

Coal Trends

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

The rapid rise in energy imports eating away at the macro economy in Japan

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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 discuss the rise in energy imports that continues to rock the macro economy in Japan.

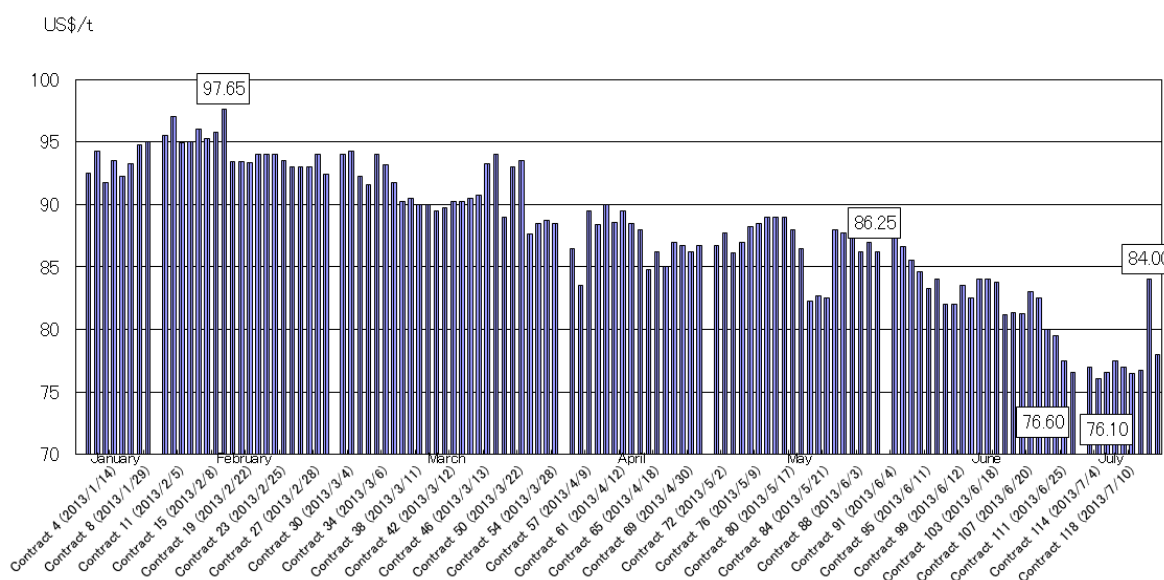
1. Spot prices for Australian and South African coal and landed prices in Japan

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

– Temporary halt to the rapid fall in both Australia and South Africa –

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

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



Source: Prepared using globalCOAL materials

For Newcastle, 112 actual spot trades were recorded in the six months from January to June 2013, but there were only 11 trades in July.

