BUCHAREST UNIVERSITY OF ECONOMIC STUDIES
FACULTY OF INTERNATIONAL BUSINESS AND ECONOMICS
Doctoral School: INTERNATIONAL BUSINESS AND ECONOMICS

HABILITATION THESIS

A Multidimensional Analysis of the Energy Transition in the European Union

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Summary

This habilitation thesis analyzes the energy transition from a multidimensional perspective, integrating political, economic, social, and technological aspects. Through an interdisciplinary approach, the study examines the impact of European regulations on the energy transition, the development of renewable energy sources, the challenges associated with the decarbonization process, and the role of innovation and digitalization in optimizing energy consumption. Furthermore, the research includes case studies and comparative analyses on the evolution of the energy transition at both European and national levels, with a particular focus on Romania.

The thesis begins by defining the political and institutional framework of the energy transition, emphasizing the importance of European regulations and sustainability strategies for reducing carbon emissions. Various models of the energy transition are analyzed, assessing their implementation effectiveness across EU member states. The author's contribution consists of identifying mechanisms to improve decarbonization policies, based on empirical studies and comparative models.

A fundamental pillar of the research is the analysis of renewable energy sources and their integration into a sustainable economic model. Alternative solutions to fossil fuels are assessed, alongside strategies for optimizing the energy mix by promoting the circular economy. The author's contributions include the development of scenarios for accelerating the adoption of renewable energy sources and the analysis of strategies to enhance energy efficiency through economic and technological instruments.

The thesis also addresses the challenges associated with the energy transition, including its impact on urban areas, the social inequalities it generates, and the measures needed for cities to adapt to climate change. Additionally, the study examines public trust in energy policies and how the COVID-19 pandemic has influenced public perceptions of the energy transition. The author's contribution lies in analyzing the interaction between energy policies and social factors, proposing solutions to increase public acceptance of decarbonization initiatives.

Another innovative aspect of this thesis is the investigation of the role of digitalization and innovation in the energy transition. The impact of emerging technologies on energy efficiency is analyzed, including the use of blockchain in smart agriculture and the role of universities as drivers of change. The author's contribution is reflected in the evaluation of the potential of emerging technologies to optimize energy processes and develop sustainable models based on digitalization.

The case studies and comparative analyses highlight the specific characteristics of the energy transition at both the European and Romanian levels, identifying best practices, challenges, and opportunities for accelerating decarbonization. This approach enables the formulation of

policy recommendations and sectoral strategies with direct implications for future decision-making in sustainable energy.

The general contribution of this thesis lies in integrating a comprehensive perspective on the energy transition, offering innovative and practical solutions for a sustainable energy system. Through its interdisciplinary approach and the use of advanced research methods, the study makes a significant contribution to the development of knowledge in the field of energy transition, providing a solid foundation for future research initiatives and the implementation of sustainability policies.

The relevance of this thesis stems from the urgent need for an efficient transition to a decarbonized energy system, given the current challenges related to climate change, energy security, and sustainable development. This research enhances the understanding of transition mechanisms and provides a valuable guide for policymakers, researchers, and practitioners interested in renewable energy and sustainability.