

Chapter 3

Impact of Shale Gas on the Coal Market

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Chapter 3

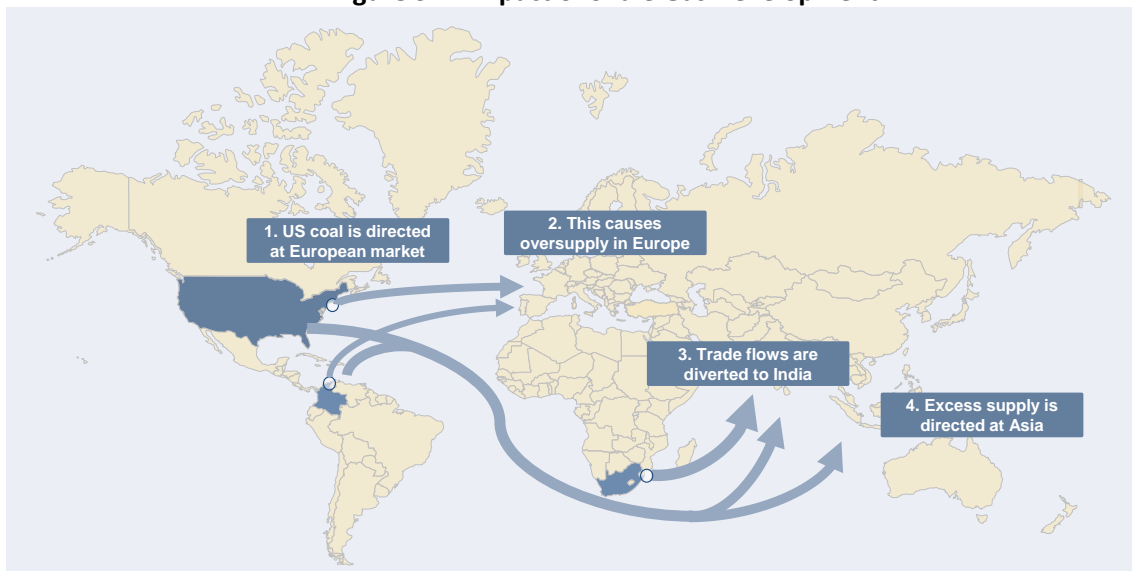
Impact of Shale Gas on the Coal Market

This chapter analyses how shale gas development in the United States (US) can affect international coal markets.

3-1. Shale Gas Impact Mechanism

The impact of shale gas development in the US is illustrated in Figure 3-1: (1) US coal is directed at the European market; (2) an oversupply is expected in the European market; (3) trade flows, particularly from South Africa, are diverted to India; and (4) excess supply is directed at Asia.

Figure 3-1. Impact of Shale Gas Development



Source: Economic Research Institute for ASEAN and East Asia (ERIA) Energy Savings Research Project.

