A Cognitive Stylistics Analysis of Sustainable Developments Goals

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Abstract

This paper explores how the mental representations activated by offloading the cognitive content of the SDGs contribute to the overall interpretation of ecological concepts. Utilizing Gavins' (2007) Text World Theory, which examines the mental models constructed by readers based on linguistic elements, the study delves into the discourse world in which the SDGs are situated and the mental representations activated by this discourse. Within the SDGs, this world is structured by four primary dimensions: Participants, Place, Time, and Sensory Inputs. Each of these components reveals how ecological concerns are constructed and how they guide and influence both global policymaking and individuals' cognitive engagement with sustainability issues. The analysis focuses on the roles of Participants and Communicators, where countries and governments serve as agents; the temporal dimensions of ecological action; and the sensory inputs that shape cognitive engagement with ecological narratives. This is further enriched by the stylistic linguistic features, which deepen the understanding of the SDGs' ideological, narrative, and metaphorical underpinnings.

Keywords: Cognitive analysis, stylistic features, SDGs, text world theory, stories we live by, ecological stylistics

مستخلص

يستكشف هذا البحث كيفية مساهمة التمثيلات الذهنية التي يتم تنشيطها من خلال تفريغ المحتوى المعرفي لأهداف التنمية المستدامة في التفسير الشامل للمفاهيم البيئية. وتطبيقًا لنظرية العالم النصي لجافينز (2007)، والتي تدرس النماذج الذهنية التي يبنيها القراء على أساس العناصر اللغوية، يتعمق البحث في عوالم النص الذي توجد فيه أهداف التنمية المستدامة والتمثيلات الذهنية التي يتم تفعيلها من خلال هذا الخطاب. وفي إطار أهداف التنمية المستدامة، يتم تنظيم عوالم النص من خلال أربعة أبعاد أساسية: المشاركون والمكان والزمان والمدخلات الحسية؛ حيث يكشف كل من هذه المكونات عن كيفية بناء الاهتمامات البيئية وكيف توجه وتؤثر على كل من صنع السياسات العالمية والمشاركة المعرفية للأفراد في قضايا الاستدامة، يركز التحليل على أدوار المشاركين والمُراسلين، حيث تعمل البلدان والحكومات كوكلاء؛ والأبعاد الزمنية للعمل البيئي؛ والمدخلات الحسية التي تشكل المشاركة المعرفية مع السرديات البيئية. ويتم إثراء ذلك من خلال السمات اللغوية الأسلوبية، التي تعمل على تعميق فهم الأسس الأيديولوجية والسردية والاستعارية لأهداف التنمية المستدامة.

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1. Introduction:

Human interference in Earth's ecosystems, both intentional and unintentional, has caused severe disruptions to the planet's ecological balance, resulting in critical environmental issues such as air, soil, and water contamination. These disturbances have been exacerbated by reckless human activities, contributing to ongoing climate change. The Glorious Quran poignantly addresses this behaviour, stating, "When he turns his back, His aim everywhere is to spread mischief through the earth and destroy crops and cattle. But Allah loveth not mischief" (Surah Al-Baqarah, 205). As Monbiot (2017) aptly notes, language and nature are intertwined, emphasizing the role of language in defending the environment. Language is a powerful tool in addressing ecological crises, used by UN organs, governments, NGOs, and individuals to influence change according to their unique contexts and positions. As Hannah and Mahlberg (2023) argue, language plays a crucial role in shaping our responses to the climate crisis, yet its potential remains underutilized. The World Meteorological Organization (2022) warns that global temperatures may exceed the Paris Agreement's 1.5°C target in the coming years, urging immediate action. This study investigates the cognitive processing of ecological texts, applying stylistic features to

fully understand and decode the linguistic component of ecological content.

2. Research Problem

Human cognition processes discourse to achieve "felicitous" comprehension by constructing mental representations, evolving from basic schemas to more complex cognitive structures, as described by Kövecses (2020) and Gavins (2007). These representations are crucial for interpreting specialized genres, such as ecological themes. However, when such texts are globalized, their universal messages may present significant linguistic challenges. The Sustainable Development Goals (SDGs) exemplify this issue, raising concerns about how they are interpreted across diverse linguistic and cultural contexts. This problem is compounded when the SDGs are translated into other languages to ensure global accessibility, requiring consideration of both cognitive and stylistic dimensions. A key question emerges: Do the SDGs reveal hidden meanings or dimensions not immediately apparent? Additionally, can newly coined ecological terms in English be effectively translated into other languages without losing their intended nuance? Addressing these questions is essential for fully understanding the implications of the SDGs in a global context.

3. Objectives of the Study

This study aims to classify ecology-related texts as a distinct linguistic genre, grounded in Halliday's Systemic Functional Linguistics (SFL) theory, which views language as a system of functional choices for generating meaning. These meanings are influenced by context and constructed through cognitive processes, particularly stylistic choices such as word and structure selection. The research studies and reveal the cognitive content of ecology-related texts using Gavins' Text World Theory (TWT) (2007) to analyse the cognitive and stylistic features. Two models, a cognitive and a stylistic, are applied to account for the different linguistic structures of SDGs.

4. Research Questions

The study attempts to answer the following questions:
1- Which cognitive stylistic tools and approaches are most effective for analyzing Eco Themes in UN ecological texts?
2- How does the integration of cognitive and stylistic features contribute to a more comprehensive interpretation of ecological content?

5. Research Methodology

The theoretical framework for this study primarily incorporates Gavins' (2007) Text World Theory to explore the cognitive content embedded in the linguistic features under investigation, alongside Stibbe's (2015) stylistic model of eco-linguistics, which will be adapted to the specific nature of the data analysed. The analysis will proceed at two distinct levels, corresponding to the macro and micro dimensions of text-world construction. At the macro level, the focus will be on the discourse world, text world, while the micro-level highlights the sub-worlds, examining the type of story conveyed in selected excerpts from the UN ecological texts. These elements are essential in shaping the reader's mental representations. This level will also incorporate broader discourse structures, including social, cognitive, and ideological dimensions, which influence how text-worlds are constructed and interpreted.

