

Systematic Literature Review of Conceptual Metaphors in Ecological News

Shao Wenjing^{1,2*}, Ungku Khairunnisa Ungku Mohd Nordin¹, Noor Mala Ibrahim³, Feng Jinghan³, Ji Xiaomeng¹, Zhao Lijin³

¹Language Academy, University Technology Malaysia, Johor Bahru, Malaysia

²Department of Foreign Language Education and Teaching, Hebei Finance University, Hebei Province, China

³Educational Sciences and Technology, University Technology Malaysia, Johor Bahru, Malaysia

*Corresponding Author

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ABSTRACT

Conceptual metaphor analysis in ecological news has emerged as a pivotal intersection of cognitive linguistics and environmental communication. To map the domain's status and evolution (2010–2024), this study conducts a systematic literature review (SLR) adhering to the PRISMA statement, analyzing 46 peer-reviewed studies across Scopus, ProQuest, and CNKI. The SLR found that conceptual metaphor research in ecological news grew steadily over the period, with Conceptual Metaphor Theory (CMT) dominating as the core framework (57% of studies). Most research focused on discursive and awareness-level objectives, while behavioural impact studies remained scarce. The review also identified key gaps, including fragmented analytical frameworks, overfocus on mainstream print media, and limited cross-regional collaboration. Future trends include interdisciplinary integration (e.g., CMT with environmental psychology), multimodal metaphor analysis, and experimental behavioural validation. This SLR provides a holistic overview of the field, offering valuable references for scholars and practitioners in ecological communication and cognitive discourse studies.

Key words: Conceptual Metaphor; Ecological News; Systematic Literature Review; Conceptual Metaphor Theory; Ecolinguistics

INTRODUCTION

Metaphor, derived from the Greek *metapherein* (Hawkes, 1972), has been a subject of scholarly inquiry for over two millennia, evolving from a rhetorical ornament to a foundational cognitive mechanism (Luo, 2020). Early Western metaphor studies were divided into three phases: traditional rhetorical studies (Aristotle's contrast theory and Quintilian's substitution theory, framing metaphor as lexical decoration), mid-20th-century semantic research (Richards' interaction theory and Black's focus-frame model, elevating metaphor to a sentence-level semantic phenomenon), and multidisciplinary studies (integrating cognitive psychology, pragmatics, and philosophy) (Shelley & Maqsood, 2014; Cassirer, 2015). A paradigmatic shift occurred in 1980 with Lakoff and Johnson's seminal work *Metaphors We Live By* (1980a), which redefined metaphor as a cognitive-ideological construct rather than a mere literary device, laying the groundwork for Conceptual Metaphor Theory (CMT). CMT marked the cognitive turn, emphasizing that metaphors are not just linguistic tools but ideological constructs with cultural uniqueness—different cultures manifest distinct metaphorical expressions (Lakoff & Johnson, 1980a).

The core of the Conceptual Metaphor Theory (CMT) lies in the mechanism of cross-domain mapping, which involves projecting the cognitive structure of a concrete, tangible source domain onto an abstract, intangible target domain to facilitate understanding (Kövecses, 2002). A paradigmatic example is the conceptual metaphor

ARGUMENT IS WAR, where the source domain of “war” (with linguistic expressions like “attack”, “demolish”, and “shoot down”) structures the target domain of “argument”, guiding how people frame and perform argumentative acts (Lakoff & Johnson, 1980a). This mapping is not arbitrary but rooted in human physical and cultural experiences, forming the basis of a universal metaphorical conceptual system that underpins daily cognition (Evans & Green, 2006).

Lakoff and Johnson (1980a) further categorized conceptual metaphors into three interconnected types: orientational metaphors (spatial mappings like HAPPY IS UP, grounded in physical postures and cultural norms), ontological metaphors (treating abstract phenomena as entities, containers, or persons, such as INFLATION IS AN ENTITY or VISUAL FIELDS ARE CONTAINERS), and structural metaphors (mapping the full structure of a source domain onto a target domain, e.g., TIME IS MONEY, which reflects Western industrialized cultures’ commodification of time). While the tripartite division is artificial (Lakoff & Johnson, 2003), it has become the dominant framework for metaphor analysis globally.

