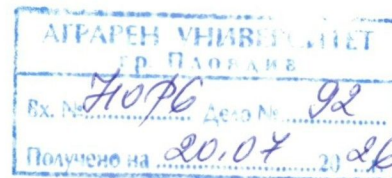


REVIEW



of a dissertation submitted for the award of the educational and scientific degree
“Doctor” in: Higher Education Area 3. Social, Economic and Legal Sciences,
Professional Field 3.8. ECONOMICS, Scientific Specialty “Economics and
Management (Agriculture)”

Author of the dissertation: Petar Kazakov, PhD student (independent study) at
the Department of Economics, Agricultural University, Plovdiv

Dissertation title: THE IMPACT OF CENTERS OF EXCELLENCE ON THE
DEVELOPMENT OF THE BIOECONOMY IN EUROPE

Reviewer: Prof. Natalia Mihova Stoyanova, PhD, University of Agribusiness and
Regional Development – Plovdiv, in Higher Education Area 3. “Social, Economic and
Legal Sciences”, Professional Field 3.7. “Administration and Management”, Scientific
Specialty “Economics and Management (Sustainable Regional Development)”, appointed
as a member of the Scientific Jury by Order No. RD-16-736/08.06.2026 of the Rector of
the Agricultural University.

1. Brief presentation of the candidate.

Petar Kazakov works as a Marketing Expert. His work is related to business
activities, organization of events, preparation of promotional materials, project reporting,
communication and cooperation with Bulgarian and foreign institutions, participation in
conferences, round tables and meetings with producers, preparation of surveys and
questionnaires, as well as processing and analysis of information, which provides him
with a broad perspective on the selected dissertation topic.

2. Relevance of the problem.

The European Union plays a leading role in the development and
institutionalization of the bioeconomy through strategic policies, financial instruments,
and initiatives aimed at stimulating scientific research and innovation. The EU
Bioeconomy Strategy of 2018 and its update in 2025, together with the European Green
Deal and the United Nations Sustainable Development Goals, form the framework for the
transition to a more sustainable and competitive economy. In this context, Centers of
Excellence (CoEs) emerge as key institutional structures that connect scientific research
with practical applications, business, and public policies.

3. Objective, tasks, hypotheses, and research methods.

The main objective of the present study is to analyze the role of Centers of Excellence in the development of the bioeconomy in Europe by assessing their impact on the innovation system and identifying directions for strategic development, with a focus on the Center of Plant Systems Biology and Biotechnology (CPSBB) in Bulgaria.

The object of the research is the Centers of Excellence in Europe as part of the European research and innovation system.

The subject of the research is the role of Centers of Excellence in the development of the bioeconomy, their organizational models, funding mechanisms, interactions with other institutions, and their socio-economic impact, as well as the specific case of CPSBB in Bulgaria.

To achieve the stated objective, the following research tasks are formulated:

1. To clarify the theoretical and conceptual foundations of the bioeconomy, including its emergence, development, and main directions.
2. To analyze the European and international strategic frameworks related to the bioeconomy, including EU strategies, the European Green Deal, and the Sustainable Development Goals.
3. To examine the institutional and innovation infrastructure supporting the bioeconomy at the European, national, and regional levels.
4. To define and classify Centers of Excellence and analyze European policies for their establishment and funding.
5. To study the organizational models, management structures, and partnerships of leading Centers of Excellence in Europe.
6. To assess the socio-economic impact of Centers of Excellence on regional and national development.
7. To conduct an in-depth analysis of the Center of Plant Systems Biology and Biotechnology (CPSBB) in Bulgaria—its mission, structure, scientific achievements, funding, and international partnerships.
8. To evaluate the contribution of CPSBB to the development of the regional and national bioeconomy.
9. To formulate recommendations for the optimization and strategic development of Centers of Excellence in the context of European priorities.

Conceptually, the methodological framework integrates three interrelated theoretical perspectives: innovation systems theory and the Triple Helix model, the understanding of the bioeconomy as a transformational framework for sustainable development, and approaches for assessing organizational and institutional impact. This allows Centers of Excellence to be viewed not only as research structures but also as strategic intermediaries between fundamental science, technological innovation, industry, and public policy. Thus, the selected methodology provides a basis for analyzing both scientific productivity and management models, as well as the contribution of CoEs to knowledge transfer, regional development, and sustainable bioeconomic transformation.

4. Presentation and illustration of the obtained results.

Dissertation data: Volume – 233 pages, Number of figures – 38, Number of tables – 32.

The present study is based on a methodological framework that combines qualitative and quantitative methods in order to provide a comprehensive and in-depth understanding of the role of Centers of Excellence (CoEs) in the development of the bioeconomy. The selected methodological design follows the logic of mixed methods, in which qualitative and quantitative techniques complement each other and allow for data triangulation (Creswell & Plano Clark, 2018). The main directions, sectors, and technologies of the bioeconomy, as well as its links with the circular economy, green economy, and sustainable development, have been examined. Special attention has been paid to the strategic documents of the European Union, including the Bioeconomy Strategies of 2018 and 2025, the European Green Deal, and the United Nations Sustainable Development Goals.

5. Discussion of the results and literature used.

Number of sources used in the dissertation – 206.

The methodological design of the dissertation includes four main complementary methods: comparative case study analysis, documentary analysis, semi-structured interviews, and a survey study.

