaining application for the Pinjam Pakai (Forestry) Operations permit. We are expecting an increase in the current resource base which is currently 40Mt as the additional drill programme on the northern section has been completed and the modelling of the seams is underway. We believe that RRP will benefit from the growing demand for low rank coal, it has a first mover advantage in a new coal province and could be in production within 12 months. Accordingly we retain our speculative buy recommendation with a price target of \$0.17/share.

#### Investment Highlights

- RRP successfully raised \$15m to enable the first stage of the acquisition process of the Katingan Ria coal project. The funds were used to acquire 100% of Kalres Ltd and 51% of Katingan Ria. Taurus Funds Management became a cornerstone investor with 19.9%. RRP is considering a number of options for funding the acquisition of an additional 24% of the project and subsequent project development.
- The Katingan Ria Project feasibility study is being progressed with its Indonesian 49% partners PT Goku (formerly indoNRG). Successful completion of the study with positive outcomes is a condition precedent to RRP's acquisition of the remaining 24% of PT Katingan Ria by 31 March 2012.
- Permitting for the project has advanced from IUP Exploration to IUP Operation. The final application required for mining operations to commence, the production forestry permit Pinjam Pakai (Forestry) Operations, has been lodged.
- In addition to the maiden JORC compliant resource of 40.1Mt in the southern area a drilling program of 8 holes, including 2 cored holes, has been completed in the northern area. The modeling of seams has commenced and an increase in the total resources is expected in early 2012.
- Andrew Matheson joined the company in June 2011 as an executive director and after the capital raising was appointed Managing Director. Mr Matheson has 25 years experience in the resources industry including CEO of Carbon Materials with the Talbot Group, General Manager of Aquila Resources' coal portfolio.
- Following the change in focus of the company to coal, RRP is performing a strategic review of its South African platinum projects and its aluminium dross retreatment operation. The realized funds from the sales of some or all of the assets would make a significant contribution to the \$20m funding requirements of the Katingan Ria Project.

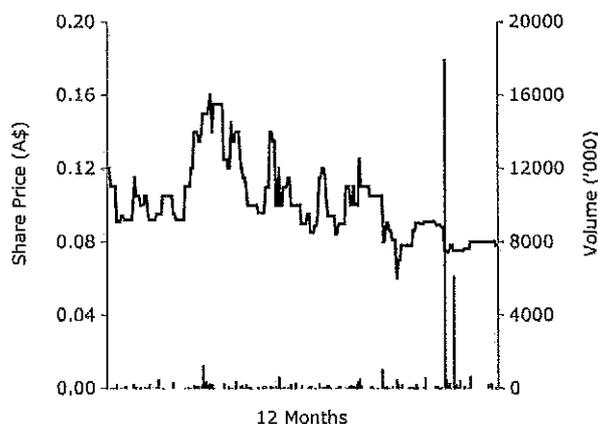
**Disclosure:** Patersons Securities Limited acted as Joint-Lead Manager to Realm Resources Limited's Share Placement to raise \$15m in September 2011. Patersons received a fee for this service.

#### Investment Summary

Year End December 31	2011F	2012F	2013F	2014F
Reported NPAT (\$m)	(2.4)	3.8	11.1	5.9
Recurrent NPAT (\$m)	(2.4)	2.6	9.9	5.9
Recurrent EPS (cents)	(0.6)	0.6	2.4	1.5
EPS Growth (%)	na	na	275.5	(40.4)
PER (x)	(13.1)	12.0	3.2	5.4
EBITDA (\$m)	(2.2)	5.7	16.0	11.7
EV/EBITDA (x)	(16.2)	10.0	3.0	5.6
Capex (\$m)	0.1	19.9	0.3	21.5
Free Cashflow	(2.8)	(16.4)	10.9	(15.5)
FCFPS (cents)	(0.7)	(4.0)	2.7	(3.8)
PFCF (x)	(11.4)	(1.9)	2.9	(2.1)
DPS (cents)	0.0	0.0	0.0	0.0
Yield (%)	0.0	0.0	0.0	0.0
Franking (%)	100.0	100.0	100.0	100.0

#### Company Statistics & Performance

Shares on Issue	281.1m	Daily Vol.	158,486
Market Cap.	\$21.9m	Debt	\$0.0m
52 Week Range	\$0.06 - \$0.16	Cash	\$1.9m

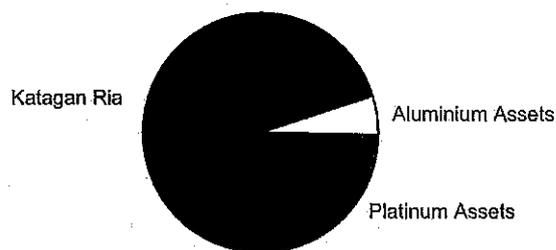


**Realm Resources Limited \$0.08**

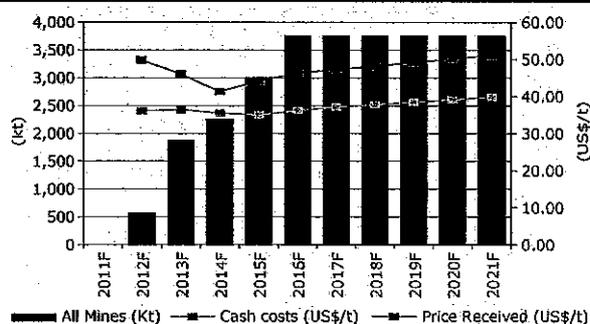
Year End December 31

Valuation	A\$m	A\$/sh
Katagan Ria	61.8	0.15
Aluminium Assets	4.4	0.01
Platinum Assets	15.7	0.04
Corporate	(12.9)	(0.03)
Unpaid Capital	0.0	0.00
Cash	1.9	0.00
Debt	0.0	0.00
<b>NPV</b>	<b>70.9</b>	<b>0.17</b>
<b>Price Target</b>		<b>0.17</b>

**Coal Sales (equity basis) by coal type**



**Coal Production Summary**



**Resources 100% Basis (Mt)**

Mine	Total
<b>Katagan Ria Coal Project</b>	
Measured	0.0
Indicated	0.0
Inferred	41.0
<b>Total Resources</b>	<b>41.0</b>

**Directors**

Name	Position
Richard Rossiter	Chairman
Andrew Mathison	Managing Director
Theo Renard	Executive Director & Company Secretary
Dr Neale Fong	Non-Executive Director
Michael Davies	Non-Executive Director
Andrew Purcell	Non-Executive Director

Significant Shareholders	Shares (m)	%
JP Morgan Nominees	58.8	20.9
Nkwe Platinum (South Africa) (Pty) Limited	15.2	5.4
Sunshore Holdings Pty Ltd	6.6	2.3
Berpaid Pty Ltd	6.3	2.2

Commodity Assumptions	2011F	2012F	2013F	2014F
US\$/A\$	1.0321	0.9950	1.0000	0.9700
Hard Coking Coal	303.75	247.50	193.75	158.75
Semi-soft Coking Coal	227.50	182.50	137.50	107.50
PCI	235.00	187.50	142.50	112.50
Export Thermal Coal	122.00	107.50	92.50	82.50
Domestic Thermal Coal (A\$/t)	47.41	49.31	50.38	51.39

**Production Summary 2011F 2012F 2013F 2014F**

Attributable Saleable Coal Production	2011F	2012F	2013F	2014F
<b>Katagan Ria (kt)</b>	<b>563</b>	<b>1,875</b>	<b>2,250</b>	
FOB costs (US\$/t)	36.08	36.37	35.46	
Price Received (US\$/t)	49.75	46.00	41.25	
<b>All Mines (Kt)</b>	<b>563</b>	<b>1,875</b>	<b>2,250</b>	
Cash costs (US\$/t)	36.08	36.37	35.46	
Price Received (US\$/t)	49.75	46.00	41.25	

**Profit & Loss (A\$m) 2011F 2012F 2013F 2014F**

<b>Sales Revenue</b>	<b>0.0</b>	<b>28.1</b>	<b>86.3</b>	<b>95.7</b>
Other Income	2.0	0.2	0.2	0.5
Operating Costs	0.0	20.4	68.2	82.3
Exploration Exp.	0.0	0.0	0.0	0.0
Corporate/Admin	4.1	2.2	2.3	2.3
<b>EBITDA</b>	<b>(2.2)</b>	<b>5.7</b>	<b>16.0</b>	<b>11.7</b>
Depn & Amort	0.0	0.1	0.5	0.6
<b>EBIT</b>	<b>(2.2)</b>	<b>5.5</b>	<b>15.6</b>	<b>11.1</b>
Interest	0.2	1.8	1.4	2.7
<b>Operating Profit</b>	<b>(2.3)</b>	<b>3.8</b>	<b>14.1</b>	<b>8.4</b>
Tax expense	0.0	0.0	3.0	2.5
Abnormals + Minorities	(0.1)	0.0	0.0	0.0
<b>NPAT</b>	<b>(2.4)</b>	<b>3.8</b>	<b>11.1</b>	<b>5.9</b>
<b>Normalised NPAT</b>	<b>(2.4)</b>	<b>2.6</b>	<b>9.9</b>	<b>5.9</b>

**Cash Flow (A\$m) 2011F 2012F 2013F 2014F**

<b>Adjusted Net Profit</b>	<b>(2.4)</b>	<b>3.8</b>	<b>11.1</b>	<b>5.9</b>
+ Interest/Tax/Expl Exp	0.2	1.8	4.5	5.2
- Interest/Tax/Expl Inc	0.6	2.2	4.9	5.6
+ Depn/Amort	0.0	0.1	0.5	0.6
+/- Other (Associates)	0.2	0.0	0.0	0.0
<b>Operating Cashflow</b>	<b>(2.6)</b>	<b>3.5</b>	<b>11.2</b>	<b>6.0</b>
- Capex (+asset sales)	14.6	33.9	0.3	21.5
- Working Capital Increase	0.0	0.0	0.0	0.0
<b>Free Cashflow</b>	<b>(17.3)</b>	<b>(30.4)</b>	<b>10.9</b>	<b>(15.5)</b>
- Dividends (ords & pref)	0.0	0.0	0.0	0.0
+ Equity raised	8.7	10.0	0.0	0.0
+ Debt drawdown (repaid)	5.2	22.0	(8.0)	19.0
<b>Net Change in Cash</b>	<b>(3.4)</b>	<b>1.6</b>	<b>2.9</b>	<b>3.5</b>
Cash at End Period	1.9	3.5	6.3	9.9
Net Cash/(Debt)	(3.3)	(25.1)	(15.8)	(33.6)

**Balance Sheet (A\$m) 2011F 2012F 2013F 2014F**

Cash	1.9	3.5	6.3	9.9
Total Assets	16.9	47.9	70.2	98.2
Total Debt	5.2	28.5	22.1	43.4
Total Liabilities	8.3	25.6	36.8	58.9
Shareholders Funds	8.5	22.3	33.4	39.3
<b>Ratios</b>				
Net Debt/Equity (%)	38.9	112.5	47.2	85.4
Interest Cover (x)	na	3.1	10.8	4.2
Return on Equity (%)	na	16.9	33.3	15.0

# Cokal Limited CKA (\$0.45)

## Recommendation: SPECULATIVE BUY

### Coking coal developer

Analyst: Andrew Harrington, Matthew Trivett

#### OUR VIEW

Cokal Ltd (CKA) has an opencut coking coal project in Kalimantan and is aiming to be in production in 12-18 months. It also has been expanding its search for quality metallurgical coal assets globally from Indonesia and Tanzania to now include Mozambique. CKA signed an agreement with a state owned corporation to participate in exploration and mining development. Despite the expanded search, the focus is still on developing the Indonesian assets which CKA aims to bring into production by 2013. The most progressed of these Indonesian assets is Bumi Barito Mineral (BBM) and CKA recently announced a 60Mt maiden resource on the project. The coal is a mix of coking coal and PCI which is very low in impurities like phosphorus and sulphur. CKA is attractive as a pure play metallurgical coal company, a rare thing on the ASX. Our attraction is based on the highly experienced board and management team with strong coal backgrounds, solid cash position after raising \$28.5m from two institutional placements and our fundamental view of the metallurgical coal market which we expect to remain in a structural supply shortage in the coming years. The share price has roughly halved over the past 6 months and conservatively modelling BBM, we rate CKA a BUY recommendation with a price target of \$1.00/share.

#### Investment Highlights

- Increased ownership and resource** – Increased ownership and resource – CKA increased its ownership of the Indonesian concessions, Bumi Barito Mineral (BBM) and Borneo Bara Prima (BBP) to 60%. BBM is the primary focus for CKA, covering an area of 20,000ha in the North Barito Basin. It is immediately to the south of PT Juloi Coal (BHP 75%, Adaro Energy 25%). BHP recently announced that it will be progressing with the Juloi project. Scoping studies have commenced on BBM and CKA believes production will commence in 2013.
- Maiden inferred JORC compliant resource of 60Mt.** The resource is from 3 seams located from surface to a depth of 300m. The coal quality is all metallurgical coal products comprising of 60% coking coal and 40% PCI with very low ash, low sulphur, low phosphorous and high energy. Drilling will continue on BBM generally in areas of low strip ratio and with higher percentages of coking coal.
- Transporting** – The project is located on the upper parts of the Barito River which is currently being utilised to transport coal by barge down river for transshipping into vessels. Barging studies have been implemented to assess the viability of the project. The capacity of the river may vary in the drier months between July and October.
- Empresa Moçambicana de Exploração Mineira (EMEM)** and CKA signed an agreement to explore tenements and jointly develop mines in Mozambique. EMEM will have 20% ownership and Cokal 80% of the JV Company. EMEM is a state owned corporation formed to participate in mining projects, undertake exploration and mining development. No tenements are currently in the JV.
- Strong cash position** – CKA has approximately \$31m in cash after placing 57m shares at \$0.50/share with Passport Capital and Blackrock. This should be sufficient funding for exploration and development of CKA assets over the next 18 months.
- Valuation** – We have modeled a 2Mtpa operation at BBM using information from CKA and PT Borneo Lumbung, located 80km west of BBM. Borneo Lumbung have an operating mine producing 5Mtpa of similar grade coal. We have used a capital cost of \$145m and average operating cost of \$91/t over the 25 year LOM.

#### Investment Summary

Year End June 30	2011A	2012F	2013F	2014F
Reported NPAT (\$m)	(2.6)	(3.0)	(3.5)	10.0
Recurrent NPAT (\$m)	(2.6)	(3.0)	(3.5)	7.5
Recurrent EPS (cents)	(0.7)	(0.8)	(0.9)	2.0
EPS Growth (%)	na	na	na	na
PER (x)	(63.2)	(54.8)	(47.4)	22.2
EBITDA (\$m)	(2.6)	(3.0)	(2.8)	19.8
EV/EBITDA (x)	(56.8)	(45.5)	(64.2)	11.7
Capex (\$m)	0.0	0.0	30.6	59.8
Free Cashflow	(25.7)	(8.7)	(40.2)	(52.5)
FCFPS (cents)	(6.7)	(2.3)	(10.5)	(13.7)
PFCF (x)	(6.5)	(19.1)	(4.2)	(3.2)
DPS (cents)	0.0	0.0	0.0	0.0
Yield (%)	0.0	0.0	0.0	0.0
Franking (%)	100.0	100.0	100.0	100.0

#### Company Statistics & Performance

Shares on Issue	384.0m	Daily Vol.	510,049
Market Cap.	\$167.1m	Debt	\$0.0m
52 Week Range	\$0.385 - \$0.82	Cash	\$34.0m

