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## Efficiency and allocation of emission allowances over more sustainable European Countries

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### Abstract

Uncontrolled CO<sub>2</sub> emissions and excessive energy dependence strongly contribute to climate change preventing economic and sustainable development. The European mitigation program is very ambitious: new objectives up to 2030 provide for a 40% reduction of GHG emissions and an increase of 27% for renewables and energy efficiency. Competitiveness would save on imports of oil and gas, to increase the gross domestic product and create new jobs in the renewable energy and energy efficiency. This study uses GHG emissions, total energy consumption and renewable energy consumption as input variables for the evaluation and the analysis of the economic and social sustainability performance of Countries belonging to the European Economic Area. Data Envelopment Analysis (DEA) model allows the identification of the less competitive areas in terms of sustainable growth and the Zero Sum Gains Data Envelopment Analysis model is used to determine how they should vary the inputs so that the economic system reaches efficiency.

**Keywords:** *Sustainable Development, Greenhouse Gas Emissions, Energy Management, Renewable Energy, ZSG DEA.*

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