

IDENTIFYING AND MAPPING KEY GREEN RESEARCH AREAS: TOWARDS THE GREENING OF SOCIAL ENTERPRISES

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Purpose: Identification of key green research areas explored in scientific publications that address social enterprises while also examining sustainability and/or various green research threads.

Design/methodology/approach: The study was planned and conducted between July 2024 and November 2024. Two methods focusing on the review of scientific publications were employed in the research process: a systematic literature review and a classic literature review. The analysis included 642 scientific publications retrieved using bibliometric query Q1 from the Scopus database and 602 scientific publications extracted using bibliometric query Q2 from the Web of Science database. The full text of these publications was analysed to identify and extract green research areas.

Findings: Thirty-one key green research areas were identified in scientific publications that explore social enterprises while also examining sustainability and/or various green research threads. The findings indicate that the concept of green social enterprises is already explicitly addressed in existing research. Additionally, an important research thread is the topic of green jobs, which is represented by two different terms: 'green jobs' and 'green collar jobs'.

Research limitations/implications: The study was constrained by two key factors. The first was the selection of databases (Scopus and Web of Science). The second factor was the design of the original bibliometric queries (Q1 and Q2). It should also be emphasized that these limitations contributed to ensuring the quality of the study and facilitate the possibility of reproducing it in the future for comparative purposes.

Originality/value: This study differentiates itself from other bibliometric studies on social enterprises through the design of the bibliometric queries. Additionally, it identified key green research areas by analysing the full content of the selected articles, rather than relying on author or indexed keywords as in traditional reviews. Consequently, the bibliometric maps generated contain a significantly larger number of green research areas. The discussion highlighted, among other aspects, the creation of green jobs and the development of green competencies within green social enterprises. In this context, it was emphasized that future research should explore whether green jobs in green social enterprises can be distinguished from golden-green jobs. This article is intended for those interested in the green transition of social enterprises.

Keywords: golden-green jobs, green economy, green jobs, green labour market, green social enterprise, sustainable development.

Category of the paper: Literature review.

1. Introduction

Various research issues related, both directly and indirectly, to the transition to more sustainable models of socio-economic development are increasingly being explored in academic discourse. Consequently, the green economy is becoming the subject of various types of analysis by researchers (e.g. Alsmadi, Alzoubi, 2022; Manisha, Singh, 2024; Mo et al., 2024). The transition to a green economy can occur through an ongoing process of green transformation or green transition. In the case of green transformation, it should be emphasized that profound, systemic changes are necessary in the functioning of economies, societies, and institutions to achieve sustainability. Therefore, green transformation involves radical change. In contrast, green transition should refer to gradual, pro-ecological shifts in socio-economic life. This approach implies an evolutionary and incremental adaptation of socio-economic systems to the challenges posed by sustainable development, rather than the radical change associated with green transformation. For the purposes of this article, subsequent references will focus on green transition.

Scientific research addressing the issue of green transition also highlights the role and importance of implementing various sustainable development practices in socio-economic life (e.g. Pesor et al., 2024; Regmi et al., 2024). Some of these practices are explicitly referred to as green practices in academic discourse (e.g. Bagri et al., 2021; Masyhur et al., 2024; Wang et al., 2023). In the author's view, considering the significance of sustainable and green practices, it could be argued that they facilitate the gradual transition from a brown economy to a green economy.

Green transition, as previous research indicates, can be examined both through the lens of specific economic sectors (e.g. Afzal et al., 2024; Gea-Bermúdez et al., 2021; Sulich, Zema, 2023) and specific economic actors, particularly enterprises (e.g. Chi, Yang, 2023; Leng, Hu, 2024). One particularly distinctive market actor is social enterprises, which prioritize social goals (e.g., social and professional inclusion) over profit maximization in their operations. This unique focus on social objectives has led research to explore the further development of social entrepreneurship in the context of various social and economic challenges (e.g. Podgórnjak-Krzykacz et al., 2024; Podgórnjak-Krzykacz, Przywojska, 2018). Social enterprises may be undergoing a process of greening, and as a result, an increasing number of green issues are being addressed in academic discussions concerning the operation of social enterprises (e.g. Kozar, 2023b; Osti, 2012). Some researchers even argue that it is possible to define a new model of social enterprise - green social enterprise (e.g. Barna et al., 2023; Descubes et al., 2018; Kozar, 2023a). Therefore, the greening of social enterprises is, in the author's view, gradually becoming an increasingly popular subject of academic research.

