

## **A framework for classification of assumptions and uncertainties in EE-MRIO calculations**

Topic: World input-output modeling and databases

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The use of environmentally extended multi-regional Input-Output (MRIO) tables has been recognised as the favoured and most suited approach for accounting for emissions from consumption. However, global MRIO tables are not specifically created for this purpose and have to be approximated using individual country level input-output tables and information on bilateral global trade. Creation of an MRIO table is not trivial and many assumptions and decisions have to be made in its construction. Each assumption inherits and passes on error and uncertainty to the system. Taking the OECD set of IO tables and bilateral trade data from the OECD STAN database and UN's COMTRADE as an example, this paper briefly describes the methods for constructing an MRIO and highlights where uncertainties may lie. The paper then classifies the types of assumptions that have to be made in each case and suggests a framework for investigating uncertainty in the model and a methodology for understanding implications of decisions made in model construction. We aim to parameterise the space each input variable resides in, create input distributions for each model variable and show the differences in model outcome that result from a change in input variable. It is suggested that by gaining further insight into the sensitivities of input variables and the assumptions made in model creation, MRIO analysts can better understand which inputs, and input decisions, make significant difference to the way emissions are reallocated to consuming countries, which in turn could have great significance in deciding emissions reduction responsibilities. These insights should help focus attention on which data needs to be better collected, which decisions have importance and which decisions have limited influence on the overall results.