

Underestimation of the performance of the EU carbon dioxide emission reductions via external trade

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This paper deals with the identification of appropriate measures of the performance of the European Union in reducing its carbon dioxide emissions via external trade, both at the aggregate and at the industry levels. We have found that standard measures based on the Leontief quantity model and profusely used by input-output practitioners and industrial ecologists will result in underestimation of the actual performance of the EU in reducing its carbon dioxide emissions via external trade. Briefly, standard measures currently available in the literature seem to assign the EU less amounts of exported air emissions (carbon dioxide) than it should be. However, this rule does not hold for all industries individually. From a methodological viewpoint, the conclusions are justified by a new approach to estimate unbiased and statistically consistent emission multipliers. This approach has three important advantages: (a) it improves the accuracy of the environmental impacts assessed by industrial ecologists; (b) it finds a way to compute unbiased and consistent input-output multipliers for input-output analysts; and (c) the use of the Leontief inverse is no longer necessary; only the supply and use matrices are required. In addition, another advantage of this approach is that all the data needed to make the calculations are ready to use worldwide at many countries' statistical offices.