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THE ASSESSMENT OF GHG EMISSIONS IN EUROPE: FUTURE ESTIMATES AND POLICY IMPLICATIONS

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Abstract

Greenhouse gas (GHG) emissions represents a global challenge and a quantitative approach is a support for decision makers. The aim of this paper is to estimate future values of GHG emissions in Europe, considering different periods of reference and through two common mathematical parameters (average annual growth rate (AAGR) and compound annual growth rate (CAGR)).
Results analysis show that a reduction of GHG emissions can be reached. However, some Member States (MSs) as Ireland and Netherlands present a critical situation. In addition, it is defined the linear correlation of GHG emissions with both Gross Domestic Product (GDP) and population. An increase of 1000 GDP Purchasing Power Standards (PPS) means an additional 0.325 tons CO_2eq of GHG emissions and an increase of one citizen means an additional 9.6 tons CO_2eq of GHG emissions.
Finally, a comparison among European countries is defined for 2015 according to two indexes: i) GHG emissions intensity of the economy and ii) GHG emissions per capita. A new framework is proposed, in which the average of European Union (EU) 28 is used as reference level and the target value as benchmark. Regarding the first index, Sweden occupies the first position (160 gCO_2eq per GDP PPS) followed by Malta and France with 223 and 233 gCO_2eq per GDP PPS, respectively. Concerning the second index, Croatia has the best performance with 5646 kgCO_2eq per capita followed by Sweden and Latvia with 5733 and 5866 kgCO_2eq per capita, respectively. Some policy implications are provided for the European MSs.

Keywords: environmental sustainability, greenhouse gas emissions, policy implications, quantitative analysis

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