

## **Meaning of “U.S. Energy Independence”**

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One of the most attention-attracting topics for energy experts in the world at present is “U.S. energy independence”. While visiting Britain from November 26 through 30 for an exchange of views with various energy experts, I felt a strong impression that this topic is the hottest in my discussions with globally famed energy experts.

What is U.S. energy independence? According to BP statistics, U.S. primary energy production came to 1.81 billion tons of oil equivalent against 2.27 billion TOE in primary energy consumption in 2011, indicating that the United States depended on net imports for 20.3% of its energy supply. Energy independence means that the United States will reduce its dependence on imports to zero and become self-sufficient in energy, or that the United States will have be self-reliant on energy supply even without energy imports.

Whether the United States can change its present structure where it depends on imports for 20% of its energy supply hangs on the future of unconventional oil and gas resources development. This is because the United States is basically self-sufficient in energy supply other than oil and gas despite the 20% dependence on energy imports. In 2011, the United States depended on imports for 58% of oil supply and for 5% of gas supply. If the supply-demand structure for the two energy sources changes, the whole picture will change. In fact, the United States' dependence on imports fell from 67% in 2005 to 58% in 2011 for oil and from 18% to 5% for gas, posting a rapid decline. Behind the decline in the U.S. dependence on oil imports, such factors as an economic slump, an oil consumption drop supported by auto fuel efficiency improvement and an increase in unconventional oil output existed. A key factor behind the falling U.S. dependence on gas imports has been a substantial expansion in domestic gas output under the so-called “shale gas revolution”. If the present oil/gas supply-demand trend continues, the United States will come closer to self-sufficiency in both oil and gas. Rather, some people expect the United States to become a net oil/gas exporter.

Through the exchange of views in Britain, I felt that there are various views about the future picture of unconventional oil and gas production in the United States. There are various uncertain factors that are expected to affect future unconventional oil and gas development, including the economics of unconventional oil and gas development as well as growing concerns about environmental problems accompanying the hydraulic fracturing process for shale gas production. Depending on future developments regarding these factors, future unconventional oil and gas output will change substantially. As for tight oil production that has attracted attention with its rapid increase, the gap between bearish and bullish production estimates for 2020 was identified as close to 4 million barrels per day. Views also vary on how natural gas prices, which have fallen to \$2-3 per million British thermal units, would affect future shale gas production. But dominant views say that the United States will come closer to energy independence as unconventional oil and gas production continues an upward trend. Specific plans have emerged for exporting liquefied natural gas from the United States. Some experts also started to discuss the possibility of oil exports. The

United States has now begun to be expected to achieve oil and gas exports beyond self-sufficiency.

How will the U.S. change affect or transform the world? First, there will be effects on energy prices. As is well known, U.S. gas prices have plunged under the shale gas revolution. The U.S. gas price plunge is expected to affect global natural gas prices and gas pricing mechanisms. This point is important for Japan that has been urgently required to address the problem of the Asian premium on LNG import prices.

The U.S. oil output expansion will play a role in increasing global oil supply capacity and be coupled with a U.S. oil demand decline to ease the global oil supply-demand balance. While there have been such oil price-moving factors as Chinese demand, geopolitical risks in the Middle East and OPEC production, the U.S. oil supply-demand balance is expected to become a decisive factor for oil prices. Given that tight oil planned for an output increase is light crude oil, U.S. oil production is also expected to exert great impacts on the supply-demand balance and prices in the light crude oil market and price gaps between light and heavy crude brands, as well as on the macro supply-demand balance. The tight oil output expansion (and its implication on light-heavy crude oil price differentials) may greatly affect the economics of oil refiners not only in the United States but also in the rest of the world.

There were interesting arguments on the U.S. change's impacts on relative prices of major energy sources. Due to the gas price plunge, gas has increased its price competitiveness and rapidly replaced coal in the electricity generation sector in the United States. Then, surplus coal has flowed into European and other non-U.S. markets. As a result, coal has become more price competitive than gas in Europe, leading to an increase in European coal consumption. An expert pointed out that U.S. energy price changes were causing remarkable imbalances of relative prices between regions and between energy sources in the global energy market. Whether the imbalances will remain unchanged or be corrected may influence global energy supply and demand. An expert said that if the United States began to export LNG and oil, the country might become a "global hub" for trading in and pricing energy sources. Future developments will attract our attention.

Second, U.S. domestic energy price falls will exert impacts on the national power of the United States and these impacts will influence international politics and the world economy. Until recently, the power or influences of the United States had been well expected to decline on the Iraqi and Afghan wars and a recession following the Lehman Shock. But we now see a growing view that the U.S. path to energy independence and energy price drops will be significant for enhancing the national power of the United States. The country may take advantage of energy price drops for expanding its industry and employment and enhancing its international competitiveness. A decline in its oil imports accounting for a key part of its trade deficit may help strengthen the U.S. economy. As a superpower, the United States may maintain or boost its national power. The United States' enhancement of its national power and competitiveness will be significant for other major countries that always consider how to keep their respective relations or distances with the United States. This may have some impact on the global order. On a microeconomic basis, some foreign industries may have to directly vie with their U.S. counterparts with stronger economic competitiveness and grow more conscious of the U.S. presence. Conditions may thus grow severer for foreign energy-intensive industries.

Third, there will be some geopolitical impacts involving energy. Will the United States continue its engagement with the Middle East while becoming self-sufficient in energy? How will the United States treat its commitment to defending key sea lanes for energy transportation? If the

United States reduces its engagement with the Middle East, what country will cover the U.S. presence in the region? How will the Middle East (and other major resources exporters) that loses the United States as a major market deepen relations with Asia that increases its dependence on energy imports? Will the transition make smooth headway without triggering frictions or disputes? These questions are very important for the world and for Japan.

The global energy paradigm since the 1970s has been based on the precondition of the United States' dependence on energy imports. When the precondition changes, Japan will have to collect wisdom to analyze how the world will change and how Japan should respond to the change.

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