Mongolia: Coking Coal Export Analysis

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Abstract

As coal becomes an engine of economic growth, an in-depth study of the coal industry is increasingly crucial for both the public and private sectors. In this paper, we analyze Mongolia's coking coal exports using detailed trade data, with three main objectives: (i) to analyze coal export data and provide a comprehensive overview, (ii) to perform a netback analysis of coking coal exports through the three main border crossings, and (iii) to provide insights into prospective infrastructure development.

Keywords:

Mongolia, coking coal, netback analysis, infrastructure

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Main findings

- The 6 biggest companies' export comprises 96% of total exports. This share is expected to increase in coming years because the Mongolian Energy Corporation LLC just started massive exports from the beginning of 2012.
- Share of coking coal export through Gashuun Sukhait/Gants Mod border has been significantly increased due to high quality products and recent infrastructure development.
- The coking coal exports mainly sold by DAP and FCA transportation terms.
- According to our calculation, coking coal export prices were between USD75/t and USD159/t for H1 2012 due to its quality and transportation cost.
- Coking coal exporters are receiving 57% of export proceeds in USD, however, 61% of sales contract are made in Chinese RMB. The settlement currency composition has stabilized since 2011.
- Our netback analysis suggests that coking coal is sold at ~4%-14% discount for Chinese market, while coking coal for Japanese market has ~17%premium over seaborne coal price. The reason of the discount in the Chinese market is mainly due to information asymmetry problem and processing cost.
- The discount calculation highly depends on coal market price, which is subjective to coking coal quality and regional features.
- The Frontier Securities Company's studies suggest that Energy Resources LLC's new railway will increase transportation capacity over 30 mpta for Erdenes Tavan Tolgoi SEO and Energy Resources LLC, in addition to lowering transportation cost by half.

Main data as of H1,2012

NSO (Official data)	
Volume (th. Tn.)	10'151
Value (mln USD)	1'076
Price (USD, per tn.)	106
Export YOY %	
Volume (Tn.)	31%
Value (mln USD)	47%
Price (USD, per tn.)	11%
Major exporters	**96%**
Energy Resources	26%
MAK & SNS-MAK	21%
Tavan Tolgoi (All)	19%
South Gobi Sands	15%
Erdenes Tavan Tolgoi	13%
MoEnCo	2%
Share of borders (%)	
Gashuun Sukhait/Gants Mod	62%
Shiveekhuren/Ceke	36%
Yarant/Takeshenken & others	2%
Prices by borders (USD/t)	
Gashuun Sukhait/Gants Mod	113
Shiveekhuren/Ceke	96
Prices by products (USD/t)	
Hard coking coal (washed)	159
Semi hard coking coal (washed)	111
Hard coking coal (unwashed)	97
Semi-hard coking coal (unwashed)	75
Currency composition (%)	
Contract RMB/USD	61/39
Settlement RMB/USD	43/57

1. Introduction

As coal is becoming an engine for economic growth, deep study on coal industry is becoming crucial for public and private sectors. According to recent statistics, coking coal comprises 46% of total exports, 11% of general budget revenue and 80% of total foreign direct investment in Mongolia. It is eventually raising questions to find out more about coking coal industry's output, exports, as well as pricing in Chinese markets.

There are numerous data on Mongolian coking coal prices in China. According to the Winsway Coking Coal Company's research report dated February 3, 2012, price for hard and washed hard coking coal at Baotou was USD98/t and USD158/t, respectively. However, executive staff of the Ministry of Mineral Resources and Energy of Mongolia mentioned that coking coal export prices were USD82/t-USD173/t.

