A SYSTEMATIC LITERATURE REVIEW OF GREEN FINANCE AND GREEN ECONOMY TRANSITION IN ECONOMY AND BUSINESS-RELATED STUDIES

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ABSTRACT
The main objective of this study is a systematisation of relevant published scientific papers on green finance and green transition economy published in the renowned scientific databases Scopus and Web of Science. For this purpose, PRISMA guidelines have been applied. Scientific databases were surveyed with the keywords "green finance" and "green transition", with an emphasis on economy and business-related studies. Areas of application of green finance and literature related to green transition are identified and presented, and in this way, trends over the years, publication year, types of documents, and, most importantly, research gaps are illuminated to provide guidelines for future work.

Keywords: *Green finance, Green transition, Systematic literature review, PRISMA.*

JEL classification: *E44, Q01, Q56.*

1. INTRODUCTION

At a time of increasingly significant climate changes, the depletion of natural resources, the destruction of the environment, and the loss of biological diversity, the demand for green finance, which represents a powerful tool for achieving an environmentally friendly and sustainable economy, is continuously growing. “Green finance” is a concept deriving from the green economy concept, which is not novel and dates back to the late 1980s. It is based on environmental economics knowledge, and it defines the green economy as “a clean economy that depends on green development” (Al-Taai, 2021). This means it utilizes resources and energy sources optimally, and it promotes and supports fair production, in a harmonizing and preserving way for the environment and nature. There is an ever-increasing number of studies that recommend both the private and public sectors accept and reinforce the concept of the green economy in the future for the sake of “sustainable development, job creation, and poverty alleviation”, in both developed and developing countries (Houssam *et al.*, 2023).

According to Zhao *et al.* (2023), "green finance refers to financial instruments that provide environmental benefits". Green finance is financing or investing in projects that have an economic benefit and promote a sustainable environment (Ozili, 2021). To develop green finance, all subjects of the private and public sectors must be involved in developing and

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implementing sustainable environmental projects (Martin, 2023). Green finance comprises "the financing of public and private green investments; the financing of public policies that encourage the implementation of environmental and environmental-damage mitigation or adaptation projects and initiatives and components of the financial system that deal specifically with green investments" Lindenberg (2014). Green finance plays a central role in green transitions, in both developed and developing countries (Wang *et al.*, 2021). Green finance facilitates the green transition, i.e. the transition towards a sustainable economy that establishes a balance between economic, social, and environmental circumstances. The green transition will make economies more ecologically sustainable, "but also make them more resistant to future shocks" (OECD, 2024).

The main objective of the paper is to identify, present, and analyse relevant published scientific economy and business-related studies from the scientific databases dealing with green finance and green transition by using PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. The main contribution of this paper is reflected in the systematization of relevant scientific full-text papers dealing with the mentioned research area and their detailed analysis and findings in narrative form.

The scientific contribution of this research is reflected in the promotion of green finance and green transition as a topical issue with an emphasis on researchers dealing with the economy and business. This research could be of interest to a wider audience, i.e. among researchers in any scientific field. The literature review presented later on in this paper significantly contributes to the scientific literature and is a springboard for future work and research on a topic that is crucial for today's sustainable economic development. Moreover, this is the first study to present a comprehensive systematic literature review and analysis of the so far published papers in this research area, thus making an important contribution to future research and work on the green economy, especially in the field of business and management as well as economy, econometrics, and finance.

The rest of the paper is structured in the following manner. After the introduction, a theoretical background of green finance and green transition is given. Section 3 presents the research design and methodology. Research results are presented in section 4, while the last section provides a discussion and a conclusion.

2. THEORETICAL BACKGROUND

2.1. Green finance

The concept of the green economy was first introduced in 1989 in the so-called *Blueprint for a Green Economy report*, which was put together by a team of economists and analysts trying to encourage practical policy measures for 'greening' modern economies and paving their way towards more sustainable development (Pearce *et al.*, 1989). The terms "Green economy", "circular economy" and "bioeconomy" have emerged as "popular narratives in macro-level sustainability discussions in policy, scientific research, and business" in the past decade (D'amato and Korhonen, 2021). These narratives address, with different approaches, the topical challenges of meeting economic, social, and environmental goals at the same time in the global context. The green economy is also defined as a "catalyser for sustainable development" in these three dimensions - economic, social, and environmental (Chaaben *et al.*, 2022). A more common definition of the green economy is its characterization as "low in carbon emissions, resource-efficient, and socially inclusive" (UNEP, 2011). Al-Taai (2021) defines it as "the nucleus of sustainable development" and the key pillar for growth, development (and especially economic development) and prosperity.

