

Narratives of Sustainability

Interdisciplinary Insights and Ecolinguistic Perspectives

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1. Introduction

A complex, “contentious concept” (Catenaccio, 2019, 208), sustainability is the subject of interdisciplinary interest, spanning several research areas and occupying a central role in recent international literature (Krieg and Toivanen 2021), which attempts to contribute to “th[e] ecological transformation founded on shared democratic values” (Brüggemann, et al. 2023, 5039).

Traditionally grounded in three interconnected pillars – environmental, social, and economic (United Nations 1987) – sustainability has encouraged researchers from different disciplines to engage in increasingly collaborative and interdisciplinary forms of inquiry. Such exchanges allow expertise developed within one field to enrich another, contributing to a more comprehensive understanding of sustainability-related challenges and objectives.

At the same time, sustainability remains a complex and often contested concept. As Godemann and Michelsen (2011) observe, its meaning and use vary considerably across discourse communities. Rather than referring to a fixed and universally shared idea, sustainability is continuously reinterpreted, adapted, and negotiated according to the needs, priorities, and assumptions of specific sectors and stakeholders (see Niceforo 2024). This flexibility has undoubtedly contributed to the widespread circulation of the concept, but it has also generated important questions concerning its definition, application, and communicative use. In contexts characterised by asymmetrical communication, sustainability may be invoked to legitimise practices, policies, or commercial interests that do not necessarily align with the expectations associated with the concept by wider publics. These multiple, dynamic and often-contested narratives are worth investigating for understanding how sustainability is negotiated across different contexts, especially in light of the central role discourse plays in shaping sustainability-related practices. Furthermore, scholars have increasingly highlighted the importance of dialogue among stakeholders in sustainability communication. As Higgins and

Coffey (2016, 18) observe, dialogue is crucial to fostering mutual understanding and “introduc[ing] new discourses that may open up new directions in how companies contribute to sustainability.” The complexity of sustainability discourse is further amplified by the diversity of actors involved in its production and circulation. Governments, international organisations, corporations, journalists, researchers, and civil society organisations all contribute to shaping public understandings of sustainability, often from different ideological, institutional, and economic standpoints. As sustainability moves across these communicative settings, its meanings are reformulated and adapted to specific audiences and purposes therefore leading to the emergence of a wide range of genres and communicative practices, from policy documents and corporate reports to news media, promotional materials, and public engagement initiatives.

Against this backdrop, qualitative and quantitative approaches to discourse analysis come as valuable tools for assessing the ways linguistic and discursive patterns are deployed in sustainability-related communication across different communities of practice. In particular, the integration of ecolinguistics and corpus-based approaches (Poole 2022; 2018) offers fruitful methodological perspectives for investigating the multifaceted dimensions of sustainability discourse. Drawing on corpus linguistics, discourse analysis, ecolinguistics, metaphor analysis, appraisal theory, and corpus-assisted approaches, the contributions collected in this volume address sustainability issues from a variety of theoretical and methodological perspectives across different contexts and offer a multifaceted account of the ways sustainability is discursively negotiated in contemporary society.

2. Content of the special issue

Ruby Rong Wei, Joanna Zijing Yin and Robert Poole examine how sustainability is discursively constructed in China’s official English-language press by relying on a diachronic corpus of more than 35,000 articles published in China Daily between 2013 and 2024. The combination of corpus-based discourse analysis, topic modelling, collocation analysis, and Discursive News Values Analysis, allows for an assessment of the shifts in sustainability narratives across the two six-year periods considered. The findings show that sustainability is consistently represented as a national priority closely linked to economic and technological transformation and innovation. At the same time, while earlier coverage focuses primarily on domestic reform and environmental sustainability, more recent reporting places greater emphasis on economic sustainability, international cooperation, and China’s global role in advancing sustainable development. China’s self-representation shifts from an active participant in sustainability initiatives to a regional and global leader promoting international solutions.

Arianna Del Gaudio’s contribution is an attempt to explore the role played by emotions in

corporate discourse, with a focus on food and beverage companies. Drawing on a manually annotated corpus of corporate reports, CEO letters and sustainability webpages, the study exploits the Appraisal Framework and, more specifically, the AFFECT category to investigate the emotional dimension of climate-related corporate communication. The analysis reveals a strong preference for positive emotional patterns, particularly those associated with inclination, confidence, satisfaction and happiness, which position corporations as proactive, responsible and future-oriented environmental actors. At the same time, the study shows how emotional language contributes to legitimising corporate environmental identities while downplaying tensions, uncertainties and corporate responsibility for ecological degradation. Adopting an ecolinguistic perspective, the article argues that emotions function as powerful persuasive resources through which climate action is reconciled with growth-oriented corporate interests.

At the heart of Maria Ivana Lorenzetti's article lies the observation that sustainability has become one of the most pervasive yet conceptually unstable keywords of contemporary discourse. Combining Corpus-Assisted Discourse Studies and Critical Discourse Analysis, the contribution explores how the noun *sustainability* and the adjective *sustainable* are used across four specialised English corpora representing environmental, scientific, social and institutional domains. The analysis of collocational patterns and concordances provides evidence for the use of sustainability as a highly flexible and polysemous concept whose meaning(s) shift(s) according to context while retaining a strong 'normative' appeal. Although environmental concerns remain salient, the findings show that economic, social and ecological aspects frequently overlap, making it difficult to determine which specific idea of sustainability is being communicated. The article concludes that sustainability operates simultaneously as a 'magic concept' capable of mobilising consensus while often remaining semantically underspecified.

Laura Narisano's article examines the discursive construction of greenness in sustainability discourse by comparing the use of *green* and *verde* in British and Italian newspaper articles. Drawing on a comparable corpus of sustainability-related news texts, the study analyses the collocational behaviour of these terms through Word Sketches and concordance analysis. The article shows that metaphorical uses predominate in both languages, especially in relation to the semantic domains of economy and finance, policy, energy, and technology. At the same time, the analysis provides evidence for significant cross-linguistic differences; indeed, while the Italian *verde* retains both literal and metaphorical uses, the borrowed adjective *green* functions as a more specialised marker of sustainability, often associated with technical and international legitimacy. The article also seeks to explore more creative extensions such as "shades of green," "*più* green/greener," and "dark green/light green," showing how colour-based metaphors are exploited to construct different degrees of environmental commitment.

Fabio Cangerò's article investigates how sustainability reports construct persuasive

corporate identities and negotiate organisational legitimacy through language by relying on a 455,269-token corpus of sustainability reports published in 2023 by companies listed in the Dow Jones Sustainability Index. The study combines Corpus-Based Discourse Analysis, Appraisal Theory, Critical Genre Analysis and Narrative Identity Theory to reveal a tendency to represent corporations as agentive and responsible actors through the extensive use of first-person plural pronouns, material process verbs and evaluative adjectives; in addition, futurity and science-based discourse are shown to reinforce corporate credibility, ethical positioning and epistemic authority while limiting alternative interpretations. The article further demonstrates how sustainability reports construct coherent narrative identities by linking past achievements, present commitments and future aspirations within a unified storyline. Also, it suggests that sustainability reporting increasingly functions as a hybrid genre that blends informational and promotional purposes, serving not only as a tool of accountability but also as a mechanism of identity negotiation and reputational management.

Anna Meyer's article investigates how the UN Sustainable Development Goals have reshaped sustainability discourse in the mining sector through a corpus-assisted ecolinguistic discourse analysis of sustainability reports published by major multinational mining companies before and after the adoption of the 2030 Agenda. The analysis reveals that the SDGs have strengthened the institutionalisation of sustainability discourse, increasing explicit references to SDG-related language; however, the findings also show that environmental concerns remain systematically subordinated to economic priorities, with corporate discourse foregrounding business continuity, technological solutions, and institutional legitimacy while frequently backgrounding or erasing the more-than-human world.

Drawing on a specialised corpus of 234 sustainability-related articles published in *The Conversation* between 2012 and 2024, Lorenzo Zannini and Martina Russo investigate how the concepts of sustainability, development, and growth are discursively framed in expert-authored public communication. The combination of theories from Corpus-Assisted Discourse Studies, framing analysis and ecolinguistics, enables the authors to observe the conceptual overlap within socio-economic, institutional, and business-oriented narratives and reveal the backgrounding of ecological perspectives in favour of economic and policy-oriented framings, reflecting the constraints and expectations of public-facing academic communication. Overall, while sustainability is commonly framed as a challenge, growth is more frequently problematised as a source of inequality and ecological pressure.

Bionotes

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Paola Catenaccio is Full Professor of English Language and Translation at the University of Milan. Much of her research explores the role of discourse in shaping contemporary environmental and societal challenges, with particular emphasis on sustainability, climate change communication, corporate environmental discourse, urban regeneration, and the discursive construction of contested technologies. Drawing on discourse analysis, corpus linguistics, and argumentation theory, she investigates framing, metaphorical representation, legitimisation strategies, and narrative construction of sustainability in both specialised communication and public discourse. She has published extensively on environmental and sustainability discourse and serves on the editorial board of *Environmental Communication*. She is co-editor of the forthcoming volume *Framing Sustainability: Discourses of Nature and the Environment across Contexts* (Palgrave Macmillan).

Francesco Nacchia, Tenure-track Research Associate of English Language, Translation and Linguistics (ANGL-01/C) at the University of Naples L'Orientale, holds a PhD in (Euro)languages and Specialised Terminology from the University of Naples Parthenope. He is currently working on a project in discourses of identity and ideology on social media in Anglophone contexts, which investigates (multimodal) representations of cultural, minority, and gender identities in digital environments, with the aim of identifying ideological forms and discriminatory practices while promoting more inclusive communication. His main research interests include corpus linguistics, multimodal critical discourse analysis, and critical metaphor analysis. He has published extensively on the discourse of alternative eating habits, as well as on the role of metaphor and specialised terminology in promotional wine-tasting discourse, with a specific focus on personification.

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A Corpus-based Discourse Study of Sustainability in the Chinese English-language Press Across 2013 and 2024

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Abstract

Sustainability is a major global concern in this era of heightened climate change awareness, yet its discursive production in China's official media remains underexplored. Therefore, this article conducts a diachronic corpus-based study of the discourse of sustainability represented in *China Daily*. The corpus is divided into two periods: from 2013 to 2018 and from 2019 to 2024. The findings from the data of these two periods indicate that China has consistently been an active participant in sustainability, with the economy serving as its key engine. Compared to the first period, in which domestic sustainability issues were the main concern, the second period gives greater prominence to international sustainability. During this transition, China's focus has gradually shifted from domestic reform to a global orientation, and its image has evolved from an active practitioner to a regional leader in sustainability issues. It is suggested that China may further integrate social and environmental dimensions to present a more holistic narrative of its understanding and actions in sustainability.

1. Introduction

Sustainability is far more than a jargonistic buzzword scattered throughout societal and organisational discourse (Else, et al. 2022). It has emerged as a foundational principle for global development, particularly as human beings are confronted with the complex and multifaceted challenges arising from the climate crisis. Indeed, understanding and effectively narrating sustainability is a key component to achieving the United Nations' 2030 Agenda and its seventeen Sustainable Development Goals (SDGs). Against this backdrop, the current investigation focuses on the discursive representation of sustainability in the Chinese English-language media outlet *China Daily* (hereafter CD). The study employs a corpus-based discourse approach along with topic modelling to explore the major focuses of CD's discourse on sustainability and its diachronic trajectories over time. This exploration is significant as it

contributes to a clearer understanding of China's interests and priorities as well as the nation's evolving role in global sustainable development.

While numerous studies have examined sustainability in international contexts (e.g., Ghosh and Boykoff 2019), research on Chinese media coverage remains relatively limited. Previous studies have investigated various stages of Chinese sustainability communication (Zhang, et al. 2022; Liu, et al. 2018) but have focused upon the period up to, and including, 2015. None of the existing research covers the pivotal period since the 18th National Congress of the Communist Party of China. By examining sustainability news reporting throughout this defining era, this study illuminates both China's contemporary and evolving perspective and self-portrayal regarding sustainability.

Three research questions will be addressed: (1) What are the main topics reported by Chinese media between 2013 and 2024? (2) What are the diachronic changes in the representative topic words? (3) What are the diachronic changes in China's image in the coverage of sustainability?