Recent researches found various findings and conclusions on prices

Besides coking coal export data, there are different studies on pricing and discounts of coking coal conducted by various research companies. The fundamental research, conducted by Renaissance Capital in June 2011, is related to our analysis and they have made reconciliation between seaborne coking coal prices and prices on the Gashuun Sukhait/Gants Mod border. They found that the difference between seaborne coking coal and domestic prices was RMB420/t (roughly USD63.6/t) which represents potential intensives for coal traders who have access to Tianjin free trade zone. The Frontier Securities, leading investment bank in Mongolia, also mentioned that open pit mining, thick coal beds and rapidly developing infrastructure enable Mongolian coking coal to be sold at discounted price of up to 40%. However, some other studies found that Mongolian coking coal is sold at ~8%-9% discount compared to Australian seaborne coking coal in the Chinese market.

In this paper, we analyze Mongolia's coking coal export based on more detailed trade data, and it has three main objectives: (i) to analyze coal export data and provide comprehensive data analysis (ii) to perform netback analysis of coking coal export crossing through three main borders and (iii) to provide information on infrastructure development prospective.

Next section of the paper presents comprehensive data analysis; section 3provides the netback analysis; section 4 explains the impact of recent infrastructural developments and section 5 concludes.

2. Export data analysis

Coal is the most risky bulk mineral and its market has generally more information asymmetries compared to other goods markets. In the case of Mongolia, we have the same issues to capture underlying prices for international and domestic market.

In this section, we used three main sources, namely, detailed export data of the Customs Department (Custom Department), paid tax data prepared by the Ministry of Finance and the Bank of Mongolia's international transactions data.

2.1 Database description

Category:	Coal export
Data type:	Floating point
Date Range:	2008 -H1/2012
Frequency:	Annual & Monthly
Database format:	MS Excel

Included items:

- Good general code
- Quantity of exported coal
- Contract value denomination currency
- Border sent to abroad
- Transportation condition/terms
- Contract value /in various terms/

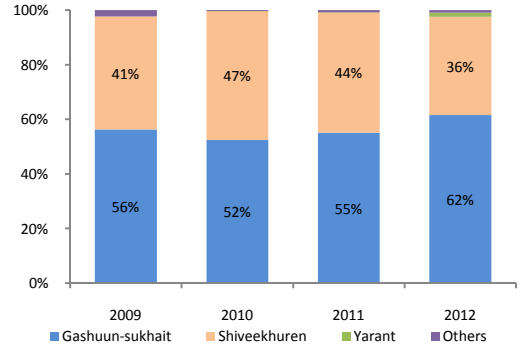
2.2 Border crossing

As it is well known, the two border crossings with China still remain as main border crossing points with China. Over the last 4 years, on average, 56% and 42% of total coal was transported via Gashuun Sukhait/Gants Mod and Shivee Khuren/Ceke, respectively. However, we highlighted more interesting facts related to border crossing.

We found that the proportion of coal export via Gashuun Sukhait/Gants Mod border has significantly increased while that via Shivee Khuren/Ceke has proportionally declined. Starting from 56% of total export, the share of coal export via Gashuun Sukhait/Gants Mod border increased significantly for the reported period and reached 62% of total export. In addition to coking coal export quantity, the export prices of Gashuun Sukhait/Gants Mod border have always been approximately 15% higher than those at Shivee Khuren/Ceke border.

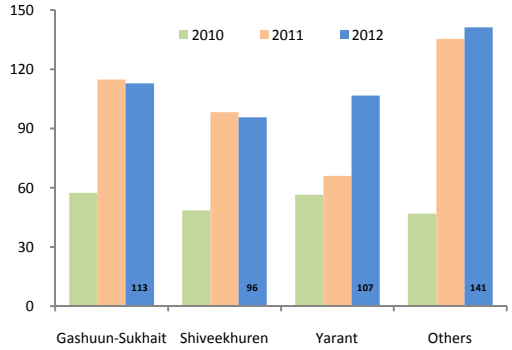
Volume of exports via Gashuun Sukhait (Gants Mod) border has increased by 10 percentage points

Figure 1. Border shares in terms of value



Source: Customs Department

Figure 2. Coal export price (WA) by border crossing 2010-12



Source: Customs Department

It is also interesting to note that the coal export via Yarant/Takeshenken border with China has started to comprise more than 2% of total coal export in terms of coal quantity. The reason is that the Mongolian Energy Corporation (MoEnCo) LLC, coal producer of Khushuut coking coal mine, started its export to China from the beginning of 2012. The MoEnCo Company received permission of and completed construction of 311 km road in November 2011. According to press statements, the road is the first hard-surface paved road for coal transport in Mongolia. Therefore, we expect the share of coking coal export via Yarant/Takeshenken border may increase in the coming years.

