# REVIEW

on the dissertation for the educational and scientific degree of "Doctor" in: field of higher education 3.0. Social, economic and legal sciences, professional field 3.8. Economics, scientific specialty "Economics and Management (Agriculture)"

**Author of the dissertation**: Petar Asenov Kazakov , part-time doctoral student at the Department of Economics at the Agricultural University, Plovdiv

**Topic of the dissertation**: Impact of centers of excellence on the development of the bioeconomy in Europe

**Reviewer**: Prof. Dr. Alexander Krasimirov Davchev, Higher School of Agribusiness and Regional Development; field of higher education 3. "Social, Economic and Legal Sciences", professional field 3.8 Economics, scientific specialty "Regional Economy and Sustainable Development" appointed as a member of the scientific jury by order No. RD-16-736/08.06.2026 by the Rector of the Agricultural University

**1. Brief introduction of the candidate.**

Doctoral student Petar Kazakov was born on November 25, 1978. He received his economic education in Veliko Tarnovo and Plovdiv. Subsequently, he began his professional career in the field of direct sales, with his main role being communication and attracting customers. Later, he continued his development in the field of marketing at the Maritsa Agricultural and Food Institute in Plovdiv, where he deals with the development and implementation of its products, the preparation of marketing strategies and other events stimulating sales. From 2019 to the present, he has been working at the Center for Plant Systems Biology and Biotechnology, where he is further developing his skills in the field of sales and turning his attention to scientific work, taking part in a number of conferences, round tables, meetings, etc.

**2. Relevance of the problem.**

The topic of the dissertation is relevant and significant both in theoretical and practical aspects. In recent decades, Bioeconomy has been established as a key conceptual and practical approach for sustainable development in the context of

increasing pressure on natural resources, climate change, demographic challenges and the need for transformation of traditional economic models. It is an integrated system based on the use of renewable biological resources, innovation and circular models of production and consumption, connecting agriculture and forestry, biotechnology, bioenergy and bio-based industries with scientific research and technological development.

In this context, centers of excellence (COEs) emerge as key institutional structures that connect scientific research with practical applications, business and public policies.

**3. Purpose, tasks, hypotheses and research methods.**

**The aim of the study** is to analyze the role of centers of excellence in the development of the bioeconomy in Europe, assessing their impact on the innovation system and deriving guidelines for strategic development, with a focus on the Center for Plant Systems Biology and Biotechnology (CSPB) in Bulgaria.

In order to achieve the set objective, the following tasks have been solved:

1. The theoretical and conceptual foundations of the bioeconomy are clarified, including its emergence, development and main directions.

2. The European and international strategic frameworks related to the bioeconomy are analyzed, including the EU strategies, the European Green Deal and the Sustainable Development Goals.

3. The institutional and innovation infrastructure supporting the bioeconomy at the European, national and regional levels is studied.

4. The centers of excellence are defined and classified, and the European policies for their establishment and financing are analyzed.

5. The organizational models, management structures and partnerships of leading centers of excellence in Europe are studied.

6. The socio-economic impact of the centers of excellence on regional and national development is assessed.

7. To conduct an in-depth analysis of the Center for Plant Systems Biology and Biotechnology (CSPB) in Bulgaria – its mission, structure, scientific results, funding and international partnerships.

8. The contribution of CSPB to the development of the regional and national bioeconomy is assessed.

9. Recommendations for the optimization and strategic development of the centers of excellence in the context of European priorities are also formulated.

The rich methodology used by the doctoral student is impressive. Based on qualitative and quantitative research techniques, it creates a basis for analyzing both scientific productivity and management models, as well as the contribution of the CEC to knowledge transfer, regional development, and sustainable bioeconomic transformation.

**The subject of the study** 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 the Center for Bioeconomy Excellence in Bulgaria.

**The object of the study** are the centers of excellence in Europe as part of the European science and innovation system.

**4. Visualization and presentation of the obtained results.**

The dissertation is structured in four logically connected parts, each of which has its own introduction and methodological explanation, concluded with a list of used literature - a total of 233 pages. The presentation of the presented dissertation work is developed in the following structure: Introduction, the first chapter entitled "Theoretical and conceptual foundations of the bioeconomy and the role of centers of excellence", the second chapter - "Centers of excellence in Europe and their role in the innovation system", the third - "Analysis of the center for plant systems biology and biotechnology" and the fourth - Optimization and strategic development of centers of excellence", conclusions and recommendations and used literature. The relatively large number of figures, respectively - 38 and tables - 32, is striking, which can be considered a good illustration of the dissertation work by the author.

**5. Discussion of the results and used literature.**

The presented dissertation aims to carry out a comprehensive and critical analysis of the Bioeconomy in its various aspects of manifestation, refracted through the prism of the UN Sustainable Development Goals and the strategic

guidelines that the EU sets for itself. The focus remains on the centers of excellence, which are considered key institutional structures connecting scientific research with practical applications, business and public policies.

