УНИВЕРСИТЕТ ПО АРХИТЕКТУРА СТРОИТЕЛСТВО И ГЕОДЕЗИЯ
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УНИВЕРСИТЕТ
по Архитектура, Строителство и Геодезия
1046 София, бул. „Хр. Смирненски" № 1
Регистрационен индекс и дата
650 / 26.08.2026

STATEMENT

Member of the Scientific Juri: Assos. Prof Eng. Siya [redacted] Veleva, PhD, Department of Sustainable Land Use and Real Estate Management, Faculty of Geodesy, University of Architecture, Civil Engineering and Geodesy, Sofia, Bulgaria, professional field 3.7. Administration and Management, scientific specialty: "Economics and Management"

of the dissertation on the topic: **ECOLOGICAL APPROACH TO STRUCTURAL PLANNING IN ENERGY PROJECTS FROM RENEWABLE SOURCES**
submitted for the acquisition of the PhD in the professional field 5.7. Architecture, Construction and Geodesy, PhD Program in Land Development and Protection of Agricultural Lands (incl. Property Management) by doctoral student **Asst. Eng. Bisera [redacted] Ivanova**, from the Department of Sustainable Land Use and Real Estate Management; Faculty of Geodesy, University of Architecture, Civil Engineering and Geodesy (UACEG).

1. Brief biographical data and description of the scientific interests of the doctoral student

Eng. Bisera Ivanova graduated with a master's degree in "Geodesy" in 2020. After graduation, she started working as a software developer in an international technology company, which allowed her to apply the acquired knowledge and practical skills in the field of spatial data and three-dimensional modeling.

In 2021, she was enrolled as a full-time doctoral student in the professional field 5.7. Architecture, Construction and Geodesy, doctoral program " Land Development and Protection of Agricultural Lands (incl. Property Management) by order No. 164/26.02.2021 of the Rector of UACEG. Since 2022, she has been appointed as an assistant at the Department of "Land and Property Management", Faculty of Geography of UACEG-Sofia and has been transferred to a part-time form of study. She was granted the right to defend by order No. 296/01.04.2025 of the Rector of UACEG.

On 30.06.2026, an internal defense of the dissertation work of Asst. Eng. Ivanova was held at an extended departmental council of the Department of "UZUI", GF and it is aimed at a public defense, which is planned to be held on 17.09.2026.

As an assistant, she leads exercises in the disciplines "Organization of agricultural territories", "Management of protected areas", "Property management", "Ecology", "Geodesy" and "Territorial organization".

Her scientific and professional interests are focused on the sustainable development of territories, their organization and planning, land and property management and the combination of investment processes with environmental protection requirements. She participates in the development of projects in the field of spatial planning, including general and detailed spatial plans. He is a member of the Academic Council of the University of Applied Sciences and Arts of Bulgaria and actively participates in the activities of the Department of Geodesy at the Faculty of Geodesy.

2. Review of the dissertation and analysis of the results

The developed methodology has been tested in the municipalities of Radnevo and Rakitovo, which confirms its applicability for supporting planning decisions at the OUP level.
The sensitivity and sustainability analysis of the results should also be positively assessed, through which the influence of expert weights and individual indicators on the final ranking was verified.

2.4. Analytical characteristics and evaluation of the material on which the contributions of the dissertation are built.

The dissertation of Eng. Bisera Ivanova on the topic "ECOLOGICAL APPROACH TO STRUCTURAL PLANNING IN ENERGY PROJECTS FROM RENEWABLE SOURCES", for the award of the educational and scientific degree "Doctor" is an in-depth scientific and applied research. It was developed within the framework of the professional direction 5.7. "Architecture, construction and geodesy" and the doctoral program "Land management and protection of agricultural lands (incl. property management)". The scientific issues are interdisciplinary, uniting spatial planning, land use, ecology, spatial analysis and the development of renewable energy.
The work is structured in six main sections, sequentially examining the relevance of the problem, the state of scientific research and the regulatory framework, the methodological foundations, the developed methodological guidelines, their testing on real territorial alternatives and the formulation of conclusions, contributions and guidelines for future research. The structure is logical and corresponds to the set goal and tasks.
The subject, object, goal and research tasks of the dissertation work are correctly defined. A research thesis is formulated. The structure of the dissertation is logically constructed and is subordinated to the overall development of the research problem, the achievement of the research tasks and goal.
As a result of the above, I conclude that the goal and research tasks of the dissertation work have been fulfilled.