MoEnCo's new road
Source: http://www.mongolia-energy.com

In addition, we excluded Sukhbaatar/Naushki border crossing with Russia for this analysis. The reason is that the only observed company that used the border crossing is Red Hill Mongolia LLC (Prophecy Resource), which transported 2.4 tons of thermal coal into Russia through Sukhbaatar/Naushki border crossing.

2.3 Transportation condition

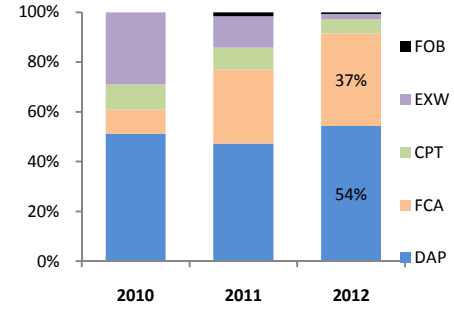
In this section, we analyzed export transportation conditions using data from 2010 to 2012.

Coking Coal Transportation
http://www.energyresources.mn

The coking coal export has been using mainly DAP condition (54%). According to the website of Energy Resources LLC, it comprises 57% of total DAP Export. It transports coking coal from the Ukhaa Khudag deposit to the transshipment stockpile at Tsagaan Khad located in about 21 km from the Gashuun Sukhait/Gants Mod border crossing.

It is obvious that there is a diminishing trend in EXW condition due to infrastructure development as well as learning by doing. The EXW (Ex Works) condition means that the Chinese importers bear all costs and risks involved in taking coking coal from the mining gate. The selling company's obligation is to prepare coking coal available at mining field.

Figure 3. Coal export shipping terms



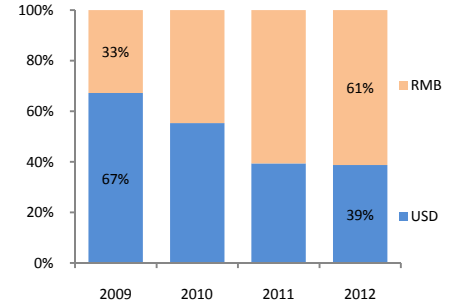
Source: Customs Department

2.4 Currency denomination

The ratio of currency denomination of coal export contracts has been inverted dramatically in the last four years. As shown in Figure 4, the share of contracts denominated in Chinese RMB has doubled and reached 61%. It is also interesting to note that the ratio of the two currencies is the same in 2011 and the first half of 2012.

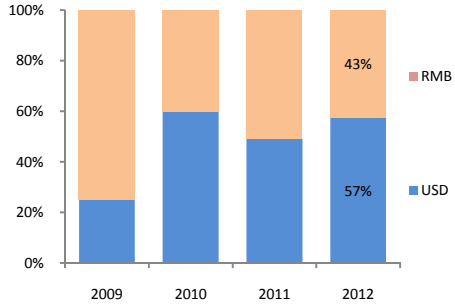
However, US dollar still remains as the major currency for export earnings banking settlement. In 2009, exporters shifted dramatically to RMB settlement; however, this tendency has changed in the last three years. As of the first quarter of 2012, coal exporters received 57 % of their export proceeds in US dollar. The reason could be limited to flexibility of RMB settlement and uncertain currency risks.

