Implementing the Just Energy Transition (JET) in Colombia: a prototype Ecological Input Output Stock Flow Consistent Model (E-IO-SFC)

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The energy transition is timely today for Colombia, not only because of the benefits it offers to its population, but also because the Colombian State has committed itself to promoting the decarbonization of the economy, and to mitigating the effects of climate change (MinAmbiente, RepÃºblica de Colombia, 2020). Decarbonizing the sectors that sustain the economy and adapting energy systems has a direct implication on the use of energy sources, which are abundant in the Colombian territory.
In this sense, five pillars could be identified for a Just Energy Transition (JET): i) The transition must be carried out through the gradual replacement of fossil energy sources with renewable energy sources, guaranteeing the sovereignty and energy reliability and economic stability of the country, contributing to the mitigation of the effects of the climate crisis; ii) The energy transition shall contribute to the transformation of a mainly extractive economy into a truly productive economy, with renewable energies as one of its pillars; iii) This energy transition must allow the processes of adaptation of workers associated with the current mining and energy sector to the new productive economic structure; iv) Through the transition, energy equality (by means of energy accessibility and affordability) should be promoted; v) The use of the country's natural and renewable resources requires planning processes that promote their use in a sustainable way (Ministerio de minas y energÃ-a, RepÃºblica de Colombia, 2022).
This study aims to develop an ecological stock-flow consistent (SFC) model based on the case of Colombia. In particular, we build upon Nalin et al. (2023) analysis of a Latin American economy highly integrated into financial markets as we include a simplified Input-Output structure. Model parameters, initial values and technical coefficients are calibrated using empirical data from DANE (2023). We show how the model can replicate in-sample stylized facts for Colombia for the 1995-2023 period. We then provide an estimate of JET in accordance with i)-v) pillars.