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Restructuring international trade regarding CO_2 reductions

- Is there anything to learn from best practice?

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Aim

The aim of the paper is to investigate the extent to which energy consumption and CO_2 emissions could potentially be reduced by restructuring international trade.

Methodology

The analyses will be carried out with a combined multi-regional generalised input-output model that focuses on energy consumption and CO_2 emissions of four countries, Denmark, Germany, Norway and Sweden, and the rest of the world, represented by Australia. One of the primary outcomes of the combined model is the primary energy and CO_2 multipliers of the four countries and the rest of the world which will be divided into both production and final demand categories.

Results

With a model of this type, Norway would be the country ideally situated to take care of the production for the consumption of the other countries. Relocating all the production for the Danish, German, Norwegian and Swedish consumption to Norway would change Norway's production technology and therefore the potential CO_2 emissions reductions will not be as significant.

Alternatively, the countries that are least efficient with regard to CO_2 emissions and energy consumption could learn from the countries that are most efficient. In order to clarify how to learn from best practice it is necessary to investigate which components make the difference in CO_2 and energy efficiency: Is it a matter of input-mix, energy efficiency, or fuel mix?

The varying effects on CO_2 and energy efficiency of these components will be analysed utilising decomposition analysis. The decomposition analysis will be carried out by replacing each of the components with components from the other countries. In that way, the contribution of each component to the total CO_2 emissions and energy consumption will be quantified.

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