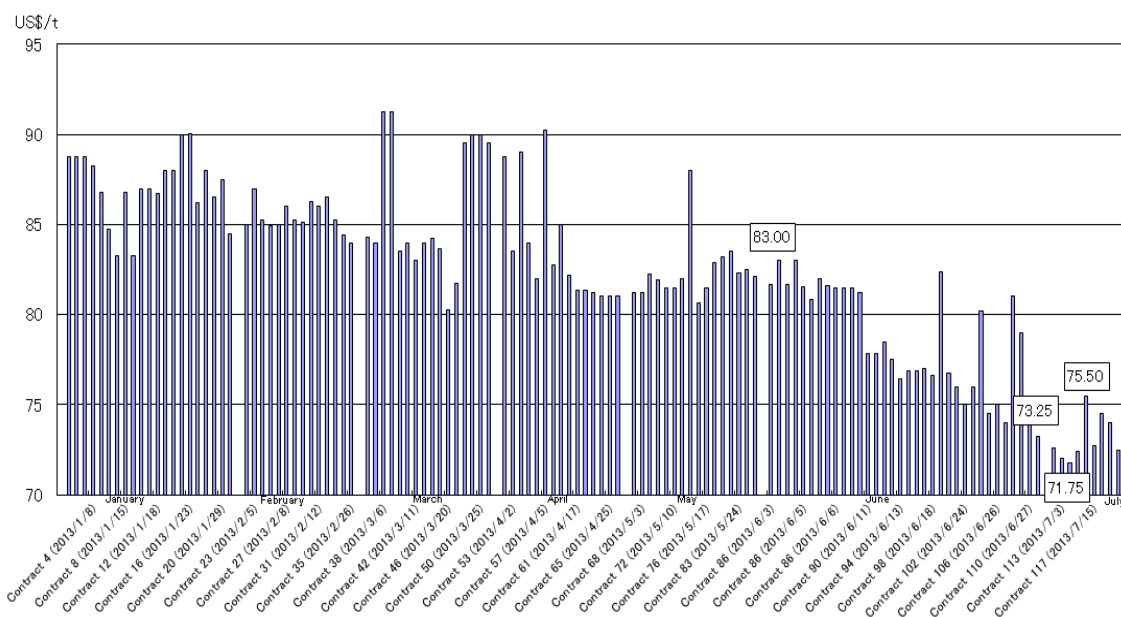
If we do a quick survey of the 123 trades from January to the end of July listed in Figure 1, we see that there was a consistent downward trend until the end of June, but as of the start of July, the rapid decline appears to have stopped for now. One delivery for 2014 was priced at US\$84 per metric ton, but the other 10 transactions were all traded in the narrow range between US\$76.10 to US\$78.00 per metric ton.

TEPCO has settled the price for the Australian coal contract starting in July 2013 (July 2013 - June 2014) at US\$89.98 per metric ton FOB. This is more than US\$5 below the price paid in April, but the price seems comparatively expensive for this point in time.

Meanwhile, there were 111 contracts for FOB Richards Bay (RB), South Africa, for January to June 2013, but as few as nine in July.

The first transactions in July started at US\$72.60 per metric ton, which is below the bottom price for this year of US\$73.25 per metric ton recorded for the last transaction in June. Further downward movement was forecast, but transactions bottomed out at US\$71.75 per metric ton before showing a slight recovery. The top price for July was US\$75.50 per metric ton, and the lowest price was US\$71.75 per metric ton.

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

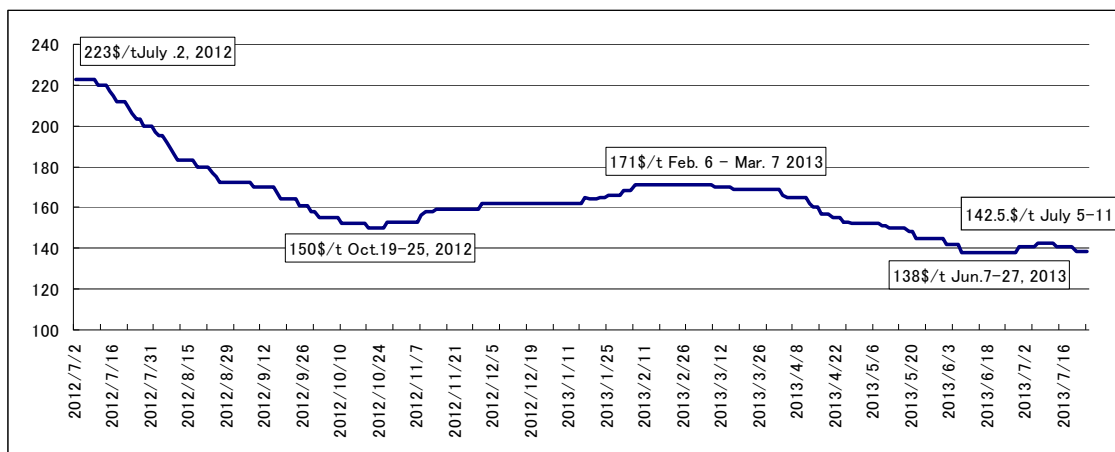


Source: Prepared using globalCOAL materials

(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
(July 2, 2012 – July 24, 2013)



Source: Prepared using Energy Publishing data

After holding ground at US\$171 per metric ton from February 6 to March 7, 2013, the CCQ Index started to slip downwards, gently but consistently, until the price slipped to US\$138 per metric ton on June 7. After that, the trend was reversed, albeit slightly, with the price rising to US\$142.50 per metric ton in the period from July 5 to 11, but then the downward trend started again.