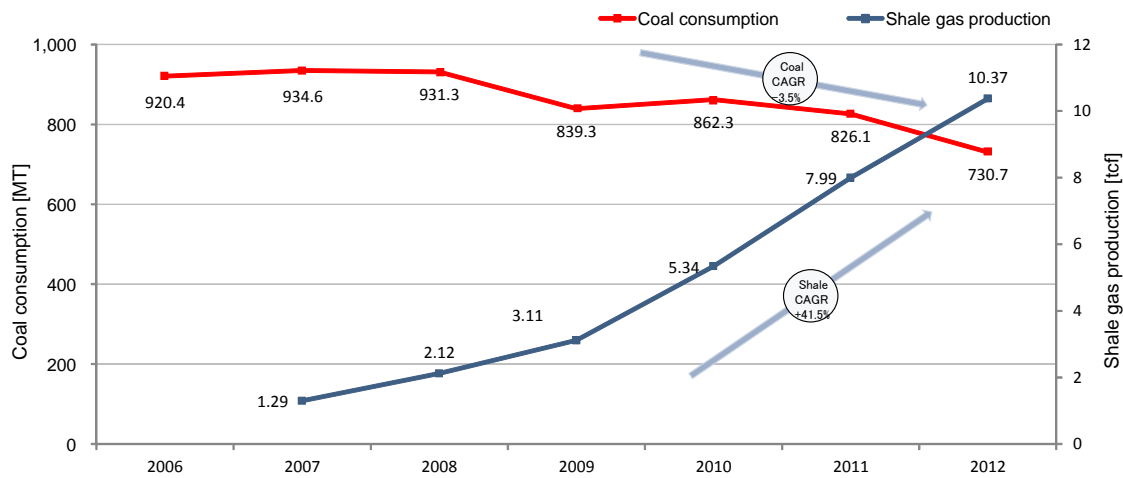
(1) US coal enters the European market

Figure 3-2 shows how shale gas development in the US concurred with a decrease in domestic thermal coal demand. Between 2007 and 2012, shale gas production increased from 1.29 trillion cubic feet (Tcf) to 10.37 Tcf. This corresponds to a compound annual growth rate (CAGR) of 41.5 percent. At the same time, coal consumption decreased from 934.6 MT to 730.7 MT, which corresponds to a CAGR of -3.5 percent.

The rise in cost-effective natural gas supply in the US particularly affects coal from the high-cost Appalachian basins. To maintain production levels, coal from these regions is

increasingly aimed at export markets, particularly in Europe where it is mainly competitive.

Figure 3-2. Coal Consumption and Shale Gas Production Trends in the United States



Source: International Energy Agency (IEA) Coal Information and Energy Information Administration (EIA) statistics.

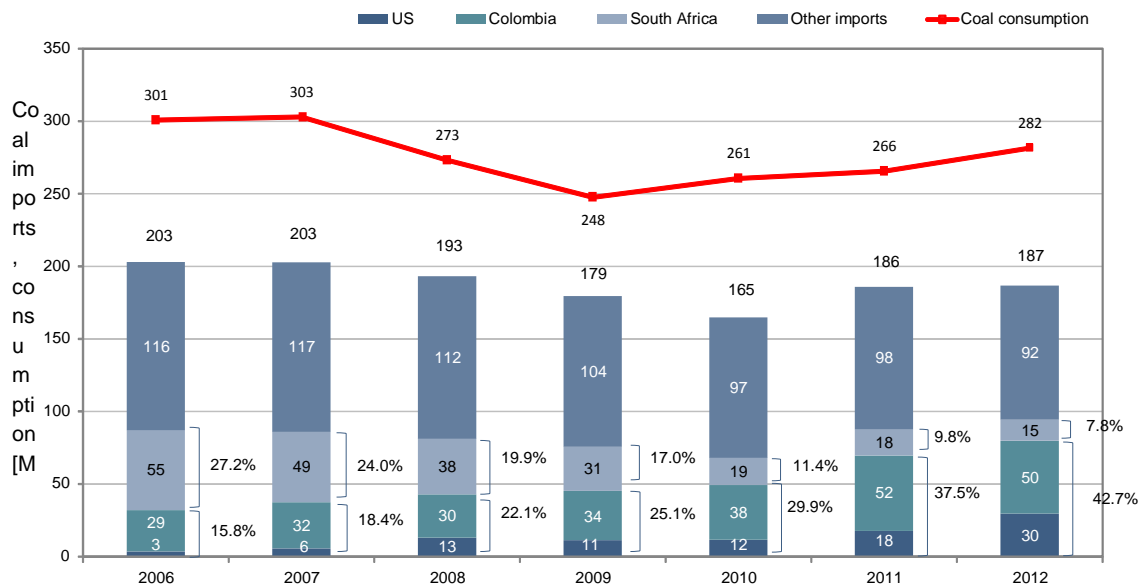
(2) Oversupply in Europe

US coal has to compete with Colombian and South African coal on a relatively saturated European market. As a result, oversupply in the European market is expected in the future.

Figure 3-3 shows thermal coal consumption and imports by origin for the Organisation for Economic Co-operation and Development (OECD) Europe between 2006 and 2012. During this period, coal consumption peaked in 2007 and reached 308 MT. After a significant decrease in coal consumption in 2009 to 248 MT, consumption started to recover in 2010. However, consumption did not attain pre-financial crisis levels by 2012 and reached only 282 MT.