The aim of the research was the identification of key green research areas explored in scientific publications that address social enterprises while also examining sustainability and/or various green research threads. To achieve this aim, it was assumed that green research areas are defined as words or phrases used in scientific publications that include the term 'green'. By referencing 'green' in this way, researchers highlight the pro-environmental values of their work, differentiate their research from non-green approaches, and establish a direct link to sustainability issues. This research objective was accomplished through the scientific exploration of two bibliometric databases, namely Scopus and Web of Science. The study employed two methods for literature review: the systematic literature review (SLR) and the classic literature review (CLR). The VOSviewer software (version 1.6.20) was used to map the key green research areas.

This article is divided into four sections, each interrelated and collectively leading to the presentation of the research conducted and the resulting conclusions. The introduction provides an overview of the analysed topic, states the research objective, and highlights the research methods employed. The methodological aspects outlined in the introduction are discussed in greater detail in the second section of the article. The research methodology is described step-by-step, based on the detailed timeline adopted, to ensure the study can be replicated in the future and compared with other analyses that have utilized bibliometric reviews in the context of social enterprise issues. The third section presents the results and includes a discussion, with attention given to potential future research directions. In particular, it emphasizes the need for further exploration of green competence development and the creation of green and gold-green jobs within green social enterprises. The brief conclusion at the end of the article highlights how the ongoing green transition is gradually contributing to the development of a new model of social enterprise: the green social enterprise.

2. Research methodology

The research study, the results of which are presented in this article, was conducted between June and November 2024. As outlined in the research schedule presented in Figure 1, the study was divided into four distinct stages, each with its own timeline and designation. All stages, along with the research activities conducted during them, formed an essential procedure aimed at ensuring the highest possible quality of the bibliometric analyses and enabling their replication for future comparative purposes. Therefore, it is not possible to single out any stage as being more important than the others. The same applies to the individual research steps carried out sequentially, as shown in Figure 1.

