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Coal Trends

Trends in coal supply, demand and prices as seen from statistics

Is it true that economic development in Asia is impossible without low-grade coal?

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In this issue, we report on market conditions in Australia and South Africa and trends in landed prices in Japan. We also report on the importance of using sub-bituminous and other low-grade coal.

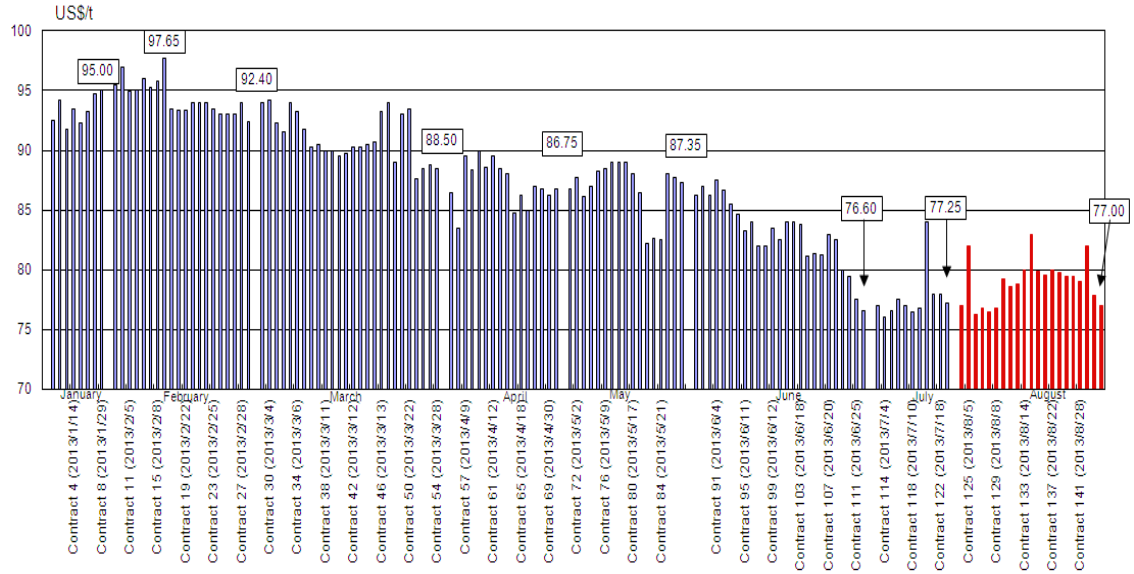
1. Spot prices for Australian and South African coal and landed prices in Japan

(1) Actual trading price trends for Australian and South African thermal coal (Jan-Aug 2013)

－ A respite for falling spot prices in Australia, but a dismal bottom for South Africa?

Figure 1 shows contracted actual spot trading prices in January to August in a time-series for Newcastle (Australia).

Figure 1. Contract Prices FOB Newcastle (NC), Australia (Jan-Aug 2013, actual)



Source: Prepared using globalCOAL materials

For Newcastle, 144 actual spot trades were recorded in the eight months from January to August 2013, but 21 of these trades were transacted in August.

If we do a quick survey of the 144 trades from January to the end of August (Figure. 1), we see that there was a nearly consistent downward trend from January to July, but compared to July, there seems to be a slight improvement in contracted prices for August.

In regard to the final trading prices for each month, there was a major drop from US$87.35 per metric ton in May to US$76.60 per metric ton in June, but in June, July, and August, prices remained at the US$77 per metric ton level with US$77.25 per metric ton recorded for July and US$77.00 per metric ton for August.

