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Green Logistics in the Last Half-Decade: A Systematic Review

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ABSTRACT: This study provides a systematic quantitative assessment technique (SQAT) of Green Logistics (GL) research conducted between 2021 and 2026, focusing on the transport and logistics sector. This review aims to map and evaluate global Green Logistics research trends published between 2021 and 2026. A total of 100 GL-related publications from 31 countries were reviewed, with the majority published in 2025, by Asian scholars. Among all contributing nations, China recorded the highest number of GL publications. Most of the reviewed studies employed empirical approaches, while a smaller proportion were conceptual in nature. Four primary data collection methods were identified (surveys, secondary data, interviews, and observations), with surveys emerging as the most dominant technique. The review further revealed three major thematic areas: GL magnitude, GL consequences, and GL mechanisms, with the magnitude dimension receiving the greatest scholarly attention. The authors highlight the need for increased GL research in underrepresented regions such as South America and Australasia and advocate for more conceptual contributions to balance the dominance of empirical works. They also recommend the adoption of qualitative and mixed-method approaches, which combine numerical data with participants' experiences and perspectives to generate deeper insights and a more comprehensive understanding of the research problem, particularly within studies focusing on GL consequences and mechanisms.

KEYWORDS: Green Logistics, Systematic Review, Transport and Logistics, Sustainability Management.

INTRODUCTION

Green Logistics (GL) has emerged as a defining strategic concept within contemporary supply chain and transport management, reflecting the growing pressure on firms to reconcile operational efficiency with environmental responsibility (Chepurna et al., 2025). At its core, GL describes the integration of environmentally conscious practices into logistics planning, transportation, warehousing, and reverse-flow activities, with the aim of reducing the ecological footprint of freight movement while sustaining service performance (Blanco & Sheffi, 2024). This orientation has become particularly salient in the transport and logistics sector, where firms are increasingly expected to redesign fleet operations, distribution networks, and supply chain structures around carbon reduction, circularity, and resource efficiency (Berberoglu et al., 2023).

A recurring theme across recent conceptualizations of GL is its treatment as both an operational practice and a strategic orientation one that shapes how firms plan routes, select transport modes, manage packaging waste, and structure reverse logistics networks (Prataviera et al., 2024). Nicoletti and Appolloni (2024) describe this evolution as "Green Logistics 5.0," in which sustainability-oriented innovation is increasingly embedded into digital and intelligent logistics systems rather than treated as a compliance afterthought. Similarly, Jazairy, Pohjosenperä, Prataviera, and Juntunen (2025) note a persistent gap between academic theorizing on green logistics and the realities of practice, suggesting that the field, while growing, still struggles to translate conceptual insight into operational adoption.

In practical terms, GL is expressed through firm-level decisions such as adopting electric or low-emission fleets, optimizing last-mile delivery through e-vans and e-cargo bikes, redesigning reverse logistics networks for circularity, and applying data-driven or blockchain-enabled systems to improve transparency and reduce waste (Caggiani, Colovic, Prencipe, & Ottomanelli, 2021; Li et al., 2024). These practices are not isolated technical adjustments; they represent a broader entrepreneurial and strategic response to regulatory pressure, stakeholder expectations, and competitive dynamics within global supply chains (Fracarolli Nunes, Lee Park, & Machuca, 2026).

Despite this growing practical relevance, GL research has historically concentrated on specific thematic clusters circular economy transitions, green supply chain performance, and environmental sustainability metrics often examined through the lens of manufacturing or general supply chain management rather than transport and logistics as a distinct empirical domain (Sharma, Luthra, Joshi, Kumar, & Jain, 2023). Where transport and logistics firms are studied, the focus tends to fall on narrow operational outcomes, such as routing efficiency or emissions reduction, rather than a systematic mapping of how GL as a research theme has developed across geography, methodology, and time (Kotlars & Skribans, 2024). This leaves a meaningful gap in understanding how GL scholarship, as a body of work, has evolved over the past several years, and where its geographic and thematic blind spots lie.

