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## Assessing air pollution abatement co-benefits of energy efficiency improvement in cement industry: a city level analysis

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### Abstract

China is the world's largest cement producer, contributing to 60% of the global total. Jiangsu province takes the lead of cement production among China's provinces, contributing to 8.4% of the national total cement output. In this study, a geo-graphical information system-based energy model is developed to assess the potential of energy savings and associated mitigation of CO<sub>2</sub> and air pollutant emissions in Jiangsu's cement industry during 2015–2030. Results show that 1) compared to 2015, energy consumption in the baseline scenario will decrease by 54% at the provincial level. Economical energy saving potential for 2030 is around 50 PJ, which equals to 35% of energy use in the baseline in 2030. 2) At the city level, Changzhou, Wuxi, and Xuzhou are top three cities in terms of energy saving potential. 3) The economical CO<sub>2</sub> emission reductions will decrease by 4.4 Mt in 2030, while the emissions of PM and NO<sub>x</sub> would decline by 30% and 56%, respectively. This study will help policy makers develop integrated policies to support the coordinated development of Jiangsu and can also enhance the effectiveness of the implementation of joint prevention and control of atmospheric pollution to improve regional air quality.

**Keywords:** co-benefits; GIS-based energy model; energy efficiency; cement industry; emission reduction.

### Nomenclature

### Abbreviations

ECSC Energy conservation supply curves

CSC Conservation Supply Curve

GHG Greenhouse gases

SO<sub>2</sub> Sulfur dioxide

NO<sub>x</sub> Nitrogen oxides

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