CHINA'S CO_2 MITIGATION TECHNOLOGY OPTIONS AND POLICIES OF ELECTRIC POWER INDUSTRY IN 2010-2030

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Abstract: Based on the Cost-effective Analysis (CEA) and Cost-benefit analysis (CBA), this paper sets the foundation for formulating the roadmap of China's electricity sector on CO_2 mitigation. Based the forecasting scenario mitigation targets of 2020 and 2030, this determines the required implementation scales of 13 selected power generating technologies. According to their initial investment, operational cost and external cost of major pollutants, the paper assigns each incorporated technology a priority rank, which is derived on the basis of internal cost and social cost, respectively. Comparison of cost present values of major generating technologies shows that hydroelectricity bears the highest total cost, while cogeneration of heat and power bears the lowest cost. However, the technology with the highest total social benefit is also hydroelectricity, while CCS yields the lowest social benefit. By 2030, 6 of the 13 technologies can realize net internal benefit and all 13 technologies except CCS can realize net social benefit. The top three technologies on the priority rank based on internal levelized cost are: cogeneration of heat and power, biomass power generation, wind power generation. Based on social levelized cost, the most prioritized technologies are: IGCC, biomass power generation, wind power generation.

Keywords:Sectroal Reduction; Electric Power Industry; CO_2Mitigation; Technology Options