The July to September 2013 price for the highest quality hard coking coal Queensland intended for blast furnaces in Japan dropped by US\$25 per metric ton from the April to June price level, to settle at FOB T US\$145 per metric ton, with a pricing that appears to be an accurate reading of current market conditions.

(3) Import price to Japan

Table 1 shows changes in import prices for all coal imports to Japan from January to June 2013 (however, February and April have been omitted).

First, if we look at the landed price in dollar terms for all imports, the consistent downward

trend continues. Compared to the previous month (May), prices fell by US\$2.25 per metric ton in June. This is a decrease of US\$9.30 per metric ton compared to the start of the year (January).

The trend is the same for coking coal and thermal coal. For June, the price of coking coal dropped by US\$4.40 per metric ton compared to the previous month, and by US\$13.77 per metric ton compared to January.

In June, thermal coal fell by US\$2.92 per metric ton compared to May, and US\$8.95 per metric ton compared to January.

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

	Jan-13		Mar-13		May-13		Jun-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	12,453	125.63
By coal type								
Coking coal	13,589	155.14	13,841	147.12	14,511	145.77	14,014	141.37
Thermal coal	10,477	119.61	11,124	118.23	11,307	113.58	10,970	110.66
Anthracite	13,699	156.39	14,780	157.09	15,367	154.36	15,549	156.85
By source								
Australia	11,904	135.89	12,462	132.45	12,764	128.21	12,788	129.00
Indonesia	9,841	112.34	10,712	113.85	10,517	105.63	10,212	103.01
Canada	15,317	174.86	17,296	183.83	15,093	151.61	14,973	151.04
China	16,861	192.48	17,627	187.35	17,745	178.25	16,320	164.63
USA	16,595	189.45	14,793	157.23	15,529	155.99	17,359	175.11
Russia	10,776	123.04	11,626	123.57	12,371	124.25	11,484	115.84
South Africa	10,567	120.63	-	-	-	-	10,258	103.48
New Zealand	-	-	17,741	188.56	-	-	-	-
Vietnam	12,401	141.57	13,856	147.27	17,099	171.76	19,720	198.93
Mongolia	-	-	-	-	-	-	-	-
Mozambique	-	-	15,053	159.99	18,023	181.05	-	-
Colombia	9,890	112.90	-	-	-	-	-	-
Coking coal by source								
Australia	14,454	165.16	14,501	154.13	14,876	149.43	14,794	149.23
Indonesia	10,133	115.68	11,071	117.67	10,975	110.25	10,618	107.11
Canada	17,210	196.47	18,989	201.84	16,643	167.19	17,518	176.72
China	-	-	17,599	186.63	17,661	177.41	12,921	130.34
USA	18,033	205.87	16,200	172.19	16,836	169.12	19,522	196.94
Russia	12,113	138.29	13,214	140.45	14,100	141.64	13,553	136.72
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	11,304	114.03
Indonesia	9,314	106.33	10,169	108.09	10,134	101.80	9,422	95.05
Canada	10,759	122.82	9,252	98.34	10,566	106.14	9,745	98.30
China	13,696	156.36	11,649	123.82	-	-	12,496	126.06
USA	10,808	123.38	10,438	110.95	10,574	106.22	10,291	103.81
Russia	10,089	115.18	10,540	112.03	10,773	108.22	10,751	108.45
South Africa	10,568	120.64	-	-	-	-	10,259	103.49
Colombia	9,891	112.91	-	-	-	-	-	-
	US1\$=87.60		US1\$=94.08		US1\$=99.55		US1\$=99.13	

Source: Prepared using Trade Statistics of Japan Monthly Reports

If we look at landed prices by source, Australia, the biggest source of supplies to Japan, bottomed out in June compared to the previous month for the first time this year, recording

only a slight increase of US\$0.79 per metric ton. However, compared to January, the drop is US\$6.89 per metric ton.