Figure 4. Currency composition based on trade data



Source: Customs Department

Figure 5. Currency composition of coal earnings settlement

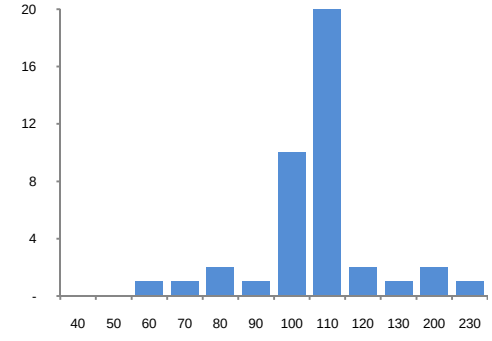


Source: Bank of Mongolia

2.5 Price descriptive analysis

According to our calculation, adjusted export price would be USD101.0/t instead of USD106/t which is published by the Customs Department. The underlying reason is that we have excluded the extreme outliers. Since 2011, the Energy Resources LLC has started exporting washed hard coking coal, which has roughly 2.2 times higher price than unwashed coking coal. Therefore, we excluded washed hard coking coal export from the calculation.

Figure 8. Histogram: H1 2012 price



Source: Customs Department

Figure 9. Comparison of last three years

Source: Estimation by Authors

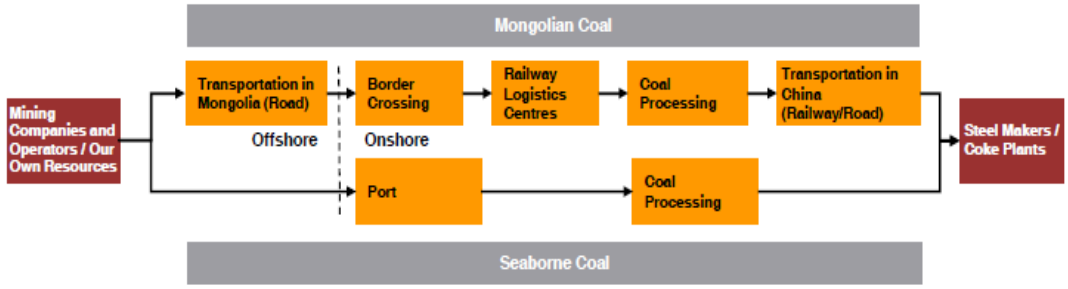
3. Netback analysis

In this section, we present the netback analysis for Gashuun Sukhait/Gants Mod border as well as Shivee Khuren/Ceke border with China. In addition, we extend the analysis to the Zamyn Uud/Erlian port and the Ereentsav port.

Most Mongolian coal is trucked to Chinese border. However, not all trucks are licensed to cross the border, resulting in the need to trans-ship and the need for logistics parks to unload and reload coal. Crossing the border adds considerably to the transportation cost, including an MNT1,500/t (USD1.25/t) customs clearance fee, and transshipment fees. Companies such as Winsway have built businesses as intermediaries facilitating border logistics through ownership of washing plants and stockpile yards, and facilitating onwards transportation of coal in China.

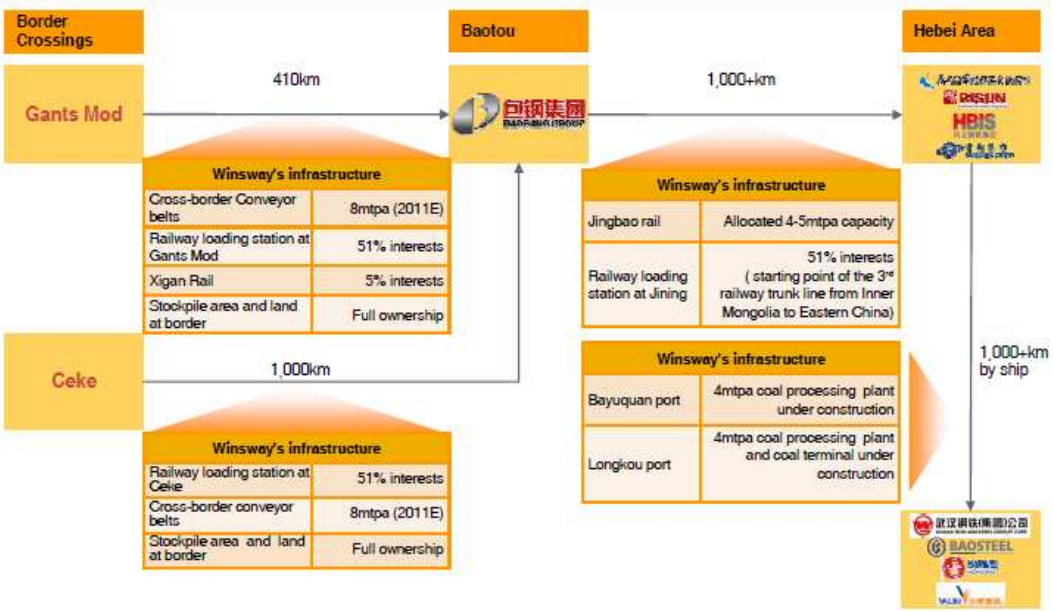
Currently three trading companies dominate coal trading at the Chinese border: Winsway, Inner Mongolia Qinghua Group and Shenhua Coal Transport and Sales Corporation. These companies make a net profit of USD15/t by trading Mongolian coal to Chinese consumers.