Scrutinizing on both the macro and micro levels, the analysis will probe deeper into the cognitive content within the discourse world, text world, and sub-worlds of individual examples. Stibbe's (2015) ecological stylistics will then be applied, focusing on story types within the context of eco-linguistic features. After revealing the cognitive content and achieving a deeper interpretation of the linguistic units, the study will consider the stylistic features applied. The analysis will also examine the propositional structure of the text, including arguments, predicates, thematic roles, implicature, presupposition, deixis, metaphors, and vocabulary related to ecological moral values. Additionally, features of blog discourse, such as the line of argumentation, will be integrated into the macro-level analysis, while the micro-level will consider register, speech acts, and verb tense. This dual approach ensures a comprehensive examination of both cognitive and stylistic elements, providing a nuanced interpretation of the discourse.

6. Corpus

The corpus of this study comprises 17 SDGs derived and quoted from the United Nations (UN) official website. To deepen the investigation, the study provides a supplementary framework for exploring the linguistic, cognitive, and stylistic elements central to the research. These 17 SDGs facilitates a comprehensive analysis that addresses both micro and macro linguistic dimensions. By drawing on these examples, the researcher interrogates the interplay between cognitive and stylistic elements, shedding light on how nuanced meanings are preserved or communicated in the linguistic unit and the formulation

of SDGs. The breadth and depth of the corpus not only reflect its relevance to critical issues such as climate change and sustainability but also underscore its value in examining the semantic meaning within the context of UN discourse. For the stylistics analysis, texts of ecological nature are studied and scrutinised as well. This robust dataset serves as a cornerstone for achieving the study's analytical and linguistic cognitive stylistic objectives.

7. Exploring Ecological Narrative

Cognitive stylistics, as applied to this research, draws upon Text World Theory (TWT) to elucidate the cognitive processes involved in reading and interpreting ecological texts. This theoretical framework allows for an in-depth exploration of how readers build mental "worlds" based on the linguistic structures and semantic cues present in the text. In addition to the cognitive analysis, stylistic aspects of the ecological UN texts will be scrutinized by applying Arran Stibbe's (2015) model of "*Ecolinguistics: Language, Ecology and the Stories We Live By*." This model offers eight different types; namely ideology, framing, metaphor, evaluation, identity, conviction, erasure, and salience of stories we live by as a framework for understanding how language shapes our conceptualizations of nature, environmental issues, and human relationships with the planet. Through the analysis of specific case studies drawn from UN ecological texts quoted from the UN website, the chapter explores how stylistic features—such as metaphors, narrative structures, and discourse strategies—contribute to the construction of environmental ideologies. By investigating these stylistic elements, the research aims to uncover how the stylistic choices in the English source text promote or challenge specific ecological values, highlighting the role of translation in the dissemination of environmental discourse on a global scale.

8. Cognitive Analysis

8.1. Discourse World: A Cognitive Mapping of the SDGs

In applying Gavin's (2007) Text World Theory to the Sustainable Development Goals (SDGs), the **Discourse World** is a crucial layer of cognitive structure that enables us to understand how the SDGs are framed in terms of temporal, spatial, and participatory contexts. The Discourse World, according to Text World Theory, encompasses both the communicative environment in which the discourse is situated and the mental representations that are activated by the discourse. Within the SDGs, this world is structured by four primary dimensions: **Participants**,

Place, **Time**, and **Sensory Inputs**. Each of these components reveals not only the way in which ecological concerns are constructed but also how they guide and influence both global policymaking and the individual's cognitive engagement with sustainability issues.

8.2. Participants and Communicators: Countries and Governments as Agents

At the heart of the **Participants** in the SDGs are the **countries**, who are both the communicators and the addressees of the goals. In the English version of the SDGs, the discourse frequently employs countries and governments as the central agents of action. These countries are depicted as active participants in the global dialogue around sustainability, responsible for the implementation of the SDGs through national policies, partnerships, and international cooperation. The role of these participants extends beyond mere passive recipients of global agendas; they are portrayed as decision-makers, influencers, and collaborators in the fight against ecological crises.

The role of communicators or agents is essential in understanding the collective goals into actionable commitments. Communicators, often represented by government bodies, international organizations, and non-governmental actors, convey these goals and the requisite actions to a broader public, thereby constructing shared meaning across national and cultural contexts. These communicators—whether they are politicians, scientists, activists, or institutions—frame the SDGs in such a way that countries' responsibility to both contribute to and benefit from global ecological efforts is made explicit. This communication helps activate cognitive structures, representing countries as part of a global network of agents working towards a common ecological future.

8.2.1. Place: The Geospatial Context

In the SDGs, the spatial component of the Discourse World is intricately mapped to specific national and global contexts, where countries are tasked with addressing ecological challenges. In the English SDGs, places are not only defined geographically (as countries, regions, or cities) but also in terms of global partnerships and shared spaces of ecological governance. For instance, countries are often referred to as active players within specific frameworks, such as the Paris Agreement on climate change or the United Nations Framework Convention on Climate Change (UNFCCC) as they are key players, where the global

commons are framed as places where cooperation is both essential and urgent.

This mapping of countries to place also extends to spatial dimensions like climate-resilient development or low-carbon economies, which call for specific geographical and socio-economic contexts to undergo transformation. The discourse on financing in the SDGs, for instance, connects countries' roles with specific regional and global economic structures, such as international finance mechanisms and climate financing initiatives. Hence, the cognitive structure of place in the SDGs is not static; it is dynamic and continually evolving as countries' roles in sustainability are redefined.

8.2.2. Time: Temporal Dimensions of Ecological Action

The Time component within the Discourse World encapsulates the progression of ecological action across past, present, and future domains. Past refers to the recognition of ecological challenges that have already manifested, such as climate change, biodiversity loss, and environmental degradation, which are commonly acknowledged in the SDGs among other UN ecological texts composing the corpus of this study as issues requiring urgent redress. The present time, particularly in the context of financing, policymaking, and calls for action, positions ecological issues as contemporary problems demanding immediate intervention. This reflects a cognitive understanding that the crisis is ongoing, and current efforts—especially in terms of financing and legislative action—are pivotal in mitigating future environmental risks.

The future aspect of time is embedded throughout the corpus, especially in goals that call for a climate-resilient development or low greenhouse gas emissions, where the language inherently suggests that these are forward-looking imperatives. There is a profound cognitive shift in the ecological discourse that positions future generations as key stakeholders, linking present ecological action that will shape the ability of nations to meet environmental targets, with an emphasis on climate-resilient development that is future-proof against climate change impacts. This framing of time urges nations and actors involved to prioritize long-term ecological investments, thus creating a cognitive alignment between immediate actions and the projected global ecological state.