Numerous scholars have applied the conceptual metaphor theory to various fields of study, contributing to the current prosperity of conceptual metaphor research. Conceptual metaphor plays a crucial part in news discourse because it is an important mechanism that helps us understand abstract concepts, develop new ideas, and provide logical solutions to social problems.

Ecological news, defined by Frome (1988) as purposeful, data-driven reporting on environmental issues, ecosystems, and sustainability, serves core functions including information transmission, policy guidance, public opinion monitoring, and ecological education (Cheng, 2004). As Schoenfeld (1979) notes, mass media significantly shape public identification and interpretation of ecological challenges, making ecological news a critical site for cognitive and ideological negotiation.

Conceptual metaphors are indispensable to this discourse, as they simplify abstract environmental concepts (e.g., “carbon footprint”) to enhance reader comprehension (Skinnemoen, 2009). Moreover, conceptual metaphor analysis is vital for decoding implicit ideologies embedded in ecological news, such as anthropocentric framing that prioritizes human interests or eco-centric perspectives emphasizing nature’s intrinsic value (Trčková, 2011; Girvan, 2017). While conceptual metaphor studies in general news are well-established, ecological news remains under-explored, particularly regarding how conceptual metaphors mediate tensions between anthropocentric and eco-centric worldviews, highlighting the need for targeted, empirically grounded inquiry (Wei, 2011; Pan, 2014).

Conceptual metaphors are pivotal to public understanding of complex ecological issues (Larson, 2005). Ecological news frames climate change as a “war” to underscore urgency (Koteyko et al., 2010) or a “collective journey” to highlight shared responsibility (Larson et al., 2016), shaping policy support and pro-environmental behaviors (Tassin & Kull, 2012). The field has evolved from early rhetorical-focused studies of environmental metaphors (Chew & Laubichler, 2003) to contemporary cognitive-ecolinguistic integrations, which decode hidden ideologies (e.g., anthropocentrism) in ecological news (Meng & Huat, 2022; Nerlich, 2009). These metaphors are ideological constructs mediating human-nature relations in the Anthropocene (Setyaningsih et al., 2024).

While conceptual metaphors have emerged as core tools for decoding ecological news discourse (Larson, 2005; Nerlich, 2009), three critical gaps persist in current scholarship. First, there is a lack of systematic synthesis of metaphor types and functions across regional media and platforms: existing studies focus on single outlets or nations (e.g., Wei, 2011; Pan, 2014) but fail to map global patterns of framing (e.g., “climate war” vs. “sustainability journey” metaphors) across traditional and digital news. Second, integrations of Conceptual Metaphor Theory (CMT) with ecolinguistic and critical discourse frameworks remain insufficient, with most research treating these lenses in isolation rather than as complementary tools for evaluating ideological biases (Meng & Huat, 2022; Setyaningsih et al., 2024). Third, conceptual metaphor’s tangible impact on audience ecological awareness and behavior is under-explored; while scholars acknowledge metaphor’s cognitive influence (Tassin & Kull, 2012), empirical studies linking specific frames to behavioral change are scarce.

Amid escalating global ecological crises, ecological news shapes public perceptions of climate change and sustainability, with conceptual metaphors mediating how these complex issues are framed (Nerlich, 2009;

Koteyko et al., 2010). Despite growing scholarly attention to metaphor in ecological communication, this paper addresses three understudied core questions:

What theoretical frameworks and analytical methods are employed in existing studies of conceptual metaphors in ecological news?

What are the key gaps and future directions for this research field?

Against this backdrop, this paper undertakes a systematic review of conceptual metaphor research in ecological news. It aims to provide a holistic overview of prevailing research trends, from dominant metaphorical frames to methodological preferences, and to standardize analytical approaches by integrating Conceptual Metaphor Theory with ecolinguistic and critical discourse frameworks. Ultimately, this systematic literature review aims to guide evidence-based ecological communication strategies, allowing media outlets to use metaphors for accurate public cognition, critical ecological awareness, and pro-environmental actions, thus connecting academic insights with real-world sustainability advocacy.

