

Mapping Green Economy Research After COVID-19: A Literature Review of Trends, Methods, and Future Directions (2020–2025) *

Retno T. HANDAYANI¹, Bellachintya R. CHRISTATA¹, Rozaq M. YASIN¹,
Af'idzatuttama AF'IDZATUTTAMA¹ And Khoirul FUAD²

¹Universitas Muria Kudus, Kudus, Indonesia

²Universitas Islam Sultan Agung, Semarang, Indonesia

Correspondence should be addressed to: Retno T. HANDAYANI, retno.tri@umk.ac.id

*Presented at the 47th IBIMA International Conference, 29-30 June 2026, Madrid, Spain

Abstract

The green economy is a topic of great interest, especially in the wake of COVID-19. After the pandemic, many countries have included green transition in their economic recovery packages. This has triggered a need for scientific evidence and data as a basis for policy making, thereby encouraging the emergence of many new studies in this field. This study uses content analysis on a number of articles published in the Scopus database from 2020 to 2025 with the green economy as the main focus of the research. This study analyzes 170 articles focusing on the year of publication, type of research, data collection instruments, data analysis methods, and research subjects. The results of this study show that in three consecutive years, namely 2022, 2023, 2024 and 2025, there was a significant increase in research on the green economy, with quantitative research being the dominant type, followed by mixed methods and qualitative research. The use of secondary data was also still the most dominant, and the most widely used data analysis method was the regression model. The highest research subjects were discussions on green energy transitions and green finance instruments. The results of this study provide information on the methods that have been used in green economy research and form the basis for identifying opportunities for further research in the field of green economy. In addition, the results of this study have an impact on increasing the diversity of research types, research topics, and the selection of more appropriate data analysis techniques.

Keywords: Green economy research, sustainability, research methodologies. Green transitions

Introduction

The green economy is an economic system that prioritizes sustainability in social, economic, and environmental aspects (Zlaugotne *et al.*, 2025). The challenges of the economic crisis have also been effectively identified and overcome through strategic measures via the green economy, which also has an impact on environmental sustainability (Ostapenko *et al.*, 2024). The green economy aims to align economic growth (Pyra, 2024) with responsible natural resource management and social inclusion, so as not to sacrifice the ability of future generations to meet their needs. The green economy primarily focuses on reducing carbon emissions and utilizing resources efficiently. This long-term carbon emission reduction has also been proven to have an impact on reducing energy consumption and carbon emissions themselves (Zhang *et al.*, 2023). Resource management in relation to a country's export and import activities also has an impact on the green economy itself (Zakari, Tawiah and Pinzon, 2024). This framework shows a major shift from the traditional economic model that focuses on output and consumption to a model that considers social and environmental costs while promoting resilient and inclusive prosperity. Even in developed countries, it has been proven that advances in digitalization also encourage

Cite this Article as: Retno T. HANDAYANI, Bellachintya R. CHRISTATA, Rozaq M. YASIN, Af'idzatuttama AF'IDZATUTTAMA And Khoirul FUAD Vol. 2026 (5) "Mapping Green Economy Research After COVID-19: A Literature Review of Trends, Methods, and Future Directions (2020–2025) " Communications of International Proceedings, Vol. 2026 (5), Article ID 4713726, <https://doi.org/10.5171/2026.4713726>

green innovation (Feng, Zou and Hafeez, 2024; Hossain *et al.*, 2024; Wang and Yang, 2024; Wei *et al.*, 2024) which ultimately also relates to the green economy (Aqidawati *et al.*, 2022; Polas *et al.*, 2022). The green economy is increasingly recognized globally as essential for climate change mitigation and promoting sustainable development (Ridwan *et al.*, 2025). Green economy initiatives promote renewable energy, green technology, and circular economy practices (Pyra, 2024). This directly impacts the reduction of environmental damage and solutions to economic inequalities that are often exacerbated by environmental issues.

The years 2020–2025 stand out as a crucial era in the transition to a green economy and the adoption of innovative clean energy solutions. This period includes significant advances in renewable energy technology, increased investment in green financial instruments, and the strengthening of policy instruments aimed at accelerating decarbonization and sustainable industrial transformation. This is primarily evident from research findings showing that both the Green Economy Index and the Environmental and Social Index have shown positive growth, particularly post-COVID-19, in 2020 and beyond (Sevic *et al.*, 2024). The importance of the 2020-2025 period is also reinforced by the increased involvement of developing countries in adopting green frameworks and innovation, which are crucial for global sustainability efforts (Hoareau and Tam, 2024; Bhardwaj, Prakash and Malhotra, 2025).

The research gap regarding the bibliography of green economic research is that it occurred starting from research before Covid-19. Research discussing bibliometric analysis of the green economy also uses the Scopus database, but it was conducted with samples mostly before 2020, before COVID-19, and also shows results that do not continuously show a periodic upward trend (Alsmadi and Alzoubi, 2022). There are also post-COVID studies related to green practices alone, and even those are only within the scope of the 2020-2022 Scopus database (Khan, Nasir and Rashid, 2022). Policy makers are encouraged to take advantage of these developments by creating an investment environment that supports the integration of green technology, standardizing regulatory approaches, and promoting interdisciplinary research to integrate sustainability across all economic sectors (Bernykov *et al.*, 2025).

Mapping is essential to understand emerging research trends and determine research priorities in the face of increasingly complex environmental and economic issues. Green economy research should prioritize multi-source data triangulation, which supports innovative technology collaboration (Pascale and Romagno, 2024) and clearly maps methodological transparency (Musaigwa and Netswera, 2025). Research mapping provides a clear picture of the direction of scientific, innovation, and technological developments relevant to the green economy, enabling researchers, policymakers, and industry players to identify rapidly growing research areas as well as those that are still under-researched. Using bibliometric methods that utilize international databases such as Scopus, this mapping not only reveals global publication and collaboration trends, but also shows the main thematic focuses related to green technology, sustainable innovation, and financial instruments that support the transition to renewable energy (Jumiati and Cahya, 2025). With a better understanding of these research dynamics, stakeholders can set a more targeted and relevant research agenda for global sustainable development needs.

