



REVIEW

by prof. Dr. Julian Vassilev

University of Economics – Varna,

Professor in the professional field 4.6 "Informatics and Computer Science",
validated in the register of the academic staff of NACID "Habilitation persons
with scientific indicators"

Author of the dissertation: Abrar Ashraf

Topic of the dissertation: The potential of information and communication
technologies in the transition towards green economy

Supervisor: Assoc. Prof. Natalia Marinova, PhD

Primary unit that opened the procedure for defending the dissertation:
Department of Business Informatics, D. A. Tsenov Academy of Economics.

Reason for writing the review: Order No. 324/16.04.2025 of the Rector
of D. A. Tsenov Academy of Economics for the opening of a procedure for
defence and determination of the composition of the scientific jury; the first
meeting of the scientific jury on 17.04.2025.

Professional field: 3.8 Economics

Doctoral Program: Application of Computing in Economics

I. General manuscript representation

The manuscript is 223 pages and includes an introduction, three chapters, a
conclusion and references.

Uniqueness of the text. Results from StrikePlagiarism.com: SC1: 4.26%.
SC2: 0.98%.

The **main thesis of the work** is the following "The successful integration
of information and communication technologies (ICT) with government policies

and a public commitment to sustainable development is a key factor to Bulgaria's progress in the transition towards a Green Economy”.

The **purpose** of the work is “to provide an analysis of the potential of Information and Communication Technology (ICT) in the transition toward a Green Economy, with a specific focus on Bulgaria”.

The **first chapter** (58 pages) is entitled "Conceptual foundations of the green economy and ICT in sustainable development.". The green economy is discussed. Some texts are related to circular and linear economy. Some case studies are given. Sustainability, resource efficiency, ICT innovations, smart cities and smart innovations are discussed. Some forecasts for 2030 are formulated.

Chapter II (58 pages) is entitled “Challenges of the linear economy and the digital transformation of ICT in the green economy“. Some drawbacks of the linear economy are identified. Discussed problems are focused on: climate change, biodiversity loss and pollution reduction. Some case studies are given. ICT aspects are covered: AI, IoT, e-waste recycling, drones, electric vehicles, data centres, and cloud computing.

Chapter Three (67 pages) is entitled “The role and potential of green ICT solutions in developed countries and Bulgaria“. Green economy, metrics for green economy, green jobs, waste recycling and smart cities are discussed. Green Economy Indicators and the Current Trends are identified.

The **conclusion** provides basic conclusions, recommendations and guidelines for future work.

A reference to the contributions **is given**.

II. Positive aspects

The author declares in his CV skills in informatics: MS Office, Python language, Linux, C/C++. The author declares in his CV knowledge of different languages.

The author cites prominent literature sources.

The author has created figures.

The author has an academic interpretation of academic acquisitions.

The author gives case studies illustrating the author's ideas and concepts.

The author has identified good practices for smart cities (e.g. Nicosia) and argues for the adoption of IT for smart cities in Sofia and Plovdiv.

The author has made a conceptualisation (in chapter 3) for the implementation of the ICT-driven green economy in Plovdiv (Tables 3.9, 3.10), describing steps, actions, timeline and monetary amounts for each step. Benefits, outcomes are identified.

To estimate the optimal number of trees to plant in specific zones, the author has defined a mathematical model. Another model calculates the survival analysis of planted trees.

The author has publications in co-authorship with his academic supervisor.

The reference to the publications shows a wide visibility of certain parts of the dissertation.

The submitted list of publications meets **the minimum national requirements for PhD degrees in the professional field 3.8.**

I accept **the contributions** (3 theoretical and 3 practical) as achievements of the author.

The abstract (40 pages) presents essential parts of the work.

III. Observations and recommendations. Questions

The conceptualisation of the proposed model (in chapter 3) may be extended with appropriate figures.

I recommend the author to publish in Scopus/Wos-indexed journals/conferences.

I have the following **questions**:

1. Can you give examples of “qualitative research methods” and “quantitative research methods”? Which specific qualitative and quantitative research methods did you use in your thesis?
2. What is the current application of GIS in the economy? Which types of businesses use GIS? Which tasks are solved using GIS?
3. What is e-waste? How is it measured? Is it measured on a national level? Does Eurostat collect and publish data concerning e-waste?
4. How do we make the decision that a specific country is “developed” or “developing”?

IV. Conclusion

I believe that the PhD student **Abrar Ashraf** has shown the ability to develop an independent scientific research on the scale of a dissertation. The PhD student is able to handle the latest achievements in economics and informatics. The PhD student expresses his personal opinion.

As a member of the scientific jury for awarding the educational and scientific degree "Doctor", I give my positive assessment of the candidate's readiness to acquire the educational and scientific degree of "Doctor" in the professional field 3.8.

05.05.2025

Varna

Sincerely:

/Julian Vasilev/