8.2.3. Sensory Inputs: The Cognitive Engagement with Ecological Narratives

The Sensory Inputs in the Discourse World of the SDGs are especially significant in the way they stimulate cognitive engagement with ecological issues. These inputs, which range from direct sensory experiences like smell, sound, and temperature to more abstract concepts like dreams, intentions, and beliefs, play a crucial role in shaping how individuals and nations process ecological information.

For example, sensory inputs related to the environment—such as rising temperatures, increased occurrences of extreme weather events, or shifts in air quality—create cognitive awareness of ecological issues. Similarly, abstract inputs like dreams and beliefs shape the aspirational narrative of the SDGs, encouraging global populations to conceptualize a future where environmental sustainability and development are seamlessly integrated. The SDGs also draw on the cognitive input of intentions and beliefs, with specific mentions of climate financing, finance flows, and the creation of low-emission pathways. These abstract ideas are not merely rhetorical; they evoke strong cognitive responses that link policy commitments to deep-seated beliefs about human-nature relationships and the future of the planet. The integration of these sensory inputs strengthens the persuasive power of the SDGs, appealing to both rational and emotional cognitive processes.

Here are the 17 SDGs:

	English	Arabic
	Sustainable Development Goals (SDGs)	أهداف التنمية المستدامة
SDG1	No Poverty	القضاء على الفقر
SDG2	Zero Hunger	القضاء التام على الجوع
SDG3	Good Health and Well-Being	الصحة الجيدة والرفاه
SDG4	Quality Education	التعليم الجيد
SDG5	Gender Equality	المساواة بين الجنسين
SDG6	Clean Water and Sanitation	المياه النظيفة والنظافة الصحية
SDG7	Affordable and Clean Energy	الطاقة النظيفة وبأسعار معقولة
SDG8	Decent Work and Economic Growth	العمل اللائق ونمو الاقتصاد
SDG9	Industry, Innovation, and Infrastructure	الصناعة والابتكار والهياكل الأساسية
SDG10	Reduced Inequality	الحد من عدم المساواة
SDG11	Sustainable Cities and Communities	المدن والمجتمعات المستدامة
SDG12	Responsible Consumption and Production	الاستهلاك والإنتاج المسؤولان
SDG13	Climate Action	العمل المناخي
SDG14	Life below Water	الحياة تحت الماء
SDG15	Life on Land	الحياة في البر
SDG16	Peace, Justice, and Strong Institutions	السلام والعدل والمؤسسات القوية
SDG17	Partnerships for the Goals	عقد الشراكات لتحقيق الأهداف

Table (3-1) SDGs in English and Arabic

Cognitive Analysis (CA) according to Gavins' TWT can be as follows:

Discourse World

Participants	Humans	Governments
		People
Place	Planet	States
Time	Eternally	From now on
Sensory inputs	Smell – sound – temperature	Saving planet
	Dreams – intentions – beliefs	Protect environment
		Preserving nature

Text World

Characters	Enactors	You – I – All the humans
World builders	Nouns (Gerunds and nouns)	gender – equality – sanitation – energy – work – growth – industry - innovation – infrastructure – inequality –consumption – production – action - justice – institutions – partnerships – goals
	Place (locative nouns)	cities –communities – water - land
	Entities (abstract noun)	Poverty – hunger – health – well-being – education – life – peace
	Demonstratives	Below – on - for
	Definite articles	The
	Personal pronouns	None
Function advancers	Actions (Causes – Results)	SDGs

Sub-World

Deictic	Time – space – entity	(now – future) land – water – cities – communities
Epistemic	Adjectives	Good – quality – strong – climate – sustainable – decent – clean
Attitudinal	Boulomaic (modality)	(goals to be achieved)
	Purpose	Save the planet
Deontic	Degree of obligation	(imperatives)

Table (3-2) CA of SDGs

Commentary:

Discourse World of the SDGs is cognitively structured through the interaction of Participants, Place, Time, and Sensory Inputs. Participants include humans, governments, and people, with each playing a role in shaping and responding to the ecological discourse. Place is conceptualized as the planet at large, encompassing the states or nations

that are involved in ecological actions. Time is framed as both eternal—indicating the long-term, ongoing nature of environmental concerns—and from now on, emphasizing the urgent, forward-looking imperative to address ecological challenges. Sensory inputs encompass tangible experiences like smell, sound, and temperature, which evoke awareness of the environment, and more abstract elements like dreams, intentions, and beliefs, which are tied to aspirations of saving the planet, protecting the environment, and preserving nature. This mapping reflects how the SDGs cognitively position humanity and nations within a temporal and spatial framework, urging collective action to safeguard the future of the planet.

Gavins' Text World Theory reveals a structured mental representation of the ecological discourse. The Discourse World is populated by Participants (countries, governments) and defined by the Place (countries) and Time (past recognition, present actions, and future aspirations). The Text World is built through entities like climate financing, greenhouse gas emissions, and climate-resilient development, with time markers such as "recognized," "calls for," and "making" providing temporal grounding. The Sub-World elaborates on epistemic and deontic elements, where knowledge is indicated by the recognition of the need for climate financing, while attitudinal modality conveys a belief in low emissions and a purpose tied to resilient development. The deontic modality reflects the obligation of countries to act on these goals, with the pathway towards sustainability positioned as a key future-oriented cognitive framework. This layered cognitive structure underscores the urgency, responsibility, and long-term vision embedded in the SDGs and climate action.

Gavins' Text World Theory highlights the dynamic mental representations within the Discourse World that engage in a multi-directional process of judgment and obligation, with private finance both evaluating companies and being increasingly judged itself. The Place component is anchored in the transition to net zero, framed as a crucial spatial and temporal shift. The Time dimension unfolds through nouns like "cities –communities – water - land" establishing a fixed and defined locations towards sustainability. Sensory inputs, such as beliefs and intentions, invoke the judging process and the aspiration for net zero, positioning it as a central goal. In the Text World, time markers' indications like "(now – future)" emphasize a future-oriented trajectory. The adjectives (Good – quality – strong – climate – sustainable – decent – clean (private finance, banks, net zero) interact through causal mechanisms which are mentioned in detail in the related ecological texts

towards alignment with sustainable goals. The Sub-World brings in epistemic elements (the process of being judged and creating investment) alongside attitudinal modality that signals hope for the transition to net zero. The deontic modality highlights the obligation for financial entities to demonstrate their role in this transition. This analysis reflects how cognitive structures in the SDGs discourse position financial actors as both enactors and evaluators in the global move towards sustainable investment.

