

423rd Forum on Research Works on July 26, 2016

Outlook for International Coal Market

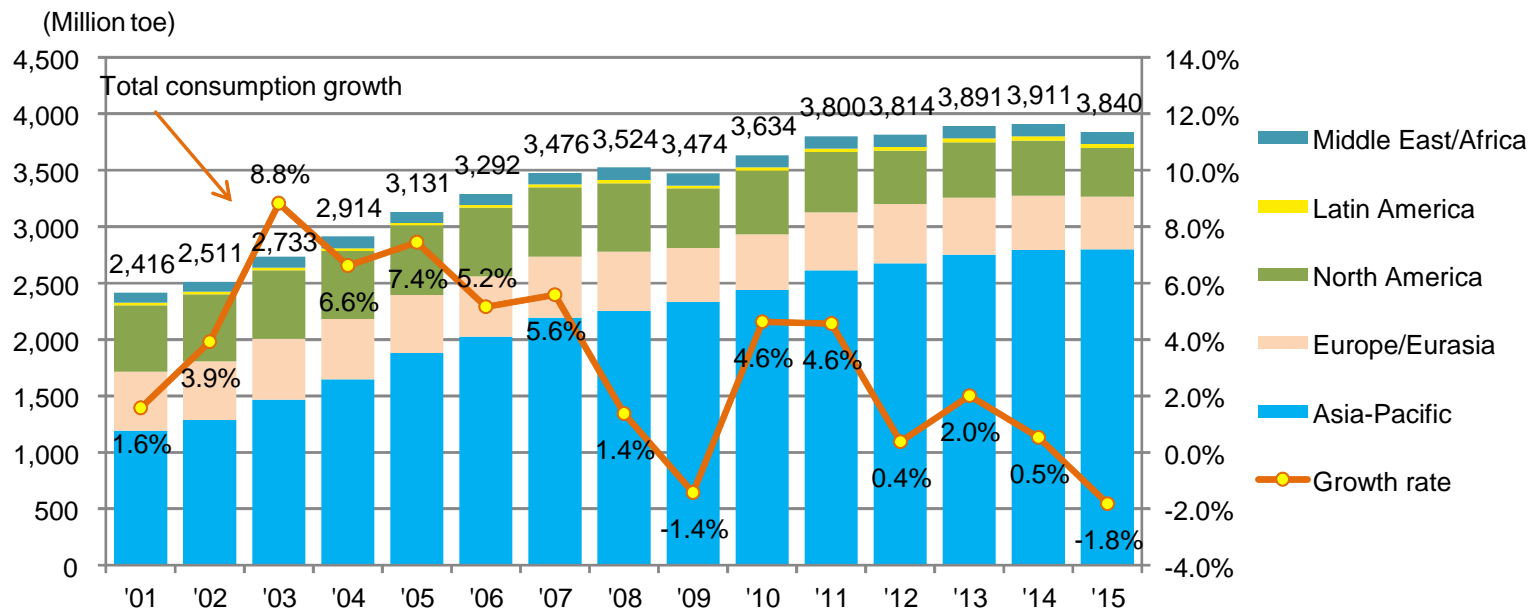
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Global Coal Consumption Trends

- Global coal consumption increased mainly on growth in Asia before decelerating growth and turning downward in 2015.
- A downtrend started in Europe and Eurasia in 2013 and in North America in 2014.
- In Asia, China's consumption has declined since 2014.



	Consumption (Million toe)					Year-on-year changes	Growth (%)				
	2011	2012	2013	2014	2015		11/10	12/11	13/12	14/13	15/14
Asia-Pacific	2,613.5	2,674.8	2,752.0	2,792.5	2,798.5	(6.0)	7.1	2.3	2.9	1.5	0.2
Europe/Eurasia	514.1	527.4	507.2	481.0	467.9	(-13.2)	4.6	2.6	-3.8	-5.2	-2.7
North America	532.3	472.0	488.1	487.9	429.0	(-58.9)	-5.5	-11.3	3.4	0.0	-12.1
Latin America	30.6	32.1	34.8	36.7	37.1	(0.4)	6.4	4.8	8.5	5.6	1.2
Middle East/Africa	109.5	108.1	108.6	113.1	107.4	(-5.7)	-0.9	-1.3	0.5	4.1	-5.0

Coal Import Trends of Major Coal Importing Countries

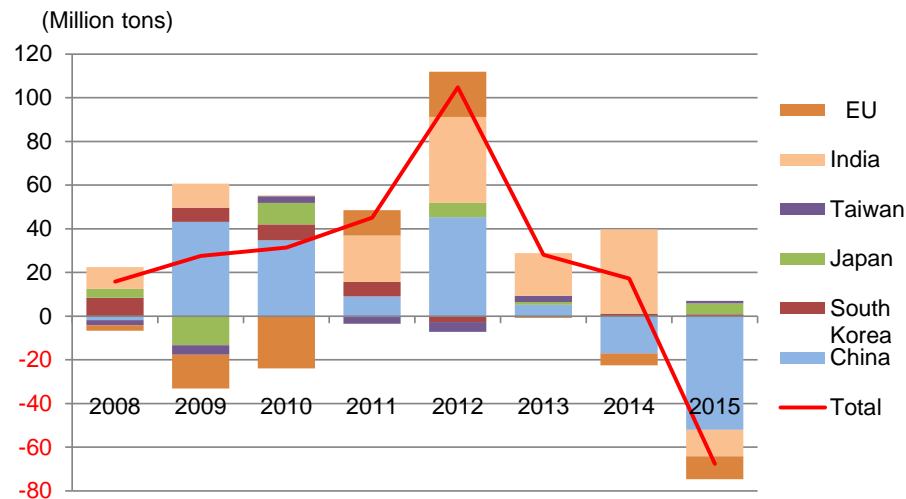
Steam coal imports:

- China and India had driven steam coal imports in the world before reducing them in 2014 and 2015, respectively.