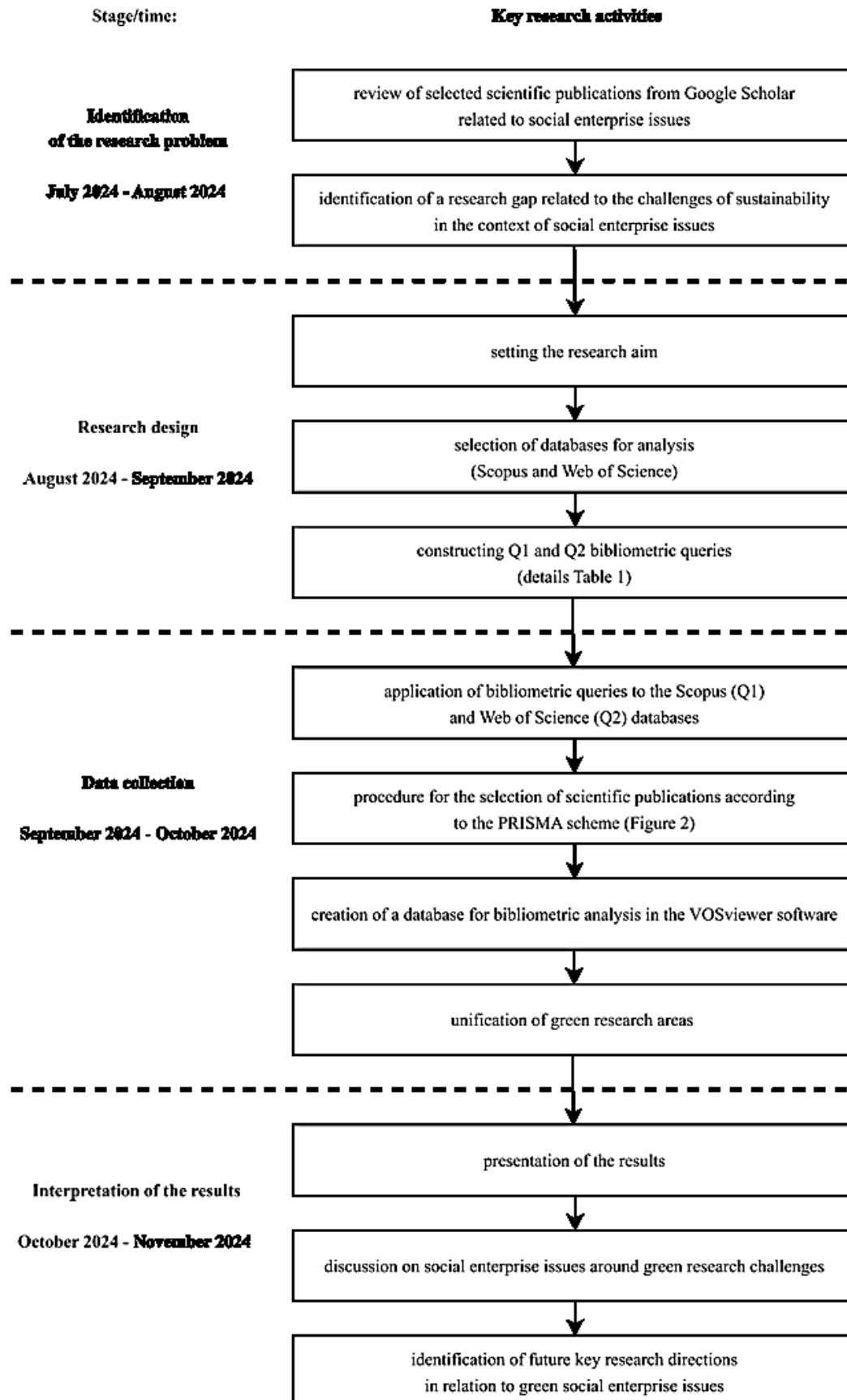


Figure 1. Research procedure stages and timeline.

Source: Authors' elaboration.

The identification of the research problem was carried out in the first stage of the study. To achieve this, a review was conducted using the freely accessible web search engine Google Scholar to examine existing scientific publications related to social enterprises and social entrepreneurship in a broad sense. No specific criteria were applied to exclude publications from the analysis. As a result, numerous research reports, various types of articles (including those employing bibliometric analysis), book chapters, and entire books were reviewed to identify research gaps in the field of social enterprises. The observations made during this process revealed that the issue of sustainable development is increasingly being addressed in scientific discussions related to social enterprises, often in the context of research that can be linked to the ongoing green transition of social and economic life. Additionally, it was found that the growing interest among researchers in green issues requires structuring through the identification of key green research areas.

The observations made during the first stage of the research, particularly the recognition of the need to structure the discussion around green issues related to social enterprises, formed the basis for the second stage, which focused on study design. First, the research aim was defined: identification of key green research areas explored in scientific publications that address social enterprises while also examining sustainability and/or various green research threads. This aim necessitated conducting bibliometric analyses using two methods: SLR and CLR. It was assumed that green research areas would be identified through content analysis of entire scientific publications. This type of analysis is broader than traditional bibliometric analyses, which focus only on author or indexed keywords, and contributes to more comprehensive observations. The analysis of complete scientific publications enables the identification of new phenomena and research trends that may not yet be represented by keywords or that are only sporadically explored, making them difficult to capture in bibliometric maps.

Phase two of the research also included the selection of databases for identifying scientific publications relevant to the study. Two bibliometric databases were chosen: Scopus and Web of Science. This selection was based on several important factors highlighting the quality of these databases. Firstly, both databases have rigorous and transparent procedures for indexing individual scientific journals. Due to these procedures and their recognition within the scientific community, Scopus and Web of Science are widely regarded and frequently utilized by researchers who often prioritize indexing in these databases when choosing journals to which they submit their research for review. An additional factor in the selection of these databases was their use in other studies that conducted literature reviews in the fields of sustainable development (e.g. Sulich et al., 2023; Wodnicka, 2024b; Wodnicka, Królikiewicz, 2024), green transition or green transformation (e.g. De Felice, Petrillo, 2021; Persson Thunqvist et al., 2023), and social enterprise issues (e.g. Gupta, Srivastava, 2024; Littlewood, Khan, 2018; Quillooy et al., 2024). Furthermore, both databases allow for the use of bibliometric queries to consistently select the range of publications for further analysis.

Considering the advantages of selecting these databases and the need to ensure that the study can be repeated for comparative purposes in the future, two original bibliometric queries were constructed (Table 1). Query Q1 was designed for the Scopus database, while Query Q2 was created for the Web of Science database. It should be noted that, due to the structural differences between these databases, the queries vary in syntax (notation), although they search for the same topics in terms of content and research quality. It is important to mention that the analysis does not include scientific publications from 2024, the year in which the research was conducted, as the publication cycle in many journals indexed in these databases was still ongoing at that time. Therefore, it is possible that new scientific publications related to social enterprises will emerge. This approach is considered a good practice adopted by an increasing number of researchers (e.g. Sulich, Sołoducho-Pelc, 2024; Wodnicka, 2024a), aimed at enhancing the potential for future comparative research by others conducting the same or similar bibliometric queries.

Table 1.
Details of search query syntax for Scopus databases

Database	Symbol	Query syntax	No. results
Scopus	Q1	TITLE-ABS-KEY ("social enterprise*" AND (sustainability OR "sustainable development" OR green)) AND PUBYEAR > 1999 AND PUBYEAR < 2024 AND (LIMIT-TO (DOCTYPE, "ar") OR LIMIT-TO (DOCTYPE, "re")) AND (LIMIT-TO (LANGUAGE, "English"))	642
Web of Science	Q2	((((TS=("social enterprise*" AND (sustainability OR "sustainable development" OR green))) AND LA=(English)) AND DT=(Article OR Review)) NOT PY=(2024)) NOT DT=(Book Chapter OR Book OR Book Review))	602

Source: Authors' elaboration 27.10.2024.