The intellectual momentum behind GL has accelerated markedly in recent years, driven by heightened regulatory attention to carbon emissions, the operational pressures of e-commerce-driven logistics growth, and rising stakeholder demand for verifiable sustainability performance (Starostka-Patyk, Bajdor, & Białas, 2024). Within Asia in particular, government-backed initiatives tied to dual-carbon targets and green finance frameworks have catalyzed a wave of GL scholarship examining logistics efficiency, technological innovation, and green economic development (Kartal & Taşkın, 2026; Miao, 2026). At the same time, studies from emerging economies increasingly explore how green logistics adoption interacts with institutional forces, financing constraints, and firm-level capabilities (Amanollahnejad, Izadi, & Zaghmout, 2026; Bui & Vu Tran, 2026).

From a firm-level perspective, GL adoption is frequently examined as a function of managerial reasoning, external stakeholder influence, and institutional context, particularly among small and medium-sized logistics providers navigating cost, capability, and regulatory constraints simultaneously (Bálint, Vilas-Boas da Silva, & Möhring, 2025). Numerous empirical studies have validated the positive relationship between green logistics practices and firm-level outcomes such as environmental reputation, financial performance, and supply chain sustainability across diverse settings, including freight transport (Shujaat Mubarik, Devadason, & Kam Jia Yi, 2025), third-party logistics (Nguyen-Huynh-Thanh & Nhu-Mai, 2026), and agricultural supply chains (Zhou, Bai, Liu, Yu, & Fei, 2024). However, comparatively limited attention has been paid to systematically consolidating this literature into a coherent map of how GL research itself has developed as a field within transport and logistics specifically.

Over the past five years, scholarly output on green logistics has grown substantially, mirroring the broader expansion of sustainability-themed research across business and management disciplines. This growth has produced a fragmented but rich literature spanning circular economy design (Gharibi & Abdollahzadeh, 2025), green logistics performance indices (Nguyen & Nguyen, 2025), knowledge management in green supply chains (Ferreira, Candeias Fernandes, Nguyen, Rammal, & Pereira, 2026), and behavioral or cognitive drivers of green logistics adoption (Nguyen & Nguyen, 2026). The present study systematically reviews this literature over a five year period (half-decade from 2021–2026) to analyze publication trends, geographical distribution, article typologies (conceptual versus empirical), data collection methods, and key thematic areas, with the aim of identifying gaps and guiding future research specifically within the transport and logistics sector.

Therefore, this study systematically reviews global GL literature published between 2021 and 2026 to analyze publication trends, geographical distribution, article typologies, and key thematic areas. It aims to map and evaluate global GL research trends in the transport and logistics sector, providing a deeper understanding of how green logistics practices can drive sustainability, competitiveness, and operational efficiency within these industries, while explicitly identifying existing gaps to guide future research. The review concludes with recommendations for future research aimed at bridging these gaps and positioning GL as a driver of transformation within the global logistics ecosystem.

METHOD

This study reviews scholarly articles on Green Logistics (GL) published between 2021 and 2026, employing the Systematic Quantitative Assessment Technique (SQAT) proposed by Pickering and Byrne (2014). The SQAT provides a structured framework for determining the inclusion or exclusion of peer-reviewed, English-language journal publications, thereby allowing researchers to systematically analyze existing studies and generate an organized synthesis of a specific research domain (Pickering & Byrne, 2014). Using this approach, the study examined publication patterns, geographical distribution, research designs, data collection techniques, and article classifications within the GL literature.

To ensure the review's focus remained strictly on Green Logistics (GL) research in the transport and logistics sector from 2021–2026, a comprehensive three-stage screening process was applied to the initial set of articles to achieve transparency and replicability. The initial search yielded 264 articles. In Stage 1, title screening and duplicate removal resulted in the exclusion of articles that were irrelevant to GL or outside the specified date range. In Stage 2, abstracts were read to confirm the presence of both GL as a core construct and a direct application to transport and logistics contexts. Finally, Stage 3 involved full-text screening against specific inclusion criteria (e.g., peer-reviewed journal status, specific definitions) to validate the final set of articles. This systematic, step-wise application of criteria was essential for maximizing the validity of the final data set by ensuring only highly relevant literature was included for synthesis, thereby providing a focused and accurate map of the field.