Among other things, mapping the contributions of green finance and green bonds has highlighted the important role of financial instruments in accelerating investment in clean energy projects, which in turn strengthens economic resilience (Moroz and Lyeonov, 2024). This approach also strengthens cross-sectoral and regional coordination to address challenges such as limited access to financing in developing countries and a lack of consistent policy support, thereby creating a solid foundation for achieving global climate and sustainable development targets.

Furthermore, research mapping can also identify unmet research gaps and interdisciplinary needs, particularly related to social aspects such as gender integration and environmental justice, which to date have often received little attention in the context of the green economy (Esteves *et al.*, 2024). Thus, the results of mapping not only contribute to the effectiveness of technical and financial policies, but also encourage the expansion of research coverage that is inclusive and sensitive to social, cultural, and ethical dimensions. This enables the creation of policies that are not only oriented towards economic growth and environmental protection, but also pay attention to social justice and community empowerment, ensuring that the transition to a green economy can take place in a fair and sustainable manner. Therefore, research mapping is an essential instrument that enables the adaptive adjustment of research and policy priorities in line with the dynamics of future needs and challenges.

Using content analysis of research journals in the Scopus database from 2020 to 2025, this study aims to collect information on various studies discussing the green economy. This study aims to answer the following questions: (1) What is the trend in the number of studies on the green economy from year to year? (2) How do the research designs used to discuss the green economy vary? (3) What research subjects are most frequently used to discuss

the Green Economy? (4) What data collection instruments are used by researchers to review the Green Economy? (5) What data analysis techniques are used by researchers to analyze the Green Economy? (6) What is the overview of a series of studies conducted by researchers to investigate the Green Economy?

There is also a 2025 study discussing Bibliometrics on the Green Economy, (Kangalakova *et al.*, 2025), but this study has several differences from the previous study. First, this study focuses on articles published in Scopus from 2020 to 2025. Second, various parameters are used as the basis for content analysis.

Methodology

This section provides a comprehensive overview of the research design, details of data sources, research instruments, and data analysis used.

Research Design

This study uses content analysis principles, focusing on various findings published in the Scopus database. The research method used in this study adopts previous research on research method trends with a focus on fields other than this study, namely biology and critical thinking skills. (Fauzi and Pradipta, 2018; Susetyarini and Fauzi, 2020)

Data Sources

Data was collected from content analysis of research articles in the Scopus database using the keywords Green Economy, publication year 2020 to 2025(August), document type research article, and publication stage Final. At this stage, 328 research articles appeared. Next, the researchers downloaded them for further analysis of their content, resulting in a final data set of 170 research articles to be processed in depth. This study used predetermined inclusion and exclusion criteria to ensure the relevance and quality of the selected articles. Inclusion criteria included: (1) articles published between 2020 and 2025, (2) journal articles indexed in the Scopus database, (3) English-language articles, and (4) research directly related to the green economy. Meanwhile, exclusion criteria included: (1) conference proceedings, (2) non-English-language articles, and (3) articles not available in full-text format. The article selection process was conducted in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, which consist of four stages: identification, screening, eligibility, and inclusion. Articles in this study were identified from the Scopus database. Subsequently, duplications were removed during the screening stage, followed by title and abstract review. Successful articles were then analyzed in full-text to determine eligibility, resulting in a final article that met all criteria.

Research Instruments

There are five aspects analyzed in this study, including (i) Year of Publication (6 categories), (ii) Type of Research (5 categories), (iii) Research Subject (9 categories), (iv) Data Collection Instruments (9 categories), (v) Data Analysis Methods (10 categories).

To ensure the reliability of the review process, this study employed a structured and consistent selection procedure based on predetermined criteria. The entire selection process was systematically documented to enhance the transparency and repeatability of the study. Each article was classified into a specific category based on certain aspects that met the predetermined categories. This information was in accordance with the categorization of aspects presented in the abstract, methods, and discussion sections. Furthermore, the collected data was presented in the form of bar charts.

Results And Discussion

Figure 1 illustrates the annual distribution of publications on the green economy over the 2020–2025 period, highlighting a clear upward trajectory in scholarly output. Beginning in 2020, the number of publications shows a steady and significant increase, indicating a growing academic interest in green economy-related topics. Specifically, the number of published articles rose from 13 in 2020 to 16 in 2021, followed by a substantial increase to 38 articles in 2022. This upward trend continued in 2023 with 42 publications and reached its peak in 2024 with a total of 54 articles, representing the highest level of research productivity within the observed timeframe.

This is also in line with the research conducted, where the highest trend of research on the green economy has indeed increased sharply and peaked in 2024 (Judijanto, Yoga and Wijayanti, 2024; Manisha and Singh, 2024) . For 2025, the number of publications appears significantly lower, with only 7 articles recorded. However, this figure should be interpreted with caution, as the data collection was conducted in August 2025, meaning the year had not yet concluded. Consequently, the apparent decline does not necessarily indicate a reduction in research interest but rather reflects incomplete annual data. Overall, the observed trend demonstrates a sustained and accelerating growth in green economy research, particularly from 2022 onwards. This surge may be attributed to increasing global awareness of sustainability challenges, climate change mitigation efforts, and the integration of environmental considerations into economic and policy frameworks. Furthermore, the rising publication trend aligns with broader developments in academic and professional domains. For instance, recent studies indicate that sustainability concepts are increasingly being integrated into higher education curricula, with a majority of accounting students recognizing the relevance of sustainability across various accounting disciplines (Shaik *et al.*, 2025). This suggests that the expansion of green economy research is not only driven by policy and environmental urgency but also supported by evolving educational paradigms and interdisciplinary engagement.

