

Participation in 38th International Energy Workshop

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On June 5, I had an opportunity to participate in the third-day plenary session of the 38th International Energy Workshop (IEW 2019) in Paris. The conference is a forum for the global energy modeling community to discuss modeling analyses and tools that play an even more important role in analyzing long-term energy challenges in the world and considering and recommending solutions to them. The annual conference has been hosted alternately by relevant countries. This year's workshop was sponsored by the International Energy Agency in Paris. I was invited by the IEA to provide the views of the Institute of Energy Economics, Japan, on global energy and environmental challenges based on the IEEJ Outlook 2019 at the workshop.

The IEW 2019 was held over three days from June 3 to June 5. Famed experts participated in each day's first plenary session as panelists, including IEA Executive Director Fatih Birol and Prof. William Nordhaus, 2018 Nobel Laureate in Economics, in the first-day plenary session. I took part only in the third-day session due to scheduling conflicts, regretting my failure to hear presentations by Professor Nordhaus and others. In the following, I would like to summarize key impressive points of the discussions at the third-day keynote panel and my later meetings with other participants.

I felt that our analysis and recommendations regarding global energy and environmental issues in the IEEJ Outlook 2019 generally attracted high interest and intellectually curious questions and opinions from IEW 2019 participants, and received due appreciation from the global energy modeling community. Particularly, the first key point of the discussions was that the most attention-attracting component of the annual outlook was our approach of minimizing total costs regarding climate change that we have continued to analyze and communicate since our outlook in 2015. Climate change costs are divided into three categories – cost of greenhouse gas emission mitigation, cost of adaptation to climate change damage and cost of actual damage from climate change. While mitigation is the most highlighted in major discussions in the world, we have analyzed the approach of minimizing the mitigation, adaptation and damage costs in consideration of a very long-term aspect of climate change. We have also examined how to minimize the total costs while limiting a global average temperature rise to 2°C over a long term.

In the discussions, participants indicated their great interest in the approach of minimizing the total costs as an economic analysis and expressed numerous opinions and questions about how to view damage among the costs. A representative question is how to analyze damage to human lives and values that are difficult to measure or quantify. Acknowledging the fact that any analysis in general is imperfect and contains shortfalls, I argued that the IEEJ tried to improve the damage

analysis as much possible while recognizing that damage tends to be viewed as underestimated and that the presence of a tipping point (an irreversible threshold for remarkable climate change) and the impact of catastrophic events have been viewed as failing to be processed well. I explained that the IEEJ has attempted to provide a new viewpoint for international discussions on climate change and adopted the pragmatic approach of minimizing the total costs based on basic, simple ideas in economics in a bid to highlight the importance of innovative technologies. In fact, the approach of minimizing the total costs contains controversial points. Significantly, however, I demonstrated through the discussions that the IEEJ would like to try to make original contribution to knowledge about climate change in the world.

The second key point of the discussions was that the IEEJ outlook was generally viewed as too optimistic about the future of coal. This may be partly because the workshop took place in Europe where arguments are particularly critical of coal. I pointed out that the IEEJ outlook has adopted a bottom-up approach of accumulating technologies in its Advanced Technologies Scenario, instead of a top-down or disciplinary approach for the IEA's Sustainable Development Scenario. I also noted that the IEEJ has annually and objectively analyzed realities and plans of countries including Asian nations for the bottom-up approach and is confident of describing the outlook based on pragmatic judgments. I explained that the IEEJ's efforts to develop the annual outlook based on the actual situation led to the 2018 outlook that took up a peak global oil demand case for the first time in its Advanced Technologies Scenario due to cumulative downward revisions to oil demand projections

In this respect, I built on Asian experiences to argue that significant factors behind energy choices include not only environmental conservation including climate change and air pollution countermeasures but also energy security and the affordability of energy prices. I also argued that we should understand that the best energy mix differs by country as energy choices and relevant economic and energy conditions vary by country.

The third key point of the discussions was that questions were made about the IEEJ's view about hydrogen utilization among innovative technologies. The panel discussions led me to recognize anew that there are high hopes and interest concerning hydrogen utilization among innovative technologies required to substantially reduce GHG emissions. The fact that Japan is recognized as the world's top runner in hydrogen utilization might have been behind the high interest in and active discussions on hydrogen. I was asked how I view green hydrogen originating in renewable energy and blue hydrogen that is made with fossil fuels through the use of carbon capture and storage technology. Clarifying my understanding that how hydrogen should be manufactured differs by country or company, I argued that as far as carbon dioxide-free hydrogen is provided in a competitive, socially acceptable manner, both green and blue hydrogen should be viewed as playing a key role. Countries or companies are making efforts to develop hydrogen utilization technologies and cut hydrogen utilization costs according to their respective conditions. We are now waiting for achievements to be made through such efforts. It was significant for us to argue that while hydrogen utilization is a long-term strategic option, efforts should be made from now on to realize the utilization.

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