Figure 10. Winsway's coal importing process



Source: Winsway

Figure 11. Winsway's transportation scheme



Source: Winsway Coking Coal Holdings Limited

Mongolian hard coking coal at the Gants Mod border crossing has on average a DAP price of USD129/t, whereas it has on average a DAP price of USD103/t at the Ceke crossing. Moreover, Mongolian coal at the Yarant/Takeshenken border crossing is sold at USD126/t and at Zamyn Uud/Erlian port at USD150/t. In comparison, Australian hard coking coal at Tianjin port is sold at USD217/t, which gives Mongolian coking coal a headline discount rate of41%–52% compared to seaborne Australian coal. However, Mongolian coking coal has a high transportation cost, which is USD47/t–USD71/t, and need quality adjustment to the tune of USD26/t, due to high sulphur concentration, high ash content and high volatile matter.

Table 3.Netback analysis for main borders

	China				Russia
	Gants Mod	Ceke	Yarant	Erlian	Vostochny
Seaborne coal	**280.8**	**280.8**	**280.8**	**280.8**	**253.3**
FOB price	217.0	217.0	217.0	217.0	217.0
Freight	17.0	17.0	17.0	17.0	12.0
Port handling fee	6.0	6.0	6.0	6.0	6.0
China VAT 17%	40.8	40.8	40.8	40.8	-
Japan VAT 5%	-	-	-	-	11.8
Japan import fee	-	-	-	-	6.5
Mongolian coal	**124.7**	**102.9**	**125.9**	**162.4**	**149.8**
Mine spot price	110.0	99.7	106.7	110.0	110.0
Trucking in Mongolia	14.7	3.2	19.2	31.2	-
Railing in Mongolia	-	-	-	7.2	39.8
Border fee	6.0	6.0	6.0	6.0	1.5
Truck to Baotou	24.8	-	-	-	-
Truck to Urumqi	-	-	39.9	-	-
Crossloading	14.0	14.0	14.0	14.0	-
Rail to Baotou	-	20.4	-	-	-
Rail to Tianjin	20.4	20.4	-	21.4	-
Rail to Vostochny	-	-	-	-	80.0
Port handling fee	5.5	5.5	-	5.5	20.0
Freight	-	-	-	-	6.0
China VAT 17%	33.2	28.8	31.6	33.2	-
Japan VAT 5%	-	-	-	-	12.9
Japan import fee	-	-	-	-	7.7
Quality adjustment	26.0	26.0	26.0	26.0	26.0
Netback	**26.2**	**56.9**	**37.4**	**26.3**	**-42.9**
Trader behavior	15.0	15.0	15.0	15.0	-
Implied discount	**11.2**	**41.9**	**22.4**	**11.3**	**-42.9**

Source: Authors estimation using Rio Tinto, Renaissance Capital, Winsway Coking Coal LTD & Bloomberg data

Another significant factor in the price gap is the trading companies. It is estimated that the coking coal trading companies on average make a profit of USD15/t. However, we believe that there is scope for coal companies to bypass Winsway and other traders, as the rail and border infrastructure improves, and as companies build their own washing facilities. In a research done by the Renaissance Capital, it is calculated that by setting up its own washing facility, and improved infrastructure, Mongolian mining companies can increase its price up to 40% from its current price. Overall, Mongolian hard coking coal is sold to China at a discount rate of 4%–14%.