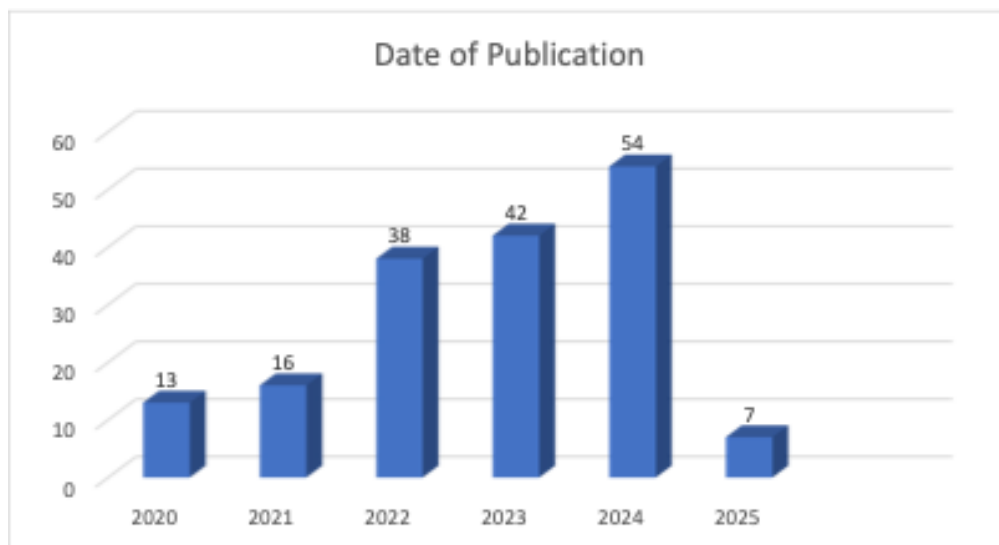


Figure 1: The trend of increasing economic research with a primary focus on the green economy in the Scopus database over the past six years

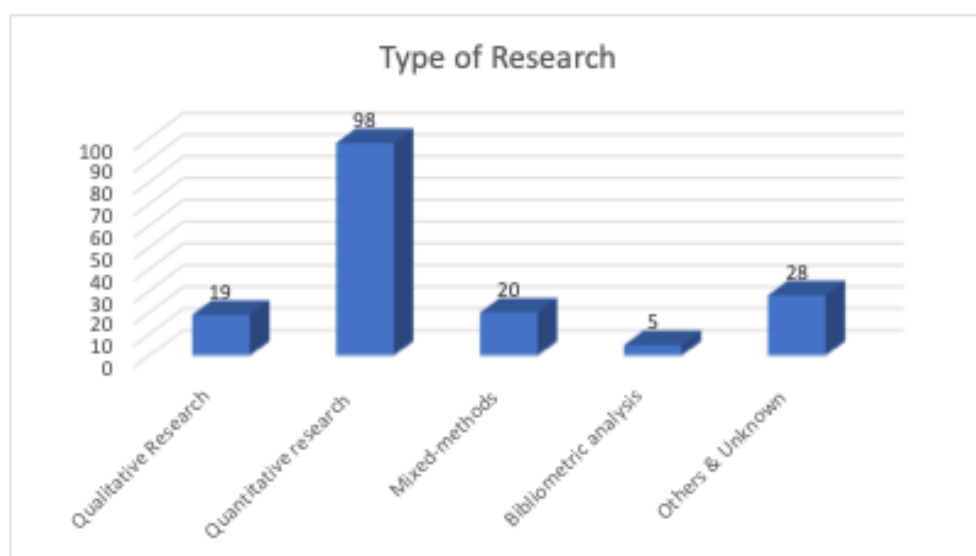


Figure 2: Distribution of Research Discussing the Green Economy Based on Type of Research

The methodological distribution presented in Figure 2 reveals a clear dominance of quantitative approaches in green economy research during the 2020–2025 period. This trend suggests that the field is largely driven by the need for measurable evidence, statistical validation, and generalizable findings, particularly in assessing economic performance, environmental indicators, and policy impacts. While such an orientation strengthens empirical rigor, it may also constrain the depth of contextual understanding, especially in capturing socio-cultural and institutional dynamics that are not easily quantifiable.

The relatively limited use of qualitative methods (19 studies) indicates a potential underrepresentation of context-sensitive insights, such as stakeholder perceptions, governance challenges, and local adaptation strategies. These aspects are critical in green economy transitions, which are inherently embedded in diverse socio-political and cultural settings. Therefore, an overreliance on quantitative methods could lead to partial interpretations of complex sustainability issues.

Notably, the increasing adoption of mixed-methods approaches (20 studies) reflects a methodological shift toward more integrative and interdisciplinary research designs. This trend is particularly relevant given the multifaceted nature of green economy challenges, which require both numerical assessment and contextual interpretation. Mixed-methods research enables triangulation, thereby enhancing the validity and robustness of findings. Research using interviews, surveys, and official statistical data will also be able to present a more in-depth picture of community empowerment, economic feasibility, and the effectiveness of (Prabowo, Nafi' and Ridjal, 2022). Similarly, in the context of evaluating climate change adaptation policies, the use of mixed data helps verify quantitative findings through the perspectives of stakeholders and institutional analysis (Hirpha *et al.*, 2021).

However, despite its advantages, the proportion of mixed-methods studies remains relatively modest compared to purely quantitative research. This indicates an opportunity for future research to further adopt and refine integrative methodologies. Such approaches are essential for bridging the gap between macro-level indicators and micro-level realities, particularly in evaluating the effectiveness and inclusiveness of green economy policies.

The minimal presence of bibliometric analysis (5 studies) also suggests that the field may still lack sufficient meta-level reflection on its own intellectual structure and research trends. Expanding bibliometric and systematic mapping studies could provide valuable insights into research gaps, collaboration networks, and emerging themes within the green economy discourse.

In addition, the category of other and unknown (28 studies) points to a degree of methodological ambiguity or inconsistency in reporting. This raises concerns regarding transparency and reproducibility, emphasizing the need for clearer methodological frameworks and adherence to reporting standards such as PRISMA in future systematic reviews.

Various data collection techniques have been used in various studies. To ensure that the evidence used to evaluate environmental and socioeconomic impacts is accurate, reliable, and complete, reliable data collection techniques are essential in green economy research.