3. Assessment of the correspondence between the abstract and the dissertation and opinion on the submitted publications

As a result of my careful familiarization with the abstract and the content of the dissertation of Eng. Bisera Ivanova, I came to the conclusion that:

- ✓ The abstract is 53 pages long and has been developed in accordance with the requirements.
- ✓ In terms of content and structure, the abstract fully corresponds to the dissertation. It reflects the main points in the dissertation and gives a clear idea of what the doctoral student has achieved.
- ✓ The reference to the contributions is correctly made, and the contributions are well highlighted and clearly formulated.

3 publications are listed, of which 1 is developed in co-authorship and 2 are independent work. It can be assumed that they are sufficient and that the main points of the dissertation are published in them.

4. Characteristics and assessment of contributions in the dissertation work

The contributions indicated in the dissertation work are the personal work of the doctoral student. They are directly related to the set goal and tasks and arise from the conducted theoretical, methodological and applied research. They can be defined as scientific and scientific applied, with a clearly expressed practical focus.

From a scientific point of view, a significant contribution is the development of an integrated ecological approach to spatial planning, which combines the ecosystem approach, the concept of ecosystem services, the DPSIR framework and multi-criteria analysis using AHP. Within the framework of this approach, an author's integrated index of ecological sustainability (ESI) has been developed, through which various characteristics of the territory are summarized.

The developed methodology for assessing and selecting territorial alternatives for the construction of a FPP has a scientific-applied nature, including a system of criteria and indicators, evaluation scales, expert determination of weights, data normalization and calculation of ESI. The methodology allows simultaneous consideration of spatial, soil-ecological, hydro-ecological, biotic and landscape characteristics.

The practical significance of the work is confirmed by testing the methodology in the municipalities of Radnevo and Rakitovo, where specific territorial alternatives were compared and their relative ecological sustainability was determined. The sensitivity analysis conducted shows the sustainability of the obtained ranking in the event of changes in individual input parameters.

In summary, it can be said that the contributions of the dissertation can be assessed as justified, interconnected and significant from both a scientific and practical point of view. The author's aspiration to turn theoretical statements into an applicable tool for supporting planning decisions in the selection of territories for FPP is particularly valuable.

5. Critical notes and comments

My careful acquaintance with the dissertation gives me reason to summarize that it is a serious scientific work with significance for theory and practice. It does not contain any significant omissions, inaccuracies or contradictions. At the same time, I also have some critical remarks, the most important of which are:

1. The developed system of criteria and indicators is sufficiently complex, but for some of the indicators a more detailed argumentation could be presented regarding their inclusion, their relative importance and their connection with the specific environmental impacts of the construction of the FPP.
2. The main emphasis in the dissertation is placed on environmental and spatial characteristics. In the future development of the methodology, economic and social criteria could be included - for example, economic efficiency of the territory, costs of connection to the electricity transmission infrastructure, impact on the local economy and the interests of agricultural producers. This would turn the model into an even more complex tool for supporting planning decisions.
3. The dissertation correctly identifies the lack of mechanisms for tracking cumulative territorial and environmental consequences. In this aspect, the developed methodology itself could be further developed with indicators that

allow for assessing the accumulation of impacts from several investment projects in one territory.

4. Although a sensitivity analysis has been performed, it would be useful to compare several scenarios with different expert preferences – for example, an ecologically oriented, balanced and infrastructure-oriented scenario. This would show to what extent the ranking of the alternatives depends on the priorities of the decision-maker.

The above-mentioned notes are primarily aimed at refining and improving the methodological tools and at a more in-depth interpretation of the results obtained. They do not affect the main premises and results of the dissertation work and do not reduce its scientific and scientific-applied value. On the contrary, I see them as opportunities for further development of the developed approach and for increasing its methodological precision and applicability.

6. Conclusion

The dissertation work of Eng. Bisera Biserova Ivanova represents a completed and independent scientific study on a current and significant problem, in which substantiated scientific and scientifically applied results have been achieved. The developed integrated approach and methodology for the assessment and selection of territories for FPPs, approved in the municipalities of Radnevo and Rakitovo, have practical applicability and contribute to more environmentally sound spatial planning. The contributions are clearly formulated and correspond to the set goals and objectives, and the candidate demonstrates the necessary knowledge and skills for independent scientific research work. The critical remarks made are recommendations for future development and do not diminish the merits of the work.

All this gives me reason to give a **POSITIVE EVALUATION** of the dissertation work and to recommend to the esteemed members of the Scientific Jury to **award Eng. Bisera Ivanova the educational and scientific degree "DOCTOR"** in the prof. field 5.7. Architecture, Construction and Geodesy, doctoral program " Land Development and Protection of Agricultural Lands (incl. Property Management).

Sofia, 25.08.2026 г. Signature:

/ Assos. Prof Eng. Siya Veléva /