Furthermore, the methodological rigor was reinforced by utilizing two independent reviewers during the critical abstract and full-text screening stages. This crucial measure was taken to enhance the reliability and objectivity of the selection process by mitigating the risk of individual bias in the interpretation of the criteria. To quantify the agreement between the reviewers, a measure of inter-rater reliability, such as Cohen's Kappa (κ), was calculated. A high Kappa value provides statistical confidence in the consistency of the selection. Any discrepancies between the reviewers were resolved through thorough discussion until a consensus was reached, thereby ensuring the integrity of the final article selection for analysis.

The SQAT provides a structured, step-by-step approach to pinpoint essential themes, research gaps, and determine crucial variables, thereby setting a clear course for future studies. Each article was classified according to the primary industry of the sample population it studied (e.g., studies

using data from manufacturing plants, ports, or logistics firms were classified as Service or Manufacturing accordingly). This ensured that the sectoral classification was based on the empirical focus of the research, providing a clear map of research attention across industries. The SQAT outlines five essential steps for conducting an effective systematic review, as summarized in Table 1.

Table 1. Description and application

S/N	Dimensions	Application in the current study
1	**Define topic**	Green Logistics (GL) journal articles published between 2021 and 2026
2	**Develop research questions**	Five research questions guided the review: (1) In which countries were these articles written? (2) In which continent were these articles written? (3) What type of GL articles were published (Conceptual vs. Empirical)? (4) What methods were used for data collection? (5) What specific themes did these papers explore, and what were the major findings of those themes?
3	**Identify keywords**	Green Logistics
4	**Database identified and searched**	Elsevier, Emerald, Sage, Springer, Taylor and Francis, and Wiley. Search criteria: "All in the title" search using the phrase "green logistics" on Google Scholar advanced search.
5	**Read and assess publications**	Abstracts of only original peer-reviewed English journal publications dealing with "green logistics" were read. Literature reviews, book chapters, and conference proceedings were not included; only peer-reviewed conceptual and empirical papers were assessed.

Source: Authors' Review.

The researcher analyzed 100 peer-reviewed English-language journal articles on Green Logistics (GL) that satisfied the established inclusion criteria, retrieved from six reputable academic databases. The distribution of these GL publications across different publishers is presented in Table 2.

Table 2. GL summary of reviewed literature (2021–2026)

Publisher	Number of GL articles
Elsevier	43
Emerald	26
Wiley	13
Springer	8
Taylor and Francis	6
Sage	4
Total	**100**

Source: Authors' Review.

RESULT AND DISCUSSION

Time-Based Analysis of Green Logistics (GL)

Figure 1. illustrates the time-based distribution of 100 peer-reviewed English-language journal articles on Green Logistics (GL) published from 2021 to 2026.

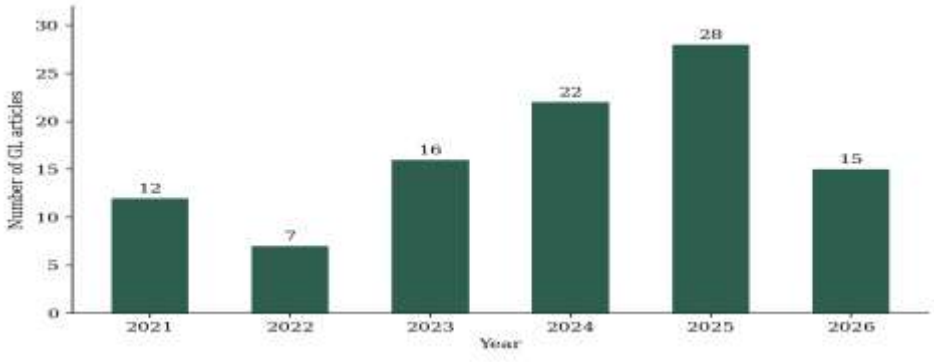

Figure 1. Time distribution of GL articles
Source: Authors' Review

The systematic review conducted on Green Logistics (GL) literature for a-half decade period revealed a consistent and generally rising publication trend. The analysis identified 2025 as the most prolific year, with a total of 28 articles published, indicating a peak in scholarly interest and research output in GL during that year. Conversely, 2022 was the least productive year, with only 7 articles published, suggesting a relative lag in research activity or publication during the early part of the review window.

