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RESEARCH ARTICLE

Trends and patterns in the use of the Contingent Valuation Method for conservation: A bibliometric analysis

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ABSTRACT

The Contingent Valuation Method (CVM) remains one of the most widely applied stated preference techniques for assessing the economic value of non-market environmental goods and services, particularly in conservation research. However, a systematic understanding of how this field has evolved regarding research productivity, intellectual structure, and thematic direction remains limited. This study conducts a comprehensive bibliometric analysis of CVM-related publications in conservation between 2000 and 2024, using data retrieved from the Scopus database. VOSviewer and Scopus Analyzer were employed to examine leading authors, publication trends, document types, influential journals, keyword co-occurrence, and citation networks by source type. The results reveal a steady increase in publication output, with notable growth after 2016 and a peak in 2020, reflecting CVM's growing methodological maturity and policy relevance. China, the United States, and Malaysia emerged as major contributors, alongside expanding participation from developing regions. Highly cited works by Loomis, Carson, Hanley, and Hanemann continue to shape the theoretical foundation of CVM, whilst emerging themes highlight applications in ecosystem service valuation, climate change, marine conservation, and sustainable tourism. Ecological Economics was identified as the most influential journal, with growing contributions from interdisciplinary outlets such as Sustainability and the Journal of Environmental Management. Despite these advances, Western dominance and limited synthesis studies indicate a need for greater geographic and conceptual inclusivity. Overall, CVM has evolved into an integrative framework linking ecological, social, and economic dimensions of conservation, with future research encouraged to enhance methodological innovation and cross-regional collaboration.

1. INTRODUCTION

Over the past few decades, integrating environmental valuation into policy and decision-making has gained significant attention due to the increasing concern over the degradation of natural ecosystems and biodiversity loss (Raihan, 2023). An essential tool in this context is the Contingent Valuation Method (CVM), a widely adopted stated preference technique used to estimate the economic value of non-market goods, particularly in the field of conservation (Abdeta et al., 2023; Hafiz Iqbal and Nur Mozahid, 2022). CVM directly elicits individuals' willingness to pay (WTP) or willingness to accept (WTA) compensation for specific environmental changes through carefully designed hypothetical market scenarios (Whitehead and Haab, 2025). As a flexible and theoretically grounded approach, CVM has become one of the most influential economic valuation tools, particularly for assessing the economic benefits of biodiversity protection, ecosystem services, forest conservation, water resources, wildlife, and protected areas (Carson, 2012; Cuccia, 2020; Johnston et al., 2017).

The use of CVM has evolved significantly since its introduction in the 1960s. Initially met with criticism regarding hypothetical bias, strategic bias, and design flaws, the method has since been refined through the development of robust guidelines, such as those set forth by the NOAA Panel on Contingent Valuation (Arrow et al., 1993). These improvements have led to broader acceptance among economists, policymakers, and environmental stakeholders. Moreover, with the rise of environmental economics and the global shift towards sustainable development, especially following the Millennium Ecosystem Assessment (MEA, 2005) and the United Nations' Sustainable Development Goals (SDGs), CVM has been increasingly employed in

conservation-related studies. It provides critical empirical evidence for integrating environmental costs and benefits into national and regional planning processes (Whitehead and Haab, 2025).

Given this growing body of literature, it becomes imperative to explore how CVM has been applied across conservation contexts, which regions or ecosystems are most frequently studied, what trends are emerging in its use, and how the methodological advancements or limitations are reflected in scholarly outputs. Bibliometric analysis offers a rigorous and quantitative approach to addressing these questions (Donthu et al., 2021; Hizami et al., 2024). By systematically mapping the existing research landscape, bibliometric methods reveal patterns in publication outputs, key contributing authors and institutions, influential journals, frequently used keywords, and evolving research themes (Donthu et al., 2021). This method is particularly effective in uncovering knowledge structures and intellectual linkages in a specific field, thereby guiding future research directions.

Although several reviews on CVM applications exist (Hausman, 2012; Hoyos and Mariel, 2010; Su and Wang, 2019), few studies have conducted a dedicated bibliometric analysis that focuses exclusively on its application in conservation-related research. This is a significant gap, especially considering the rising global concern about environmental sustainability, climate change, and the economic valuation of conservation interventions. By employing bibliometric tools, such as performance analysis and science mapping using databases such as Scopus and Web of Science, researchers can gain deeper insight into the historical development, collaborative networks, and thematic shifts in CVM-focused conservation studies. These insights are not only academically valuable but also have practical implications for decision makers who rely on economic valuation to justify conservation investments and policy design (Hassin et al., 2024).

This study aims to fill this gap by presenting a comprehensive bibliometric analysis of the global literature on the use of the Contingent Valuation Method in conservation. Specifically, this study investigates: (i) the top 10 authors in CVM research, ii) the publication trends over time, (iii) the most productive countries, (iv) the type of most published document, (v) the authors who have highly cited works, (iv) the co-occurrence of keywords and (v) the mapping based on the citation by source type to identify thematic evolution and research hotspots. By visualizing these patterns, this study offers a structured overview of how the academic discourse surrounding CVM and conservation has progressed and identifies potential avenues for future research.

The novelty of this work lies in its systematic mapping of the intellectual structure of CVM-based conservation research, enabling researchers and practitioners to understand not just the quantity of publications but also the quality, impact, and thematic direction of the field. Furthermore, this study employs advanced bibliometric tools such as VOSviewer and Bibliometrix, which facilitate graphical representation of co-authorship networks, keyword clusters, and citation patterns, thus enriching the interpretive value of the findings.

In summary, as environmental challenges continue to intensify and demand more integrated valuation frameworks, understanding the role and trajectory of CVM in conservation becomes increasingly important. This bibliometric analysis provides a foundational resource for scholars, practitioners, and policymakers seeking to comprehend the academic landscape of contingent valuation in conservation, its evolving methodological trends, and its potential to inform sustainable environmental governance.

2. LITERATURE REVIEW

The Contingent Valuation Method (CVM) has been widely applied in environmental economics to estimate the economic value of non-market goods, particularly in the context of conservation (Hassin et al., 2020; Zegeye et al., 2023). This method involves presenting respondents with hypothetical scenarios to elicit their willingness to pay (WTP) for specific environmental benefits or their willingness to accept (WTA) compensation for environmental losses (Abdeta, 2022; Johnston et al., 2017; Li and Nitanan, 2022). The flexibility of CVM allows it to capture both use and non-use values, making it a valuable tool for policy analysis and benefit-cost analysis in conservation projects (Venkatachalam, 2004; Whitehead and Haab, 2025). For instance, CVM remains a dominant technique for estimating the economic value of non-market goods, particularly in environmental and conservation contexts. Recent studies have applied CVM to various conservation projects, such as biodiversity conservation in national parks (Chen and Jim, 2010; Khai and Yabe, 2014; Hasan-Basri et al., 2020), urban river management (Zhao et al., 2005) and wetland restoration (Mangaiyarkarasi et al., 2025; Truong, 2021). These applications demonstrate CVM's broad utility in valuing ecosystem services and informing conservation strategies. However, the method faces ongoing challenges related to biases and the reliability of results, necessitating careful survey design and implementation (Spash, 2008; Venkatachalam, 2004).

Recent trends also indicate an increasing integration of interdisciplinary approaches and stakeholder

considerations in CVM studies. For instance, incorporating anthropomorphic and anthropocentric factors has been shown to influence willingness to pay (WTP) for biodiversity conservation (Martín-López et al., 2008). Additionally, studies have explored the impact of different payment vehicles and motivational factors on WTP, highlighting the importance of understanding public attitudes and socio-demographic characteristics (Chen et al., 2014; García-Llorente et al., 2011). The use of CVM in developing countries has also been emphasized, with studies focusing on efficient pricing policies for ecotourism and conservation funding (Whittington and Pagiola, 2012; Zaiton et al., 2012). These studies collectively illustrate the broad applicability and robustness of CVM in capturing public preferences for conservation, despite challenges related to biases and the need for methodological improvements (Hassin et al., 2024).

Building on this foundation, recent empirical and bibliometric evidence reveals an evolution in CVM research toward greater sophistication and contextual relevance. A global meta-analysis by Drupp et al. (2024) found that the average income elasticity of WTP for ecosystem services is approximately 0.6, suggesting that as income levels rise, the WTP for conservation increases but not proportionally. This finding highlights how socioeconomic dynamics shape conservation priorities and underscores the importance of scaling CVM estimates according to income levels and demographic profiles. Similarly, applications in emerging economies, such as Malaysia, have shown that education and income are strong predictors of WTP for forest conservation (Sin et al., 2022). These findings suggest that CVM is shifting from merely quantifying economic values to examining the behavioural, social, and cultural determinants underlying conservation preferences. This transition aligns with a broader research trend that situates CVM within sustainability science and conservation psychology, emphasizing context-specific drivers of environmental valuation.