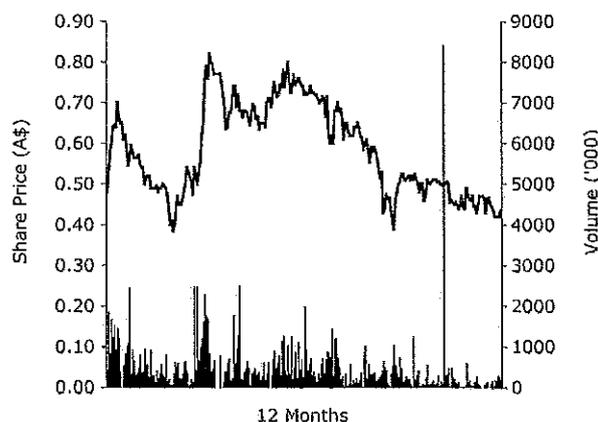


Figure 1: Indonesian concession location map

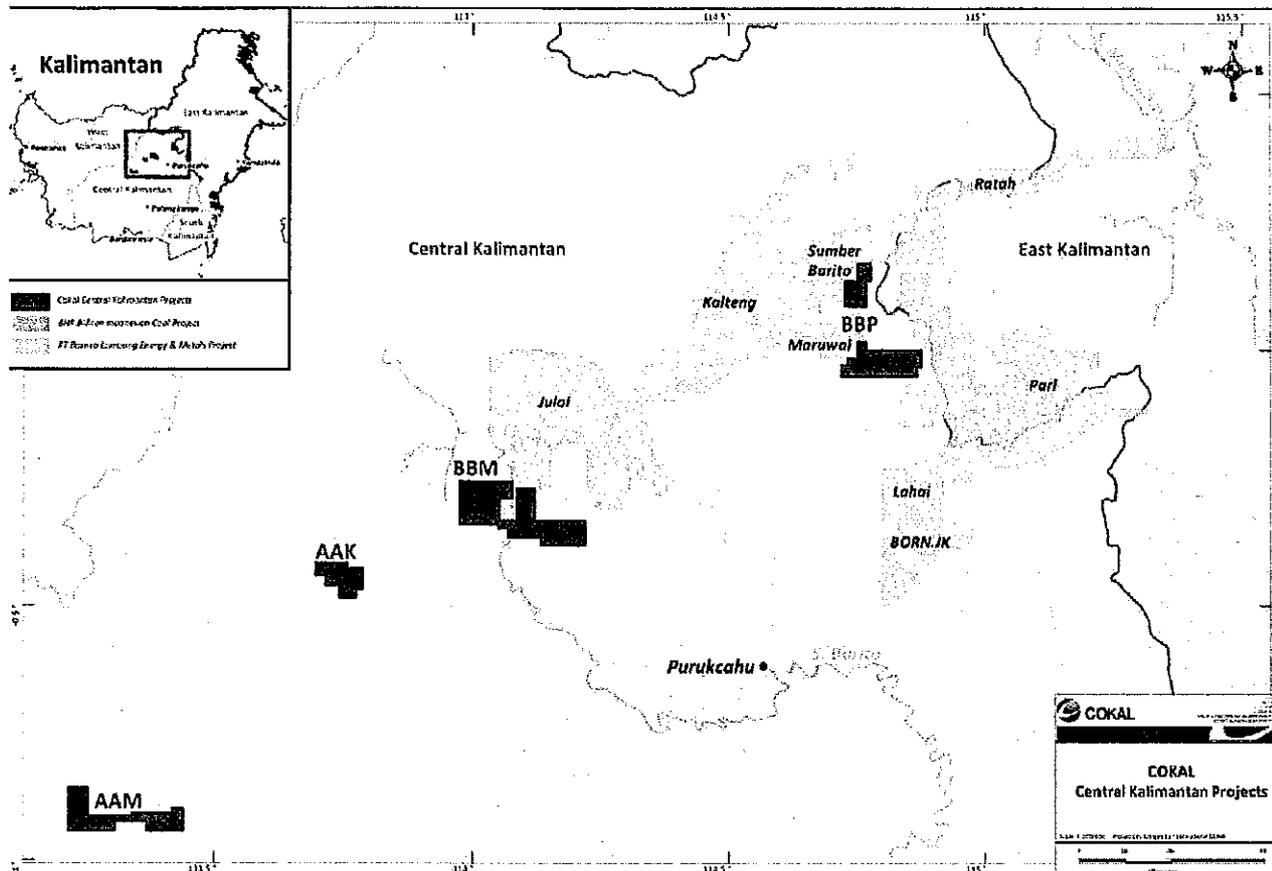


Figure 2: Coal quality results by seam

Seam	Product	Inherent Moisture	Ash	Volatile Matter	Fixed Carbon	Total Sulphur	Calorific Value Kcal/kg	CSN	Relative Density	Phosphorous
D	PCI	0.9	5.1	10.3	83.7	0.43	8,204	1.5	1.36	0.002
D	Coking	0.9	5.1	14.4	79.7	0.39	8,287	9.0	1.33	0.002
C	PCI	1.0	5.5	9.3	84.3	0.41	8,191	1.0	1.36	0.001
C	Coking	0.5	5.5	14.5	79.5	0.24	8,265	8.5	1.33	0.001
E	PCI	0.9	14.0	9.5	75.6	0.41	7,676	1.5	1.40	0.004
E	Coking	0.5	12.6	13.8	73.1	0.23	7,591	7.5	1.38	0.002

## Cokal Limited

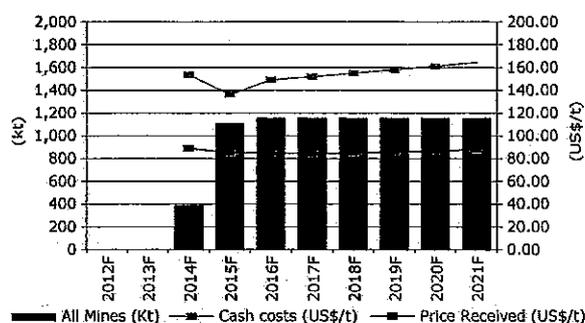
\$0.45

Year End June 30

Valuation	A\$m	A\$/sh
Bumi Barito Mineral	362.4	0.94
FX Hedging	0.0	0.00
Corporate	(23.5)	(0.06)
Unpaid Capital	6.7	0.02
Cash	30.8	0.08
Debt	0.0	0.00
<b>NPV</b>	<b>376.4</b>	<b>0.98</b>
<b>Price Target</b>		<b>1.00</b>

Commodity Assumptions	2011A	2012F	2013F	2014F
US\$/A\$	0.9869	1.01	1.00	0.99
Hard Coking Coal	248.75	303	211	176
Semi-soft Coking Coal	182.50	228	153	123
PCI	195.00	233	158	128
Export Thermal Coal	106.00	123	98	88
Domestic Thermal Coal (A\$/t)	45.39	49	50	51

## Coal Production Summary



## Resources 100% Basis (Mt)

Mine	M & I	Inferred	Total
Bumi Barito Mineral		60	60
Other Indonesian Assets		0	0
Tanzania		0	0
Mozambique		0	0
<b>Resources</b>			<b>60</b>

## Directors

Name	Position
Mr Peter Lynch	Executive Chairman
Mr Pat Hanna	Executive Director
Mr Jim Middleton	Managing Director
Mr Domenic Martino	Non Executive Director
Mr Duncan Cornish	CFO & Company Secretary
Mr Chris Turvey	Exploration & Resource Manager

## Significant Shareholders

Name	Shares (m)	%
Peter Lynch	55.0	14.3
Domenic & Sandra Martino	36.5	9.5
Blackrock Group	31.6	8.2
Patrick Hanna	25.0	6.5
Norges Bank	17.8	4.6
Passport Capital	14.5	3.8
Jim Middleton	10.0	2.6

## Production Summary 2011A 2012F 2013F 2014F

## Attributable Saleable Coal Production

<b>Bumi Barito Mineral (kt)</b>	<b>384</b>
FOB costs (US\$/t)	88.66
Price Received (US\$/t)	153.41
<b>All Mines (Kt)</b>	<b>384</b>
Cash costs (US\$/t)	88.66
Price Received (US\$/t)	153.41

## Profit &amp; Loss (A\$m) 2011A 2012F 2013F 2014F

<b>Sales Revenue</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>59.8</b>
Other Income	0.6	1.1	1.3	0.9
Operating Costs	0.0	0.0	0.0	34.6
Exploration Exp.	0.0	0.0	0.0	2.3
Corporate/Admin	3.2	4.1	4.1	4.1
<b>EBITDA</b>	<b>(2.6)</b>	<b>(3.0)</b>	<b>(2.8)</b>	<b>19.8</b>
Depn & Amort	0.0	0.0	0.0	1.2
<b>EBIT</b>	<b>(2.6)</b>	<b>(3.0)</b>	<b>(2.8)</b>	<b>18.6</b>
Interest	0.0	0.0	0.7	7.8
<b>Operating Profit</b>	<b>(2.6)</b>	<b>(3.0)</b>	<b>(3.5)</b>	<b>10.8</b>
Tax expense	0.0	0.0	0.0	0.7
Abnormals + Minorities	0.0	0.0	0.0	0.0
<b>NPAT</b>	<b>(2.6)</b>	<b>(3.0)</b>	<b>(3.5)</b>	<b>10.0</b>
<b>Normalised NPAT</b>	<b>(2.6)</b>	<b>(3.0)</b>	<b>(3.5)</b>	<b>7.5</b>

## Cash Flow (A\$m) 2011A 2012F 2013F 2014F

Adjusted Net Profit	(2.6)	(3.0)	(3.5)	10.0
+ Interest/Tax/Expl Exp	0.0	0.0	0.7	10.8
- Interest/Tax/Expl Inc	14.7	5.7	6.8	14.7
+ Depn/Amort	0.0	0.0	0.0	1.2
+/- Other (Associates)	(8.3)	(0.1)	0.0	0.0
<b>Operating Cashflow</b>	<b>(25.7)</b>	<b>(8.7)</b>	<b>(9.6)</b>	<b>7.3</b>
- Capex (+asset sales)	0.0	0.0	30.6	59.8
- Working Capital Increase	0.0	0.0	0.0	0.0
<b>Free Cashflow</b>	<b>(25.7)</b>	<b>(8.7)</b>	<b>(40.2)</b>	<b>(52.5)</b>
- Dividends (ords & pref)	0.0	0.0	0.0	0.0
+ Equity raised	31.3	28.8	0.0	0.0
+ Debt drawdown (repaid)	0.0	0.0	30.6	55.1
<b>Net Change in Cash</b>	<b>5.6</b>	<b>11.5</b>	<b>(9.6)</b>	<b>2.6</b>
Cash at End Period	17.2	28.7	19.1	21.7
Net Cash/(Debt)	17.2	28.7	(11.5)	(64.0)

## Balance Sheet (A\$m) 2011A 2012F 2013F 2014F

Cash	17.2	28.7	19.1	21.7
Total Assets	44.8	62.2	89.3	174.0
Total Debt	0.0	0.0	30.6	85.7
Total Liabilities	8.6	0.2	30.8	105.5
Shareholders Funds	36.2	62.0	58.5	68.5

## Ratios

Net Debt/Equity (%)	na	na	19.7	93.5
Interest Cover (x)	na	na	na	2.4
Return on Equity (%)	na	na	na	14.6

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Effective Date: 16 January 2011

# APPENDIX 20

COUNTRIES

## AUSTRALIA



OVERVIEW / DATA

ANALYSIS

ANALYSIS BRIEFS ▾

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Last Updated: October 2011

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## Background

**Australia was the world's largest coal exporter and the fourth largest LNG exporter in 2010**

Australia has considerable petroleum, natural gas and coal reserves and is one of the few countries belonging to the Organization for Economic Cooperation and Development (OECD) that is a significant net hydrocarbon exporter, exporting about two-thirds of its total energy production. Australia was the world's largest coal exporter and, according to Cedigaz, the fourth largest exporter of liquefied natural gas (LNG) in 2010, after Qatar, Indonesia, and Malaysia. Australia is a net importer of crude oil and refined petroleum products, but a net exporter of liquefied petroleum gas (LPG). Hydrocarbon exports accounted for 34 percent of total commodity export revenues in its fiscal year 2009-2010.

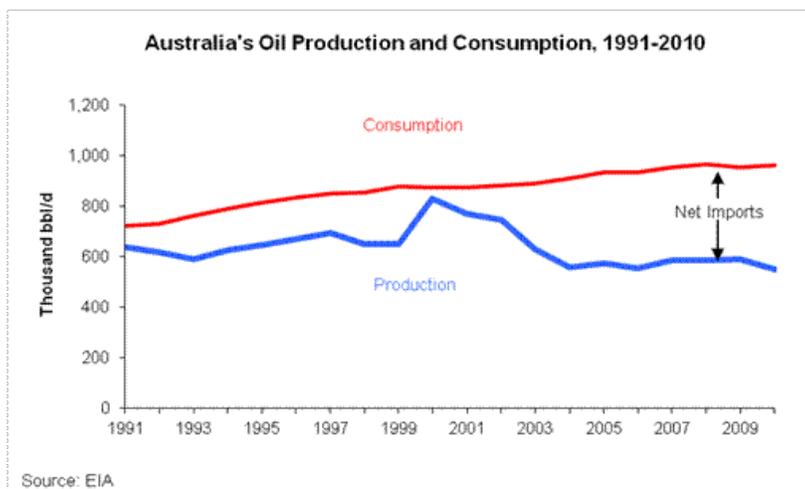
Australia's stable political environment, substantial hydrocarbon reserves, and proximity to Asian markets make it an attractive place for foreign investment.



## Oil

**Australia's dependence on oil imports is projected to increase as domestic consumption increases and production continues to decline**

According to *The Oil and Gas Journal*(OGJ), Australia had 3.3 billion barrels of proven oil reserves as of January 1, 2011. Australian crude oil is of the light variety, typically low in sulfur and wax, and therefore of higher value than the heavier crudes. The majority of reserves are located off the coasts of Western Australia, Victoria, and the Northern Territory. Western Australia has 64 percent of the country's proven crude oil reserves, as well as 75 percent of its condensate and 58 percent of its LPG. The two largest producing basins are the Carnarvon Basin in the northwest and the Gippsland Basin in the southeast. While Carnarvon Basin production, accounting for 72 percent of total liquids production, is mostly exported, Gippsland Basin production, accounting for 24 percent, is predominantly used in domestic refining.



### Sector Organization

Australia's management of oil exploration and production is divided between the states' and the Federal (Commonwealth) governments. Australia's states manage the applications for onshore exploration and production projects, while the Commonwealth shares jurisdiction over Australia's offshore projects with the adjacent state or territory. The Department of Resources, Energy and Tourism (RET) and the Ministerial Council on Energy (MCE) function as regulatory bodies over Australia's oil sector. In place of a national oil company, the Australian government supports privately held Australian companies, of which the largest are Woodside Petroleum and Santos. ExxonMobil is the largest foreign oil producer; other international oil companies include Shell, Chevron, ConocoPhillips, Japex, Total, BHP Billiton, and Apache.

### Production

Oil production totaled 549,000 barrels per day (bbl/d) in 2010, of which 79 percent (435,000 bbl/d) was crude oil. Oil production in Australia peaked in 2000 at 828,000 bbl/d and since has been declining. According to the Australian Petroleum Production and Exploration Association (APPEA), oil liquids production will continue to decline unless major new fields are discovered.

Australia's main frontier for oil exploration has moved in recent years to the deepwater area of the Timor Sea, although the nearby Carnarvon Basin off the coast of Western Australia remains the busiest area in terms of overall drilling activity. After a spike in drilling activity in the past decade, several significant discoveries are now in the process of being put into commercial operation.

The Pyrenees and Van Gogh projects offshore Western Australia came online in the first quarter of 2010, with production capacities of 96,000 bbl/d and 150,000 bbl/d, respectively. In fiscal year 2010-2011, these projects are projected by the Australian Bureau of Agricultural and Resource Economics (ABARE) to increase oil exports by 7 percent in line with higher production. The Kipper and Turum oilfields in the Gippsland Basin, southeastern Australia are expected to start up in 2012 at 20,000 bbl/d. These additions to production are expected to help offset the declining output in other fields in the short term.

### Pipelines

Australia has a well-developed domestic oil and gas pipeline network. The Australian Pipeline Trust, with 6,200 miles of pipeline, is the largest operator. Epic Energy is the second-largest, with 2,500 miles of pipeline. Santos operates two major domestic pipelines that are used for carrying oil and oil products, which include the Jackson to Brisbane line that spans 500 miles, and the Mereenie to Alice Springs line that covers 167 miles. Esso Australia Ltd. operates the 115-mile Longford to Long Island Point pipeline.

### Imports and Exports

According to the Australian Bureau of Agricultural and Resource Economics (ABARE), in fiscal year 2009-2010 Australia had net total oil imports of about 440,000 bbl/d. Australia's crude oil and condensate imports mainly come from South East Asia; Malaysia, Indonesia, and Vietnam are currently the largest sources, while Australia's refined product imports come largely from Singapore.

Because the majority of Australia's oil production is located off its northwest coast, Australia exports much of its crude and condensates to Asian refineries as Australia's domestic refineries are located on its east coast, close to its major domestic consuming markets.

According to ABARE, in fiscal year 2009-2010, Australia exported of 311,000 bbl/d of crude oil and condensates and 47,841 bbl/d of LPG, amounting to about 70 percent of its total oil production of 511,304 bbl/d. These volumes were exported to Asian markets, mainly Singapore, South Korea, China, and Japan. Australia's 2009-2010 gross exports of refined petroleum products were 14,786 bbl/d, about 3 percent of its total oil production; its largest markets were New Zealand and Singapore.

### Refining

According to *The Oil and Gas Journal*, in January 2011, Australia had 7 major refineries, with a total crude oil refining capacity of 757,000 bbl/d. Capacity has increased from 725,000 bbl/d in 2009. Crude oil feedstock for these refineries comes from oil produced in the Bass Strait offshore southeastern Australia in addition to increasing imports.