The qualitative analysis is complemented by semi-structured interviews conducted with representatives of academia, funding organizations, business, and experts in the field of the bioeconomy. The interviews were conducted using a previously developed thematic questionnaire and analyzed through thematic analysis, allowing the

identification of the main factors influencing the development and impact of Centers of Excellence.

The quantitative component of the study was implemented through a standardized survey conducted during the period January–March 2026. The primary tool for information collection was an online questionnaire developed using the Google Forms platform.

The survey instrument is structured into five thematic blocks covering the respondents' profile, the strategic role of Centers of Excellence, their scientific and economic contribution, their management and sustainability, as well as the main challenges and prospects for future development. Descriptive statistical methods were used in processing the results, including frequency distributions, relative shares, mean values, and graphical presentation of data.

6. Contributions of the dissertation

Scientific contributions

- An integrated theoretical and conceptual framework has been developed for analyzing the interrelationship between the bioeconomy, Centers of Excellence, and innovation systems by combining economic, institutional, and managerial aspects of sustainable development.
- A conceptual typology of Centers of Excellence has been developed, identifying their organizational characteristics, management models, funding mechanisms, and functional relationships with the scientific, innovation, and economic environment.
- The role of Centers of Excellence as strategic intermediaries between science, business, and public policy has been theoretically substantiated through the integration of innovation systems concepts and the Triple Helix model.
- The scientific understanding of Centers of Excellence as a key element of the European bioeconomic transformation has been further developed by substantiating their role in knowledge transfer, human capital development, and regional socio-economic development.

Scientific and applied contributions

- A comparative analysis of leading European Centers of Excellence in the field of plant systems biology has been carried out, identifying best practices, organizational models, and factors for sustainable development applicable under Bulgarian conditions.

- An empirical approach for assessing the role of Centers of Excellence in the development of the bioeconomy has been developed and tested through a bilingual survey, enabling the identification and systematization of the main factors determining their impact on innovation ecosystems and regional development.

- An integrated multi-component model for the strategic development and optimization of Centers of Excellence has been developed, combining institutional, financial, scientific, and innovation mechanisms for sustainable operation.

A business model and strategic roadmap have been proposed for the sustainable development of the Center of Plant Systems Biology and Biotechnology and of Centers of Excellence in general, including mechanisms for financial sustainability, technology transfer, international cooperation, and strengthening interactions between science, business, and public institutions.

7. Critical remarks and questions – none.

8. Published articles and citations.

Number of publications by the doctoral candidate – 6

- o Kazakov, P., & Dintcheva, T., & Boteva, H. (2024). Marketing research and market of non-traditional and poorly distributed vegetable crops in Bulgaria. *Bulgarian Journal of Agricultural Economics and Management*, 67(1), 31–42.

- o Gechev, T., Kazakov, P., Ivanova, A., Ivanova, T., Mircheva, M., Kolev, V., Ganeva, D., Tabakova-Komsalova, V., Ruseva, M., Kantardjieva, E., & Kazashka, V. S. (2024). Establishment and development of the Center of Plant Systems Biology and Biotechnology in Plovdiv, Bulgaria. *Open Research Europe*, 3, 140.
<https://doi.org/10.12688/openreseurope.16514.3>

- o Kazakov, P., Atanasov, D., & Gechev, T. (2023). The Teaming Initiative: Establishing of New European Centers of Excellence in Plant Biology and Medicine. *Austin Journal of Plant Biology*, 9(2), 1040.

o Kazakov, P., Alseekh, S., Ivanova, V., & Gechev, T. (2024). Biostimulant-Based Molecular Priming Improves Crop Quality and Enhances Yield of Raspberry and Strawberry Fruits. *Metabolites*, 14, 594. <https://doi.org/10.3390/metabo14110594>

o Ilieva, Y., Gupta, S., Wittenberg, M., Ivanova, V., Kazakov, P., Alseekh, S., Sujeeth, N., & Gechev, T. (2026). A plant biostimulant from *Ascophyllum nodosum* protects raspberry from heat-induced sunburn. *Plant Stress*, 20, 101315. <https://doi.org/10.1016/j.stress.2026.101315>

o Kazakov, P., Atanasov, D., Beluhova, R., Mircheva-Topalova, M., Ivanova, A., Kazashka, V., & Gechev, T. (2026). Impact of leading plant research centers of excellence on the scientific and socio-economic development in Europe. *Frontiers in Research Metrics and Analytics*, 11, 1770226. <https://doi.org/10.3389/frma.2026.1770226>

The submitted dissertation abstract objectively reflects the structure and content of the dissertation.

CONCLUSION:

Based on the various research methods learned and applied by the doctoral candidate, the properly conducted experiments, and the conclusions and generalizations made, I consider that the submitted dissertation meets the requirements of the Academic Staff Development Act of the Republic of Bulgaria and the Regulations of the Agricultural University for its implementation, which gives me grounds to evaluate it **POSITIVELY**.

I would like to propose that the esteemed Scientific Jury also vote positively and award Petar Kazakov, doctoral candidate at the Department of Economics, Agricultural University, Plovdiv, the educational and scientific degree “Doctor” in the scientific specialty “Economics and Management (Agriculture)”.

Date: 24.06.26

Plovdiv

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данни).**