2. Literature review

Sustainability can be traced back to the German word *Nachhaltigkeit* (sustainability), which dates to the 17th century, when European countries faced a timber crisis caused by excessive deforestation (Grober 2007). However, the original notion of *sustainability* has gradually evolved into that of sustainable development in the late 20th century due to the worsening global climate, the limitations of environmental resources, the pervasiveness of social injustice resulting from global disparities (Huang 2024). Besides these immediate environmental and social pressures, the modern focus on sustainability can be attributed to the efforts of the United Nations since the 1970s. In the widely known 1987 Brundtland Report, *sustainable development* was defined as “development that meets the needs of the present generations without compromising the ability of the future generations to meet their own needs” (1987, 43). In 2015, the United Nations launched Agenda 2030 to formulate action-focused 17 SDGs, thereby providing a common framework for evaluating the sustainability of global development (Fleurbaey, et al. 2018). Presently, sustainability and sustainable development are seemingly used interchangeably in academic discussions and prevailing discourse (Ngai 2020). In terms of content, sustainability has been summarized as people, planet, and profit within the so-called “three pillars framework” (Purvis, Mao and Robinson 2019), though this framing was subsequently criticized (Adams 2006)

In the past decades, sustainability has been extensively studied across diverse disciplines, as it is visible in the domain of economy (Xu and Song 2025; Munteanu, et al. 2024), arts (Power 2021), technology (Drucker 2021) and notably, communication and discourse studies (Näyhä

and Wallius 2024; Angst and Strauß 2023). In these domains of communication and discourse, sustainability is considered a social construct constantly negotiated through discursive practices across various modes, genres, and registers. Considering the influence of news media to normalise, reproduce, and perpetuate ideological ways of speaking and being (Van Dijk 1988), the present study interrogates how a major media outlet in China discursively constructs sustainability and how the representation of sustainability has shifted in recent history.

3. Data and method

3.1 Corpus data

To build the sustainability corpus, we used *sustain** to extract all relevant articles from *China Daily* (CD) through the electronic database LexisNexis. CD is a national English-language daily newspaper, and it is the only Chinese newspaper that effectively enters the international media landscape (Zhu and Wang 2021, 125). The time frame under analysis is from 01 January 2013 to 31 December 2024. The data collection focuses on the decade following the 18th National Congress of the Communist Party of China.

After cleaning the corpus to remove duplicate articles, the final corpus is comprised of 35,336 newspaper texts and 1,047,563 tokens (Table 1). To explore the diachronic changes of sustainability representation in CD, the corpus is further divided into two periods: period 1 (January 1, 2013 - December 31, 2018) and period 2 (January 1, 2019 - December 31, 2024). This division is made for the following reason. The first was a more active period of publication, while the number of publications stabilised in the second (Figure 1). Thus, this division enabled investigation of an initial period of heightened attention with a second period of stability in order to highlight diachronic change in the discourse space.

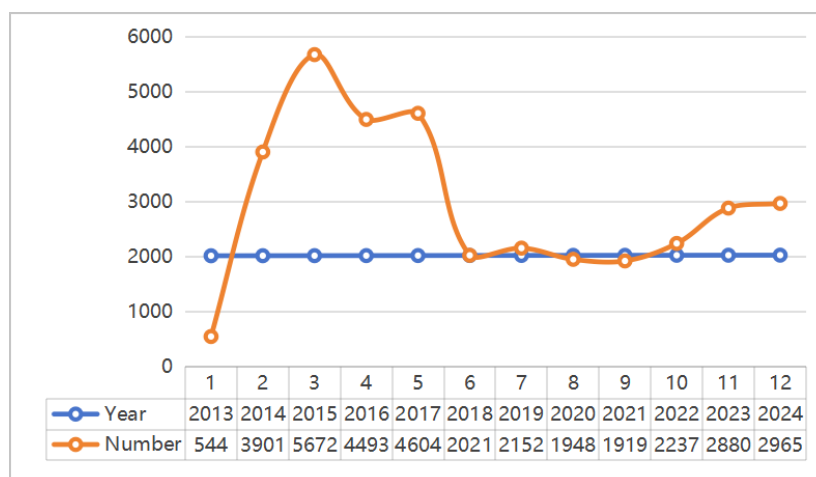


Fig. 1: The number of reports per year

	Period 1 01/01/2013–31/12/2018	Period 2 01/01/2019–31/12/2024	Total
News texts	21,235	14,101	35,336
Tokens	493,879	553,684	1,047,563

Tab. 1: Details of the corpus

3.2 Methodology

We adopt a corpus-based discourse approach that combines quantitative and qualitative analyses (Baker, et al. 2008). The application of corpus tools is particularly prevalent and productive in news discourse research (Li and Zhao 2025; Nguyen and Clancy 2025; Elsoufy 2024; Wei 2023; Huan and Deng 2021). In terms of national image interpretation, discursive news values analysis (DNVA) is applied because discursive news values are intertwined with ideology (Bednarek and Caple 2017; Van Dijk 1988), and ideology helps shape the national image (Liu 2002). In this study, we apply the DNVA framework proposed by Bednarek and Caple (2017), which includes eleven news values: Aesthetic Appeal, Consonance, Eliteness, Impact, Negativity, Personalisation, Positivity, Proximity, Superlativeness, Timeliness, and Unexpectedness (Dahl and Fløttum 2017, 125).

Additionally, the current study integrates *topic modeling* and corpus analysis techniques of *collocation* and *concordance*. Topic modeling refers to a family of generative probabilistic models, among which the most commonly implemented is Latent Dirichlet Allocation (LDA) (Jaworska and Nanda 2018). Therefore, the built-in LDA model in the KH Coder is employed for topic generation in the present investigation (Liu 2023). Collocation identifies the frequent co-occurrences of words, while concordance presents all instances of word co-occurrences (Baker 2006). Both methods enable researchers to detect additional linguistic features that may not be captured by standard content analysis (Touri and Koteyko 2015).

To clarify, our analysis was composed of three steps. First, we used the KH Coder tool to identify prominent topics within the sustainability corpus. In the second step, lexical items deemed salient, meaningful, and representative of the discourse were selected for further analysis through corpus techniques of collocation and concordance analysis. The data were then analyzed through the lens of the DNVA framework (Bednarek and Caple 2017).

4. Major findings

4.1 Main topics

The topic modeling process identified 8 representative topics on sustainability between 2013 and 2024. These include Topic 1: Innovation-driven development, Topic 2: Environmental protection, Topic 3: Inclusive economic growth, Topic 4: Market-oriented industrial development,

Topic 5: Global cooperation, Topic 6: International agenda, Topic 7: China's commitment, and Topic 8: China's action. These eight topics are reflected in the 20 most relevant keywords, presented in the following sections in the form of word clouds in which the size of each keyword indicates its prominence in the topic. In terms of content, the eight topics can be categorised into four groups: “development orientation” (Topic 1 and Topic 2), “economic reform” (Topic 3 and Topic 4), “international solution” (Topic 5 and Topic 6), and “China's contribution” (Topic 7 and Topic 8). In general, the CD's reporting on sustainability discusses domestic economic restructuring as a driver of sustainable development while also engaging with the international sustainability consensus and agendas. The following discusses each topic category.

4.1.1 Development orientation

The first topic category, “development orientation,” is related to the modern understanding and application of sustainability, which emphasizes the balance between economic growth, social development, and environmental protection (Huang 2024). This category comprises two topics: Topic 1: Innovation-driven development, and Topic 2: Environmental protection, as shown in Figure 2.

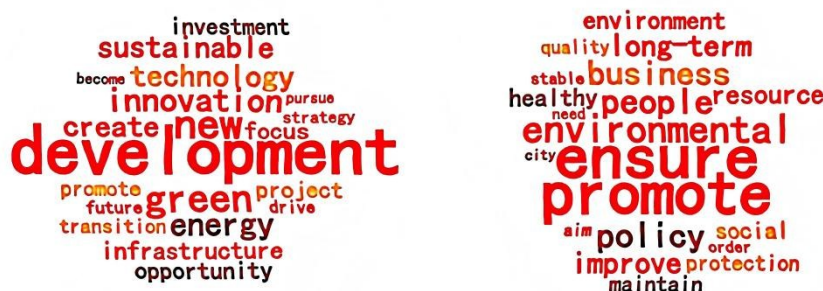


Fig.2: Word clouds of the topic category *development orientation*

As the word cloud reflects, Topic 1, Innovation-driven development, reflects a discourse of development propelled by technological innovation and green transformation, as evidenced by topic words such as *development*, *new*, *green*, *innovation*, and *technology*. It is a topic that highlights “sustainable” development (Zhou, et al. 2021, 174), which demonstrates that the “quantity-based” unsustainable development model should be replaced by “quality-based” green development (He 2024). That is, the discourse advances innovation to empower sectors developing new-quality productive forces, such as new energy, to become engines of economic growth. Topic 2, Environmental protection, emphasises the necessity of environmental protection for maintaining social stability and promoting long-term human well-being, as

demonstrated by topic words such as *environmental*, *environment*, *protection*, *ensure*, *promote*, *healthy*, and *stable*.

4.1.2 Economic reform

The second topic category, economic reform, presents the economy as China's sustainability engine, encompassing Topics 3: Inclusive economic growth, and 4: Market-oriented industrial development, as indicated in Figure 3.



Fig. 3: Word clouds of the topic category *economic reform*

Topic 3: Inclusive economic growth outlines a vision of a sustainable economy that is both structurally balanced and globally beneficial. This is reflected in key topic words such as *economic*, *economy*, *growth*, *balanced*, *inclusive*, *world*, *share*, and *help*. Domestically, China's economy shifts from high-speed growth to high-quality growth, with its transition to development narratives such as “new normal” (Zhang 2023, 95). Thus, the country strives to build an *inclusive* and *balanced* economy through a series of economic reforms. Internationally, China is further aligning with the global economic system (Zhang, et al. 2025), actively fulfilling its commitment to advancing global economic growth and ensuring that its achievements are shared with the international community.

Topic 4, Market-oriented industrial development, focuses on practical industry actions, financial flows, and the economic mechanisms that support sustainability objectives. This topic is evidenced by topic words such as *market*, *industry*, *government*, *company*, *sector*, *role*, *boost*, and *support*. In the context of high-level economic system reform (Zhang, et al. 2025), there is a need to build a fair and sustainable economic system that fully leverages the market's fundamental role in resource allocation. In this framework, the government is expected to take the role of ‘facilitator’ to stimulate the internal driving force and innovative vitality of business entities, thus cultivating a high-level market system mechanism (Chi 2012). Under this

mechanism, various market entities can be supported and served, including companies, sectors, and industries. These governmental aims are evident in the CD discourse.

4.1.3 International solution

The third topic category, international solutions, revolves around two topics related to global responses to sustainability: Topic 5: Global cooperation and Topic 6: International agenda (Figure 4).



Fig. 4: Word clouds of the topic category *international solution*

Topic 5: Global cooperation indicates a discourse that frames sustainability as an objective requiring worldwide collaborative efforts. It is represented by topic words such as *global*, *international*, *community*, *cooperation*, *enhance*, *promote*, and *strengthen*. Nowadays, international relations are becoming increasingly complex due to unprecedented changes in the global economic and political landscape and the lasting impact of the COVID-19 pandemic (Yang and Wang 2023). However, as human beings are confronted with severe global challenges such as climate change and food security, the discourse in CD projects global cooperation as the only way to preserve long-term sustainability for future generations.

Topic 6: International agenda, reflects a discourse that centres structured international frameworks and action plans established to advance global sustainability, which is represented through keywords such as *UN*, *United*, *Nations*, *set*, *Agenda*, *initiative*, and *plan*. As previously noted in Section 1 and Section 2, Agenda 2030 set by the United Nations provides a common framework for evaluating the sustainability of global development and its multidimensional achievements (Biggeri, et al. 2023) and includes the aforementioned SDGs, which serve as guidelines to address environmental and social problems that have emerged in the Anthropocene (Fleurbaey, et al. 2018). The discourse also reflects initiatives such as China's Belt and Road Initiative (BRI). The initiative involves 20 of the world's 27 low-income countries,

as well as 45 of the world's 55 low- and middle-income countries. It is regarded as the most ambitious infrastructure project and the largest project of the century (Schulhof, et al. 2025). These frameworks lay a foundation for global action, enabling coordinated, effective efforts across the international community. It is, thus, unsurprising that the CD discourse of sustainability would aim to highlight these significant international and national initiatives.

4.1.4 China's contribution

The fourth topic category, China's contribution, consists of Topic 7: China's commitment and Topic 8: China's action (Figure 5), both of which indicate a discourse that emphasises China's role in the promotion of sustainability.