It is noteworthy to mention that this paper incorporates a cognitive analysis of the Sustainable Development Goals (SDGs), focusing on the cognitive processes involved in interpreting these texts. However, in order to conduct a comprehensive stylistic analysis, it is necessary to extend the scope beyond the SDGs, as they consist of relatively simple linguistic units. To fully explore stylistic features, the research draws on additional ecological texts that are contextually related to the SDGs. This broader approach enables a more nuanced examination of stylistic elements within a wider ecological discourse, providing a deeper understanding of how language constructs environmental narratives and ideologies.

9. Stylistic Analysis

The stylistic analysis of the UN ecological texts is carried out using Arran Stibbe's model of ecological stylistics (2015), which highlights how language constructs our perceptions of environmental issues. Stibbe's framework identifies eight distinct types of "stories we live by"—ideology, framing, metaphor, evaluation, identity, conviction, erasure, and salience—which play a pivotal role in shaping ecological narratives. To explore these stories, the researcher applies this model to 23 selected examples from the corpus of UN ecological texts compiled by the researcher. By examining how these stories manifest in the discourse, the analysis reveals how language influences our understanding of the environment, shapes policy discussions, and affects the framing of ecological crises and solutions. Through this approach, the study highlights the role of language not just in reflecting but in actively constructing our collective relationship with nature.

9.1. **Ideology as a type of story we live by**

To start stylistics analysis, ideology is the first type of story proposed by Stibbe which refers to the underlying beliefs, values, and worldviews that shape how language is used to convey meaning,

particularly with respect to issues like ecology and environmentalism. Arran Stibbe's model highlights how language constructs our understanding of the world, including the environment and climate change. Here's how ideology is vivid and clear in the two examples:

Example 1: "People are experiencing climate change in diverse ways."

1. **Inclusive Framing**:
   o The use of "people" broadens the focus, emphasizing that everyone is affected by climate change, which reflects an egalitarian ideology — climate change impacts all of humanity.

2. **Subjectivity & Personal Experience**:
   o The word "experiencing" suggests that climate change is not just a distant, abstract phenomenon but something individuals feel and live through. This introduces the idea that personal experience with climate change matters, shaping the narrative in a way that centres on human awareness and agency.

3. **Diversity and Pluralism**:
   o The phrase "in diverse ways" implies that climate change affects individuals differently, depending on factors like geography, social status, or socioeconomic position. This highlights the varied responses and differential impacts, which may reflect an ideology of fairness or acknowledgment of unequal consequences of climate change.

4. **Recognition of Complexity**:
   o This statement avoids oversimplifying the situation, thus promoting a holistic view of climate change that considers multiple factors and perspectives. It reflects an ideology that recognizes the complexity of environmental issues.

Example 2: "Every increase in global warming matters."

1. **Urgency and Importance**:
   o The word "every" stresses that even the smallest changes in global warming are significant, suggesting an ideology of urgency. It communicates that all increments, no matter how small, should be taken seriously, reinforcing a sense of immediacy.

2. **Causality and Responsibility**:
   o The phrase "matters" implies a value judgment, positioning global warming as an issue that deserves attention. This

reinforces the moral responsibility to address climate change, reflecting an ideology of collective accountability.

3. **Prevention and Consequences**:
   - By focusing on the importance of "every increase," the statement suggests that even minor increases in global warming can lead to significant consequences. This aligns with an ideology of prevention — emphasizing the need to act now, before the situation escalates.

4. **Impact and Scope**:
   - The use of "global warming" without qualifiers (such as "potential" or "possible") presents it as an unequivocal fact. This framing pushes for an ideology that accepts climate change as a reality and underscores the need for proactive measures.

Hence, both examples reflect an ideology that stresses the urgency and personal responsibility surrounding climate change. They convey an underlying belief in collective action and the need to acknowledge the consequences of environmental degradation. The examples highlight the importance of experiencing climate change as both an individual and global issue, with an emphasis on how every action, no matter how small, contributes to a larger ecological impact.

9.2. Framing as a type of story we live by

Framing refers to the use of a source frame (a structured packet of knowledge) to shape the way we understand and interpret a target domain. Arran Stibbe's model emphasizes that language frames our worldview, particularly in environmental discourse, such as climate change. Below is an analysis of how framing is vividly and clearly present in the following two examples.

Example 3: "We must change course, UN Secretary-General Antonio Guterres said, or we risk missing the point where we can avoid the 'disastrous consequences for people and all the natural systems that sustain us.'"

1. **Framing of Climate Change as a Critical Choice**:
   - The phrase "We must change course" frames climate action as an urgent decision point, implying that there is a clear right direction (action) and a wrong direction (inaction or continued harmful behaviours).

2. **Source Frame of Navigation or Journey**:
   - The expression "change course" draws on a metaphor from navigation, where a ship or vehicle changes direction to avoid danger. This frame suggests that humanity is on a

perilous journey and has the ability to alter its path to avoid a disastrous destination. The target domain (climate change) is structured as a journey that requires deliberate action to avoid negative outcomes.

3. **Risk and Consequences Framing**:
   o The use of "risk missing the point" frames the situation as a critical juncture. Missing this point means crossing an irreversible threshold, where we can no longer avoid catastrophe. This framing heightens the urgency of immediate action and conveys a sense of time pressure.
   o The phrase "disastrous consequences for people and all the natural systems that sustain us" reinforces the idea of climate change as a catastrophic threat to both human societies and ecological systems, framing the environment as fragile and interdependent with human well-being.

4. **Human-Nature Interdependence**:
   o The mention of "natural systems that sustain us" connects human survival directly with the health of ecosystems, reinforcing the framing of humanity's dependence on nature and the inextricable link between the two.

Example 4: "The cost of inaction is far greater than the cost of action."

1. **Framing of Cost as a Decision-Making Criterion**:
   o This sentence uses a cost-benefit frame to structure the issue of climate change. It frames the decision to act or not act as a financial or resource-based calculation, where the "cost of inaction" is positioned as more harmful and more costly than the "cost of action."
   o This frame taps into a widely recognized economic logic, implying that the consequences of inaction (delaying or refusing to address climate change) outweigh the costs of taking preventive measures.