Furthermore, methodological refinement has become a central focus in recent CVM applications. Newer studies are adopting double-bounded dichotomous choice formats, follow-up certainty scales, and hybrid models to address hypothetical bias and improve scope sensitivity (Musa and Shahrudin, 2023; Venkatachalam, 2004). Researchers have also begun integrating CVM with participatory approaches, stakeholder engagement, and mixed methods to capture the social dimensions of conservation decision-making better. For instance, recent work in Malaysia's Gunung Mulu National Park (GMNP) integrated visitors' and local communities' perceptions and well-being into CVM, offering a more comprehensive assessment of conservation values (Ibrahim et al., 2025). This interdisciplinary integration signals a shift from CVM as a purely economic valuation tool toward a more holistic framework combining ecological, social, and cultural values. However, persistent challenges such as protest responses, choice of payment vehicles, and the framing of valuation scenarios remain subjects of methodological scrutiny. The recent trends and patterns in CVM research clarify a methodological maturation, with the approach increasingly recognized as a vital component of global conservation policy and sustainable resource management frameworks.

3. RESEARCH QUESTIONS

The bibliometric analysis identifies seven research questions intended to address the trends and patterns in using the Contingent Valuation Method (CVM) for conservation. These questions are as follows:

1) Who are the top 10 authors based on research citations?
2) What are the CVM's research trends by year of publication
3) Which countries are at the top of the publication list?
4) What type of document is most published?
5) Who are the most influential authors in CVM's studies?
6) What is the co-occurrence of keywords?
7) How is visualization mapping regarding the citation by source type?

4. MATERIAL AND METHODS

Bibliometrics involves collecting, organizing, and analyzing bibliographic data from scientific publications (Alves et al., 2021; Assyakur and Rosa, 2022; Verbeek et al., 2002). It includes basic statistics such as publication year, journal name, and lead author classification (Wu and Wu, 2017) as well as advanced methods like document co-citation analysis. A robust literature review involves repeated steps of keyword identification, literature searching, and in-depth analysis to build a strong bibliography and ensure reliable outcomes (Fahimnia et al., 2015). Accordingly, this study emphasized high-impact publications, as they offer key insights into the theoretical development of the field. Data were collected exclusively from the SCOPUS database to ensure reliability (Al-Khoury et al., 2022; di Stefano et al., 2010; Khiste and Paithankar, 2017). Only peer-reviewed journal articles were considered, while books and lecture notes were excluded to maintain quality standards (Gu et al., 2019). Notably, Elsevier's Scopus, known for its wide coverage, supported retrieving publications from 2000 to

December 2024 for analysis. While Scopus ensures reliable and broad coverage of peer-reviewed literature, using it as the sole data source may introduce limitations. Studies have shown that Scopus underrepresents regional and non-English journals, which may lead to data bias and limit geographic and linguistic diversity (Singh et al., 2021; Yoon et al., 2023). Future research could incorporate additional databases to improve coverage and reduce selection.

4.1. Data search strategy

This study adopted a systematic bibliometric approach to explore the trends and patterns using the Contingent Valuation Method (CVM) for conservation-related research. The analysis process followed a structured and replicable procedure, as illustrated in Figure 1, which outlines four main phases: identification, screening, eligibility, and inclusion. Each stage ensured that only high-quality and relevant studies were included for analysis. A preliminary search was conducted to identify the appropriate search terms and scope for article retrievals. It began with a broad query in the Scopus database, which initially retrieved 4,949 articles.

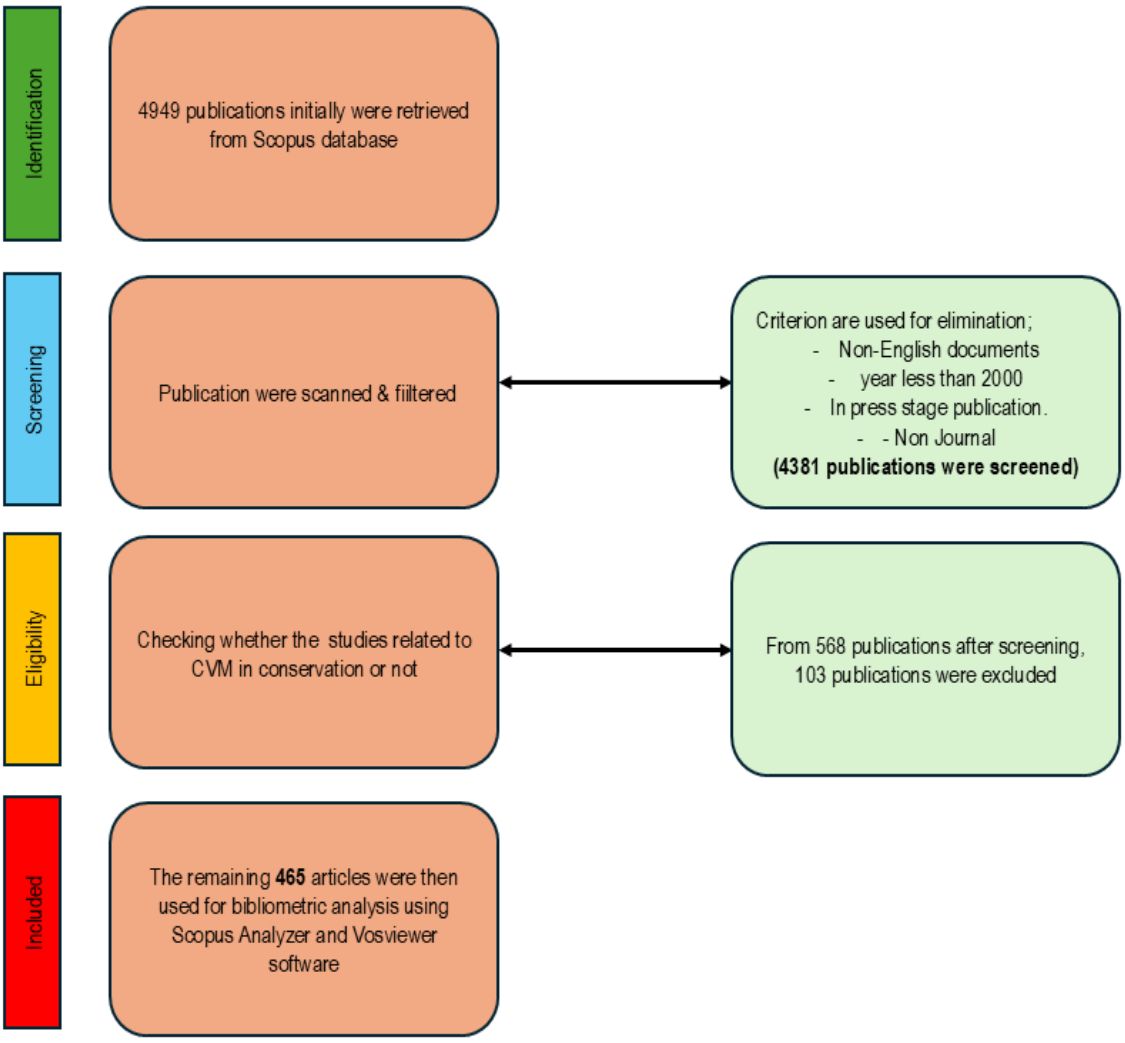

Figure 1: Bibliometric Analysis of Searching Flow (Hizami et al., 2024; Sudakova et al., 2022)

The query was then refined to ensure that the term "contingent valuation method" specifically targeted studies related to conservation. The final search string used was:
(TITLE-ABS-KEY ("contingent valuation method" OR "CV Method") AND TITLE-ABS-KEY (conservation)) AND PUBYEAR > 1999 AND PUBYEAR < 2025 AND (LIMIT-TO (SRCTYPE , "j")) AND (LIMIT-TO (PUBSTAGE , "final")) AND (LIMIT-TO (LANGUAGE , "English"))

In the screening stage, duplicate and irrelevant documents were removed, while non-English publications, non-journal items (e.g., conference papers, book chapters), and "in press" papers were excluded. As of December 2024, only articles retrieved from Scopus concerning the application of the contingent valuation method for conservation were included. This filtering reduced the dataset to 4,381 screened publications. At the eligibility stage, a manual review was carried out to confirm that each study explicitly applied the Contingent Valuation Method (CVM) within a conservation context, such as biodiversity conservation, protected areas, wildlife protection, ecosystem services, or natural resource management. From the 568 articles remaining after this stage, 103 were excluded due to their indirect or unrelated focus. After applying the selection criteria, a total of 465 relevant articles were retained for bibliometric analysis. The inclusion and exclusion document criteria used in this study are summarized in Table 1. The requirements were designed to ensure the dataset's relevance, reliability, and consistency, aligning with established bibliometric practices (Donthu et al., 2021).

Table 1: The selection criterion for searching

Criterion	Inclusion	Exclusion
Timeline	2000 - 2024	Less than 2000
Publication Stage	Final	In press
Language	English	Non English

4.2. Data analysis

VOSviewer is a widely used bibliometric tool developed by Nees Jan van Eck and Ludo Waltman at Leiden University, Netherlands (van Eck & Waltman, 2010, 2017). The program is extensively employed for visualizing and assessing scientific literature, specializing in the creation of intuitive network visualizations, clustering related data, and generating density maps. Its adaptability facilitates the analysis of co-authorship, co-citation, and keyword co-occurrence networks, offering researchers an in-depth comprehension of research environments. The interactive interface and ongoing updates guarantee effective and dynamic analysis of extensive datasets. VOSviewer's capacity to calculate metrics, personalized visualizations, and its compatibility with numerous bibliometric data sources render it an invaluable tool for researchers pursuing insights into intricate research fields.

