

# Project *brief*

Thünen Institute of Forestry

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## Monitoring the bioeconomy of Uruguay: bio-based value chains and related sustainability effects

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- A material flow based bioeconomy monitoring approach developed for Germany was applied to monitor Uruguayan bio-based material flows as well as related sustainability effects.
- The monitoring reveals the importance of beef, soybean and pulp production for employment and value-added generation, the high GHG emissions generated in livestock farming and pulp production and the relevant agrochemicals use in soybean production.
- Data availability, data gaps and data aggregation, especially in environmental statistics, remain the main challenges towards a long-term bioeconomy monitoring

### Background

The transition from a fossil-based economy towards a more sustainable and renewable bioeconomy is a goal expressed in the global agenda. In order to track the progress to a sustainable bioeconomy, the development of a monitoring system is a prerequisite. Uruguay has been selected as a pilot country for the Food and Agriculture Organization (FAO) project "Towards sustainable bioeconomy guidelines", aiming to support countries in the development of monitoring systems.

### Methodology

The bioeconomy monitoring approach by the Thünen Institute originally developed for Germany includes two different components: i) monitoring of material flows and ii) monitoring of bio-based sectors detailed in (see Gordillo et al 2022; DOI:10.3220/PB1672741297000). The monitoring of material flows provides a more detailed picture of bioeconomy at value chain level. It describes and quantifies the flow of biomass from harvesting to final use and associated sustainability impacts. The monitoring covers *Eucalyptus* pulp, beef and soy. Additionally, milk powder and fisheries were analyzed.

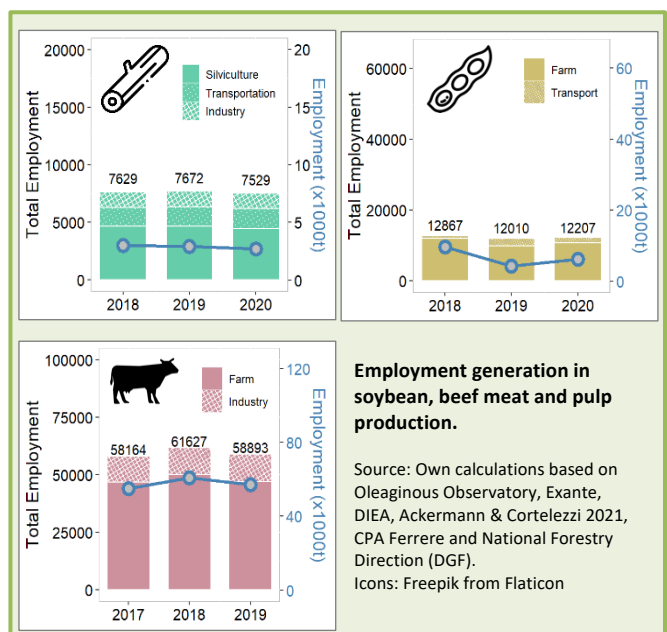
### Results

The monitoring of the material flows reveals the importance of beef, soybean and pulp production in terms of employment and value-added generation in the Uruguayan bioeconomy; it confirms that livestock farming is the biggest source of GHG emissions and dominant land use; it shows the potential to increase energy efficiency of pulp production and for GHG emissions reduction in the industrial processes. Additionally, it emphasizes

opportunities to reduce agrochemical use for soybean production.

### Discussion

The initial monitoring provides a preliminary view on the sustainability effects associated with material flows. The main shortcomings to ensure a sound based long-term bioeconomy monitoring include data aggregation and lack of regularly updated information, especially of environmental statistics.



### Further Information

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