It is crucial to highlight that the researcher sourced articles within a specific timeframe, from January 1, 2021, to July 13, 2026. This timeframe selection ensures that the review encompasses a comprehensive range of studies pertinent to the field of GL, thereby providing a robust basis for analyzing publication trends and research productivity over the designated period.

Geographical distribution of GL articles

In the period covered, a total of one hundred GL journal articles were published from thirty-one countries. Figure 2 shows the top three countries in terms of GL article publications between 2021 and 2026.

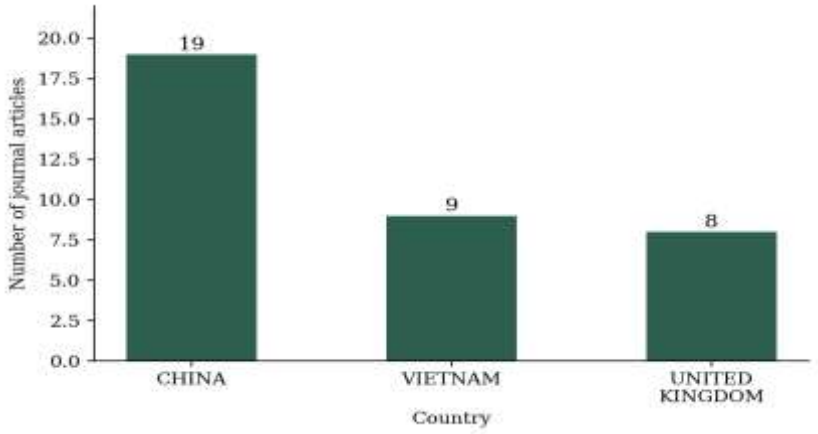

Figure 2. Countries with the maximum GL articles
Source: Authors' Review

China has the highest number of articles, with 19 publications, making it the top-ranked country. Vietnam follows with a total of 9 articles, while the United Kingdom has 8 articles on green logistics. The majority of GL research has been produced in Asian countries, indicating that Asia leads GL research over the last half-decade. This review encourages broader global participation in GL research, as only 31 out of 196 countries have contributed. The remaining 28 countries and their numbers of GL articles are presented in Table 3. To provide further insight into the geographical distribution of GL articles in the review period, Figure 3 presents the distribution on a continental basis. The review shows that the majority of GL articles are concentrated in Asia (51 articles), with minimal representation in South America (1 article) and Australasia (1 article). Europe follows Asia with 33 articles, Africa with 11, and North America with only 3.

Asia's prominence in the volume of Green Logistics (GL) research stems largely from its institutional and policy focus on stimulating low-carbon logistics transformation for economic growth, particularly following the dual-carbon and green finance initiatives that gained momentum across the region from the early 2020s onward (Kartal & Taşkın, 2026). Several Asian governments have consistently implemented strategies that prioritize and fund research into green logistics practices to drive innovation and competitiveness, particularly in freight transport and e-commerce-linked distribution networks (Yunlin, 2023). This policy environment fosters a robust academic ecosystem, often linking university research directly to industry sustainability targets, resulting in a higher volume of foundational GL studies within the region's diversified, export-oriented logistics economies.

The relative scarcity of GL studies focused specifically on the transport and logistics sector as a stand-alone empirical domain is primarily explained by two factors: industry maturity and academic classification. The logistics industry has historically been viewed through the lens of operational efficiency and Supply Chain Management (SCM), prioritizing cost reduction and coordination metrics that are sometimes treated separately from sustainability-oriented strategic decision-making (Chatzoudes, Kadłubek, & Maditinos, 2024). Academics and practitioners often classify logistics providers as an 'organizational function' embedded within broader supply chains rather than as a primary, stand-alone sector for green strategic analysis. This perception creates a degree of theoretical inertia where the natural synergy between GL (sustainability, innovation) and SCM (stability, cost control) remains underexplored, despite the industry's critical need for green strategy to navigate decarbonization targets, market volatility, and evolving regulatory demands.