The first part examines the theoretical foundations and evolution of the concept of the bioeconomy, analyzing the main scientific approaches and international interpretations of the concept. The development of the bioeconomy is traced from early theoretical statements to modern European and global policies aimed at sustainable management of biological resources and the transition to a low-carbon economy.

The second part is dedicated to the theoretical and comparative analysis of the centers of excellence (COE) as a tool of the European policy for scientific research, innovation and development of the bioeconomy. Their conceptual characteristics, European policies for establishment and funding, as well as organizational models of leading European centers in the field of plant systems biology are studied.

The third part is dedicated to the analysis of the Center for Plant Systems Biology and Biotechnology (CPSB) as an example of a successfully established research infrastructure and center of excellence in Bulgaria

The fourth part is dedicated to the optimization and strategic development of centers of excellence, with special attention paid to the Center for Plant Systems Biology and Biotechnology (CPSB). Based on the conducted empirical research, comparative analysis and good European practices, the main challenges to their development have been identified and proposals have been developed to increase their institutional, scientific and financial sustainability.

Based on the conducted research, the following main conclusions are formulated:

• It has been proven that the bioeconomy is a complex transformation framework that integrates scientific, technological, economic and institutional processes aimed at the sustainable use of biological resources, and at the same time the role of centers of excellence in it has been established.

• Successful practices in leading European centers have been compared and their key role in the creation of high added value products has been proven.

• The empirical research conducted through a survey clearly shows that centers of excellence, and in particular the Centers of Excellence for

Biotechnology, are perceived as a key factor for scientific and innovative development

- The similarities and differences between the international and Bulgarian sample are analyzed, highlighting the strengths of the domestic centers positioned in the national innovation ecosystem
- The existing limitations that play a role in their development are also indicated, based not so much on the lack of scientific capacity, but rather related to the specifics of the institutional and market environment in which they operate
- The study confirms that centers of excellence can become a key tool for realizing the goals of the European Green Deal, digital transformation and bioeconomy strategies

In summary, the results clearly show that centers of excellence have a significant positive impact on the development of the bioeconomy in Europe and Bulgaria by accelerating scientific innovation, technology transfer and regional specialization.

The dissertation formulates an integrated set of institutional and practical recommendations for the better and sustainable work of the Centers of Excellence. These include the adoption of a national long-term program for institutional sustainability, professionalized technology transfer structures to support patenting, licensing, the creation of spin-off companies and partnerships with industry. The creation of sustainable financial models, specialized programs for attracting and retaining young scientists, postdoctoral fellows and international researchers, as well as expanding cooperation between the Centers of Excellence and agrarian business through living labs, demonstration farms and pilot innovation platforms.

It can be assumed that the results of the presented study have been interpreted in depth, reasoned and relevant to the set goals and objectives.

A good impression is made by the numerous, modern and multi-layered literary sources that the doctoral student has used, of which the majority are strategic documents and sources in English. This shows his in-depth attitude to the research subject, as well as knowledge of its theoretical framework. It can be categorically concluded that the development of the dissertation was built on a

very good foundation, which contributes to the high quality of the proposed work.

**6. Contributions of the dissertation work.**

The dissertation work contains scientific-theoretical and scientific-applied conclusions, which I present as the doctoral student formulated it:

**Scientific-theoretical contributions:**

• An integrated theoretical and conceptual framework has been developed for the analysis of the interrelationship between the bioeconomy, centers of excellence and innovation systems, bringing together economic, institutional and management aspects of sustainable development.

• A conceptual typology of centers of excellence has been developed, outlining 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 policies has been theoretically substantiated by integrating the concepts of innovation systems 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, arguing for 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 was carried out, through which good practices, organizational models and factors for sustainable development applicable in Bulgarian conditions were identified.

• An empirical approach was developed and tested to assess the role of centers of excellence in the development of the bioeconomy through a bilingual survey, which allows for the identification and systematization of the main factors determining their impact on innovation ecosystems and regional development.

• An integrated multi-component model for strategic development and optimization of centers of excellence was developed, which combines institutional, financial, scientific and innovation mechanisms for sustainable functioning.

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

I accept the contributions thus indicated

**7. Critical remarks and questions.**

I have no critical remarks and questions.

**8. Published articles and citations.**

Publications are presented that are directly related to the topic of the dissertation and reflect its main research aspects. The publication activity (6 publications presented) exceeds the minimum requirements for admission to the defense of a dissertation. No data on citations are provided.

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

**CONCLUSION:**

Based on the various research methods learned and applied by the doctoral student, the correctly conducted experiments, the generalizations and conclusions made, I believe that the presented dissertation meets the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria and the Regulations of the Agricultural University for its application, which gives me reason to evaluate it **POSITIVELY**

I would like to propose to the esteemed Scientific Jury to also vote **positively** and award **Petar Asenov Kazakov** the educational and scientific degree of "doctor" in the scientific specialty "Economics and Management (Agriculture)"

Date: 14.05.2026
Plovdiv

Подписите в този документ са заличени във връзка с чл.4, т.1 от Регламент (ЕС) 2016/679
(Общ Регламент относно защитата на данни).