### Natural Gas

According to *The Oil and Gas Journal (OGJ)*, Australia had 110 trillion cubic feet (Tcf) of proven natural gas reserves as of January 2011, making Australia the twelfth largest holder of conventional natural gas reserves in the world. Australia also had 396 Tcf of technically recoverable shale gas reserves in 2009, according to an EIA study [World Shale Gas Resources](#).

### Sector Organization

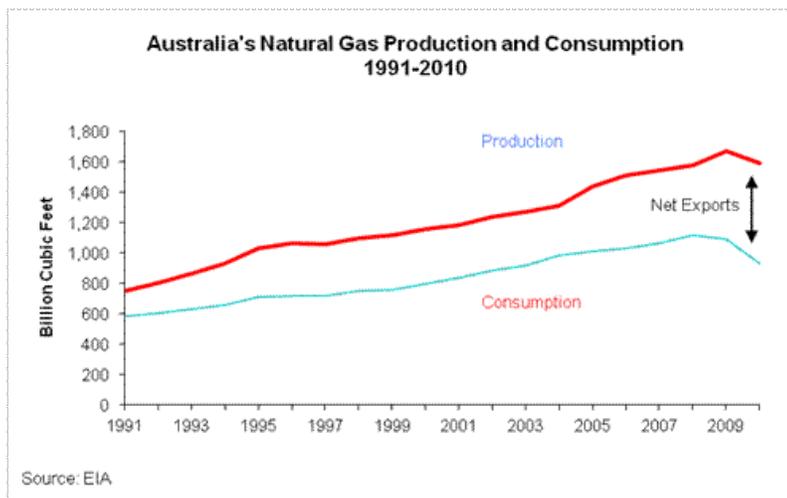
The Australian government has no ownership stake in the domestic oil and natural gas industry. The industry is regulated by the Department of Resources, Energy and Tourism (RET) and the Ministerial Council of Energy (MCE). The MCE was created in 2001 to foster policy coordination between the Commonwealth and the state governments. The MCE functions as the national policy and governance body for the Australian energy market and is comprised of Ministers with responsibility for energy from the Australian government and all states and territories.

Major domestic and foreign companies operating in Australia include Santos, Woodside, Chevron, ConocoPhillips, ExxonMobil, Origin Energy, BG Group, Apache, INPEX, Total, and Shell.

**Australian natural gas production and exports have been increasing since the mid-1990s**

## Production

Natural gas production in Australia reached 1.6 Tcf in 2010. Conventional gas is largely produced from the Carnarvon Basin offshore North Western Australia, the Cooper/Eromanga basin in central Australia, and Gippsland/Victoria. These 3 basins account for 96 percent of Australia's conventional natural gas production. Queensland and New South Wales are the main sources for coal bed methane, which accounted for 13 percent of gas production in 2010. About half of natural gas production is converted into LNG for export and the other half is consumed domestically. Several major new LNG projects are under construction or advanced planning as the Asian LNG market continues to expand and domestic demand increases. Four projects currently under construction or advanced planning will use conventional gas from offshore the northwest coast and four will be based on LNG extraction from CSG in Queensland.



Major new conventional LNG production projects include:

The first stage of the Pluto project near Karratha offshore Western Australia is expected to be online in March 2012, with estimated capacity of 200 billion cubic feet (Bcf) of LNG per year. Woodside Energy owns 90 percent of the venture supported by 15-year sales contracts with Kansai Electric and Tokyo Gas, which have 5 percent equity each. The Pluto project includes an offshore platform connecting 5 subsea wells and a 112-mile pipeline to an onshore LNG facility on the Burrup Peninsula. Plans for a second train are on hold as additional gas supplies are sought.

The Gorgon project, led by Chevron (50 percent), with Shell and ExxonMobil (25 percent each), is under construction and is on track to be completed in 2014. The Gorgon gas field, which is 80-124 miles off the northwest coast, is believed to contain 40 Tcf of natural gas and is currently Australia's largest known natural gas resource. The project includes development of the Gorgon gas fields, with connection by subsea pipelines to Barrow Island, where gas processing facilities will have production capacity of 700 Bcf per year. Also planned are LNG shipping facilities to transport products to international markets, and greenhouse gas management via injection of carbon dioxide into deep formations beneath Barrow Island. In the beginning of 2011, Chevron signed long-term sales agreements with Nippon and Kyushu corporations for sales of Gorgon LNG. The project is expected to annually produce 390 Bcf of LNG and 19 million bbl of LPG, as well as 100,000 bbl/d of condensate when completed.

The Ichthys project, located offshore the northwest coast in the Browse Basin, is expected to begin construction in early 2012. The project is led by Japan's INPEX (74 percent) and Total (26 percent). A 528-mile undersea pipeline will connect the fields to a new export LNG terminal to be built near Darwin. When the project comes onstream in 2016, its production is expected to be 380 Bcf of LNG and 19 million barrels of LPG per year, as well as 100,000 bbl/d of condensate. The final investment decision is expected in the fourth quarter of 2011, following the June 2011 environmental approval by the Australian government.

The Wheatstone project in northwestern Australia reportedly will begin construction in November 2011. It is led by Chevron (73.6 percent) and Apache (23 percent), Kuwait Petroleum (KUFPEC) (7 percent) and Shell (6.4 percent). KUFPEC and Apache joined the project as gas suppliers from their nearby Julimar and Brunello fields, which will extend the life of the project. Wheatstone is supported by long-term LNG sales contracts with Tepco and Kogas. When complete in 2016, the first two trains of its LNG export plant are expected to export 433 Bcf per year.

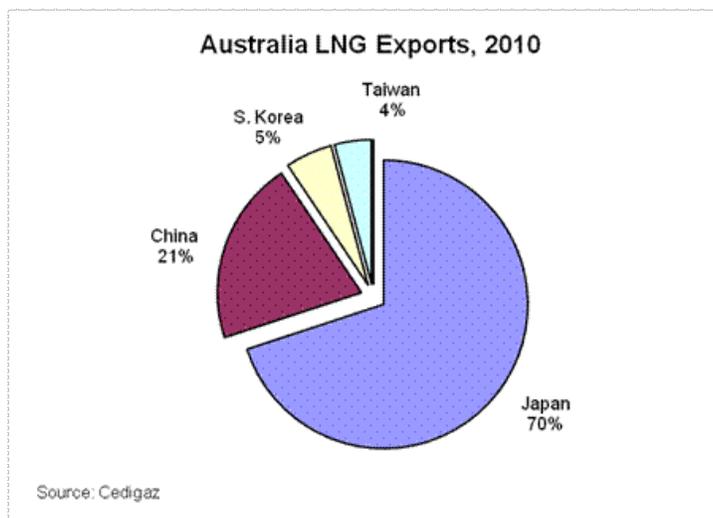
Major new unconventional LNG production projects under development include:

The Gladstone project will be the world's first major coal seam gas (CSG) to LNG operation. Located onshore Queensland, construction reportedly began in September 2011. This project is a joint venture between Santos (30 percent), Petronas (27.5 percent), Total (27.5 percent), and Kogas (15 percent). A long-term sales agreement with Kogas has been signed. Gladstone LNG will have initial capacity of 362 Bcf when it comes online in 2015, later increasing to 464 Bcf.

Three other major CSG to LNG projects in Queensland are also underway: the Arrow project, a joint venture of Shell and PetroChina; the Australia Pacific project, a joint venture between Origin and ConocoPhillips; and the Queensland Curtis project being developed by BG Group. Together, they could deliver 1,232 Bcf/year by 2016.

## LNG Exports

The distances between Australia and its key natural gas export markets in Asia discourage any pipeline trade; all exports are in the form of LNG. Over the past decade, Australian LNG exports have increased by 60 percent and they are expected to continue to increase over the short to medium term. In 2010, Australia exported 872 Bcf of LNG, up from 714 Bcf in 2009. Japan is the primary destination, but other purchasers include China, South Korea, and Taiwan.



Australia currently has two LNG export facilities. The largest is the North West Shelf Venture (NWSV), a consortium of 6 energy companies (Woodside, Shell, BP, Chevron, Japan Australia LNG, BHP Billiton), which operates five offshore LNG trains with a total capacity of 761 Bcf per year. It relies on natural gas supplied from nearby fields in the Northwest Shelf (NWS). The majority of LNG produced by the NWSV is exported to Japan by long-term contracts. Darwin LNG is the second facility, a consortium of ConocoPhillips, Santos, Eni, SPA, and INPEX. It has one production train with capacity of 140 Bcf per year and exports LNG under contracts to Tokyo Gas Corp. and Tokyo Electric. Darwin is located on Australia's northern coast and is supplied with natural gas from fields in the Timor Sea. However, as new LNG facilities come online beginning with the Pluto project, Australia's LNG export capacity will be expanding substantially.

## Coal

**Coal is Australia's largest export commodity**

As of the end of 2010, Australia contained 84 billion short tons (Bst) of recoverable coal reserves, according to the British Petroleum (BP) 2011 Statistical Energy Review. Australia is the world's fourth largest coal producer, after China, the United States, and India, but it is the largest exporter. Coal is Australia's largest export commodity, and it is also a significant component of domestic energy needs, accounting for about 77 percent of Australian electricity generation in 2008-2009.

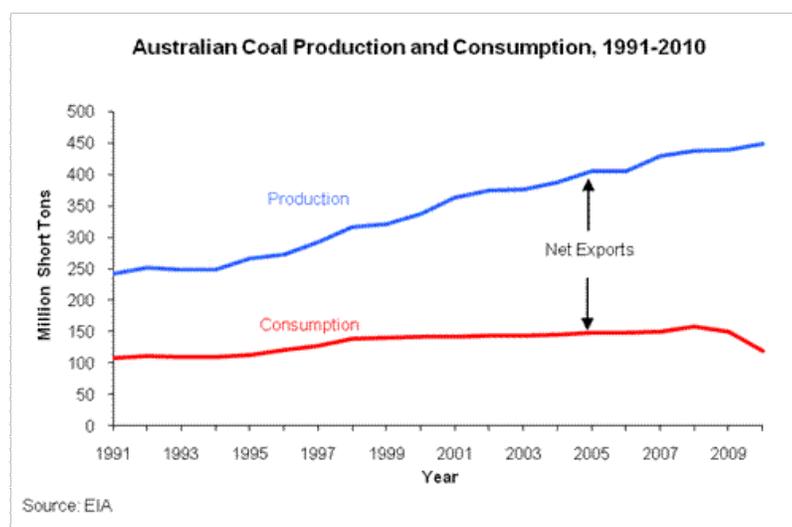
### Sector Organization

Australia has around 107 privately owned coal mines located throughout the country. About 74 percent of Australia's coal production comes from open pit operations, with the remainder coming from underground mines. International companies such as BHP Billiton, Anglo American (UK), Rio Tinto (Australia-UK), and Xstrata (Switzerland) play a significant role in Australia's coal industry.

### Production

In 2010, Australia produced 449 million short tons (MMst) of coal. According to EIA estimates, over the last two decades, coal production in Australia has grown by 99 percent, with new projects continuing to come online every year. This growth has been supported by strong global demand and by continuing investment in new mining and export capacity, and it is expected to continue over the medium term.

The states of Queensland and New South Wales (NSW) together account for 95 percent of Australia's black coal production, while Victoria accounts for 96 percent of brown coal reserves. Brown coal is used largely for domestic electricity generation.



### Exports

According to RET, Australia exported about 70 percent of its coal production in 2009-2010, or about 322 MMst. According to the Australian Coal Association, Japan was the destination for 43 percent of Australia's coal exports during Australian fiscal year 2009-2010. Other important export markets included South Korea (15 percent), China (14 percent), and India (11 percent). About 8 percent of Australia's coal exports went to Europe.

Coal exports are serviced by 9 major coal ports and export terminals located in Queensland and NSW. These terminals in 2009 had a

combined handling capacity of 400 MMst. Several new port infrastructure projects are in various stages of development and are expected to add about 130 MMst to annual coal export capacity by 2014. These include the Dalrymple Bay capacity expansion and the Newcastle Coal Infrastructure Group's capacity expansion at the Port of Newcastle.

## Links

### EIA Links

[EIA - Australia Country Energy Profile](#)

### U.S. Government

[CIA World Factbook - Australia](#)

[U.S. State Department Background Notes on Australia](#)

### Associations and Institutions

[Australian Bureau of Agricultural and Resource Economics](#)

[Australian Institute of Petroleum](#)

[Australian Petroleum Production and Exploration Association](#)

### Foreign Government Agencies

[Australian Department of Resources, Energy and Tourism](#)

[Australian Embassy in the United States](#)

[Geoscience](#)

[Gorgon Project](#)

[Chevron](#)

[ConocoPhillips Australia](#)

[Epic Energy](#)

[ExxonMobil Australia](#)

[Inpex Japan](#)

[National Gas Market Bulletin Board](#)

[Santos](#)

[Woodside Energy](#)

### Coal

[Australian Coal Association](#)

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# APPENDIX 21

Thursday, January 17, 2013 9:32 AM ET **Exclusive**

## Former Mont. Gov. Brian Schweitzer calls most Wash. coal export plans 'dead'

Article

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By Dan Testa

Brian Schweitzer's two terms as the 23rd governor of Montana drew to a close Jan. 7. In mid-December 2012, Schweitzer spoke with SNL Energy on topics including coal development, wind generation and his prospects as a potential secretary of energy. Second in a [two-part series](#).

### SNL Energy: What are the prospects for sequestration technology at power plants that burn coal?

**Brian Schweitzer:** For right now, if there is no negative value in CO2 emissions, then people are going to emit their CO2. There is no carbon tax. There is no cap-and-trade, so there is no inducement for somebody to spend twice as much to build a coal-fired plant that can capture the CO2 than a conventional coal plant. I don't know what the plans are in the future, but if we do force power plants to pay for their externalities, which includes CO2, then and only then are they going to begin capturing CO2.

If you could get 25 bucks a ton for your CO2 emissions right now, that might even pay for retrofitting some of these coal-fired plants. Think about it: You get two tons of CO2 from every ton of coal burned, so that means a ton of coal that you paid \$10 for, you actually get \$50 a ton for the CO2 that you can capture from it. And the oil and gas industry, they'll pay for it, they're ready to go, giddy-up, we need it, we want it.

### Speaking of coal, how much expansion do you support at [Cloud Peak Energy Inc.](#)'s Spring Creek Mine?

It's going to be tough to say. What has happened right now is we have a real lull in the market for coal. There is overcapacity of coal in the Powder River Basin, and I don't know what is on the horizon. With cheap natural gas, it's cheaper when you consider, let's say, Spring Creek coal at 9,500 Btu that costs 15 bucks at Spring Creek. Well, by the time you get it to the Midwest or the Southeast, you've got another 50, 60 bucks in rail. So now you've got an \$80 coal compared to a \$3 natural gas — that dog don't hunt.

Now what is the other option with Spring Creek coal? Well, theoretically, it could be an export coal. People don't understand that Otter Creek coal is not an export coal. It's an 8,500-Btu coal. And frankly, let me give you the numbers on coal. So let's say ... Spring Creek peddles their 9,500-Btu/lb coal for 15 bucks a ton. Well, you've got \$15 a ton loaded on the rail, then you've got \$45 to get it to the coast, then you've got 10 bucks to load it on a boat, then you've got \$20 to get it to Asia. Now you've got a \$90 coal, for 9,500 Btu. Let's say you save \$5 by buying an Otter Creek coal with 8,500 Btu/lb, but then you've got to add the same \$80 to it to get it to the market.

So these people who are talking about Otter Creek coal as an export coal ... because export coal in Montana means Signal Peak at 10,500 Btu/lb or Spring Creek, Decker at 9,500 Btu/lb. And most of the Wyoming coal is not going to make it as an export coal, because that is 8,200 to 8,300 Btu/lb.

### So how do you account for the export terminal plans going forward in Washington state?

[Ambre Energy Ltd.] has an active interest because they and Spring Creek own this 9,500-Btu/lb coal. But plans? You call those plans? I don't see the plan

Tools



#### Related Companies

<b>Cloud Peak Energy Inc. (CLD-US)</b>	\$ 18.67	(0.74%)
<b>Enbridge Inc. (ENB-TSX)</b>	C\$ 47.02	(0.59%)
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#### About This Feature

In-depth, insightful interviews with movers and shakers in SNL's sectors, including executives, analysts, investors, academics and authors.

that's getting built. A plan is when you put it on a piece of paper and pay somebody to start pouring concrete. I've been out there looking at these things. I think [Cherry Point](#) is dead.

The [Millennium project](#) in Cowlitz County there that Ambre has proposed, that is far out into the distance. Ambre has also [got a plan](#) that they hope to get built along the Columbia River on the Oregon side. But I think that Oregon has poked a big hole in that balloon. So the only export terminal that we really have is in Vancouver, and now they've got their locals up in arms when Westshore has proposed to increase from about 27 [million] to about 30 million tons.