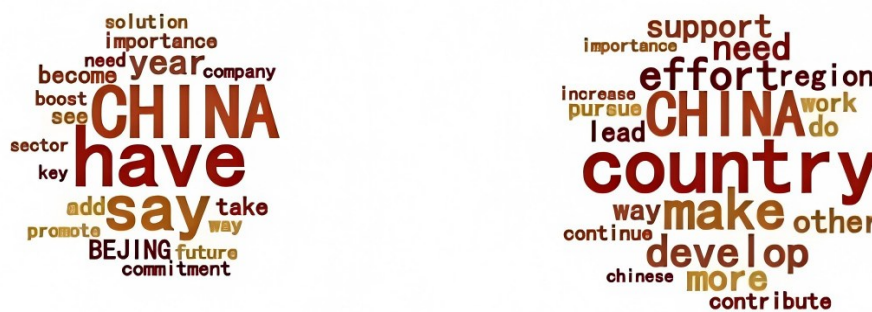


Fig. 5: Word clouds of the topic category *China's contribution*

Topic 7: China's commitment refers to China's commitment to sustainability at the macro level, which is evidenced by keywords such as *China*, *Beijing*, *have*, *say*, *add*, and *commitment*. For instance, as early as March 2016, China's 13th Five-Year Plan committed to actively implementing the Agenda 2030 and promptly aligning with its SDGs, so as to achieve higher-quality, more sustainable development (Biggeri, et al. 2023).

In connection to Topic 7, Topic 8: China's action presents China's practical actions to support sustainable development at home and abroad. It is demonstrated through words such as *China*, *effort*, *support*, *contribute*, *country*, *other*, and *nation*. Generally, the discourse suggests China not only pursues efforts in domestic sustainable development but also leads and contributes to the sustainable development of other developing countries and regions. For instance, it has promoted the high-quality development of the BRI and fostered new drivers of sustainable development by forming more than 3,000 cooperation projects and creating hundreds of thousands of jobs for countries along the route (Xiao 2025, 44). Again, the discourse of *CD* constructs China as active agent of international sustainability.

4.2 Analysis of selected topic words

Informed by the macro analysis of topic modelling and their associated topic words, three representative topic words were chosen for detailed analysis: *sustainability*, *environment*, and *economy*. Firstly, the topic word *sustainability* was picked for its clear representativeness of the research topic. Additionally, the topic word *environment* in Topic 2 and the topic word *economy* in Topic 3 were selected because they represent two main dimensions of sustainability. As noted in Section 3, a collocation analysis was conducted for each of the three chosen topic words across the two periods. In the process, Log Dice was utilised as the metric for identifying collocations and for comparing collocations across corpora of different sizes (Rychlý 2008). Specifically, a Log Dice threshold of ≥ 7 was employed to focus on those collocations with the strongest association (Feola and Jaworska 2019). The collocation window was adjusted for each topic word in order to draw attention to particular discursive tendencies of the three lexical items.

4.2.1 Analysis of sustainability

To better uncover the semantic collocation of *sustainability*, the study focuses on the lexical collocates of *sustainability* in the L1 position (i.e., the first position to the left) with Log Dice scores ≥ 7 . In other words, the focus was upon how sustainability is modified and evaluated in the discourse of CD first between 2013-2018 and later from 2019-2024.

Period 1 2013–2018		Period 2 2019–2024	
Collocates	Log Dice ≥ 7	Collocates	Log Dice ≥ 7
environmental	10.59	environmental	10.68
urban	8.43	Debt	10.27
global	8.17	Fiscal	8.48
debt	7.64	Financial	7.93
Social	7.40	Global	7.29
Fiscal	7.35	corporate	7.04
corporate	7.32	--	--

Tab. 2: Top L1 collocates of *sustainability*

As shown in Table 2, an analysis of these collocates in context reveals that Period 1 is dominated by a narrative of environmental governance and is complemented by economic and social sustainability. The prominence of *environmental* indicates that sustainability reporting is mainly conceptualised through environmental protection with environmental action proposed at various geographic scales (*urban* sustainability, *global* sustainability) from localised to

transnational actions. The attention to urban sustainability can be illustrated in the following example:

- (1) But Chinese cities still have much to do to improve sustainable development. Only Hong Kong ranks among the top 20 for **urban sustainability** competitiveness. Sustainable development capacity, which refers to a city's soft capacity to improve and sustainably satisfy residents' long-term social wellbeing, is of great significance to urban competitiveness. (30/10/2018)

Example (1) denotes the urgency of embracing *sustainability* in urban management constructed in the discourse. Here, the adversative conjunction *but* limits adverbs *still* and *only* to acknowledge existing gaps between Chinese cities and international cities. The lack of Chinese cities' ranking in the global urban sustainability index has potentially prompted China to strengthen city resilience, thereby raising local residents' happiness through improved sustainability efforts.

The collocates of *sustainability* in Period 2 point to the significant shift toward economic sustainability. Though *environment* remains the predominant collocate for sustainability, the sharp rise in *debt* and the slight ascendancy of *fiscal* and *financial* concerns consolidate the prominence of economic-fiscal concerns in the discourse. In the case of *debt sustainability*, its Log Dice value increased from 7.64 to 10.27, approaching the bonding of *environmental sustainability* (10.68). A close inspection of its concordance reveals that *debt sustainability* is mainly related to BRI, as shown in the following example:

- (2) More important, contrary to Western propaganda, no country has fallen into a debt crisis as a result of its participation in the Belt and Road Initiative. In fact, **debt sustainability** is of major importance to China. (23/12/2021)

Example (2) shows that CD employs the defensive rhetorical strategy "no country has fallen into a debt crisis" to deal with Western scepticism on BRI's potential financial burden on participating countries (World Bank 2019). In addition, by asserting that *debt sustainability is of major importance to China*, the media underscores its priority in their discourse, thereby producing the elevated position of economic sustainability in Period 2.

4.2.2 Analysis of *environment*

This study of the topic word *environment* focuses on collocates within a span of five words to the left (L5) and right (R5). Given space limitations, Table 3 only presents the top 15 collocates by statistical significance.

Period 1 2013–2018		Period 2 2019–2024	
Collocates	Log Dice ≥ 7	Collocates	Log Dice ≥ 7
protect	10.68	business	10.67
protecting	9.77	protect	10.41
create	9.68	ecological	10.16
natural	9.55	protecting	9.87
resources	9.46	protection	9.67
society	9.33	healthy	9.60
business	9.26	create	9.60
healthy	9.24	improving	9.60
protection	9.24	improve	9.57
institute	9.23	conducive	9.51
social	9.05	institute	9.37
development	8.97	stable	9.33
sustainable	8.91	marine	9.23
living	8.89	society	9.22
favorable	8.79	favorable	8.95

Tab. 3: Top 15 collocates of *environment*

As shown in Table 3, the media discourse in Period 1 constructs a narrative in which environmental protection serves as the foundation for sustainable development. It is represented by high-ranking keywords such as *protect*, *protecting*, *natural*, and *resource*, which frame the environment as a vulnerable object in need of preservation (see example 3). Meanwhile, the purpose of environmental protection is fully aligned with ‘people-centred’ needs, as evidenced by collocates such as *society*, *social*, and *living*. This suggests that in Period 1 that environmental quality is constructed as a prerequisite for long-term development and for the satisfaction of citizens.

- (3) China has reiterated its policy of protecting resources and the **environment for sustainable development**. (01/11/2013)

Example (3) uses a direct quotation from an official of the Ministry of Commerce to reveal China’s responsible environmental governance policy. Here, the verb *reiterate* discursively

conveys continuity and resolution, thereby enhancing the credibility and authority of the statement and reflecting China's long-term determination to protect natural resources and the environment.

The discourse of period 2 indicates a strategic integration of economic and environmental narratives. In terms of economic growth, the metaphorical extension of *environment* becomes a dominant feature. It is interesting that the word *business* has risen from rank 7 to rank 1. Such a shift suggests CD's extension of the environment from a primarily physical one in Period 1 to an economic one in Period 2. Additionally, the collocational profile reveals a semantic preference for positive evaluative terms such as *conducive*, *stable*, and *favorable*, which form an enabling policy support for the business environment. Nonetheless, the close combination of the market economy with the environment implies a duality in the discourse which emphasises both the wellbeing of the market environment and the physical environment. The appearance of ecological conservation suggests China's view of integrating the environment into the layout of national sustainability, as in the following:

- (4) With 17 years of fishing experience, Xu attributes the good harvests to the improving ecological environment and strengthened conservation efforts. To ensure the **sustainable development** of Bosten Lake's fishery, local authorities have implemented a range of measures, such as managing and controlling pollution at its source, separating pollutants from the water, releasing fish into the lake and imposing seasonal fishing bans. (10/10/2023)

The quotation in example (4) comes from a fisherman. He expresses appreciation for the Chinese government's achievements in building toward an ecological civilisation. This reflects the implementation of the national vision of building an ecological civilization system and building towards modernisation featuring harmonious coexistence between humanity and nature proposed at the Fifth Plenary Session of the 19th Central Committee. The shift from *protecting* to *improving* in the discourse frames environmental action not merely as safeguarding against resource loss but as an active action that yields dual dividends: tangible economic benefits (*good harvests*) and natural capital, thereby constructing sustainability as a synergistic achievement.

4.2.3 Analysis of economy

Similar to Table 2, Table 4 shows the top 15 (L5 to R5) collocates of the word *economy* over the two periods.

Period 1 2013–2018		Period 2 2019–2024	
Collocates	Log Dice ≥ 7	Collocates	Log Dice ≥ 7
world	11.08	Digital	11.05
Chinese	11.06	China's	10.64
global	10.79	circular	10.49
China's	10.75	Chinese	10.28
growth	10.49	global	10.27
sustainable	10.24	blue	10.26
world's	10.01	growth	10.23
will	9.89	world	10.16
development	9.76	healthy	9.86
balanced	9.66	sustained	9.85
second-largest	9.65	recovery	9.84
green	9.53	platform	9.83
open	9.46	green	9.68
new	9.36	development	9.67
inclusive	9.36	sustainable	9.59

Tab. 4: Top 15 collocates of *economy*

In Period 1, the media coverage centres on China's commitment to economic restructuring aligned with sustainability, particularly within a global framework. This is evidenced by adjectives such as *sustainable*, *balanced*, *open*, *new*, and *inclusive*. Meanwhile, this adjustment is usually posed in a global context. As *economy* was mostly associated with nouns and adjectives illustrating the geographic scope and belongings, such as *world*, *Chinese*, *global*, *China's*, and *world's*. Take *world* as an example:

- (5) Despite being **the second-largest economy in the world**, China is still trapped in a low-skill equilibrium, in which most enterprises employ semiskilled workers who produce low-end goods or provide comparatively low-quality services. Since this economic model cannot ensure sustainable growth, the government has been taking measures to expedite high value-added production. (11/07/2014)

Example (5) demonstrates the necessity of China's economic reform by highlighting the gap between its economic quantity and quality. It adopts a juxtaposition strategy, where the concessive marker *despite* contrasts China's *second-largest* economic status globally with its *low-skill*, and *low-end* reality. The metaphorical use of the verb "trapped" also implies a state of stagnation. By depicting the economy as "stuck," CD argues that the previous growth model is

“unsustainable.” This discourse serves to validate the Chinese government’s restructuring policy that aims to promote economic development while ensuring sustainable growth.

Period 2 witnesses a discursive shift towards a developing sustainable economy, where sustainability is embedded in economic forms. Specific modifiers such as *digital*, *circular*, *blue*, *platform*, and *green* represent high-quality economic forms driven by technological innovation. The development of these sectors suggests a discourse which asserts sustainability is no longer just a slogan to adopt but a practice to pursue. Such a shift is crucial for the post-pandemic context in which *growth* and *recovery* have become central concerns. Developing such sustainable economies can not only contribute to economic recovery but also achieve the targets of the 17 SDGs. Take the circular economy as an example:

- (6) The **circular economy** is our only hope of achieving the 17 UN Sustainable Development Goals and ensuring humanity’s long-term survival. If great powers must compete, it is here that they should be doing it. (04/08/2021)

Example (6) demonstrates a strong appeal for developing a circular economy in the practice of sustainability. Here, the exclusive adverb “only” creates a sense of urgency, framing the circular economy as the sole path to achieving the SDGs and human survival. Moreover, the emphatic pattern “it is [...] that [...],” along with the obligational modal verb “should,” creates a sense of responsibility, which reframes the narrative of “great power competition.” It is the moral race for sustainability that major countries ought to seek, thereby legitimizing the development of the circular economy and elevating it to an imperative for global leadership. Thus, the CD discourse frames economic reform and action as central to sustainability efforts.