At the third stage of the research, the constructed bibliometric queries were applied to the selected databases. As a result, 642 scientific publications were identified in the Scopus database, and 602 scientific publications were found in the Web of Science database. It was recognized at this stage that some publications appeared in both bibliometric databases. Therefore, the PRISMA procedure (Figure 2) was conducted to create a single database for the analysis, including only those scientific publications that met specific criteria: they were accessible (which was crucial, as the full content of the publications was analysed), written in English (to ensure the meaningful interpretation of green research areas), and contained references to both social enterprises and relevant green research topics. The final database included 210 scientific publications, each associated with its identified green research areas. This database was structured to enable the use of VOSviewer software for mapping, similar to bibliometric analyses based on author's or indexed keywords.

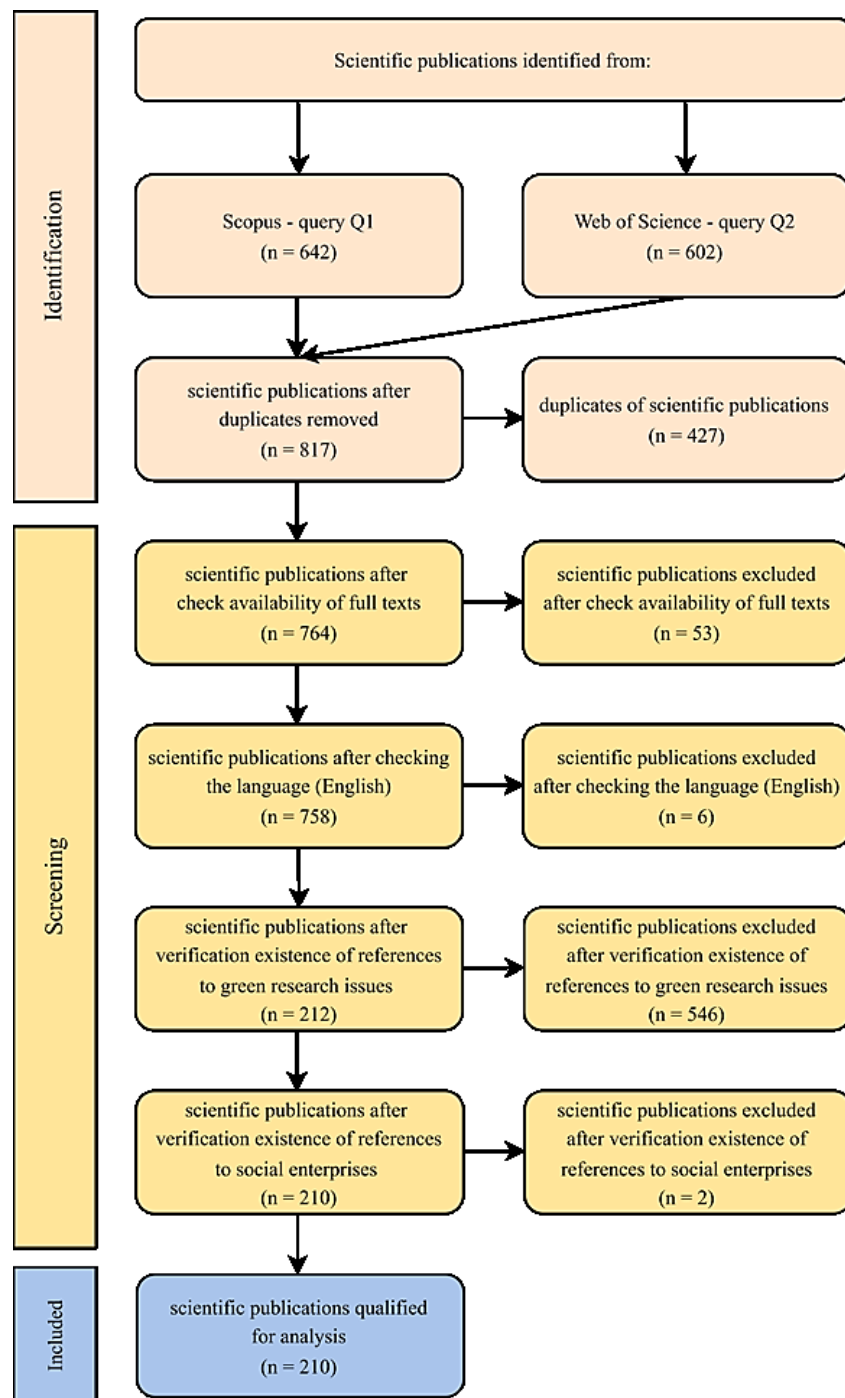


Figure 2. PRISMA scheme for the selection of scientific publications for analysis.