2. **Source Frame of Economics or Trade-Offs**:
   o The "cost" metaphor invokes economic reasoning, drawing on a source frame where people are encouraged to weigh the benefits of immediate action against the risks of delay. It frames climate action as a rational decision that involves calculating the long-term financial and societal gains from intervention versus the potentially catastrophic costs of ignoring the issue.
   o

3. **Framing of Action vs. Inaction**:
   - The comparison between the costs of action and inaction places the onus on the audience to choose the lesser evil, thus shaping the discourse as a clear moral and practical choice. It implies that inaction is not just an absence of effort but an active decision that leads to greater harm, which frames those who resist action as making an irresponsible and costly mistake.
4. **Framing Climate Change as a Manageable Risk**:
   - The statement also suggests that climate change is manageable through action, with a clear distinction between proactive measures (action) and passive neglect (inaction). This shapes the target domain of climate change as something that can still be controlled if the right steps are taken, fostering a sense of agency and empowerment in the face of the crisis.

Hence, both examples frame climate change as an urgent and critical issue that requires immediate action, using various source frames like journeys, economics, and decision-making to structure the discourse. The first example frames the issue as a moral and navigational choice, emphasizing the critical need for action to avoid disastrous consequences for both humanity and nature. The second example uses an economic frame, positioning the choice between action and inaction as a rational, cost-benefit decision, with the consequences of inaction framed as much more expensive than taking preventive steps. The language used highlights the human responsibility to act, framing the future as dependent on the choices made today, and presenting climate change as a matter of both survival and pragmatic decision-making. Framing, as a stylistic linguistic tool, plays a crucial role in the easily understanding of climate change issues, influencing the way we perceive risks, responsibilities, and potential outcomes.

9.3. Metaphor as a type of story we live by

Metaphors are used as a powerful tool for framing, where the source frame (the area of life used to structure the metaphor) is often from a concrete and familiar domain, distinct from the target domain (the abstract or complex issue being discussed). In the case of climate change and environmental issues, metaphors help convey complex or distant concepts in more relatable, concrete terms, making them easier to understand and emotionally engaging. Here's an explanation of how metaphor is vivid in the following three examples:

Example 5: "Beware of greenwashing"

1. **Source Frame: Deception and False Advertising**:
   - The term "greenwashing" draws on the metaphor of "whitewashing", which comes from the act of covering up something undesirable with a clean exterior. In the context of greenwashing, companies falsely present themselves as environmentally friendly, even though their actions may not reflect that claim.

2. **Concrete, Familiar Domain: Marketing and Dishonesty**:
   - The source frame is marketing tactics and consumer deception, areas that most people are familiar with. This makes the metaphor effective in conveying the idea of false appearances in relation to environmental claims.

3. **Target Domain: Environmental Responsibility**:
   - The metaphor frames the environmental issue of misleading corporate practices as a matter of consumer vigilance and fraud. The metaphor implies that people need to be cautious, as if they're detectives or informed consumers guarding against false claims.

4. **Vivid and Clear Meaning**:
   - "Greenwashing" makes it easy to understand that not all environmentally friendly claims are genuine. It helps frame climate action as something that requires not just broad societal engagement but also awareness of misleading practices, urging vigilance in the face of deceptive advertising.

Example 6: "How this agreement was critical in protecting the health of our planet"

1. **Source Frame: Health and Medicine**:
   - The metaphor here uses the source frame of health and medicine, specifically the idea of protecting the health of a living organism (in this case, the planet). This invokes an image of a doctor diagnosing and protecting a patient's health.

2. **Concrete, Familiar Domain: Medicine and Protection**:
   - The concept of "health" is something that people understand intuitively. It draws on familiar ideas of taking actions to prevent illness, heal wounds, and safeguard well-being, which makes the metaphor impactful when applied to the environment.

3. **Target Domain: Environmental Protection**:
   - The metaphor links the protection of the environment to the preservation of health, framing the planet as a vulnerable entity that requires careful, preventive action to avoid harm. This metaphor suggests that the planet is like a patient needing to be treated or healed.

4. **Vivid and Clear Meaning**:
   - The health metaphor makes environmental protection feel urgent and personal. Just as people wouldn't ignore a medical emergency, the metaphor calls for immediate action to protect the planet. It frames climate agreements as life-saving measures for the Earth, making the need for such agreements feel essential.

Example 7: "Turn that anger into collective action"

1. **Source Frame: Emotional Energy and Transformation**:
   - The metaphor involves anger (a powerful emotion) and the idea of transformation—turning negative energy into a constructive force. This frames emotional responses as resources that can be harnessed for a positive purpose.

2. **Concrete, Familiar Domain: Emotional Energy and Transformation**:
   - The metaphor uses anger—a strong, often uncontrollable emotion—making it relatable to people who have experienced frustration. The idea of transforming that anger into something productive is a familiar and concrete way of reinterpreting a negative emotion as fuel for change.

3. **Target Domain: Social and Political Action**:
   - The metaphor connects the emotion of anger with collective action, suggesting that strong feelings of injustice or frustration about environmental issues can be redirected into organized efforts to make a change. It frames activism as a cathartic and empowering process.

4. **Vivid and Clear Meaning**:
   - The metaphor conveys the idea that anger can be a driving force for social change, emphasizing that emotional energy, when channelled correctly, can fuel movements and prompt action. It implies that environmental activism requires not only intellectual understanding but also emotional engagement to be effective.

Hence, metaphors studied in the above mentioned three examples frame abstract or complex environmental issues in familiar, concrete terms: deception in advertising, health and medicine, and emotional transformation. Metaphors of consumer awareness, health protection, and emotional action make environmental issues more accessible and actionable. They provide clear mental pictures that invite people to engage with climate change on an emotional and practical level. Furthermore, these metaphors are also action-oriented, urging people to take responsibility, protect the planet, and channel their emotions into positive action.

9.4. Evaluation as a type of story we live by

Evaluation refers to the process of forming judgments about whether something in life is perceived as good or bad. Arran Stibbe's model highlights the use of appraisal patterns, which are language structures that represent things positively or negatively. These patterns shape how we view and evaluate different aspects of the world, particularly in terms of environmental issues like climate change. Here's how evaluation is vividly and clearly expressed in the three given examples:

Example 8: "We would have been in a better place if we had."

1. **Evaluation of the Current State**:
   o The phrase "we would have been in a better place" expresses a negative evaluation of the present situation. It implies regret or dissatisfaction with the current state, suggesting that action not taken has led to a suboptimal outcome.