For March, Indonesia recorded a month-over-month increase of US\$2.70 per metric ton, but the price continued to fall in April, May and June. In June, the range of reduction was US\$2.62 per metric ton compared to May, and US\$9.33 per metric ton compared to January, showing a high range of reduction even when compared to Australia (in dollar terms).

No imports of coking coal from New Zealand, Mongolia or Mozambique were recorded in June.

In June, there was a record of thermal coal from South Africa landed for the first time since February, but shipments from Colombia have been stopped since February.

2. The rapid rise in energy imports eating away at the macro economy in Japan

Table 2 shows Ministry of Finance data on the changes in the trade balance.

According to trade statistics for the first half of 2013 released by the Ministry of Finance in July 2013, the value of exports has increased for the first time in two terms to JPY33,957 billion, but the value of imports has also increased for the seventh consecutive term to JPY38,804.1 billion, with the result being a deficit of JPY4,847.1 billion. This is reported to be the second largest deficit after 1979. The cause of the deficit is said to be mineral fuels, in short, the growth in energy imports.

Table 2. Changes in Japan's Trade Balance

Unit: million yen

	Export value	Import value	Balance	Of which, value of mineral fuel imports
Fiscal 2009	59,007,879	53,820,852	5,187,027	15,259,513
Fiscal 2010	67,788,838	62,456,704	5,332,134	18,143,792
Fiscal 2011	65,288,487	69,710,574	-4,422,087	23,132,073
Fiscal 2012	63,940,544	72,116,818	-8,176,274	24,664,109
Jan-June 2013	33,957,009	38,804,158	-4,847,149	13,465,920

Source: Trade Statistics of Japan

Note: Mineral fuels refer to crude oil and raw oil, petroleum products, liquefied natural gas, liquefied petroleum gas, and coal.

In fiscal 2011, when operations at Japan's nuclear power stations were unavoidably stopped one after another due to the Great East Japan Earthquake (March 11, 2011), the import value of energy (mineral fuels) rose by JPY4,988.3 billion compared to the previous year. In fiscal 2012, the year-on-year rise was JPY1,320 billion, and for the first half of fiscal 2013, the increase over the same period in the previous year was JPY846.8 billion¹.

Table 3 shows the changes in import volume and value per energy source.

Table 3. Import Volume and Value per Mineral Fuel (energy source) (FY2009-2012)

	Product	Unit	Quantity	Value (million yen)	Unit value
FY2009 Exchange rate: JPY93.07/US\$1	Mineral fuels			15,259,513	
	Crude oil, raw oil	1,000 kl	212,698	8,587,447	40,374 JPY/kl
	Petroleum products			1,337,015	
	LNG	1,000 tons	66,354	2,855,172	43,029 JPY/ton
	LPG	1,000 tons	11,805	643,804	54,537 JPY/ton
	Coal	1,000 tons	164,775	1,815,794	11,020 JPY/ton
	(Thermal coal)	1,000 tons	90,946	828,173	9,106 JPY/ton
FY2010 Exchange rate: JPY86.08/US\$1	Mineral fuels			18,143,792	
	Crude oil, raw oil	1,000 kl	215,013	9,755,883	45,373 JPY/kl
	Petroleum products			1,707,226	
	LNG	1,000 tons	70,562	3,549,216	50,299 JPY/ton
	LPG	1,000 tons	12,525	828,348	66,136 JPY/ton
	Coal	1,000 tons	186,637	2,261,523	12,117 JPY/ton
	(Thermal coal)	1,000 tons	105,012	1,030,959	9,818 JPY/ton
FY2011 Exchange rate: JPY79.01/US\$1	Mineral fuels			23,132,073	
	Crude oil, raw oil	1,000 kl	209,839	11,893,780	56,681 JPY/kl
	Petroleum products			2,347,305	
	LNG	1,000 tons	83,183	5,404,384	64,970 JPY/ton
	LPG	1,000 tons	12,695	928,014	73,101 JPY/ton
	Coal	1,000 tons	175,379	2,525,026	14,398 JPY/ton
	(Thermal coal)	1,000 tons	101,723	1,152,934	11,334 JPY/ton
FY2012 Exchange rate: JPY82.7/US\$1	Mineral fuels			24,664,109	
	Crude oil, raw oil	1,000 kl	211,021	12,525,426	59,356 JPY/kl
	Petroleum products			2,607,610	
	LNG	1,000 tons	86,865	6,211,984	71,513 JPY/ton
	LPG	1,000 tons	13,271	1,064,457	80,209 JPY/ton
	Coal	1,000 tons	183,769	2,219,929	12,080 JPY/ton
	(Thermal coal)	1,000 tons	106,289	1,112,610	10,468 JPY/ton

