Circular economy innovations in a 2-area input-output stock-flow consistent dynamic model

Topic: Special session: Advances in Circular Economy Scenario Modelling
Author: JosÃ© Bruno Fevereiro
Co-Authors: Marco Veronese Passarella, Oriol Valles Codina

We develop a 2 region Input-Output Stock-Flow Consistent model, where money is endogenously created, production is demand-driven, and the macro-economy is divided into industries that produce goods and services while generating waste and CO2 emissions and depleting natural resources. The model is empirically calibrated using EXIOBASE 3 input-output tables, aggregating the world into 2 regions (European Union and Rest of the World). The model is used to simulate the adoption of different Circular Economy practices, such as higher recycling rates, use of secondary materials and increased product lifetime extension. Preliminary results indicate that restructuring production and consumption patterns to adopt CE-driven practices within the EU provides positive impacts in terms of employment, GDP and in the trade balance, while leading to negative effects in the rest of the world trade balance. These results highlight the potential negative macroeconomics effects to global south countries, which specialize in the production and exports of raw materials, of a transition towards a more environmentally sustainable economy led by developed countries such as the EU.