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Recognized Importance of Electricity and Gas & LNG Supply Security

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Given that energy is an indispensable good for smooth economic activities and civic life, it is extremely important for energy policy in all countries to secure stable energy supply at reasonable or affordable prices. In fact, it is well known that numerous countries have given priority to energy security or energy supply security. Supply security for oil among energy sources has remained the most important matter of concern for the world. This is because oil has been the biggest energy source and the largest internationally traded energy good. This is also because in reality the events threatening international oil supply security have come in a manner to shake international politics and the world economy.

The world has seen various national and international efforts to ensure and enhance oil supply security. International efforts include the creation of the International Energy Agency and IEA initiatives. In the face of the 1973 oil crisis, developed countries created the IEA as a framework for international cooperation in enhancing oil supply security. Since then, the IEA has promoted cooperation mainly among its member countries to ensure and enhance oil supply security. The IEA has thus served as the guardian of oil supply security. Recently, however, the IEA has demonstrated its emphasis on maintaining and ensuring natural gas & LNG and electricity supply security as well as oil supply security, recognizing that supply security for natural gas & LNG and electricity has become one of the key energy security issues due to the electrification of global energy systems and the growing role of natural gas & LNG. Furthermore, the IEA has recently suggested its stance that energy security also covers supply security for important rare minerals or materials for supporting advanced energy technologies. This apparently indicates that the energy security concept has been expanded in response to changes in the international energy situation.

At a time when it was becoming important to consider energy security more widely under a new situation, an event came in Japan to lead us to recognize the importance of electricity and natural gas & LNG supply security anew. When unusually powerful cold waves hit Japan around the turn of the year, day-ahead electricity spot prices shot up due to a tightening supply-demand balance. At the same time, LNG spot prices soared and wildly fluctuated due to an increase in demand for LNG used to generate power to adjust the supply-demand balance. On January 27, the Institute of Energy Economics, Japan, held an urgent webinar titled “Considering This Winter’s Tightening Electricity Supply-Demand Balance.”

As two powerful cold waves from late last year to early this year led to the highest-in-a-decade maximum electricity demand in Japan, a decline in solar power generation under bad weather was combined with a fossil-fired power plant trouble to reduce the capacity reserve margin close to 3%, the minimum required level for stable electricity supply, for some utilities, prompting the supply-demand balance to rapidly tighten. As a result, the day-ahead electricity spot price on the Japan Electric Power Exchange skyrocketed from 10 yen per kilowatt-hour in the first half of December to more than 200 yen/kWh. Even though the power market has been deregulated,

stable power supply is vitally important for the Japanese economy. So, the government and private sectors mobilized all available measures including requests for power savings, power supply arrangement among utility companies, private power generation, and fossil-fired power generation expansion. Then, hopes grew on gas-fired power plants known for their excellent load following capabilities. However, constraints have existed on the procurement of LNG for gas-fired power generation. Japan's LNG imports have mostly been subjected to term contracts under which periodic imports are scheduled. LNG inventories have been limited to the equivalent to two to three weeks' consumption because of LNG's characteristics. While watching LNG inventory levels, power utilities attempted to take advantage of maximum flexibility under term contracts to front-load LNG procurement. Then, pressure increased on spot procurement. By late last year, LNG demand growth in Northeast Asia was combined with various constraints on Asian LNG supply expansion to push up Asian LNG spot prices above $10 per million British thermal units. These constraints included a decline in supply from some LNG projects, limitations on LNG carrier operations, and restrictions on passage through the Panama Canal. Growing pressure of additional LNG procurement amid the tightening electricity supply-demand balance under cold waves led LNG spot prices to shoot up to record highs far beyond $30/MMBtu ($200 per barrel of oil equivalent).

In this way, the importance of responses to a tightening electricity supply-demand balance and stable LNG supply was recognized anew. Regarding the responses, it is important to secure essentially necessary supply capacity while taking efficient power-saving and demand control measures. The capacity market may be effectively utilized to this end. Furthermore, measures and institutions should be considered according to lessons learned from European and U.S. markets. Significant for LNG procurement is how to secure and enhance supply flexibility and resilience from a comprehensive viewpoint while diversifying supply sources and procurement methods and developing their best portfolios. Policies and strategies will have to be prepared for a tightening supply-demand balance and price hikes for electricity and LNG. As indicated by the latest event, market prices occasionally stage extremely wild fluctuations. It is important to pursue the effects of market forces while understanding and preparing for such wild price fluctuations. It would be unwise to withdraw from the spot market or market mechanism for the reason of wild price fluctuations. Rather, it would be important to promote the improvement and sound development of markets to allow market forces to work well.

Tighter supply-demand balances and price spikes as grave energy security problems emerged simultaneously in two markets, stimulating high interest in the latest event. Another background factor behind the high interest is that electricity and gas & LNG are expected to play more important roles in Japan (and the world) in the future, leading their stable supply to be given priority. This should be considered in relation to the issues regarding decarbonization initiatives. As is well known, key decarbonization measures include maximum electrification and a zero-emission power sector. Electrification is expected to naturally make progress. However, decarbonization trends may prompt electrification to make further progress, leading electricity to increase its importance. How to supply important electricity stably at reasonable or affordable prices in line with climate change targets is a new electricity supply security challenge. Natural gas & LNG is viewed as an effective option for promoting transition towards decarbonization in the foreseeable future, contributing to cutting costs of transition to a decarbonized society. This is the case not only for Japan but also for Asia that is set to drive global energy demand growth and would be required to promote an efficient or cost-effective transition from heavy dependence on coal. It will become important to ensure natural gas & LNG supply security to allow natural gas & LNG to play its expected roles, while considering the potential decarbonization of fossil fuels including natural gas & LNG.

In such situation, future energy policy discussions should focus on how to realize the so-called 3E's + S – energy security, environmental protection and economic efficiency plus safety – in a balanced manner by recognizing the importance of energy security, achieving carbon neutral status, and ensuring reasonable or affordable energy prices. Based on an understanding that costs must be paid for addressing externalities including energy security and environmental protection, they should also deal with how to minimize such costs.

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