Total imports generally followed consumption trends but import origins are changing. In 2006, South Africa was one of the major coal suppliers to Europe, accounting for 27.2 percent of total imports. By 2012, South Africa's share has shrunk to 7.8 percent. On the contrary, imports from Colombia and the US have steadily risen. While Colombia's share in 2006 was only 14.1 percent, it increased to 26.9 percent in 2012. On the other hand, US share increased from 1.7 percent in 2006 to 15.9 percent in 2012.

Figure 3-3. Coal Consumption and Imports in OECD Europe



OECD = Organisation for Economic Co-operation and Development.
 Source: International Energy Agency (IEA) Coal Information.

(3) Trade flows are directed at India

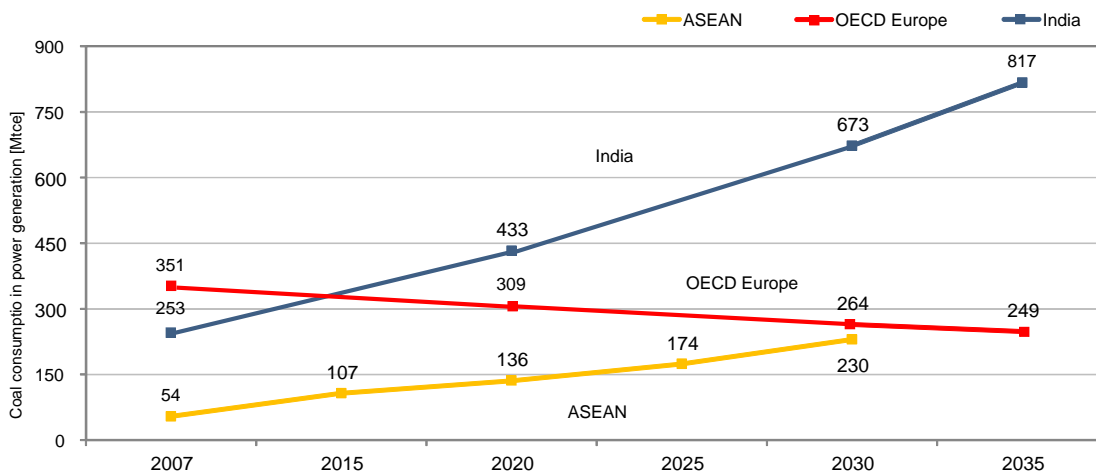
As illustrated in Figure 3-3, South African coal was traditionally directed at European markets. However, now that competition in Europe is intensifying, South African coal is increasingly redirected at India. In 2012, South Africa exported 20.9 MT to India, overtaking Europe as the largest export destination. If competition in Europe remains fierce even after South Africa withdraws part of its supply from Europe, Colombian coal and US coal may also be supplied to India.

(4) Excess supply is directed at Asia

Figure 3-4 displays coal demand forecasts for power generation in ASEAN, India, and OECD Europe. Demand in OECD Europe is forecasted to steadily decline to 249 million tonnes of coal equivalent (Mtce) in 2035. On the contrary, demand in India is expected to increase up to 817 Mtce by 2035. Similarly, demand in ASEAN is also expected to increase, reaching 230 Mtce in 2030.

In case competition in Europe remains fierce after Colombian and US coal is supplied to the Indian market, Colombian and US excess supply may be directed at other Asian markets, including ASEAN, to satisfy the growing demand. However, this will depend on the cost competitiveness of Colombian and US coal in the Asian market.

Figure 3-4. Coal Demand Forecasts for ASEAN, India, and OECD Europe



OECD = Organisation for Economic Co-operation and Development.

Source: International Energy Agency (IEA), 2009 and 2013, *World Energy Outlook*.

3-2. Implications for Asia

From the Asian point of view, suppliers to Asia such as Australia and Indonesia are expected to remain the main suppliers, with sufficient capacity to supply the Asian market. However, shale gas development is favourable for Asian markets because excess coal from South Africa can be directed at India. Depending on cost structure and transportation costs, US coal and Colombian coal can also potentially contribute to coal supply in India and other Asian markets, which further enhances supply security of existing coal sources from Australia and Indonesia.