The analysis of data collection instruments from several articles analyzed in this study is shown in Figure 3. Of the 170 articles analyzed, 124 articles used secondary data as their data collection technique. In green economy research, quantitative analysis is highly dependent on secondary data from national statistical agencies and leading international organizations. Regularly collected and comparable datasets on indicators such as renewable energy investment, greenhouse gas emissions, employment figures, and economic output are provided by organizations such as World Development Indicators (WDI) (Liu *et al.*, 2025). For data collection instruments, 5 questionnaires and 5 surveys were used. For the types of research that used data collection instruments, 10 interviews, 4 experimental models, 8 literature reviews, 4 bibliometric data, 8 theoretical and analytical approaches, and 32 unidentified instruments were used.

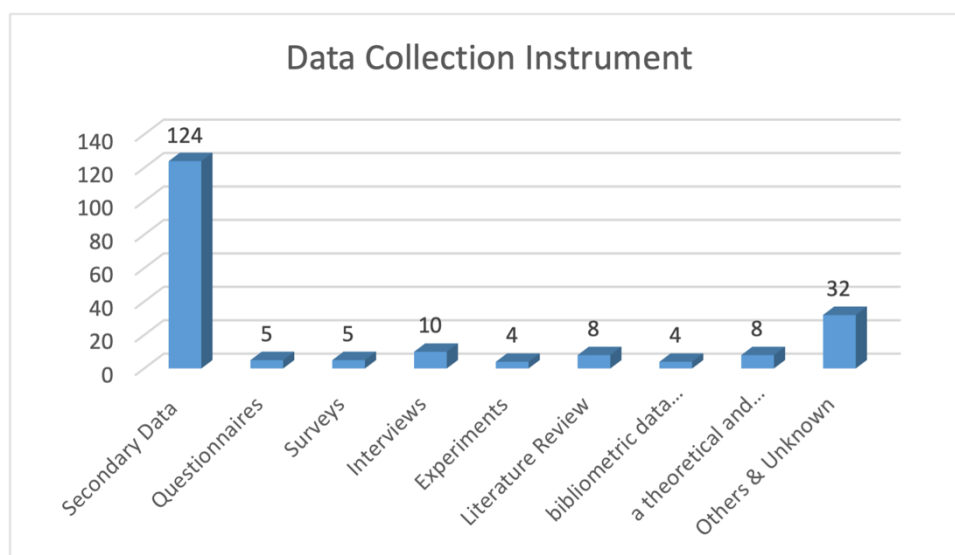


Figure 3: The Distribution of Instrument Selection for Data Collection in the Scopus Database Researches with Critical Thinking Skill

Figure 4 presents the distribution of data analysis methods applied across the 170 selected studies, revealing a strong dominance of quantitative econometric techniques in green economy research. Among these, regression models emerge as the most frequently employed method, accounting for 52 studies. This predominance reflects the field's reliance on statistical inference to examine relationships between economic, environmental, and policy variables, particularly in panel data contexts involving cross-country or firm-level analyses.

The extensive use of regression techniques can be attributed to their flexibility in controlling for confounding variables and capturing both cross-sectional and temporal variations. As highlighted in prior studies (Mavlutova *et al.*, 2023; Saleem *et al.*, 2025), regression-based approaches are particularly effective in testing hypotheses related to green growth, environmental performance, and the interplay between capital, labor, and sustainable production practices. However, this methodological concentration also raises concerns regarding potential over-reliance on linear assumptions and standardized modeling frameworks, which may oversimplify the inherently complex and nonlinear dynamics of green economy systems.

In addition to conventional regression, more advanced econometric techniques such as the Generalized Method of Moments (GMM) (16 studies) and Difference-in-Differences (DID) approaches (9 studies) are also employed, indicating a growing effort to address issues of endogeneity, causality, and policy impact evaluation. The use of Ordinary Least Squares (OLS) in 12 studies further reinforces the prevalence of baseline econometric modeling, although its limitations—particularly in handling heteroskedasticity and omitted variable bias—suggest the need for more robust estimation strategies in future research.

Structural equation modeling using Partial Least Squares (PLS-SEM), applied in 16 studies, represents an important methodological alternative, especially for examining latent constructs such as environmental awareness, sustainability practices, and behavioral intentions. This indicates an emerging shift toward integrating behavioral and perception-based dimensions into green economy research. Similarly, the presence of 16 qualitative studies and 23 studies employing mixed descriptive-evaluative approaches highlights a gradual, albeit still limited, movement toward methodological diversification.

Despite this variation, the relatively small number of bibliometric analyses (5 studies) points to a significant gap in meta-level research. Bibliometric methods are essential for mapping the intellectual structure, identifying research clusters, and tracking the evolution of themes within a field. Their limited use suggests that green economy research remains more focused on empirical application than on critical reflection and knowledge synthesis.

Moreover, the presence of 14 studies categorized as other or not meeting specific methodological criteria raises concerns about methodological transparency and reporting consistency. This ambiguity may hinder

reproducibility and limit the comparability of findings across studies, underscoring the importance of adhering to standardized reporting frameworks.

From a critical standpoint, the findings reveal a methodological imbalance characterized by the dominance of quantitative econometric approaches, accompanied by a slower integration of qualitative, mixed-methods, and meta-analytical techniques. While quantitative rigor is essential, an overemphasis on econometric modeling risks narrowing the analytical lens, particularly in addressing socio-institutional, behavioral, and governance-related aspects of the green economy.

Therefore, future research should prioritize methodological pluralism, combining advanced econometric techniques with qualitative insights and systematic synthesis approaches. Expanding the use of bibliometric analysis, mixed-methods designs, and interdisciplinary frameworks will be crucial for capturing the full complexity of green economy transitions and enhancing the policy relevance of research outcomes.