Ten years from now, maybe there will be some export capacity on the West Coast, but for right now, what we have is completely full and what has been proposed is probably dead — and not even dead in the water, just dead.

**Do you consider the Obama administration to have waged a "war on coal"?**

It's almost all market forces. For example, here in Montana and during the election [[PPL Corp.](#)] ... announced that they are [closing Corette](#) in Billings, which is a little coal-fired plant, and some Republicans tried to make hay with it, saying that, "Oh, see, that proves there is a war on coal." No, they closed the damn thing because it was not cost-effective anymore. It is old technology in a \$3-per-MMBtu gas market. And that is what's happening all over this country.

**What about EPA regulations cracking down on particulates, NOx and SO2?**

This is just a continuing trend. People seem to forget that it was Richard Nixon who started the EPA and passed the Clean Air Act, which effectively shut a lot of the coal mining down in the Midwest and the East and drove it to the Powder River Basin, and it was over sulfur. This is just a continuation, and frankly, we need to do a little better job with our coal-fired plants. It's twofold: Number one is concerns about quality of breathing air. We have a lot of people who are asthmatic in this country. Coal-fired plants can do a better job. But right now, the great driver here is differential in price. And then if your fuel source — if you look out into the distant future for the next 10, 20 years appears to be still pretty inexpensive fuel — you're going to get all over that natural gas.

**After having laid out your vision for where you'd like to see energy policy in a perfect world, what is actually in store for oil and gas development in Montana in the near term?**

It is going to continue to grow in Montana, and it's kind of exciting. Here's what's interesting: We own 5.2 million acres in Montana; 2.6 million of those acres are under lease right now for oil and gas development. Fifty percent of the land we own has got a lease on it. Now what is happening in Montana is, of course, the Bakken was developed on the Montana side in Elm Coulee [in Richland County]. And as they moved and started wildcatting and seeing how deep the Bakken might be and how thick it was, as they moved east and south, it was found that the Bakken was thicker than it was in Montana. So sort of in the Bakken, Montana is the shallow end of the pool and North Dakota is the deep end of the pool.

All across central Montana, from the Bakken fields all the way to the Rocky Mountain Front, there is a hell of a lot of leasing activity in the Heath. Now the Heath is another shale that people have wildcatted on, done some fracking with, and they're milking some oil and gas out of it. So now the excitement is kind of moving on the Heath, and then as you get closer to the Rocky Mountain Front, all the way down the Rocky Mountain Front there is something called the Alberta-Bakken, which is the same geologic structure as the Bakken in eastern Montana, but due to the uplift, it is a little closer to the surface in Alberta and Montana along the Rocky Mountain Front. And there is a lot of excitement about it. So there is going to be a lot of oil and gas development in Montana over the course of the next 20 years.

**Turning to renewables, you've spoken previously about large-scale wind development in Montana that could be exported to bigger markets in the Southwest or California, but it seems there are some transmission obstacles there.**

Actually, it has turned out pretty good. We passed the renewable portfolio standard, and now we've had more than a billion dollars invested, thousands of jobs created in Montana, building wind farms and transmission lines. There have been some ideas. [[NorthWestern Corp.](#)] proposed [the MSTI line](#), which would have gone from Townsend down to Idaho and then tied into some transmission lines to get it to Las Vegas. I think that one is dead in the water.

But we've got some other great opportunities. The Bonneville line, which was originally built from the coal-fired plants out to the utilities on the West Coast, that is a line that already has the easements in place. With just some upgrades with transformers, they could add 500 MW to that capacity, and it could all be wind energy.

And of course the MATL line, which is really one of the few new transmission lines that has been built in North America over the course of the last 10 years, from Great Falls to Lethbridge, Alberta, is 100% wind power. And so you get a Canadian company like [[Enbridge Inc.](#)] that builds and owns a transmission line in Montana, and then a Spanish company by the name of [[Naturener SA](#)] that builds the wind farms in Montana; between the two of them, it's a billion-dollar industry. Where is that wind energy going? Well right now, [[Glacier Electric Cooperative Inc.](#)] is using some of it domestically, but some of it ultimately is going to go into Alberta, and then it's going to make it over to the coast, and there is some transmission capacity that is going to bring it right back down into Washington and Oregon and ultimately to California. So it is actually California utilities that are the beneficiaries of wind power produced in north-central Montana, pumped into Alberta, over to British Columbia and back down to California.

**You're describing natural gas cutting into coal's market share. What will the impact of gas be on renewables? Do states have to continue spurring renewable power development through portfolio standards?**

At some point, renewables are going to have to walk on their own. I think increasingly the way that wind power is going to work is that we have a transmission system that works. Our transmission system doesn't work right now because we've balkanized our transmission system in this country. What you've got is feudal lords, like Europe had 500 years ago, where every time you cross a bridge you have to pay the toll keeper and that happens to be the lord of that county or whatever.

That is the way our transmission system is built in this country, with hundreds of these little utilities and large utilities that own a little piece of action across some land. And so, for example, if you're producing wind energy in Montana ... we can't efficiently get the electricity to California. Not because there aren't wires that are strung between here and California, but because you've got to pay a toll to all of those utilities along the way. And until we have a national energy policy that creates incentives for these utilities to work together, we're going to continue to have an electricity system that can't be moved from Point A to Point B.

**With all this talk of a national energy policy, do you have any thoughts on what you might do next? Any interest in a job like secretary of energy?**

I wouldn't be a very good secretary. I can't even type. I want to change the world, and I'm afraid that putting your feet in concrete in Washington, D.C., is probably not the place to change the world.

**Please don't take offense, but would you consider a lobbying job on behalf of some of the industries we've been discussing?**

Probably not. I don't like the smell of what they do for a living. I think the special interests and lobbyists have effectively destroyed our legislative process in this country. If being an advocate for an energy system that is cleaner, greener, domestic, an energy system that wouldn't require us to send another generation to fight an oil war for petro-dictators, if that is being a lobbyist, well then I am, but that doesn't mean I'm going to be paid for by some special interest to sell out my core values.

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# APPENDIX 22

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## Gambling on Coal, and Losing

The history of West Coast coal terminals.

Eric de Place on September 12, 2011 at 9:30 am



This post is part of the research project: [Northwest Coal Exports](#)

West Coast port cities have already gambled and lost on coal export facilities. After investing millions of dollars in infrastructure and setting aside sizeable harbor acreage to coal export facilities, both Portland and Los Angeles watched their promised revenue from coal exports evaporate.

Worse yet, local communities were stuck with the tab. The abandoned coal export facilities locked up [millions of dollars in stranded investments and clean-up expenses, not to mention years-long missed opportunities](#) for more durable economic development choices.



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### What happened in Portland?

The early 1980s saw a rush of coal companies proposing export terminals in Washington and Oregon to satisfy a hungry Asian market. Longview, Kalama, Vancouver, and Astoria all entertained proposals, but [the Port of Portland bought in](#). Portland committed to a 25-year lease with Pacific Coal for 90 acres and 900 feet of prime riverfront for a coal export terminal. Governor Atiyeh even broke ground at the site with a giant gold-painted power shovel in 1982.

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The Port and investors spent \$25 million building a coal export terminal. The project imploded just two years later after Asian markets proved unstable, unreliable, and not-so-hungry. After a five-month investigation in 1984, the *Oregonian* reported, "Port and Pacific Coal officials

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[heedlessly plunged ahead despite clear warnings](#) that they might never move a solitary lump of coal." And they never did.

The *Oregonian* found that the terminal's construction contractors didn't get paid, public and private debts went bad, and lawsuits flourished. Public officials and private financiers alike were hoodwinked by shady operatives over-hyping Asian demand for US coal that could be more cheaply supplied domestically or by other countries, such as Australia. According to the *Oregonian*:

What the [Far East trade representatives] apparently had in mind was a reserve supply that also would work to keep base prices low. If West Coast ports could be talked into spending their own money to turn themselves into Far East coal colonies, so much the better.

By betting on coal, the Port wasted prime industrial land, money, and jobs. The *Oregonian* noted:

Analysts later determined that coal export failed because the Asian demand was based on promises rather than actual long-term contracts. And international banks studying the issue found that the demand for coal had been 'vastly overstated.'

Soon after the Port of Portland collapse, nearly all other West Coast coal plans were scrapped.

#### What happened in Los Angeles?

Despite Portland's dramatic failure in the 1980s, a decade later Los Angeles forged ahead with another "world class" coal export facility. In the early 1990s, coal giant Peabody led a consortium of [investors that promised jobs, tax revenue, and environmental protection](#) with a new coal export terminal at the Port of Los Angeles (LAXT). The enormously [divisive project alarmed neighbors and nearby workers](#).

A 1993 *Los Angeles Business Journal* article [seems to prefigure today's debates](#) in the Northwest:

... although the terminal will create jobs and taxes throughout Southern California, the terminal will have a negligible impact on L.A. County because the product (coal) is sourced from other states and the automated terminal won't generate many direct jobs.

And:

The City of Long Beach filed a lawsuit July 14, alleging that the Port of L.A.'s environmental impact report doesn't adequately address the negative environmental impact of coal dust that will be spewed from the massive uncovered storage pile of coal and petroleum coke.

Fears proved well-founded. The terminal experienced at least two [fires after dangerous amounts of coal dust accumulated](#) in the ship-loading machinery. By that time, however, Peabody was no longer around; perhaps sensing market weakness, they dropped out of the consortium before the terminal was built.

The facility closed just six years after it opened owing to unfavorable market conditions. When the facility shut down, the City of [Los Angeles had to write off \\$19 million of capital investment, and forfeit \\$94 million in expected revenue](#). Ultimately, the city was sued for improperly managing the site—and for failing to consider alternative uses of the site—and [taxpayers shelled out \\$28 million to settle the suit](#).

In fact, LAXT's development and subsequent closure sparked a firestorm of lobbying, backroom deals, and lawsuits. As one city councilmember at the time put it, "Every lobbyist I have ever

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- ▶ Washington

heard of is in this chamber... I would like to know [where, if \[the terminal\] is on the verge of bankruptcy, they got the money to hire all these lobbyists.](#)" The *LA Times* reported that the terminal, "made 25 [political contributions totaling more than \\$10,000 to city officials and candidates](#) including Mayor James K. Hahn and his sister, Councilwoman Hahn."

Today, it is not surprising that so [many Northwest ports have already rejected coal export schemes](#). It's an especially smart move given that clean redevelopment projects offer better economic returns, more jobs, and less risk. For more on that, stay tuned for the next blog post in this series.

*Much of this blog post originally appeared in the research memo "[Coal Export: A History of Failure for Western Ports](#)," a joint project of Sightline and [Columbia Riverkeeper](#).*

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## Comments

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David says:

October 14, 2011 at 4:00 pm

The entrepreneur.com and LA Times links are broken.

[Reply](#)



Eric de Place says:

October 14, 2011 at 4:34 pm

Thanks, David.

I have no idea why all those links were broken, but they should be fixed now. Two notes:

\*\* The LA Business Journal article that was formerly at entrepreneur.com is now at allbusiness.com.

\*\* There are actually links to four different LA Times articles. Each of them is a worth a read.

[Reply](#)

---

BUMH says:

November 26, 2011 at 2:15 am

I will agree on the varacity of the claims against Pacific Coal. The speculators behind the development seemed to think they could build a small coal shipping terminal and still make a quick buck. They were wrong but mostly because the worldwide price of coal collapsed in the early 80s. Investing in commodities is always risky. Luckily for Portland the property was easily repurposed to handle a different bulk commodity - potash.

LAXT is a different story. All we hear about is the write-down the Port of LA had to take on the coal/petcoke terminal. Yes, it was a relatively large loss. Several evaluations of the terminal prior to construction pointed out that this was the wrong terminal with the wrong equipment in the wrong location. Wiser heads prevailed.

What no-one mentions is that the coal terminal was only a minor part of the harbor redevelopment plan. The sneaky part was the major channel dredging, done to suite the "largest coal ships in the world" which could never really enter the harbor around the breakwater.

All that spoil - dredged material, was used to create new dry land islands on which massive new container terminals were built.

So any evaluation of the "major financial loss" must consider these economic side benefits before writing off the coal terminal as a dead loss..

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# APPENDIX 23



# Los Angeles Times

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## L.A. Weighs Costly Exit From Coal Terminal

June 14, 2003 | Patrick McGreevy | Times Staff Writer

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Los Angeles officials are preparing to pull out of a 10-year-old partnership in a coal export terminal, which would mean writing off a \$19-million investment by the city and forfeiting nearly \$94 million in projected revenue from the venture.

The Port of Los Angeles, a city agency, could face much steeper losses if the Los Angeles Export Terminal Inc. declares bankruptcy, as officials say will probably occur without a new agreement.

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But the plan to terminate the city's investment and transfer some of its harbor area property to one of the partners has sparked a battle at City Hall.

City Councilwoman Janice Hahn, who represents the harbor area, prefers that the city seek bidders who could put the 117 acres in question to other, more environmentally friendly uses than transferring coal and petroleum coke.

"This was a bad deal from the beginning," Hahn said. "It was a loser every single year. We ought to take our losses, write it off and look for a better opportunity."

A City Council committee has voted 3 to 2 to endorse the deal, which heads to the full council for action Tuesday.

#### FROM THE ARCHIVES

L.A. Rejects Restructuring Plan for Port Venture

June 18, 2003

Air Board to Examine Safety of Coal Terminal

November 14, 1997

L.A. Council OKs \$180-Million Coal Export Terminal...

August 1, 1993

---

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The Harbor Department invested in the terminal facility in 1993, seeking a way to help private investors establish a major export business on surplus city land at Pier 300 on Terminal Island.

In exchange for providing the 117 acres and \$19 million in capital, the city agency received a 13% interest in the Los Angeles Export Terminal, whose 29 partners are foreign and U.S. corporations involved in the coal and export business.

The terminal was completed in 1997 to transfer coal from rail cars to ships for export.

It is capable of handling 3 million tons of coal and 2 million tons of petroleum coke annually.

However, Harbor Department General Manager Larry Keller said a slump in the coal export market has prevented the terminal from ever generating cash above operating expenses.

The facility has been hurt by the emergence of China as a major coal exporter, a strong U.S. coal demand, disruptions in U.S. coal supplies and a decline in export prices for coal in the Pacific Rim from \$40 per metric ton to \$30, with some spot prices as low as \$23, Keller said.

The terminal "has determined that it cannot compete economically at these prices and sees no demand for the U.S. to export coal in the foreseeable future," Keller said in a report to the City Council.

Because of the slump, the terminal has stopped handling coal and owes the Harbor Department more than \$11 million in back rent for the land.

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Under the proposed deal, Los Angeles Export Terminal Inc. would be replaced by a partner, Oxbow Carbon and Mineral Inc., and the city would give up its \$19 million in equity in the terminal. Other partners would walk away from \$230 million they have spent on the facility, according to Brad Goldstein, a spokesman for Oxbow.

The proposal calls for 81 acres devoted to coal storage to be deleted from terminal holdings and to revert to city use after Oxbow contributes \$500,000 of the \$1.5 million it will cost the city to clean up the site.

Oxbow would maintain use of 36 acres for 12 1/2 years to operate a petroleum coke export facility, and would clean up the site before transferring it back to the city.

Oxbow also would pay the city the \$11 million owed in back rent, but the minimum annual payment to the city in future years would be cut from \$11 million to about \$3 million, for a loss of \$93.6 million in future revenue during the next 12 years.

Councilwoman Hahn says much of the money could be recovered by renting the land to other tenants, but Harbor Department officials said they are uncertain how soon that could be done and what it would yield.

Hahn said the city would be better off seeking open bids from firms to shut down all coal and coke operations in five years and converting the property into a cleaner operation.

"I know my residents in Wilmington would like to see that facility go away," she said. "It's an ugly facility."

The dispute over the best way for the city to get out of a sour investment has divided Los Angeles political leaders, resulted in multiple charges of conflict of interest and put an army of lobbyists to work attempting to influence the outcome.

"Every lobbyist I have ever heard of is in this chamber," Councilwoman Ruth Galanter said during a recent hearing on the proposal.

"I would like to know where, if [the terminal] is on the verge of bankruptcy, they got the money to hire all

these lobbyists," Galanter said.

The lobbyists, who include former harbor-area City Councilman Rudy Svorinich Jr., have been hired by other private corporations that have or want to have a financial stake in the terminal.

The debate is complicated further by the fact that even though the terminal is facing severe financial problems and is partly owned by the city, records show it has made 25 political contributions totaling more than \$10,000 to city officials and candidates including Mayor James K. Hahn and his sister, Councilwoman Hahn.