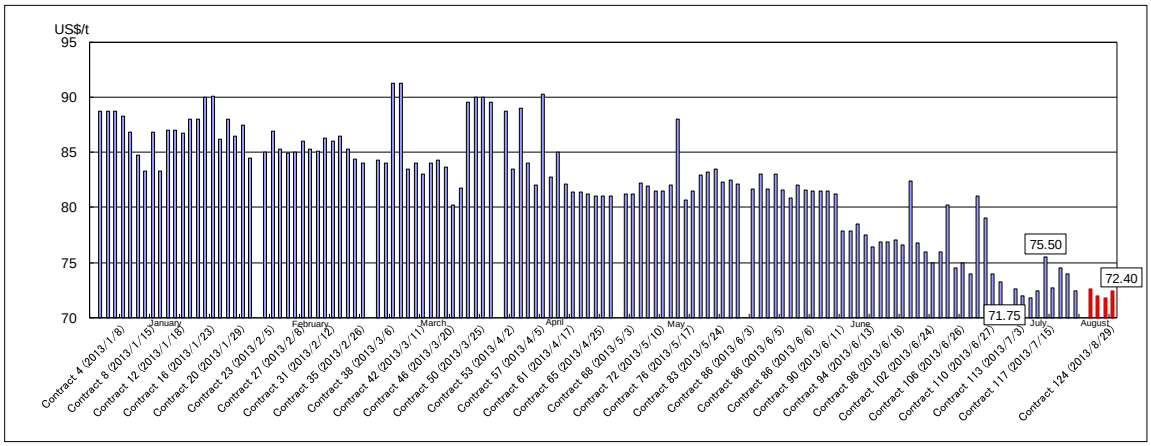
Due to the impact of torrential rains in the state of Queensland, Australia, and heavy rains in Indonesia at the end of 2010, the Weekly Index for Newcastle recorded a steep increase to US$136.30 per metric ton at the start of 2011, but since then, prices have continued to fall. Prior to the torrential and heavy rains at the end of 2010, the price level had been US$90-100 per metric ton, and therefore, the price level of US$75-80 per metric ton since the end of June this year falls far short of the earlier level. In short, in some views, the current drop is “a drop too far.”

There is a sense that the present downward trend in price is gradually coming to a close.

Meanwhile, there were 120 contracts for FOB Richards Bay (RB), South Africa, from January to July 2013, but August was slow with only four trades.

The contracted prices for the four August transactions were low and within a narrow range from US$71.75 per metric ton to US$72.75 per metric ton. In addition to the low number of transactions, there was a lack of vitality even compared to July when there was some upward movement even though the levels were low. The final transaction was for US$72.40 per metric ton.

Figure 2. Contract Prices FOB Richards Bay, South Africa (Jan-Aug 2013, actual)

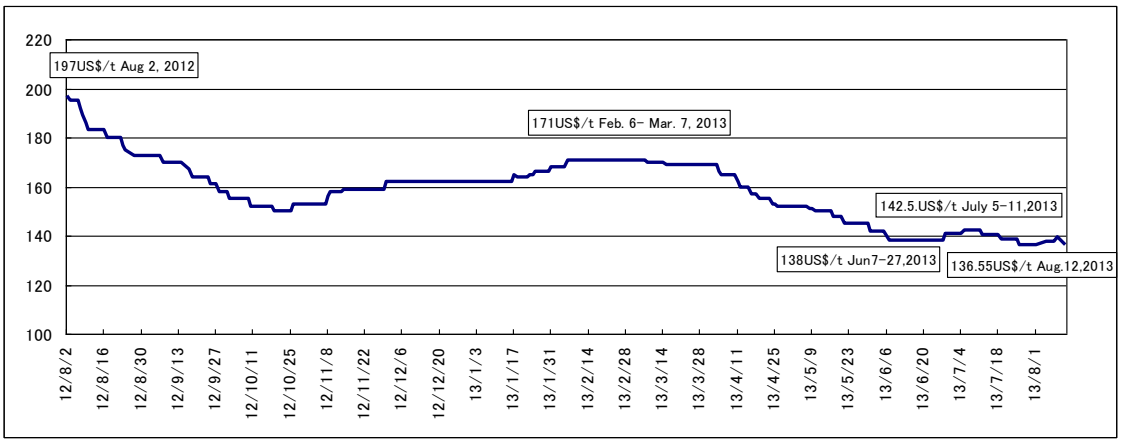


Source: Prepared using globalCOAL materials

(2) Coking coal spot index

Figure 3 shows the indexes for Coking Coal Queensland (CCQ); in other words, the hard coking coal price index for East Coast Australia (Queensland), on a daily basis over a period of one year.

Figure 3. Energy Publishing's CCQ (Coking Coal Queensland) Index
(August 2, 2012 – August 12, 2013)



Source: Prepared using Energy Publishing data

As of August 12, 2013, the CCQ Index is US$136.55 per metric ton; it has oscillated at the level of US$140.00 per metric ton since the first ten days of June.

(3) Import price to Japan

- Import prices are continuing to fall -

Table 1 shows changes in import prices for all coal imports to Japan in the odd months from January to July 2013.

If we look at the landed price in dollar terms for total imports, coking coal, thermal coal, and anthracite in July, we find that none of them have been able to break out of the consistent downward trend.