Source: Authors' elaboration.

The final research activity conducted in the third stage of the study was a review of the identified green research areas, which highlighted the need for standardization. This procedure is commonly performed in bibliometric analyses where data are visualized using VOSviewer software to enhance the transparency of the resulting bibliometric maps. As a result of this standardization, standardized green research areas were identified in the dataset. Examples of these standardized green research areas, which are also represented in the bibliometric map shown in Figure 3, are provided in Table 2.

Table 2.
Selected standardised green research areas

Identified green research issues:	Unification into a green research area:
green collar jobs	green collar army; green-collar jobs
green company	green (sustainable) company; green companies
green consumers	green consumer
green economy	cultural green economy; green economies; green economy government; green economy strategies; sustainable green economy
green enterprises	green enterprise
green entrepreneurs	green entrepreneur; green or environmental entrepreneur
green initiatives	green and sustainable initiatives; green initiative
green innovation	green and/or social innovation; green innovation consciousness; green-innovation
green jobs	green job; green job creation; green-job training programme; green/sustainable job
green products	green products category
green products and/or services	green products and services; green products or services; green products/services; marketing of green products or services
green projects	green-innovative projects; green/sustainable projects
green revolution	green revolution-based technologies; green revolutions
green services	green services category
green social enterprises	green social enterprise
green spaces	green space; local green spaces; public green spaces
greenwashing	corporate greenwashing; green washing; green-washing; greenwash monitoring

Source: Authors' elaboration.

The final stage of the research, illustrated in Figure 1, focused on presenting the results and engaging in scientific discussion around them. A detailed description of this stage is provided in the next section of the article. However, it is important to emphasize that the shape of the data obtained was influenced by two key considerations. First, the study was limited to two bibliometric databases: Scopus and Web of Science. As a result, any publications related to the research issues that were not indexed in these databases were excluded. On the other hand, this approach ensured a clear selection of journals for the study. It should also be noted that it is currently impossible to access all scientific publications on a given research topic, so applying such restrictions is scientifically justified. The researcher must make the decision to select appropriate publications for analysis. Additionally, only publications identified through the bibliometric queries were included in the analysis. This approach ensures that the study can be replicated in the future and compared with other bibliometric studies focused on social enterprises. Deviations from this strict research procedure could result in different outcomes (e.g., by including other bibliometric databases or altering the design of the bibliometric queries).

3. Results and discussion

The procedures carried out during the data collection stage resulted in the creation of a bibliometric database comprising 210 scientific publications, each assigned one or more of 300 different green research areas (following a standardisation process). This database was subsequently analysed using the VOSviewer software, which enabled the identification of key green research areas by extracting those mentioned most frequently in the content of the analysed scientific papers through a co-occurrence analysis using the full counting method. The VOSviewer software set a minimum threshold of 5 occurrences for a keyword to be considered significant. This criterion led to the identification of 32 green research areas out of the initial 300 analysed. However, for data visualization purposes, 31 of these areas were used, as they were deemed key green research areas. The term 'green issues' was excluded from the analysis due to its overly general nature (all the green areas analysed are subsets of green issues).

Between each of the visualized key green research areas, as shown in Figure 3, there are links represented by lines. For further analytical purposes, both the number of links and occurrences are presented numerically in Table 3. These are two fundamental measures for describing bibliometric data. Links (L) represent the number of key green research areas shown in the bibliometric map with which a specific isolated key green research area co-occurred at least once in the analysed scientific publications. Given that 31 key green research areas were identified in the bibliometric map as a result of the analyses, the maximum number of links possible is 30. Regarding the bibliometric measure of occurrences (O), it is important to note that this measure determined whether a green research area was classified as a key area. This measure indicates the number of scientific publications among the analysed set in which a specific green research area was mentioned, either explicitly (in the original notation of the area) or after standardization (when a different verbal notation referred to the same area). In the research conducted, the maximum number of occurrences could have been 210, corresponding to the total number of scientific publications analysed that contained references to various green research areas.