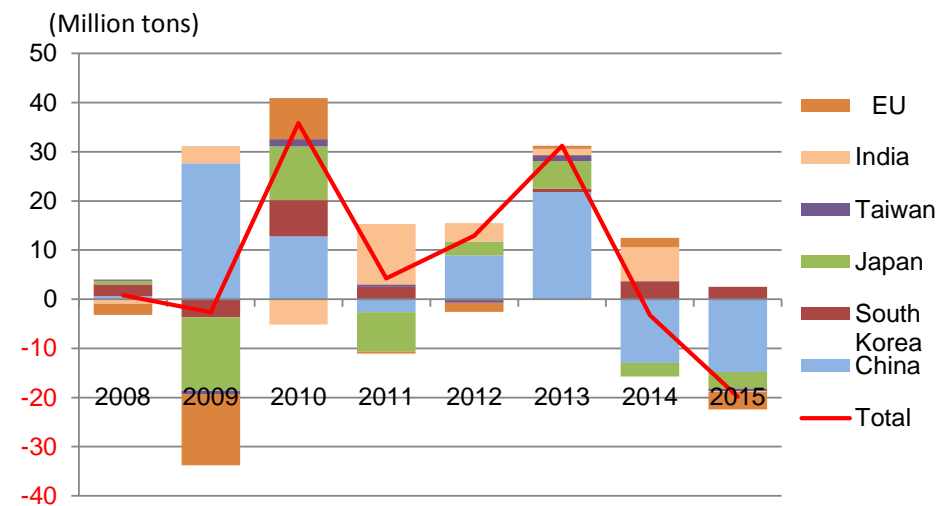
Coking coal imports:

- Coking coal imports had been expanding due primarily to Chinese import growth before Chinese imports dropped in 2014 and 2015. Indian imports in 2015 remained almost unchanged from the previous year.

**Year-on-year import changes
(steam coal)**



**Year-on-year import changes
(coking coal)**



Note: The EU covers 15 countries.
Source: Trade statistics in each country

Coal Export Trends of Major Coal Exporting Countries

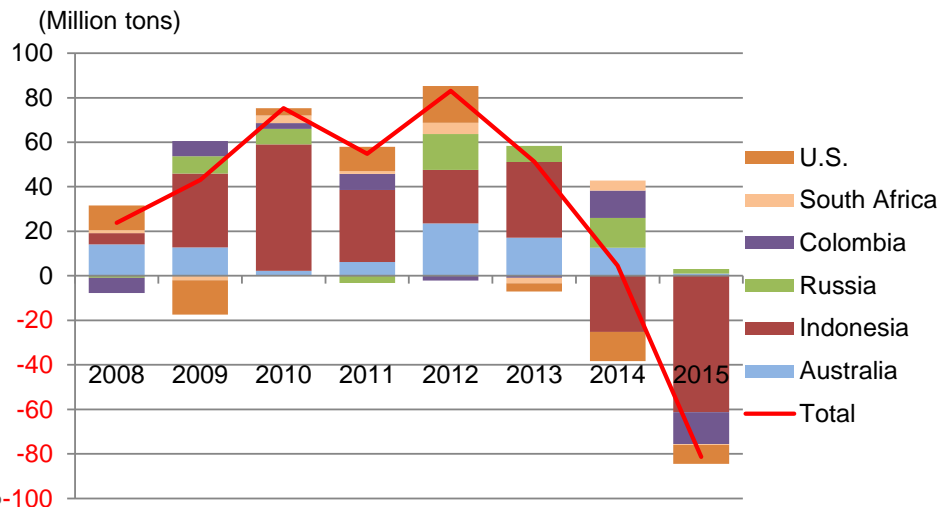
Steam coal exports:

- Steam coal exports had smoothly increased before Indonesian and U.S. exports declined in 2014. In 2015, Indonesia posted a large drop. Colombia also reduced exports. Australian exports leveled off.

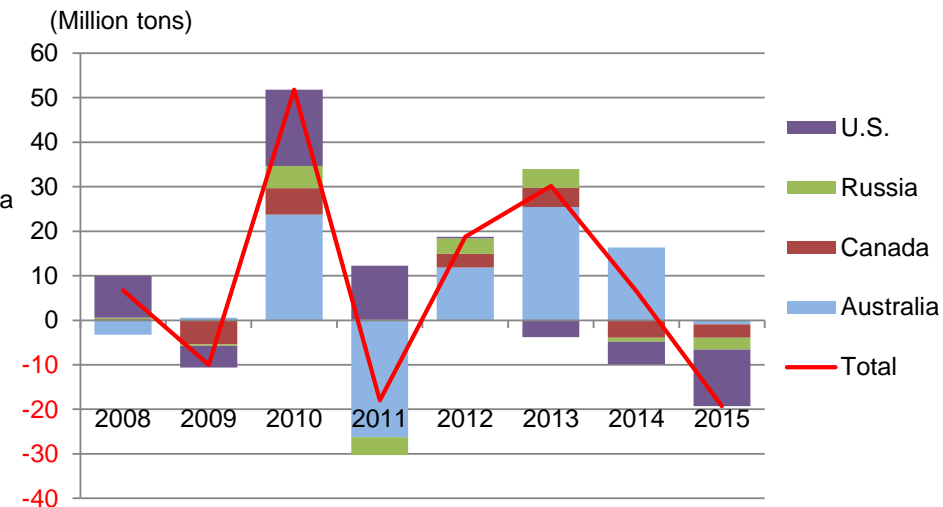
Coking coal exports:

- In 2015, Australian exports remained almost unchanged from the previous year, with U.S., Canadian and Russian exports posting drops.

