

Expanding a Global MRIO for City Footprint Analysis

Topic: (8.6) Special Session: Consumption-based accounts for global cities: data, methods and analysis

Author: Thomas O. WIEDMANN

Co-Authors: Manfred LENZEN, Anne OWEN, Guangwu CHEN, Johannes TÄBBEN, Yafei WANG, Futu FATURAY, Harry C. WILTING

Most consumption in modern economies takes place in cities. As a consequence, consumption-based accounting of resource use and emissions often allocates a large proportion of total national environmental footprints to urban final demand. City governments and authorities are therefore increasingly interested in analysing and quantifying these indirect environmental impacts of their jurisdiction and standards for consumption-based greenhouse gas accounting in cities are being developing and refined.

However, calculating the carbon footprint of cities with input-output analysis “as commonly done for nations and regions” is often hampered by the lack of city-specific input-output tables and satellite accounts. In this contribution, we present an approach for estimating two-region input-output tables for any city and the rest of its nation. We then nest these tables in a global multi-region input-output model based on the GTAP database and calculate global carbon footprints of city final demand. Particular emphasis is placed on the uncertainty of the suggested method which is based on a modified simple location quotient and rebalancing approach. We compare the derived two-region tables with input-output tables based on actual surveys (Beijing and Shanghai) and with those derived from different approaches to regionalisation (Nanjing, Guangzhou, Wuhan, Chengdu, Berlin, Jakarta, Sydney and Melbourne). We analyse the differences in tables and in carbon footprint results, allowing us to refine and optimise the settings and assumptions in the regionalisation approach applied in this study.