Special Bulletin

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Viewpoints for Future Energy Scenarios

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The internal and external situations of Japanese energy problems are very uncertain. It is not easy to forecast the future situation and consider appropriate responses. An effective approach for considering such uncertain future situation is scenario planning. Scenario planning includes: extracting issues affecting the future situation; considering their relationships and implications for the future situation; and developing multiple logically-possible stories of the future situation based on key "branching points" that could affect the future course.

The Institute of Energy Economics, Japan, conducted the 41st annual energy and environment summer seminar event using the scenario planning approach on July 18 and 19. This year's summer seminar event was an exercise where some 90 Japanese energy industry people in addition to IEEJ researchers were divided into 14 groups to develop their respective future scenarios under the common theme of "energy and environment problems and Japan's responses through 2040." Based on discussions in the scenario planning process at this year's summer seminar event, I here would like to pick up key points of future scenarios reflecting the perceptions on the current problem of people in the Japanese energy industry and compare it with such perceptions in the past. In this respect, I would like to review discussions held at the event from two viewpoints: (1) extracting key issues affecting the future situation (issue extraction) and (2) branching points for different future stories.

In extracting issues affecting the future situation, participants in the event presented their views about key issues freely based on their respective matters of interest. The issues thus directly reflected their matters of interest regarding the future. The IEEJ's review and analysis of issues presented through discussions at this year's summer seminar event (using the same method used at previous annual events) found that a total of nearly 1,000 issues were presented. Natural gas and LNG issues accounted for the largest share, at 233 issues (more than 20%), covering supply and demand, prices, the shale gas revolution and other areas. Following natural gas and LNG issues were electricity market issues (106 issues), including attention-attracting electricity market system reforms and prices, and nuclear energy issues (102 issues), such as the urgent problem of restarting nuclear reactors left offline due to safety concerns since the March 2011 Fukushima nuclear crisis. Natural gas and LNG, electricity and nuclear issues accounted for more than 40% of the total, indicating that these issues could greatly affect future energy scenarios in Japan.

Compared with issues presented at last year's event, those at the latest event indicated a growing interest in natural gas and LNG issues. The number of natural gas and LNG issues increased substantially from 218 last year to 233 this year, implying that interest in natural gas and LNG issues is growing among people involved in the Japanese energy industry at present. Another category of issues attracting interest is nuclear energy. The number of nuclear energy issues presented this year rose from 72 last year to 102, reflecting the present situation where nuclear issues are attracting great interest at a time when the Nuclear Regulation Authority is considering whether to allow specific nuclear reactors to restart operation under new safety standards. One more category of issues subject to growing interest was new energy technologies, covering energy conservation, cogeneration, hydrogen, fuel cells and other areas. The number of issues presented for this category expanded greatly from 51 last year to 71 this year, indicating that people involved in the energy industry view new energy technologies as having great impacts on the future energy situation.

The second important matter for scenario planning consists of the branching points at which different scenarios begin to be developed. Factors that are particularly expected to exert great impacts and feature great uncertainties are selected as branching points through scenario planning discussions. The selected branching point represents each group's consensus on what is most important for developing different future energy scenarios. At this year's summer university event, four of the 14 groups selected branching points that include whether to restart nuclear reactors and how to position nuclear energy. The result can be interpreted as reflecting the fact that people involved in the Japanese energy industry are greatly aware that a key branching point for Japan's future energy situation is how to position nuclear energy for the future, following the Fukushima nuclear disaster that came after nuclear energy had accounted for a quarter of Japan's electricity supply.

Another interesting point regarding the latest summer seminar event is that three groups selected branching points related to the Middle East situation—almost equal to the number of groups (four) that selected nuclear-related turning points—, indicating that people involved in the Japanese energy industry pay great attention to the Middle East situation in planning Japan's future energy scenarios. Factors behind this result include (1) the Middle East's importance for global energy supply, (2) Japan's great dependence on the Middle East for energy supply including LNG, and (3) the Middle East situation, which has been destabilized through the Arab Spring democratic movement and the Iran nuclear problem. The result may simply reflect the problem awareness of people involved in the Japanese energy industry.

The abovementioned key points of future energy scenario planning discussions at this year's summer seminar event fairly reflect the problem perception of people involved in the Japanese energy industry. If the situation changes as time goes by, or if people other than those involved in the energy industry conduct scenario planning discussions, the key points of such discussions may be diffenrent. However, the latest discussions can be viewed as a snapshot of indications and implications, containing significant points for considering Japan's future energy situation.

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