Energy in input-output analysis: a historical perspective

Topic: Special Session: Integration of energy systems models and economic models: advances and applications
Author: Sangwon SUH

This abstract is submitted for the special session, "Integration of energy systems models and economic models: advances and applications" organized by Professor Matteo V. Rocco.

In this presentation, the history of energy input-output literature is reviewed. The works by late Bob Ayres will also be introduced for his contribution that recognized the linkage between natural resources and the economy using input-output structure in the 1960s. Among the subjects included are: the works of Walter Izard who recognized the linkages between nature and the economy and the field of ecological network modeling in the 70s and 80s, which used energy as the currency of ecological networks using the Ghoshian input-output modeling. I will also touch upon the similarities and relationships between the Ghoshian IO model and the absorbing Markov-chain model. I will also touch up on the recent works by Koopmans et al., where the Ghoshian model is revived but in a different spin. I will also talk about Cutler Cleveland and Bob Costanza's works in the 80s published on Science that culminated the golden era of energy input-output modeling in the mainstream science. I will finish with my understanding of the state-of-the-affairs in energy input-output analysis and its prospects.