In our analysis, it is established that export to Japan via Russia is not competitive, one of the main reasons being the high transportation cost. Given these calculations, the Phase 1 of the Government rail plan makes little economic sense. However, it is noted that rail tariff on the Trans-Siberian Railway can be negotiated, as well as the fact that it is highly dependent on distance and whether or not rail carts are rented or owned.

Coking coal exported via Yarant crossing is very cheap compared to seaborne coal. However, it must be noted that Yarant is a very remote crossing (1840 km from Ulaanbaatar) with Bayi Steel in Xinjiang the only possible customer for the mining companies exporting via this crossing. Nevertheless, it is being reported that Xinjiang is on the road to become the main steel producer in China and if that is to materialize, then the coking coal via this crossing may rise in the future.

4. Infrastructure development prospective

Infrastructure development has been a crucial problem for coal industry. Due to insufficient road infrastructure, bottleneck of border crossing, and lack of railways, the cost of coking coal export is very high compared to other countries.

4.1 Rail development

Mongolia severely lacks rail infrastructure. Currently there exists only a 1,110 km Trans-Mongolian Railway line, which connects Sukhbaatar in the north to Ulaanbaatar, and extends to Zamyn Uud in the south. In addition to the Trans-Mongolian Railway, there is a 239 km rail line between Choibalsan and Ereentsav, which is linked to the Trans-Siberian

Railway. Freight rates on the Trans-Mongolian Railway are subject to negotiation and rates as low as USD0.015/km.t is possible for users with their own rail carts, but haulage companies in Mongolia estimate that a rate of USD0.03/km.t is more likely to be established due to growing demand and to realize a return on investment. Meanwhile, freight tariffs cost USD0.022/km.t in China and USD0.02/km.t in Russia. Russian tariff is dependent on whether rail carts are rented or owned but highly subject to negotiation. It is reported that negotiation can lead to rates as low as USD0.007/km.t.

Parliament of Mongolia has approved a three-phase rail plan to construct 5,683.5 km of rail over the next decade at a cost of approximately USD17 billion, with an estimated cost of USD3 million/km, which will provide a better access to markets in China and other countries.

Phase 1 of the rail plan (the red lines in Figure 12) will require construction of 1,040 km of rail, and will link the Tavan Tolgoi coal deposit to the Trans-Mongolian Railway at Sainshand, through Baruun Urt and onto Choibalsan. As Choibalsan is already linked by a 239 km of rail to the Russian border at Ereentsav and through to the Trans-Siberian Railway, Phase 1 will eventually connect the Tavan Tolgoi deposit to the Russian ports of Vanino and Vostochny. It is reported that Lotte Engineering and Mongolian Railway have agreed to collaborate on the construction of Phase 1. It is estimated that completion of Phase 1 by 2014 would be optimistic. The decision by the Mongolian government to focus on a rail link to Trans-Mongolian Railway and onto Russia highlights the Government's reluctance to become overly dependent on China and the desire to reach other markets.

Figure 12. Expansion of National Railway and the Locations of the main coking coal mines

Source: Mr. Bat-Erdene, Sustaining the Coal Sector with the Road and Transportation Policy, Presentation on Coal Mongolia 2012

Phase 2 of the rail plan (the green lines in Figure 12) will require construction of 892.5 km of rail, which includes:

- 45.5 km of rail line from Nariin Sukhait to Shivee Khuren/Ceke border crossing
- 267 km of rail line from Ukhaa Khudag to Gashuun Sukhait/Gants Mod border crossing
- 380 km of rail line from Khuut to Numrug
- 200 km of rail line from Khuut to Bichigt border crossing

MAK will finance the rail line from Nariin Sukhait to Shivee Khuren and MMC will finance the rail line from Ukhaa Khudag to Gashuun Sukhait.