Green finance, on the other hand, is a more specific concept that is a part of the green economy, but it includes financing of new green projects that enhance environmental benefits. These

novel financial instruments and new policies, such as “green bonds, green banks, carbon market instruments, fiscal policy, green central banking, financial technologies, community-based green funds”, etc., are nowadays collectively known as “green finance” (Sachs *et al.*, 2019). However, even today, a commonly accepted and well-established definition of green finance does not exist (Berrou *et al.*, 2019). Khan *et al.* (2022) defined and quantified green finance as “climate mitigation finance”.

It is widely accepted among scholars that green finance is vital in financing renewable and green energy projects that could decrease carbon emissions and thus, its negative health effects, in developing climate-resilient infrastructure for cities and supporting and enhancing environmental sustainability (Taghizadeh-Hesary and Yoshino, 2019).

Even though the interest in the concept of green finance is quite large, the literature on green finance is still rather modest. Some of the most interesting findings regarding green finance are presented as follows. Ozili (2022) found that green finance can indeed make a big impact on the environment, society, and climate change mitigation, however, he also recognized many challenges ahead for green finance, such as "the lack of awareness about green finance, inconsistent definitions of green finance, lack of policy coordination for green financing, inconsistent policies, and lack of profitable incentives to investors and financial institutions who are willing to invest in climate change mitigation".

The findings of the study of Akomea-Frimpong *et al.* (2022) reveal that “green securities, green investments, climate finance, carbon finance, green insurance, green credit, and green infrastructural bonds are the key green finance products mostly used by banks”.

There are even empirical studies (such as the one of Meo and Abd Karim, 2022), whose findings imply that green finance is the “best financial strategy” for decreasing CO_2 emissions. Khan *et al.* (2022) empirically proved that green finance “delivers as anticipated” in Asia.

2.2. Green transition

In the past few decades, rising environmental issues such as “global warming, climate change, ozone layer depletion, respiratory diseases, deforestation, and desertification” have been recognized and treated as both national and global challenges (Zhang *et al.*, 2023). Therefore, understanding green transitions is of key importance, especially at a time when all the available and currently dominant solutions “contribute to unsustainable development” (Haukkala, 2018). The term “green transition” refers to the process of transition to a green and sustainable economy, i.e. to “a fundamental transformation towards more sustainable modes of production and consumption” (Söderholm, 2020). The term “Green Transition” “refers to the EU’s efforts to become a carbon neutral continent by 2050” (Kekkonen *et al.*, 2023), thus including a wider application of renewable energy, reduction of greenhouse gas emissions, and promotion of the sustainable process of transportation and agriculture.

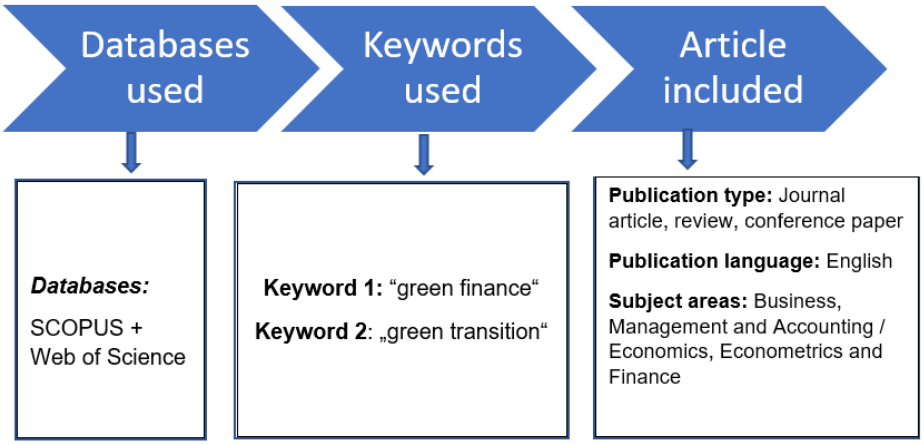
The successful green transition process needs adequate fiscal, monetary, and financial market policies that would support the process and provide the needed funds since the currently existing funds for this purpose are not sufficient (Braga and Ernst, 2023). Green transition processes take time. For instance, Europe’s green transition is a “long-term project guided by the political resolution to make Europe’s economy climate neutral by 2050” (Pietras, 2023). Kemp and Never (2017) addressed some of the green transition issues, tackling a few actions governments in developing economies could undertake to “phase in green technologies given the priorities for development, imperfect institutions for policy-making and implementation, weakly developed innovation systems, and problems of lock-in”. To implement a successful and quality green transition, policymakers have to come up with an innovative policy mix that would encourage a higher quantity of green finance projects, but with very good quality as well (Lamperti *et al.*, 2019).

