

2017 Global Energy Situation Indicated by BP Statistics

Ken Koyama, PhD
Chief Economist, Managing Director
The Institute of Energy Economics, Japan

On June 13, international oil company BP PLC held a presentation meeting in London on the global energy situation in 2017, releasing its BP Statistical Review of World Energy 2018. As noted in six past editions of this report (Nos. 94, 135, 177, 224, 276 and 330), the BP statistics are one of the most representative annual international energy supply and demand statistics. Energy stakeholders in the world refer to the BP statistics known for comprehensive coverage of the latest data. In the following, I would like to review the 2017 international energy situation based on the data.

First, primary energy consumption in the world in 2017 totaled 13.51 billion tons of oil equivalent (TOE) with a robust increase of 2.2% from the previous year. The annual growth topped the latest 10-year (2006-2016) average increase of 1.6%, exceeding 2% for the first time since 2013. A basic factor behind the robust growth was the acceleration of global economic growth. According to the International Monetary Fund, global economic growth stood at 3.2% in 2015 and 2016, remaining below 3.5% over several years, before accelerating to 3.8% in 2017. Under the firm economic growth closest to 4% since 2011, global energy consumption posted a brisk increase. The members of the Organization for Economic Cooperation and Development scored an energy consumption increase of 1.3%, far slower than a 2.8% rise for non-OECD countries, indicating that emerging and developing countries drove global energy consumption in the year. Although the OECD's share of global energy consumption stood at 70% in 1970, the non-OECD share exceeded 50% in 2007 for the first time ever. In 2017, the non-OECD share came to 58.5% against the OECD share at 41.5%, indicating that the gravity center of global energy consumption was shifting further to non-OECD countries. Particularly, Asia Pacific energy consumption in 2017 logged a high growth rate of 3.1%, with the region accounting for 63% of the global growth. The Asia Pacific growth was driven by China and India. The two countries alone captured 46% of the global growth.

Second, consumption of all energy sources increased in 2017, while growth rates differed from source to source. Coal consumption in the year increased by 1.0% from the previous year to 3.73 billion TOE for the first increase in four years after continuing to decline for three years from 2014. Asian coal consumption firmly expanded as China's consumption ceased declining. Among other fossil energy sources, oil and gas scored respective steady growth rates of 1.7% and 3.0%. Among non-fossil energy sources, renewable energy (excluding hydro) posted a remarkable consumption increase of 17.0% in contrast to the moderate rises of 1.1% for nuclear and 0.9% for hydro. In 2017, the largest energy source was oil (accounting for 34.2% of total primary energy consumption), followed by coal (27.6%), natural gas (23.4%), hydro (6.8%), nuclear (4.4%) and renewable energy (3.6%). Fossil fuels have gradually reduced their share of total energy consumption but still accounted for as much as 75.2% of the total. Non-fossil energy sources' share expanded from 14.5% in 2016 to 14.8% in 2017. While non-fossil sources' share increased, robust fossil fuel consumption expansion led global energy-related carbon dioxide emissions in 2017 to

increase by 1.6% from the previous year to 33.44 billion tons. The increase was the largest in four years.

By country, the United States remained the world's largest oil and natural gas consumer, accounting for 20% of consumption of the two most important goods in international energy trade. The United States was also the largest oil and natural gas producer. Its oil production in 2017 increased by 5.6% from the previous year to 13.06 million barrels per day after falling due to slack oil prices in 2016. Its oil production gap with Saudi Arabia as the second largest oil producer (with production at 11.95 million bpd in 2017) widened in 2017 as the Middle Eastern oil kingdom restricted production along with some other oil producing countries. The United States also expanded natural gas production in 2017 by 1.0% from the previous year to 734.5 billion cubic meters after reducing it in 2016 for the first time in 11 years. As a result, U.S. natural gas exports accelerated growth. Particularly, liquefied natural gas exports in 2017 quadrupled from 4.3 billion cubic meters in 2016 to 17.4 billion cubic meters. The United States thus became one of the major LNG exporters in the world.

The European Union reduced primary energy consumption for four years on end before increasing it from 2015. In 2017, its primary energy consumption grew by 1.6%. The increase in recent years came as the European economy got out of sluggishness and retained annual growth around 2%. In the EU, consumption increased by 12.0% for renewable energy, by 4.3% for natural gas and by 1.8% for oil, while decreasing by 1.9% for coal, by 0.9% for nuclear and by 14.1% for hydro. While renewable energy consumption growth was remarkable, natural gas consumption increased for four years on end from 2017 after decreasing for four years from 2010.

In China, the world's largest energy consumer accounting for 23% of global consumption, primary energy consumption in 2017 expanded by 3.1% from the previous year to 3.13 billion TOE. Chinese primary energy consumption ended its rapid expansion from the 2000s and retained a slow growth rate of around 1% from 2015 under the so-called "New Normal" economy before posting the largest rise in four years in 2017. China's primary energy consumption growth of 85 million TOE in 2017 accounted for 34% of the total global growth, indicating that China's energy consumption trend exerted great influence on global consumption. China's consumption of coal as its largest energy source remarkably scored a 0.5% increase in 2017, ending a three-year straight fall. However, the rise was less than the overall primary energy consumption growth of 3.1%, leading coal's share of primary energy consumption to decline from 62.0% in 2016 to 60.4% in 2017. In an attention-attracting manner, consumption grew by 31.0% for renewable energy, by 16.7% for nuclear and by 15.1% for natural gas. In the second half of 2017, rapid increases in China's natural gas demand and imports attracted global attention. Particularly, its liquefied natural gas imports in 2017 expanded by 47% from the previous year to 52.6 billion cubic meters, making China the world's second largest LNG importer after Japan.

In the Middle East as the most important oil and gas supplier in the world, oil production in 2017 decreased by 250,000 bpd or 0.8% to 31.6 million bpd (accounting for 34% of global oil production). The decline is attributable to a coordinated production restriction by the Organization of the Petroleum Exporting Countries and non-OPEC oil producing countries that has continued since the beginning of 2017. Particularly, production cuts by Middle Eastern OPEC members such as Saudi Arabia, Kuwait, the United Arab Emirates and Qatar contributed to the decline in regional oil production. In Iran on which economic sanctions were lifted upon its nuclear deal with major countries, oil production increased by 8.2%. The Middle East expanded natural gas production in

2017 by 4.9% from the previous year to 65.99 billion cubic meters (accounting for 17.9% of global production), continuing increasing natural gas production. The Middle East remained the world's largest oil and LNG exporter, exporting 23.92 million bpd of oil (capturing 35% of global total) and 122.5 billion cubic meters of LNG (accounting for 31%).

In Russia that has participated in the coordinated oil production restriction, oil production in 2017 decreased by 0.1% from the previous year to 11.26 million bpd. Russia is the world's third largest oil producer following the United States and Saudi Arabia. Russian natural gas production in 2017 recorded a substantial increase of 8.2% from the previous year to 635.6 billion cubic meters, accounting for 17.3% of global total, the second largest share in the world. Russian pipeline gas exports mainly to Europe took advantage of their competitiveness to increase by 15.4 billion cubic meters or 7.7% to 215.4 billion cubic meters. Russian gas exports including LNG totaled 231 billion cubic meters. Russia thus remained the world's largest natural gas exporter.

Contact: report@tky.ieej.or.jp

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