Table 3. The remaining 28 countries and number of GL articles

S/N	Country	No. of Articles
1	Indonesia	3
2	Italy	3
3	Spain	5
4	Pakistan	2

S/N	Country	No. of Articles
5	Brazil	2
6	Bangladesh	3
7	Nigeria	2
8	Malaysia	2
9	USA	2
10	Iran	3
11	Lebanon	1
12	Turkey	2
13	Netherlands	2
14	South Korea	2
15	Latvia	1
16	Denmark	2
17	Poland	4
18	Saudi Arabia	1
19	Australia	2
20	Jordan	2
21	Sweden	4
22	Ghana	2
23	Greece	2
24	India	3
25	Finland	2
26	Uganda	1
27	Austria	2
28	Tunisia	2

Source: Authors' Review

Green Logistics (GL) is conceptualized as a strategic and operational orientation that guides firms in adopting environmentally responsible practices across transportation, warehousing, and reverse-flow activities (Chepurna, Alvarez-Palau, Castillo Gutiérrez, & Viu Roig, 2025). It is a critical concept for executives when formulating strategies aimed at reducing environmental impact while sustaining competitiveness and seizing opportunities that less sustainability-oriented competitors may overlook. GL encompasses the processes, practices, and decision-making styles that characterize environmentally conscious behaviour within logistics organizations (Nicoletti & Appolloni, 2024).

Commonly, GL is examined through core dimensions such as green transport mode selection, emissions reduction, reverse logistics and circularity, green warehousing, and sustainable supply chain collaboration (Berberoglu, Kazancoglu, & Sagnak, 2023). These dimensions collectively shape the green logistics posture of a firm, and they continue to exert significant influence, particularly in the transport and logistics sector. Future research should particularly focus on exploring GL in underrepresented regions such as South America and Oceania (Australasia), as well as other continents that currently lack substantial representation in green logistics studies with respect to the transport and logistics sector. This geographical emphasis could provide a more comprehensive understanding of GL's global applicability and impact.

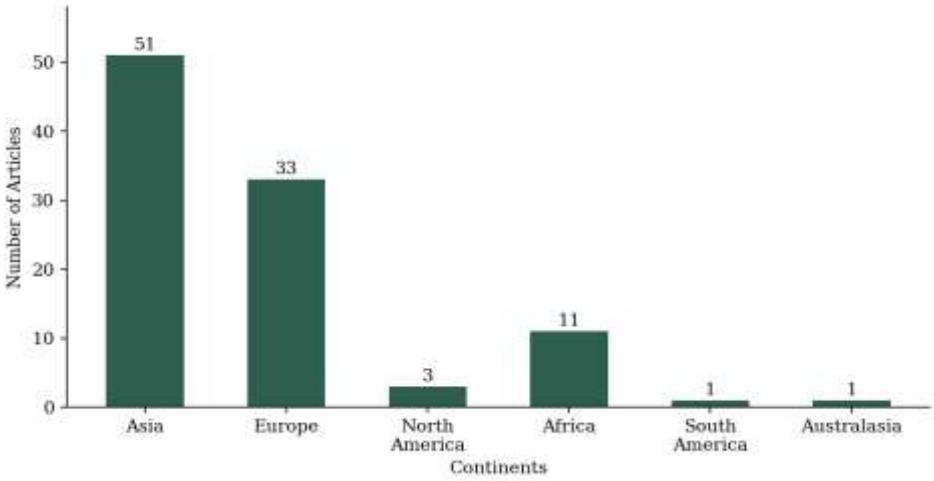

Figure 3. GL Articles by continent
Source: Authors' Review

South America and Oceania (Australasia) have the fewest empirical investigations in this context, highlighting a significant geographical gap in GL research. South America, in particular, is noted for its high poverty levels (Bikefe et al., 2020). The region requires substantial growth and development, and productivity must increase steadily to ensure sustained improvements in employee well-being. Reducing inequality is essential by closing the productivity gap between advanced companies and those with low productivity (Tinoco & Bárcena, 2012).

In Oceania (Australasia), academic publishing faces particular structural challenges, with academics under pressure to secure grant funding and publish in high-ranking journals. The shift by Australasian governments from quantity to quality means that grants are increasingly awarded to universities based on the quality of their journal publications (Mrva-Montoya & Edward Luca, 2021). Implementing GL programs in South American and Australasian logistics companies could significantly enhance the economic and environmental conditions of their continents. Therefore, future research should focus on addressing this geographical gap in GL studies.

