Feasibility Studies with the Aim of Developing a Joint Crediting Mechanism in FY2015

Carbon Capture Utilization and Storage Projects in Saudi Arabia

New Energy and Industrial Technology Development Organization (NEDO)
The Japan Research Institute, Limited
Feasibility Study on Carbon Capture Utilization and Storage (CCUS) projects in Saudi Arabia
(Study for Project Development and Organization) Conducted by: The Japan Research Institute, Limited

The Kingdom of Saudi Arabia has accelerated the introduction of CCUS projects. Japanese technology featuring a highly efficient and enhanced capacity for CCUS could enable the realization of large-scale CO₂ emissions reduction.

Survey Summary

This study robustly examines 1) the feasibility of policies related to JCM that will contribute to the diffusion of CCS technology, and 2) the applicability of CCUS projects in the eastern region of the Kingdom of Saudi Arabia including the Riyadh area, where the implementation of a CO₂ emissions reduction project using CCUS is planned.

Survey Items

1) Strategy, policies, and activities to promote CCUS projects in the Kingdom of Saudi Arabia
2) Viability analysis of CCUS projects and project planning
3) Measurement, reporting, and verification methodology
4) Estimation of greenhouse gas emissions reduction and its economic impact

Partner/Site

Partner: A company in the Kingdom of Saudi Arabia
Site: Eastern region of the Kingdom of Saudi Arabia including the Riyadh area

Estimated Reduction Amount

**[Current]**

- Natural gas 300 MW cogeneration system
- Disperse CO₂ into the air (approx. 1.29 million t-CO₂/year)

**[After]**

- Natural gas 300 MW cogeneration system
- CCS equipment
- Inject captured CO₂ into the soil
- Disperse CO₂ into the air (approx. 0.2 million t-CO₂/year)

Reduction amount: 1.09 million t-CO₂/year
“CO₂ separation, capture and storage” refers to activities and/or technologies to separate and capture CO₂ right before its dispersion into the air and then store it underground and/or in a stable water environment for a long period of time. This technology is applied mainly to large-scale emissions sources such as thermal power generation plants and chemical factories.

One of the technical challenges regarding the separation and capture of CO₂ is improving its efficiency and cost effectiveness, and many countries have tackled this issue. Japanese companies are market leaders in developing CCS-related technologies. Mitsubishi Heavy Industries (MHI) is thus far the only manufacturer that has constructed a plant with a capacity of separating 500 tons of CO₂ per day. Japanese technology and products in this field have been introduced to commercial plants all over the world, with MHI’s technology introduced to 12 projects worldwide, mainly involving fertilizer plants.

Oil companies are also engaged in detailed analyses of enhanced oil recovery technology that utilizes separated and captured CO₂.