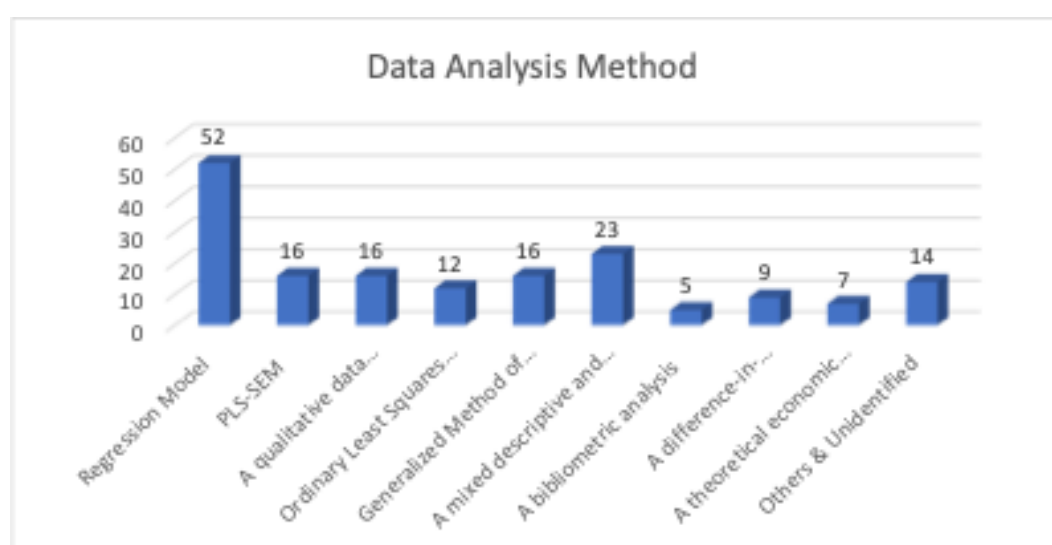


Figure 4: Distribution of Research Tool Selection for Data Analysis Method in Several Studies with Green Economy as the Main Focus in the Scopus Database

The research subjects in studies on green economy are also presented in this study. This can be seen in more detail in Figure 5 below. The top three research subjects are Green Energy Transitions with 26 studies, Green Finance Instruments with 22 studies, and Green Economic Recovery with 20 studies. The theme of energy transition has generated a large cluster because it combines measurable targets, large datasets, and specific policy programs, which attract the attention of interdisciplinary research (Yu, 2022; Muhire *et al.*, 2024; Shah, Kumar and Talukder, 2024). This green energy transition includes pro-environmental activities such as recycling activities from collecting waste or other things (Cerqua, Fiorino and Galli, 2024). After green energy transition, the second highest research subject is green finance instruments. Green financing itself is a collection of several financial instruments, the implementation of which has been proven to have an impact on investment efficiency (Yan, Mao and Ho, 2022). Several studies also link the two, where green finance has been proven to have a positive and significant impact on renewable energy technology innovation (Nepal *et al.*, 2024). The green energy transition, which has led to a reduction in carbon emissions, has also proven to have a positive impact on the economic growth of large companies such as Google, Ikea, Unilever, and Tesla (Yakymchuk and Rataj, 2024).

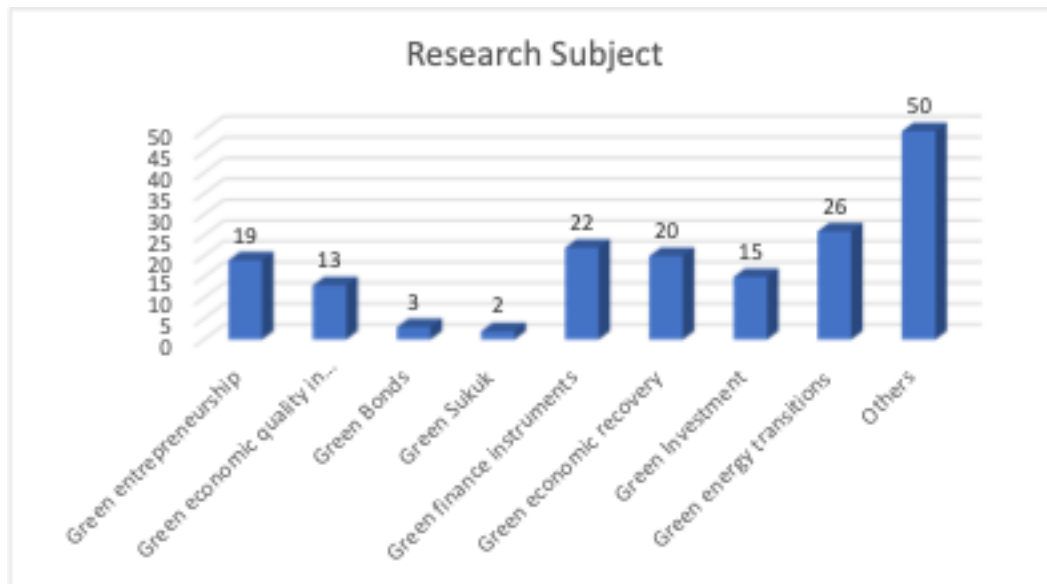


Figure 5: Distribution of Research Tool Selection for Research Subject in Several Studies with Green Economy as the Main Focus in the Scopus Database

The topic of green economy, mainly concerning renewable energy, has indeed proven to be a major factor driving most respondents to agree with the increased implementation of green economy (Putri *et al.*, 2025; Silaban and Sitorus, 2025). The number of studies on green investment is in the middle, totaling 15, some of which reinforce that green investment in the 2020-2021 period has weakened considerably, given that the economy has also weakened (Shang *et al.*, 2023). Therefore, economic improvement is needed to increase green investment and have an impact on green recovery.

One study using the GMM method, which discusses green sukuk, has reinforced the insight that the green economic transition in financial instruments is indeed gaining momentum (Ali *et al.*, 2024). Several studies related to financial investments such as green bonds have also succeeded in creating tax incentive mechanisms that can be applied in any country (Borodin *et al.*, 2023). The issue of tax incentives is certainly interesting in the business world, given their impact on increasing profits. However, on the other hand, there are also studies that state that high economic growth reduces the implementation of a green economy due to the maximum utilization of resources (Azwardi, Zainal and Igamo, 2025). Therefore, studies on the theme of green economy vary according to the perspective of the analysis. The subject of research on the green economy appears to be very diverse considering that green brands also have a big influence on consumer loyalty (Lyulyov *et al.*, 2024; Hoo *et al.*, 2025). There are also 50 other studies, including an interesting one analyzing green behavior in developing countries such as Malaysia and Nigeria (Ogiemwonyi, 2024).

