

INTERACTIONS BETWEEN EMISSIONS OF GREENHOUSE GASES AND SULFUR DIOXIDE FROM THE POWER SECTOR IN CHINA AND INDIA

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In many Asian countries, the electricity sector will be expanding during the coming decades. As a result, emissions of air pollutants are expected to increase as well. This study will present the results of a scenario analysis, focusing on emissions of greenhouse gases and sulfur dioxide from the electricity sector in China and India. The aim of the study was to quantify the technical potential of various options, and combinations of options, to reduce these emissions in the year 2020. First, we analyzed possible increases in emissions assuming that current trends continue. Greenhouse gas emissions from the power sector in China and India may increase considerably between 1990 and 2020. Next, we analyzed alternative scenarios, which reflect the combined technical potential of selected options to reduce emissions. These scenarios differ with respect to the assumed combinations of reduction options that are implemented. Emissions can be reduced through end use efficiency improvement, fuel switches, and efficiency improvement of new and existing and new power plants. Our analysis indicates that the technical potentials for emission reduction vary considerably among reduction options. In addition, also the feasibility to implement the technologies involved differ. Our study indicates that it is possible to formulate different scenarios in which greenhouse gas and sulfur dioxide emissions are reduced considerably relative to business-as-usual trends. This indicates that there are different strategies possible for realizing relative large emission reductions in China and India. End use efficiency improvement may be one of the most effective ways to reduce greenhouse gas emissions, in particular when combined with fuel switches. Acknowledgements: This study was performed as part of the project “An Asian Dilemma: Modernising the electricity sector in China and India in the context of rapid economic change and the concern for climate change”, funded by the Dutch National Research Program on Global Air Pollution and Climate Change (NRP). The Business-as-Usual scenario was developed as part of an international project “Potential for use of renewable sources of energy and their cost effectiveness in air pollution abatement in Asia”, funded by the European Commission (INCO). We gratefully acknowledge researchers of the Energy Research Institute (Beijing) and the Tata Energy Researcher Institute (New Delhi) for their input.