2. **Implicit Judgment**:
   o The word "better" carries a positive judgment, indicating that an alternative (a different choice or action) would have led to a more favourable situation. The statement suggests that the failure to act resulted in a less desirable outcome, thus highlighting the negative consequences of inaction.

3. **Regret and the Value of Action**:
   o By framing the situation as one of missed opportunity, this evaluation emphasizes the importance of proactive decision-making. It suggests that inaction (or poor decision-making) has led to an unfavourable reality, reinforcing a sense of loss and what could have been.

Example 9: "Good news is that solutions do exist!"

1. **Positive Evaluation of Solutions**:
   - The phrase "Good news" introduces an immediate positive evaluation of the situation. It sets up a hopeful tone and signals a shift from negative or problem-focused narratives to a more optimistic perspective.

2. **Framing of Solutions as Valuable**:
   - The statement that "solutions do exist" further strengthens the positive evaluation, positioning solutions as viable and real. It contrasts the problems of climate change or environmental degradation with the availability of effective remedies, creating an optimistic outlook.

3. **Hope and Agency**:
   - This evaluation shifts the focus to actionable hope, emphasizing that there are positive opportunities available to address the crisis. It suggests that, despite challenges, progress is possible, making the idea of taking action sound both practical and rewarding.

Example 10: "The worst impacts can still be averted if we act now."

1. **Evaluation of Potential Outcomes**:
   - The phrase "the worst impacts" presents a negative evaluation of the potential future if no action is taken. It signals the severity of the situation, emphasizing harmful consequences that are at risk of occurring.

2. **Hopeful Framing of Prevention**:
   - The word "averted" introduces a positive evaluation of the future, suggesting that the worst-case scenarios are preventable if immediate action is taken. This frames action as the key to avoiding disaster and emphasizes control over the future.

3. **Urgency and Responsibility**:
   - The phrase "if we act now" carries an implicit judgment about the necessity of immediate action, framing the situation as one where time is critical. The evaluation implies that without prompt intervention, disastrous impacts are inevitable, but also highlights the empowerment to make a difference through collective action.

Hence, the three examples make clear use of evaluation by assigning positive or negative judgments to different aspects of the environmental
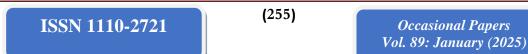
issue. While example 8 conveys regret and emphasizes the negative consequences of inaction, framing it as something that has resulted in a less favourable situation, example 9 introduces hope and optimism, presenting available solutions as a positive opportunity to address the crisis, creating a sense of possibility and agency. However, example 10 evaluates the situation in terms of risk, contrasting the worst possible outcomes with the positive potential to avoid them, thus highlighting the urgency and empowerment of taking action. These evaluations serve to motivate and shape public perception and response to climate change and related issues.

9.5. **Identity as a type of story we live by**

Identity refers to how language shapes our understanding of what it means to be a particular kind of person or group, often by emphasizing certain roles, attributes, or characteristics. Arran Stibbe's model identifies how language constructs identity by framing people or groups in specific ways, either as victims, agents of change, or other roles. Below is an analysis of how identity is vividly and clearly expressed in the given example:

Example 11: "Poorer countries and underserved communities are often portrayed solely as victims of climate change, rather than positive agents of change. The same is often the case for women and girls."

1. **Framing Poorer Countries and Underserved Communities as Victims**:
   - The phrase "portrayed solely as victims" constructs the identity of poorer countries and underserved communities as passive victims of climate change. This framing limits their identity to one of suffering and helplessness, suggesting they have no agency or active role in the climate crisis.
2. **Lack of Agency in the Portrayal**:
   - The term "solely" highlights that these groups are often viewed only as victims, with no recognition of their potential to contribute positively or to take action. This limits their identity, framing them as reactive rather than proactive agents.
3. **Reversal of the Identity to "Agents of Change"**:
   - The statement contrasts the victimhood framing with the idea that these groups can also be seen as positive agents of change. This introduces an alternative identity, portraying

poorer countries and underserved communities as active participants in solving climate problems, rather than just passive recipients of aid or suffering.

4. **Identity of Women and Girls**:
   o The parallel structure "The same is often the case for women and girls" extends the same victimhood framing to women and girls, suggesting that they are similarly seen as victims in the context of climate change. This reinforces the notion that gender groups, like certain communities, are often portrayed in a way that excludes their potential for agency and leadership in climate action.

5. **Call for a Shift in Identity Framing**:
   o By mentioning both underserved communities and women and girls, the statement challenges the narrow portrayal of these groups and advocates for a broader identity framing that includes their roles as empowered change-makers. It calls for a reimagining of identity to highlight their potential for leadership and active participation in addressing climate change.

Hence, the idea of identity is represented by the portrayal of victimhood whereas the initial framing of poorer countries and underserved communities as victims of climate change limits their identity, making them appear passive and reactive. Then the statement mentioned in the example contrasts this victimhood with a more empowered identity as agents of change, emphasizing their potential for leadership and action. Gendered Identity, represented by women and girls, is similarly framed in a way that often limits their role to victimhood, ignoring their potential to be active agents in the climate crisis. The comparison suggests a need to reframe the identities of these groups, shifting the focus from suffering to empowerment and agency.

9.6. Conviction as a type of story we live by

Conviction refers to the degree of certainty or truth ascribed to a description or claim. According to Arran Stibbe's model, facticity patterns represent how language expresses something as true, uncertain, or false. Below is an analysis of how conviction is vividly and clearly expressed in the example 12.

Example 12: "In tackling the climate crisis, leaders must lead but all of us must do our part. Speak up and get others to join in taking action. It's one of the quickest and most effective ways to make a difference. Talk

about climate change. Urge your city, bank and employer to go green. Appeal to leaders to act now."

1. **Strong Certainty and Urgency in the Call to Action**:
   - The phrase "leaders must lead" and "all of us must do our part" presents a strong, unequivocal conviction about the necessity of action. The use of "must" suggests an imperative, presenting this as a certain truth—that both leaders and individuals have clear, non-negotiable roles in addressing the climate crisis.

2. **Clear and Firm Advocacy for Action**:
   - The statement "Speak up and get others to join in taking action" further underscores certainty by presenting action as the right thing to do. The directive tone implies that not only is action important, but it is urgent and necessary for making a difference.