Conclusion

This study provides a comprehensive review of green economy research indexed in the Scopus database over the 2020–2025 period, revealing several important trends in publication growth, methodological choices, and thematic focus. One of the most notable findings is the significant surge in research output during three consecutive years 2022, 2023, and 2024 indicating a rapid expansion phase in the development of green economy scholarship. This acceleration reflects increasing global attention to sustainability issues, climate change mitigation, and the transition toward low-carbon economic systems. It also suggests that the green economy has evolved from a peripheral topic into a central area of academic and policy discourse.

From a methodological perspective, the findings demonstrate a clear dominance of quantitative research approaches, followed by mixed-methods and qualitative designs. This pattern highlights the field's strong orientation toward empirical validation, statistical modeling, and hypothesis testing. While such approaches contribute to robustness and generalizability, they also risk limiting deeper contextual and interpretive insights, particularly in understanding social, institutional, and behavioral dimensions of the green economy. The relatively smaller proportion of qualitative and mixed-methods studies suggests that opportunities remain for more integrative and interdisciplinary research designs.

In line with this trend, the reliance on secondary data as the primary data collection instrument further reinforces the quantitative orientation of the field. Secondary datasets—such as macroeconomic indicators, environmental metrics, and financial data—enable large-scale, cross-country, and longitudinal analyses. However, this reliance may also constrain the ability of researchers to capture localized dynamics, stakeholder perspectives, and real-time policy implementation challenges. As a result, the richness and contextual relevance of findings may be compromised in certain cases.

The predominance of regression-based models as the primary data analysis technique underscores the importance of econometric approaches in examining relationships between green economy variables. Regression models provide a flexible and widely accepted framework for analyzing causal linkages and testing theoretical assumptions. Nevertheless, an overdependence on such models may lead to methodological homogeneity and limit the exploration of more advanced or alternative analytical techniques, such as system dynamics modeling, machine learning approaches, or experimental and quasi-experimental designs. Expanding the methodological toolkit is therefore essential to better capture the complexity and nonlinearity inherent in green economy systems. In terms of research focus, the findings indicate that the most frequently studied topics are green energy transitions and green finance instruments. This concentration reflects the central role of energy systems and financial mechanisms in driving sustainable economic transformation. However, it also points to a potential imbalance in the literature, where other critical dimensions—such as social equity, governance structures, circular economy practices, and community-level adaptation—may be relatively underexplored. Addressing these gaps is crucial for developing a more holistic understanding of the green economy.

Overall, this study contributes to the literature by mapping the current state of green economy research and identifying key patterns and limitations. The findings highlight the need for greater methodological diversification, thematic expansion, and data innovation in future research. Specifically, scholars are encouraged to incorporate more primary data collection methods, adopt mixed and interdisciplinary approaches, and explore underrepresented topics that capture the socio-economic and institutional complexities of sustainability transitions.

Furthermore, future studies should aim to strengthen theoretical contributions by moving beyond purely empirical analyses toward more integrative frameworks that link economic, environmental, and social dimensions. Enhancing transparency in methodological reporting and adopting standardized guidelines such as systematic review protocols will also be essential for improving the reproducibility and credibility of research. In conclusion, while green economy research has experienced rapid growth and increasing academic relevance, its continued development will depend on the ability of researchers to move beyond conventional approaches and embrace more innovative, inclusive, and interdisciplinary perspectives. The recommendations provided in this study are expected to serve as a foundation for future research and to support the advancement of knowledge in this critical field.

Acknowledgement

This project is sponsored by Directorate of Research and Community Service, Directorate General of Research and Development, Ministry of Higher Education, Science and Technology, Indonesia with the contract number 127/C3/DT.05.00/PL/2025 and 008/LL6/PL/AL.04/2025.

References

- [Ali, Q., Rusgianto, S., Parveen, S., & Yaacob, H. (2024). on economic growth , social development , and financial. *Environment, Development and Sustainability*, 26(8), 21097–21123. <https://doi.org/10.1007/s10668-023-03520-6>
- Alsmadi, A. A., & Alzoubi, M. (2022). Green Economy: Bibliometric Analysis Approach. *International Journal of Energy Economics and Policy*, 12(2), 282–289. <https://doi.org/10.32479/ijeep.12758>
- Aqidawati, E. F., Sutopo, W., Pujiyanto, E., Hisjam, M., Fahma, F., & Ma'aram, A. (2022). Technology Readiness and Economic Benefits of Swappable Battery Standard: Its Implication for Open Innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(2), 88. <https://doi.org/10.3390/joitmc8020088>
- Azwardi, Zainal, R. I., & Igamo, A. M. (2025). The Impact of Corruption on Green Growth: Theory and Empirical Evidence of Green Economy as a Source of Growth. *International Journal of Energy Economics and Policy*, 15(2), 600–608. <https://doi.org/10.32479/ijeep.18343>
- Bernykov, V., Bilousko, T., Bilousko, R., Pitel, N., & Starovoyit, V. (2025). Green Technologies and Their Contribution to a Sustainable Global Economy in 2020-2025: A Literature Review. *FUTURITY*

Economics & Law, 5(1).