It is no wonder that the concepts of green finance and green transition receive such increased interest, especially after the adoption of the 2030 Agenda for Sustainable Development in 2015 by the UN, as a potential way to address sustainability challenges. Moreover, green finance and green transition are directly and indirectly related to various SDGs (Sustainable Development Goals) (Taghizadeh-Hesary and Yoshino, 2019). Thereafter, a surge in interest in the topic of green economy occurred and the scholarly literature on the topic is expanding. Recent bibliometric studies found that the green/ sustainable economy gained greater academic attention and interest from scholars since 2016, with Asia and Europe leaders in green economy studies (Zhu *et al.*, 2023). However, as shown in section 3, the investigation of green finance and green transition combined (i.e. green finance products and services that support the green transition) is rather neglected by scholars, researchers, and academic members in the field of Business, Management and Accounting as well as Economics, Econometrics and Finance.

3. RESEARCH APPROACH

This paper implements the PRISMA-guided systematic review of green finance and green transition in economy and business-related studies. Based on the key phrases "green finance" and "green transition", relevant works related to business and economy were identified from the scientific databases Scopus and Web of Science, as shown in Figure 1. Moreover, there were stringent criteria used in this systematic review. First, the publication type was one of the inclusion criteria, i.e. only journal articles, reviews, and conference papers were included in the process. Second, the publication language of all included papers is English, and third, the selected surveyed papers are written in the research fields of Business, Management, and Accounting as well as Economics, Econometrics, and Finance.