Table 1. Japan Landed Imported Coal Prices (January – July 2013)

	Jan-13		Mar-13		May-13		Jul-13	
	JPY/ton	US$/ton	JPY/ton	US$/ton	JPY/ton	US$/ton	JPY/ton	US$/ton
Total imports	11,819	134.93	12,391	131.70	12,731	127.88	12,116	121.65
By coal type								
Coking coal	13,589	155.14	13,841	147.12	14,511	145.77	13,930	139.86
Thermal coal	10,477	119.61	11,124	118.23	11,307	113.58	10,716	107.60
Anthracite	13,699	156.39	14,780	157.09	15,367	154.36	14,410	144.68
By source								
Australia	11,904	135.89	12,462	132.45	12,764	128.21	12,329	123.79
Indonesia	9,841	112.34	10,712	113.85	10,517	105.63	9,878	99.18
Canada	15,317	174.86	17,296	183.83	15,093	151.61	15,484	155.46
China	16,861	192.48	17,627	187.35	17,745	178.25	14,559	146.18
USA	16,595	189.45	14,793	157.23	15,529	155.99	14,156	142.13
Russia	10,776	123.04	11,626	123.57	12,371	124.25	11,032	110.76
South Africa	10,567	120.63	-	-	-	-	-	-
New Zealand	-	-	17,741	188.56	-	-	-	-
Vietnam	12,401	141.57	13,856	147.27	17,099	171.76	17,665	177.36
Mongolia	-	-	-	-	-	-	-	-
Mozambique	-	-	15,053	159.99	18,023	181.05	-	-
Colombia	9,890	112.90	-	-	-	-	15,651	157.14
Coking coal by source								
Australia	14,454	165.16	14,501	154.13	14,876	149.43	14,940	150.01
Indonesia	10,133	115.68	11,071	117.67	10,975	110.25	10,482	105.25
Canada	17,210	196.47	18,989	201.84	16,643	167.19	16,868	169.37
China	-	-	17,599	186.63	17,661	177.41	12,609	126.60
USA	18,033	205.87	16,200	172.19	16,836	169.12	16,154	162.20
Russia	12,113	138.29	13,214	140.45	14,100	141.64	12,527	125.78
New Zealand	-	-	17,741	188.57	-	-	-	-
Mongolia	-	-	-	-	18,023	181.05	-	-
Mozambique	-	-	15,054	160.00	-	-	-	-
Thermal coal by source								
Australia	10,650	121.58	11,430	121.49	11,654	117.09	11,113	111.58
Indonesia	9,314	106.33	10,169	108.09	10,134	101.80	8,989	90.25
Canada	10,759	122.82	9,252	98.34	10,566	106.14	9,646	96.85
China	13,696	156.36	11,649	123.82	-	-	12,284	123.34
USA	10,808	123.38	10,438	110.95	10,574	106.22	10,618	106.61
Russia	10,089	115.18	10,540	112.03	10,773	108.22	9,939	99.79
South Africa	10,568	120.64	-	-	-	-	-	-
Colombia	9,891	112.91	-	-	-	-	-	-
	US1$=\87.60		US1$=\94.08		US1$=\99.55		US1$=\99.60	

Source: Prepared using Trade Statistics of Japan Monthly Reports

In respect to landed prices in July by source, the prices for Canada and Vietnam relative to May have risen by US$3.85 per metric ton and US$5.60 per metric ton respectively, but prices from all other sources have been down compared to May. Indonesia has at last come

through the US$100 per metric ton level to US$99.18 per metric ton.

With regard to prices by type of coal, the decrease for thermal coal is severe compared to coking coal. Compared to May, July landed prices for coking coal from Australia, Indonesia, and Canada were up by US$0.58 per metric ton, down by US$5.00 per metric ton, and up by US$2.18 per metric ton respectively, but regarding thermal coal, the price collapse was significant at US$5.51 per metric ton, US$11.55 per metric ton, and US$9.29 per metric ton, respectively.