- Bhardwaj, M., Prakash, N., & Malhotra, R. K. (2025). The Impact of Carbon Credits on Financial Growth in Diverse Economies. *Journal of Informatics Education and Research*, 5(1).
- Borodin, A., Zaitsev, V., Shash, N., & Chibisov, K. (2023). Features of Stimulating the Issue of Green Bonds in the Modern Economy. *International Journal of Energy Economics and Policy*, 13(5), 281–288. <https://doi.org/10.32479/ijee.14526>
- Cerqua, A., Fiorino, N., & Galli, E. (2024). Do green parties affect local waste management policies? *Journal of Environmental Economics and Management*, 128(September), 103056. <https://doi.org/10.1016/j.jee.2024.103056>
- Esteves, D., Holz, S., Lopes, M., & Sandri, S. (2024). Exploring the nexus of gender and environment in the H2020 PHOENIX project: insights from the design of a gender equality plan. *Frontiers in Environmental Science*, 12(February), 1–12. <https://doi.org/10.3389/fenvs.2024.1331099>
- Fauzi, A., & Pradipta, I. W. (2018). Research methods and data analysis techniques in education articles published by Indonesian biology educational journals. *JPBI (Jurnal Pendidikan Biologi Indonesia)*, 4(2), 123–134. <https://doi.org/10.22219/jpbi.v4i2.5889>
- Feng, M., Zou, D., & Hafeez, M. (2024). Mineral resource volatility and green growth: The role of technological development, environmental policy stringency, and trade openness. *Resources Policy*, 89(July 2023), 104630. <https://doi.org/10.1016/j.resourpol.2023.104630>
- Hirpha, H. H., Mpandeli, S., Bantider Dagnew, A., Chibsa, T., & Abebe, C. (2021). Assessing the integration of climate change adaptation and mitigation into national development planning of Ethiopia. *International Journal of Climate Change Strategies and Management*, 13(3), 339–351. <https://doi.org/10.1108/IJCCSM-07-2020-0082>
- Hoareau, C. E., & Tam, N. (2024). Evaluating the Impact of Government Policies on Circular Economy Adoption in the Construction Sector. *Civil and Sustainable Urban Engineering*, 4(2), 83–94. <https://doi.org/10.53623/csue.v4i2.481>
- Hoo, W. C., Yang, Y. Q., Madhavedi, S., & Paraman, P. (2025). The Influence of Brand Perceptions and Consumer Behavior on Green Lifestyle Adoption in Malaysia: An Empirical Study. *International Journal of Sustainable Development and Planning*, 20(8), 3171–3185.
- Hossain, M. R., Rao, A., Sharma, G. D., Dev, D., & Kharbanda, A. (2024). Empowering energy transition: Green innovation, digital finance, and the path to sustainable prosperity through green finance initiatives. *Energy Economics*, 136(June), 107736. <https://doi.org/10.1016/j.eneco.2024.107736>
- Judijanto, L., Yoga, T., & Wijayanti, I. O. (2024). Bibliometric Analysis of Green Finance and Sustainable Investment Strategies. *West Science Social and Humanities Studies*, 2(12), 1965–1980. <https://doi.org/10.58812/wsshs.v2i12.1487>
- Jumiati, E., & Cahya, W. A. (2025). Innovation and Economic Sustainability: A Bibliometric Perspective on Global Research Trends. *International Journal Of Law Social Sciences and Management*, 2(2).
- Kangalakova, D., Satpayeva, Z., Nurkenova, M., & Nyussupova, G. (2025). Trends and research networks in greening networks in greening business: A bibliometric analysis. *Environmental Economics*, 16(1).
- Khan, K. I., Nasir, A., & Rashid, T. (2022). Green Practices: A Solution for Environmental Deregulation and the Future of Energy Efficiency in the Post-COVID-19 Era. *Frontiers in Energy Research*, 10(April), 1–14. <https://doi.org/10.3389/fenrg.2022.878670>
- Liu, Q., Usman, M., Akbar, A., Hedvičáková, M., & Zou, C. (2025). Green Finance and Environmental Security: Evidence from Global Perspectives. *Polish Journal of Environmental Studies*, XX(X), 1–15. <https://doi.org/10.15244/pjoes/200206>
- Lyulyov, O., Pimonenko, T., Chen, Y., Kwilinski, A., & Yana, U. (2024). Countries' green brands within the context of sustainable development goals. *Journal of Innovation and Knowledge*, 9(3), 100509. <https://doi.org/10.1016/j.jik.2024.100509>
- Manisha, K., & Singh, I. (2024). Investigating Green Economy Studies Using a Bibliometric Analysis. *Journal of the Knowledge Economy*, 16.
- Mavlutova, I., Spilbergs, A., Verdenhofs, A., Kuzmina, J., Arefjevs, I., & Natrins, A. (2023). The Role of Green Finance in Fostering the Sustainability of the Economy and Renewable Energy Supply: Recent Issues and Challenges. *Energies*, 16(23). <https://doi.org/10.3390/en16237712>
- Moroz, A., & Lyeonov, S. (2024). Stimulating Financial-Fiscal Instruments of Supporting Development of Renewable Energy Sources: Bibliometric Analysis. *Financial Markets, Institutions and Risks*, 8(4), 179–203. [https://doi.org/10.61093/fmir.8\(4\).179-203.2024](https://doi.org/10.61093/fmir.8(4).179-203.2024)
- Muhire, F., Turyareeba, D., Adaramola, M. S., Nantongo, M., Atukunda, R., & Olyanga, A. M. (2024). Drivers of green energy transition: A review. *Green Energy and Resources*, 2(4), 100105. <https://doi.org/10.1016/j.gerr.2024.100105>