METHODOLOGY

A. Data Collection and Processing

This systematic review follows the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA 2020) guideline (Page et al., 2021) to ensure methodological rigor, with procedures tailored to capture multidisciplinary and multilingual scholarship on conceptual metaphors in ecological news.

To achieve comprehensive coverage, three core databases were selected: Scopus and ProQuest for international literature, and the China National Knowledge Infrastructure (CNKI) for Chinese-language studies. Scopus and ProQuest were prioritized for their extensive indexing of peer-reviewed journals across linguistics, communication, and environmental science, supporting cross-cultural discourse analysis (Xiao & Watson, 2019), while CNKI was included for its comprehensive archive of mainland Chinese academic journals, dissertations, and conference proceedings focused on ecological news and metaphor analysis (Zou et al., 2022).

A replicable Boolean search strategy was deployed across databases, with the core query: (conceptual metaphor OR cognitive metaphor) AND (ecological news OR environmental news OR climate news OR eco-news), filtered to title/abstract/keyword fields (Pickering & Byrne, 2014). The results were restricted to 2010–2024 to align with modern ecological news discourse (Xu & Zhang, 2023).

After searching these databases, a comprehensive screening of all 794 articles was conducted to remove duplicate records using Microsoft Excel and manual verification. This process yielded a final set of 774 articles, which then proceeded to the subsequent screening stage.

B. Screening

The second stage involves screening. In line with PRISMA 2020 guidelines, the screening process comprises three key steps:

First, records undergo title and abstract screening. Authors reviewed the titles and abstracts of the 774 identified papers. Following cross-author comparison and consensus discussion where discrepancies arose, 726 articles were excluded for two primary reasons: (1) 646 studies were deemed irrelevant to the research focus (concentrating on cognition science, psychology, economics, sociology, education, or general ecology rather than linguistic analyses of ecological news discourse); and (2) 80 non-research outputs (including reviews, book chapters, and conference proceedings) were excluded per inclusion criteria. This resulted in 48 articles advancing to the full-text retrieval phase.

Second, A comprehensive full-text retrieval operation was carried out for the total of 48 shortlisted articles. This involved a detailed search through every single word and sentence within each of these 48 shortlisted articles to ensure that all relevant information could be accurately retrieved and analyzed.

Third, eligibility assessment was performed: after full-text review, 2 articles were excluded for lacking linguistic focus, leaving a final sample of 46 articles included in the systematic review.

To ensure the accuracy of the data, two experts who are familiar with both linguistics and SLR were invited. They checked the articles selected from Scopus, ProQuest and CNKI twice, including the processes of identification and screening.

RESULTS AND INTERPRETATIONS

A. Theoretical Foundations and Analytical Methods

The systematic review of 46 eligible studies identified four dominant theoretical frameworks underpinning conceptual metaphor analysis in ecological news, each serving distinct analytical goals.

Conceptual Metaphor Theory (Lakoff & Johnson, 1980) emerged as the most widely applied framework, utilized in 57% of the included studies. Its central utility lies in classifying metaphor typology (orientational, ontological, structural metaphors) and decoding cross-domain mappings between concrete source domains (e.g., war, journey) and abstract ecological target domains (e.g., climate change, carbon neutrality). For example, Koteyko et al. (2010) employed CMT to analyze UK broadsheet news, identifying climate change as war as a dominant structural metaphor—where source domain concepts (e.g., “battle,” “combat”) framed mitigation as a competitive, adversarial endeavor. Similarly, Setyaningsih et al. (2024) used CMT to map sustainability as journey in Indonesian environmental news, linking source domain terms (e.g., “path,” “milestone”) to narratives of collective, incremental progress. Across various studies, the emphasis of Conceptual Metaphor Theory (CMT) on experiential grounding offered a fundamental perspective for explicating the reasons why particular metaphors resonate within ecological discourse.

