

A Structural Decomposition Analysis of the Change in Global Renewable Energy Use between 1995-2009

Topic: Structural decomposition

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This study investigates the growth in global renewable energy (RE) use between 1995 and 2009. It identifies its main drivers and their geographical distribution. A structural decomposition analysis is applied to global multi-regional input-output tables and distinguishes six key drivers. Global RE use rose from 52.3 Exa Joules (EJ) in 1995, to 68.7EJ in 2009. This growth is not only caused by effects that are related to more energy use but is also increased due to the substitution of non-renewable to renewable energy. Our decomposition takes that substitution explicitly into account. The 16.4EJ increase was the net result of changes in: overall energy efficiency (-18.4EJ); consumption per capita (+26.3EJ); population (+10.3EJ); and the total (+1.6EJ) of the three remaining factors (including substitution towards RE and trade structure changes). The impact of trade on global RE use was negligible, but it played an important role in terms of relocation of RE use across countries.