

The current status of Uncertainty in EE-MRIO

Topic: Energy Input-Output Modeling I (Chair: Kirsten S. Wiebe, SINTEF)

Author: Mohamed Badr

Name: Mohamed Badr

PhD. Supervisor: Konstantin Stadler

Position: Ph.D. Candidate

Institutional affiliation: NTNU (Norwegian University for Science and technology)

Title: The Current Status of Uncertainty in EE-MRIO - Abstract

Presenting uncertainty metrics is instrumental to the bridging of sustainability research and policy. Despite some progress in recent years, uncertainty within Environmentally Extended Multiregional Input-Output models (EE-MRIO) remains an under-researched field. In this research we conduct a literature review on the status of uncertainty estimates in EE-MRIO concentrating on methodological aspects, among others on the data sources for uncertainty estimates and the methods used for calculations. At the same time, we also explore the potential of integrating uncertainty estimates into the python library `pymrio` which enables researchers to receive uncertainty estimates while running their respective models as well as connecting these parameters with EXIOBASE. The research presents two significant results; 1) An overview of the research conducted on uncertainty in EE-MRIO, with regards to the main sources of known uncertainties, 2) A convenient tool that will allow researchers to estimate uncertainties associated with EE-MRIOs. The research is closely related to the overall ambitions of the HiTEA project at NTNU. In general, understanding the nature of uncertainty within EE-MRIO will add robustness to near-term assessments. By giving researchers the tool to readily conduct uncertainty and sensitivity analysis, footprints of specific consumption goods and global supply chain hotspots can be more accurately presented.

Pymrio GitHub Repository: github.com/konstantinstadler/pymrio

HiTEA webpage: hitea.iedl.no