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## GHG EMISSIONS EVALUATION FROM FOSSIL FUEL WITH CCS

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### Abstract

A present challenge for research is to determine how to use the combination of oil, gas and coal most efficiently with the minimum environmental damage. In this paper the authors have compared technologies to produce the electricity using natural gas and coal. The objective of this paper consists in evaluation of the life cycle assessment of the natural gas and coal in order to compare their *greenhouse gases* (GHG) emissions. In this way, three systems with and without CCS were examined: one using the *natural gas combined cycle* (NGCC) and two using the coal: pulverized coal with sub-critical and super-critical parameters and *integrated gasification combined cycle* (IGCC).

The study shows that life cycle GHG emissions from fossil fuel power stations with *carbon capture and storage* (CCS) can be reduced by 75–84% relative to the reference case. IGCC is found to be favorable with a reduction of GHG emissions to less than 160 g/kWh. For NGCC power plants, the amount of methane leakage from natural gas extraction and transport has a significant effect on life cycle GHG emissions.

*Key words:* CCS, coal, energy, life cycle assessment, natural gas.

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