



ACADEMIC OPINION

Regarding: competition for obtaining the academic position PhD in:
Field of higher education: 3. Social, economic, and legal sciences
Professional field: 3.8 Economics
Scientific Specialty: Agricultural Economics and Management

Author: Svetoslav Zhorov Lavchiev, Part-time PhD Student, Department of Economics, Agricultural University – Plovdiv

Dissertation topic: Sustainable Electricity Production From Photovoltaic Systems

Reviewer: Prof. Toni Bogdanova Mihova, PhD, Technical University of Sofia, Plovdiv Branch, Higher Education Area: 3. Social, Economic, and Legal Sciences, Professional Field: 3.7 Administration and Management, Scientific Specialty: Economics and Management, Appointed as a member of the Scientific Jury by Order No. RD-16.491 / 06.04.2026 issued by the Rector of the Agricultural University (AU).

1. Relevance of the topic and appropriateness of the goals and objectives set

Sustainable electricity production from photovoltaic (PV) systems is one of the most pressing topics in energy, economics, and ecology, especially in the context of European and national decarbonization goals. The main arguments for the significance of the researched problem are related to economic profitability and development, energy independence and security, and environmental sustainability. In this context, photovoltaic systems represent a key element for the sustainable energy transition in Bulgaria. This necessitates the assessment of the sustainability of photovoltaic energy production in Bulgaria through an analysis of various factors affecting the development, implementation, and operation of PV systems as a timely issue in both scientific and applied aspects.

2. Aim, tasks, hypotheses, and research methods.

The aim, subject, and tasks of the research are accurately and clearly formulated, in alignment with the research topic. The methodology employs a diverse range of tools, including document analysis, quantitative and qualitative methods, comparative analysis, and case studies. Furthermore, it incorporates investment analysis, encompassing cash flow assessments, the calculation of financial profitability indicators, and the application of scenario modeling to forecast various development options

3. Visualization and Presentation of the Obtained Results

The dissertation features a balanced structure and consists of an introduction, three main chapters, a conclusion, a bibliography, and appendices (263 pages in total). The author illustrates the results through a comprehensive set of 55 tables and 32 figures.

4. Discussion of the results and references used.

The first chapter defines the core concepts of the research - specifically 'energy sources', 'energy model', and 'energy transition' by synthesizing various theoretical perspectives. It provides a comprehensive classification of energy sources, highlighting their strategic significance. Particular emphasis is placed on the role of photovoltaic (PV) systems in the sustainable energy transition and the inherent challenges of implementing such projects.

Chapter two details the methodological framework for investigating sustainable electricity production from photovoltaic (PV) systems. The study employs an integrated research design, combining qualitative and quantitative methods to facilitate a multi-dimensional analysis of the macroeconomic, institutional, and project-specific aspects of PV technology development.

The third chapter establishes the empirical framework by analyzing four distinct photovoltaic case studies. Utilizing investment analysis and scenario modeling, the research evaluates the economic efficiency of these projects, with results indicating that such investments are not only financially viable but also hold substantial potential for sustainable growth. These findings validate the central research thesis concerning the pivotal role of photovoltaic systems in Bulgaria's sustainable energy transition.

Chapter four examines the future outlook for solar energy and proposes conceptual models for the sustainable deployment of photovoltaic systems. Serving a synthesis function, this chapter develops frameworks that integrate economic efficiency, technological feasibility, and institutional compatibility. Based on this synthesis, a set of strategic recommendations is formulated. The overarching conclusion suggests that photovoltaic systems are not merely a technological solution but a strategic driver for the transition to a low-carbon economy. Their successful expansion is contingent upon consistent political support, a refined regulatory environment, streamlined access to financing, and the engagement of local communities. The findings substantiate the core research thesis, demonstrating that sustainable electricity production from photovoltaic systems in Bulgaria is attainable through the convergence of technological efficiency, economic viability, and robust institutional support.

The literature review covers 327 sources, which correspond directly to the main research areas of the dissertation. The author has utilized strategic documents of the European Union, specifically the European Green Deal and the Integrated National Energy and Climate Plans. The doctoral candidate is well-versed in the current state of the research problem.

5 Contributions of the Dissertation

I endorse the submitted report on the candidate's contributions and hold the following achievements in high regard:

Scientific Contributions

- The study establishes an integrated theoretical framework for assessing the

sustainability of photovoltaic systems. By merging economic, technological, and institutional perspectives, this framework extends current scientific paradigms for evaluating renewable energy technologies.

Scientific and Applied Contributions

- This research proposes conceptual models for investment strategy selection in photovoltaic system deployment and formulates practical recommendations for policy and regulatory enhancements designed to incentivize renewable energy investment and increase overall energy sector efficiency.

6. Critical Remarks and Questions

I have no critical remarks or questions. My recommendation to the doctoral candidate is to disseminate the results of the study through publications in high-impact international journals (indexed in Scopus and Web of Science) to enhance the global visibility and scholarly impact of the dissertation's contributions.

7. Publications and Citations

The candidate has submitted three research papers aligned with the dissertation's scope, including one sole-authored publication. The dissertation abstract provides an objective and comprehensive overview of the work's structure and core findings.

CONCLUSION:

Considering the diverse research methodologies employed, the solid experimental work, and the well-founded conclusions presented by the candidate, I find that the dissertation complies with the legal requirements of the LDASRB and the specific internal regulations of the Agricultural University. Therefore, I confidently give a **POSITIVE** assessment of the work.

I strongly recommend that the esteemed Scientific Jury cast a positive vote and confer the educational and scientific degree of 'Doctor' upon Svetoslav Zhorov Lavchiev in the field of Economics and Management (Agriculture).

07.05. 2026

Plovdiv

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