A distinctive characteristic of VOSviewer is its ability to convert complex bibliometric datasets into visually interpretable maps and charts. The software specializes in network visualization, effectively clustering related items, evaluating keyword co-occurrence patterns, and producing density maps. Researchers gain advantages from its intuitive interface, allowing both beginners and seasoned users to navigate research environments effectively. VOSviewer's ongoing advancement guarantees its position as a leader in bibliometric analysis, providing significant insights via metric calculations and configurable visual representations. VOSviewer's adaptability to various bibliometric data types, including co-authorship and citation networks, establishes it as a versatile and essential tool for scholars pursuing profound comprehension and significant discoveries within their research fields.

Known for its user-friendly interface, it facilitates the creation of network visualizations, clustering related items, and the generation of density maps. The software supports analyses such as co-authorship, co-citation, and keyword co-occurrence, offering valuable insights into research structures through customizable and interactive visualizations. Datasets including publication year, title, author, journal, citations, and keywords were extracted from Scopus (2000 – December 2024) in PlainText format and analyzed using VOSviewer version 1.6.19. VOS clustering and mapping techniques allowed the construction of bibliometric maps based on item similarity(van Eck & Waltman, 2010, 2017). Unlike Multidimensional Scaling (MDS), which uses cosine or Jaccard indices (Appio et al., 2014), VOSviewer applies the association strength index (ASij), calculated as:

$$AS_{ij} = C_{ij} / (W_i \times W_j)$$

Where:

AS_{ij} represents the strength of association between items *i* and *j*;

$\mathbf{C_{ij}}$ is the number of co-occurrences between items *i* and *j.* For instance, if *i* and *j* are authors, C*ij* indicates how many publications they co-authored;

$\mathbf{W_i}$ denotes the total occurrences of item *i*, such as the number of papers authored by individual *i* or total citations received by document *i,* and

$\mathbf{W_j}$ refers to the total occurrences of item *j*, which follows the same definition as W_i.

The equation (AS_{ij}) is defined as the ratio of C_{ij} divided by the product of W_i and W_j. This ratio describes the association strength as being proportional to the ratio between the actual number of co-occurrences of items *i* and *j* and the expected number of such co-occurrences if their occurrences were statistically independent (van Eck & Waltman, 2010, p. 531). Based on this index, VOSviewer constructed a visual map by minimizing the weighted sum of squared distances among all item pairs. As noted by Appio et al. (2014), the LinLog/modularity normalization technique was employed in the mapping process. Additionally, by utilizing VOSviewer's visualization capabilities, mathematical relationships within the dataset were explored, allowing analyses such as keyword co-occurrence, citation analysis, and co-citation analysis to be conducted.

5. RESULT AND DISCUSSION

1) Who are the Top 10 authors based on research citations?

The citation analysis of the top ten based on research publications in the Contingent Valuation Method (CVM) for conservation is presented in Table 2. The finding of this study highlights the intellectual foundation and thematic diversity that have shaped this research domain. The most cited work, by Loomis et al. (2000) with 608 citations, emphasizes the total economic value of restoring ecosystem services in a degraded river basin, underscoring CVM's capability to quantify ecological restoration benefits. This seminal contribution positioned CVM as a central tool for integrating ecological and economic considerations in river management and policy evaluation. The study by Brander et al. (2007), with 286 citations, extended CVM's application to coral reef ecosystems through a meta-analysis, reflecting the growing use of valuation in marine and coastal resource management. Similarly, Birol et al. (2006) contributed 258 citations by assessing economic valuation techniques for water resources, providing a methodological benchmark that strengthened the interdisciplinary link between hydrology and environmental economics. The paper by Castro et al. (2014), with 253 citations, explored ecosystem service trade-offs, advancing spatially explicit valuation approaches that bridge ecological processes with social preferences. In the tourism context, Dharmaratne et al. (2000) demonstrated the role of CVM in estimating conservation financing through tourism-based valuation, highlighting its practical relevance for sustainable protected area management. Further, Castro et al. (2011) and Martín-López et al. (2008) enriched the literature by examining social and biodiversity-related dimensions of valuation, respectively, reinforcing the human and ethical aspects of conservation economics. Turpie (2003) 's study on South Africa's biodiversity provided an important regional perspective, emphasizing socioeconomic factors that influence willingness to pay for conservation. Meanwhile, Ruijgrok (2006) expanded the scope of CVM to the valuation of cultural heritage, demonstrating the method's adaptability beyond natural ecosystems. Lastly, Lee and Mjelde (2007) applied CVM to ecotourism in the Korean Demilitarized Zone (DMZ), showcasing how environmental valuation can inform policy in politically sensitive and biodiversity-rich areas.

Collectively, these highly cited studies reveal that CVM's intellectual evolution is rooted in its flexibility to capture a range of environmental, cultural, and social values. However, the analysis also suggests limitations, particularly in the overrepresentation of case studies from developed or rapidly developing economies, which may constrain the global generalizability of valuation estimates. Additionally, many studies remain site-specific, often neglecting temporal dynamics, cultural heterogeneity, and non-use values that are crucial for comprehensive policy design. Looking ahead, future research should integrate CVM with advanced spatial, behavioral, and econometric tools, such as Geographic Information Systems (GIS), choice modeling, and mixed logit analysis, to enhance methodological robustness and contextual precision. Greater inclusion of developing regions, particularly in Africa, Southeast Asia, and Latin America, would also strengthen the global relevance of CVM findings. Moreover, interdisciplinary collaborations between economists, ecologists, and social scientists are needed to capture the full spectrum of ecosystem and social benefits. By addressing these gaps, future CVM studies can provide stronger empirical support for evidence-based conservation policies and more equitable valuation frameworks across diverse ecological and cultural contexts.

Table 2: Top 10 Authors Based on Research Citation

Authors	Title	Year	Source title	Citation
Loomis et al. (2000)	Measuring the total economic value of restoring ecosystem services in an impaired river basin: Results from a contingent valuation survey	2000	Ecological Economics	608
Brander et al. (2007)	The recreational value of coral reefs: A meta-analysis	2007	Ecological Economics	286
Birol et al. (2006)	Using economic valuation techniques to inform water resources management: A survey and critical appraisal of available techniques and an application	2006	Science of the Total Environment	258
Castro et al. (2014)	Ecosystem service trade-offs from supply to social demand: A landscape-scale spatial analysis	2014	Landscape and Urban Planning	253
Dharmaratne et al. (2000)	Tourism potentials for financing protected areas	2000	Annals of Tourism Research	157
Castro et al. (2011)	Social preferences regarding the delivery of ecosystem services in a semiarid Mediterranean region	2011	Journal of Arid Environments	146
Martín-López et al. (2008)	Economic valuation of biodiversity conservation: The meaning of numbers	2008	Conservation Biology	140
Turpie (2003)	The existence value of biodiversity in South Africa: How interest, experience, knowledge, income and perceived level of threat influence local willingness to pay	2003	Ecological Economics	132
Ruijgrok (2006)	The three economic values of cultural heritage: a case study in the Netherlands	2006	Journal of Cultural Heritage	124
Lee and **W. Mjelde, (2007)**	Valuation of ecotourism resources using a contingent valuation method: The case of the Korean DMZ	2007	Ecological Economics	119

2) What are CVM's research trends by year of publication?

