Japan Should Lead Global Efforts to Reduce Methane Emissions

-Participating in the Methane Emission Reduction Roundtable-

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On March 14, the U.S. Embassy in Tokyo and the U.S.-Japan Council (USJC) jointly held a roundtable discussion on reducing methane emissions, convened at the U.S. Embassy. Over 40 high-level experts related to natural gas, methane, and related issues from governments (Japan, United States, and the EU), government agencies, private companies, international organizations, think tanks, universities, etc., attended. Following opening remarks by Ambassador Emanuel, a roundtable discussion was conducted under Chatham House Rules. Mr. Hashimoto, Chief Researcher of the Gas Group, participated from the IEEJ, and I moderated in my capacity as Senior Advisor to the U.S.-Japan Council.

The background for planning this roundtable is as follows. The USJC is a U.S.-Japan exchange organization centered on Japanese Americans, and in recent years the Council has been conducting many activities with the central theme of climate, energy, and sustainability as part of its Climate and Sustainability Initiative. After consulting with the U.S. Embassy, both parties agreed to hold a roundtable (so-called track 1.5 meeting) about U.S.-Japan cooperation on methane emission reduction, inviting government and industry experts, in view of Japan as the G7 presidency this year and in particular, the G7 Climate, Energy and Environment Ministers' Meeting in April in Sapporo.

Methane accounts for 23% of the total greenhouse gas (GHG) effect and is said to have a greenhouse effect approximately 30-80 times that of CO2. However, not much attention has been paid by the public until the COP26 in 2021, when the Global Methane Pledge was announced, led by Europe and the United States and with the participation of Japan.

Below, I would like to introduce my takeaways based on the discussions at the

roundtable (with restrictions due to Chatham House rules).

First, there is consensus that reducing methane emissions will lead to additional supplies of natural gas and reduce GHG emissions, so it will be a dual solution for energy security and climate change. There is also a growing recognition that this initiative is a low-hanging fruit, looking at recent high natural gas price.

According to the IEA, the energy sector accounts for about 40% of the world's largest methane emission source after agriculture, and about 260 bcm of methane is released into the atmosphere each year from operations in the oil and gas sector. Major countries with high methane emissions from the oil and gas sector are China, Russia, the United States, and Turkmenistan. Three-fourths of these methane emissions can be supplied to the market through leak prevention and capture using existing technology. The amount is more than the EU's natural gas imports from Russia before Russia's invasion of Ukraine. And because of high gas prices, approximately 40% of the emission is estimated to create positive value at negative costs. In other words, it is a state of a towel that easily drips water when squeezed, as seen in past (and in some cases still ongoing) energy-saving efforts.

Although there is consensus of the dual purpose of energy security and climate change countermeasures, there are differences in positions among countries. The United States, due to the nature of the current Biden administration (maybe because of the influence of Special Envoy Kerry?), emphasizes GHG reduction objectives, while the EU, which has been keen on GHG reduction as part of the Green Deal since prior to Russia's invasion of Ukraine due to the current tight natural gas supply and demand situation, is placing more emphasis on the energy security aspect. Japan seems to be in a position like the EU in emphasizing energy security. For oil and gas producing countries, the main economic objective is to increase income from additional gas supplies. It will be necessary to keep these differences in positions in mind when promoting international cooperation.

Secondly, even if efforts to reduce methane emissions are low-hanging fruit, it was recognized that economic incentives and/or regulations are necessary to promote such efforts. Interestingly in this regard, the Inflation Reduction Act (IRA) passed in the United States last year imposes a methane emission charge on methane emissions above a certain amount from onshore and offshore oil and gas facilities. The fee will be

$36 ($CO_2$ equivalent) from 2024, $48 from 2025, and $60 from 2026. It is not imposed below a certain amount of methane emissions (determined as a percentage of oil and gas shipments) and netting is allowed between facilities of the same company. This is an attempt like emission regulation. It can be said that it is the first carbon price at the U.S. federal level. The IRA will also allocate $1.5 billion to the Environmental Protection Agency (EPA) for plants and equipment installation and innovation to reduce methane emissions. In other words, in the United States, the carrot and the stick of incentives and regulations have been prepared.

The policy challenge is whether to adopt regulations and/or economic incentives to promote a certain initiative, or how to combine them, and whether to adopt hard regulations or soft regulations such as guidelines. As indicated in the IEA's regulatory roadmap, it will be necessary to carefully consider the legal and political circumstances of the country/region as well as the industrial situation.

