

## **METHODOLOGICAL APPROACHES FOR LIFE-CYCLE-ANALYSIS USING INPUT-OUTPUT-TABLES**

Topic: Environmental IO models 11

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Eco-balances are chosen as an evaluation criterion for sustainability of products or services. To assure a holistic analysis, the life-cycle-assessment investigates such goods over the entire life-cycle ("from cradle to grave"). The material balance analysis is the common way to analyze a particular product. Impact categories like the primary energy consumption and the climate change are the basis of eco-balances. Such an analysis is highly time-consuming and especially the evaluation of services is challenging because of missing methodological approaches.

The energetic and environmental input-output analysis constitutes a macro-analytical computation method. It enables a great time-saving potential for performing eco-balances for products and services. Specific energy expenses and specific emissions are calculated for the different goods of the production-sectors listed in the input-output tables. The direct energy demand or emission as well as the one of the upstream process chains are contained. Consequently the analysis involves the production steps "from cradle to gate".

To perform an eco-balance based on this method, an input output model implementing the current German input-output table for 2007 is build up. This process contains different challenges within the data preparation and the calculation steps. A methodological comparison of classical and hybrid-unit models as well as extensions to an energetic and environmental input-output model are analyzed.