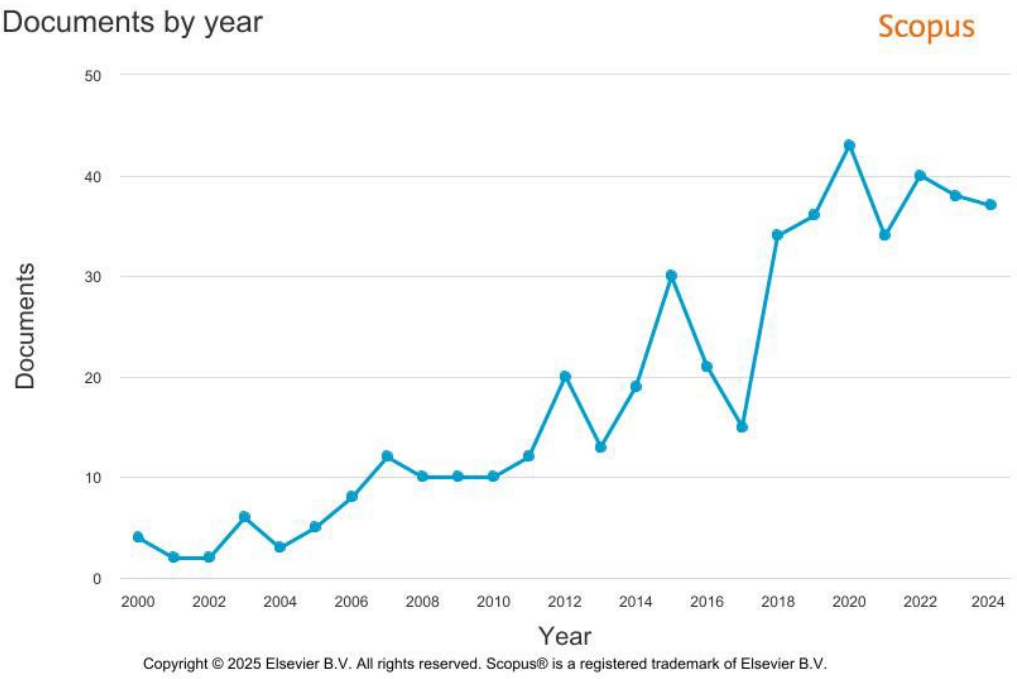

Figure 2: Document trend by year of publication

Figure 2 shows the annual publication trends on using the Contingent Valuation Method (CVM) for conservation from 2000 to 2024, based on Scopus data. The trend shows a steady increase in publications over time, beginning with only a few studies (2–6 per year) in the early 2000s, when CVM was still relatively new in conservation research. A gradual rise is seen between 2006 and 2015, reaching 30 publications in 2015. This period likely reflects growing awareness of the need to assign economic value to ecosystem services and natural resources to support conservation decision-making. A sharp increase occurred from 2016 onwards, with publications peaking at 43 documents in 2020. This peak may be partly related to the COVID-19 pandemic, which renewed attention to the links between human well-being, nature, and environmental sustainability. Researchers and policymakers were more concerned about how ecological degradation affects society and the economy during this period. This led to more interest in economic valuation studies such as CVM. The number of studies remained high from 2021 to 2024 (34–40 annually), suggesting that CVM has become a well-accepted and practical approach in conservation and sustainability research. Malaysia's position as the third most active country in CVM-based conservation research can be explained by its rich biodiversity and policy support for environmental valuation. As one of the world's biodiversity hotspots, Malaysia has implemented policies such as the National Policy on Biological Diversity (2016–2025), which encourages research on valuing ecosystem services, particularly in forests and protected areas. There are also differences in research focus between Global South and Global North authors. Studies from the Global North tend to emphasize improving CVM methodology and its policy applications. Simultaneously, those from the Global South, including Malaysia, often explore local community perspectives, livelihood benefits, and willingness to pay for conservation. These differences reflect diverse regional priorities, with Global South studies focusing more on real-world conservation challenges and socioeconomic contexts. Although these findings indicate a growing global and regional interest in CVM for conservation, several limitations should be noted. Scopus data may not fully capture studies from developing regions or non-English publications, affecting global representation. Moreover, a higher number of publications does not necessarily reflect new conceptual insights, as many studies may replicate similar approaches. Future research combining bibliometric and qualitative insights would help better understand how CVM continues to develop in conservation research.

3) Which countries are at the top of the publications list?

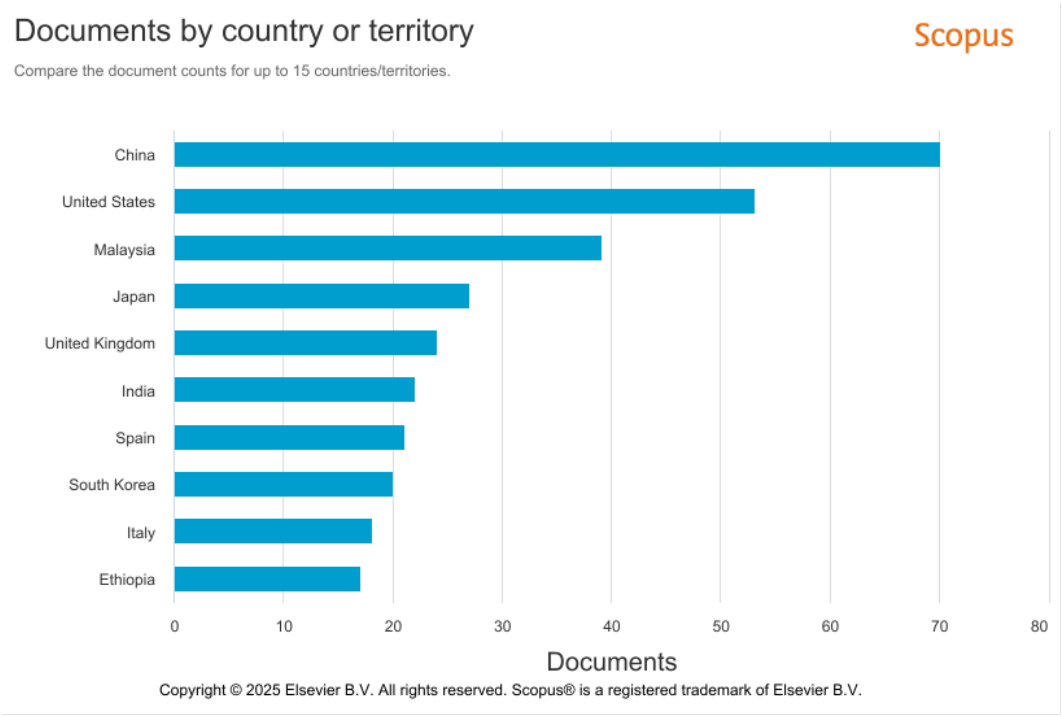

Figure 3: Top 10 countries of publications in CVM

The distribution of publications by country, as illustrated in Figure 3, highlights global engagement in applying the Contingent Valuation Method (CVM) for conservation, with notable regional leadership. China leads with 70 publications, reflecting its expanding focus on environmental valuation amid rapid development and growing ecological concerns. The United States follows with 53 documents, consistent with its long-standing contribution to environmental economics. Malaysia ranks third with 39 publications, indicating strong regional interest, likely driven by its rich biodiversity and increasing efforts to integrate conservation into national policy. Other prominent contributors include Japan (27), the United Kingdom (24), and India (22), representing both developed and emerging economies actively employing CVM to support conservation strategies. European countries like Spain (21) and Italy (18), along with South Korea (20), further emphasize the method's global applicability. Ethiopia's position (17) highlights rising CVM adoption in Africa, suggesting growing recognition of its value in addressing conservation challenges in developing contexts. This global spread underscores the method's versatility and relevance across diverse ecological and socioeconomic settings. However, the country-level distribution should be interpreted with caution. Publication language, indexing criteria, and institutional access to publishing resources may influence the visibility of research in international databases like Scopus. As a result, countries with strong academic infrastructures may appear more prominent, while valuable research from underrepresented or low-income regions might be overlooked. Moreover, high publication counts do not necessarily reflect policy impact or practical application. Addressing these disparities in future analyses could offer a more balanced view of CVM's global development and real-world relevance.

4) What type of document is most published in CVM research?