4.3 The national image of China

National image is the abstract cognition of a nation’s actions, characteristics, spirit and the public’s overall evaluation and interpretation (Xue, et al. 2015, 1258). It contributes to national development while fostering cooperation within international systems (Zhu, et al. 2022). The topic analysis in section 4.1 demonstrates a discourse that presents China as playing an indispensable role in promoting sustainability. Therefore, this section focuses upon China’s national image and its diachronic changes in official sustainability coverage from 2013 to 2024. To further explore China’s national image, this study integrates DNVA to identify news values in China’s sustainability discourse.

A list of the top 35 collocates of China was compiled within the span from L5 to R5, using Log Dice as the association metric. According to Table 5, and with DNVA as interpretive lens, the news value of Positivity, Consonance and Eliteness are all present across the two periods. In

terms of differences, Period 1 is dominated by Positivity, while Period 2 maintains Positivity as a baseline but strengthens Eliteness. This shift projects China's image as a cooperative reformer in sustainability during the first period, and as a global leader in the second.

Period 1 2013–2018		Period 2 2019–2024	
Collocates	Log Dice ≥ 7	Collocates	Log Dice ≥ 7
Is	11.20	Has	11.47
Has	11.14	Is	10.84
Said	10.94	Said	10.66
Will	10.85	Will	10.57
sustainable	10.70	Sustainable	10.45
growth	10.66	development	10.42
development	10.49	growth	10.10
economic	9.89	can	9.85
can	9.81	cooperation	9.70
sustain	9.67	economic	9.70
world	9.50	countries	9.64
sustainability	9.38	global	9.54
economy	9.29	are	9.50
have	9.29	been	9.49
cooperation	9.28	sustained	9.34
should	9.24	sustain	9.33
achieve	9.20	international	9.32
been	9.14	world	9.32
sustained	9.11	sustainability	9.32
continue	9.07	should	9.27
countries	9.07	achieve	9.23
needs	9.03	have	9.21
global	9.01	Africa	9.20
help	8.88	market	9.05
important	8.87	US	9.04
investment	8.86	continue	9.01
business	8.80	new	8.95
work	8.77	other	8.94
years	8.76	made	8.94
would	8.76	help	8.87
country	8.72	Goals	8.87
made	8.67	work	8.87
reforms	8.66	security	8.86
international	8.64	energy	8.85
US	8.62	Bank	8.84

Tab. 5: Top 35 collocates of *China*

In the first period, pointers to Positivity – such as *sustainable*, *growth*, *development*, *investment*, *will*, *should*, *would*, *work*, *reforms*, *help*, *international*, *cooperation* and *global*, – indicate

China's emphasis on enacting sustainability, thereby projecting itself as an active participant that advances sustainable development and integrating sustainability into its national agenda by means of domestic reforms and international cooperation. Meanwhile, pointers to Consonance, including *has*, *been*, *sustain* and *continue*, reflect China's efforts to pursue reforms that advance sustainable development. A pointer to Eliteness is realised through the collocate *US*, highlighting China's engagement with a major Western power and projecting its sense of responsibility in building a sustainable future through Sino-American collaboration.

- (7) History shows that opening-up is a viable way for **China** to promote further domestic **reforms** and sustainable economic development, and also an important means to achieve new progress in China's modernization drive. (14/11/2017)

Example (7) illuminates China's attempt to combine *domestic reforms and sustainable economic development* with the global sustainability objectives through the implementation of *opening-up*. The combination is supported through historical reference in the discourse (*history shows*) and through future-oriented phrasings (*an important means to achieve new progress in China's modernization drive*). Therefore, the example illustrates a discourse that attempts to align China's self-driven sustainability efforts with its goal of modernisation, thereby shaping its national image internationally as one that incorporates global norms into its long-term strategy.

In the second period, the persistence of sustainability in the coverage is evident in collocates such as *sustainable*, *growth*, *development*, *security*, *energy*, *cooperation*, *global*, *international*, *Goals (SDGs)*, which again point to Positivity, as well as collocates such as *has*, *been*, *sustain*, and *continue* point to Consonance. Eliteness is encapsulated in the key players in global sustainability governance, including countries or areas such as the *US* and *Africa*, as well as the organisation *Bank* (The People's Bank of China). The most important evolution is the presence of *Africa*. While the only explicitly named nation state that appears as a collocate of China is the *US*, the emergence of *Africa* as a new collocate signals China's strategic alignment with developing nations. This discursive change reflects China's commitment to both its relations with Western major powers and its engagement with additional countries (Zhang and Li 2026), thus framing its leadership within a broader context of South-South cooperation and global balance for a shared future. Notably, the words that have risen in rank – *cooperation* (from Rank 15 to Rank 9), *global* (from Rank 23 to Rank 12) and *international* (from Rank 34 to Rank 17) –, as well as the appearance of *Goals (SDGs)* indicate China's emphasis on achieving international sustainability, discursively framing China as a regional coordinator and a global leader in sustainable development in Period 2.

- (8) In addition, **China** is assisting **Africa** in developing sustainable agriculture, improving its food security risk management systems and establishing an emergency response mechanism. It is carrying out cooperation on agricultural scientific research and technological transfer to support African countries implementing the Comprehensive Africa Agriculture Development Programme, including African Union-led food security projects and activities. (10/11/2020)

Example (8) highlights China's growing leadership in promoting development across the Global South. Nowadays, countries in the Global South are important co-creators in international relations. By offering strategic assistance mainly through *Comprehensive Africa Agriculture Development Programme*, China has incorporated the Global South into a broader vision of global sustainable development. This practice of *developing sustainable agriculture* indicates the discursive framing of China's image has evolved from a "domestic sustainability cooperator" to a "global sustainability leader," representing China's global mission as a responsible major country (Ren 2025).

5. Discussion and conclusion

This study has combined quantitative and qualitative methods to investigate the narratives of sustainability by *China Daily* from 2013 to 2024. Underpinned by a corpus-based method, we used the corpus tool KH coder to generate 8 representative topics, which were categorised into four groups: "development orientation" (Topic 1 and Topic 2), "economic reform" (Topic 3 and Topic 4), "international solution" (Topic 5 and topic 6), and "China's contribution" (Topic 7 and Topic 8). Results indicate that CD's media reporting and discursive framing of sustainability is closely related to all-around transformation with domestic economic restructuring as its main engine.

Furthermore, we carried out collocation analysis of three selected words (*sustainability*, *environment*, and *economy*) across the two periods of 2013-2018 and 2019-2024. The analysis reveals CD's discourse has shifted from environmental sustainability to economic sustainability and from domestic sustainability to international sustainability. In the transformation, economic factors, including debt sustainability, business environment, and economic recovery, are emphasised within the discourse. This finding aligns with the previous investigations which similarly suggest that economic concepts are preferred in the newspaper *People's Daily* (Zhang, et al. 2022).

Finally, we explored China's national image in sustainability through the lens of news values. As demonstrated in Section 4, CD's representations of China's sustainability foreground the

news values of Positivity, Consonance and Eliteness across both periods. However, while Positivity is emphasised in the first period, Period 2 also strengthens the news value of Eliteness. Overall, this analysis reveals that China is discursively framed as a responsible major power in promoting sustainability. The discourse also reflects a shift of China's image from an active participant to a global leader in addressing sustainability issues.

Importantly, news discourse underpins the construction and reconstruction of social reality. As shown in the current study, China's self-image in its mainstream media is portrayed as a proactive agent spearheading sustainability through economic transformation. However, in Western media, China is frequently portrayed as a country pursuing economic growth at the expense of the environment (Yang and Wang 2023) – two discourses clearly in conflict. Such representations in the West potentially fail to capture the comprehensive nature of China's sustainability efforts or the philosophical underpinnings guiding its policies. In response to Western media's stance, CD, as the official English-language media, produces a discourse that highlights the country's achievements in multiple aspects of sustainability.

In conclusion, this study has presented a diachronic analysis of sustainability discourse in the Chinese official press spanning 2013 to 2024. Since our data processing is limited by the corpus tools in terms of capacity and variety, future studies are encouraged to utilise more advanced computational linguistics methods to identify more complex and robust linguistic patterns.

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Evaluating Climate Commitment and Environmental Sustainability in Corporate Environmental Discourse

An Appraisal Analysis of Affect

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Abstract

Climate commitment and environmental sustainability have emerged as critical issues for corporations, leading to increased corporate communication showcasing efforts and strategies to achieve environmental goals. In this context, emotions are vital for fostering pro-environmental behaviours (Brosch 2021).

Corporations have been described as *emotional arenas* in which emotions are “deeply woven into the way power is exercised, trust is held, commitment formed, and decisions made” (Fineman 2000, 2). However, the role of emotions is often underestimated in corporate discourse (Wright and Nyberg 2015).

The present article investigates the use of evaluative language in climate-related corporate discourse, with a particular focus on the role of emotions in evaluative climate commitment and environmental sustainability. To this end, the study analyses a small specialised corpus (85,475 words) of corporate texts, which was manually annotated using the UAM Corpus Tool. The study employs the appraisal framework to scrutinise the use of attitudinal resources in the CRCLim annotated corpus, by looking at the affect sub-system (Benítez-Castro and Hidalgo Tenorio 2019; Martin and White 2005).

Findings shed light on the evaluative patterns corporations employ to articulate their commitment to climate change and environmental sustainability in response to the phenomenon's impact on corporate productivity. Therefore, the exploration of the emotional dimension within corporate discourse seeks to shed new light on the persuasive mechanisms of corporate communication regarding climate commitment and environmental sustainability.

*Emotions have no place in business,
unless you do business with them*

(Friedrich Dürrenmatt)

1. Introduction

The impacts of climate change on humans and more-than-humans have been well documented, with irreversible effects on Earth that threaten the future of life on this planet. This existential

threat to the future evokes complex emotional responses. On this line, Pihkala (2022, 1) argues that “the various phenomena related to the [climate] crisis cause various emotions in people and many contextual factors have an effect on them.” Thus, the emotional dimension of climate change discourse has become increasingly prominent, with fear, hope, and optimism emerging as core elements influencing behavioural responses, psychological well-being and health, moral issues, and decision-making.

In recent decades, climate change and environmental sustainability have emerged as core issues for the industrial sector. In particular, corporations face social and political pressure to align their practices with climate-related and environmental sustainability goals (Breeze 2013; Weingart et al. 2000). Corporate communication regarding climate change and environmental sustainability has become a strategic instrument for preserving a favourable public image in an environmentally conscious society. In this context, discourse is crucial in influencing audience perceptions and shaping social understandings of corporate responsibility and environmental leadership. In doing so, companies largely employ emotional language in environmental discourse to convey deeper engagement and understanding, while producing more impactful narratives surrounding environmental issues (Lee 2021; Thill and Bovée 2017). Despite extensive investigation of emotions across diverse disciplines and perspectives, the role of emotions in discourse remains complex.

In light of the above, the present article investigates the role of emotions in corporate environmental discourse. Drawing on the appraisal framework (Martin and White 2005) as a theoretical and methodological approach, and specifically on the AFFECT taxonomy developed by Benítez-Castro and Hidalgo Tenorio (2019), the study examines how food and beverage corporations employ attitudinal language to evaluate climate change and environmental sustainability.

The food and beverage industry has been recognised as a major contributor to environmental degradation, including water depletion, deforestation, biodiversity loss, and greenhouse gas emissions (Poore and Nemecek 2018). The discrepancy between this reality and the use of attitudinal language in their environmental disclosures constitutes a critical gap that this study aims to foreground. Hence, the analysis of attitudinal language contributes to the understanding of how the logics of globalised capitalism are reproduced through the affective dimension of corporate environmental discourse. Adopting ecolinguistics as a critical lens, the study questions whether emotions function to perpetuate growth-oriented corporate ideology, reconcile ecological responsibility with profitability, and obscure corporate implications in environmental degradation. More specifically, the work addresses the following main research questions:

1. How are climate change and environmental sustainability evaluated in corporate environmental discourse?
2. What kind of inscribed and invoked AFFECT strategies are employed in the corpus?
3. How does the use of emotions contribute to the alignment with, or challenge, the principles of ecological responsibility?

This article conceptualises emotions as core elements of the evaluative and interpersonal meanings negotiated in texts. The adopted taxonomy divides emotions into *goal-seeking* emotions, *goal-achievement* emotions and *goal-relation* emotions and is particularly well suited to corporate discourse, where goals are always embedded in invoked and inscribed emotional language. Using this framework, the study presents and discusses the findings of manual annotation of a small corpus of corporate texts addressing commitments to climate change and environmental sustainability (hereafter, CRCLim annotated corpus). In particular, it explores how emotions such as INCLINATION, CONFIDENCE or HAPPINESS are distributed across the corpus and how they contribute to narratives of corporate commitment to environmental sustainability and climate change. This study, as part of a larger work on climate change evaluation in corporate discourse, extends the qualitative analysis of appraisal also from an ecolinguistics perspective on climate commitment and environmental sustainability.

