Calculating comprehensive material footprint indicators with a global MRIO-MFA model. The case of EXIOBASE 2.0 (for special session on CREEA)

Topic: The EXIOBASE Global MRIO database – new insights developed in the projects CREEA and DESIRE (Compiling and Refining Environmental Accounts / Development of a System of Indicators for a Resource Efficient Europe)
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Issues related to resource use and resource efficiency have gained significant importance in the policy agendas of the European Union, the EU Member States and in the international policy arena. This paper contributes to the development of robust and comprehensive material footprint indicators, which take into account the supply-chain wide extraction of raw materials (i.e. Raw Material Consumption / RMC and Total Material Consumption / TMC) through assessing the global material resource use related to final consumption of the EU. We will for the first time apply the EXIOBASE multi-regional input-output (MRIO) system version 2.0, with the base year 2007. We will illustrate the potentials for disaggregating results generated with a global MRIO-MFA model such as EXIOBASE, e.g. with regard to products of final consumption, countries of origin of raw materials as well as a large number of different material categories. The results generated with the MRIO-MFA system will also be compared both with the results from other groups applying MRIO-based approaches (based on MRIO systems such as GTAP, EORA, WIOD and OECD) as well as with results generated from bottom-up, product-oriented coefficient approaches, developed by Eurostat and by the Wuppertal Institute. The comparative analysis will reveal the advantages and limitations of the different methodological options to calculate material footprint indicators and will allow deriving suggestions on how different options might be integrated in a "hybrid" approach, applying MRIO-based calculations for some products and product groups, and coefficient-based calculations for others depending on the specific advantages of each approach.