**Year-on-year export changes
(steam coal)**



**Year-on-year export changes
(coking coal)**

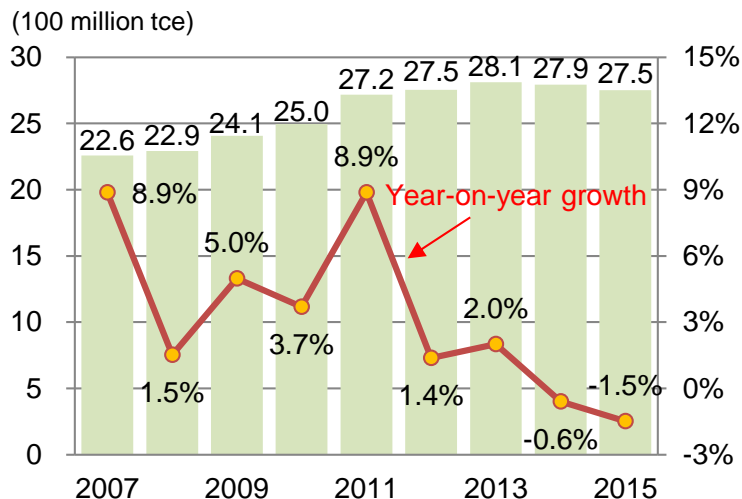


Source: Trade statistics in each country

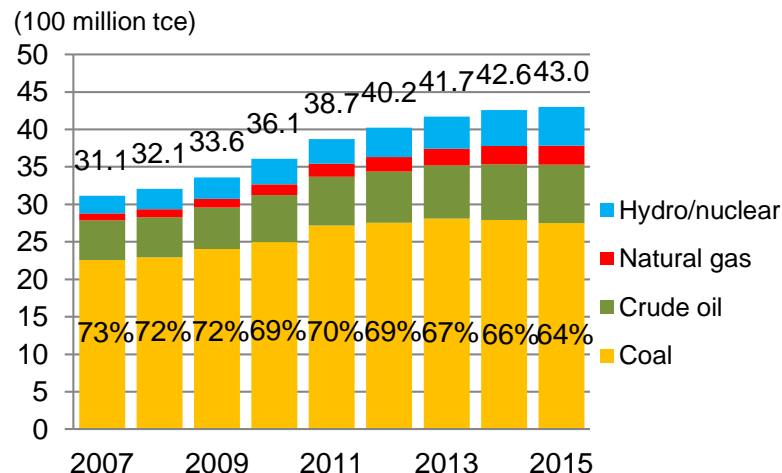
Coal Consumption and Production Trends in China

- ❑ Coal consumption has declined since 2014 due to the following factors:
 - Stagnation of electricity, steel and cement demand under economic growth deceleration
 - Coal consumption and environmental regulations in large cities and coastal regions plagued with air pollution
 - Brisk hydro power generation, etc.
- ❑ Coal production has also fallen since 2014.
- ❑ The downtrend continues in 2016.

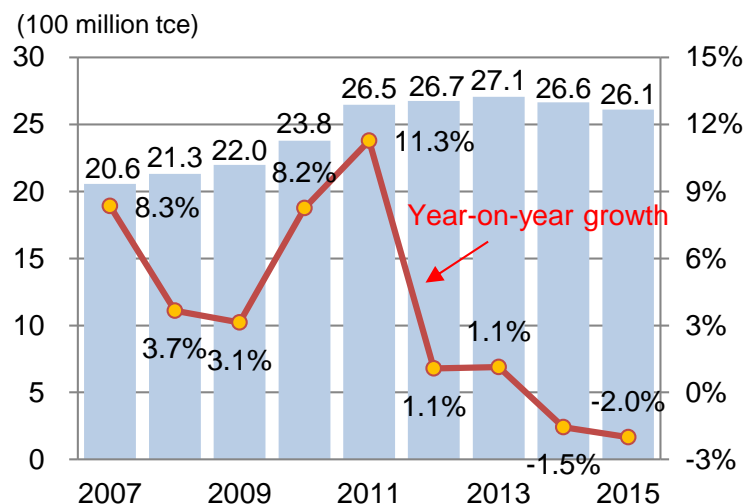
Coal consumption trends



Primary energy consumption trends



Coal production trends



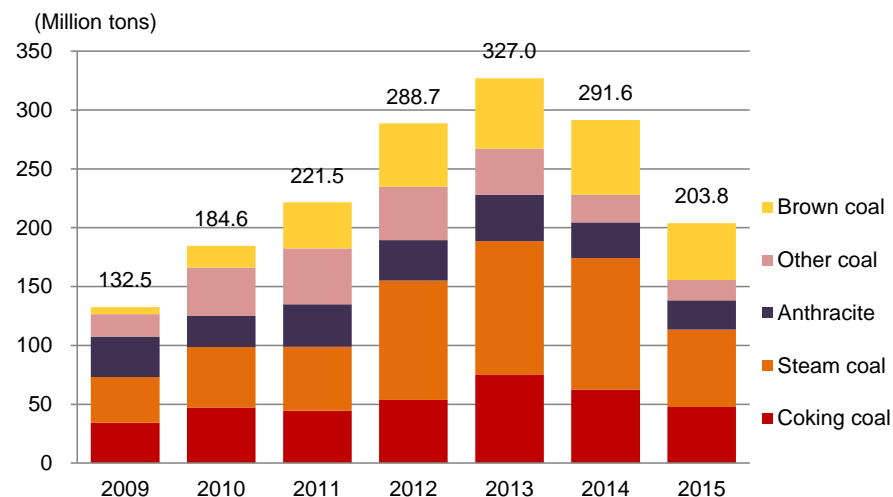
Coal Import Trends in China

- Imports declined for the second straight year.
- Imports in 2015 declined by 123.2 million tons from a peak in 2013. The decline is broken down below:
 - 69 million tons in steam coal (steam coal and other coal):
 - 27.8 million tons in coking coal
- A brake was applied on the coal import decline entered in 2016. Imports in the first five months of this year increased by 3 million tons from a year earlier. The Increase is broken down below:
 - Steam coal (steam coal and other coal): Down 3.01 million tons
 - Coking coal: Up 4.7 million tons

Coal import changes (2013-2015)

	(1,000 tons)				
	2013	2014	2015	Year-on-year changes	
				2013-2014	2014-2015
Coking coal	75,400	62,440	47,624	-12,960	-14,816
Steam coal	113,051	111,740	65,843	-1,312	-45,897
Anthracite	39,601	30,366	24,765	-9,235	-5,601
Other coal	39,089	23,450	17,300	-15,639	-6,150
Subtotal	267,142	227,996	155,531	-39,146	-72,464
Brown coal	59,833	63,589	48,252	3,757	-15,337
Total	326,974	291,585	203,784	-35,390	-87,801

Coal import trends



Coal import changes (January-May 2016)