2. Is it true that economic development in Asia is impossible without utilizing low-grade coal?

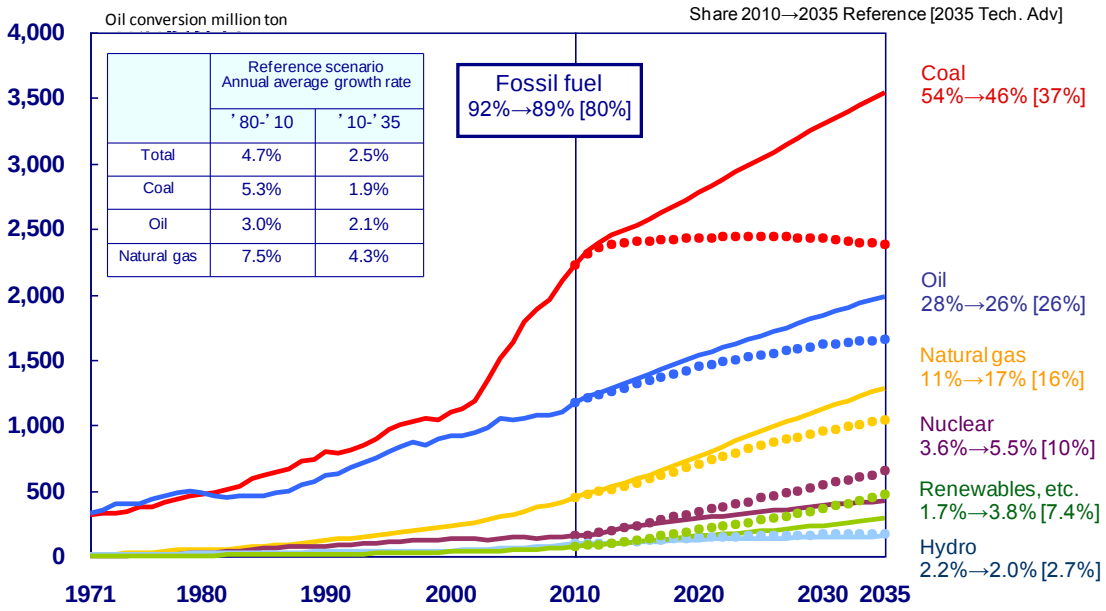
Figure 4 is a forecast of primary energy consumption in Asia by energy source, and a part of the results published in *Asia/World Energy Outlook 2012* by the IEEJ in October last year.

According to Figure 4, coal was the largest source of energy consumed in Asia in 2010, accounting for 54% of consumption. Although this share will shrink to 46% as we approach 2035, coal will remain the largest energy source (reference scenario).

Under the technologically advanced scenario (accelerating spread of energy-saving equipment, etc.), the share of coal will decrease to 37%, but oil (26%) and natural gas (16%) will not draw level.

In short, this means that under both scenarios, coal will remain the largest source of energy to support economic growth in Asia.

Figure. 4 Primary Energy Consumption in Asia (by energy source)



Note) Solid line: Reference scenario; Dotted line: Technologically advanced scenario
Source: World/Asia Energy Outlook 2012, The Institute of Energy Economics Japan

The solid position of coal is also supported by an abundance of reserves and cheap prices.

However, it is not the case that there are no misgivings about the myth of the existence of abundant reserves.

Table 2 shows the R/P ratio (the reserves to production output ratio), that is, the fluctuations in the figures that indicate the remaining lifespan of reserves.

Table 2. Fluctuations in the R/P Ratio

	End of 1992	End of 1997	End of 2002	End of 2007	End of 2012
Oil	43.1	40.9	40.6	41.6	52.9
Natural gas	64.8	64.1	60.7	60.3	55.7
Coal	232	219	204	133	109

Source: BP Statistics, all years

As you can see, the R/P ratio for oil in 2012 is 52.9 years, exceeding by nearly ten years the ratio of 43.1 years in 1992. The drop for natural gas has been limited to 9.1 years, but, in contrast, the R/P ratio for coal has dropped by 123 years from 232 to 109 years.

As shown in Table 3, the main reason for the substantial decline is the explosive growth in production output in China. In the twenty-year period from 1992 to 2012, production output in the world as a whole has increased 1.7 times, while in China alone, production output has increased 3.3 times to expand by 2,534 million tons.

Table 3. Fluctuations in Coal Production Output

Unit: million tons of coal

	1992	1997	2002	2007	2012
World	4,519	4,731	4,961	6,589	7,865
China share	1,116	1,388	1,550	2,692	3,650

Source: BP Statistics, all years

As shown in Table 4, the result is that reserves of high-grade coal such as anthracite and bituminous coal have decreased by 23% in the past twenty years.

However, on the other hand, the decrease in reserves of sub-bituminous coal, lignite and other coal of inferior quality has halted at 12%. It can be said that their production is hardly robust compared to bituminous coal.

Table 4. Fluctuations in Confirmed Deposits

Unit: million tons of coal

	End of 1992	End of 1997	End of 2002	End of 2007	End of 2012
Anthracite/Bituminous	521,413	519,358	519,062	430,896	404,762
Sub-bituminous• Lignite	517,769	512,252	465,391	416,592	456,176
Total	1,039,182	1,031,610	984,453	847,488	860,938

Source: BP Statistics, all years

For additional detail, we take a look at changes in the R/P ratio by type of coal.

