A Hybrid Energy Input-Output Matrix for Brazil: Analyzing Energy Sectoral Pressures and GHG Emissions

Topic: Energy Policies
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Estimates from the Intergovernmental Panel on Climate Change (IPCC) show that human activities could cause about 1.0Â°C of global warming above pre-industrial levels and warming is likely to reach 1.5Â°C between 2030 and 2052, if it continues to increase at the current rate. Currently, estimated global anthropogenic warming is increasing by 0.2Â°C per decade, considering past and current emissions, warns the IPCC. The consequences of climate change caused by global warming pose risks to humanity and natural ecosystems, highlighting the importance of an energy transition. In this context, contributions arising from population growth, increased food production and economic growth contributed to energy consumption and, in turn, to greenhouse gas (GHG) emissions. Therefore, this work analyzes the structural changes in the Brazilian economy in relation to pressures in the energy sector and pollutant emissions. To this end, the methodology used consisted of using a hybrid input-output model with energy data (physical flows) from the National Energy Balance (BEN), based on input-output matrices estimated for Brazil, between 2000 and 2015, and data from the Greenhouse Gas Emissions and Removals Estimation System (SEEG). The analysis will be based on two parts. The first will be based on the hybrid energy consumption model that will allow checking the direct, indirect and total requirements of the energy sector. In the second part, we will observe the behavior of the energy sector and other sectors of economic activity in Brazil, in relation to GHG emissions. The results obtained will allow a better understanding of the energy sector in Brazil and its participation in the level of emissions given a global agenda to combat climate change.

Keywords: Energy; Input-output; Hybrid models; GHG emissions.