Source: Trade Statistics of Japan

¹ The import value of mineral fuels for the January to June period in 2012 was JPY12,619.2 billion.

The following are the findings of a comparison of fiscal 2010 and fiscal 2012, the years before and after the earthquake disaster.

- Crude oil and raw oil: Volume is down by 3,992,000 kiloliters; Value is up by JPY2,769,543 million; Unit value is up by JPY13,983 per kiloliter
- Petroleum products: The value is up by JPY900,384 million
- Liquefied natural gas (LNG): Volume is up by 16,303,000 tons (+23.1%); Value is up by JPY2,662,768 million; Unit value is up by JPY21,214 per metric ton → Additional import volume of 16,303,000 metric tons x unit value of JPY71,513 = JPY1,165.9 billion, which is the estimated cost of additional imports of LNG. However, this also includes imports of LNG for utility gas.
- Liquefied petroleum gas (LPG): Volume is up by 746,000 metric tons; Value is up by JPY236,109 million; Unit value is up by JPY14,073 per metric ton
- Thermal coal: Volume is up by 1,277,000 metric tons (+1.2%); Value is up by JPY81,651 million; Unit value is up by JPY650 per metric ton.

To summarize the above, imports of petroleum products (heavy oil) and LNG as substitutes for nuclear power have increased by 5,816,000 kiloliter (of which heavy oil accounts for 5,614,000 kiloliters)² and 16,303,000 metric tons (including increase for utility gas use) respectively. Import value has also increased by JPY900.4 billion (including the unit value increase) and JPY1,165.9 billion (including increase for utility gas use), which has been additionally paid to oil and gas producing countries.

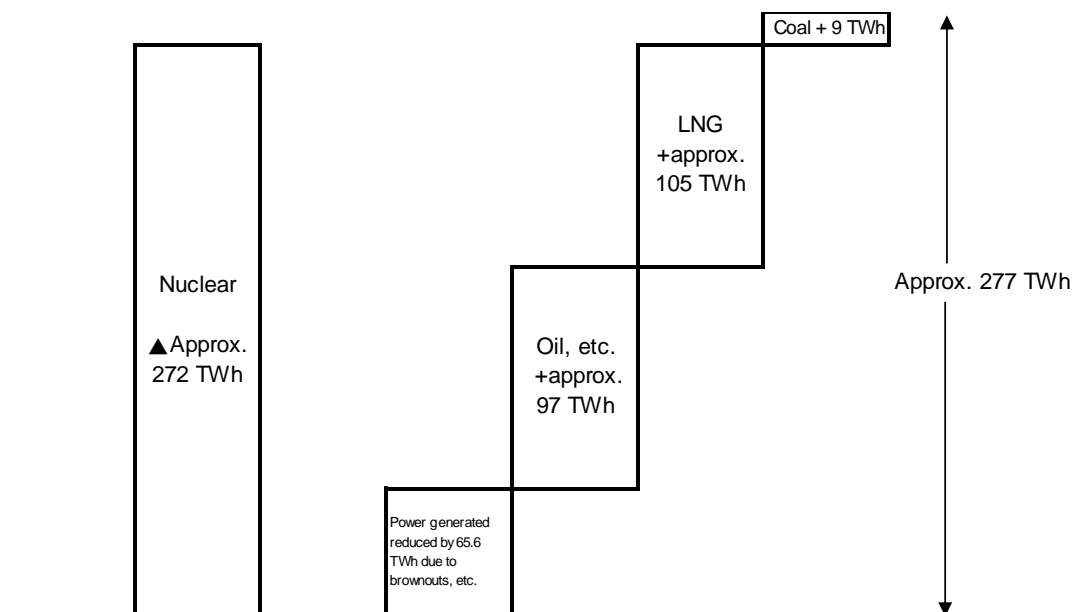
Meanwhile, there has been no large increase in volume or value of coal. This is probably because utilization factor for coal-fired thermal power is already high, and there is no margin for increase. (See Figure 5).

