

## Economic feasibility of capture, utilization, and storage of CO<sub>2</sub> emitted from 500 MW<sub>e</sub> oxy-coal power plants

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The concentration of CO<sub>2</sub>, as a major climate change factor, has been increased, because of the continuous use of fossil fuels for the energy demand. The carbon capture utilization and storage (CCUS) technology has been proposed to recycle fossil fuels and respond to climate change for a sustainable society. This study presented a techno-economic feasibility of 500 MW<sub>e</sub> oxy-coal power plants including CCUS. Based on the process simulation, economic indicators such as the total capital investment (TCI), total production cost (TPC), levelized-cost of electricity (LCOE), return on investment (ROI), and payback period (PBP) were compared for CO<sub>2</sub> sequestration and methanation with water alkaline electrolysis. The amount of CO<sub>2</sub> sequestration and methanation was presented to reduce CO<sub>2</sub> emission and solve economic problems, according to the amount of renewable electricity such as wind and solar photovoltaic powers.