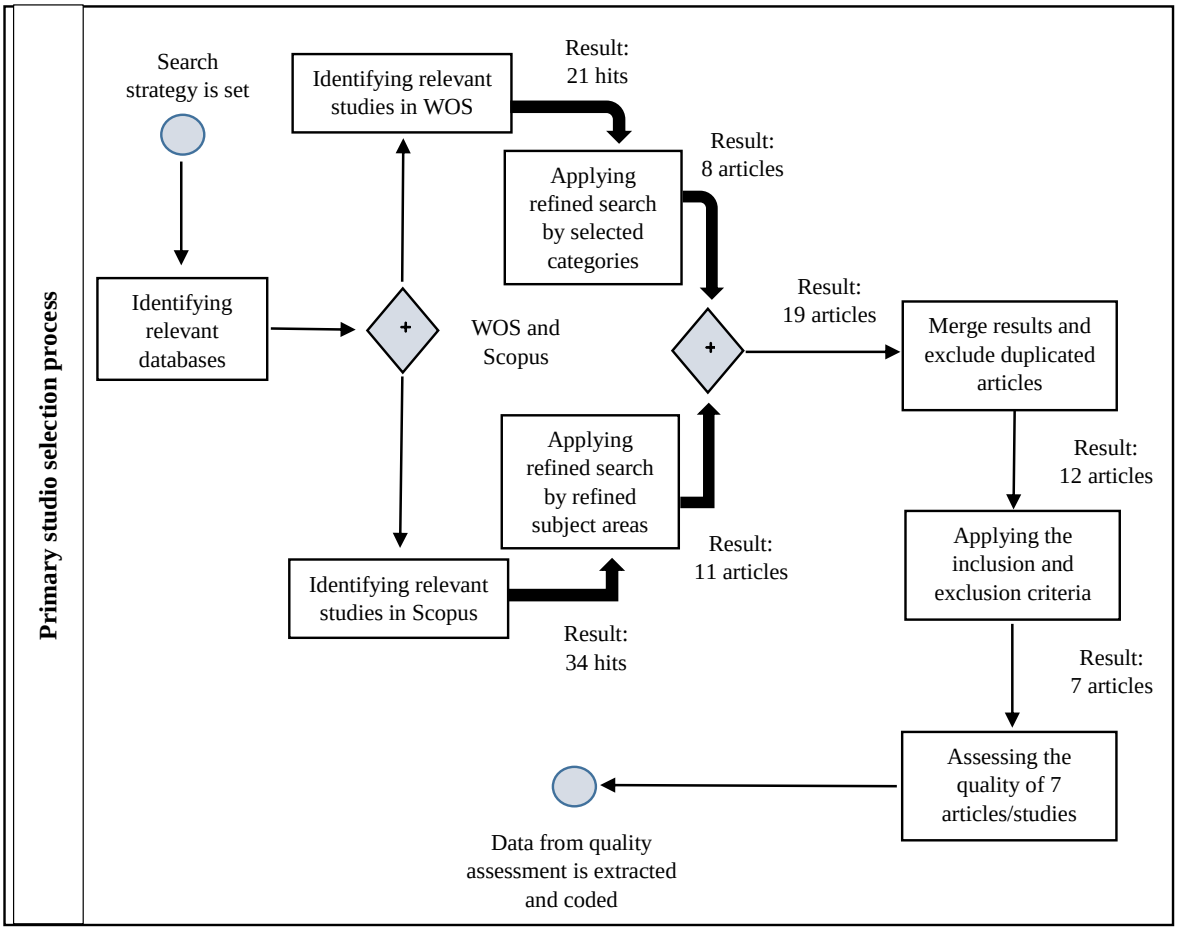
Figure 1: Procedure of the review study



(Source: Authors' work)

The whole selection procedure of the included papers is presented in Figure 2. Namely, in the first step, each of the Scopus and Web of Science databases was surveyed with the key phrases "green finance" AND "green transition", which led to 34 papers in Scopus and 21 papers in the Web of Science database. After applying the refining criteria and selecting defined research areas, types of publications, language of publication, as well as full-text availability, a total of 7 papers for quality assessment were left out.

Figure 2: The selection process flowchart



(Source: Authors' work)

4. RESEARCH RESULTS

As discussed in the introduction, this paper is related to the systematization of relevant scientific papers on green finance and green transition economy and studies related to business published in globally renowned scientific databases. In the continuation, the relevant papers, available as full-text papers from the mentioned scientific databases, are analysed in detail in a narrative form. For the sake of transparency, the presentation of the same is also given in a table form, in Table 1.

Table 1: List of analysed papers

Author/s and year of publication	**Title of the paper**	**Analysed country/region**
Zhao, Wang and Dong (2023)	"The role of green finance in eradicating energy poverty: ways to realize green economic recovery in the post-COVID-19 era"	China
Chi and Yang (2023)	"Green finance and green transition by enterprises: An exploration of market-oriented governance mechanisms"	China

Martin (2023)	"Green Finance: Regulation and Instruments"	Serbia
Zhao, Zhao, Dong (2023)	"Green growth contribution to carbon neutrality"	China
Kandrács (2023)	"Financing a Sustainable Economy in Hungary, Opportunities and Challenges: Decarbonisation, Green Transition, Sustainable Finance, Central Bank"	Hungary
Angelov (2022)	"Assessment of Challenges and Risks for the Banking Sector in the Transition to a Green Economy through a Sample Survey"	Bulgaria
Versal and Sholoiko (2022)	"Green bonds of supranational financial institutions: On the road to sustainable development"	selected countries of Africa, Asia, Europe, America

(Source: Authors' work)

Zhao *et al.* (2023) analysed whether green finance can solve energy poverty. The research was conducted for the period 2004–2018 in China by using an empirical econometric model. Energy poverty can be eradicated using green finance only in regions with low energy poverty and mitigated in areas with high and low green finance. Green finance directly helps eradicate energy poverty and indirectly reduces it by introducing innovations and technological changes. **Chi and Yang (2023)** analysed the impact of green finance on Chinese enterprises between 2009 and 2019. The authors concluded that green finance could stimulate the green transition of enterprises through the provision of market-oriented management, especially in areas where state environmental management is more prominent. In conclusion, the hypothesis "Green finance significantly drives green transition by enterprises." which the authors set was confirmed.

The green transition towards sustainable economic growth is made possible by green finance (**Martin, 2023**). In addition to green bonds, the author points out some other common green financial instruments in Serbia. Recently, market values of green instruments have increased significantly in Serbia. It is necessary to encourage the development of new green instruments for solving problems related to climate change.

The effects of the green transition on CO2 emissions are analysed by **Zhao *et al.* (2023)** by using 2004-2018 data in China. The research results indicate that green transitions gradually reduce but have different effects on CO2 emissions. In the eastern region, they increase emissions, and in the central and western decrease. The green transition has a direct impact on the reduction of CO2 emissions, while green financing has an intermediary effect.

A green transition is not possible without significant investment and financing. In Hungary, the central bank, Magyar Nemzeti Bank, effectively helps finance green and sustainable investments, to contribute to the transition to an ecologically sustainable economy (**Kandrács, 2023**). To protect the environment and mitigate climate change in the Hungarian economy, decarbonization is essential, which will improve the macroeconomic structure and reduce energy imports.