The article is organised as follows: Section 2 describes the theoretical and methodological framework employed in this study. In particular, it focuses on the relationship between emotions and discourse in corporate communication, the appraisal framework and ecolinguistics. Section 3 provides a detailed description of the annotation protocol and the sample selected for the manual annotation of appraisal. Section 4 presents and discusses the findings regarding the linguistic realisation of affect in the CRCLim annotated corpus. Concluding remarks, limitations and avenues for future research are outlined in Section 5.

2. Theoretical and methodological framework

2.1 Emotions in corporate environmental discourse

Emotions are deeply embedded in human language practices. Any act of meaning-making is oriented towards particular goals and is therefore underpinned by affective motivations. Emotions are not only at the core of explicit emotional utterances but are also encoded with varying degrees of implicitness. As Alba-Juez and Haugh (2025) argue, language is one of the main semiotic resources through which emotions are conceptualised and expressed. Yet emotionality is closely interwoven with reasoning, often providing the basis for decisions that appear purely rational (Moisander, et al. 2016).

In corporate settings, the role of emotion has long been marginalised. Business organisations have typically been regarded as rational, objective and impartial. However, more recent work in organisational and business communication has challenged this assumption, showing that corporations are anything but emotion-free environments (Wright and Nyberg 2015). This led to a shift in the *emotional turn* in corporate discourse studies. Within this shift, scholars have begun examining how language and emotion interact to shape corporate practices and discourses, highlighting the centrality of emotion in the strategic, profit-oriented ways corporations operate and communicate (Orts Llopis 2022).

Despite the breadth of work on emotion in psychology, sociology and philosophy, emotions in discourse remain a complex object of study, partly because they can take multiple forms and functions (Thompson and Alba-Juez 2014). Emotions may be realised phonologically, morphologically, syntactically, lexically, semantically and pragmatically, and thus permeate the different strata of linguistic encoding (Alba-Juez and Mackenzie 2019).

Within the corporate sphere, emotions are as constitutive as in any other social domain (Wright and Nyberg 2015). From a systemic-functional perspective, emotional positioning is typically associated with the interpersonal metafunction of language (Halliday 1994), through which speakers negotiate relationships, express attitudes and align (or disalign) with others. Yet, emotional language is also closely linked to leadership communication, in which emotions are employed to convey enthusiasm, authenticity, loyalty, and engagement (Lee 2021). In this regard, emotions can be seen as central to how corporations formulate goals, make decisions and pursue achievements (Orts Llopis 2022). Corporate actors, therefore, mobilise emotions to advance strategic objectives, reinforcing organisational priorities (Lee 2021; Fineman 2000). As Moisander et al. (2016) note, emotions are intrinsic to cognitions, beliefs, and moral judgements, underscoring the importance of emotional resonance in the construction of corporate norms and in securing stakeholder compliance.

In the context of climate change and environmental sustainability, emotions are also leveraged to address public concerns and align environmental protection with profitability. However, this alignment is purely symbolic. The use of emotional language in corporate environmental commitment functions to reconcile corporate identity with public environmental expectations without necessarily implying transformative change. Wright and Nyberg (2015; 2012) draw on the notion of *emotionology* to capture the emotional standards that regulate how actors are expected to feel and to express emotion about issues such as climate change. Corporations mainly promote an emotionology of optimism in environmental discourse. This optimism, however, often aligns more closely with reputational and market interests. It enables a form of emotional management in which climate change and environmental sustainability are evaluated as opportunities for innovation and new markets, reinforcing the business-as-usual

approach. By emphasising hope and satisfaction rather than urgency, loss or complicity in environmental harm, companies build eco-brands around sustainability (Wright and Nyberg 2015). This emphasis on hope supports the belief that market-based solutions will be sufficient to address the climate crisis (Pihkala 2022), while more critical aspects – such as corporate contributions to environmental degradation – are backgrounded (Brosch 2021; Wright and Nyberg 2015; 2012; Fineman 2000; 1996). In this way, corporate discourse on environmental sustainability and climate change aligns perfectly with the broader functions of corporate discourse, understood as the means by which interpersonal and organisational goals are advanced and realised (Jaworska 2020; Breeze 2013). Hence, corporations often use performance disclosures to showcase their efforts to reduce environmental harm, blending factual reporting with promotional elements to inform the audience and manage their corporate image. Through the deliberate use of inscribed and invoked emotional language, corporations seek to engage stakeholders and enhance their reputational standing in the context of environmental accountability. In this sense, corporate environmental discourse has been described as linguistically performative and as playing a vital role in shaping ecological realities within business and in its relationships with the environment (Incelli 2025; Jaworska 2018; Alexander 2009).

The use of emotion in climate-related corporate discourse may be understood in relation to the relationship between language and the environment. In this regard, Stibbe (2021, 2) argues that “the link between ecology and language is that how humans treat each other and the natural world is influenced by our thoughts, concepts, ideas, ideologies and worldviews, and these in turn are shaped through language.” In the context of climate-related corporate discourse, the connection refers to how language is used to shape environmental understanding and influence action through emotions. Specifically, the relationship between language, emotions and the environment operates at the economic level, as language serves to legitimise existing systems of growth. Additionally, it plays a role in identity construction, as consumer identities are formed and lifestyles are directed towards accumulation through the use of emotions in language.

Importantly, the communication of climate and environmental sustainability commitment through emotional language often reflects “enlightened self-interest” (Fineman 1996, 485) rather than deep concern for the destructive effects of climate change. Emotions are used to reconcile environmental discourse with economic imperatives and to present climate commitment and environmental sustainability as both morally desirable and commercially sensible. This makes it essential to examine emotional language in climate-related corporate discourse in more detail. Such analysis can shed light on how emotions are used to engage audiences, reinforce claims of commitment to climate action, and construct collective eco-

identities for corporations and their stakeholders.

2.2 An ecolinguistic approach to the appraisal framework

The present work employs an ecolinguistic approach to investigate emotions in climate-related corporate discourse. Ecolinguistics explores

patterns of language that influence how people both think about, and treat, the world [...] There are certain key stories about economic growth, about technological progress, about nature as an object to be used or conquered, about profit and success, that have profound implications for how we treat the systems that life depends on. (Stibbe 2021, 1)

From an ecolinguistic perspective, corporations employ evaluative language to construct stories that shape the relationship between human activity and the natural world. Specifically, emotions are commonly used in corporate environmental discourse to construct stories in which corporations are benevolent environmental actors pursuing growth in harmony with nature, erasing the material conditions of ecological destruction. From this perspective, this study therefore employs ecolinguistics to unravel how the use of emotional language contributes to ecological destruction. It primarily adheres to the appraisal framework and the principles of Systemic Functional Linguistics (SFL) as articulated by Martin and White (2005). As already stated, the interpersonal metafunction concerns the way in which language constructs and negotiates social relationships within SFL (Halliday 1994). The appraisal framework operationalises the interpersonal metafunction at the level of discourse semantics by identifying the evaluative linguistic patterns through which speakers or writers position themselves in relation to events, entities, and interlocutors (Martin and White 2005).

The appraisal framework has become one of the most valuable models for the analysis of attitudinal language (Hidalgo Tenorio and Benítez-Castro 2020). It constitutes a system of interpersonal meanings within discourse semantics that examines the attitudinal dimension of discourse (Martin and White 2005). As Martin (2014, 9) notes, discourse semantics cannot be regarded as “a list of cohesive ties relating to one grammatical unit to another, but as a further level of structure in its own right.” Furthermore, discourse semantics enables researchers to “reinterpret from an interpersonal perspective resources that are experientially constituted in lexicogrammar (i.e., mental processes and states of affection)” (Martin 2014, 19). For this reason, the appraisal framework operates at a more abstract level, allowing meanings to spread across discourse semantics and a variety of lexicogrammatical systems. Appraisal offers a generalisation of lexicogrammatical systems that bring feelings into relation with one another, enabling the delineation of evaluative prosodies. Therefore, appraisal relies on evaluation with regard to “the kinds of attitudes that are negotiated in a text, the strength of the feelings

involved and the ways in which values are sourced and reader aligned” (Martin and White 2005, 22).

The appraisal framework comprises three interrelated systems: ATTITUDE, ENGAGEMENT and GRADUATION. ATTITUDE is the general system responsible for expressing emotions, social judgments and aesthetic evaluations. Accordingly, it is divided into three subsystems: AFFECT, JUDGEMENT, and APPRECIATION. AFFECT is concerned with the feelings or the emotional reactions of the appraiser, whereas JUDGEMENT and APPRECIATION are regarded as the institutionalisation of AFFECT. In this context, JUDGEMENT focuses on the evaluation of people’s behaviours, and APPRECIATION is concerned with the evaluation of things in the environment with which the appraiser interacts (Hart 2014; Martin and White 2005).

Broadly speaking, AFFECT, as part of the ATTITUDE system, has been the subject of considerable scholarly attention. Martin and White (2005) concluded that AFFECT is crucial in understanding how evaluations are driven by feelings generated in discursive practices. As for AFFECT, this article draws on the refined taxonomy taken from Benítez-Castro and Hidalgo Tenorio (2019). This taxonomy is the result of a psychologically inspired approach to the linguistic expression of emotion. The revised framework emphasises the adaptive function of emotions and places the notion of *goal* at its core, which is considered the foundation of all types of emotions. In this regard, emotions arise from the perception of events as either beneficial or harmful to one’s goals. Consequently, the authors argue that emotion classification should be goal-oriented and divide emotions into three emotion types. The category of *goal-seeking* EMOTION encompasses emotional states that motivate an individual to pursue or avoid a particular goal. This category includes emotional states regarding INTEREST, INCLINATION, and SURPRISE. The second group, *goal-achievement* EMOTION, comprises emotions associated with the attainment or failure to attain goals, needs, and values. This category includes DIS/SATISFACTION, IN/SECURITY and UN/HAPPINESS. In *goal-achievement* EMOTION, HAPPINESS and SATISFACTION are treated as more inclusive categories. Moreover, they distinguish between hedonic HAPPINESS (related to sensory pleasures) and eudaimonic HAPPINESS (related to the fulfilment of social needs). Finally, the category of *goal-relation* EMOTION pertains to instinctive attitudes, “permeating our interaction with certain entities, often going beyond specific events and situations where those entities were involved” (Benítez-Castro and Hidalgo Tenorio 2019, 329).

Given the salient importance of the notion of *goal* in understanding the nature of emotions and in corporate discourse, this taxonomy is deemed applicable to analysing affect in corporate discourse on environmental sustainability and commitment to climate change. Finally, while the appraisal framework primarily provides analytical categories, this study also adopts a critical discourse perspective in interpreting the findings. In this sense, the use of emotions and

attitudinal language is examined not only as interpersonal resources but also as linguistic patterns that perpetuate consumerist corporate ideologies. The study concentrates on how inscribed and invoked emotions contribute to the legitimisation of corporate environmental identities, the naturalisation of growth-oriented sustainability narratives, and the backgrounding of corporate responsibility for ecological harm.

3. Data and methods

The year 2022 has been defined by *Copernicus* (the Earth Observation Component of the European Union's Space programme) as *the year of extremes*, which saw record droughts, temperatures, wildfires, and floods worldwide. Such contextual relevance had implications for corporate communication on climate commitment and environmental sustainability, providing fertile ground for applying the appraisal framework to examine how food and beverage corporations evaluate their commitment to climate change and environmental sustainability through affect analysis. This resulted in the compilation of the CRCLim annotated corpus, comprising 21 corporate texts, totalling 85,475 words (see Table 1). The CRCLim annotated corpus is compiled from randomly selected texts drawn from a larger corpus (CRCLim corpus, 7,272,328 words) comprising CSR reports, CEO letters, and web pages on environmental sustainability published by food and beverage corporations operating in the Global North and the Global South between 2015 and 2022. Given the considerable size of the corpus, it was not feasible to manually annotate the entire dataset for appraisal analysis. The CRCLim annotated corpus was therefore selected for manual annotation to enable in-depth analysis while preserving the representativeness of the CRCLim corpus.

