Special Bulletin

A Japanese Perspective on the International Energy Landscape (524) March 19, 2021

Decarbonization Trend and Future of Natural Gas and LNG in Asia

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At a time when major countries in the world have announced carbon neutrality targets and are about to enhance decarbonization initiatives, the future of fossil fuels supporting the global economy and people's livelihood at present is growing uncertain. Decarbonization requires maximum energy efficiency improvement, the promotion of non-fossil energy sources such as renewables and nuclear, the electrification of energy consumption and the elimination of greenhouse gas emissions in the power sector. These measures will still fall short of achieving decarbonization. Innovations will be required for complete decarbonization, including the utilization of CO_2-free hydrogen and the direct capture of CO_2 in the atmosphere that are costly and have yet to be commercialized.

Given the above, the future of fossil fuels as mainstay energy at present does not necessarily look bright. Divestment in fossil fuels and a clampdown on financing in the fossil fuel sector are attracting interests in energy discussions. A foul wind blowing against coal in Western developed countries and a global oil demand peak have become great matters of concern. The future of fossil fuels is thus uncertain and insecure.

In the abovementioned international situation, uncertainties have emerged even about natural gas and LNG, known as the cleanest and environment-friendliest among fossil fuels. However clean natural gas and LNG are, they are positioned as one of the fossil fuels. In this sense, a rising number of people have become critical of natural gas and LNG. Since the beginning of this year, I have had multiple opportunities to talk with energy experts and business stakeholders in Japan and other countries about how we should view the future of natural gas and LNG in Asia. Based on the timely talks on the matter, I here would like to make some comments on particularly impressive arguments.

First, I would like to point out that natural gas and LNG demand in Asia is dominantly expected to continue moderate growth until 2040, although specific growth rates are likely to differ depending on decarbonization initiatives. In Asia, Japan and South Korea have vowed to achieve carbon neutrality by 2050. China has set 2060 as the target year for carbon neutrality. However, other Asian countries have not given such decarbonization targets. In India and Southeast Asian countries where energy demand is likely to continue expanding on economic and population growth over the long term, affordable energy prices are expected to be required. Though being expected to enhance initiatives to address environmental issues such as climate change and air pollution, these countries apparently fall short of seeking carbon neutrality. Carbon neutrality is not necessarily any easy target for Japan, China or South Korea to achieve. This is the same case with such Western developed economies as the United States and the European Union. Carbon neutrality is an extremely challenging target that would be achieved at heavy costs through maximum government /public and private sector efforts.

As Asia transitions from coal as a mainstay energy source at present to cleaner energy sources, natural gas and LNG are likely to continue playing a key role. This is the reason Asian natural gas and LNG demand is dominantly projected to steadily increase until at least 2040 in long-term outlooks released by international organizations and energy companies.

As a matter of course, we can conceive a scenario in which natural gas and LNG demand would peak around 2040. In such case, most Asian countries would set carbon neutrality targets and strive to achieve the targets. In a scenario in which Asia as a whole would pursue net-zero emissions, Asian natural gas and LNG demand would decline substantially. In the European Union that is about to take leadership in achieving carbon neutrality by 2050, for instance, natural gas demand is dominantly projected to plunge substantially towards the year, with natural gas replaced by carbon-free gases including hydrogen and biomethane. This future picture is not easy even for the EU to realize in 30 years. Given the current realities, such future picture is difficult for Asia to realize.

However, Asian developing countries cannot be allowed to neglect decarbonization initiatives. As noted above, Asian countries may be required to accelerate energy efficiency improvement, promote non-fossil energy, speed up electrification and minimize carbon emissions in the power sector. This is because these measures are expected to contribute much to resolving not only climate change but also air pollution as their urgent environmental problem.

In such situation, important initiatives and interesting problems for the future of natural gas and LNG in Asia are emerging. Among them is a carbon neutral LNG initiative. Carbon neutral LNG, though defined variously, is provided through supply chains from which CO_2 emissions are offset through such means as renewable energy consumption and forest absorption. Carbon neutral LNG cargoes have already begun to be traded. There are various challenges and problems regarding the carbon neutral LNG initiative, including how far this initiative would expand and how carbon neutrality would be measured and verified. How this initiative would develop as a system unique to Asia where LNG demand continues expanding will attract attention.

Price affordability is another major challenge on which the future of natural gas and LNG in Asia depends. We must take note of the possibility of natural gas and LNG demand growth being restricted if their supply costs rise beyond a certain level in Asian developing countries as the center of global economic growth. In India that attracts attention as the center of future global economic growth, for instance, natural gas and LNG demand growth heavily depends on price affordability. While cheap natural gas and LNG prices can expand potential demand in India and other Asian developing countries, the problem is who can provide natural gas and LNG at cheap prices. What price levels would allow both supply and demand to sustain their expansion is an important question for the Asian market.

The diffusion of innovative technologies for using CO_2-free hydrogen and ammonia is important for considering the long-term future of natural gas and LNG in Asia. If CCS (carbon capture and storage) and CCUS (carbon capture, utilization and storage) technologies diffuse for blue hydrogen and ammonia to be produced from natural gas among fossil fuels, natura gas demand will increase on the upstream supply side. If coal-fired and gas-fired power plants use these new fuels, however, natural gas demand will decline on the consumption side. As the decarbonization of fossil fuels attracts global attention, the impact of these technologies on the Asian natural gas and LNG market will become a focus of attention.