

## **Global Energy Situation in 2016 Indicated by BP Statistics**

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At Conrad Tokyo Hotel in Tokyo on July 4, international oil company BP PLC held a presentation meeting on the global energy situation based on its BP Statistical Review of World Energy 2017. The annual BP statistics were released on June 13. Following the annual release, BP opens presentation meetings at various sites in the world. The Conrad Tokyo Hotel meeting was one of such gatherings. As noted in five past editions of this report (Nos. 94, 135, 177, 224 and 276), 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 2016 international energy situation based on the data.

First, primary energy consumption in the world in 2016 totaled 13.28 billion tons of oil equivalent, with annual growth limited to 1.0%. The low annual growth around 1.0% continued for three years from 2014. As global gross domestic product grew at an annual rate of around 3% from 2014, energy consumption's GDP elasticity was limited to around 0.3. Global economic growth has thus failed to have any direct impact on energy consumption expansion. The members of the Organization for Economic Cooperation and Development scored an energy consumption increase of 0.2%, far slower than a 1.7% rise for non-OECD countries. Particularly, Asia Pacific energy consumption logged a high growth rate of 2.1%, with the region accounting for 77% of the global growth. The Asia Pacific growth was driven by China, India and the Association of Southeast Asian Nations, indicating that the gravity center of global energy consumption continued a shift to Asia in 2016.

Second, coal consumption in 2016 declined by 1.7% from the previous year to 3.73 billion TOE for the second straight year of fall. Coal alone posted a consumption drop while all other energy sources scored small or steady growth. By country, China and the United States recorded remarkable falls in coal consumption, leading to the global decline. Among other fossil fuels, oil and natural gas posted the respective steady growth rates of 1.6% and 1.5%. Meanwhile, non-fossil energy sources logged robust consumption growth rates including 1.3% for nuclear, 2.8% for hydro and 14.1% for non-hydro renewable energy. As a result, non-fossil energy's share of total primary energy consumption rose from 14.0% in 2015 to 14.5% in 2016. The low primary energy consumption growth was combined with the non-fossil energy consumption's increased share to limit global energy-related carbon dioxide emission growth to only 0.1%. CO<sub>2</sub> emissions totaled 33.43 billion tons.

The 2016 energy situation had various national or regional characteristics. The United States, though being the world's second largest energy consumer after China, remained the largest consumer of oil and natural gas that are the most important for international energy trade. The United States was also the largest oil and natural gas producer in the world. After substantial oil production growth under the shale revolution, the United States reduced oil production in 2016 by 3.2% from the previous year to 12.354 million barrels per day, close to 12.349 million bpd for Saudi Arabia, the second largest oil producer. U.S. natural gas production in 2016 decreased by 2.5% to 749.2 billion cubic meters, representing the first drop since 2005 (oil production decreased for the first time since 2008). Coal consumption in the United States recorded a substantial fall of 8.8%, while all other energy consumption in that country expanded.

The European Union continued small primary energy consumption growth in 2015 and 2016 after four years of decline from 2010. An apparent factor behind energy consumption growth is the acceleration of annual GDP growth to around 2% in 2015 and 2016. While coal reduced its share of EU primary energy consumption in 2016 by 1.5 percentage points to 14.5%, oil and natural gas raised their respective shares by 0.4 and 1.4 points. While the share fell slightly for nuclear and remained almost unchanged for renewable energy including hydro, consumption shifted from coal to natural gas. Whether natural gas consumption and its share of total energy consumption will sustain their expansion is worthy of attention.

In China, the largest energy consumer in the world, primary energy consumption increased by 1.3% to 3.05 billion TOE. Its share of global primary energy consumption came to 23%, widening its excess over the U.S. share that stood at 17%. After growing by 5-6% annually between 2008 and 2013, Chinese energy consumption growth decelerated to the 1-2% range from 2015 under the "New Normal" economy. However, Chinese energy consumption growth at 47 million TOE in 2016 accounted for 27% of global growth, indicating that the Chinese energy consumption trend continued to exert great influences on the entire world. Remarkably, coal, which accounts for more than 60% of Chinese energy consumption, logged a 1.6% consumption decline. Chinese coal consumption declined for the third straight year after 2013. Other energy sources scored consumption growth. Renewable energy consumption scored substantial growth. As a result, the largest CO<sub>2</sub> emitter in the world reduced emissions by 0.7% to 9.12 billion tons.

Among major energy producing regions, the Middle East expanded both oil and natural gas production in 2016. Oil output in the region in the year rose by 1.72 million bpd or 5.7% from the previous year to 31.79 million bpd. Iran scored the largest production increase of 700,000 bpd due primarily to Western countries' lifting of economic sanctions under a nuclear agreement. The Iranian production expansion was followed by 430,000 bpd in Iraq and 360,000 bpd in Saudi Arabia. The three countries alone accounted for 87% of the overall increase in the Middle East. The region's natural gas production rose by 3.3% to 637.8 billion cubic meters, exceeding Russian output. The Middle East was the second largest natural gas producer after the United States. Liquefied natural gas exports from the Middle East totaled 122.5 billion cubic meters, capturing 35% of the global total. The region thus remained the largest LNG exporter.

Despite low oil prices, Russian oil production in 2016 rose by 2.2% to 11.23 million bpd. The third largest oil producer after the United States and Saudi Arabia expanded oil production for the eighth straight year. Russian natural production in the year slightly increased to 579.4 billion cubic meters. Russia expanded natural gas exports through pipelines (mainly to Europe) by 11.7 billion cubic meters to 190.8 billion cubic meters, retaining its position as the largest natural gas exporter.

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