

2012 World Energy Situation as Indicated by BP Statistics

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On June 12, the 2013 edition of the BP Statistical Review of World Energy was published. As noted in my report titled "A Japanese Perspective on the International Energy Landscape (94)" (July 11, 2012), the review is globally referred to as a representative energy statistics. It is very useful in that it covers all energy sources and countries for the latest year (2012 for the 2013 edition). I would like to summarize key points of the international energy situation as indicated by the BP review.

First, I would like to review global primary energy consumption trends. In 2012, global primary energy consumption rose by 1.8% from the previous year to 12,477 million tons of oil equivalent. In the entire world, primary energy demand has sustained an upward trend amid moderate economic growth since a decline in 2009 following the 2008 Lehman Shock. But a region-by-region breakdown indicates that primary energy consumption in 2012 decreased by 2.8% from the previous year in the United States, by 1.1% in the European Union and by 0.9% in Japan. In the Organization for Economic Cooperation and Development countries, primary energy consumption declined by 1.2%. Affected by an economic slowdown and a continued improvement in vehicle fuel efficiency, primary energy consumption in the OECD countries dropped for the fourth straight year. But non-OECD primary energy consumption scored a firm increase of 4.2% in 2012 due to relatively higher economic growth, rising population and energy subsidies. Among regions, Asia logged the fastest primary energy consumption growth of 4.7%, driven by a 7.2% increase in China and a 5.1% expansion in India. The Middle East posted the second fastest growth of 4.5%. In 2012, Asia and the Middle East thus led non-OECD or global primary energy consumption growth more clearly. The OECD accounted for 44% of global primary energy consumption, against 56% for the non-OECD region. Since the non-OECD share exceeded the OECD share in 2008 for the first time ever, the excess has continued widening, indicating that the gravity center of the world energy market has been shifting to the non-OECD region.

Second, a breakdown of energy consumption by energy source indicates that fossil energy consumption was generally and remarkably firm. Coal accounted for 101 Mtoe or 40% of the 252 Mtoe primary energy consumption increase in 2012. The coal share for total incremental energy consumption was followed by gas and oil shares. Fossil energy increased by 223 million tons, accounting as a whole for 89% of the 2012 energy consumption expansion. Although the percentage increase in fossil energy consumption was lower than 16% in renewable energy and 5% in hydro energy, fossil energy remained dominantly important for the global energy market.

Particularly, coal consumption increased rapidly in Asian emerging countries including India with a 9.9% rise in coal consumption and China with a 6.1% expansion. The Asia-Pacific region accounted for 70% of the global coal market. The future course of coal consumption will be significant for Asian energy and environmental problems. As coal consumption grew faster than oil consumption, coal's share of global energy consumption rose to 30%, close to oil's 33%. If the

current trend continues, coal may recover its position as the largest energy source, replacing oil that has long remained in the position. Among non-fossil energy sources, renewable energy posted a substantial consumption increase in contrast with a sharp decline in nuclear energy consumption. The fall in nuclear energy consumption came to 6.7% or 40 Mtoe. While European countries logged modest drops including 8% for Germany and 4% for France, Japan registered a sharp decline of 89%, making the largest contribution to the global nuclear energy consumption drop. The decline for Japan translated into 32.8 Mtoe accounting for more than 80% of the global decline.

Under such energy consumption trend in 2012, global carbon dioxide emissions in the year increased by 1.9% from the previous year to 34.47 billion tons. The non-OECD region's share of global CO₂ emissions rose to 60%, against 40% for the OECD region. The year featured an excess of CO₂ emission growth over the primary energy consumption rise. Behind the excess were the abovementioned coal consumption rise and nuclear consumption decline.

Third, I would like to take up region-by-region trends and supply-side developments. In the United States, natural gas consumption remarkably posted a firm increase while overall primary energy consumption decreased as noted above. U.S. gas consumption expanded by 4.4%, while coal consumption decreased by 11.7%, with natural gas replacing coal as fuel for the power generation sector. Behind the consumption growth gap between the energy sources was the shale revolution. U.S. gas output in 2012 rose by 4.7% from the previous year to 681.4 billion cubic meters. The United States has remained the world's largest natural gas producer since 2009. The country also expanded oil output by 14% to 8.91 million barrels per day thanks to a substantial rise in light tight oil production. U.S. oil output in 2012 was the highest since 1991. The United States was the world's third largest oil producer after Saudi Arabia and Russia in 2012, narrowing its gaps with the two largest oil producers.

Meanwhile, Russian oil and gas output growth remained slack. Oil output in 2012 posted a small increase of 1.2% from the previous year to 10.64 million bpd (the second largest in the world), while gas production declined by 2.7% to 592.3 billion cubic meters. The slackness was attributable to an oil and gas demand slump under an economic slowdown in Europe, a main market for Russia. Particularly, European gas demand decreased by 2.3%. The weak European gas demand indicates that the European gas market was sandwiched between the influx of cheaper surplus coal into Europe amid a U.S. coal demand decline under the shale gas revolution and the policy-supported expansion of renewable energy demand. In Europe, enhancing gas's competitiveness against other energy sources, as well as an economic rebound, has become a challenge for a gas market recovery.

In the Middle East where the situation remained fluid and uncertain due to the Arab Spring democracy movements and the Iranian nuclear crisis, oil output rose by 0.9% to 28.27 million bpd and gas production by 5.4% to 548.4 billion cubic meters. But oil production conditions differed from country to country in the region. Oil production declined by 50% in Syria and by 16% in Iran. In a manner to cover the decline, Persian Gulf countries such as Saudi Arabia and Kuwait expanded oil output. Iraq also increased oil production by 11% as production expansion investment came to fruition. As oil consumption within the Middle East increased firmly, oil exports from the region in 2012 leveled off from the previous year to 19.7 million bpd. Of the region's oil exports, 74% or 14.55 million bpd went to the Asia-Pacific market, indicating deepening interdependence between Asia and the Middle East.

Lastly, liquefied natural gas trade in the world in 2012 decreased by 0.6% from the previous year to 32.79 billion cubic meters. Behind the downturn in 2012 after a long upward trend was a sharp demand decline in Europe that is a major LNG consumer. Affected by an energy demand slump under an economic slowdown, the influx of cheaper surplus coal into Europe amid a U.S. coal demand decline under the shale gas revolution and the policy-supported expansion of renewable

energy demand as noted above, LNG demand in Europe declined substantially. This was a key point for 2012. In Japan that is the world's largest LNG consumer, however, LNG imports posted a steep rise of 11%. As China as well as Japan increased LNG imports, Asia's share of global LNG imports widened to 69% in 2012 from 63% in the previous year, indicating Asia's growing weight in global LNG trade.

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