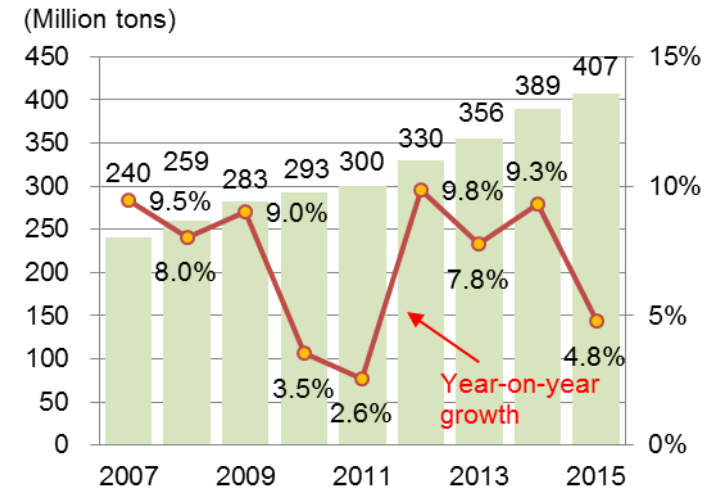
	January-May 2014	January-May 2015	January-May 2016	(1,000 tons) Changes	
				2014-2015	2015-2016
Coking coal	25,321	16,555	21,217	-8,766	4,662
Steam coal	51,103	30,035	25,456	-21,068	-4,578
Anthracite	14,622	9,698	9,839	-4,924	141
Other coal	13,411	6,109	7,577	-7,303	1,469
Subtotal	104,457	62,396	64,090	-42,061	1,694
Steam coal	30,672	20,849	22,182	-9,823	1,333
Total	135,129	83,245	86,271	-51,884	3,026

Source: TEX Report (based on China customs statistics)

Coal Consumption, Production and Import Trends in India

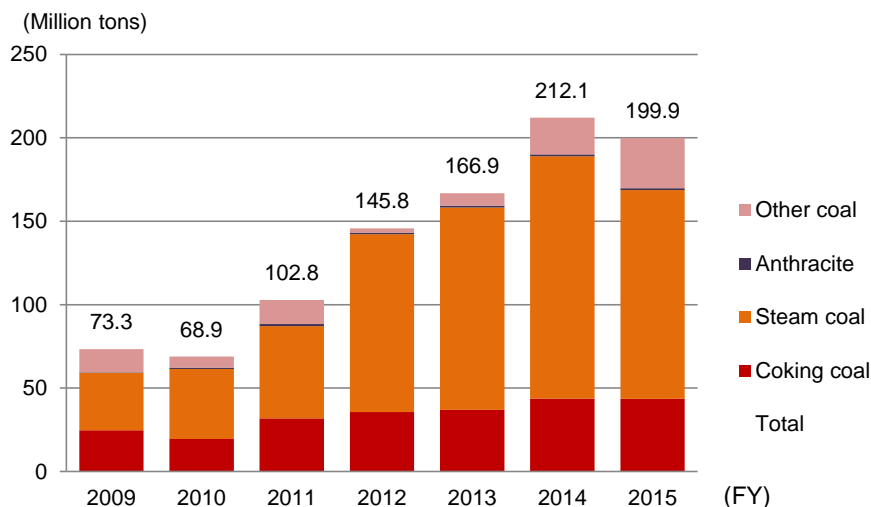
- Coal consumption has steadily increased and will rise on the expansion of demand for coal for power generation in the future.
- Coal production has also increased, reaching 680 million tons in 2015. India has a policy of enhancing coal production.
- Coal imports steadily increased mainly in steam coal imports from FY2011 but declined in FY2015. Steam coal imports decreased while coking coal imports leveled off.
- Coal imports will increase again in FY2016?

Coal consumption trends



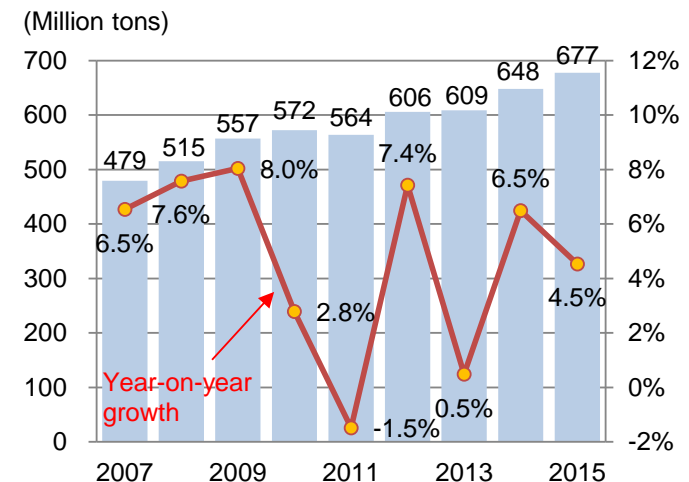
Source: BP

Coal import trends



Source: Ministry of Commerce and Trade

Coal production trends



Source: BP 6

Coal Import Trends in Other Asian Countries

- Malaysia, the Philippines, Vietnam and Thailand have gradually increased coal imports.

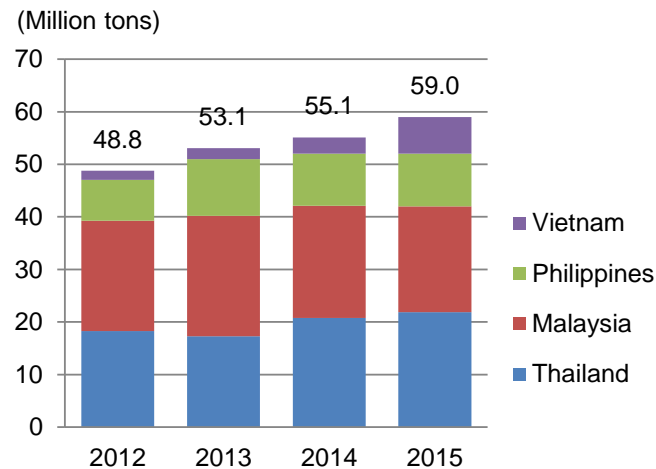
New coal power plants will be constructed in line with electricity demand expansion in the future.

- South Korea has slightly increased coal imports over the past years.

According to South Korea's The 7th Basic Plan for Long-term Electricity Supply and Demand, nine new coal power plants will launch operation in 2016, being followed by one in 2017.

