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Developing an energy satellite for an MRIO virtual laboratory

Topic: Multi Regional Input-Output (MRIO) Models Using Industrial Ecology Virtual Laboratory: Development of Regional IE Lab models and Applications

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National multi-regional input-output (MRIO) virtual laboratories have become increasingly available. They provide a platform for flexible, collaborative and highly-automated compilation of MRIO databases. These virtual laboratories draw on national input-output tables and other sub-national sectoral finance and physical data to compile MRIO tables. They also provide the capacity to compile associated environmental satellites. In general, financial data are often available in better sectoral and spatial resolutions than environmental data. Therefore, in the case of using a more detailed MRIO table for an environmentally-extended MRIO analysis, its quality can be compromised by the disaggregation process of the environmental data to match the corresponding spatial and sectoral details of MRIO tables. This work uses the development of an energy satellite as an example to explore and address this challenge.

This paper describes work aimed at developing more sectorally and spatially disaggregated energy satellites for environmentally-extended MRIO analysis. The specific research question is: how to best sectorally and spatially disaggregate a national energy account for sub-national MRIO applications. For the method used, this work utilises energy-related proxies for disaggregation and implements the energy satellite in the Australian Industrial Ecology Virtual Laboratory (Australian IELab). Data used include i) energy data from the Australian Energy Account, and the Australian Energy Statistics, ii) energy expenditure data from the Australian national input-output tables, and iii) CO₂ emissions data from the Australian Greenhouse Emissions Information System. The major novelty of the research is the use of energy-related proxies for sectorally and spatially disaggregating national energy account for MRIO applications in a virtual laboratory environment. The paper considers some of the potential analytic and policy applications of MRIO data and research focused on sub-national energy data.