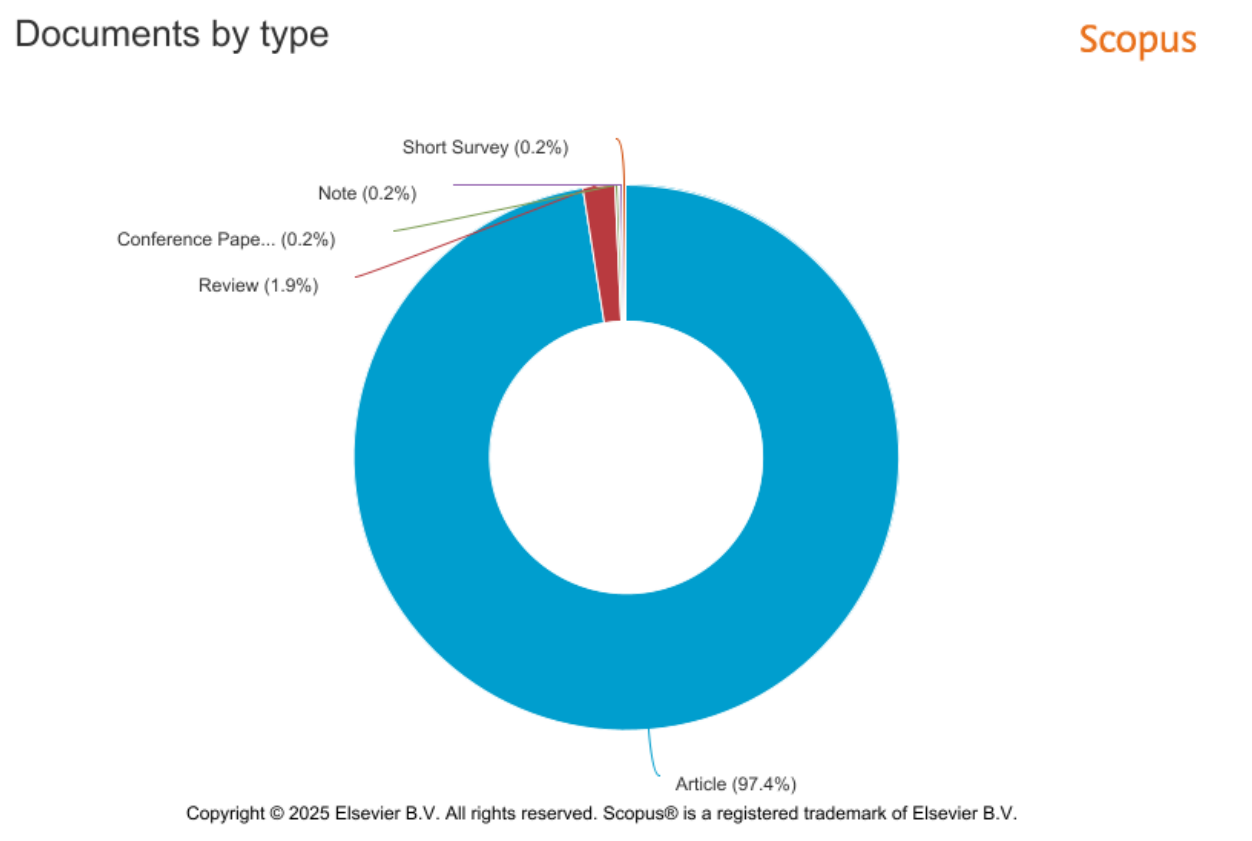

Figure 4: Type of most published document in CVM research

Figure 4 illustrates the distribution of document types related to the Contingent Valuation Method (CVM) in conservation research retrieved from the Scopus database. The overwhelming majority of publications are journal articles (453 documents), which signifies that CVM has been predominantly disseminated through peer-reviewed scholarly channels, ensuring methodological rigour and academic credibility. In contrast, reviews (9 documents) and other forms, such as conference papers, notes, and short surveys (1 each), remain limited. This pattern reflects the maturity of CVM research as an established methodological approach, where empirical studies are prioritized over conceptual or methodological syntheses. The scarcity of review papers indicates a potential research gap in systematically

summarizing existing knowledge and identifying emerging themes, particularly in linking CVM with contemporary conservation challenges such as ecosystem service valuation, biodiversity offsets, and climate adaptation strategies.

The implications of this distribution suggest that most CVM research focuses on applied, case-specific analyses rather than cross-study integration or theoretical advancement. Consequently, this limits the development of a unifying framework that could guide the evolution of CVM applications across diverse ecological and socioeconomic contexts. Moreover, the minimal representation of conference papers may indicate limited interdisciplinary collaboration or early-stage dissemination within conservation economics forums. Scholars should emphasize systematic reviews, meta-analyses, and conceptual papers for future research directions to consolidate fragmented findings and enhance methodological comparability across regions and valuation contexts. Expanding beyond traditional journal publications through conference proceedings and collaborative workshops could also foster innovation, interdisciplinary exchange, and policy relevance, thereby strengthening the role of CVM in informing sustainable conservation decision-making.

5) Who are the most influential authors in CVM's studies?

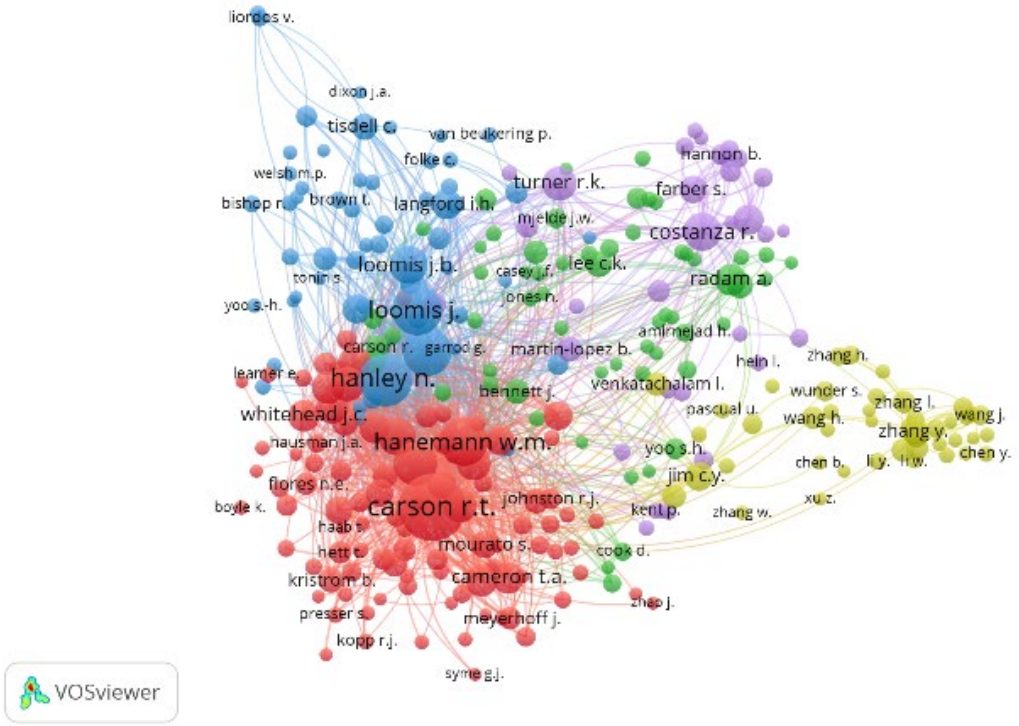

Figure 5: The network visualization map of co-citation

The co-citation analysis using VOSviewer in Figure 5 reveals key influential authors in the field of Contingent Valuation Method (CVM) for conservation based on their citation frequency and total link strength (TLS), which indicates the strength of co-citation relationships with other authors. Carson R.T. is the most highly cited author with 463 citations and an exceptionally high TLS of 21,992, confirming his foundational role in CVM literature. Similarly, Hanley N. (290 citations, TLS 14,758), Loomis J. (261 citations, TLS 11,041), and Hanemann W.M. (245 citations, TLS 11,149) are among the most central and frequently co-cited authors, reflecting their long-standing contributions to environmental valuation and methodological development. Despite varying citation counts, authors such as Arrow K., Costanza R., and Mitchell R.C. also demonstrate high TLS, indicating sustained influence through broad connectivity in the citation network. However, a notable emerging pattern is the increasing visibility of Eastern scholars or those from the developing regions in the CVM research landscape. Authors such as Yacob M.R. (TLS 3,100), Radam A. (TLS 4,083), Kaffashi S., and Lee C.K. represent a growing wave of Asian researchers who have contextualized CVM applications in local

conservation settings, particularly in Malaysia, South Korea, China, and other parts of Southeast Asia. Their studies often emphasize conservation's socio-cultural and ecological dimensions, bridging Western valuation frameworks with local realities such as community dependence on forest resources, ecotourism, and willingness-to-pay for ecosystem protection. This regional diversification marks a significant shift in the knowledge structure of CVM research, broadening its applicability beyond Western contexts and highlighting the importance of cross-cultural understanding in environmental valuation.

Despite this encouraging trend, the co-citation network still indicates that the CVM research landscape remains concentrated around a few established Western scholars, suggesting potential limitations in global research inclusivity and authorship diversity. Additionally, author name variations (e.g., Adamowicz W. vs. Adamowicz W.L., Arrow K. vs. Arrow K.J.) highlight the need for data standardization and name disambiguation to ensure bibliometric accuracy. From an implication standpoint, this structure demonstrates that CVM's theoretical and methodological foundations are well-established. Still, future research should aim to expand co-citation networks by integrating emerging scholars, interdisciplinary collaborations, and diverse regional contexts. Such efforts would enhance the global applicability of CVM, foster methodological innovation, and support evidence-based conservation policy across different socio-ecological settings.

6) What are the popular keywords related to the study?