Place	CEO letters	CSR reports	Web pages
USA	984	13,088	401
UK	359	7636	326
Canada	770	4102	539
Italy	1102	6690	466
Australia	932	21,466	1921
South Africa	2029	13,749	678
India	914	5882	1441
Total	7090	72,613	5772

Tab. 1: An overview of the CRCLim annotated corpus

The identification of evaluative expressions across texts is often considered subjective. The genre and the communicative contexts in which texts are produced significantly impact the interpretation of the meanings expressed and, consequently, the annotation process. In this context, manual annotation of corpora for analysing appraisal is considered a valid method for reducing accuracy bias associated with the automatic identification of predefined lists of

evaluative expressions. This approach enables a comprehensive, detailed analysis of evaluative language that would not be feasible with purely automatic methods (Fuoli 2018a).

The manual annotation of the corpus was carried out through the software UAM Corpus Tool (O'Donnell 2008). The annotation process relied on the annotation protocol developed by Fuoli (2018a) in order to preserve the principles of reliability, replicability and transparency of findings. The reliability of the annotation protocol and the findings was assessed through an intra-coder agreement. Following Fuoli and Hommerberg (2015) and Spooren and Degand (2010), in the one-coder manual annotation of corpora, the entire corpus is annotated by a single annotator. Although the annotator may employ subjective annotation strategies, it is reasonable to assume these strategies are systematic. Therefore, this does not hinder the ability to address research questions.

In particular, the annotation process involved several steps, including the sample selection and preparation of the corpus in UAM Corpus Tool, the development of the annotation manual and the assessment of the scheme and the annotation protocol, the revision of the annotation manual, the annotation of the corpus and the intra-coder reliability test and the analysis of the results (Fuoli 2018a).

Given the context-dependent nature of evaluative discursive patterns in the expression of emotions, particular attention was paid to internal consistency to ensure the replicability and reliability of the findings. In doing so, the coding scheme was systematically applied to the annotated corpus, and annotations were compared within and across texts to ensure coherence over two time intervals.

4. Findings and discussion

This section discusses the findings from manual annotation of the CRCLim annotated corpus. This article is part of a broader study which investigates the evaluation of climate change in corporate discourse. For this reason, the quantitative results presented here are sourced from the doctoral dissertation that serves as the foundation for this work.

Quantitative analysis of the CRCLim annotated corpus indicates a bias towards positive emotional language, accounting for over 80% of annotated instances, as may be seen in Figure 1. In line with previous studies, this suggests a strong tendency among corporations to cultivate environmental optimism and trust.

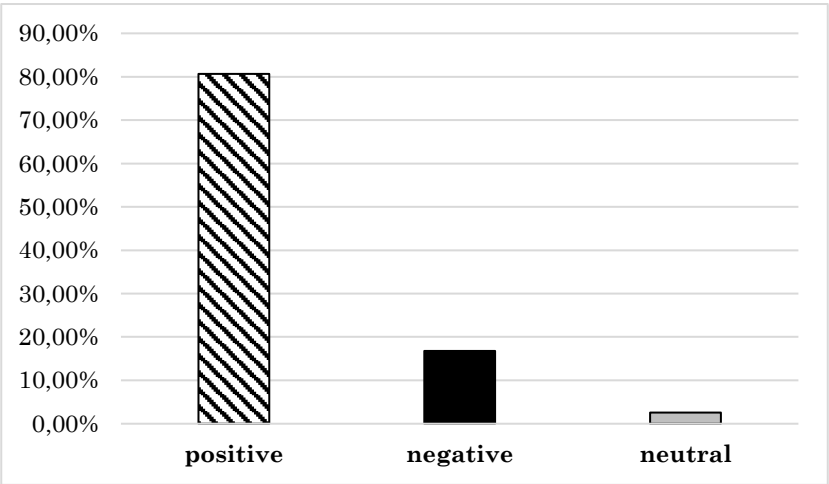


Fig. 1: Positivity in the CRClm annotated corpus

The examination of the annotated data indicates that corporate discourse concerning environmental issues predominantly embodies *goal-achievement* and *goal-seeking* emotional dimensions, particularly those associated with SATISFACTION (SECURITY and HAPPINESS) and INCLINATION. Such categories reflect “instances of volition to engage with a stimulus” as well as “affective states pertaining to our ecosocial wellbeing” (Benítez-Castro and Hidalgo Tenorio 2019, 312):

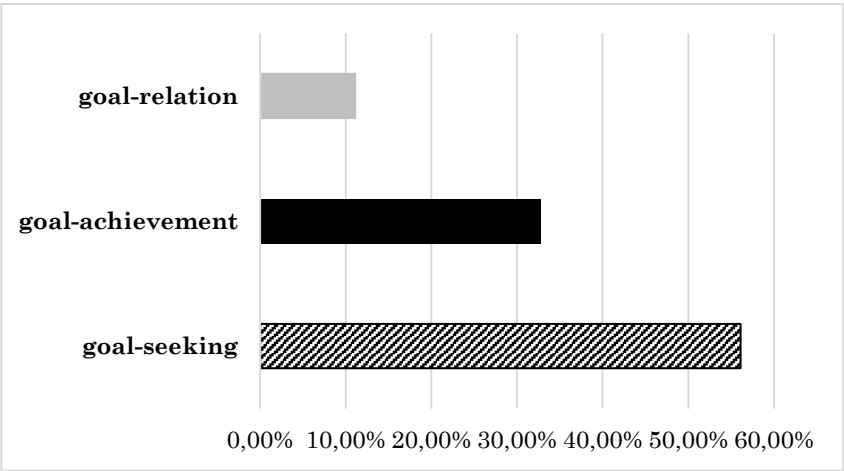


Fig. 2: EMOTION-type in the CRClm annotated corpus

As the graph shows, the use of *goal-seeking* emotions is salient in the CRClm annotated corpus, accounting for 56.1%. Goal-seeking emotional realisations are encoded in the category of INCLINATION, thereby signalling intentionality in corporate discourse on climate action and environmental sustainability. This dynamic effectively cultivates a goal-oriented narrative that is characterised by aspirational language. The strategic use of evaluative patterns under INCLINATION not only aligns corporate communication with overarching strategic environmental objectives but also reinforces the commitment to climate action and fosters a

sense of corporate responsibility. On the other side, *goal-achievement* emotions are commonly employed to convey success, stability and reassurance.

Interestingly, the CRCLim annotated corpus highlights a noteworthy alternation between inscribed and invoked emotions. In particular, inscribed emotions are explicitly encoded through evaluative patterns that unambiguously express emotional states (e.g., *proud*, *happy*, *concerned*). Invoked emotions, by contrast, are triggered implicitly through lexico-grammatical patterns and contextual evaluation, inviting the audience to infer determination, reassurance, or urgency without overtly naming an emotion. This distinction is crucial to the analysis, as it highlights where corporations explicitly present themselves as emotionally invested in environmental sustainability, but also how seemingly neutral formulations can carry evaluative force and contribute to the legitimisation of corporate environmental identities.

The salient presence of *goal-seeking* INCLINATION indicates corporate motivation to obtain a positive goal:

- (1) **Protecting** the environment: As the effects of climate change become more frequent, more severe and more challenging for communities and businesses, CORP is **committed** to helping the world mitigate the most severe effects by managing our greenhouse gas emissions (CN_rp)
- (2) To foster a Healthy Environment, we are **committed** to doing our part to meet the challenge of climate change. New to our strategy is a science-based target to reduce greenhouse gas emissions [...]. Meeting this target will require changes in our operations and throughout our value chain (US_ceo)
- (3) CORP recognises climate change as the single most significant sustainability challenge facing our world and impacting business and society. To support the shift to a low carbon economy we have **committed** to reaching Net Zero carbon emissions by 2040. In this way we support the outcomes of the Paris Agreement and the objective to limit global warming to well below 2°C, aiming for 1.5°C (UK_rp)
- (4) We are **focused on growth**: our **goal** is to become the leader in branded and value-added seafood in North America and to **help feed the world** through sustainable and responsible sourcing. Our value chain spans the globe, impacting communities, partners and environments worldwide. Our longstanding **commitments** to sourcing seafood responsibly and upholding high environmental and ethical standards were strengthened in 2022 through new initiatives and goals (CN_rp)

- (5) At CORP it's our aim to procure the raw materials we use in a way that is as environmentally sound as possible, considering for impacts on land, water and biodiversity. Environmental sustainability in food production is critical not just for the planet, but also for improving the resilience of our supply chain. **Combatting** deforestation [...] is a key issue for the whole food industry. We **commit** to working towards zero net deforestation and conversion-free sourcing by 2025 for the high-risk raw materials that we use (UK_rp)

- (6) Mitigating climate change associated risk and implementing an energy resilience plan is core to CORP's sustainability strategy. In **committing** to reduce our environmental footprint, we **strive** to reach our target of achieving carbon neutrality by 2050. We **continue to focus** on improving our energy efficiency and seek to reduce our consumption of non-renewable energy (SAF_wp)

As examples 1-6 show, INCLINATION primarily concerns corporate commitment to climate action to achieve environmental sustainability. Hence, references to pursuing quantified goals (e.g., zero net deforestation, shift to a low-carbon economy, management of GHG emissions, and carbon neutrality) are often implicitly emotionally charged through the use of verbs such as *commit*, *protect*, *strive* and *combat*. In doing so, corporations position themselves as proactive participants in mitigating climate change. In particular, the prominent use of *commit* signals a strong willingness to achieve environmental sustainability through collective, temporally displaced goals. The verb *strive* (example 6) suggests corporate dedication and effort. However, by using *strive* corporations foreground the importance of efforts over the accomplishment of goals, as these statements may be regarded as not “sufficient to reassure shareholders and investors that the company will live up to their expectations and turn their investments into profit” (Fuoli 2018b, 18). Interestingly, through the use of *protect* in a nominalised form (example 1), corporations in the CRClim annotated corpus attempt to appraise environmental protection as a genuine goal, rather than a response to the company’s contribution to environmental harm. Similarly, *help* (example 4) is used as a strategic pattern to convey INCLINATION, while downgrading corporate responsibility in environmental degradation. In this way, corporations position themselves as good global citizens. However, this may suggest that while appearing committed to climate action and environmental sustainability for benevolence towards the environment and societies, these statements reveal the selfish nature of corporations, where commitment is not genuine but profit-oriented. This perfectly aligns with the notion of greenwashing, which aims to construct a favourable corporate image (Vollero 2022). The use of emotional language thus functions as a reputational instrument that positions

corporations as responsible ecological actors while leaving the underlying business-as-usual approach intact. Moreover, the employment of *combat* (see example 5) engenders an aggressive mode of conveying INCLINATION, whereby climate-related issues are externalised and evaluated as matters to be combated in order to secure corporate profits (Del Gaudio 2024). Thus, securitisation of profits in climate-related corporate discourse indicates the alignment with a business-as-usual approach to environmental sustainability.

INCLINATION is often linked to negative evaluations of climate change or environmental harm. Corporations increasingly conceptualise climate change as a multifaceted issue, emphasising the urgency of climate action to mitigate its detrimental impacts. By invoking feelings of insecurity, companies seek to portray their commitment to climate action as firmly rooted in the prevailing crisis context, often by conveying destructive scenarios that underscore the severity of the challenge. The use of such negative evaluations of climate change functions as a background for showcasing corporate motivation and inclination towards business growth.

Similarly, the use of *pursue* and *objective* conveys *goal-seeking* INCLINATION as they overtly signal the corporate aspirational intent and forward-looking goals:

- (7) In line with the UNFCCC Paris Agreement's commitments and our sustainability strategy, we are **pursuing** targets of 50% absolute reduction in GHG emissions by 2030 (on a 2019 baseline), independence from third-party non-renewable electricity supply by 2040, and carbon neutrality (Net Zero) across our operations by 2050 (AF_rp)
- (8) At CORP, sustainability is integral to our core business. As we **pursue** increasingly **ambitious objectives** such as adopting a GHG management program and forming a growing number of sustainability-oriented partnerships and collaborations, our purpose of Reimagining Seafood to Nourish Life continues to sharpen our vision and fuel our progress (CN_rp)
- (9) The priorities within these pillars align with many of the United Nations 17 Sustainable Development Goals (UN SDGs), which are designed to serve as a blueprint to achieve a better and more sustainable future for all by 2030. This holistic approach was co-created with colleagues across the company which will enable us to better integrate sustainability throughout our business so that longer term **ambitions** can be achieved with measurable and targeted goals (US_rp)

- (10) We set **aspirations**, **objectives** and targets that drive environmental performance and continue to work towards these (AUNZ_rp2022)

In *goal-seeking* EMOTION, patterns annotated under the category of INCLINATION are accompanied by *ambitious*, *ambition* and *aspirations*, which are characteristic elements of corporate aspirational discourse. In particular, ambition is typically described as the hopeful desire to achieve something, usually accompanied by determination and hard work. It involves setting goals, pursuing them, and deriving satisfaction from their accomplishment. Hence, these patterns serve to establish competitive positioning and desire for expansion. In examples 8-10, then, *ambitious*, *ambitions* and *aspirations* are employed to not leave space for uncertainty, conflict or failure. The language of ambition thus becomes a key resource for legitimization, allowing corporations to position themselves as forward-looking and ethical, while overlooking the contradiction between ecological repair and continued growth. Although ambition does not explicitly evoke an emotional reaction to specific events, achieving ambitious goals is associated with feelings of excitement, joy, and SATISFACTION.