When we interpret the results of the above trial calculations in light of “Figure 4 Comparison of Amount of Power Generated (FY2012/FY2010),”³ we find that to increase electricity production from LNG by approximately 105 Tera Wh, an import volume of 16,303,000 metric ton at a value of JPY1,165.9 billion (includes imports by utility gas operators) has been invested, and to increase electricity production from petroleum, etc. by approximately 97 Tera Wh, petroleum products (heavy oil) of 816,000 kiloliters (of which heavy oil accounts for 5,614,000 kiloliters) have been imported, paying out an additional JPY900.4 billion (including unit value increases) to oil-producing countries.

² Report of Mineral Resources and Petroleum Products Statistics and Monthly Report on Resource Energy, Ministry of Trade, Economy and Industry

³ Published in Coal Trends No. 10

Figure 4. Comparison of Amount of Power Generated (FY2012/FY2010) (Reproduced from Coal Trends No. 10)



Source: Prepared by the author based on the website of the Federation of Electric Power Companies of Japan

However, as indicated in Table 4, although the value of imports in the first half of this year has increased compared to the same period in the previous year due to the cheap yen, the import volume for LNG, liquefied petroleum gas (LPG), and thermal coal remains stable, and is even ever so slightly decreasing. This may be because electric power composition patterns in the absence of nuclear power have been completed.

Since utilization factor of LNG-fired thermal power is increasing to an appreciable extent (See Figure 5), it is difficult to imagine that any increase in imports of LNG will stand out in the future. The same also applies to the worsening trade deficit due to expanding import volumes.

Table 4. Import Volume and Value per Mineral Fuel (energy source)
(Comparison of first half of FY 2012 and FY 2013)

	Product name	Unit	Quantity	Value (million yen)	Unit value	
Jan-June 2012 Exchange rate: JPY79.59/US\$1	Mineral fuels			12,619,162		
	Crude oil, raw oil	1,000 kl	108,802	6,523,691	59,959	JPY/kl
	Petroleum products			1,229,950		
	LNG	1,000 tons	44,618	3,090,468	69,265	JPY/ton
	LPG	1,000 tons	6,798	547,750	80,575	JPY/ton
	Coal	1,000 tons	88,845	1,209,600	13,615	JPY/ton
	(Thermal coal)	1,000 tons	51,714	590,342	11,416	JPY/ton
Jan-June 2013 Exchange rate: JPY94.72/US\$1	Mineral fuels			13,465,920		
	Crude oil, raw oil	1,000 kl	105,216	6,915,587	65,728	JPY/kl
	Petroleum products			1,344,664		
	LNG	1,000 tons	43,407	3,499,259	80,615	JPY/ton
	LPG	1,000 tons	6,337	554,871	87,561	JPY/ton
	Coal	1,000 tons	91,811	1,133,623	12,347	JPY/ton
	(Thermal coal)	1,000 tons	50,770	557,364	10,978	JPY/ton

Source: Trade Statistics of Japan

Lastly, we will attempt a trial calculation, which we hope will prove useful to readers.