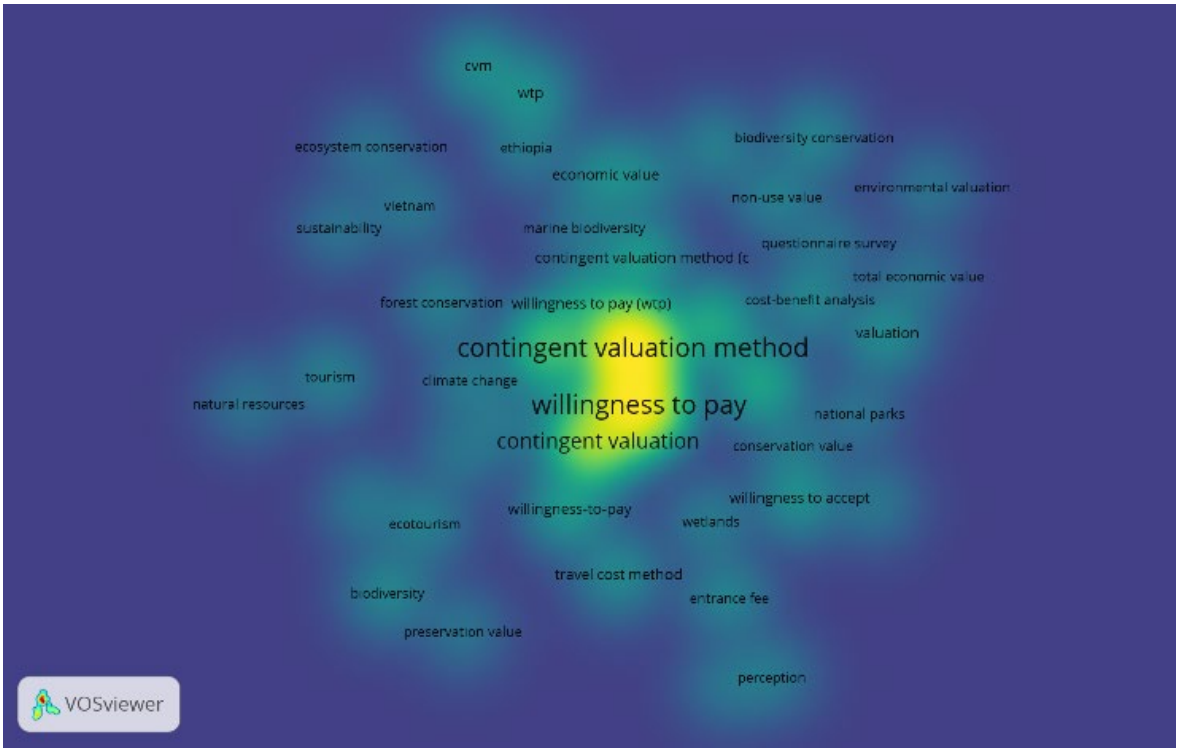

Figure 6: Density visualization map of keywords' co-occurrence

The density visualization map in Figure 6 illustrates the prominence and interrelationships of keywords used by authors in Contingent Valuation Method (CVM) studies related to conservation. The results in indicate that the keyword "contingent valuation method" dominates with the highest number of occurrences (193) and Total Link Strength (TLS = 259), confirming its centrality in the literature and reaffirming CVM as a foundational tool for non-market valuation. The closely associated terms "willingness to pay" (173 occurrences, TLS = 254) and "contingent valuation" (79 occurrences, TLS = 89) further demonstrate the method's strong association with public preferences and monetary estimation of conservation benefits. These clusters emphasize that stated preference approaches remain the primary focus for assessing environmental goods that lack market prices, particularly in biodiversity and ecosystem service valuation.

Keywords such as "economic valuation," "ecosystem services," "biodiversity," and "conservation" also appear prominently, indicating the method's interdisciplinary application in linking ecological values with socioeconomic decision-making. Meanwhile, the emergence of keywords such as "climate change," "marine protected area," "ecotourism," and "forest conservation" reflects an evolving

research frontier where CVM is increasingly applied to evaluate conservation funding, visitor management, and adaptation strategies in the face of global environmental change. The inclusion of country-specific terms like "China," "Ethiopia," and "Vietnam" suggests that research interest has become more geographically diversified, showing that CVM is now applied beyond its traditional Western context. This shift highlights the growing contributions of Eastern and developing country scholars, who are contextualizing CVM within local conservation, tourism, and livelihood frameworks.

However, certain underrepresented terms, such as "non-market valuation," "preservation value," "sustainability," and "total economic value", indicate conceptual or methodological gaps that deserve further exploration. The relatively low link strength of these keywords may suggest either limited integration of these concepts in CVM-based studies or inconsistencies in keyword usage by authors. A limitation of this finding is that the visualization depends on author-provided keywords, which may vary across journals and disciplines, potentially underrepresenting specific emerging topics. Additionally, the dominance of general terms like "willingness to pay" and "contingent valuation" might overshadow niche research directions, leading to a concentration of studies in traditional valuation themes rather than novel policy-oriented applications.

The implications of these findings are twofold. First, they highlight the need for methodological diversification, where future CVM research can incorporate multi-method valuation frameworks that combine stated and revealed preference approaches to capture broader welfare dimensions. Second, the growing environmental challenges, including biodiversity loss, climate impacts, and ecosystem degradation, call for integrating CVM with sustainability science and ecological economics. Future research should also encourage the consistent use of standardized keywords and metadata to enhance discoverability and cross-comparative analysis in bibliometric studies. Strengthening collaboration between Western and Eastern scholars can further diversify perspectives and contribute to refining valuation frameworks that are culturally and ecologically inclusive.

7) How is visualization mapping regarding the citation by source type?

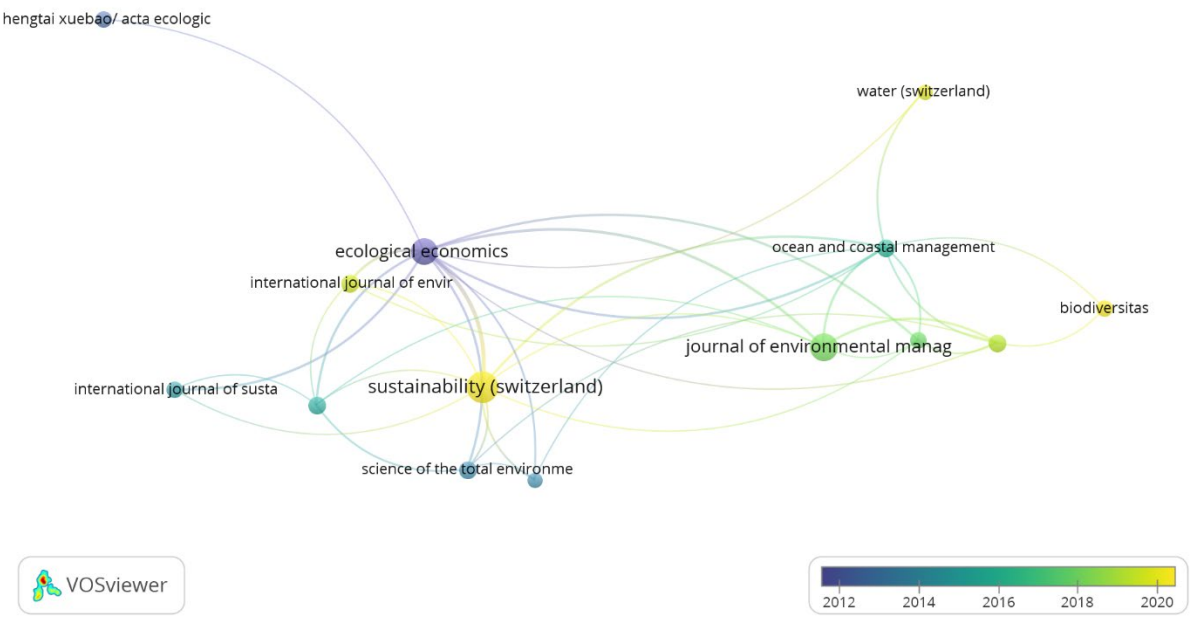

Figure 7: Overlay visualization mapping regarding the citation by source type

The results presented in Figure 7 exhibit the overlay visualization maps based on the citation by source type of publication. This finding offers insight into the journals that have shaped the scholarly landscape of Contingent Valuation Method (CVM) research in the context of conservation. Among the sources analyzed, Ecological Economics emerges as the most influential outlet, publishing 16 papers that collectively received 1,923 citations and recorded a Total

Link Strength (TLS) of 35. This dominance underscores its central role as a foundational platform for environmental valuation discourse, where many landmark studies on non-market valuation and ecosystem service assessment have been published. Its prominence reflects the journal's high impact on environmental economics and its ability to attract interdisciplinary research that bridges ecological and economic perspectives. Beyond this leading journal, other well-established outlets such as Science of the Total Environment (503 citations, TLS = 9), Journal of Environmental Management (459 citations, TLS = 13), and Ocean and Coastal Management (360 citations, TLS = 18) contribute substantially to the field. These journals serve as key dissemination platforms for applied studies that use CVM to evaluate conservation benefits, policy instruments, and ecosystem service trade-offs in various geographical settings. Their relatively strong citation impact suggests that CVM has become an important methodological tool in addressing contemporary sustainability challenges, including climate resilience, land-use planning, and coastal resource management. Meanwhile, Sustainability (Switzerland) stands out with the highest document count (22 publications) and a respectable 287 citations, indicating a growing trend toward integrating economic valuation with sustainable development and social policy research.

The inclusion of regionally focused journals such as Shengtai Xuebao/Acta Ecologica Sinica and Biodiversitas highlights the emerging visibility of Asian and developing-country scholars in the CVM research space. Although these sources record modest citation levels (45 and 62, respectively), they demonstrate how research communities in China and Southeast Asia increasingly contribute to localized applications of CVM, especially in biodiversity conservation, protected area financing, and cultural ecosystem valuation. These journals provide essential platforms for context-specific evidence that may otherwise be understated in global literature. However, several patterns point to structural limitations within the publication network. The heavy concentration of citations in a few dominant Western journals reveals an uneven distribution of academic influence, suggesting that a large portion of global scholarship still depends on established outlets for recognition and visibility. Additionally, regional journals indicate relatively low link strength signals, limited citation interconnectivity and collaboration between scholars from different regions. Such gaps may stem from differences in research accessibility, publication language, and indexing coverage, which can hinder the inclusion of valuable empirical evidence from developing contexts.

The implications of this pattern are both methodological and institutional. The clustering of research around a few high-impact journals reinforces the theoretical consistency of CVM but may also restrict diversity in valuation frameworks and applications. On the other hand, the steady rise of sustainability-oriented and interdisciplinary outlets shows a healthy expansion of research perspectives. These emerging journals often emphasize integrated policy relevance, linking economic valuation with conservation practice, community participation, and resource governance. Future research should strengthen global academic linkages by fostering collaboration between Western and Eastern scholars through joint publications, co-citation efforts, and regional special issues to help balance the literature landscape and ensure that the method remains relevant in addressing real-world conservation challenges.

