Possible near-zero emissions coal-based power plant with CCS in Japan

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Fast growing China uses coal to generate about 70 percent of its electricity. Coal fuels more than 50 percent of electricity in the United States and approximately 40 percent of the world‘s electricity. Near zero emissions coal-based power plants with carbon capture and storage CCS are vital technologies to the global climate and energy crisis.

NOx and SOx are thoroughly removed from the flue gas of recent fossil fuel fired power plants in Japan. The CO2 recovery technology from the flue gas was successfully tested by a pilot plant in the Osaka Nanko power plant. Harmful components can be removed almost completely from the flue gas of power plants. The remaining problem is how to store vast amount of carbon dioxide captured from the flue gas of gigantic power plants. The underground behavior of carbon dioxide is not well known scientifically.

Depleted oil or gas reservoirs, saline aquifers, coal seams, basalt layers and serpentine bodies may provide the geological storage of carbon dioxide. Most of large power plants in Japan locate along the coastline, because virtually all fuels are imported from overseas. Near shore subseabed saline aquifer and coal measures will be favorable carbon storage for future near zero emission coal fired power plants in Japan.