Table 5 shows fluctuations in reserves and production output for bituminous coal + anthracite, sub-bituminous coal, and lignite published by the World Energy Council every three years.

The BP statistics on coal reserves are apparently also based on the figures from the World Energy Council.

Table 5. Fluctuations in Reserves and Production Output per Type of Coal

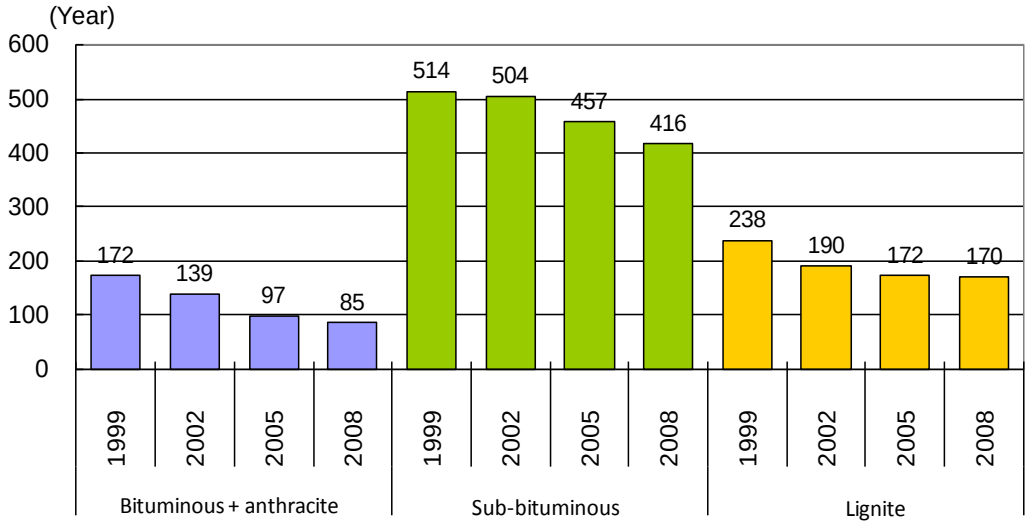
Unit: million tons of coal

	Reserves			Production output		
	Bituminous coal + Anthracite	Sub-bituminous coal	Lignite	Bituminous coal + Anthracite	Sub-bituminous coal	Lignite
1993	519,358	197,096	315,156	3,169	374	931
1996	509,491	279,021	195,699	3,264	598	784
1999	519,062	276,301	189,090	3,011	538	795
2002	478,771	272,326	157,967	3,451	541	832
2005	430,896	266,837	149,755	4,445	584	872
2007	411,321	264,818	149,862	4,854	637	882
2008	404,762	260,789	195,387	5,225	598	916

Source: World Energy Council

Based on Table 5, we calculated the R/P ratio by type of coal. Figure 5 below shows the results in graphic form.

Figure. 5 Fluctuations in R/P Ratio by Type of Coal



Source: Prepared by IEEJ using data from the World Energy Council

In a mere decade, the R/P ratio for superior quality coal alone, i.e., bituminous coal + anthracite, has shrunk from 172 years to 85 years. Meanwhile, the ratio for sub-bituminous coal, though shrinking, is still 416 years, while the ratio for lignite is 170 years.

Here, we will attempt a preliminary calculation. As shown in the reference scenario in Figure 4, production and consumption of coal will increase in the future, but if we assume that bituminous coal + anthracite will supply all the coal, what will the R/P ratio for bituminous coal + anthracite be in 2035?

The answer is 18.4 years.

Table 6. Calculation Method

			Source/Method of calculation
Coal consumption	2010	3,476 Oil conversion million ton	Asia/World Energy Outlook 2012
	2035	4,870 Same as above	Same as above
	2010	7,252 Coal million ton	BP statistics
	2035	10,160 Same as above	7,252* (4,870/3,476)
	2011-35 cumulative total	217,650	7,252*25 years + (10,160-7,252)/2*25 years
Reserves (bituminous +	2008	404,762 Coal million ton	Based on Table 5
	2035	187,112 Same as above	2008 reserves 404,762* - total consumption 217,650
R/P ratio	2035	18.4 years	2035 reserves 187,112/2035 consumption 10,160

Note: Although we should have used reserves at the end of 2010, the data do not exist and we substituted with figures for 2008.

It is difficult to raise any objections to the importance of promoting the use of sub-bituminous coal and lignite in order for coal to be used in the long term as the energy source to power economic growth in Asia.

(To be continued in the next issue)

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