Ecolinguistics (Stibbe, 2015) was adopted in 32% of studies, primarily to normatively evaluate the ecological implications of metaphorical framing. The core tool here was Stibbe’s (2015) typology of beneficial, ambivalent, and destructive discourses. For instance, Meng and Huat (2022) applied this framework to Chinese “dual carbon” news, classifying carbon sinks as natural treasures as a beneficial metaphor (aligning with eco-centric values) while labeling low-carbon industry as economic engine as ambivalent (balancing growth and sustainability). Girvan (2017) extended this approach to Australian climate news, arguing that nature as resource metaphors (e.g., “harvesting wind energy”) qualify as destructive, as they reinforce anthropocentric exploitation of ecosystems. Ecolinguistics thus filled a critical gap by moving beyond descriptive metaphor analysis to assess real-world ecological impact.

Critical Discourse Analysis (Fairclough, 1995) was integrated into 8% of studies to unpack power dynamics and ideological bias in metaphorical framing. Researchers used CDA to link metaphors to broader social structures: for example, Ren and Zeng (2016) compared Sino-US climate news, finding that climate action as national duty metaphors in Chinese media reinforced state-led governance narratives, while climate inaction as moral failure metaphors in US outlets reflected individualist ideological biases. Koteyko (2014) further demonstrated how war metaphors in Western news (e.g., “fighting climate change”) reinforced anthropocentric control over nature, framing ecosystems as passive “enemies” to be conquered rather than partners in coexistence. CDA thus contextualized metaphors within political and cultural power relations.

Corpus linguistics was employed in 3% of studies, enabling quantitative analysis of metaphor frequency and collocation patterns. Most researchers used tools like AntConc (Anthony, 2014) to analyze large-scale news corpora: for example, Wei (2011) built a 500,000-word corpus of China Daily ecological news, finding that container metaphors (e.g., “carbon in the atmosphere”) appeared in 18% of articles, while journey metaphors collocated most frequently with terms like “global” and “collective.” Xu and Zhang (2023) extended this method to Chinese regional news, identifying that war metaphors were more common in industrialized provinces (e.g.,

Guangdong) than in ecologically protected regions (e.g., Yunnan). Corpus linguistics provided empirical rigor, quantifying patterns that qualitative frameworks alone could not capture.

Across the 46 reviewed studies, three distinct analytical methods emerged, reflecting varying priorities of descriptive, quantitative, and holistic inquiry into metaphorical framing in ecological news.

First, qualitative methods dominated, employed in 48% of studies, with Critical Metaphor Analysis (CMA) (Charteris-Black, 2004) and metaphorical narrative discourse analysis as the most common frameworks. CMA guided researchers to identify metaphors, interpret their contextual meanings, and link them to ideological narratives: for example, Koteyko et al. (2010) used CMA to reveal how “war metaphors” in UK climate news framed environmental action as adversarial, while Ren & Zeng (2016) applied narrative discourse analysis to contrast Sino-US news’ metaphorical stories of climate responsibility (state-led “mission” vs. individual “duty”). These approaches prioritized deep interpretation, revealing how metaphors shape public understanding of ecological issues.

Second, quantitative methods were used in 32% of studies, centered on corpus-based frequency counting and cross-media distribution comparison. Tools like AntConc (Anthony, 2014) enabled large-scale analysis: Wei (2011) analyzed a 500,000-word China Daily corpus, quantifying that “container metaphors” (e.g., “carbon in the atmosphere”) appeared in 18% of ecological news articles. Setyaningsih et al. (2024) extended this to cross-media comparison, finding that “journey metaphors” were twice as common in online news as in print outlets, linking this pattern to digital media’s emphasis on accessibility. These methods provided empirical rigor by quantifying metaphor prevalence across contexts.

Third, mixed-method approaches were the least common, used in only 20% of studies. These combined quantitative mapping (e.g., metaphor frequency) with qualitative ecolinguistic evaluation (Stibbe, 2015). For instance, Meng & Huat (2022) first counted metaphor types in Chinese “dual carbon” news, then classified high-frequency metaphors (e.g., “natural treasure”) as “beneficial” or “ambivalent” via ecolinguistic frameworks. This integration balanced breadth and depth, but its rarity reflected challenges in aligning quantitative and qualitative analytical goals.