Through a survey conducted in the period 2021/2022, Angelov (2022) tried to determine the attitudes of employees of banking institutions about the changes in banks during the green transition in Bulgaria. Research results indicate that employees are familiar with green finance and green banking. They are also familiar with mechanisms of state support for green investments and generally accepted standards of green finance.
Green bonds and green projects carried out by the World Bank and the European Bank for Reconstruction and Development were analyzed in **Versal and Sholoiko (2022)**. Financial (for the period 2008–2021) and non-financial (for the period 1992–2018) data were collected for selected countries of Africa, Asia, Europe, and America. A positive trend was observed in the issuance of these financial instruments, particularly focused on RES and energy efficiency.

Table 2: The research subject and period in analysed articles

Author/s and year of publication	**Subject of research**	**Time frame**
Zhao, Wang and Dong (2023)	green finance in eradicating energy poverty	2004–2018
Chi and Yang (2023)	green finance impact on enterprises	2009–2019
Martin (2023)	green finance instruments regulation	2021
Zhao, Zhao, Dong (2023)	green transition and CO2 emissions	2004–2018
Kandrács (2023)	financing a sustainable economy	2008–2021
Angelov (2022)	attitudes of employees of banking institutions about the changes in banks during the transition to a green economy	2021/2022
Versal and Sholoiko (2022)	green bonds and green projects	2008–2021, 1992–2018

(Source: Authors' work)

A summary of all the findings and a discussion regarding them is provided in the next section.

5. DISCUSSION

This paper deals with a PRISMA-guided systematic review of green finance and green transition in economy and business-related studies. Based on the keywords "green finance" and "green transition", relevant papers related to business and economics are identified from the scientific databases. A total of 7 relevant papers, available as full-text papers, were analysed qualitatively. The results of this analysis are provided as follows. Out of all the analysed articles, two were published in 2022, and the remaining in 2023, which indicates that green finance and green transition have become a world concern in the past few years of the 21st century. Five articles were published in journals, one as a book chapter and one as a conference paper. Three of the surveyed studies focus on China (Zhao *et al.*, 2023; Chi and Yang, 2023; Zhao *et al.*, 2023), one study on Hungary (Kandrács, 2023), one on Bulgaria (Angelov, 2022), one on Serbia (Martin, 2023)) and one include multiple world economies (Versal and Sholoiko, 2022). Three surveyed papers concern the impact of green finance and the transition to an ecologically sustainable economy (Zhao *et al.*, 2023; Zhao *et al.*, 2023; Kandrács, 2023). Two

studies deal with green financial instruments (Martin, 2023; Versal and Sholoiko, 2022). One study involves the impact of green finance on enterprises (Chi and Yang, 2023)) and one on employees of banking institutions (Angelov, 2022). The systematization of articles according to the research subject and period is given in Table 2.

6. CONCLUSION

The scientific contribution of this paper is reflected in the promotion of green finance and green transition as a topical issue with an emphasis on researchers dealing with the economy and business. The same research could be of interest to a wider audience, i.e. among researchers in any scientific field. This literature review would significantly contribute to the scientific literature and is a springboard for future work and research on a topic that is crucial for today's sustainable economic development. The subject at hand is very contemporary and thus, it could be beneficial to policymakers, NGOs, scholars, academic members, and the wider audience.

The main limitation of this paper mirrors the selection of the two most renowned and popular scientific databases, excluding and not counting potential papers that might be relevant to this research topic, but are published in journals indexed elsewhere. This could have affected the correctness of the analysis. Moreover, another limitation is that this study included only available full-text papers, which leaves the possibility for non-available papers to be relevant to this subject but not included in the review. Therefore, the authors plan to expand this research in future work and undergo a more detailed meta-analysis, data comparison, and methodology introduction of similar literature, including more empirical studies. This would help reveal regions and factors of green transition globally. Moreover, in future work, more scientific databases are planned to be included in the literature review (besides the Scopus and Web of Science databases), to obtain a stronger theoretical background as well as stronger research findings.

As far as the authors' knowledge goes, this article is the first to present a comprehensive systematic literature review and analysis of the so far published papers in this research area. Future research is expected to investigate the position of Croatia in terms of green finance and green transition in the EU frame which strives for a climate-neutral and sustainable economy. Notwithstanding, a future analysis of the impact of digital technology on the green economy is expected, as well as the implications of artificial intelligence, business innovations, and digital business transformations on the sustainable growth and development of economies globally.

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