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Growing Interests in Shale Gas Revolution

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Recently, I had successive opportunities to exchange views with experts in Japan's oil, gas and electricity sectors. While having their respective problems and challenges, these sectors have some common problems or interests, including those regarding the "shale gas revolution."

What is the "shale gas revolution"? It can be viewed in various ways. It may be described as a phenomenon that shale gas, which had not been expected to become any major presence due to high development costs and other economic or market factors under the old common sense, has substantially increased its marketability through technological development, begun to play a far-greater-than-expected role in the U.S. energy market, and expanded its influences or spillover effects on the world and exerted substantial influences on supply/demand conditions and pricing on the international natural gas market or the entire international energy market. As far as the phenomena are called a "revolution," the changes and their influences should be drastic or dramatic.

Although this report has no room to look into any details, I can say that what has happened can be called a "revolution." In the United States where the "revolution" has emerged, (1) a shale gas output expansion has led domestic gas output and its forecasts to be substantially revised upward, (2) LNG imports (including forecasts), which had been planned to fill a domestic supply/demand gap, have declined substantially, and (3) the domestic gas supply/demand balance eased to bring about substantial gas price drops. These phenomena have been actually seen. In response to these changes, energy policy makers and industry people have placed great hopes on shale gas as a future U.S. energy source that is a domestic one supported by abundant resources for energy security and an effective, realistic low-carbon option for global warming prevention. The promotion of shale gas development is expected to bring about effects to boost economic growth and employment.

The shale gas revolution's influences are not limited to the United States. The supply/demand balance change, or a fall in LNG demand, in the United States as the world's largest gas market has prompted surplus LNG to cross the Atlantic Ocean to the European market. As a low-cost energy source, LNG imports prompted gas prices to better reflect the loosening gas supply/demand balance in the Continental Europe market where gas prices have traditionally been linked to product oil prices. (See A Japanese Perspective on the International Energy Landscape (8)). Furthermore, many countries have rapidly increased their interests in their development of shale and other unconventional gas resources on a growing recognition that these resources are not limited to the United States but believed to exist in large quantity in various regions of the world. This means that interests are growing in the possibility that what has happened in the United States could happen in other regions.

Under such situation, Japanese energy experts naturally have increased their interests in

the shale gas revolution, as noted at the outset. There were discussions from various angles. Major questions of concern to these experts include (1) whether what has happened in the United States could be sustained over a long time, (2) how (fast and strongly) the expansion of shale and other unconventional gas supply would affect the global gas market and (3) how the revolution would influence Japan's LNG procurement conditions (including supply/demand conditions and prices).

Specific or accurate answers to these questions are difficult to make, given various uncertainties about the present international energy situation. Nevertheless, I would like to give some answers based on information available now. An answer to the first question is that the expansion of shale gas production in the United States is dominantly expected to remain sustainable. At our IEEJ joint seminar with the Massachusetts Institute of Technology in Tokyo last month and at an earlier workshop of Rice University's Baker Institute in Houston, most U.S. experts pointed to abundant resources and development cost cuts on the technology development and depicted a bright future for shale gas in the United States. Although we must take note of some problems including falling gas prices' impact on the economic feasibility of shale gas development and water pollution caused by drilling, we may expect sustainability of the shale gas output expansion.

Answers to the second question about global impacts are divided. In many regions of the world, in fact, shale and other unconventional gas development has attracted much attention. Unconventional gas development efforts are ongoing in China and India among Asian countries, Germany, Hungary and Poland among European countries, and other countries. But abundant resources do not necessarily mean that they can be extracted and made available with due economic feasibility secured. Given the very advanced pipeline networks and clear relations between resources and development rights in the United States, the U.S. case could be viewed as special. As seen in the United States, unconventional gas development costs differ from case to case. In the world, unconventional gas development costs may vary widely. In this sense, we may see some uncertainties over the future course of unconventional gas resources development, despite great expectations of future dramatic changes.

As for the third question regarding influences on Japan, I would like to discuss two points – objective circumstances and Japan's voluntary actions. Objective circumstances indicate that the gas supply/demand balance in the global gas market is expected to remain loose over a short to medium term as supply remains abundant on an increase in unconventional gas production. This is a key point. Over a longer term, supply/demand conditions may possibly remain unchanged from the present conditions. But how fast big gas consumers such as China and India could expand demand and how gas supply including unconventional gas output would increase are key points. We must closely watch relevant future developments. Undoubtedly, however, the promotion of shale and other unconventional gas development has brought about a desirable market environment for Japan that is a major gas consumer/importer. Nevertheless, the complex problem of how the world gas market would be globalized may affect gas procurement costs. At a time when the Atlantic gas market is little linked to the Asian market, the loosening gas supply/demand balance in the United States and its impact on the price formation in Europe may have only a limited impact on the Asian market. Basically, the link between the Asian and Atlantic gas markets may gradually increase on the expansion of spot LNG markets. But the speed and depth of the increase may vary on a case-by-case basis. Given such objective circumstances, Japan's energy industry may have to voluntarily take maximum advantage of the present market conditions to secure more stable and competitive gas procurement. As great hopes are placed on gas, Japan's energy industry may be greatly expected to make positive efforts. The government's role in supporting such efforts may be important. The

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public and private sectors are required to make joint efforts while taking into account the appropriate separation of their roles.

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