Article Type

Figure 4 shows that out of 100 peer-reviewed papers on Green Logistics, 94 were empirical articles and 6 of the reviewed works were conceptual in nature. Empirical research, by contrast, entails the systematic collection of data aimed at testing or confirming established theoretical frameworks (Soomro & Shah, 2019).

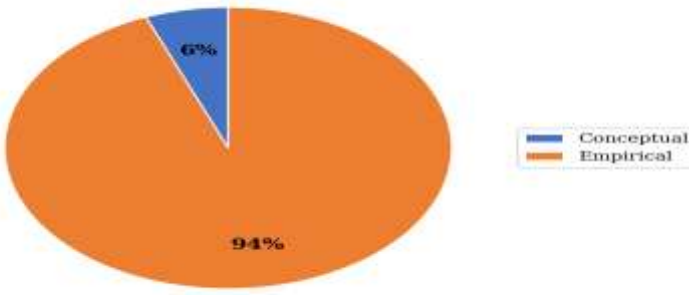

Figure 4. GL Articles Type
Source: Authors' Review

GL Data collection methods

In this section, we highlight, among the 94 empirical publications reviewed, four distinct data collection approaches that were utilized: survey questionnaires, secondary data sources, interviews, and observation. Conceptual papers are excluded from this analysis as they do not involve primary data collection.

The survey method was the most prevalent, utilized by 80 out of the 94 empirical GL papers reviewed, including studies such as Du & Li (2022), Sharma et al. (2023), Van Vo and Nguyen (2023), Namagembe et al. (2025), and Nguyen and Nguyen (2025). The interview method was employed by 26 papers, including Jazairy, von Haartman, and Björklund (2021), Osman, Huge-Brodin, Ammenberg, and Karlsson (2023), and Björklund (2026). Secondary data was used in 14 papers, including Du and Li (2022), Yao, Cheng, Zhou, and Song (2022), and Cheng, Han, and Ren (2023), while 10 papers utilized observation, including Berti and Finco (2022) and Kotlars and Skribans (2024).

Additionally, a number of the GL papers employed more than one data collection method, including Chen (2025), Prataviera, Creazza, and Perotti (2024), and Ferreira, Candeias Fernandes, Nguyen, Rammal, and Pereira (2026). This observation suggests a trend towards using mixed methods

in GL research. Consequently, future studies are encouraged to adopt either a combination of methods or mixed-methods approaches to enhance the robustness and comprehensiveness of GL research.