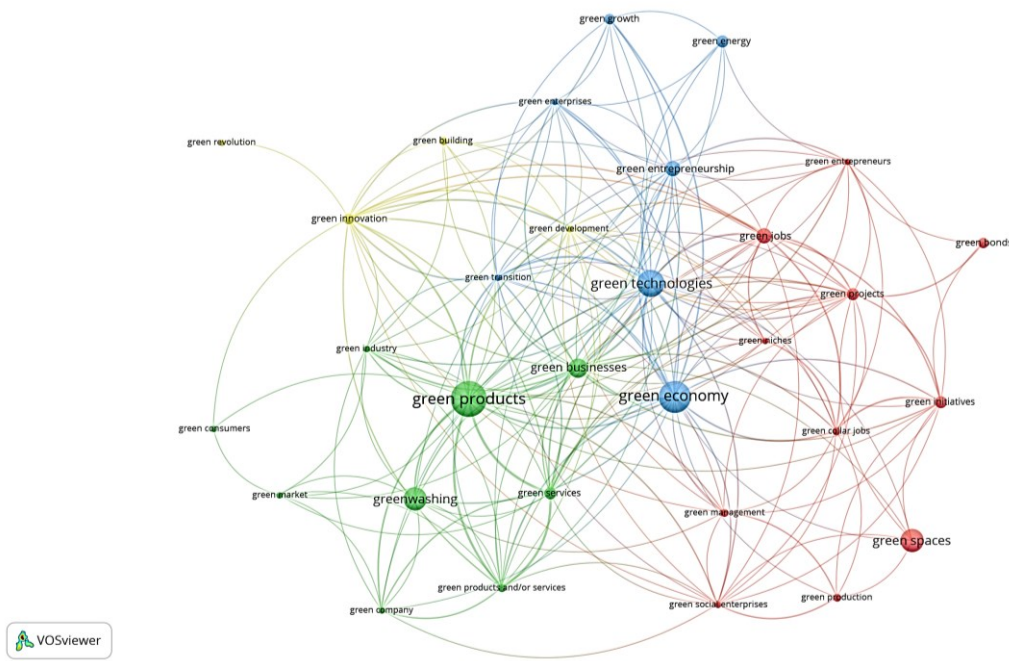


Figure 3. Bibliometric map of co-occurrence of key green research areas identified in the study within the context of social enterprise issues - network visualisation.

Source: Authors' elaboration in VOSviewer software (version 1.6.20).

Table 3.

Keyword co-occurrence clusters presented in Figure 3

Cluster	Keywords
red	green bonds (L = 3, O = 8); green collar jobs (L = 12, O = 6); green entrepreneurs (L = 14, O = 5); green initiatives (L = 13, O = 9); green jobs (L = 17, O = 11); green management (L = 12, O = 6); green niches (L = 11, O = 5); green production (L = 6, O = 6); green projects (L = 20, O = 9); green social enterprises (L = 16, O = 5); green spaces (L = 7, O = 17);
green	green businesses (L = 23, O = 14); green company (L = 10, O = 5); green consumers (L = 3, O = 5); green industry (L = 14, O = 5); green market (L = 8, O = 5); green products (L = 24, O = 26); green products and/or services (L = 16, O = 6); green services (L = 18, O = 9); greenwashing (L = 10, O = 17);
blue	green economy (L = 23, O = 23); green energy (L = 7, O = 9); green enterprises (L = 14, O = 5); green entrepreneurship (L = 14, O = 11); green growth (L = 8, O = 8); green technologies (L = 24, O = 20); green transition (L = 18, O = 5);
yellow	green building (L = 8, O = 6); green development (L = 17, O = 5); green innovation (L = 19, O = 8); green revolution (L = 1, O = 5);

Source: Authors' elaboration in VOSviewer software (version 1.6.20).

None of the identified key green research areas was the subject of scientific consideration in all the analysed publications (Table 3). The highest number of occurrences were recorded for green products (green cluster), green economy (blue cluster), and green technologies (blue cluster). These research areas thus represented the most significant key green research areas among those identified. In contrast, green technologies (blue cluster), green products (green cluster), green economy (blue cluster), green businesses (green cluster), and green projects (red cluster) collectively had the highest number of different green research areas.

