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## Mechanism and Research Progress of CO<sub>2</sub> Geological Storage Utilization Technologies in Resource Development

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At present, CO<sub>2</sub> geological storage utilization technologies in resource development, including CO<sub>2</sub> enhanced oil (CO<sub>2</sub>-EOR), coal bed methane (CO<sub>2</sub>-ECBM), shale gas (CO<sub>2</sub>-ESGR) recovery and geothermal system instead of water, could not only realize CO<sub>2</sub> geological storage, but also promote the energy resources development. Take the CO<sub>2</sub> as displacement medium in energy development, increase economic benefit at the same time, can safely store CO<sub>2</sub> in underground geological space, which means economic and environmental benefits. CO<sub>2</sub>-EOR technology is relatively mature, which has become the key oil recovery technology in United States and other developed countries. At the basis of single well pilot project, multiple well test CO<sub>2</sub>-ECBM technology is gradually developing. CO<sub>2</sub>-EGS technology test using supercritical CO<sub>2</sub> mixed river water in order to develop

geothermal only in the hot dry rocks of Ogachi, Akita Prefecture, Japan. The Mechanism of CO<sub>2</sub>-ESGR and CO<sub>2</sub>-ECBM is similar, but Still in the laboratory research stage. Generally, China faces great challenges in reducing emissions due to its coal-dominated energy mix and large yet growing CO<sub>2</sub> emissions, which determines CO<sub>2</sub> geological storage utilization technologies in resource development will become a strategic technology option to help reduce CO<sub>2</sub> emissions and safeguard energy security in future. However, compared with the developed countries, there is a certain gap of the core technology research and development degree which needed to speed up the further research.

**Key words:** CO<sub>2</sub> geological storage; resource development; mechanism; progress

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