

## **Significance of Long-term Global Energy Supply/Demand Outlooks**

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About 20 years have passed since the transition to the 21st century from the 20th century called the “Century of Oil.” It is said that the world is now in an energy transition. In such circumstance, various attempts are being made to project the future global energy situation. The most typical, important attempt may be the development of long-term world energy supply and demand outlooks.

Numerous energy-related organizations publish global energy outlooks covering periods up to 2040 or 2050. Representative ones are the “World Energy Outlook” by the International Energy Agency, the “World Oil Outlook” by the Organization of the Petroleum Exporting Countries and the “International Energy Outlook” by the U.S. Energy Information Administration. These outlooks are basically updated every year with new knowledge and information added. Such annual updating attracts attention from energy stakeholders throughout the world, as is well known. In addition to these organizations, international oil companies such as Shell, BP and ExxonMobil publish long-term global energy supply and demand outlooks based on their respective approaches. The Institute of Energy Economics, Japan, also releases the “IEEJ Outlook” as its flagship product.

It is difficult to predict the world 20 or 30 years from now. This is because we tend to be preoccupied with the present situation or trends and have difficulties in incorporating accurately into a long-term prediction factors that could innovatively or dramatically change things. Various factors that greatly influence long-term global energy supply and demand include economic growth or development, international politics, geopolitics, energy policies, environmental policies, energy prices, technologies, human behaviors and social conditions, which are all opaque and uncertain. Depending on these factors, the actual world could deviate far from a predicted world.

Outspoken critics often complain that no long-term energy supply and demand outlook has ever come true, doubting the significance of long-term outlooks. In fact, comparison between long-term global energy supply and demand outlooks in the past and actual realities may indicate that the accuracy performance of outlooks is not high. Nevertheless, numerous long-term global energy outlooks, as mentioned above, are developed and published annually. Why? In the following, I would like to make an analysis in a bid to find an answer to the question.

The fact that long-term global energy supply and demand outlooks continue to be developed and published indicates that they are recognized as necessary. The necessity originates from the essentially inherent human instinct to prepare for a long-term future. The more uncertain the future is, the more valuable a long-term outlook is. In the energy field, a key factor for the necessity of long-term outlooks is that energy investment is of a long-term nature. Investment in oil, gas, electricity and so on may take several decades to be paid back after commercial production starts in the wake of investment decisions. Investors want to understand the future as accurately as possible because their investment decisions are set to exert influence over the next decades.

In this sense, various long-term energy outlooks are expected to be reference information or reliable guides for energy-related decisions. In this respect, it is important that outlooks build on quantitative data to depict the future. Outlooks that use specific numerical values as well as images to depict the future are valuable as reference information. Quantified pictures of the future are based on some assumptions and forecasting concepts. Readers of outlooks can assess outlooks based on their respective positions and consider their applications by understanding not only forecast numerical data but also approaches and assumptions for forecasting.

How will long-term energy supply and demand outlooks become reference information? In this regard, I would like to provide two approaches for forecasting. The first approach projects the likeliest future or the business-as-usual future. Under the approach, outlooks indicate what the likeliest developments would be if things remain unchanged or business remains as usual.

Outlooks based on this approach give messages or warnings on how energy challenges and issues would change, how energy security would be and what effects and problems would arise regarding climate change. They thus indicate how the world, each country, the energy industry and civic society would have to prepare for or respond to likely problems or what they should do to prevent likely problems. These outlooks thus become very important reference information for energy policy and industry stakeholders and the entire international community.

The second approach projects a desirable future picture of the world. Outlooks under this approach provide desirable future pictures and indicate what should be done to realize such future pictures. There are various outlooks under this approach. The most representative among them may be the Sustainable Development Scenario (SDS) in the IEA World Energy Outlook. The SDS projects long-term global energy supply and demand for achieving the United Nations' Sustainable Development Goals by 2040, providing the world with what should be done for achieving the SDGs and what challenges would arise in this regard.

Though different from any global outlook, Japan's target energy mix for 2030, of which the steady attainment has been reaffirmed as important in the fifth Strategic Energy Plan, represents a desirable future as seen from the viewpoint of the 3E's – energy security, economic efficiency and environmental protection. Outlooks under the second approach project not any future picture that would be realized naturally but a desirable future picture, clarifying what governmental, industrial and social sectors should do to realize a desirable world. They become reference information suggesting what efforts, investment, costs and technologies would be required for a desirable world and what institutions, frameworks and solutions would be required to promote them.

As a matter of course, there may be other approaches for projecting future pictures. It may be too simplistic to divide the approaches into the above two. However, the key point is that long-term global energy outlooks under any approach are very significant for the international community, each national government and the energy industry, serving as a useful tool for them to prepare for the future. Although it is always difficult to predict the future, the development and publication of objective, scientific and neutral long-term outlooks will continue to be required socially. The IEEJ for its part would like to enhance its efforts to develop its annual energy outlook.

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