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# APPENDIX 24



# Los Angeles Times

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## L.A. to pay \$28 million to settle port suit

December 14, 2006 | Patrick McGreevy | Times Staff Writer



The Los Angeles City Council agreed Wednesday to pay \$27.7 million to settle a lawsuit that accused the city of improperly blocking expansion and changes in the site of a now-defunct petroleum coke operation at the port.

In addition, the council agreed to waive \$46 million in rent it said was overdue from two firms that had sued the city in a dispute over the site on Terminal Island.

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Oxbow Carbon & Mineral Inc. and Los Angeles Export Terminal Inc. had filed \$400 million in legal claims against the city, alleging city officials, led by Councilwoman Janice Hahn, had unfairly blocked proposals for alternative uses of the site when the market for coal exports soured.

As part of the settlement, the operator agreed to relinquish a permit and lease that had given it control of the 117-acre, city-owned site until 2032.

The settlement is one of several controversial deals the council has approved in recent months, but is by no means the largest.

Councilman Tony Cardenas said the deal will allow the city to put the site to a profitable use, eventually recovering the settlement cost.

### FROM THE ARCHIVES

Ethics Policy for County Workers to Be Drafted

November 2, 2005

Port Chief Had Fiscal Ties to Firm

October 27, 2004

Garcetti Appointment Is a Family Affair

August 20, 2002

---

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"On the surface it sounds like it's a bad deal, but when you think about it -- for that particular piece of land we could be getting \$20 million per year or more," Cardenas said.

Harbor-area activists were disappointed that so much public money was being spent to get the city out of what was a controversial and troubled deal from the beginning.

"The port has proven that it consistently gets in these kinds of messes and takes actions that are not very bright," said Janet Schaaf-Gunter, treasurer of the San Pedro Peninsula Homeowners Coalition. "I just hate to see our money being spent like this."

The Port of Los Angeles has had a 13% interest in Los Angeles Export Terminal Inc., which was created in 1993 by the Harbor Department and 36 U.S. and Japanese coal, energy and shipping companies to establish a coal and petroleum-coke export operation.

When the market for coal soured, the other shareholders sought permission to use part of the property to import crude oil, liquid natural gas and other energy products, but alleged that the city refused to consider the proposals.

Gerald Swan, president and chief executive of Los Angeles Export Terminals Inc., said the firm had invested in developing the site and had a legitimate claim. He noted that the costly dispute had dragged out in court for more than a year.

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"We are satisfied with the settlement," said Swan, who, Hahn noted, is a former assistant city attorney who helped negotiate creation of the partnership.

In voting 10 to 0 to approve the settlement, without public debate, council members said the money would come from Harbor Department funds provided by fees and leases.

The claims filed against the city alleged that Hahn led efforts to close the terminal and block alternative proposals while receiving \$8,000 in political contributions from executives and advisors of a firm that operated a competing terminal.

The terminal operator also suggested that former Councilman Rudy Svorinich Jr. had violated city ethics laws by lobbying the city for the competing terminal after voting a dozen times on Los Angeles Export Terminal matters.

The Ethics Commission has not filed complaints against Hahn or Svorinich in the two years since the allegations were made, and neither side in the lawsuit admitted wrongdoing.

Hahn, who represents the harbor area, called the assertions that she was influenced by political contributions "ridiculous," adding that she had been intent from before she took office to get rid of the operation, which she deemed a nuisance.

"This is good for the city because it gets rid of a polluting business and returns 117 acres to the port so it can turn it into better use," Hahn said.

As part of the settlement, the terminal firm agreed to provide "limited environmental remediation" of the site, which has significant potential contamination because of its use for coal storage.

[patrick.mcgreevy@latimes.com](mailto:patrick.mcgreevy@latimes.com)

\*

(BEGIN TEXT OF INFOBOX)

### Settlements

The \$27.7-million payment approved by the Los Angeles City Council on Wednesday to settle a lawsuit with Los Angeles Export Terminal Inc. is not the largest for the city. Other sizable settlements include:

\* 1999: \$39 million to settle with police officers who accused the city of not properly compensating them for overtime work.

\* 2000: \$19 million to Carol Adkins, a Florida woman severely disabled in a traffic accident involving a city truck driver.

\* 2000: \$15 million to Javier Francisco Ovando in connection with police misconduct during the Los Angeles Police Department's Rampart Division scandal.

\* 2003: \$60 million to mitigate air pollution at the Port of Los Angeles, an agreement reached with environmental and community groups.

Source: City of Los Angeles

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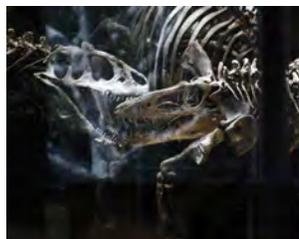
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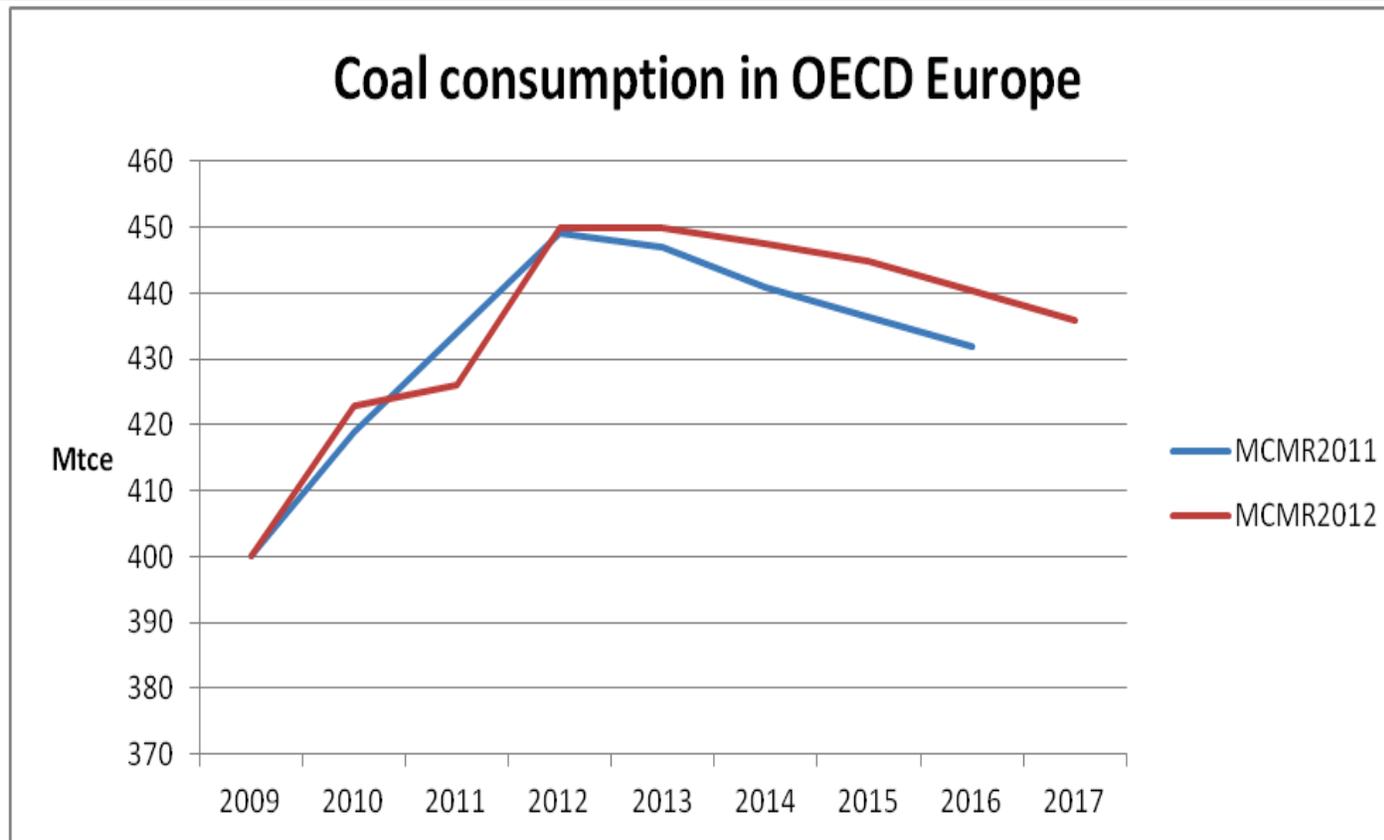
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# APPENDIX 25

# A golden age of coal in Europe?



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- **Gas to coal switch is already limited by system operation constrains**
- **The need for conventional generation is declining**
- **Decomissioning of old plants is sure, but economics of new coal to build is questionable**

# APPENDIX 26

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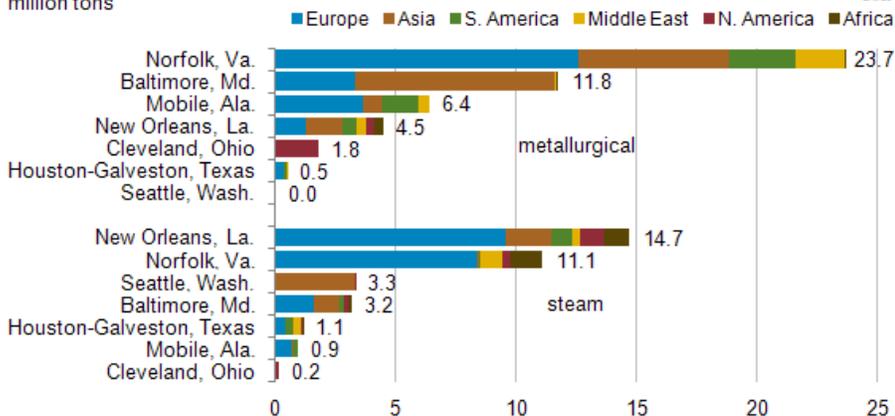
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NOVEMBER 15, 2012

## Europe and Asia are the leading destinations for U.S. coal exports in 2012

**U.S. 2012 coal exports by type, port, and destination, first eight months of 2012**  
million tons



Source: U.S. Energy Information Administration based on U.S. Census Bureau data.

Note: For top seven ports totaling 94% of U.S. exports. Due to limited volumes, South and Central America are combined.

About 75% of U.S. coal exports were shipped to Europe and Asia in 2012, [continuing the growth](#) of the past few years with exports this year expected to reach an all-time high. Despite growing demand in Asia, the United States exports slightly more coal to Europe than it sends the rest of the world combined. U.S. coal exports to Europe are primarily serviced out of the East Coast via Norfolk, Virginia (the largest coal export facility in the United States) and Baltimore, Maryland (the third largest). Exports to Asia originate mostly from the East Coast as well, primarily out of Baltimore. Somewhat counterintuitively, most coal out of Baltimore—almost double the port's European volume—is destined for Asia, the world's largest [coal consuming region](#).

One reason eastern seaports are the primary origin of U.S. coal exports to Asia is their proximity to U.S. metallurgical (met) coal mines, concentrated in the eastern United States. While U.S. exports to Europe are closely split between met and steam coal (used to generate electricity), Asia primarily imports met coal, which is used in steelmaking. The unavailability of significant capacity limits exports from the western United States, the country's [largest coal producing region](#), although the Seattle customs district has seen rapid growth over the past several years exporting steam coal via rail to Canada, where it is then shipped to Asia.

### U.S. Coal Exports

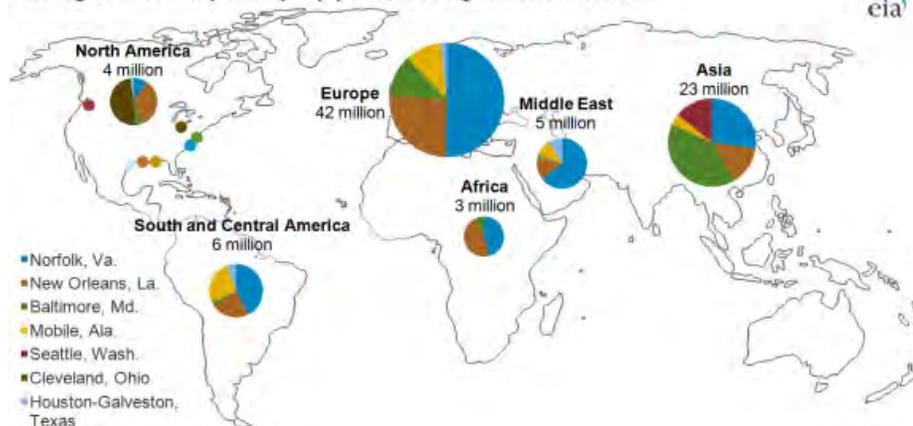
Destination by U.S. origin

Coal type

Regional breakdown



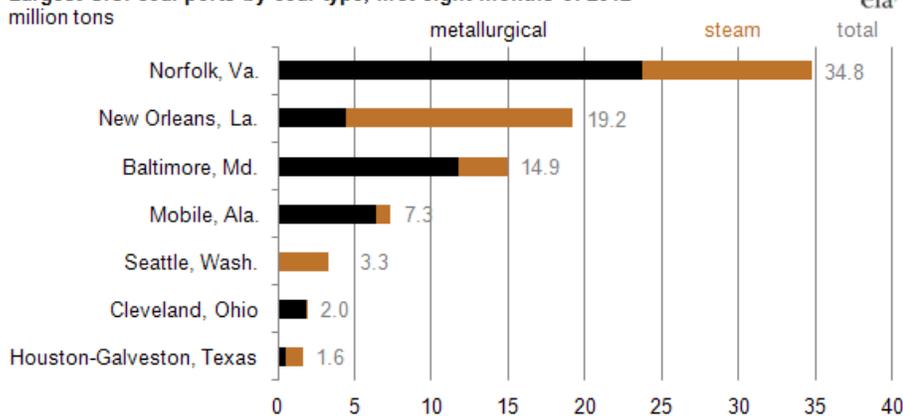
### U.S. regional coal exports by top ports, first eight months of 2012



Source: U.S. Energy Information Administration based on U.S. Census Bureau data.  
 Note: For top seven ports totaling 94% of U.S. exports. Data for 2012 run through August. Due to limited volumes, South and Central America are combined and Oceania is not displayed.

U.S. coal exports are largely concentrated in a few facilities, with the leading seven ports accounting for 94% of U.S. exports. Norfolk, the largest coal port, shipped almost 35 million tons of coal from January through August 2012 (the latest trade data available), accounting for nearly 40% of total U.S. exports. With access to barge shipments down the Mississippi River, exports out of New Orleans have grown from around one million tons in 2000 to more than 19 million tons in the first eight months of 2012, making it the second highest volume coal port in the United States. Among the top export facilities, only New Orleans and Seattle primarily export steam coal. While the majority of U.S. exports are met coal, growing steam coal demand is fueling 2012 exports to an expected all-time high. High natural gas prices in Europe have contributed to increased imports of U.S. steam coal.

### Largest U.S. coal ports by coal type, first eight months of 2012



Source: U.S. Energy Information Administration based on U.S. Census Bureau data.  
 Note: Top seven ports account for 94% of total U.S. coal exports for the period.

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# APPENDIX 27

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	<b>Tons</b>	<b>Tons</b>	<b>Tons</b>
	<b><u>Received</u></b>	<b><u>Shipped</u></b>	<b><u>Transshipped</u></b>
1976	2,557,023	1,855,086	2,206,055
1977	3,469,079	3,646,643	3,557,861
1978	3,395,302	3,147,833	3,271,568
1979	4,296,625	3,973,441	4,135,033
1980	4,018,101	4,090,696	4,054,399
1981	4,669,957	4,185,270	4,427,614
1982	4,639,880	3,790,273	4,215,077
1983	5,116,826	5,718,900	5,417,863
1984	5,538,089	6,677,349	6,107,719
1985	6,628,656	6,990,885	6,809,771
1986	8,210,957	8,180,871	8,195,914
1987	10,586,691	11,157,326	10,872,009
1988	10,489,423	10,079,146	10,284,285
1989	11,586,027	11,775,845	11,680,936
1990	12,385,949	12,298,458	12,342,204
1991	11,108,209	11,496,813	11,302,511
1992	10,434,937	10,875,446	10,655,192
1993	10,938,476	11,458,886	11,198,681
1994	13,319,768	13,481,527	13,400,648
1995	13,707,576	13,240,666	13,474,121
1996	13,253,250	13,739,290	13,496,270
1997	14,658,735	14,804,946	14,731,840
1998	16,184,578	15,816,993	16,000,785
1999	16,059,280	16,262,566	16,160,923
2000	16,269,907	16,691,452	16,480,679
2001	17,033,873	17,374,574	17,204,224
2002	18,524,449	18,388,102	18,456,276
2003	17,551,791	18,282,188	17,916,990
2004	18,591,272	18,804,254	18,697,763
2005	19,897,742	20,979,033	20,438,388
2006	21,816,695	21,819,824	21,818,260
2007	21,306,182	20,887,353	21,096,768
2008	21,669,807	22,998,081	22,333,944
2009	18,946,540	18,672,373	18,809,456
2010	19,145,467	18,481,152	18,813,310
2011 31-Dec	12,793,859	14,697,408	13,745,634
	440,800,977	446,820,951	443,810,964

# APPENDIX 28


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### Services Provided

#### MIDWEST ENERGY RESOURCES COMPANY (MERC)

Midwest Energy Resources Company (MERC) is your means of access to a full range of competitive rail, vessel, and truck transportation options in delivering your western coal from the mines to your end-users. These transportation options, coupled with our state-of-the-art coal blending and transshipment terminal facility located in Superior, Wisconsin, combine to provide you with a highly competitive fuel delivery mechanism.