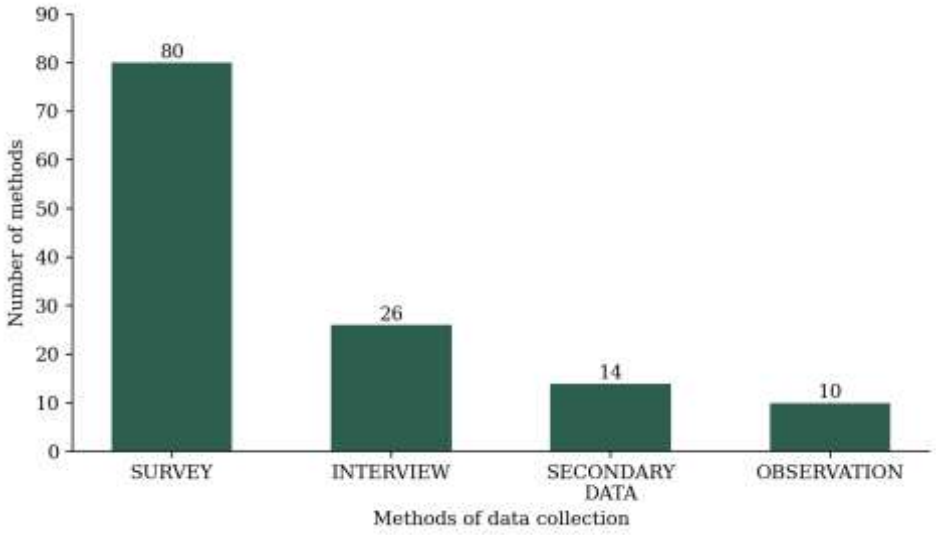

Figure 5. GL Data Collection Methods
Source: Authors' Review

GL Themes

Figure 6 illustrates the thematic classification of the 100 Green Logistics (GL) articles analyzed in the systematic review. The findings reveal that the studies addressed three major thematic areas. A substantial proportion of the publications (71 out of 100) concentrated on the magnitude of GL, particularly its association with variables such as logistics performance, environmental sustainability, and financial performance (Roy & Mohanty, 2024). These 71 studies were further categorized into two primary sectors: service and manufacturing, with the service sector receiving the highest research attention, emerging as the most researched sector with 66 articles, while the manufacturing industry was the least researched, with only 5 articles.

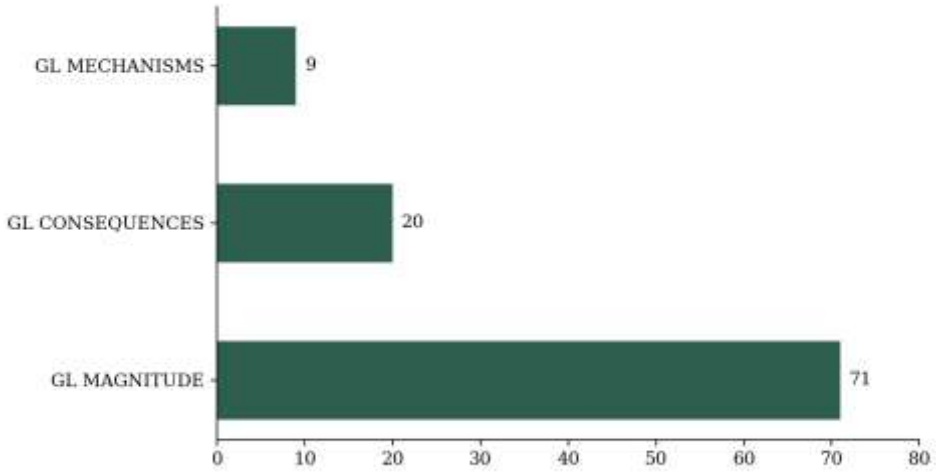

Figure 6. GL Themes
Source: Authors' Review

In the service industry, freight and third-party logistics (Nguyen-Huynh-Thanh & Nhu-Mai, 2026; Shujaat Mubarik, Devadason, & Kam Jia Yi, 2025), maritime and port logistics (Qiu, Gao, Lin, Zheng, & Lin, 2024; Zhao, Gao, Jia, & Gong, 2024), and financial or economic logistics performance (Kartal & Taşkın, 2026; Jinru, Changbiao, Ahmad, Irfan, & Nazir, 2022) are among the most researched sub-domains. The manufacturing sector, by contrast (Du & Li, 2022; Yao, Cheng, Zhou, & Song, 2022), accounted for a comparatively small share of the review. This finding aligns with the broader observation that service-oriented logistics organizations tend to exhibit greater awareness and application of green logistics practices, employing them more visibly to build sustainability-linked reputational and competitive advantage (Baah et al., 2021). In contrast, manufacturing-linked logistics operations are often associated with more rigid, cost-constrained operational frameworks that are slower to adapt.

The second most explored theme identified in the review is the consequences of GL, with a notable number of studies focusing on outcomes such as financial performance, environmental reputation, and supply chain sustainability (Roy & Mohanty, 2024; Shamout et al., 2024), while the manufacturing sector remains the least examined in terms of GL outcomes.

The third theme, referred to as the GL mechanism, comprised studies exploring how green logistics adoption is shaped by institutional forces, cognitive and behavioral drivers, and process innovation (Amanollahnejad, Izadi, & Zaghmout, 2026; Nguyen & Nguyen, 2026). Within this category, freight and third-party logistics recorded a notable concentration of research, followed by studies on blockchain-enabled and intelligent distribution systems (Li et al., 2024). In contrast, agricultural and last-mile delivery mechanisms received comparatively minimal scholarly attention (Zhou, Bai, Liu, Yu, & Fei, 2024; Kotlars & Skribans, 2024).