3. **Fact-based Assertion of Effectiveness**:
   - The claim that "It's one of the quickest and most effective ways to make a difference" expresses a high level of conviction about the efficacy of taking action. The phrase "one of the quickest and most effective" is presented with certainty, suggesting that there is no uncertainty about the effectiveness of the proposed actions in combating the climate crisis.

4. **Direct and Assertive Calls for Change**:
   - "Talk about climate change," "Urge your city, bank and employer to go green," and "Appeal to leaders to act now" all use imperative verbs that convey a sense of urgency and importance. These actions are framed as non-negotiable steps people must take, reinforcing the idea that the truth of the situation is that action is required immediately to make a difference.

5. **Implied Certainty about the Necessity of Urgent Action**:
   - The repeated use of imperative verbs like "speak," "urge," "appeal" reinforces the sense that these actions are certainly necessary, and that inaction is not an option. The statements frame climate action as an urgent necessity, one that cannot be delayed or doubted.

Hence, Conviction and Facticity are clear in example 12 through the imperatives ("must," "speak up," "urge") that convey a high level of certainty that certain actions are both necessary and immediate. The phrase "one of the quickest and most effective ways to make a difference"

is presented as a fact, with a strong assertion of effectiveness, leaving little room for uncertainty. The language used in the example demonstrates absolute conviction that climate action is not only urgent but also achievable and impactful if individuals and leaders act now. The idea is framed as a certain truth—that taking action, whether by speaking out or urging others, is a necessary and effective step toward addressing the climate crisis.

9.7. **Erasure as a type of story we live by**

Erasure refers to a linguistic process in which certain aspects of a topic, issue, or perspective are minimized, overlooked, or rendered unimportant within a text or discourse. Erasure patterns, as described in Arran Stibbe's model, refer to the use of language that backgrounds or erases certain subjects, either by not mentioning them at all or by framing them in such a way that they are not given the significance or attention they deserve.

In the context of the example provided, the focus is on climate action steps that individuals can take in their daily lives, but certain aspects may be erased or downplayed through the way the language is framed as in the following examples from 13 to 22.

Examples 13-22:

"Save energy at home
Walk, bike, or take public transport
Eat more vegetables
Consider your travel
Throw away less food
Reduce, reuse, repair, recycle
Change your home's source of energy
Switch to an electric vehicle
Make your money count
Speak up."

1. **Individual vs. Systemic Action**:
   - The listed examples emphasize individual actions, such as saving energy at home, reducing waste, and eating more vegetables, without addressing the larger, systemic factors that contribute to climate change (e.g., corporate practices, government policies, or industrial pollution). This erases the importance of collective or structural action in favour of actions that can be performed by individuals alone.

o Erasure Pattern: The absence of policy-related actions (like advocating for legislation, supporting renewable energy initiatives, or addressing industrial emissions) minimizes the role that larger-scale changes play in addressing the climate crisis.

2. **Focus on Consumption Choices**:
   o Many of the items, such as eating more vegetables, reducing food waste, and switching to an electric vehicle, focus on consumer behaviour and personal consumption choices. While these actions are important, the language does not highlight the structural and systemic factors that shape these choices, such as the availability of sustainable food options, the infrastructure for public transport, or the pricing of electric vehicles.
   o Erasure Pattern: By highlighting personal responsibility over collective solutions or systemic changes in infrastructure, the language erases the role of the government, industries, and corporations in making sustainable practices widely accessible or affordable.

3. **Absence of Social Justice or Equity Concerns**:
   o The list does not mention issues such as environmental justice, equity, or the disproportionate impacts of climate change on marginalized communities. It doesn't reflect on how different groups have unequal access to resources or the means to take certain actions (e.g., not everyone can afford an electric vehicle or has access to public transport).
   o Erasure Pattern: The lack of attention to inequality in environmental action erases the need for equitable solutions that address the specific challenges faced by underprivileged or marginalized groups, whose actions may be limited by factors beyond their control, such as socioeconomic status or location.

4. **Limited Scope of Political and Economic Action**:
   o The list mentions speaking up as a way to make a difference, but it doesn't elaborate on the political dimensions of climate change activism, such as advocacy for policy reform, collective political actions, or the importance of voting for climate-conscious candidates.
   o Erasure Pattern: While individual action is emphasized, the role of organized political movements, protest, and policy change is largely erased from the narrative. This minimizes

the importance of public pressure and political activism in driving large-scale change.

5. **Framing of Climate Action as a "Personal Choice"**:
    o Many of the actions listed are framed as personal choices, such as considering your travel or switching to an electric vehicle. This individualizes the issue of climate change, suggesting that the solution lies primarily in personal responsibility rather than in the shared responsibility of global institutions, corporations, and governments.
    o Erasure Pattern: By focusing on individual consumer actions, the text erases the collective responsibility to address the underlying drivers of climate change, such as fossil fuel dependence and industrial emissions. It shifts the burden onto individuals, erasing the collective action needed to push for substantial systemic changes.

Hence, the impact of applying the erasure technique is to minimize Systemic Factors. The examples focus predominantly on individual actions while ignoring the broader, systemic causes of climate change and the role of government, corporations, and industries in perpetuating the problem. This erases the urgency of collective action and policy reform. The language does not acknowledge the unequal distribution of environmental impacts or the differing abilities of people from various social backgrounds to take climate action. This erasure silences voices and experiences from marginalized groups. The focus becomes on personal consumption habits without considering how larger social, political, and economic structures influence these choices minimizes the need for structural change in favour of individual responsibility, making the issue seem more manageable than it is.

9.8. Salience as a type of story we live by

Salience focuses on identifying how language highlights particular aspects of the issue and which elements are foregrounded as important as it is clear in the following example.

Example 23: "The challenge remains to avoid the proliferation of standards, and encourage financial authorities and regulators to work together to ensure coherent, cohesive regulation. The Network for Greening the Financial System brings together Central Banks, financial regulators and authorities toward enhancing the role of the financial system to manage risks and mobilize capital for low-carbon, resilient investment."