We're delivering more than coal

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#### MERC Benefits to End-Users:

- Competitive rail access to western coal mines
- Supply of aluminum bodied railcars
- Large capacity on-site terminal coal storage
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- Combustion engineering, material handling, dust control and dust suppression consultation services included at no charge with service packages
- Short or long-term contracts tailored to meet individual end-user requirements
- One contract - one competitive price



**- AND there is more -**

Include Venture Fuels, our coal marketing partnership with Cloud Peak Energy (CPE), and western coal sourcing becomes part of the package. With Venture Fuels, a high-quality western coal to fit your individual requirements is delivered directly to your end user. Again, our advantage, one contract - one competitive price.



Midwest Energy Resources Company and Venture Fuels customers:

- Consumers Energy
- Detroit Edison
- Duluth Steam Cooperative
- Graymont Lime
- Hibbing Public Utilities
- Marquette Board of Light and Power
- Minnesota Power
- MP Taconite Harbor
- New Brunswick Power
- Nova Scotia Power
- Ontario Power Generation
- Silver Bay Power
- U.S. Steel, Minntac
- Virginia Public Utilities
- WE Energies
- Xcel Energy Inc.

# APPENDIX 29

# US Coal Exports and Uncertainty in Asian Markets

What the complex future of the Pacific Rim coal trade means for the Northwest.

Eric de Place and John Kriese

October 2012

With US demand for coal dropping, coal interests are now looking to Asia to shore up sagging coal sales. Since 2011, several companies have launched ambitious plans to mine low-grade coal on public lands in the Powder River Basin of Montana and Wyoming, transport it by rail to ports in Oregon and Washington, and then ship it overseas to Asian markets—particularly China, consumer of half the world’s annual coal use. At full capacity, the five export terminals proposed in the Northwest would export roughly 140 million tons annually—more than the entire United States has ever exported in a single year.<sup>1</sup>

The coal industry claims that Asia offers stable and lucrative markets for American coal exports. Yet much of the available evidence is cautionary, at best. There are good reasons to believe that Asia’s major coal markets have highly uncertain demand and that US coal will meet with stiff competition from other coal-exporting nations.

For example, recent news accounts depict a China awash in coal, with falling prices and purchasers breaking contracts to avoid buying unwanted coal.<sup>2</sup> As the *New York Times* reported in June 2012:

Record-setting mountains of excess coal have accumulated at [China’s] biggest storage areas because power plants are burning less coal in the face of tumbling electricity demand. But local and provincial government officials have forced plant managers not to report to Beijing the full extent of the slowdown, power sector executives said.<sup>3</sup>

Which of these two views—an Asia with an insatiable appetite for US coal or an Asia with unstable coal markets that already show signs of glut—will hold true for the future?

To help answer that question, this memo summarizes some of the key dynamics in the Pacific Rim coal trade. It focuses on the two key coal importers, China and India, as well as the countries competing with US interests to supply lower-value “thermal” coal to Asian electricity generators. It touches on many factors that affect the viability of a nation’s coal exports, including: the magnitude and quality of coal reserves; the cost of extracting coal; the quality of freight transportation and port infrastructure; the costs of transport from mine to market; the local investment climate; and government regulations and taxes of the coal industry.<sup>4</sup> The evidence suggests that Asian markets may prove far more uncertain and less hospitable to US coal than industry boosters hope.

We cannot claim to capture in this memo all of the complex dynamics that may result from the interplay of trends that are themselves uncertain. Rather, our intent is to provide a summary of the thermal coal trade and to call attention to some of the major market drivers for importers and exporters of coal in the Pacific Rim region.

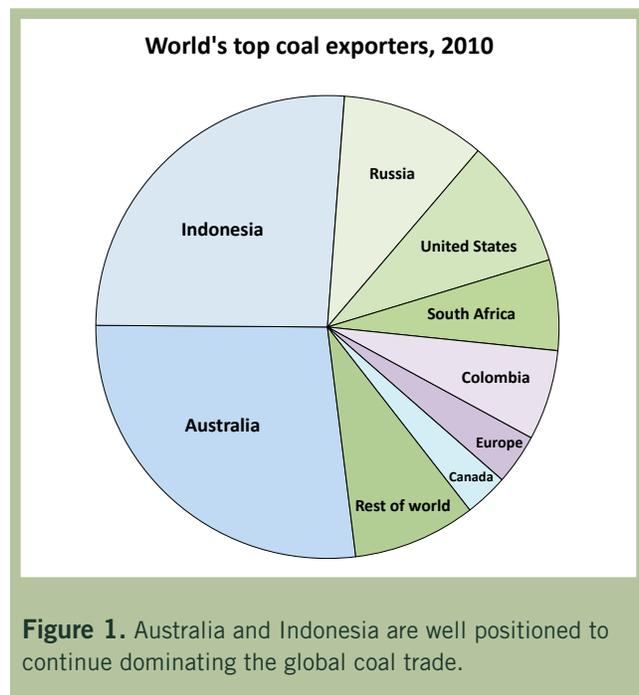
## US thermal coal exports face stiff international competition

North American coal interests will face stiff international competition in selling coal to Asian markets.

Australia and Indonesia both enjoy abundant coal reserves, together accounting for over half of global coal exports. (See Figure 1.) And both nations’ proximity to the biggest thermal coal markets in Asia give them a market advantage in selling a commodity whose price is largely driven by transportation costs.

Several other nations, including Russia, South Africa, and Colombia, are already well-established in the global coal trade, and may already be positioned to boost exports to Asia.

In contrast, North America is a newcomer to Asia’s thermal coal markets. With essentially no current coal export capacity on the Pacific coast, the US in recent years has mostly provided Asia with high-grade coal suitable for steelmaking, rather than the lower-grade coal used for electricity.<sup>5</sup> Canada does have three large coal ports on the Pacific, but like the US, it mostly exports high-value metallurgical coal that does not directly compete with the thermal coal planned for export from the Northwest.<sup>6</sup>



A review of the major competitors to US coal exports finds that, while each nation faces unique constraints to export growth, several major exporters may have an edge over the US in selling thermal coal to Asia.

## **Australia**

Since 2010 Australia has been moving huge quantities of coal—well over 300 million tons annually—making it the world leader in coal exports.<sup>7</sup>

Recent developments have created some uncertainty for Australia's coal industry. Two taxes introduced in 2012—the Mineral Resource Rent Tax and the Carbon Tax—will increase the cost of coal mining, making it more difficult for Australia to compete with low-cost coal exporters such as Indonesia.<sup>8</sup> At the same time, public concern about the environment is raising headwinds for the nation's coal industry. The United Nations has formed an environmental team to study the impacts of coal shipments that travel over the Great Barrier Reef.<sup>9</sup> A number of communities are also raising concerns about dust and pollution from coal trains, and actions likely to significantly impact the environment are subject to the Environmental Protection and Biodiversity Conservation Act.<sup>10</sup>

Nonetheless, Australia's proximity to Indian and Chinese coal markets confers a big advantage to its coal export industry because transportation costs represent a very large share of the expense of bringing coal to market in East Asia. Compared with the proposed export terminals in the US Northwest, Australia's export centers are roughly a thousand nautical miles, or 20 percent, closer to China's big eastern ports—and they have an even greater location advantage for Indian markets.<sup>11</sup> Shorter trips mean lower transportation costs, and a potentially decisive price advantage over coal exported from the Pacific Northwest.

These factors may allow Australia to substantially boost exports of low-cost coal to Asian markets in the short-to-medium term. In fact, several new projects to increase port and rail capacity are already underway, and these are expected to enable Australia to export even more coal.<sup>12</sup>

## **Indonesia**

As the world's second largest coal exporter, Indonesia has large reserves available. Indonesia's coal reserves consist mainly of lower-quality sub-bituminous coal, like the Powder River Basin coal planned for export from the Northwest, and lignite-grade coal, though uncertainties in reporting cloud the estimates of the size of its reserves.<sup>13</sup>

Difficulties in land transport, as well as an uncertain regulatory environment, may inhibit growth in Indonesian coal exports. For example, much of Indonesia's coal is currently moved by coastal and river barges<sup>14</sup> and challenging terrain in many areas

will require substantial investments in new roads to deliver additional coal to export markets.<sup>15</sup> (Slurry pipelines may offer an alternative means of transporting coal.<sup>16</sup>)

Indonesia's regulatory environment has created both obstacles and opportunities for the nation's coal exporters. Environmental restrictions, such as laws to protect rainforests, may add costs to Indonesian coal production, and new regulations and taxes on coal mining may limit expansion of coal mining.<sup>17</sup> A new domestic market obligation, which sets the percentage of total production each coal producer must make available to domestic customers, may limit the amount of coal available for export.<sup>18</sup> On the other hand, a 2009 mining law reduced the number of licenses and authorizations required to open a mine, potentially boosting the Indonesian coal industry, although regulatory processes reportedly remain slow.<sup>19</sup>

Yet despite potential regulatory and transportation barriers to increased exports, Indonesian coal has a major advantage over its competitors: it is even better positioned geographically than Australia to serve both Indian and Chinese coal markets. Ports in the coal producing region of Kalimantan, for example, are less than half the distance from China as the Pacific Northwest, and far closer to India than the coal currently buried in Montana and Wyoming.<sup>20</sup>

## **Russia**

Home to huge coal reserves—behind only the US and perhaps China—Russia ranks as the world's third largest exporter of coal.<sup>21</sup> As its traditional customers in Europe look to reduce coal consumption, Russia is turning to Asian markets, aiming to boost its coal exports to Asia to an annual 85 million tons by 2030.<sup>22</sup>

Russia's Pacific ports can, in theory, provide nearby access to most of Asia's large coal-consuming countries. Expanding rail and port capacities will be key to bringing Russian coal to these markets.<sup>23</sup>

## **South Africa**

Home to the world's largest coal export terminal at Richards Bay,<sup>24</sup> South Africa has routinely moved well over 70 million tons of coal per year, but the future of the country's coal export industry is somewhat uncertain.<sup>25</sup> Rail bottlenecks limit transportation of coal, environmental legislation may lead to increased costs, and work stoppages and strikes by miners may lead to increased costs. In particular, South Africa's aging and inefficient state-owned rail infrastructure is a major constraint on moving coal from mines to port. Moreover, investment has been slowed by bureaucratic delays, uncertainties around mining rights, and implementation of new royalties.<sup>26</sup>

Like Russia, South Africa is expected to shift its export strategy away from European consumers and toward Asian consumers.

## Colombia

Colombia has ramped up its coal exports in recent years to roughly 75 million tons annually.<sup>27</sup> The country needs major investments in transportation and port facilities if its coal export industry is to continue growing,<sup>28</sup> yet foreign investment may avoid Colombia because of political instability and security concerns (from armed conflict, social unrest, and the drug trade), which are a significant concern to investors.<sup>29</sup>

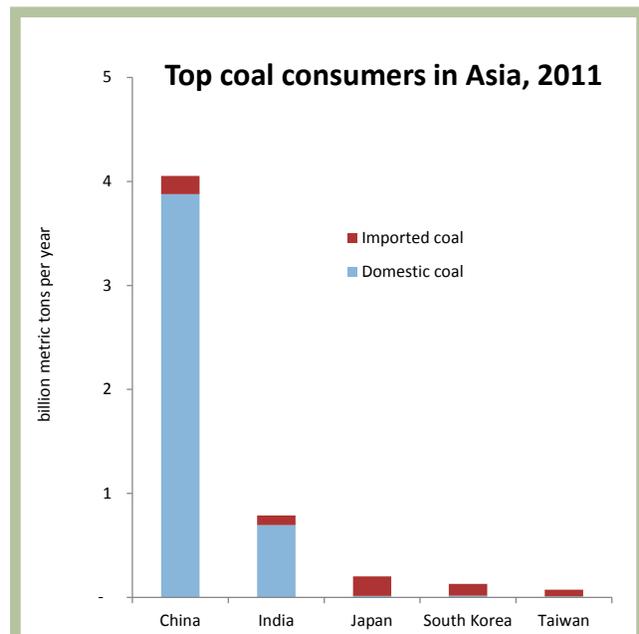
Colombia's coal production costs may be set to increase as new forms of government oversight may increase mining costs and add pressure to raise the price of coal. Mining accidents, especially in underground coal mines, have been a continuing problem and the government has acknowledged that it does not have a reliable count of the mining firms operating in the country.<sup>30</sup> The Colombian government plans to increase mine-safety inspections in response to criticism over its lax approach. Moreover, the Colombian Environment Minister said the government will increase sanctions against oil and mining companies that abuse the environment.<sup>31</sup>

Colombia is also even more remote from Asian coal markets than the Pacific Northwest. It is perhaps the only major coal-exporting country that is not likely to offer serious competition to the Powder River Basin coal planned for export from the US.

## Major importers face uncertainties, have significant coal reserves

As Asia's dominant coal consumers, China and India will determine the future of the Pacific thermal coal markets. (See Figure 2.)

Three other countries—Japan, South Korea, and Taiwan—also import large quantities of coal and have historically dominated the Pacific Rim coal trade. But these countries will have a comparatively minor impact on future changes to the Pacific Rim coal trade. Each of these countries has a well-developed economy and well-established relationships with coal importers. And their coal imports—particularly thermal coal imports—have grown more slowly than India's and China's, in part because these better-developed countries are pursuing an array of clean energy and carbon reduction strategies.<sup>32</sup>



**Figure 2.** Trends in China and India will drive the future of the Pacific coal trade.

Indian and Chinese coal sectors are alike in at least two important respects. First, in both countries, growth in coal demand—particularly demand for thermal coal—will likely be dictated to a large extent by the country’s demand for electricity. A rising demand for power would suggest increased coal use. Yet the electricity markets in both countries are subject to a range of policies that heavily distort normal market operations and make predictions fraught with uncertainty.

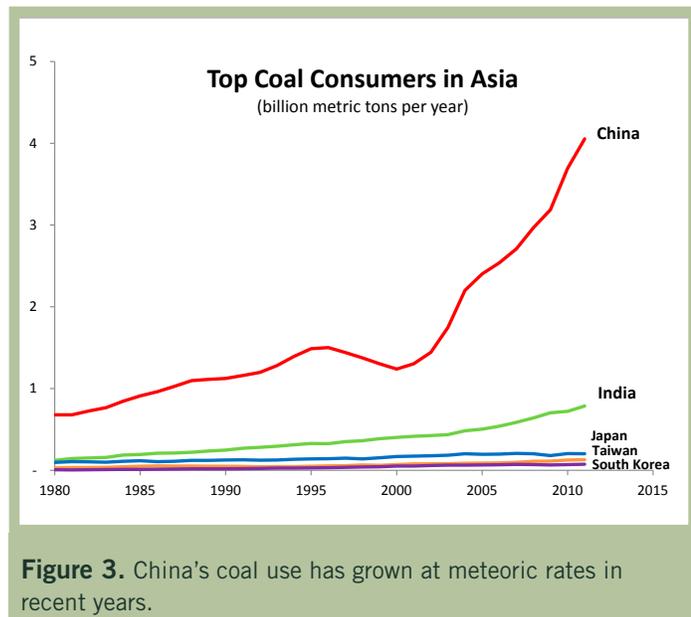
Second, both countries have ample reserves of coal, easily enough to supply their domestic demand. But poor transportation infrastructure currently hinders greater use of domestic coal reserves. Clouding matters, government policies in both India and China suppress domestic coal production.

## China

China is far and away the world’s largest consumer of coal, burning nearly half of all the coal used in the world each year. And the nation’s coal consumption has grown at more than 10 percent per year in recent years.<sup>33</sup> (See Figure 3.)

