

## NEW TECHNOLOGIES TO REDUCE ENVIRONMENTAL IMPACTS OF COAL-FIRED POWER PLANTS

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### ABSTRACT

Coal is the largest source of power globally and given its wide availability and relatively low cost, it is likely to remain so for the foreseeable future. The *High-Efficiency, Low-Emissions Coal-Fired Power Generation* is to generate the same amount of electricity, with a more efficient coal-fired unit which burns less fuel, emit less carbon, release less local air pollutants, consume less water and have a smaller carbon footprint. High-efficiency, low emissions (HELE) technologies in operation already. A range of advanced coal combustion technologies have been developed to improve the efficiency of coal-fired power generation approaching 50% or even higher. New, more efficient coal-fired combustion technologies reduce emissions of CO<sub>2</sub>, as well as pollutants such as NO<sub>x</sub>, SO<sub>x</sub> and particulates.

Increases in the efficiency of electricity generation are essential in tackling climate change. A one percentage point improvement in the efficiency of a conventional pulverized coal combustion plant results in a 2-3% reduction in CO<sub>2</sub> emissions.

Moving the current average global efficiency rate of coal-fired power plants from 33-35% to 40-43% by deploying more advanced technology could cut two gigatonnes of CO<sub>2</sub> emissions now, while allowing affordable energy for economic development and poverty reduction.

In this study description and evaluation of high efficiency low emission coal fired power generation and comparison with conventional power generation technologies in terms of environmental impacts with special emphasize on emission levels, especially contribution to greenhouse gas (GHG) emissions were studied. Additionally key actions required to keep 2<sup>o</sup>C global warming scenario and mitigation potential of high efficiency and low emission power generation towards a Sustainable Energy Future are also evaluated.

**Keywords:** *Advanced coal combustion Technologies, high-efficiency- low-emission, tackling climate change, sustainable future*