1. **Key Terms and Concepts**:
   - **Proliferation of standards**: This phrase foregrounds the potential problem of too many conflicting or inconsistent regulatory standards. The challenge of "avoiding" proliferation highlights a concern with control and organization in the financial sector, positioning the idea of regulation as an area of importance.
   - **Financial authorities and regulators**: The mention of these actors emphasizes the key role that governance and regulation play in addressing environmental issues in finance. The salience is on the institutions that are responsible for shaping financial systems.
   - **Coherent, cohesive regulation**: The adjective pair "coherent, cohesive" stresses the importance of a unified and organized approach to regulation, implying that disorganization or lack of consistency could be detrimental.
   - **Greening the Financial System**: The term "greening" immediately highlights the ecological theme of sustainability and environmental responsibility within the financial system. This foregrounds the idea that financial practices must be aligned with environmental goals, positioning ecological concerns at the forefront of the discourse.
   - **Low-carbon, resilient investment**: This phrase underscores specific ecological goals—*low-carbon* and *resilient*—which foreground the importance of sustainability in financial decision-making. The salience here is on the shift towards eco-friendly investments and the adaptation of the financial system to mitigate climate change risks.

2. **Story of Importance**: The language used in this passage constructs a story where the need for regulatory coherence is positioned as a central concern. This is compounded by the need for cooperation between financial authorities to manage ecological risks. Salient themes include:
   - The environmental responsibility of financial systems (through "greening" and low-carbon investments).
   - The role of financial institutions (regulators, central banks) in shaping this ecological shift.
   - The importance of effective regulation to ensure that financial systems are mobilized for environmental goals.

3. **Foregrounding Ecological Concerns**: The passage brings ecological issues to the forefront by focusing on financial systems'

role in managing climate-related risks and mobilizing capital for low-carbon, resilient investment. The specific terms related to low-carbon investment, as well as the broader theme of greening, indicate that ecological sustainability is a key issue in the conversation, which would otherwise be dominated by purely economic concerns.

4. **Potential Patterns of Salience**:
   o The financial system (and its regulators) is presented as a key agent in addressing ecological issues, emphasizing the role of governance in shaping the future of ecological finance.
   o Low-carbon investment and resilience emerge as the specific actions required to make the financial system align with ecological priorities, making these the key "actions" for achieving ecological goals.
   o There is a visible push for coherent regulation—meaning the salience here is not just on the content of the regulation, but on its coordination, suggesting that fragmented or misaligned actions are seen as detrimental.

5. **Ecological Themes**:
   o Sustainability: Through terms like "low-carbon," "resilient," and "greening," the passage highlights that the financial system must consider environmental impacts.
   o Interconnectedness: The collaboration between financial authorities and regulators highlights the interconnected nature of ecological challenges, which require cooperative efforts across different sectors and actors.
   o Responsibility and Future-Oriented Goals: The phrase "mobilize capital for low-carbon, resilient investment" suggests a future-oriented approach, emphasizing the long-term importance of financial systems in managing climate change and environmental risks.

Hence, salience in this example focuses on the regulation of the financial system in the context of environmental sustainability. By using terms that emphasize the importance of coherent regulation, low-carbon investment, and resilience, the passage frames ecological concerns as critical to the future of financial practices. These concerns are not merely peripheral but are woven into the narrative of financial governance, thus making them a central and urgent part of the story that the language constructs.

10. Conclusion

The integration of cognitive and stylistic features in the analysis and translation of ecological content, particularly in the context of the United Nations (UN) ecological texts, provides a multifaceted framework that ensures both conceptual accuracy and effective communication. By utilizing cognitive stylistic tools, such as Text World Theory (TWT) and ecological stylistics, this research has demonstrated how ecological themes can be meaningfully analyzed and conveyed to the target audience while preserving the richness and complexity of the original content. TWT offers a detailed approach by mapping the cognitive structures—participants, time, place, and sensory inputs—at multiple levels of the text, while also considering how actions, relationships, and epistemic attitudes shape the understanding of sustainability issues. This comprehensive mapping facilitates a deeper understanding of how ecological discourse frames global issues and participants' roles in addressing these challenges. The contribution of cognitive approaches lies in their ability to uncover the mental representations and underlying conceptual structures that guide our engagement with ecological texts.

On the other hand, stylistic tools, particularly the ecological stylistics framework developed by Arran Stibbe, provide crucial insight into the narrative strategies used to frame ecological issues. Stibbe's model highlights how language, through stories like metaphor, framing, and evaluation, actively shapes public perceptions of environmental concerns. By identifying how ecological issues are linguistically constructed, the stylistic analysis enhances our understanding of how these narratives influence policy discourse and shape public attitudes toward sustainability. Stylistic features such as metaphorical constructs, ideological framing, and salience play a pivotal role in guiding the reader's response and engagement with ecological texts, emphasizing the importance of contextual and cultural sensitivity in the translation process.

The synthesis of these cognitive and stylistic approaches leads to a more nuanced and effective analysis of ecological texts, particularly when assessing the translation of such content. A purely cognitive approach ensures that ecological knowledge and conceptual content are accurately preserved, but it must be complemented by an awareness of how stylistic features—rhetorical devices, framing, and the tone of discourse—impact the reception and engagement of the target audience. In this context, the integration of cognitive and stylistic tools serves not only to ensure fidelity to the source text but also to maintain its persuasive power,

engagement, and accessibility to diverse global audiences. Without attention to both aspects, translations may fail to fully convey the intended message, leading to either a loss of meaning or an absence of impact on the target audience.

This integration is particularly crucial in the translation of ecological content between linguistically and culturally distant languages. Differences in language structures, cultural references, and environmental concerns make it necessary for translators to navigate both cognitive accuracy and stylistic resonance. For instance, specialized ecological terminology, metaphors, and rhetorical devices may not have direct counterparts in the target language, requiring creative solutions that uphold both the factual integrity and the stylistic appropriateness of the translation. By addressing both the cognitive and stylistic aspects of ecological texts, translators are better positioned to produce translations that resonate across cultures and convey the urgency of global sustainability goals effectively.

In the context of interdisciplinary fields such as ecolinguistics, the challenges of translating ecological texts are further compounded by the need to handle specialized jargon, complex metaphors, and culturally specific frames. The integration of cognitive and stylistic features provides a robust strategy for overcoming these challenges, ensuring that the translation process upholds both conceptual clarity and cultural relevance. This approach not only guarantees accuracy but also helps in preventing misinterpretation, loss of nuance, or the imposition of inappropriate cultural frames, ensuring that the translated text maintains its integrity and relevance in the target context.

Ultimately, the combined use of cognitive and stylistic approaches fosters a holistic understanding of how ecological texts function both cognitively and stylistically. This comprehensive assessment, which balances accuracy with engagement, is critical for translating ecological content in ways that uphold the integrity of the original text while making it accessible, persuasive, and relevant to a global audience concerned with sustainability and environmental issues.

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