Boasting the second or third largest coal reserves in the world,<sup>34</sup> China historically has met the vast majority of its demand with domestic coal supplies. In fact, until recently, China typically exported more coal than it imported. But in 2009, as the cost of importing coal dropped, China became a net coal importer.<sup>35</sup>

Practical limits may put some of China’s coal reserves out of easy reach. About 30 percent of China’s coal reserves may be too deep to mine economically.<sup>36</sup> And in recent years, the Chinese government has shut down almost 10,000 small coal mines in an effort to restructure the mining industry, prevent deadly accidents, and reduce pollution.<sup>37</sup> Moreover, most of China’s coal reserves are located in the north and west of the country, at a considerable distance from the areas of greatest demand for electrical power,<sup>38</sup> and truck routes and railways in China for shipping coal are insufficient and costly. For example, the coal supply for southeast China is first shipped to eastern ports and then sent by ship to the southern part of the country. Even though this route is the most economical, transportation costs can comprise 50 to 60 percent of the price of domestic coal delivered to a southern province.<sup>39</sup>



Yet China's domestic coal industry has several options available to compete with low-cost imported coal. Increased investment in electricity transmission rather than coal transport may make it more economical for the Chinese to build power plants near coal mines rather than import coal for power plants located in the southern or eastern areas of the country. Moreover, new coal mines in western China could provide new sources of inexpensive coal, particularly if coupled with new infrastructure projects.<sup>40</sup>

In addition, some analysts foresee a marked increase in China's use of low-cost natural gas, perhaps imported from other countries in the region.<sup>41</sup>

Some of China's coal use may be offset by renewable energy generation, and the Chinese government has introduced a policy mandating that electricity suppliers meet some of their needs from renewable energy sources.<sup>42</sup> The government also set goals for using energy more efficiently, including an ambitious new plan to spend nearly \$372 billion reducing the nation's energy consumption by the equivalent of 300 million tons of coal by 2015.<sup>43</sup> However, as with China's coal industry, systematic problems with reported data often make it difficult for analysts to evaluate trends.<sup>44</sup>

It is important to remember that the Chinese government's pricing policies for electricity and coal are complex, market-distorting, and have changed many times over the last few decades. Producers of electricity incur losses when coal prices are high, producers of coal reduce production when prices are low, and consumers endure power shortages for a variety of reasons.<sup>45</sup>

In the past, economic growth and increased electricity consumption have gone hand-in-hand in China, and academic studies focused on China indicate that electricity supply leads economic growth.<sup>46</sup> For a growing China, then, an increase in electricity supply will likely point to an increase in demand for thermal coal as roughly 80 percent of the country's power is currently generated at coal-fired plants.<sup>47</sup> Yet the corollary is that stalled economic growth could mean a reduction in demand, and there is mounting recent evidence to suggest that China's demand for coal and electricity is declining. For example, news accounts show Chinese ports glutted with coal, prices falling, and coal buyers abrogating contracts with dozens of importers.<sup>48</sup> In fact, there is increasingly widespread agreement that China's economic boom is drawing to a close and that the country is poised for a slowdown, at minimum or even economic decline, heralding diminishing demand for imported thermal coal.<sup>49</sup>

## **India**

India may try to boost coal imports in coming years.<sup>50</sup> Academic studies focused on India indicate that electricity consumption is a leading indicator of economic growth.<sup>51</sup> In other words, a growing economy in India is likely to be associated with an increase in electricity consumption, which may in turn be linked to an increase in demand for thermal coal.<sup>52</sup>

Yet predicting the future of India's thermal coal market is extremely difficult. India's idiosyncratic and heavily regulated electricity markets function poorly, which may inhibit new investments in power plants.<sup>53</sup> And recent electricity blackouts that affected substantial portions of the country have called into serious question the reliability of India's coal-based power system, leading to renewed calls for a transition to cleaner and more dependable energy sources.<sup>54</sup>

Complicating matters, India has huge coal reserves of its own—the world's fifth largest—but the coal is mined by a state-owned monopoly that has not significantly boosted output in recent years.<sup>55</sup> In fact, recent allegations of coal-related corruption on the part of government officials dominated India's domestic politics in the middle of 2012.<sup>56</sup> Furthermore, India's coal deposits are mostly in the east-central and southeastern regions of the country—areas far away from the centers of coal demand, and that have limited transportation infrastructure.<sup>57</sup> Finally, India's coal is generally of poor quality because of its high ash content that, if untreated, incurs higher transportation costs and can create problems in power plants.<sup>58</sup>

In short, India's coal sector has a mix of major constraints in both supply and in demand that make future coal trade trends very difficult to predict.

## Conclusion

Coal interests have twice before attempted to operate coal terminals on the US West Coast—first in Portland in the 1980s and later in Los Angeles in the 1990s—but both attempts were expensive busts. After investing millions of dollars in infrastructure and setting aside sizeable harbor acreage to coal export facilities, both Portland and Los Angeles watched their promised revenue from coal exports evaporate—leaving local communities stuck with the tab. The abandoned coal export facilities locked up millions of dollars in stranded investments and clean-up expenses, not to mention years-long missed opportunities for more durable economic development choices.<sup>59</sup>

Now, some industry analysts believe that international coal markets have changed dramatically, and that high prices and surging demand in Asia will make US coal exports profitable for many years to come. Yet our examination reveals a picture of the Pacific Rim coal trade that is clouded by a great deal of uncertainty.

To be sure, the two leading Asian prospects for US thermal coal exports, India and China, do show some indications of providing a growing market. But both countries have ample domestic supplies of coal and murky policies governing their coal industries. Moreover, the United States is poorly positioned in geographic terms to supply a commodity like coal where the price is determined largely by the costs of transportation. Major coal-exporting nations like Australia, Indonesia, and Russia enjoy much greater proximity to key markets, and are therefore likely to enjoy lower costs.

At least one news account suggests that China is uninterested in large-scale coal imports from the United States with experts citing “high transportation costs, political red tape and environmental regulations” as major barriers.<sup>60</sup> Even relatively small players in the global coal trade, such as Mongolia and Vietnam, already supply far more coal to China than the United States, largely owing to their advantageous geographic proximity to Chinese coal ports.<sup>61</sup> In fact, one Japanese coal-mining company aims to triple exports to China from Mongolia.<sup>62</sup>

Overall, we find that there is no clear trend governing the future of the Pacific Rim coal trade, but rather an array of countervailing and sometimes contradictory forces that defy accurate predictions. These major uncertainties in Asian global markets make investments in Northwest coal export terminals a gamble with precarious and unforeseeable outcomes.

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**Sightline Institute** is a not-for-profit research and communication center—a think tank—based in Seattle.

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# APPENDIX 30



[← Countries](#)

## Korea, South



Last Updated: January 17, 2013 ([Notes](#))

[full report](#)

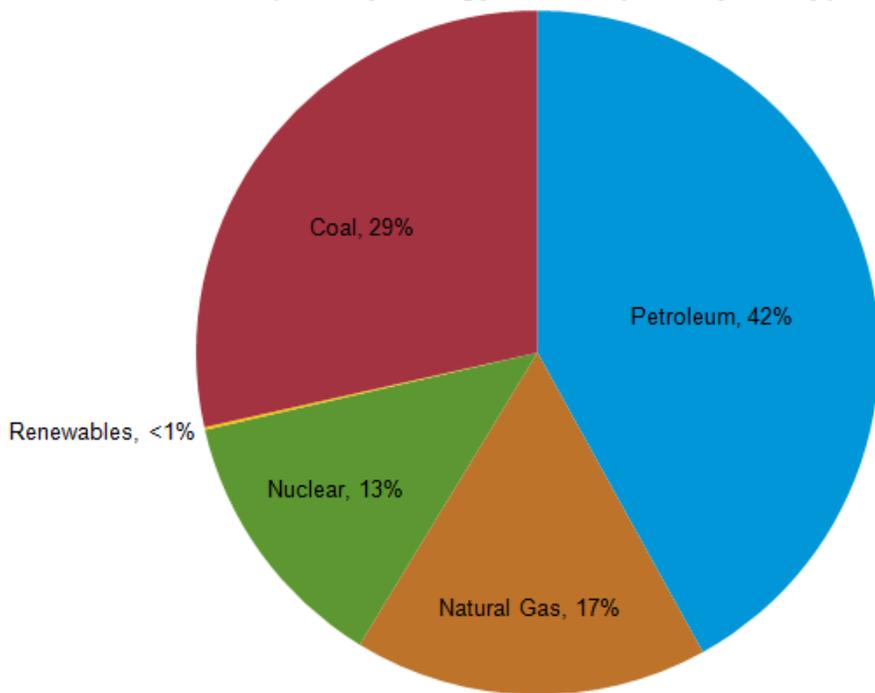
### Overview

South Korea is a major energy importer.

EIA estimates that South Korea was the world's tenth largest energy consumer in 2011, and with its lack of domestic reserves, Korea is one of the top energy importers in the world. In 2011, the country was the second largest importer of liquefied natural gas (LNG), the third largest importer of coal, and the fifth largest importer of crude oil. South Korea has no international oil or natural gas pipelines, and relies exclusively on tanker shipments of LNG and crude oil. Despite its lack of domestic energy resources, South Korea is home to some of the largest and most advanced oil refineries in the world. In an effort to improve the nation's energy security, oil and gas companies are aggressively seeking overseas exploration and production opportunities.

Although oil accounted for the largest portion (42 percent) of South Korea's primary energy consumption in 2011, its share has been declining since the mid-1990s, when it reached a peak of 66 percent. This is attributed to the steady increase in natural gas and nuclear energy consumption. The government plans to dramatically increase the nuclear share of total energy consumption in the near future as planned reactors come online.

## South Korea total primary energy consumption by fuel type, 2011



Source: U.S. Energy Information Administration



Source: CIA Factbook.

## Oil

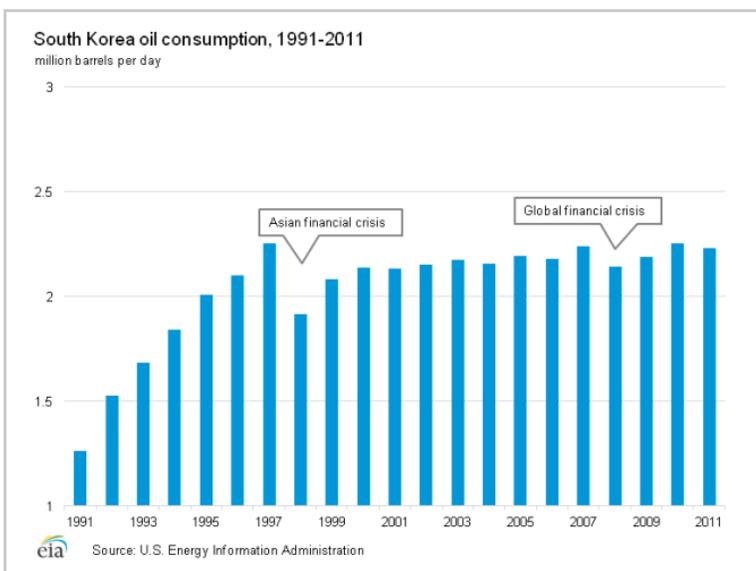
South Korea has a large refining sector, but relies on crude imports for nearly all of its oil

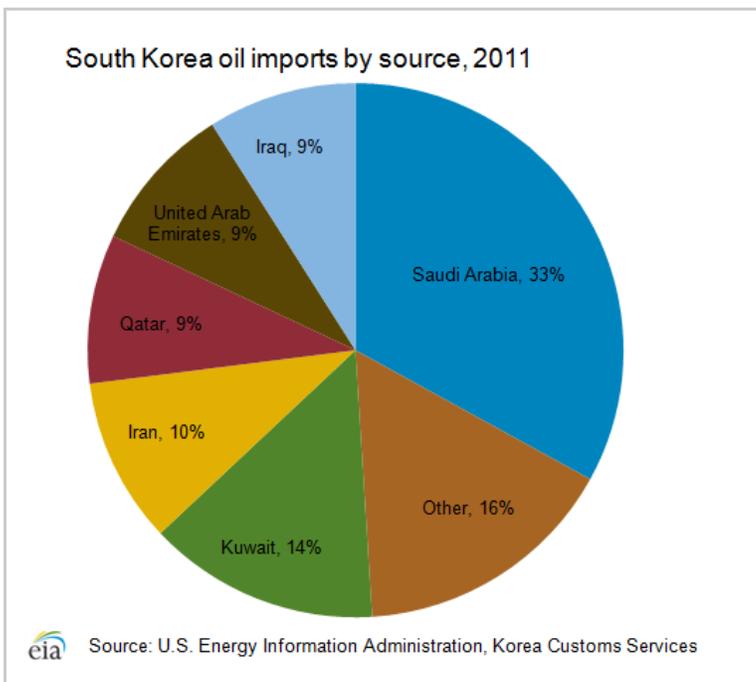
needs.

South Korea consumed over 2.2 million barrels of oil per day (bbl/d) in 2011, making it the tenth largest consumer of oil in the world. According to the Korea National Oil Company (KNOC), Korea has a small amount of domestic oil reserves, but relies significantly on imports to meet its demand. According to the Oil and Gas Journal, South Korea maintains three of the ten largest crude oil refineries in the world and exported more than 1.1 million bbl/d of refined products in 2011, an increase of 16 percent from the previous year. Because of increasing demand from Asia, Korea's exports of refined products have been growing at a faster rate than its crude oil consumption, which in the past five years has been rising steadily near 2.2 million bbl/d with the exception of the global downturn in 2008. In order to compensate for its lack of oil reserves and bolster its refined product exports, both its state-owned and private oil companies engage in numerous overseas exploration and production (E&P) projects.

South Korea's oil consumption rates have fluctuated alongside its economy. Oil consumption grew at a rapid pace as did its economy in the 1990s, fell following the Asian Financial Crisis, and rose steadily in the last decade but dipping from the Global Financial Crisis in 2008.

In 2011, South Korea imported over 2.2 million bbl/d of crude oil, making it the sixth largest importer in the world. South Korea is highly dependent on the Middle East for its oil supply, and the region accounted for more than 85 percent of Korea's 2011 crude oil imports. [Saudi Arabia](#) was the leading supplier and the source of just under a third, followed by [Kuwait](#) at just under 15 percent of total crude oil imports. South Korea, which imported 10 percent of its crude oil in 2011 from [Iran](#), halted shipments for two months in 2012 to comply with the U.S. imposed ban on Iranian imports. After showing good faith effort, South Korea was granted a waiver and began resuming imports from Iran.





## Sector organization

The Korea National Oil Corporation (KNOC) is a state-owned oil company and the largest entity in the country's upstream sector with 3.2 million barrels of ultra-light crude domestic reserves. In addition, KNOC, through both acquisitions of overseas companies and investment with major international and national oil companies, maintains a daily foreign production of 219,000 bbl/d and 1.28 billion barrels of oil and gas reserves in 2011.

Korea's downstream sector is home to several large international oil companies including SK Energy, the nation's largest International Oil Company (IOC). SK Energy holds roughly 34 percent of the petroleum product market (excluding LPGs), followed by GS Caltex, S-Oil and Hyundai Oilbank. These corporations have historically focused on refining, but some have put increasing emphasis on crude extraction projects in other countries. SK Energy also owns the largest stake in the Daehan Oil Pipeline Corporation (DOPCO), which exclusively owns and manages Korea's oil pipelines, although most of the country's oil is distributed in tankers or tank trucks.

The Korea-Oil Producing Nations Exchange (KOPEX) was started in 2006 by the Korea Petroleum Association (KPA) to maintain good relations with supplier nations and to offer technology training to producing nations in the downstream sector. In a desire to be less dependent on foreign imports, the Ministry of Knowledge Economy has established oil and gas self-sufficiency targets of 20 percent of all imports in 2012 for South Korean companies. In order to achieve this, the government provides financial support to win bids through the Special Accounts for Energy and Resources (SAER), administered by KNOC, for support on E&P projects.

## Exploration and production

After beginning exploration in the 1970s, South Korea discovered one commercially producing field among its Ulleung, Yellow, and Cheju Basins thus far. Discovered in 1998, Donghae-1, Block 6-1 in the Ulleung Basin, has total proven reserves of 250 billion cubic feet (Bcf) of natural gas (see Natural Gas section for further discussion) and oil. While

natural gas production from Donghae-1 began in November 2004, oil production did not begin until 2010 after further exploration and discovery. In 2011, KNOC produced 1,000 bbl/d of ultra-light crude (condensates), representing a negligible portion of its 2.2 million bbl/d total petroleum consumption, nearly all of which is imported. South Korea, which has been exploring at depths of less than 500 feet, plans to explore its domestic basins at depths greater than 1,000 feet.

Although new discoveries might improve domestic oil prospects, overseas E&P plays a more essential role in Korea's oil industry. The Korean government has helped to encourage private E&P overseas through tax benefits and the extension of credit lines to IOCs by the Korea Export-Import bank, as well as by providing diplomatic aid in overseas negotiations. As of December, 2011, KNOC was invested in 215 projects in 24 countries, 57 of which are production projects (see map below for greater detail).

