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Innovation Networks in the Bioeconomy: The Case of Sugarcane in Brazil

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Abstract

The shift from a fossil-based to a bio-based economy requires better utilisation of the entire biomass that can be generated from agricultural production. The proposed paper applies the concept of the “biomass-based value-web” as an analytical approach to capture this new dimension of the bioeconomy. This concept is an extension of the commodity-oriented value chain approach and captures alternative use options of the biomass of a crop and the potential by-products that arise during production and processing. Sugarcane in Brazil is a particularly interesting case study to demonstrate the application of the value web concept primarily because the county was a pioneer investor in biofuels, in addition, Brazil demonstrated the viability of an alternative to a purely fossil fuel-based economy and the willingness to shape markets technologies into a bio-based system. To develop a strong international competitiveness in sugarcane, sugar and ethanol, Brazil showcases the effective use of the entire biomass from sugarcane production, e.g. by cogeneration of electricity. Sugarcane also has the potential to provide biomass for a large number of other uses in the bioeconomy. The case study is based on the analysis of documents and a series of in-depth interviews with stakeholders involved in different “branches” of the value web. The application of the value web concept shows that important lessons can be learned from the case, highlighting the role of innovation, institutional alignment and policy frameworks. The case study emphasizes the role of innovation networks from the past developments and presents an assessment of future development options in Brazil.

Keywords: Bioeconomy, Brazil, innovation networks, sugarcane, value-web