In light of these findings, this review strongly recommends that future research not only expand investigations into the consequences and mechanisms of GL but also extend such studies more deliberately to the transport and logistics sector as a distinct unit of analysis. Given the sector's vital role in global trade, incorporating GL research into transport and logistics particularly around fleet decarbonization, reverse logistics, and digital sustainability tools will provide deeper insights into how green practices drive innovation, competitiveness, and operational efficiency within these industries.

Table 4. Summary of findings of the reviewed GL articles

S/N	Headings	Key Findings	Implication
1	**Time Distribution (2021–2026)**	GL articles were published every year across the half decade window (2021–2026). A significant number of articles were published in 2025.	GL research is attracting increasing scholarly attention year on year.
2	**Geographical distribution**	The review identified 100 articles from 31 countries. GL articles are concentrated in Asia, while South America and Australasia remain largely ignored. China has the highest number of GL articles among contributing countries.	There is a need for more GL research in South America, Australasia, and other countries that currently have no representation.
3	**Article Type**	Empirical and conceptual research were both adopted in the articles reviewed; the large majority were empirical studies.	Researchers are interested more in the practical application of GL within the service sector as a stand-alone unit of analysis.
4	**Data collection methods**	Four data collection methods survey, secondary data, interview, and observation were adopted across the articles, with survey being the most used method within the period.	The data collection methods used were the dominant ones seen across most GL research. The use of mixed methods of data collection should be encouraged.
5	**GL Themes**	Three different GL themes were identified (GL Magnitude, GL Consequences, and GL Mechanisms). GL magnitude was the most investigated theme.	Scholars are advised to carry out more research on the consequences of GL and GL mechanisms, especially within the Green Logistics sector.

Source: Authors' Review

CONCLUSION

Green Logistics (GL) refers to a firm's strategic and operational approach to reducing the environmental impact of transportation, warehousing, and supply chain activities while sustaining competitiveness and service performance. Within the transport and logistics sector, GL is particularly vital, as it enables organizations to proactively adopt low-emission technologies, redesign distribution networks for circularity, and enhance operational efficiency in an increasingly regulated and environmentally conscious market (Nicoletti & Appolloni, 2024). GL reflects the processes, practices, and decision-making styles that embody a sustainability-oriented mindset, driving firms to innovate and sustain a strategic advantage in logistics operations, supply chain management, and service delivery (Chepurna et al., 2025).

This study conducted a systematic review of 100 peer-reviewed English-language journal articles on GL published between 2021 and 2026. The review analyzed five core dimensions: time distribution, geographical distribution, article type, data collection methods, and GL research themes. The findings revealed that most GL studies were published in 2025, with China contributing the largest share of publications among individual countries. Asia emerged as the most research-active continent, while South America and Australasia were significantly underrepresented, indicating a need for broader global engagement, particularly in developing regions.

The majority of the reviewed works were empirical studies, while only a small proportion were conceptual articles. The dominant data collection techniques included surveys, interviews, secondary data, and observation, with surveys being the most frequently applied method.

Despite providing valuable insights, the review also revealed some limitations. It considered only articles published across six major databases, potentially omitting important GL studies relevant to transport and logistics. Moreover, papers that did not explicitly include the term “green logistics” in their titles were excluded, which may have overlooked research using related constructs such as sustainable logistics or eco-logistics. Similarly, restricting the review to English-language journal articles excluded potentially significant findings from industry reports, book chapters, and conference proceedings.

To ensure a more explicit integration with logistics innovation, future studies should be directed toward three key areas. First, digital adoption requires empirical examination to understand how GL dimensions particularly technology adoption and process innovation, how it influences the successful integration of advanced technologies such as artificial intelligence for demand forecasting, blockchain for supply chain transparency, and intelligent distribution systems. Second, research on sustainability frameworks is essential to explore the relationship between green logistics and green finance adoption, including investments in low-emission fleet technologies and proactive engagement in circular economy business models as sources of competitive advantage rather than mere regulatory compliance. Third, there is a need to develop and validate performance metrics that are more sector-specific, linking GL to measurable logistics outcomes such as service reliability, last-mile efficiency, and resilience to global disruptions.

This dedicated research would help uncover how GL principles influence fleet management, supply chain innovation, and logistics performance, thereby deepening understanding of how green logistics behavior drives competitiveness and technological advancement within the global logistics industry.

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