As can be seen from Figure 2, *goal-achievement* emotions in the CRCLim annotated corpus primarily find realisation in the category of SATISFACTION. *Goal-achievement* emotions are often realised through inscribed attitude markers. Inscribed SECURITY realisations are specifically employed to articulate perceptions of protection, certainty, and safety concerning the leadership environmental roles of corporations. This approach emphasises the significance of corporate responsibility in fostering a secure and sustainable environment:

- (11) Healthy freshwater, soil and ecosystems are essential to the long-term success of our business, farmers' businesses, and to communities. We **believe** protecting and restoring the environment is critical to safeguard opportunities for future generations. To achieve this, we're working to develop the skills, knowledge and systems to regenerate the environment throughout our global supply chain (AUNZ_wp)
- (12) Throughout our long existence, we, at CORP, **have believed** that sustainability across our business ecosystem is the key to ensuring a safe environment while giving the highest regard to human rights. Our sustainability strategy which embodies the vision of being a Responsible Global Total Foods Company is in the hearts of all our stakeholders and we pursue this by setting benchmarks in all areas of our operations (INSL_ceo)

The verb *believe* conveys a sense of corporate integrity and highlights the organisation's commitment to environmental issues (Fuoli 2018b). Within the CRCLim annotated corpus, it is employed to strengthen the company's image and demonstrate confidence in its capacity to restore the environment by enhancing skills and knowledge. This application underscores a self-promotional trust in the corporation's competence and its capability to tackle environmental challenges. In the examples above, *believe* encodes a sense of assurance, quiet confidence that the corporate view of sustainability and the environment is correct and stable. The frequent use of *we believe* suggests that corporations in the CRCLim annotated corpus are emotionally at ease with their role in proposing environmental sustainability solutions. Yet, the use of the present perfect in example 12 (*we, at CORP, have believed*) embeds this emotional stance in historical continuity in order to further enhance corporate confidence. The realisation of SECURITY emotions through the use of the verb *believe* suggests a corporate attitude towards erasing insecurity and conflict. Hence, the linguistic and emotional construction of corporate confidence in the communication of climate commitment and environmental sustainability lies in the systematic erasure of doubt and conflict, thereby constructing a protective and responsible corporate self that is difficult to challenge.

SECURITY is also realised explicitly through the use of the adjective *confident* in the corpus:

- (13) While we are **confident** in our capabilities and our position for growth, we know that the quality of our partnerships and the work we do together is the best way to ensure a sustainable future for all (CN_rp)
- (14) Looking ahead, it looks like it's going to be another challenging year. However, I remain **confident** that our ESG agenda strengthens and complements CORP's business strategy and helps the company to fulfil its purpose and grow in a positive and sustainable way (UK_ceo)
- (15) I'm proud to share our 14th Sustainability Report. I am **confident** it demonstrates the maturity of our sustainability journey and shows the sustainable and solid way we conduct our business, everywhere we operate (IT_ceo)

In examples 13-15, the communication of corporate SECURITY lies in the reassurance to stakeholders through the affective certainty in corporate competencies. In particular, in examples 14 and 15, the use of CEOs personal voice intensifies the rhetorical load of corporate confidence. In example 14, the use of the verb *remain* before *confident* and the acknowledgement of climate-related challenges for corporations further enhances confidence as enduring and

resilient in the face of difficulty. Accordingly, corporate confidence is grouped with *maturity* and *solid* in example 15, which retrospectively validates the company's own emotional construction of strength and security.

The adjective *confident* reflects a sense of emotional strength, assurance, and lack of anxiety and doubts. It is often used to describe corporate feelings related to the corporate ability to perform or succeed. Therefore, it signals a strong sense of certainty and SATISFACTION in the corporate ability to achieve climate-related goals, reflecting the invoked affective dimension of corporate discourse. In these examples, SECURITY encompasses not only confidence in achieving goals but also the corporate belief in the robustness and reliability of the approach to climate change. Hence, SECURITY indicates that food and beverage corporations usually have confidence in their methods and outcomes, leading to a positive self-evaluation of sustainability efforts. In example 15, SECURITY is also coupled with the category of HAPPINESS, as the use of the adjective *proud* suggests.

Proud signals positive SATISFACTION, typically associated with achievement, success, or a sense of value:

- (16) Despite significant challenges in the global supply chain, we **were able to secure** a steady seafood supply through the strength of our diversified global supply chain and our strong supplier relationships. 98% of the seafood we sourced was from audited suppliers, demonstrating our commitment to responsible sourcing practices that ensure we can feed a growing world population with healthy protein, now and into the future. Managing our emissions. We are **proud** of our long legacy of sustainable business practices but understand the urgency with which the world needs to address climate change (CN_ceo)
- (17) CORP has been committed to making food that people love while having a positive impact on the communities we call home and the planet we share. It's in our DNA and has always been fundamental to who we are as a company. We are **proud** of the impact we have made throughout our history. Today, as the world demands more—and as macro-economic, social and environmental changes accelerate—we will demand more of ourselves (US_ceo)

The use of *proud* not only expresses happiness but legitimises a corporation's environmental records. Through the use of *pride* as a realisation of HAPPINESS, corporations turn environmental sustainability into an object of deserved satisfaction. Yet, *pride* is embedded in corporate identity and history. Hence, the use of the evaluative adjective *proud* next to *our long*

legacy of sustainable business practices (example 15), *our DNA* and *the impact we have made throughout our history* (example 17) serves to influence public perception of corporations as always-responsible and always-ethical. In this context, the emotion of *pride* is not about a single achievement but about an entire historical trajectory. The historical perspective is strategically employed by corporations in order to be perceived as unassailable. Therefore, *pride* is regarded as a self-praising and motivating emotion through which food and beverage corporations transform environmental sustainability into an object of satisfaction. For this reason, it plays a crucial role as it contributes to enhancing corporate stance and self-esteem. Through the emotion of *pride*, corporate actors position themselves as leaders in climate action and environmental sustainability, aiming to elicit a positive emotional response from the audience.

Corporations express SATISFACTION in relation to their involvement in climate-related initiatives:

- (18) For our farmers to meet expectations for methane reduction by 2030 and 2050, significant investment was made by both Government and industry in research and development to create practical steps that farmers can take. [...] we are **pleased** to be one of the partners in the new Centre for Climate Action on Agricultural Emissions (AUNZ_rp2022)

The use of *pleased* indicates the realisation of inscribed emotion to express gratitude. In example 18, SATISFACTION is tied to corporate involvement in proactive and impactful climate action. *Pleased* refers to a feeling of mild joy, often in response to something agreeable or satisfying. Therefore, it presents a more modest realisation of SATISFACTION, centred on enjoyment or comfort derived from a sense of collaboration, whereas *pride* centres on a stronger sense of fulfilment tied to happiness.

Lastly, SATISFACTION is also implicitly conveyed as embedded in corporate ability and the possibility to achieve goals:

- (19) Our efforts to create a sustainable working environment have allowed us to **achieve** many of our environmental targets while further promoting diversity and well-being within our organisation. Our sustainability strategy, which we unveiled last year, has 4 core pillars, supported by 8 levers and further split into 26 programs. These programs have been assigned annual targets and Key Performance Indicators (KPIs) to evaluate our progress as we put the strategy into action (INSL_ceo)

- (20) Despite a challenging economic and geopolitical environment for all businesses, the Group was **able to grow** and to **increase investments** in its brands, R&D and production capacity. These investments represent our continuous approach to improving the quality, freshness and safety of our products, while reducing our environmental impact (IT_ceo)

As these examples show, SATISFACTION: HAPPINESS is not only about the self-praise narrative regarding the achievement of goals, but it also indicates the way in which corporations appraise the financial results emerging from environmental sustainability and their position in relation to it. In examples 19-20, HAPPINESS is anchored to the notions of investments and growth. In this sense, business expansion is prioritised, with environmental benefits presented as a rhetorical surface. Therefore, SATISFACTION is strongly self-referential. Companies in the CRCLim annotated corpus evaluate their own performance and structures as successful and adequate. Instances annotated under the categories of INCLINATION, SECURITY and HAPPINESS, do more than simply register commitment, confidence and success. The use of inscribed and invoked emotional language is employed strategically to evaluate climate commitment and environmental sustainability positively and construct a narrative in which corporations are already on the right path, already achieving, already investing, such that deeper questions about ambition, sufficiency, and structural change risk being neutralised by the sheer density of self-congratulatory achievement language.

A further dimension that characterises all the analytical categories is temporality. *Goal-seeking* EMOTION is strongly future-oriented, whereas *goal-achievement* EMOTION is mainly retrospective and anchored in past achievements and long-term responsibility. Therefore, the temporal dimension is crucial as it allows corporations to combine future-oriented optimism and retrospective self-validation.

5. Concluding remarks

This article provided an examination of the emotional language in corporate environmental discourse with special attention to the evaluation of the commitment to climate change and environmental sustainability. By focusing on *goal-seeking* and *goal-achievement* emotions, the study appears to show that the use of inscribed and invoked emotions is central in corporate discourse, where evaluative discursive patterns are used strategically to evaluate commitment to environmental issues, position corporations as responsible actors, and manage relationships with stakeholders.

Results suggest a corporate bias towards the use of positive emotional language. Within this

context, goal-seeking emotions are especially salient and encoded under the category of INCLINATION. Through INCLINATION, corporations position themselves as proactive and forward-looking actors, showcasing strong motivation and foregrounding the importance of efforts over the importance of environmental sustainability. At the same time, *goal-achievement* emotions are strategically employed to signal success, reassurance and stability.

These findings have several implications for the study of climate-related corporate discourse. This study indicates that emotions in corporate texts are highly patterned and strongly aligned with organisational interests. Hence, AFFECT is used to stabilise a narrative of proactive, confident and self-regulating corporate actors, rather than to foreground vulnerability, conflict or responsibility for environmental harm. Yet, the bias towards the use of positive emotions suggests an anthropocentric, utilitarian and cynical evaluation of corporate commitment to climate change and environmental sustainability, which are considered resources for business growth and investment. Despite the use of emotions to produce proactive and protective narratives, corporate discourse on environmental sustainability and climate commitment is deeply rooted in consumerist ideologies, perpetuating business-as-usual approaches that fail to address the systemic changes needed to tackle environmental degradation (Burnett 2026).

This article contributes to the ongoing debate on environmental issues in ecolinguistics and critical discourse studies by demonstrating that corporate environmental discourse is structured by a distinctive emotional pattern that privileges optimism, ambition, satisfaction and security. By bringing emotional language to the centre of analysis, the study aimed to demonstrate how food and beverage corporations selected for this study use AFFECT to legitimise their environmental strategies, to reconcile climate action with business-as-usual growth-oriented ideologies, and to construct eco-identities that are difficult to challenge. From an ecolinguistic perspective, this results in the production of the stories *we die by* (Nerlich and Jaspal 2012; Goatly 2001). Corporate environmental optimism aligns with stakeholder expectations and enhances a broader societal understanding that associates progress with technological innovation and economic growth. Consequently, the evaluation of corporate commitments to climate change and environmental sustainability reveals the self-serving nature of corporate discourse, as authentic concern for the environment and the pursuit of sustainable living practices are frequently marginalised or overlooked.

The study also has limitations, which suggest directions for future research. It only took into account a single year (2022) and a single industrial sector (food and beverage). Future work could extend the analysis to other sectors and time periods. Yet, comparative studies of corporate genres could further elucidate how different genres employ emotional language to serve distinct communication purposes.

Bionote

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Disentangling the Polysemous Character of *Sustainability* in English Specialised Discourse

A CADS Approach

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Abstract

Sustainability is a pervasive yet conceptually unstable keyword in contemporary discourse. While often described as a ‘boundary term’ capable of aggregating heterogeneous epistemic communities around a shared commitment, it also functions as a floating signifier whose meaning shifts across domains and communicative contexts. Despite its widespread association with climate change discourse, since the late Twentieth century, *sustainability* has often been used without clarification, leading to ambiguity and facilitating semantic dilution and greenwashing.