Phase3 of the rail plan (the blue lines in Figure 12) will focus on the construction of 3600 km of rail in the west of Mongolia, which will be planned alongside further exploration of mineral deposits. This will progress in tandem with the Government's regional development policy. Given the priorities in Phase 1 and 2, Phase 3 seems some way in the future.

4.2 The economics of infrastructure development

The transportation costs of various transport modes are summarized in the following table.

Table 1. Coking coal transportation costs

№	Mode of Transport	Cost per km/t
1	Gravel road	USD0.0700
2	Paved road	USD0.0550
3	Railway (Mongolia)	USD0.0300
4	Railway (China)	USD0.0220
5	Railway (Russia)	USD0.0200

Source: Haulage companies' estimation, Renaissance Capital, and Rio TInto

After the completion of the Phase 2 of the rail plan, transportation cost will decrease significantly. We calculate that currently, it costs USD24.7/t and USD9.2/t to transport coking coal to Gants Mod and Ceke, respectively. Construction of rail links eliminates the transshipment costs at the border, in addition to the reduction in transportation cost, itself. Thus, after the completion of Phase 2, it will cost USD12/t and USD5.4/t to Gants Mod and Ceke, respectively.

4.3 Recent developments

Major mining projects and extraction are to start in 2013, and investment into major infrastructure development is set to increase as weak infrastructure is the most negative factor for Mongolia's inability to be competitive in the world market.

Major infrastructure projects in 2013 would include

- Majority of Tavan Tolgoi – Sainshand railroad
- 30% of TT – Gashuun Sukhait and Nariin Sukhait – Shivee Khuren railroads (Frontier Securities: these railroads are related to MMC and South Gobi)
- Work is to start on 400 MWt power planed based on TT deposit, Mandalgobi – TT – OT220kV overhead power line and substation, Choir – TsagaanSuvraga220 kV power line and substation
- 50 MWt wind parks in Tuv province and Sainshand
- 300-350 MWt hydro plant at Selenge river
- 1400 km of paved roads, expansion and improvement of 100 km paved road in Ulaanbaatar
- Start of infrastructure works at Sainshand heavy industrial hub

5. Conclusions

This paper conducted some analysis for the Mongolian coking coal export data and its price competitiveness in Chinese markets.

As a result we found the following facts:

- The 6 biggest companies' export comprises 96% of total exports. This share will increase in the coming years because the Mongolian Energy Corporation (MoEnCo) LLC has started massive exports from the beginning of 2012. Share of coking coal export through Gashuun Sukhait/Gants Mod border has been significantly increased due to high quality products and recent infrastructure development.

- The coking coal exports mainly sold by DAP and FCA transportation terms. Coking coal exporters are receiving 57% of export proceeds in US dollars; however, 61% of sales contracts are made in Chinese RMB. The settlement currency composition has stabilized since 2011.

- Our net-back analysis suggests that coking coal sold at ~4%-14% discount for Chinese market, while coking coal for Japanese market has ~17% premium. The reason of the discount in the Chinese market is mainly due to information asymmetry problem and processing cost.

In addition, we suggest further step to improve this analysis:

- We need to improve our coking coal export statistics in terms of its classification and transportation terms, more specifically, the information about transportation and insurance.

- It is crucial to select appropriate selling price for fitting quality of coking coal. Therefore, we need to improve our export price dataset for latter analysis.

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7. Appendix

All data in MS Excel file named as “Coking coal analysis data.xlsx”

- Export data 2008
- Export data 2009
- Export data 2010
- Export data 2011
- Export data 2012 H1
- Xinhua Infolink’s Coking Coal Price /2000-2012/