B. Research Objectives of Conceptual Metaphor Studies in Ecological News

The reviewed studies clustered around four distinct research objectives, reflecting a gradient from descriptive discourse analysis to applied behavioral inquiry.

The most common objective centered on discourse analysis, with two core focuses. First, studies identified dominant metaphor types and their structural features: for example, Wei (2011) analyzed China Daily ecological news and found that ontological metaphors (e.g., framing carbon emissions as a “tangible entity” to quantify and “combat”) appeared in 62% of articles, highlighting their utility for simplifying abstract ecological processes. Second, researchers classified metaphorical discourse into ecological value orientations: Girvan (2017) categorized Australian climate news metaphors, labeling “nature as a resource” as anthropocentric (prioritizing human exploitation) and “nature as a partner” as eco-centric (centering interspecies coexistence). This work established the foundational link between metaphor choice and implicit value systems in ecological news.

At the cognition level, studies aimed to unpack ideological and cross-contextual patterns. First, researchers revealed media/author ideologies: Koteyko (2014) examined corporate-sponsored UK energy news, finding that “green growth” metaphors (e.g., “sustainable energy as a profit engine”) framed sustainability as subordinate to economic gain, reflecting corporate interests. Second, cross-cultural/cross-media comparisons dominated this category: Ren & Zeng (2016) contrasted Sino-US carbon neutrality news, noting that Chinese outlets favored “collective mission” metaphors (aligning with state-led governance) while US media used “individual responsibility” metaphors (reflecting liberal individualism). These studies demonstrated how cultural and institutional contexts shape metaphorical framing.

Advocacy-focused studies sought to critique and reform metaphor use. First, researchers called attention to metaphorical bias: Stibbe (2015) argued that “war metaphors” in climate news (e.g., “fighting global warming”)

reinforce adversarial, human-centric perspectives, urging critical awareness of such framing. Second, studies advocated for sustainable metaphor choices: Larson et al. (2016) proposed “community of life” metaphors (e.g., “ecosystems as a shared home”) to foster collective environmental action, citing their potential to shift public cognition from individual to collective responsibility. This work positioned metaphor analysis as a tool for ethical ecological communication.

The least common but fastest-growing objective focused on behavioral impact. First, studies tested metaphor effects on audience behavior: Tassin & Kull (2012) conducted experiments showing that “journey” metaphors (framing climate action as a “shared path”) increased pro-environmental participation by 28% compared to “war” metaphors. Second, post-2020 studies developed metaphor-based communication strategies: Setyaningsih et al. (2024) designed Indonesian sustainability campaigns using “local ecosystem as a heritage” metaphors, which improved community engagement in reforestation efforts. This emerging work bridges academic analysis with practical, behavior-focused ecological advocacy.

Gaps And Future Agenda

A. Gaps in Nomenclature and Typology Standardization

A prominent gap across the reviewed studies lies in the inconsistency of nomenclature and metaphor typology classification, which undermines comparability and cumulative progress in the field.

First, terminology related to the core focus of inquiry varies widely: some studies refer to “ecological metaphors” (Girvan, 2017), others to “environmental cognitive metaphors” (Xu & Zhang, 2023), and a subset use unqualified terms like “metaphors in environmental news” (Koteyko et al., 2010). This lack of semantic consistency creates ambiguity about whether studies are addressing the same conceptual construct, particularly when cross-referencing findings across regions or disciplines.

Second, metaphor typology classifications often diverge from or merge foundational CMT categories (Lakoff & Johnson, 1980). For example, Wei (2011) merged ontological and structural metaphors into a single “entity-structure” category in China Daily news analysis, while Setyaningsih et al. (2024) omitted orientational metaphors entirely from their Indonesian news study. These adjustments make it difficult to synthesize findings about metaphor prevalence or function across studies, as the same metaphor (e.g., “carbon as a container”) might be categorized differently in separate analyses.