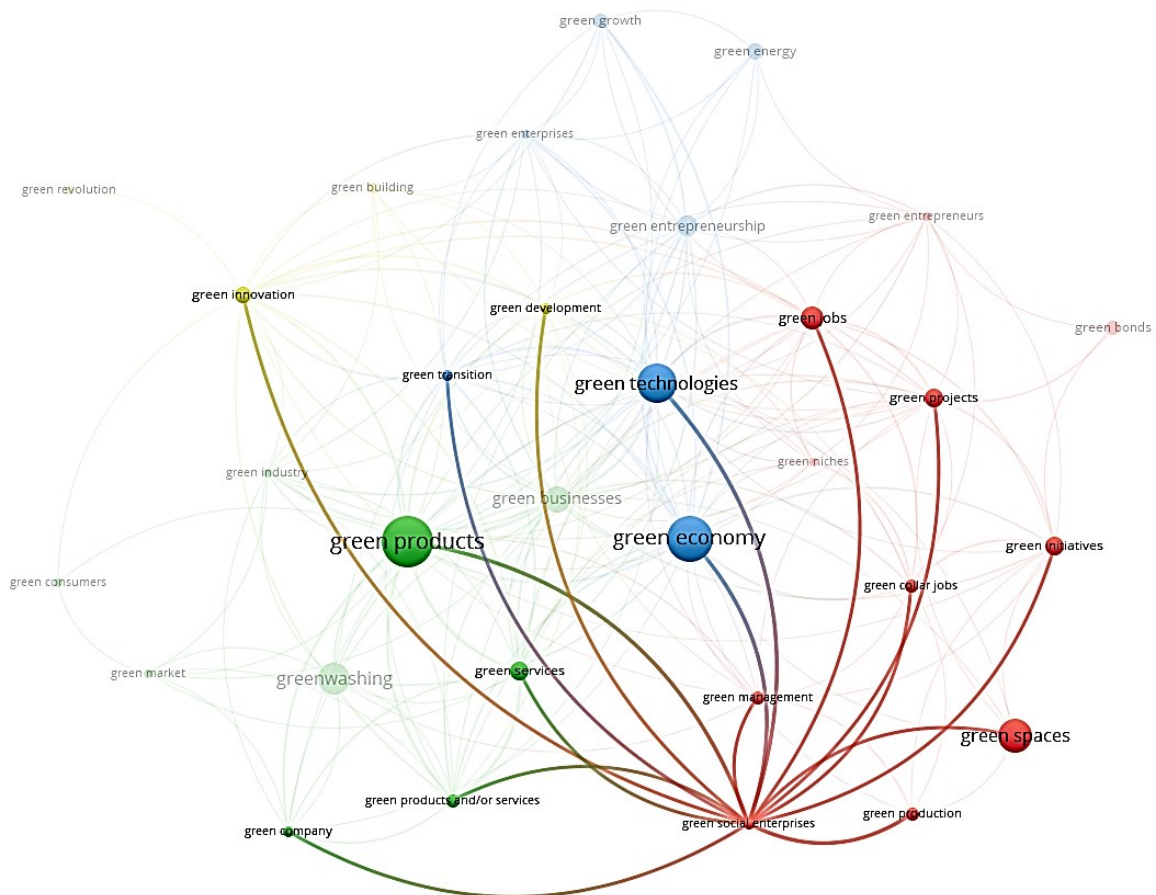


Figure 4. Visualisation of green social enterprises on a bibliometric map.

Source: Authors' elaboration in VOSviewer software (version 1.6.20).

It is worth noting that among the key green research areas visualized in the bibliometric map shown in Figure 3, there is a reference to a new model of social enterprise that is gaining increasing recognition in academic discussions: green social enterprise (red cluster). As illustrated in Figure 4, this research area co-occurred with 16 different identified key green research areas in the analysed scientific publications. The three most frequent green research areas were green products (Barna et al., 2023; van Gils, Horton, 2019), green economy (Barna et al., 2023; Descubes et al., 2018), and green technologies (Barna et al., 2023; van Gils, Horton, 2019). Additionally, significant references to the creation of a new type of job, namely green jobs, were observed. This issue was represented both by direct references to green jobs (Barna et al., 2023) and green collar jobs (Descubes et al., 2018). During the standardization stage, these green research terms were intentionally left unstandardized to illustrate the complexity of green issues surrounding the functioning of social enterprises and to emphasize that the same research problem can be referred to differently by various authors studying social enterprises and addressing different green themes. In this context, as discussions in various economic sectors indicate, the term green jobs is commonly used (e.g. Araújo et al., 2018; Kozar, Sulich, 2023; Mathieu, 2024). Therefore, this term will be used in the subsequent discussion.

This study distinguishes itself from previous research by the scope of its bibliometric inquiry. While issues related to social enterprises have been bibliometrically explored in the context of sustainability and its challenges (e.g. Ghosh et al., 2024; Harsanto et al., 2022), this study adopts a broader approach by referencing green issues in general, making it a novel and original bibliometric query. Over time, selected green-specific research questions, such as green enterprises, have started to emerge in academic reviews (e.g. Jayawardhana et al., 2022). However, these studies do not encompass the full range of green research issues related to the green transition of social enterprises, as they tend to focus on specific green topics. This study stands out due to its comprehensive bibliometric inquiry, which contrasts with research that limits itself to social enterprise issues alone, without incorporating additional themes for exploration in individual bibliometric databases (e.g. Hisyam, Lin, 2023). Furthermore, the analyses conducted help address a research gap by identifying key green research areas discussed in scientific publications that address social enterprises while also considering sustainability issues and/or various green research threads.

