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A Tentative Sketch of the Implementation of CO_2 Sequestration Technology in Taiwan

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Abstract

A consensus with respect to the greenhouse gas issue has formed worldwide. The potential of saline aquifers and oil & gas reservoirs for storing significant amount greenhouse gases is recognized. A number of developed countries have invested enormous effort of research in the areas geologic and oceanic storage of CO_2 and related subjects. Substantial progress has been achieved also. As a matter of fact, technologies development of CO_2 capture and storage (CCS) has been the important portion of the nation's greenhouse gases mitigation strategy of The USA. Taiwan is a member of global village, and can not be an isolative identity regarding to global warming issue. Therefore the acquiring of domestic geological information associated with geologic sequestration and readiness for adapting developed technologies are essential.

This study was intended to develop a local CCS development strategy through the analysis of structure of energy usage as well as the greenhouse gas emission in Taiwan. In fact, half of the energy was consumed by industry sectors, and with only small a mound was contributed by the utility sector and the process furnaces and boilers are the main standing emission sources. The electricity providers contributed almost half of the total emission in this country, among which 3/4 combust fossil fuel to generate electricity. Theoretically, these are potential candidates for CO_2 capture.

The main focus for geologic sequestration studies are finding appropriate geologic structures or saline aquifers with good sealing cap rock, high porosity, good permeability and suitable depth where CO_2 can be easily injected and stored permanently. A preliminary survey shows that in Taoyuan- Hsinchu area seem to have potential locations where their geologic structures may be suitable for storing CO_2; however, owing to the lacking of sealing cap and depth a few known geologic structures down in the south are not as good as those in the north. Nevertheless, the PCC formation and the neighboring aquifers in Chiayi area will need further investigation and study to confirm the suitability for storing CO_2, especially the off-shore part of it.

With the technologies, knowledge and experiences associated with oil and gas exploration, drilling, production, underground gas storage operation and most importantly the possession of abundant geologic data accumulated in the past decades, Taiwan is able to carry out the investigation and evaluation of CO_2 sequestration as well as to initiate a pilot test program and subsequent monitoring system research.