- Musaigwa, M., & Netswera, F. (2025). Harnessing Technological Innovations for Climate Change Mitigation : A Systematic Review of Business and Economic Impacts. *International Journal of Applied Research in Business and Management*, 6(2).
- Nepal, R., Liu, Y., Wang, J., & Dong, K. (2024). How does green finance promote renewable energy technology innovation? A quasi-natural experiment perspective. *Energy Economics*, 134(March), 107576. <https://doi.org/10.1016/j.eneco.2024.107576>
- Ogiemwonyi, O. (2024). Determinants of green behavior (Revisited): A comparative study. *Resources, Conservation and Recycling Advances*, 22(April), 200214. <https://doi.org/10.1016/j.rcradv.2024.200214>
- Ostapenko, I., Zadykhaylo, D., Lyseiuk, A., Tunitska, Y., & Sierova, L. (2024). Global Practices and Experiences in Developing a Green Economy amid Financial Crises. *Grassroots Journal of Natural Resources*, 7(3), 244–270. <https://doi.org/10.33002/nr2581.6853.070314>
- Pascale, G. De, & Romagno, A. (2024). Globalization and ICT capital endowment: How do they impact on an inclusive Green Growth Index? *Structural Change and Economic Dynamics*, 69(November 2023), 463–474. <https://doi.org/10.1016/j.strueco.2024.03.003>
- Polas, M. R. H., Kabir, A. I., Sohel-Uz-zaman, A. S. M., Karim, R., & Tabash, M. I. (2022). Blockchain Technology as a Game Changer for Green Innovation: Green Entrepreneurship as a Roadmap to Green Economic Sustainability in Peru. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(2), 62. <https://doi.org/10.3390/joitmc8020062>
- Prabowo, R. U., Nafi', A., & Ridjal, J. A. (2022). Implementasi Reposisi Green Economy : Peningkatan Kapasitas Usaha Rintisan Masyarakat Sekitar Taman Nasional Meru Betiri. *Agribios*, 20(1), 129. <https://doi.org/10.36841/agribios.v20i1.1653>
- Putri, W. R. E., Suhendro, S., Azhar, R., Desriani, N., & Pramana, A. C. (2025). Exploring Public Sentiment on Green Economy Policy: A Natural Language Processing-Based Analysis. *International Journal of Energy Economics and Policy*, 15(2), 560–565. <https://doi.org/10.32479/ijep.18360>
- Pyra, M. (2024). The Role of the Green Economy in Shaping Economic Growth in Poland. *Annals of the Polish Association of Agricultural and Agribusiness Economists*, 26(3), 129–142. <https://doi.org/10.5604/01.3001.0054.6951>
- Ridwan, M., Akther, A., Dhar, B. K., Roshid, M. M., Mahjabin, T., Bala, S., & Hossain, H. (2025). Advancing Circular Economy for Climate Change Mitigation and Sustainable Development in the Nordic Region. *Sustainable Development*, 1–20. <https://doi.org/10.1002/sd.3563>
- Saleem, F., Asif, M. F., Aw, E. C.-X., Cham, T.-H., Ahmad, W., Hamid, A., Syed, Q. R., & Anwar, A. (2025). Green growth through green production practices: The moderating role of stringent environmental policies in G8 countries. *Energy & Environment*. <https://doi.org/10.1177/0958305X251367085>
- Sevic, A., Nerantzidis, M., Tampakoudis, I., & Tzeremes, P. (2024). *International Review of Financial Analysis Sustainability indices nexus : Green economy , ESG , environment and clean energy*. 96(September). <https://doi.org/10.1016/j.irfa.2024.103615>
- Shah, M. A., Kumar, S., & Talukder, M. B. (2024). Advancing to Sustainable Development. *Practice, Progress, and Proficiency in Sustainability*. <https://doi.org/10.4018/979-8-3693-6567-0.ch001>
- Shaik, A. R., Saheb, S. S., Abdulmajeed, I. A. I., & Bafaqeer, S. M. (2025). Embedding Sustainability in Accounting Education : Exploring the Role of SDGs in Saudi Arabian Higher Education Institutions. *International Journal of Sustainable Development and Planning*, 20(8), 3211–3220.
- Shang, Y., Qi, P., Chen, H., Yang, Q., & Chen, Y. (2023). COVID-19 and its impact on tourism sectors: implications for green economic recovery. In *Economic Change and Restructuring* (Vol. 56, Issue 2, pp. 941–958). <https://doi.org/10.1007/s10644-022-09456-7>
- Silaban, A., & Sitorus, S. A. (2025). Leveraging Renewable Energy and ESG for a Sustainable Future: The Mediating Role of Green Accounting in Carbon Emission Management and the Green Economy. *International Journal of Energy Economics and Policy*, 15(2), 766–785. <https://doi.org/10.32479/ijep.18154>
- Susetyarini, E., & Fauzi, A. (2020). Trend of critical thinking skill researches in biology education journals across Indonesia: From research design to data analysis. *International Journal of Instruction*, 13(1), 535–550. <https://doi.org/10.29333/iji.2020.13135a>
- Wang, L., & Yang, H. (2024). Digital technology innovation and corporate ESG performance: evidence from China. In *Economic Change and Restructuring* (Vol. 57, Issue 6). <https://doi.org/10.1007/s10644-024-09791-x>
- Wei, A., Zakari, A., Tawiah, V., & Aleesa, N. (2024). Cultivating resilient economies through responsible mineral resource trade: Does eco-resourcing rebate matter? *Resources Policy*, 89(November 2023), 104523. <https://doi.org/10.1016/j.resourpol.2023.104523>
- Yakymchuk, A., & Rataj, M. (2024). Development Of The Green Policy Strategies Of Enterprises: A

Decent Work. *Economics and Environment*, 2(89).

- Yan, C., Mao, Z., & Ho, K. C. (2022). Effect of green financial reform and innovation pilot zones on corporate investment efficiency. *Energy Economics*, 113(March), 106185. <https://doi.org/10.1016/j.eneco.2022.106185>
- Yu, Q. (2022). International Green Finance Research Progress, Hotspot Analysis and Trend Outlook--Based on VOSviewer's Bibliometric Analysis. *Financial Engineering and Risk Management*, 5(6), 89–96. <https://doi.org/10.23977/ferm.2022.050612>
- Zakari, A., Tawiah, V. K., & Pinzon, S. (2024). Greening the recovery: Efficiency in natural resource markets. *Resources Policy*, 98(February). <https://doi.org/10.1016/j.resourpol.2024.105360>
- Zhang, S., Anser, M. K., Yao-Ping Peng, M., & Chen, C. (2023). Visualizing the sustainable development goals and natural resource utilization for green economic recovery after COVID-19 pandemic. *Resources Policy*, 80(December 2022), 103182. <https://doi.org/10.1016/j.resourpol.2022.103182>
- Zlaugotne, B., Bostrom, M. L., Larsson, M., Lareke, A., Mockeviciene, L., & Gusca, J. (2025). Challenges, Best Practices and Solutions for Sustainable Local Food Supply Chains in Latvia, Lithuania and Sweden. *Conference of Environmental and Climate Technologies*..