By purchasing stakes in North American oil sands and shale formations, KNOC has diversified its market into unconventional oil and gas. Through the company's oil acquisition of Harvest Energy in Canada, KNOC obtained the lease for BlackGold oil sands, a site with an estimated 259 million barrels of recoverable bitumen reserves. KNOC also acquired two other overseas oil companies in 2009 — SAVIA-Peru and Kazakh Sumbe — and obtained a majority share in UK-based oil company Dana Petroleum in September of 2010.

In the U.S., KNOC has working interest in producing projects in ANKOR and Northstar in the Gulf of Mexico, Old Home field in Alabama, and Parallel project in Texas and New Mexico. In 2011, KNOC acquired a 23.7 percent interest in Eagle Ford shale gas formation, producing 25 million barrels of oil equivalent per day of oil, gas, and natural gas liquids (NGLs).

KNOC's global exploration projects



Source: Korea National Oil Corporation

KNOC's domestic exploration blocks



## Downstream and refining

According to Oil and Gas Journal, South Korea had 2.76 million bbl/d of crude oil refining capacity at six facilities as of January 1, 2012. South Korea has the sixth largest refining capacity in the world. The country's three largest refineries are owned by SK Innovation, GS Caltex, and S-Oil, the latter of which is partially owned by Saudi Aramco.

### South Korea's Oil Refineries, as of January 1, 2012

Owner	Location	Capacity (barrels per day)
SK Innovation	Ulsan	840,000
GS Caltex Corp.	Yeosu	760,000
S-Oil Corp.	Onsan	565,000
Hyundai Oil Refinery Co.	Daesan	310,000
SK Innovation	Inchon	275,000
Hyundai Lube Oil	Busan	9,500

Source: Oil & Gas Journal Refinery Survey

Korean refineries are increasingly producing more light clean products as a result of refinery upgrades that have taken place in recent years. The increasing sophistication of the Korean refining market is likely to increase capacity utilization, which is already quite high

for some refineries. As a result, South Korea is expected to remain a leading refiner in Asia, with significant exports to [China](#), Singapore, and [Indonesia](#). Korean refiners are using their expertise in capacity expansion and teaming up with other oil companies to construct plants in other regions of the world, especially in the Middle East.

South Korea is also a major producer of petrochemicals with 7.3 million tons per year of ethylene capacity. Most of the country's petrochemical plants are integrated into larger refineries such as Incheon, Ulsan, and Daesan. South Korea is home to the single largest aromatics production site in the world, owned by GS Caltex. Upcoming Korean refinery projects include S-Oil's construction of a new \$1.2 billion-Benzene, Toluene, and Xylene (BTX) plant, which broke ground in spring 2010.

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## Oil dependence and outlook

According to the Korea Energy Economics Institute, oil will account for less than 40 percent of total primary energy consumption by 2012, down from 42 percent in 2011, due to an expected increase in the use of natural gas and nuclear power. Other factors affecting long-term demand include more stringent energy efficiency standards and a population that will begin to decline in 2019. In response to South Korea's new energy demands, oil companies have not only upgraded refining facilities and increased upstream investment, but have also begun investing in alternative energy projects. KNOC also plans to increase its oil inventories to 141 million barrels by 2013, with an additional 101 million barrels to be held by the government as international co-operative stocks.

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## Natural gas

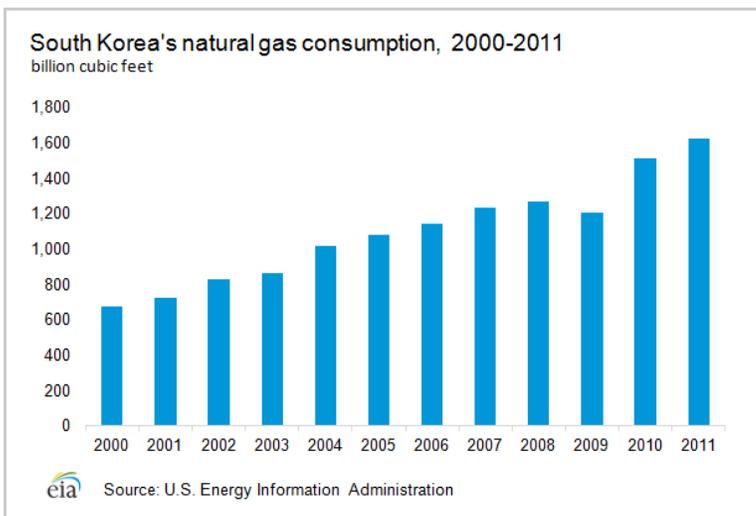
South Korea is the second-largest importer of liquefied natural gas in the world behind Japan.

South Korea relies on imports to satisfy nearly all of its natural gas consumption, which has approximately doubled over the previous decade. While the country has discovered proven reserves of 250 billion cubic feet (Bcf), domestic gas production is negligible and accounts for less than two percent of total consumption. South Korea does not have any international gas pipeline connections, and must therefore import all gas via LNG tankers. As a result, although South Korea is not among the group of top gas-consuming nations, it is the second largest importer of LNG in the world after [Japan](#).

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## Consumption

South Korea consumed 1.6 trillion cubic feet (Tcf) of natural gas in 2011, which was an increase of more than 125 percent from 2001. The city gas network, serving residential, commercial and industrial consumers, accounted for the majority (54 percent in 2011) of natural gas sales, while power generation companies made up nearly all of the remaining share.



## Sector organization

Korea Gas Corporation (KOGAS) dominates South Korea's gas sector and the company is the largest single LNG importer in the world. In spite of recent efforts to liberalize the LNG import market, KOGAS maintains an effective monopoly over the purchasing, import, and wholesale distribution of natural gas. In addition to operating three of Korea's four LNG receiving terminals, KOGAS owns and operates the 1,790-mile national pipeline network, and sells regasified LNG to power generation companies and private gas distribution companies.

The Korean central government is the largest KOGAS shareholder with 26.9 percent direct equity, and an additional indirect 24.5 percent via the Korean Electric Power Company (KEPCO). Korea has 30 private distribution companies, but each has an exclusive sales right within a particular region. These local companies purchase wholesale gas from KOGAS at a government-approved price, and sell gas to end-users. Since June 2011, city gas companies have been allowed to source gas produced from coal or refineries, as gas demand peaks in winters, while wholesale gas prices have been frozen by the government to protect end-users.

In the upstream, KOGAS has historically focused primarily on overseas LNG liquefaction projects, while the Korea National Oil Corporation (KNOC) has handled most exploration and production-related activities. As KOGAS seeks new opportunities for growth however, its focus on overseas upstream activities is increasing.

## Exploration and production

South Korea produced about 18 Bcf of natural gas (about 1.3 percent of consumption) in 2011 from the domestic gas field in production, Donghae-1 in the Ulleung Basin. KNOC will continue production operations until 2018, when the project will be converted into an offshore storage facility. State-owned Gas Hydrate Research & Development has conducted studies of deposits of methane hydrates in the Sea of Japan, and the government has previously announced plans to start extracting methane hydrates from the sea by 2015.

As part of the effort to develop into a global integrated energy company, KOGAS is participating in 26 projects, 13 of which are either solely E&P projects in 16 countries. South Korea holds equity shares in four production-stage projects, namely 50 percent in Canada's

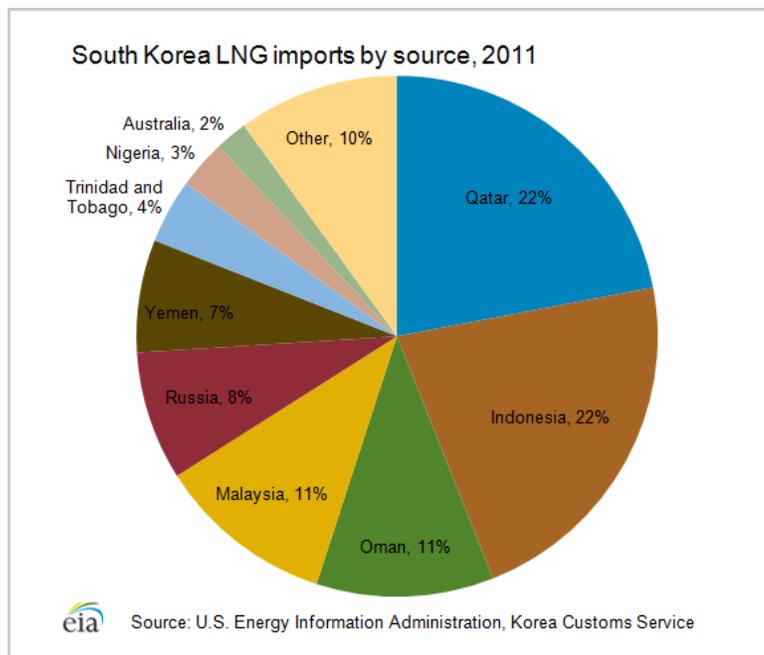
Encana project, 3 percent in Qatar's RasGas project, 8.9 percent in Yemen's YLNG project, and 1.2 percent in Oman's Oman LNG project. It is KOGAS' mid-term goal to secure 25 percent of gas imports from equity production sources by 2017.

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## Liquefied natural gas

South Korea has four LNG regasification facilities, with a total capacity of 4.5 Tcf per year. KOGAS operates three of these facilities (Pyongtaek, Incheon, and Tong-Yeong), accounting for about 95 percent of current capacity. Pohang Iron and Steel Corporation (POSCO) and Mitsubishi Japan jointly own the only private regasification facility in Korea, located on the Southern Coast in Gwangyang. In 2011, South Korea imported 1.6 Tcf of LNG. KOGAS purchases most of its LNG through long-term supply contracts, and uses spot cargos primarily to correct small market imbalances. Almost two-thirds of 2011 natural gas imports came from [Qatar](#), [Indonesia](#), [Malaysia](#), and [Oman](#).

Nearly an additional 1 Tcf of regasification capacity had been added since 2010. In addition to recent expansion of existing facilities, KOGAS is planning a new 487 Bcf per year facility at Boryeong, whose first unit is scheduled for completion by 2013, second by 2019. KOGAS is currently constructing a new LNG receiving facility at Samcheok, on the Northwest coast. The first stage of 278 Bcf per year is slated for 2013 completion, with supplies of 350 Bcf per year to be met primarily through gas imported from Vladivostok, Russia starting in 2015. Although the associated 2008 KOGAS-Gazprom Memorandum of Understanding indicated that the gas could be imported either as LNG or pipeline gas from Vladivostok, Russian and Korean leaders recently acknowledged that the pipeline construction option most likely will not be deemed economically feasible without the cooperation of North Korea.

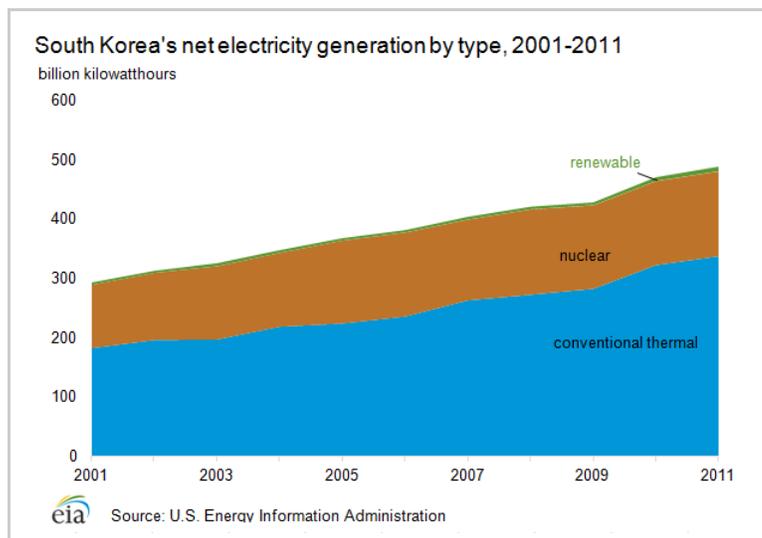


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## Electricity

Conventional thermal power accounts for more than two-thirds of South Korea's electricity generation.

South Korea generated about 485 billion kilowatt-hours of net electricity in 2011. Of this amount, 69 percent came from conventional thermal sources, 30 percent came from nuclear power, and roughly 1 percent came from renewable sources. Although thermal capacity is dominant in Korea at present, nuclear power is set to expand over the next decade, along with significant investment in offshore wind farms.



## Sector organization

The state-owned Korea Electric Power Corporation (KEPCO) dominates all aspects of electricity generation, retail, transmission, and distribution. In 2001, KEPCO's generation assets were spun off into six separate subsidiary power generation companies. Although the initial restructuring included plans to subsequently divest KEPCO of these generation companies (excluding the Korea Hydro & Nuclear Power Company), KEPCO continues to wholly own each of the subsidiaries. Furthermore, KEPCO owns majority shares of KEPCO Engineering and Construction, Korea Nuclear Fuel, Korea Plant Service and Engineering, and Korea Electric Power Data Network.

The Korea Electric Power Exchange (KPX), also established in 2001 as part of the electricity sector reform efforts, serves as the system operator and coordinates the wholesale electric power market. KEPCO continues to act as the electricity retailer, and controls transmission and distribution.

KPX regulates the cost-based bidding-pool market, and determines prices sold between generators and the KEPCO grid. An electricity tariff pricing system, designed to protect low-income residents and industrial consumers, historically has not reflected the true costs of generation and distribution, or provided incentives to conserve electricity. MKE must approve all changes in end-use electricity prices.

## Generation structure

According to KEPCO, in 2011 about 81 percent of electricity consumers were residential, 17 percent were commercial and public, and 2 percent were industrial.

South Korea has the sixth-highest nuclear generation capacity in the world. Its first nuclear plant was completed in 1978, and over the following three decades, South Korea directed significant resources towards developing its nuclear power industry. Korea Hydro & Nuclear

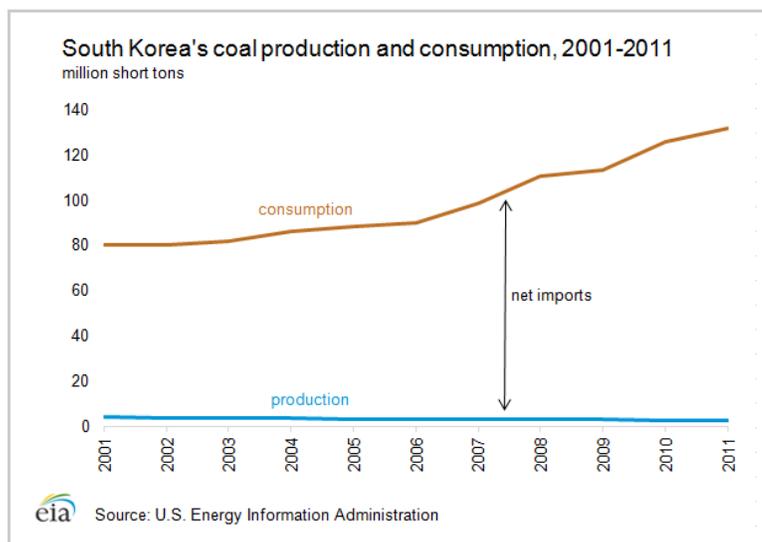
Power Co. currently operates South Korea's four nuclear power stations, with 20 individual reactors. Fourteen additional reactors are scheduled to be completed by 2024, with the goal of generating nearly half of the power supply from nuclear sources. Emerging as an international leader in nuclear technology, Korea is pursuing opportunities to export its technologies. In December of 2009, KEPCO won a \$20 billion contract to build four 1,400 megawatt nuclear reactors in the [United Arab Emirates](#), the first of which is expected to become operational by 2017.

A renewable portfolio standard for South Korea became effective in 2012 with a beginning renewable electricity quota of 2 percent of total generation. Renewable sources remain a small share of South Korea's electricity generation, with hydropower being limited to small dams on the Han River, and a 1 billion kilowatt (kW) pumped-storage facility at Yangyang, 120 miles from the capital of Seoul. The Korean government plans to invest \$8.2 billion into offshore wind farms in order to reach a wind capacity of 2.5 billion kW by 2019, from only 0.3 billion kW in 2008.

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## Coal

South Korea held only 139 million short tons (MMst) of recoverable coal reserves in 2008. Consumption reached 131 MMst of coal in 2011, while production was less than 3 MMst. As a result, South Korea is the third largest importer of coal in the world, following Japan and China. Australia and Indonesia account for the majority of South Korea's coal imports. Coal consumption in South Korea increased by just under 50 percent between 2005 and 2011, driven primarily by growing demand from the electric power sector. The electric power sector accounts for more than half of coal consumption, while the industrial sector accounts for most of the remainder.



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## Notes

- Data presented in the text are the most recent available as of January 17, 2013.
- Data are EIA estimates unless otherwise noted.

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## Sources

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