Among the key green research areas identified in academic studies addressing social enterprises are green products (e.g. Bandyopadhyay, Ray, 2019; Lin, Chen, 2016; Wu et al., 2022), green services (e.g. Abdullah et al., 2022; Sacchetti, 2023), or a combination of both (e.g. Bansal et al., 2023; Rahdari et al., 2016; Stecker, 2016). It can be inferred that one of the pathways for the green transition of social enterprises should involve incorporating green services and/or products into their offerings or replacing existing non-green services and/or products with ones that meet environmental sustainability criteria. Consequently, it can be concluded that the green transition can occur through modifications to the range of services and/or products provided by social enterprises. However, such changes are unlikely to be achieved without the introduction of green innovations (e.g. Rahdari et al., 2016) or the implementation of suitable green technologies (e.g. Ayoungman et al., 2023; Enciso-Santocildes, Caro-González, 2023; Hagedoorn et al., 2023). This presents a challenge for managers of social enterprises: how to effectively implement green changes while meeting the social objectives of the organisation. Therefore, the issue of balancing the realisation of social objectives with the financing of a green transition should become a crucial focus for future research on social enterprise operations. Such research could potentially lead to the development of practical recommendations not only for social enterprise managers but also for external support organisations, facilitating the smooth implementation of green transitions. It is certain that many social enterprises will face the need for such transitions, as public pro-environmental awareness continues to rise. For instance, the emergence of a new consumer category, the green consumer, is already being recognised in scientific research. This trend was also evident in the identification of key green research areas in this study (e.g. Bandyopadhyay, Ray, 2019).

Another important area for future research in the context of the green transition is the issue of greenwashing. This phenomenon is increasingly being addressed in various studies (e.g. Gallo Aguila et al., 2024; K. Gupta, Singh, 2024; Santos et al., 2024). The pressure to adapt to green transformations, combined with inadequate funding, can contribute to the emergence of greenwashing. This undesirable practice misleads consumers seeking green products and/or services into believing they are eco-friendly, even when they lack genuine green credentials. Currently, there is no research focusing on greenwashing in relation to green products and services offered by social enterprises. However, as the analyses in this study have shown, the issue has already been identified in academic literature addressing social enterprises (Bonomi et al., 2017; Dąbrowska, 2022).

As previously mentioned, the analyses conducted observed references to green jobs and their direct connection, on the bibliometric map, to the new social enterprise model of green social enterprises (Figure 4). In the opinion of the author, green social enterprises that aim to achieve social and professional inclusion can create green competencies and green jobs for individuals who are socially and professionally excluded. However, there is a lack of targeted research to determine the scale of green job creation in green social enterprises. The author believes that future research should include an assessment of the quality of these green jobs and the extent to which they are genuinely green. Such research would enable a comparative analysis with other market actors and help answer whether social enterprises can effectively contribute to the inclusion of green jobs and the development of employees' green competencies, preparing them for a gradually greening labour market. Additionally, research on green social enterprises should seek to distinguish so-called 'golden-green jobs' from the other green jobs they create. The concept of golden-green jobs is beginning to emerge in academic discourse (e.g. Kozar, 2024; Kozar, Padaszyńska, 2024).

In the context of future research on the green transition of social enterprises, it is also worth addressing an issue that was not identified as a key green research area during the analysis: the green competence gap. This issue is already prominent in academic discourse (e.g. Nikoloski et al., 2024; Pavlova, 2018; Renfors, 2023). Future research should focus on the extent to which the green competence gap influences the ongoing green transition process in social enterprises. In this context, it would be beneficial to survey not only those responsible for managing social enterprises but also representatives from external support organisations that assist these enterprises.

4. Summary

The survey identified 31 key green research areas in scientific publications that addressed both social enterprises and sustainability, as well as various other green research threads. Only one area explicitly referred to the concept of social enterprise: green social enterprise. In this context, numerous other key green research areas with which it is linked (e.g. green jobs) were also recognised.

The development of research focused on the ongoing green transition of social enterprises and its effects is inevitable. It has already been demonstrated that green social enterprise is an emerging model of social enterprise. In the author's view, this opens up possibilities for further scientific discussion and the potential segmentation of the green social enterprise model into sub-models. These sub-models could focus on aspects such as green products and/or services, the development of green competencies (in the context of social and professional inclusion), and the creation of green jobs within these enterprises.

At the same time, it should be noted that the pace and extent of the green transition in social enterprises (in this direction) will be fundamentally influenced by various changes already underway in socio-economic life, which are gradually fostering green awareness among participants in this sphere. A key question is whether it will be possible to develop solutions that can effectively meet the social objectives of social enterprises while implementing often costly green changes. Additionally, the quality of the green transition process must be considered. This will be influenced by the green credentials of both those responsible for managing social enterprises and the external actors supporting them. Thus, as highlighted by the analyses undertaken, the green transition of social enterprises, from a scientific perspective, presents new research challenges.

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