

BUCHAREST UNIVERSITY OF ECONOMIC STUDIES
Doctoral School of Cybernetics and Economic Statistics



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Doctoral thesis title:
**STATISTICAL INSTRUMENTS FOR EVALUATING AND
MONITORING SUSTAINABLE BIOECONOMY**

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ABSTRACT

The present thesis focuses on measuring the performance of sustainable bioeconomy through a stepwise composite indicator that aggregates and presents as much information as possible in an accessible manner. The structure of the paper is partially progressive, as the final chapter builds on the foundations of the previous ones, creating a logical flow of arguments for decision-making in research. Thus, the first chapter concentrates on understanding the bioeconomy, starting from its history and definitions, and reaching the intersectoral and interregional variations to establish the scope of influence of the index and its levels of aggregation. The second chapter describes the basis of the bioeconomy, namely biomass, and its implications in the transition to a sustainable economy, which for the developed measurement tools it translates to the formation of a standalone category with a significant weight in the result. The next chapter narrows down the component sectors of the bioeconomy, being highly useful in filtering the values of the included sub-indicators. The fourth chapter analyses the link to the circular economy and verifies the paradigm resulting from the intersection of the two, also being an important pillar of the index developed in Chapter 5, alongside the presentation of the evolution of other bioeconomy measurement tools. To achieve all the objectives, bibliometric analyses, classification, and methodologies for building composite indicators were used. The results revealed significant variations in the implementation of bioeconomy across different regions, the increasing popularity of advanced analysis methods, even those based on artificial intelligence, and a ranking dominated by European states in terms of sustainable bioeconomy performance. The research in this thesis and that done throughout the doctoral studies has significantly contributed to the coherent development of the analysed field by finding solutions to the issue of measuring it in a clear and unified way.

Keywords: bioeconomy, circular economy, sustainability, monitoring, index

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