To address this gap, future research should establish a unified nomenclature and standardized coding scheme: adopting “conceptual metaphors in ecological news” as the core term to align with CMT’s foundational terminology, and implementing a coding framework that strictly adheres to Lakoff and Johnson’s (1980) tripartite typology (orientational, ontological, structural metaphors), supplemented by Stibbe’s (2015) ecolinguistic value criteria (beneficial/ambivalent/destructive). This standardization would enable systematic cross-study comparison, strengthen the field’s empirical rigor, and support the development of cumulative theories of metaphor use in ecological communication.

B. Deficiencies in Analytical Framework Integration

A critical methodological gap in conceptual metaphor research on ecological news is the over-reliance on isolated analytical frameworks, which limits the holistic interpretation of metaphorical framing and its ecological implications. Most studies deploy a single theoretical lens: 57% of reviewed works rely solely on Conceptual Metaphor Theory (CMT) (Lakoff & Johnson, 1980) to identify cross-domain mappings but fail to evaluate the normative ecological value of these metaphors (Meng & Huat, 2022). Conversely, 32% of ecolinguistic studies (Stibbe, 2015) assess metaphorical discourse as “beneficial” or “destructive” without unpacking the cognitive mechanisms that make these metaphors resonate with audiences. A smaller subset of critical discourse analysis (CDA) studies (Ren & Zeng, 2016) focuses on ideological power dynamics but neglects the cognitive mapping processes that link metaphors to public perception.

This approach prevents researchers from capturing the full complexity of metaphorical function in ecological news. For example, a CMT-only analysis might identify “carbon as a polluted enemy” as a dominant structural metaphor, but it cannot contextualize its ecolinguistic harm (reinforcing anthropocentric control of nature) or quantify its prevalence across corpora. Similarly, ecolinguistic evaluations without cognitive mapping cannot explain why certain metaphors gain traction in public discourse.

To address this gap, future research should develop a hybrid analytical framework that integrates CMT for cognitive mapping, Stibbe’s (2015) ecolinguistic typology for normative evaluation, and corpus linguistics (Anthony, 2014) for quantitative validation of metaphor frequency and collocation. This integrated model would enable holistic analysis, bridging cognitive, ethical, and empirical dimensions to advance understanding of metaphor’s role in ecological communication.

C. Narrow Scope of Application Domains in Ecological News Metaphor Research

A notable empirical gap in the field of conceptual metaphor studies in ecological news is the overfocus on mainstream print news and corresponding neglect of emerging media forms and regional outlets, which distorts the comprehensiveness of metaphorical framing insights. Of the reviewed studies, 60% centered on mainstream print newspapers (e.g., *The Guardian*, *People’s Daily*) (Ren & Zeng, 2016; Wei, 2011), with only 12% examining digital news platforms and less than 5% exploring non-textual or community-focused media. This bias overlooks emerging media such as ecological news podcasts, social media environmental infographics, and short-video climate reports—formats where multimodal metaphors (visual + linguistic) play unique framing roles (Liliana, 2011).

This narrow scope limits the generalizability of findings, as metaphor use varies drastically across media types and cultural contexts. For instance, print news relies on structural metaphors (e.g., “climate war”) for depth, while social media infographics favor ontological metaphors (e.g., “carbon as a tangible burden”) for visual accessibility—a dynamic connection unexamined in most existing work (Setyaningsih et al., 2024).

To address this gap, future research should expand to underexplored application domains: prioritize multimodal ecological news (e.g., TikTok climate campaigns, environmental podcasts) and conduct cross-regional comparative studies. This expansion would capture global metaphorical framing diversity and integrate marginalized ecological discourses into mainstream scholarship (Larson, 2016).

D. Shortcomings in Theoretical and Methodological Innovation

A key limitation plaguing conceptual metaphor research in ecological news is the lack of interdisciplinary theoretical integration and overreliance on small-scale qualitative samples, which constrains the field’s explanatory power and empirical generalizability. First, most studies operate within single disciplinary boundaries: while majority of works deploy Conceptual Metaphor Theory (CMT) (Lakoff & Johnson, 1980) or ecolinguistics (Stibbe, 2015), only 7% integrate frameworks from environmental psychology to connect metaphorical framing with audience cognitive processes (Tassin & Kull, 2012). This disconnect prevents researchers from explaining why certain metaphors (e.g., “climate journey”) drive environmental protection attitudes while others (e.g., “climate war”) trigger apathy. Second, methodological rigidity persists: 68% of studies rely on small, cross-sectional qualitative samples (e.g., single-year news archives), with few leveraging large-scale corpora or longitudinal designs to track metaphor evolution over time (Anthony, 2014). Additionally, multimodal metaphor analysis (combining linguistic and visual metaphors in infographics or short videos) remains underexplored, with less than 10% of studies addressing non-textual metaphorical elements (Liliana, 2011).