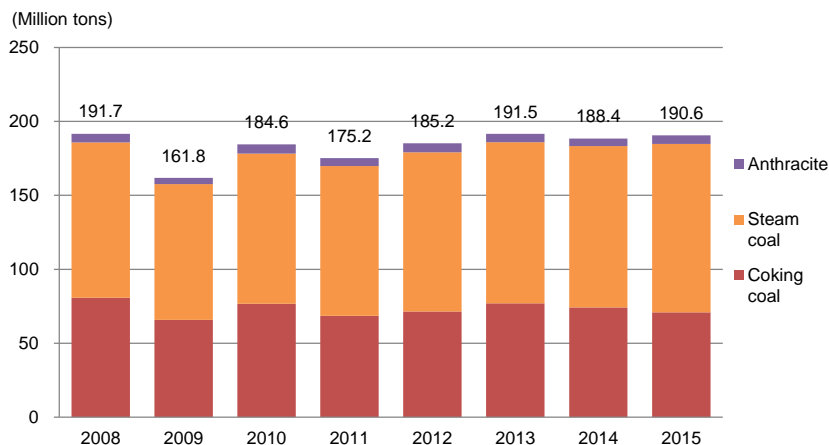
- Japan's coal imports have remained around 190 million tons per year over the past years.

Coal import trends in major Southeast Asian coal importing countries



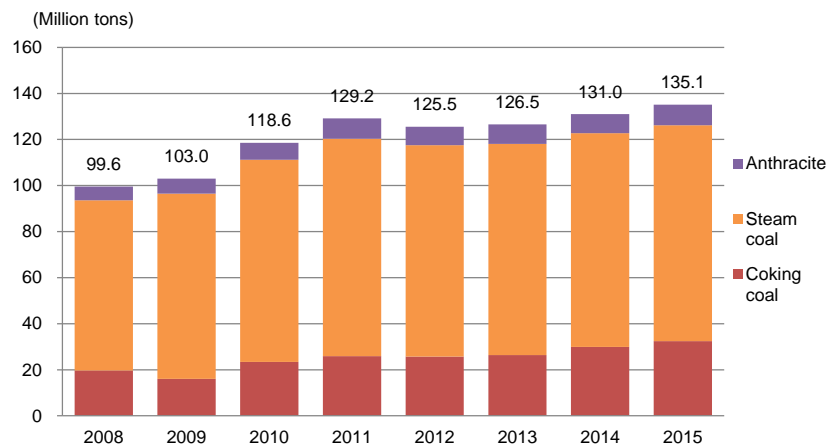
Sources: Statistics in each country, TEX Report

Coal import trends in Japan



Source: Trade Statistics

Coal import trends in South Korea

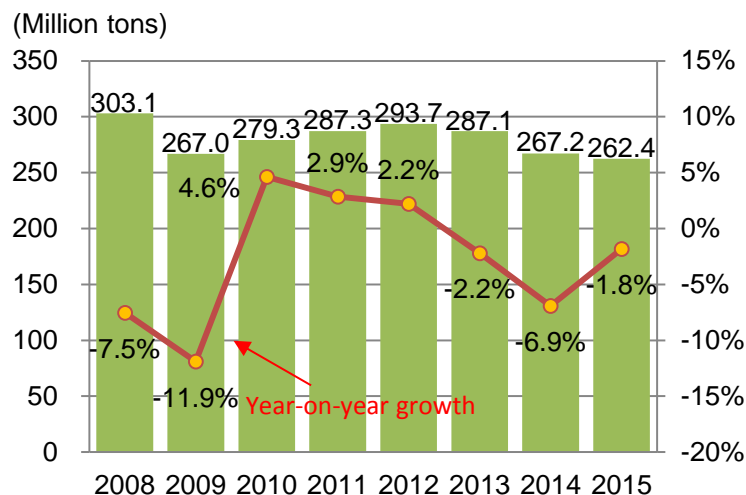


Source: TEX Report (based on South Korean trade statistics)

Coal Consumption and Import Trends in Europe

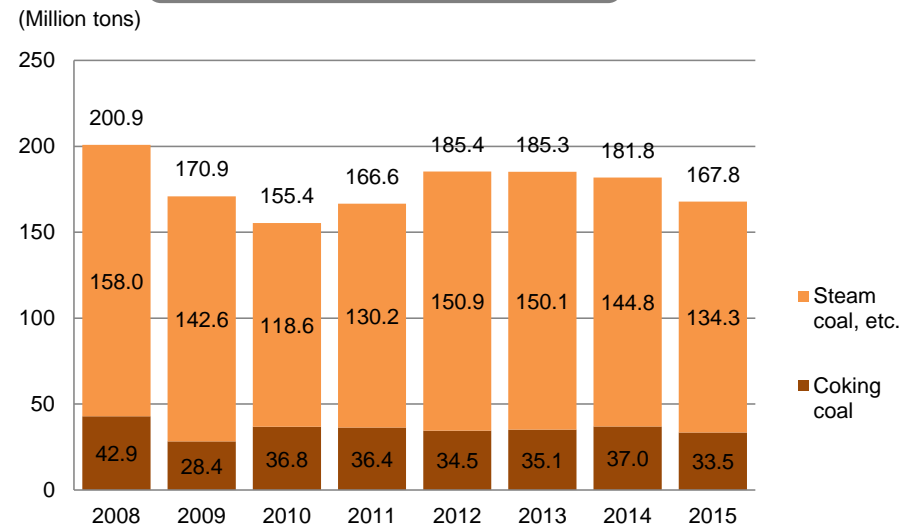
- ❑ Coal consumption plunged on the Lehman Shock and increased gradually until 2012. Since 2013, however, coal consumption has followed a downtrend due to the following factors:
 - Renewable energy's share of power generation has expanded with total generation slumping.
 - Gas prices have declined.
 - Measures against air pollution and climate change have been enhanced.
- ❑ In line with the consumption trend, steam coal imports have fallen since 2014.
- ❑ The current trend will continue in the future.