If the 105 Tera Wh of additional electricity generated from LNG were covered by coal-fired thermal power, how much would be saved on fuel costs compared to LNG? In short, we have done a trial calculation of the degree to which import value could be decreased. The results are outlined in Table 5.

Table 5. Cost of Fuel Required to Generate 105 Tera Wh

	Generation efficiency	Calorific value (kcal/kg)	Fuel price (yen/ton)	Required fuel (thousand ton)	Required fuel cost
Coal-fired	40.5%	6,139	10,468	36,300	Approx. JPY380 billion
LNG-fired	47.2%	13,000	71,513	14,700	Approx. JPY1,050 billion

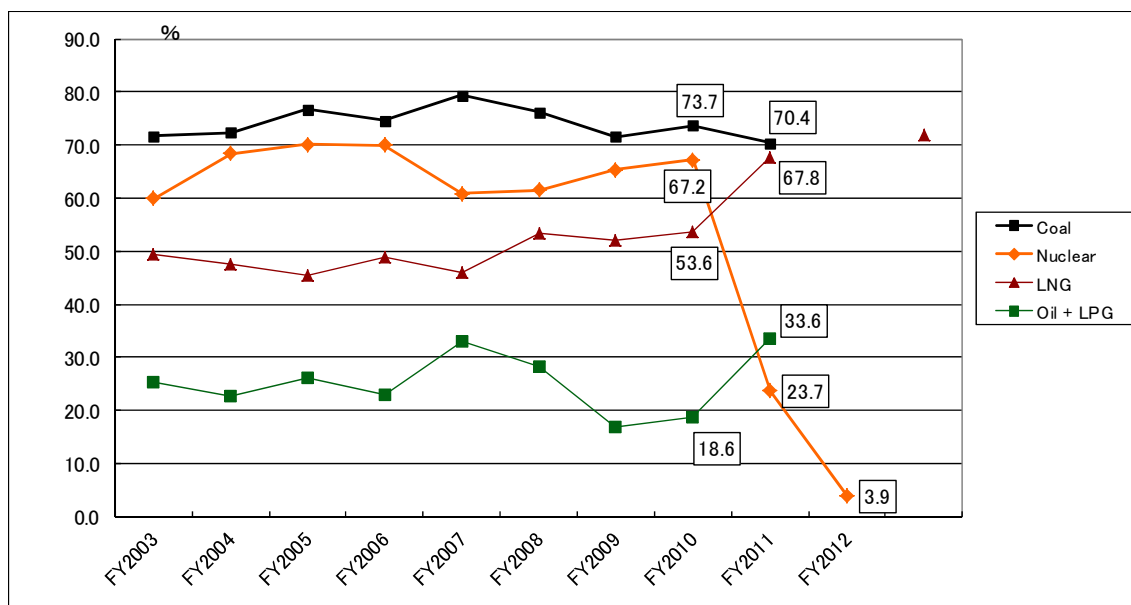
Source: Calculations by the author

Premise for calculation: Heating efficiency is the Japanese average (based on ECOFYS data). Calorific value is based on Comprehensive Energy Statistics, METI/EDMC. Fuel prices are based on FY2012 performance in Table 3.

The results we obtained suggest that using coal would be cheaper by JPY670 billion. It may also have been possible to reduce the trade deficit by at least a similar amount. However, this is castles in the air.

Realistically, the utilization factor for coal-fired thermal power is already high enough; in short, it would be impossible to burn additional coal beyond 36 million metric tons. In fiscal 2013 and following years, there are similar aspects in the scenario for LNG.

Fig. 5 Capacity Factor (Utilization Factor) for 10 Japanese Power Companies by Power Source (Reproduced from Coal Trends No. 10)



Source: Prepared based on data from the Federation of Electric Power Companies of Japan

(To be continued in the next issue)

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