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Software and data for circular economy assessment

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Propositions:

Stellingen

Behorende bij het proefschrift

Software and Data for Circular Economy Assessment

1. Transparency, comparability and replicability of circular economy macro-economic environmental studies are of utmost importance to provide policy makers with reliable insights and rigorous methods to support the establishment of the circular economy as a scientific field (This thesis, Chapter 3).

2. Easy to use web-based tools are fundamental to facilitate accessibility of Environmentally Extended Input-Output Data and the creation of scenarios for Circular Economy
   (This thesis, Chapter 4).

3. Current data availability is insufficient to model in detail circular economy interventions as CE implementation will require many innovations and micro level changes throughout the economy (This thesis, Chapter 5).

4. The use of bottom-up data collection methods for Life Cycle Inventory modelling can provide a wealth of information on product systems that can then be used to model the micro-level changes due to circular economy interventions along international supply chains (This thesis, Chapter 5).

5. Artificial Intelligence methods and digital technologies can enable more rapid and effective data collection efforts for sustainability and circular economy (This thesis, Chapter 6).

6. The industrial ecology community should make a priority to nurture the coordination of the development of artificial intelligence methods to promote sustainability (This thesis, Chapter 6).

7. Circular Economy scenario studies in Multi-Regional Environmentally Extended Input-Output are scarce partly due to the limited availability of data from official statistics (adapted from Wiebe et al., 2019).

8. The orchestration of Computer-Aided Technologies with Life Cycle Assessment can aid the development of more sustainable and circular products and manufacturing (adapted from Kalverkamp et al., 2017).

9. Data management, data sharing, and interorganizational and intraorganizational collaboration are essential for circular and sustainable products (adapted from Rusch et al., 2023).

10. Scientists in the sustainability and industrial ecology community should pursue more investigative approaches to reveal life cycle inventory data on current productions independently from data provided directly by industrial actors (adapted from Goldstein & Newell, 2019)

11. The current use of digital technologies and artificial intelligence will likely lead to further planetary destabilization by stimulating overconsumption and overexploitation of resources, however, policy could change its course toward sustainability (adapted from Creutzig et al., 2022).

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Leiden, April 26, 2023