Third, it was pointed out that measurement, reporting and verification (MRV) and quantification are important for actual efforts to reduce methane emissions, and that international standards and frameworks are necessary for that purpose. The Oil & Gas Methane Partnership 2.0 (OGMP 2.0), UNEP's oil and gas reporting program, has been joined by about 100 oil and gas companies around the world to voluntarily report on their methane emissions. OGMP2.0 data is aggregated and published as UNEP International Methane Emissions Observatory (IMEO) data. This is a mechanism that encourages major companies to make voluntary efforts. In collaboration with IMEO, the Oil and Gas Climate Initiative (OGCI), a group of the world's major oil and gas companies (to which JGC recently joined from Japan), is working to detect, measure, estimate and quantify methane emissions. It is trying to address issues of method and technology, and to establish common international industrial practices.

In Japan as well, JOGMEC has issued (GHG/CI) guidelines for calculating GHG emissions and carbon intensity of LNG, hydrogen, and ammonia in 2022. It recommends a bottom-up approach of methane measurement (imaging with an infrared camera at the site, etc.) and top-down approach (using satellites and drones) for flare, venting, leakage, etc. of oil and gas facilities. In fact, JOGMEC is conducting a demonstration project at an ammonia plant in Indonesia. This JOGMEC initiative presents technical guidelines especially for measurement. Future challenges will be to establish such a global MRV standard and increase the reliability of the data (in fact,

there are differences between IMEO and IEA in estimating global methane emissions).

Fourth, it was shown that Japan, in particular, has a lot of technology and know-how to reduce methane emissions. Japan's leading companies in the upstream, midstream, and downstream fields of natural gas are making meticulous efforts unique to Japan to prevent methane outflows. They cover construction (high-quality piping, equipment selection, etc.), maintenance (gas pressure management, etc.), and inspection (equipment selection, inspection frequency, leak recovery, etc.). As a result, methane emissions by Japanese companies in the natural gas supply chain appear to be well below the global average.

In addition, in fields other than the natural gas supply chain, Japan is advancing efforts to develop and deploy methane-related technology. For example, wastewater and waste treatment plant engineering makes it possible to recover energy from wastewater and waste by utilizing methane fermentation technology. Since the waste field is a field that emits a large amount of methane, this is also a useful Japanese plant technology that secures energy and reduces GHG emissions. In addition, industry-university research and development is progressing to chemically decompose methane, which is biogas discharged from sewage, etc., into methanol and formic acid using optical technology. As a result, it is expected that it will be possible to use it as a liquid energy that can be stored and transported without emitting GHG. In the field of agriculture, there are also unique Japanese initiatives. One example is that it is possible to reduce the amount of methane generated by extending the period of rice cultivation 'nakaboshi' (drying the paddy field by draining the water before the ears of rice appear), and the methodology was established as the subject of J Credits.

These are examples of technologies and know-how that lead to the reduction of methane emissions that Japan is working on. Japan can contribute to the reduction of global methane emissions by deploying these technologies in other countries. It is also possible to secure profits as a business. Of course, Japan needs to be careful not to fall into a situation where it wins in technology but loses in business. Therefore, Japan needs to be heavily involved in the establishment of standards and rule-making that will serve as the basis for these efforts.

Finally, in conclusion, although Japan's domestic methane emissions are minimal compared to other major emitters, Japan, together with like-minded partners such as

the United States, the European Union, and fossil fuel-producing countries, is expected to demonstrate its leadership and coordinating ability for global efforts to reduce methane emissions, taking advantage of its position as the G7 Presidency this year and the host and organizer of the LNG Producer-Consumer Dialogue for many years. As a concrete action, Japan has excellent technology, experience, and know-how in the three main fields of methane emissions (agriculture, energy, and waste). This should be actively expanded overseas. As a prerequisite for efforts to reduce methane emissions, methane emissions and efforts to reduce them should be "visualized", and MRV is the method for doing so. It is hoped that an international common standard for this method will be established, and Japan is expected to actively participate and contribute to this process.

In addition, Japan is a major importer of fossil fuels, and it is hoped that Japan will take advantage of this position to engage in win-win collaborations with fossil fuel-producing countries. Already in 2020, the EU has called for the creation of a coalition of buyer countries together with Japan and other fossil fuel importing countries, the creation of international MRV standards, and the promotion of the spread of emission reduction technologies.

In 2022, Japan participated in the U.S.-led Joint Declaration from Energy Importers and Exporters on Reducing Greenhouse Gas Emissions from Fossil Fuels. Since 2012, Japan has been presiding over the LNG Producer-Consumer Dialogue, and aggregating consuming countries to hold dialogues with producing countries, thereby contributing to the development of a healthy international LNG market. Such opportunities should be used to promote the spread of clean LNG, which emits less methane.

Reduction of methane emissions has moved from a stage of slogans to a stage where effective implementation of concrete actions is required. Japan is expected to play a leading role in comprehensive international cooperation efforts for this purpose, making use of Japan's position and experience.