Coal consumption trends



Source: BP

Coal import trends

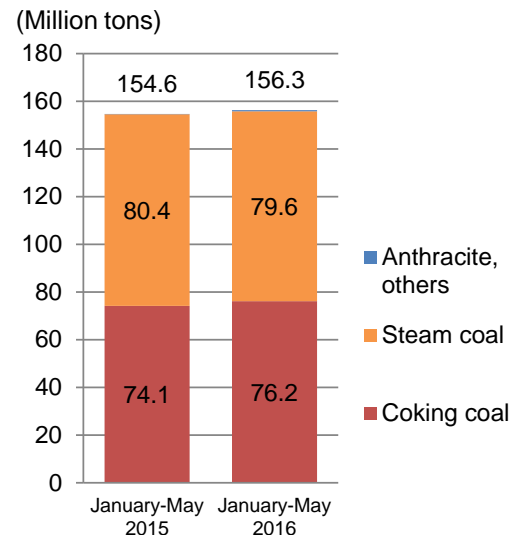
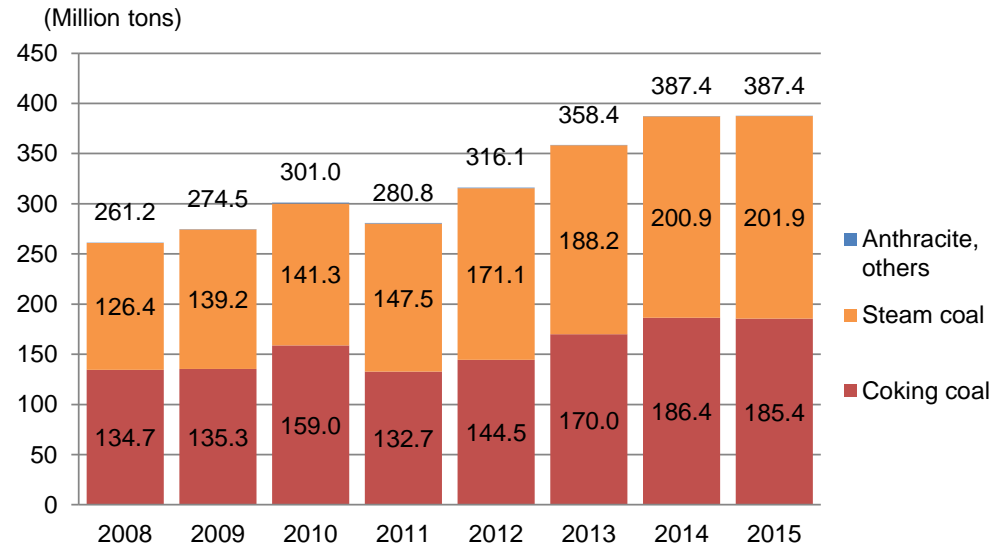


Source: TEX Report (based on Eurostat)

Australia's Coal Exports

- ❑ Australian coal exports in 2011 declined due to heavy rain in Queensland before recovering steadily from 2012.
 - ❑ In 2015, however, coal exports leveled off on a fall in demand.
 - ❑ Under stagnant demand and low prices, unprofitable coalmines have been shut down, with low-productivity mines being forced to suspend production. Asset consolidation is going on in the coal industry.
- Large coal companies have concentrated business resources on high-productivity mines to maintain production levels.
- ❑ However, coal development plan delays or postponements under low prices are feared to affect supply and demand in several years.

Coal export trends

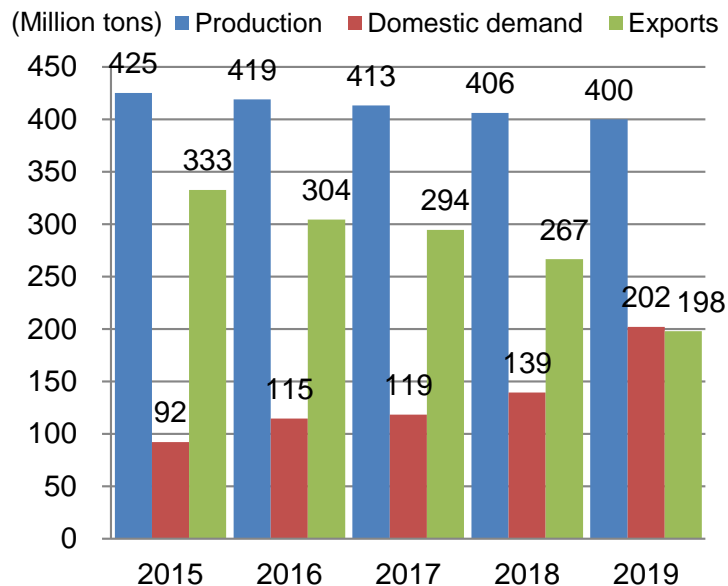


Source: TEX Report (based on Australian trade statistics)

Indonesia's Coal Exports

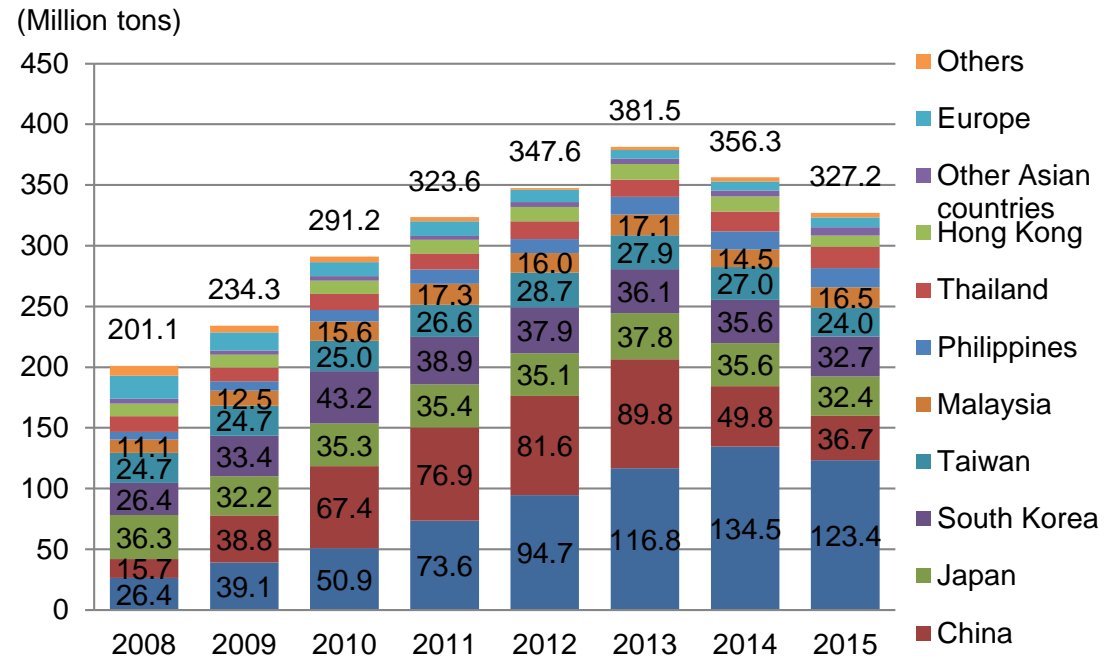
- Indonesia's coal exports have declined since 2014 after a rapid increase meeting the expansion of the Asian market.
Exports to China have declined sharply. Those to India also fell in 2015.
- According to a production plan released in early 2015, production will gradually decrease from 425 million tons in 2015 to 400 million tons in 2019.
- Production in 2015 totaled 392 million tons, slipping below a planned level.
- Exports decreased on domestic demand growth.