6. CONCLUSION

The bibliometric analysis of trends and patterns in the use of the Contingent Valuation Method (CVM) for conservation reveals a steady and notable growth in scholarly output from 2000 to 2024. Publication activity increased significantly after 2016 and peaked in 2020, reflecting the method's rising maturity and relevance in global conservation research. Geographically, China, the United States, and Malaysia emerged as the leading contributors, demonstrating both developed and emerging nations' engagement with CVM applications. At the same time, contributions from countries such as Ethiopia indicate expanding adoption within the Global South. Influential scholars such as Carson R.T., Hanley N., Loomis J., and Hanemann W.M. dominate the co-citation network, underscoring a robust intellectual foundation rooted in environmental valuation theory. The growing visibility of regional scholars, including Yacob M.R. and Radam A. from Malaysia, signifies increasing participation and capacity development among Asian researchers, marking a gradual shift toward more geographically diverse scholarship.

Keyword mapping further confirms the dominance of core concepts such as "contingent valuation method," "willingness to pay," and "economic valuation," alongside emerging interests in "climate change," "marine protected areas," and "ecotourism." This evolution indicates an expanding thematic scope where CVM is increasingly applied to interdisciplinary conservation challenges. From a practical perspective, the results provide valuable insights for policymakers, conservation agencies, and funding bodies by identifying knowledge clusters and research priorities. Understanding these bibliometric trends can support evidence-based policy design, promote cross-regional

collaboration, and enhance the global visibility of underrepresented research communities.

At the journal level, Ecological Economics, Ecosystem Services, and Journal of Environmental Management emerged as leading publication outlets with strong citation networks and link strengths, illustrating their central role in advancing methodological and applied dimensions of CVM. The prevalence of journal articles compared to reviews or conference papers also suggests that CVM research remains heavily empirical, emphasizing field applications rather than theoretical synthesis. While this focus strengthens the method's real-world relevance, it also signals a need for more comparative reviews and conceptual frameworks to connect findings across regions and disciplines.

Overall, the findings affirm that CVM has matured into a critical and widely adopted tool for assessing the economic value of ecosystem services and conservation benefits. However, several limitations remain. This study relied solely on Scopus data, which may not fully capture non-English or regionally indexed publications, and bibliometric indicators such as citation counts may not fully represent research quality or societal impact. Future studies could integrate complementary databases such as Web of Science and apply hybrid methods that combine bibliometric mapping with qualitative or content-based analysis.

Moving forward, the integration of advanced analytical approaches, including GIS, experimental economics, and choice modelling, can further enhance CVM's explanatory power. Strengthening collaborations between Western and Eastern scholars, expanding research beyond dominant publication outlets, and promoting interdisciplinary synthesis will be essential for shaping the next phase of CVM development. By addressing these gaps, future research can establish a more inclusive, methodologically innovative, and policy-relevant understanding of conservation values that supports global biodiversity and sustainability objectives.

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CONFLICT OF INTEREST

The authors declare that no conflict of interest existed in preparing this manuscript.

REFERENCES

Abdeta, D. (2022). Willingness to pay for forest conservation in developing countries: A systematic literature review. *Environmental and Sustainability Indicators*, *16*(May), 100201. https://doi.org/10.1016/j.indic.2022.100201

Abdeta, D., Ayana, A. N., & Bekele, Y. (2023). Willingness to pay for forest conservation: Evidence from a contingent valuation survey analysis in Southwest Ethiopia. *Global Ecology and Conservation*. https://doi.org/10.1016/j.gecco.2023.e02551

Al-Khoury, A., Hussein, S. A., Abdulwhab, M., Aljuboori, Z. M., Haddad, H., Ali, M. A., Abed, I. A., & Flayyih, H. H. (2022). Intellectual Capital History and Trends: A Bibliometric Analysis Using Scopus Database. *Sustainability (Switzerland)*, *14*(18). https://doi.org/10.3390/su141811615

Alves, J. L., Borges, I. B., & De Nadae, J. (2021). Sustainability in complex projects of civil construction: Bibliometric and bibliographic review. *Gestao e Producao*, *28*(4). https://doi.org/10.1590/1806-9649-2020v28e5389

Appio, F. P., Cesaroni, F., & Di Minin, A. (2014). Visualizing the structure and bridges of the intellectual property management and strategy literature: a document co-citation analysis. *Scientometrics*, *101*(1), 623–661. https://doi.org/10.1007/s11192-014-1329-0

Arrow, K., Solow, R., Portney, P., Leamer, E., Radner, R., & Schuman, H. (1993). Report of the NOAA panel on Contingent Valuation. In *Federal Register* (Vol. 58).

Assyakur, D. S., & Rosa, E. M. (2022). Spiritual Leadership in Healthcare: A Bibliometric Analysis. *Jurnal Aisyah : Jurnal Ilmu Kesehatan*, *7*(2). https://doi.org/10.30604/jika.v7i2.914

Birol, E., Karousakis, K., & Koundouri, P. (2006). Using economic valuation techniques to inform water resources management: A survey and critical appraisal of available techniques and an application. *Science of the Total Environment*, *365*(1–3), 105–122. https://doi.org/10.1016/j.scitotenv.2006.02.032

Brander, L. M., VAN BEUKERING, P., & Cesar, H. S. J. (2007). The recreational value of coral reefs: A meta-analysis. *Ecological Economics*, *63*(1), 209–218. https://doi.org/10.1016/j.ecolecon.2006.11.002

Carson, R. T. (2012). Contingent valuation: A practical alternative when prices aren't available. *Journal of Economic Perspectives*. https://doi.org/10.1257/jep.26.4.27

Castro, A. J., Martín-López, B., García-Llorente, M., Aguilera, P. A., López Carrique, E., & Cabello, J. (2011). Social preferences regarding the delivery of ecosystem services in a semiarid Mediterranean region. *Journal of Arid Environments*, *75*(11), 1201–1208. https://doi.org/10.1016/j.jaridenv.2011.05.013

Castro, A. J., Verburg, P. H., Martín-López, B., García-Llorente, M., Cabello, J., Vaughn, C. C., & López Carrique, E. (2014). Ecosystem service trade-offs from supply to social demand: A landscape-scale spatial analysis. *Landscape and Urban Planning*, *132*, 102–110. https://doi.org/10.1016/j.landurbplan.2014.08.009

Chen, W. Y., Aertsens, J., Liekens, I., Broekx, S., & De Nocker, L. (2014). Impact of perceived importance of ecosystem services and stated financial constraints on willingness to pay for riparian meadow restoration in Flanders (Belgium). *Environmental Management*, *54*(2), 346–359. https://doi.org/10.1007/s00267-014-0293-z

Chen, W. Y., & Jim, C. Y. (2010). Resident motivations and willingness-to-pay for urban biodiversity conservation in Guangzhou (China). *Environmental Management*, *45*(5), 1052–1064. https://doi.org/10.1007/s00267-010-9478-2

Cuccia, T. (2020). Contingent valuation. In *Handbook of Cultural Economics, Third Edition*. https://doi.org/10.4337/9781788975803.00016

Dharmaratne, G. S., Yee Sang, F., & Walling, L. J. (2000). Tourism potentials for financing protected areas. *Annals of Tourism Research*, *27*(3), 590–610. https://doi.org/10.1016/S0160-7383(99)00109-7

di Stefano, G., Peteraf, M., & Veronay, G. (2010). Dynamic capabilities deconstructed: A bibliographic investigation into the origins, development, and future directions of the research domain. *Industrial and Corporate Change*, *19*(4), 1187–1204. https://doi.org/10.1093/icc/dtq027

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*. https://doi.org/10.1016/j.jbusres.2021.04.070

Drupp, M. A., Turk, Z. M., Groom, B., & Heckenhahn, J. (2024). *Global evidence on the income elasticity of willingness to pay, relative price changes and public natural capital values*. *November*. http://arxiv.org/abs/2308.04400

Fahimnia, B., Sarkis, J., & Davarzani, H. (2015). Green supply chain management: A review and bibliometric analysis. In *International Journal of Production Economics* (Vol. 162, pp. 101–114). https://doi.org/10.1016/j.ijpe.2015.01.003

García-Llorente, M., Martín-López, B., & Montes, C. (2011). Exploring the motivations of protesters in contingent valuation: Insights for conservation policies. *Environmental Science and Policy*, *14*(1), 76–88. https://doi.org/10.1016/j.envsci.2010.11.004

Gu, D., Li, T., Wang, X., Yang, X., & Yu, Z. (2019). Visualizing the intellectual structure and evolution of electronic health and telemedicine research. *International Journal of Medical Informatics*, *130*. https://doi.org/10.1016/j.ijmedinf.2019.08.007

Hafiz Iqbal, M., & Nur Mozahid, M. (2022). Valuing conservation of the Sundarbans mangrove forest ecosystem. *Trees, Forests and People*. https://doi.org/10.1016/j.tfp.2022.100278

Hasan-Basri, B., Samdin, Z., & Ghani, A. N. A. (2020). Willingness to Pay for Conservation of Mangrove Forest. *Jurnal Ekonomi Malaysia*. https://doi.org/10.17576/JEM-2020-5403-07