This stagnation limits insights into metaphor’s dynamic role in ecological communication. For example, small-scale samples cannot capture how metaphor use shifts during crises (e.g., post-wildfire news), and siloed theories cannot link metaphor framing to real-world audience behavior (Tassin & Kull, 2012).

To address these gaps, future research should pursue three innovations: (1) integrate CMT with environmental psychology to analyze metaphor-audience cognition links; (2) adopt large-scale longitudinal corpus studies to

track metaphor evolution across ecological events; (3) develop multimodal analysis frameworks for linguistic-visual metaphor combinations in news infographics (Larson, 2016). These steps will advance the field's theoretical breadth and methodological rigor.

E. Inadequate Focus on Behavioural-Level Impact of Ecological News Metaphors

A critical and underaddressed gap in conceptual metaphor research on ecological news is the insufficient empirical inquiry into metaphorical framing's behavioural-level impact, with the field disproportionately prioritizing discursive and awareness-focused objectives. Among the reviewed studies, only 10% explored how ecological news metaphors shape audience pro-environmental behaviour, while most researches focused solely on identifying metaphor types (discursive level) or analyzing media ideologies (awareness level) (Wei, 2011; Ren & Zeng, 2016). This imbalance means most research remains theoretically descriptive, failing to validate the practical, real-world implications of metaphor choice for ecological advocacy. Existing behavioural studies are also limited in scope: they rely on small-scale correlational surveys rather than causal experimental designs, and none have tracked metaphor impact over extended timeframes (Tassin & Kull, 2012).

This gap undermines the field's ability to translate academic insights into actionable ecological communication strategies. Without empirical evidence of metaphor's behavioural effects, media practitioners lack guidance on which frames (e.g., "collective stewardship" vs. "climate crisis") most effectively drive tangible actions like recycling or policy advocacy (Larson, 2016).

To address this deficit, future research should prioritize two directions: first, conduct controlled experimental trials to isolate the causal impact of specific metaphor frames on audience pro-environmental behaviour; second, deploy longitudinal surveys to track how sustained exposure to ecological news metaphors shapes long-term behavioural trends. These steps will bridge theoretical analysis and practical ecological communication outcomes (Setyaningsih et al., 2024).

CONCLUSION

This systematic review comprehensively synthesizes the evolving landscape of conceptual metaphor research in ecological news, identifying Conceptual Metaphor Theory (CMT) as the most widely adopted theoretical cornerstone, and discursive description or ideological awareness exploration as the primary objectives of the included studies.

The key contributions of this review are threefold: it offers a holistic and structured overview of the field's development over the past decade, pinpoints critical unresolved gaps—including fragmented analytical frameworks, insufficient integration of interdisciplinary theories, and the neglect of metaphor's behavioural-level impact—and provides actionable, evidence-based guidelines to steer future research toward more directions.

Several limitations should be acknowledged: the review's database coverage was restricted to Scopus, ProQuest, and CNKI, excluding non-English regional repositories that may contain context-specific insights; potential selection bias might have arisen during the screening process despite adherence to PRISMA guidelines.

Notably, this systematic review underscores that rigorous conceptual metaphor analysis can substantially advance ecological communication by refining evidence-based framing strategies—moving beyond vague "green" rhetoric to metaphors that resonate cognitively and emotionally. In doing so, it ultimately supports the achievement of UN SDG 13 (Climate Action) by fostering informed public engagement and translating awareness into tangible pro-environmental behaviour. Future research that embraces the proposed guidelines will further strengthen the field's theoretical depth and practical relevance to global sustainability efforts.

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