Production plan and domestic demand/export outlook



Source: Presentation material for Clean Coal Day (September 2015) by Directorate General of Mineral and Coal, Ministry of Energy and Mineral Resources

Coal export trends

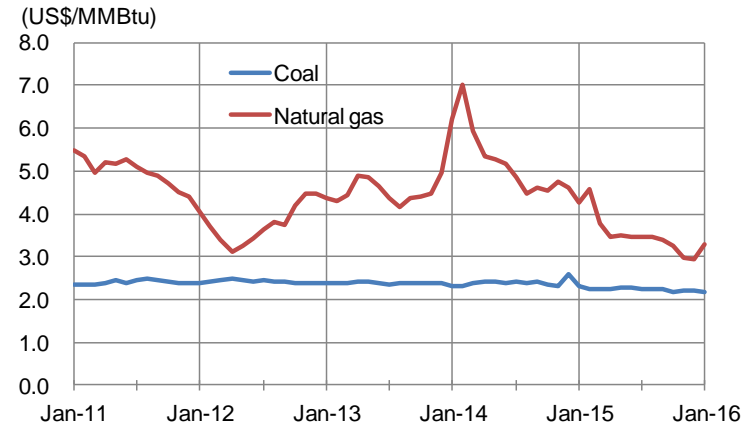


Source: TEX Report (based on Indonesian trade statistics)

U.S. Coal Consumption and Exports

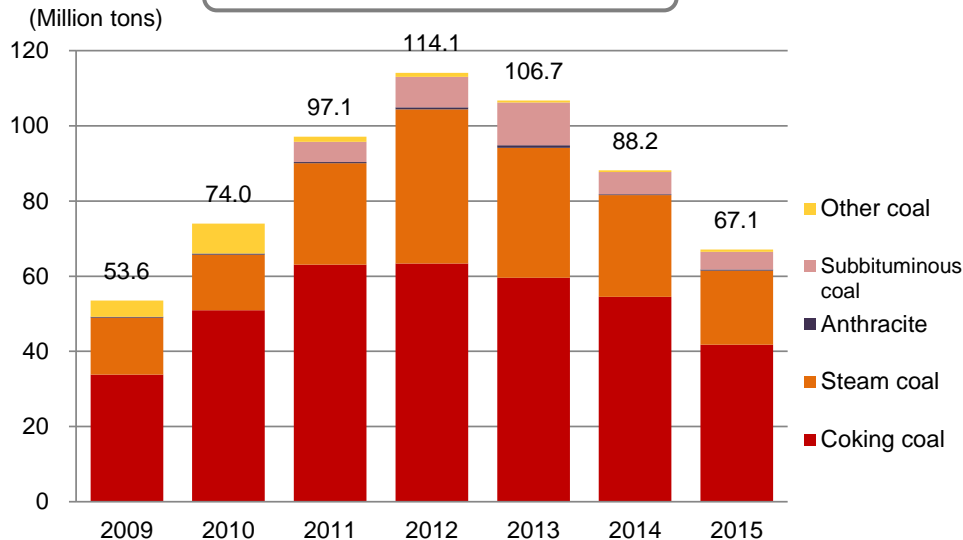
- Coal consumption has declined due to gas price drops and coal power plant shutdowns under air pollution regulations.
- Coal exports have fallen rapidly since 2013.
- Falling international coal prices and exports, and decreasing domestic consumption have forced many coal producing companies, including the two largest ones, to file for protection under Chapter 7 or 11 of the U.S. Bankruptcy Act.

Power generation fuel price trends



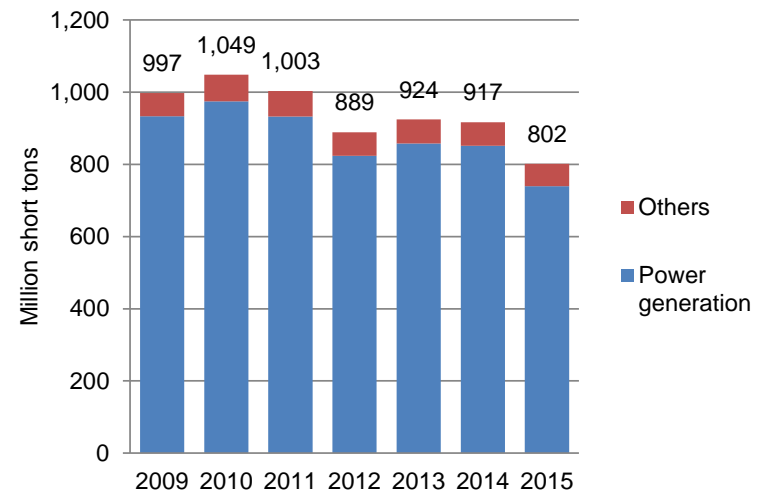
Source: EIA

Coal export trends



Source: TEX Report (based on U.S. trade statistics)

