Talking points

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In recent years, there has been a growing interest in carbon neutrality globally, but the reality that we must be aware is that it is very challenging to eliminate fossil fuel use from our energy demand structure as long as we prefer to enjoy sound economic growth as well as the current modern lifestyle. To be more precise, our energy demand can be broadly divided into electricity demand and heat demand. Electricity demand might be fully decarbonized with zero-emission power generation sources such as nuclear power, renewable energy and hydrogen, but it is almost impossible to meet all heat demand with non-fossil fuel energy.

Although it is very difficult to eliminate fossil fuels from our energy demand structure, it is possible to realize carbon neutrality while using fossil fuels. CCS plays a central role in this reconciliation of the two seemingly contradictory elements: fossil fuels and decarbonization. CCS can be applied to various types of point sources that intensively use fossil fuels. CCS will also play an important role in realizing a hydrogen economy. Hydrogen can be produced from both by electrolysis by renewable electricity and by fossil fuel with CCS. Due to the intermittent output and small per-unit production of electrolysis hydrogen, low-carbon hydrogen produced from fossil fuel with CCS will occupy a large share of hydrogen supply in the short to medium term. Furthermore, CCS will be an essential component of technology-based carbon dioxide removal (CDR). All the IPCC's carbon neutrality scenarios for 2050 assume CDR deployment. While a wide variety of CDR solutions will be available in the long term, those combined with CCS (such as direct air capture with carbon storage and bio energy with carbon capture and storage) have higher technological maturity at this stage.

Recognizing CCS as an indispensable piece of decarbonization efforts, the Japanese government has set a numerical target for annual CCS storage volume at 13 million tons per year as of 2030 and 120 to 240 million tons as of 2050. The government has already selected seven pilot projects for feasibility studies to achieve the 2030 storage target. In addition, since there is currently no law governing CCS projects in Japan, a new law is being enacted to develop legal and regulatory systems to expedite the adoption of CCS.

As an area for trilateral cooperation among China, Korea, and Japan, development for international rules for carbon accounting and credit system for international CCS operations. To be sure, CCS projects should be pursued within each country; the emitted CO2 should be captured and stored by those who emitted. However, since the storable volume and its cost are highly dependent on subsurface geological conditions, there may be opportunities for international CCS operations in the long term. In implementing such international CCS operations, international rules and systems on accounting of emissions reduction and credit mechanism associated with the CCS operation need to be developed. There is room for cooperations among China, Japan, and Korea in such international rulemaking for cross-border CCS operations.

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