Evaluating new technologies of biorefineries in Brazil through the application of input-output analysis

Topic: Designing of Energy Policies with I-O
Author: Romulo N. Ely
Co-Authors: Alexandre Salem Szklo, Victoria Emilia Neves Santos

The biorefinery concept provides a wide perspective of products and uses from the biomass conversion. The drive for cost reductions and the threat of food competition have put residual biomass under the spotlight. Sugarcane is the most produced crop in the world, and its residual bagasse has got the additional feature of abundance. Going beyond its traditional use for electricity and thermal generation, this paper explores the potential alternative uses for the sugarcane bagasse in Brazil. Under an Input-Output perspective, Brazilian production recipes are obtained for six distinct biorefining technologies assuming the use of sugarcane bagasse as feedstock. Also, minimum selling prices are derived for the main products of each technological route assessed, comprising an initial estimative of their cost prices in the Brazil. The biomass to ethanol and higher alcohol route presented the higher share (25%) of productive and service sectors into its production recipe. The bioplatform succinic acid route was the only one reaching competitive minimum selling prices (0.57 $/kg) in comparison to current pricing of the fossil-derived succinic acid. Also, we intend to present more findings regarding the research that we are undertaking. The idea is to shed some light into the income, labor and GHG multipliers of such technologies in Brazil.