Coal consumption trends

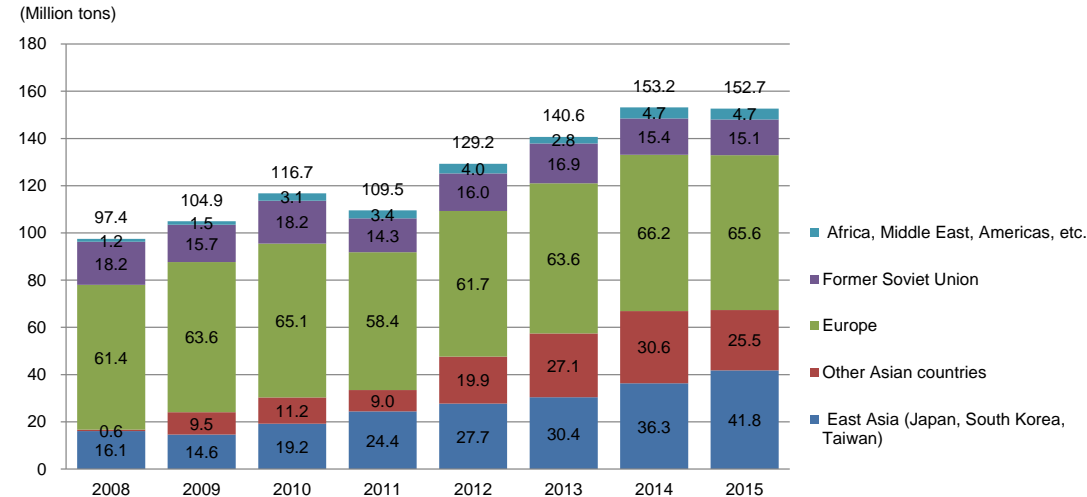


Source: EIA

Russian, Colombian and South African Export Trends

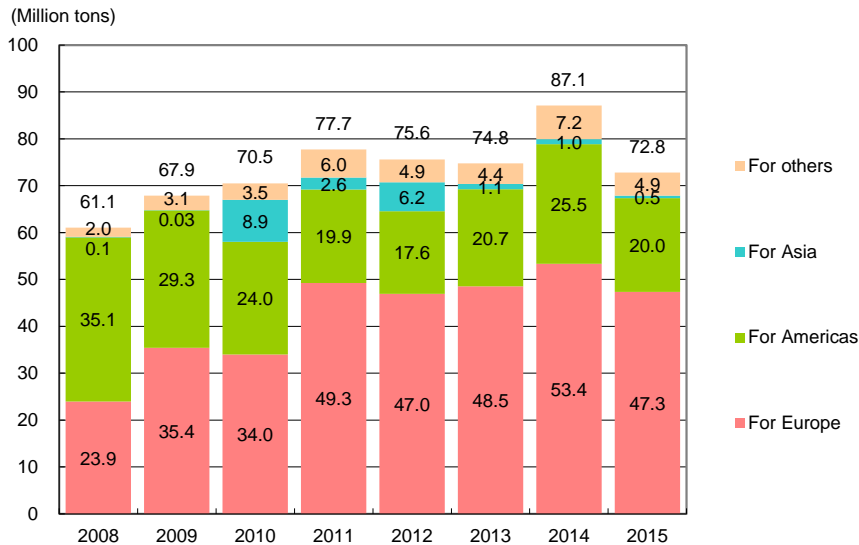
- Russian coal exports including steam coal increased gradually before leveling off in 2015.
- Colombian coal exports decreased gradually in the past several years excluding 2014.
- South African coal exports remained above 78 million tons in 2014 and 2015, including those to India that increased rapidly.

Russian coal export trends



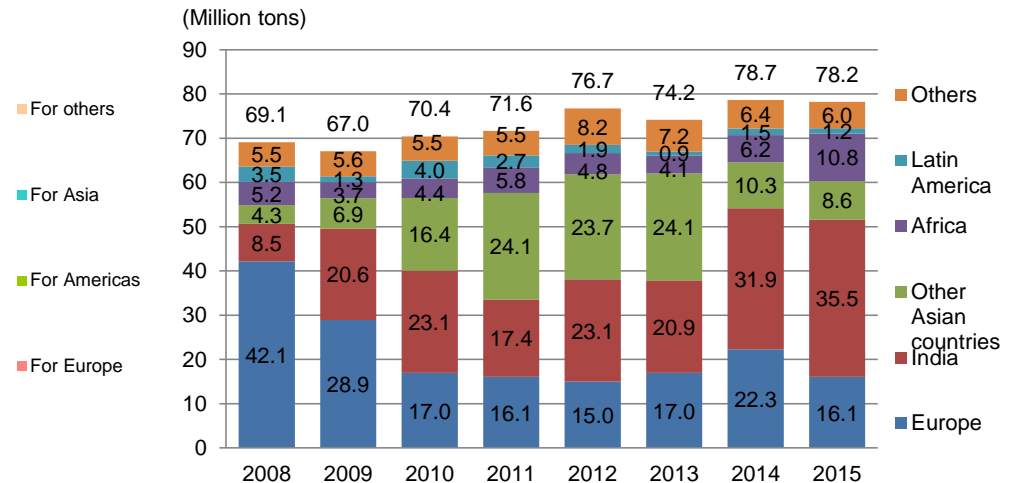
Source: TEX Report (based on Russian trade statistics)

Colombian coal export trends



Source: TEX Report (based on Colombian trade statistics)

South African coal export trends



Source: TEX Report (based on South African trade statistics)

Summary (International Coal Market in 2016-2017)

Coal demand

- ▣ Asian steam coal demand will increase, with growth centering on India and Southeast Asia.
 - ⇒ Steam coal imports in these regions are expected to increase. However, India is enhancing coal production, holding down the increase of imports.
- ▣ Asian coking coal demand will increase, with growth centering on India.
 - ⇒ Imports are expected to increase in line with demand growth.
- ▣ A brake has been applied to a decline in China's imports. Steam coal imports into China are expected to level off in the future. Coking coal imports into China are likely to increase slightly.
- ▣ European coal demand will decline due to renewable energy expansion, competition with gas, enhanced air pollution measures and climate change measures.
 - ⇒ In line with the demand trend, imports are expected to decrease.

Coal supply

- ▣ Under weak prices, coal mining companies are shutting down coalmines, suspending production or consolidating assets, making adjustments responding to a demand fall. U.S. and other coal companies have failed one after another.
- ▣ Under such situation, a coal glut is fading away.

Summary (Coal Prices in 2016-2017)

Spot steam coal price (FOB price for shipments from Newcastle, Australia)

- 2nd half 2015: Ranging between \$55/ton and \$60/ton
- 2017: Rising to around \$60/ton

Spot coking coal price (FOB price for Australian hard coking coal)

- 2nd half 2016: Ranging between \$90/ton and \$95/ton
- 2017: Rising above \$95-/ton