Hassin, N H, Kamaludin, M., Azlina, A. A., Alipiah, R. M., & Rosle, S. (2024). Economic valuation of forest conservation: insight from a current systematic literature review. *International Forestry Review*, *26*(4), 454–469. https://doi.org/10.1505/146554824839334614

Hassin, Nor Hizami, Koshy, N., Hambali, K., & Kumaran, J. V. (2020). Local Communities Willingness to Pay for Conservation of Ecotourism Resources at Gelam Forest, Kelantan, Malaysia. *IOP Conference Series: Earth and Environmental Science*. https://doi.org/10.1088/1755-1315/549/1/012090

Hausman, J. (2012). Contingent valuation: From dubious to hopeless. *Journal of Economic Perspectives*. https://doi.org/10.1257/jep.26.4.43

Hizami, H. N., Kamaludin, M., Aziz, A. A., & Alipiah, R. M. (2024). Application of Choice Experiment Method in Protected Area: a Bibliometric Analysis. *Journal of Sustainability Science and Management*, *19*(8), 159–178. https://doi.org/10.46754/jssm.2024.08.012

Hoyos, D., & Mariel, P. (2010). Contingent valuation: Past, present and future. *Prague Economic Papers*. https://doi.org/10.18267/j.pep.380

Ibrahim, M. S. N., Johari, S., Assim, M. I. S. A., Mohammad, S. K. W., Afandi, S. H. M., & Hassan, S. (2025). An economic assessment on public well-being for biodiversity conservation in Gunung Mulu National Park, Sarawak, Malaysia. *Environment, Development and Sustainability*. https://doi.org/10.1007/s10668-024-04533-5

Johnston, R. J., Boyle, K. J., Vic Adamowicz, W., Bennett, J., Brouwer, R., Ann Cameron, T., Michael Hanemann, W., Hanley, N., Ryan, M., Scarpa, R., Tourangeau, R., & Vossler, C. A. (2017). Contemporary guidance for stated preference studies. *Journal of the Association of Environmental and Resource Economists*. https://doi.org/10.1086/691697

Khai, H. V, & Yabe, M. (2014). The demand of urban residents for the biodiversity conservation in U Minh Thuong National Park, Vietnam. *Agricultural and Food Economics*, *2*(1). https://doi.org/10.1186/s40100-014-0010-5

Khiste, G. P., & Paithankar, R. R. (2017). Analysis of Bibliometric term in Scopus. *International Research Journal*, *01*(32), 78–83.

Lee, C. K., & W. Mjelde, J. (2007). Valuation of ecotourism resources using a contingent valuation method: The case of the Korean DMZ. *Ecological Economics*. https://doi.org/10.1016/j.ecolecon.2006.12.011

Li, H., & Nitanan, K. M. (2022). Local Visitors' Willingness to Pay for Conservation Fee at Kampung Kuantan Firefly Park, Kuala Selangor, Malaysia. *Journal of Tropical Forest Science*. https://doi.org/10.26525/jtfs2022.34.2.187

Loomis, J., Kent, P., Strange, L., Fausch, K., & Covich, A. (2000). Measuring the total economic value of restoring ecosystem services in an impaired river basin: Results from a contingent valuation survey. *Ecological Economics*, *33*(1), 103–117. https://doi.org/10.1016/S0921-8009(99)00131-7

Mangaiyarkarasi, N., Amarnath, J. S., Anjugam, M., Sivasankari, B., Balaji, R., & Balamurugan, V. (2025). Contingent valuation, conjoint experiment elicitation and behavioural economic valuation of Koothapar big tank wetland. *Current Science*, *128*(2), 163–168. https://doi.org/10.18520/cs/v128/i2/163-168

Martín-López, B., Montes, C., & Benayas, J. (2008). Economic valuation of biodiversity conservation: The meaning of numbers. *Conservation Biology*. https://doi.org/10.1111/j.1523-1739.2008.00921.x

MEA. (2005). Ecosystems and Human Well-Being. Synthesis. In *World Health*.

Musa, F., & Shahrudin, I. N. M. (2023). Estimating the visitor's willingness to pay towards biodiversity conservation at Kuala Lumpur Forest Eco Park, Malaysia, using the Contingent Valuation Method. *Biodiversitas*. https://doi.org/10.13057/biodiv/d240705

Raihan, A. (2023). A review on the integrative approach for economic valuation of forest ecosystem services. *Journal of Environmental Science and Economics*. https://doi.org/10.56556/jescae.v2i3.554

Ruijgrok, E. C. M. (2006). The three economic values of cultural heritage: a case study in the Netherlands. *Journal of Cultural Heritage*, *7*(3), 206–213. https://doi.org/10.1016/j.culher.2006.07.002

Sin, M. S., Kamaludin, M., Qing, W. H., & Abdullah, M. (2022). Public Awareness and Willingness to Pay (WTP) for Forest Conservation in Malaysia. *International Forestry Review*. https://doi.org/10.1505/146554822835224865

Singh, V. K., Singh, P., Karmakar, M., Leta, J., & Mayr, P. (2021). The journal coverage of Web of Science, Scopus and Dimensions: A comparative analysis. *Scientometrics*. https://doi.org/10.1007/s11192-021-03948-5

Spash, C. L. (2008). Contingent valuation design and data treatment: If you can't shoot the messenger, change the message. *Environment and Planning C: Government and Policy*, *26*(1), 34–53. https://doi.org/10.1068/cav4

Su, H., & Wang, H. (2019). A review of preference uncertainty in contingent valuation method. *Resources Science*. https://doi.org/10.18402/resci.2019.12.16

Sudakova, N. E., Savina, T. N., Masalimova, A. R., Mikhaylovsky, M. N., Karandeeva, L. G., & Zhdanov, S. P. (2022). Online Formative Assessment in Higher Education: Bibliometric Analysis. In *Education Sciences*. https://doi.org/10.3390/educsci12030209

Truong, D. D. (2021). Estimating residents' willingness to pay for wetland conservation using contingent valuation: The case of van long ramsar protected area, Vietnam. *Biodiversitas*. https://doi.org/10.13057/biodiv/d221110

Turpie, J. K. (2003). The existence value of biodiversity in South Africa: How interest, experience, knowledge, income and perceived level of threat influence local willingness to pay. *Ecological Economics*, *46*(2), 199–216. https://doi.org/10.1016/S0921-8009(03)00122-8

van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, *84*(2), 523–538. https://doi.org/10.1007/s11192-009-0146-3

van Eck, N. J., & Waltman, L. (2017). Citation-based clustering of publications using CitNetExplorer and VOSviewer. *Scientometrics*, *111*(2), 1053–1070. https://doi.org/10.1007/s11192-017-2300-7

Venkatachalam, L. (2004). The contingent valuation method: A review. *Environmental Impact Assessment Review*. https://doi.org/10.1016/S0195-9255(03)00138-0

Verbeek, A., Debackere, K., Luwel, M., & Zimmermann, E. (2002). Measuring progress and evolution in science and technology - I: The multiple uses of bibliometric indicators. *International Journal of Management Reviews*, *4*(2), 179–211. https://doi.org/10.1111/1468-2370.00083

Whitehead, J. C., & Haab, T. C. (2025). *Contingent valuation method* (T. Lundgren, M. Bostian, & S. B. T.-E. of E. Managi Natural Resource, and Environmental Economics (Second Edition) (eds.); pp. 215–223). Elsevier. https://doi.org/https://doi.org/10.1016/B978-0-323-91013-2.00007-1

Whittington, D., & Pagiola, S. (2012). Using contingent valuation in the design of payments for environmental services mechanisms: A review and assessment. *World Bank Research Observer*, *27*(2), 261–287. https://doi.org/10.1093/wbro/lks004

Wu, Y. C. J., & Wu, T. (2017). A decade of entrepreneurship education in the Asia Pacific for future directions in theory and practice. In *Management Decision* (Vol. 55, Issue 7, pp. 1333–1350). https://doi.org/10.1108/MD-05-2017-0518

Yoon, J., Kim, N., & Chung, E. (2023). Characteristics of scholarly journals published in non-English-speaking countries: An analysis of Library and Information Science SCOPUS journals. *Learned Publishing*, *36*(1), 14–24. https://doi.org/https://doi.org/10.1002/leap.1520

Zaiton, S., Syamsul Herman, M. A., Alias, R., & Mohd Rusli, Y. (2012). Willingness to pay for conservation fee at Penang National Park. *Malaysian Forester*, *75*(1), 43–52. https://www.scopus.com/inward/record.uri?eid=2-s2.0-84859729374&partnerID=40&md5=ee2813cfed6cb16d7547bec2bfba26e2

Zegeye, G., Erifo, S., Addis, G., & Gebre, G. G. (2023). Economic valuation of urban forest using contingent valuation method: The case of Hawassa city, Ethiopia. *Trees, Forests and People*, *12*(June), 100398. https://doi.org/10.1016/j.tfp.2023.100398

Zhao, J., Yang, K., Tai, J., & Wu, E.-N. (2005). Willingness to pay for ecosystem services of urban river in Shanghai. *Huanjing Kexue/Environmental Science*, *26*(2), 5–10. https://www.scopus.com/inward/record.uri?eid=2-s2.0-15744363411&partnerID=40&md5=26ebbb43a326acc6074930e26535b6b7