Integrating the theoretical tenets of critical discourse analysis with the methodological techniques of corpus linguistics, this study presents a corpus-based investigation of the noun *sustainability* and the adjective *sustainable* in four specialised English corpora available on Sketch Engine, focusing on collocational and co-occurrence patterns. The four corpora represent environmental discourse (EcoLexicon English Corpus and Environment Corpus), scientific/social science communication (Elsevier Open Access CC-BY Corpus), and economic/institutional language (United Nations Parallel Corpus).

The results reveal both convergence and divergence in usage across domains. Economic and environmental sustainability show strong, recurrent semantic connections, whereas instances of general, domain-neutral sustainability remain vague and poorly specified. Notably, such uses do not clearly distinguish between weak and strong sustainability, nor do they consistently foreground a specific sustainability pillar. This indeterminacy highlights *sustainability* as a case of complex lexeme, whose meanings emerge dynamically through ‘figure and ground’ mechanisms within discourse.

The idea of infinite or unlimited growth, which proves so attractive to economists, financiers and experts in technology, is based on the lie that there is an infinite supply of the earth's goods, and this leads to the planet being squeezed dry at every limit.

(Pope Francis)

1. Introduction

Every historical period has its own *zeitgeist* words and concepts, that is, those terms reflecting the dominant beliefs, attitudes, and moods of an era, from technological shifts to social movements, essentially acting as cultural touchstones or trending concepts that epitomise a time. As a result of societal transformations spurred by knowledge, activism, global phenomena like climate change, and a rising collective awareness of environmental responsibility, social equity, and the need for systemic change, *sustainability* and *sustainable development* feature prominently in the *zeitgeist* of the early 21st century.

Today, we drive *sustainable* cars and choose food produced from *sustainable* agriculture at the grocery store, and when planning a week off, we may opt for a *sustainable* holiday to improve our *sustainable* lifestyle. Sustainability permeates every aspect of society. It is ubiquitous in the discourse of political leaders and economists, in advertising, and on the labels of everyday consumer products (Smith 2025; Bausch, Schröder and Tauber 2024; Machin and Liu 2024; Parguel, Bénéit-Moreau and Russell 2015). Borrowing from Gieryn's (1999; 1983)¹ concept of 'boundary work,' sustainability in its contemporary usage can be characterised as a boundary term² set to bridge gaps among heterogeneous epistemic communities around a shared commitment to environmental, social and political-economic concerns (Godemann and Michelsen 2011; Scoones 2007).

In its broadest sense, sustainability refers to the ability to maintain or sustain a process continuously over time. It is based on the key ideas of a) using resources at a rate at which they can be replenished, b) avoiding irreversible damage to natural, social, or economic systems, and c) focusing on the long-run perspective and not just on short-term goals or gains (Mollenkamp 2025).

Sustainability, which can guide decisions at the global, national, organisational and individual levels, is usually broken down into three pillars, namely economic, environmental and social, and is grounded on the belief that without drastic changes to the way the planet is run, irreversible consequences will follow for both the ecosystem and humanity (Mollenkamp 2025). A related concept is that of 'sustainable development,' and the terms are often used interchangeably. UNESCO, however, specifies that while sustainability is to be conceived as a long-term goal, sustainable development refers to the many processes and pathways to achieve

¹ Gieryn's original definition of 'boundary work' was that of "an ideological style found in scientists' attempts to create a public image for science by contrasting it favourably to non-scientific intellectual or technical activities" (Gieryn 1983, 781) and was designed to discriminate science from other kinds of intellectual activities. Later, the concept has been reframed in interdisciplinary terms as "the constructive effort to support communication and coordination across the fences that separate communities" (Keularz 2009, 266).

² Star and Griesemer (1989) and Star (2010) speak about boundary objects to refer to the same entities (see also Keularz 2009).

it, as exemplified by the Agenda 2030's 17 Sustainable Development Goals (United Nations 2025).

Although it is broadly associated with long-term ecological and social viability, in recent years the term has been widely discussed across a range of policy circles and has received a number of context- and culture-specific definitions (Redclift 2005). Specifically, in corporate discourse, *sustainability* is associated with efficiency, green growth, ESG,³ and long-term profitability. In contrast, in environmental movement discourse, it is related to ecological limits, degrowth, and biodiversity protection. In governmental or institutional discourse, the focus is primarily on the policy balance among the economy, society, and the environment. Finally, in development discourse, it refers to improving poverty reduction, growth and overall resilience. These are but a few possible definitions that testify to an unstable, continually negotiated meaning.

Kosatica and Smith (2025, 1) argue that the proliferation of “so many iterations and meanings of ‘sustainability’ underscores the urgency of developing healthy, environmental, social and economic systems – and just how important it is to investigate what is meant by this highly dynamic word critically.”

However, the flexibility of sustainability as a concept and lexeme, whose widely acknowledged meaning was popularised by the 1987 Brundtland Report (WCED 1987), and the subsequent proliferations of definitions, including the misappropriation of the term by some influential sectors of society, progressively led to a Babel of senses hinting at divergent and at times conflicting agendas.

A common understanding of key terms is paramount in any scientific discussion, especially when the debate is cross-cultural and interdisciplinary (Bausch, Schröder and Tauber 2024). On the one hand, the pervasive use of *sustainability* makes it difficult, let alone impossible, to pinpoint its exact meaning when applied to such wide-ranging areas, leading scholars to note its semantic dilution or even its meaninglessness (Owen 2011, 246). On the other hand, its polysemy enables widespread adoption, while obscuring analytical precision, as actors invoke the term to legitimise practices ranging from transformative systemic change to minimal compliance, or to rebrand unsustainable practices or products in a more environmentally friendly guise (Smith 2025; Parguel, Benoît-Moreau and Russell 2015).

Nowadays, *sustainability* can mean many different things to different constituencies, although it is purportedly supposed to unite them under a shared commitment (Palmer, Cooper and van der Vorst 1997). The emergence of such numerous, and at times conflicting, meanings

³ ESG is an acronym standing for Environmental (E), Social (S), and Governance (G) and defines corporate sustainability standards (United Nations Global Compact 2004).

(Salas-Zapata and Ortiz-Muñoz 2018; Johnston, et al. 2007) is undoubtedly connected to discourse hegemony, power authority and the intention of different actors to play a role in climate change and energy transition discourse. The modern discourse on sustainability does not problematise the usefulness of the concept, which is assumed to be generally accepted. By contrast, it is the subject's positionality that determines what is perceived as sustainable or unsustainable (Yamada, et al. 2022; Randle, et al. 2016). Such a situation and the great deal of greenwashing that often takes place under the sustainability banner (Machin and Liu 2024; Mapes and Ross 2022) limit the credibility of a fundamental concept, challenging its applicability and the significance of associated achievements, and hindering the progress in environmental and social development that it was supposed to underpin. While the meaning of *sustainable development* and *sustainability* are often left unspecified and taken for granted even in specialised discourse, clarifying the sense in which these terms are used and establishing for whom something is supposed to be sustainable is not of secondary importance, especially when faced with pressing global issues such as climate change and global warming, which require alignment with supranational policies.

Language is at once the core medium for the social construction of reality through the spread and reproduction of mental models, and a pivotal means in the art of persuasion and the legitimisation of specific viewpoints and agendas (Van Dijk 2006; 1997). Linguistic representation may have crucial repercussions on our moral worldview and what we consider morally right or wrong (Stibbe 2021; Lakoff 2014). In this respect, dominant cultural narratives, often promoted by influential stakeholders or societal structures, can define what sustainability means, what actions are considered valid, and even what problems are deemed most important. This can lead to situations where deeply ingrained cultural assumptions hinder genuine, transformative change.

This contribution integrates qualitative and quantitative research perspectives, combining the tenets of critical discourse analysis (CDA) with corpus linguistics to investigate the meanings of the noun *sustainability* and the adjective *sustainable* in domain-specific English. It argues that combining detailed text and corpus analysis (Baker, et al. 2008; Baker 2006) with a thorough examination of collocations and co-occurrence patterns may provide valid instruments for disentangling the complexities of lexemes. Specifically, starting from the isolation of their defining features, the behaviour of the two lexemes is analysed in a set of specialised corpora available on the corpus manager and text analysis software Sketch Engine (Kilgarriff, et al. 2004). The corpora cover the main areas of relevance of the two terms in current discourse, namely the environmental (EcoLexicon English Corpus and Environment Corpus), the scientific (Elsevier OA CC-BY Corpus), and the sociopolitical (United Nations Parallel Corpus).

The paper is organised as follows: Section 2 provides a brief historical overview of the evolution of the term *sustainability*, highlighting the most recent developments. Section 3 introduces the theoretical background of this research, while Section 4 describes the data and details the methodology adopted. Section 5 constitutes the core of the study and presents and discusses the quantitative and qualitative findings. Conclusions follow in Section 6.

2. *Sustainability*: A story of multiple definitions

Etymologically, *sustainability* derives from Latin *sustīnĕo, es, tīnŭi, tentum, ĕre*, which combines *sub* (up from below) with *tenĕre* (to hold) and means “to uphold, bear up, keep up, support, sustain” (Castiglioni and Mariotti 2007; Lewis and Short 1879).

In French, German, and Dutch, the corresponding lexemes had been stably in use for centuries, as reported by Du Pisani (2006). Conversely, according to the Oxford English Dictionary (OED), the first attestation of *sustainability* in English was in 1835 as “the capacity to be upheld, or defended as valid and true,” imported from French *soutenir*, in a sense referring to arguments (OED). Significantly, this normative aspect of validity and righteousness is a core feature that will persist across successive senses. Subsequently, in the 1950s, the time aspect also emerged as one that could be preserved to a certain extent in the sense “the quality of being sustainable at a certain rate or level,” while the environmental understanding of the term is reported from the 1980s (OED).

What is more, the overall estimated frequency of *sustainability* since its first attestation, as recorded in Google Books Ngrams, a dataset based on the Google Books corpus of several million books printed in English between 1500 and 2010, shows a steady increase, rising from 0.0001 in 1830 to 6.5 (per million words) in 2010, thus testifying to a growing salience.

The foundational ideas of sustainability, however, are very ancient and can be traced back at least to 450 BC, when anxieties about deforestation began to spread over the cutting of the cedars of Lebanon in Ancient Greece (Grove 1995, 6). Concerns about various forms of environmental degradation resulting from human activities can be found in the writings of Plato in the 5th century BC and of Pliny the Elder in the 1st century AD (Du Pisani 2006). Furthermore, in Medieval times, those ideas appear in the writings of Francis of Assisi, and later in the geometrically surveyed forests of the Enlightenment, in an epoch when people wanted to get ‘back to nature’ and when a connection between economy and ecology was rediscovered (Grober 2012).⁴

Hans Carl von Carlowitz’s forestry treatise *Sylvicultura Oeconomica* (Silviculture and

⁴ A comprehensive historical survey of the development of sustainability as a concept falls beyond the scope of this study. However, for more details, see Grove (1995), Grober (2012) and Caradonna (2014).

Economics), published in 1732, is argued to contain, *in nuce*, the modern concept of sustainability. In it, von Carlowitz, a forestry expert, coined the expression *nachhaltige Nutzung* (sustainable use) of forest resources (Kosatica and Smith 2025), maintaining that as much wood should be cut as could be regrown.

In the late 20th century, the term broadened to encompass the preservation of environmental resources, as noted in Ernst Basler's 1972 work. However, the turning point for the emergence of the different shades of the term that are crucial nowadays was the UN Commission on Environment and Development's landmark report *Our Common Future*, generally referred to as the Brundtland Report, which defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987, 43).

This definition is widely credited with popularising the view of sustainability as a holistic approach encompassing the environmental, economic and social dimensions, highlighting the interconnectedness of these aspects as crucial to achieving lasting prosperity, and spreading the concept of sustainable development into international policy discourse.

One conceptualisation was introduced in this respect, that of the three pillars, i.e. environmental, economic and social, which has gained widespread traction to the point of becoming commonplace (Purvis, Mao and Robinson 2019). This model, also known as the Triple Bottom Line (Elkington 1998), is typically depicted as three intersecting circles, with overall sustainability in the middle (Figure 1a). In it, sustainability is viewed as balancing trade-offs among seemingly equally desirable goals within these three categorisations. Environmental sustainability refers to preserving natural resources without foregoing economic and social progress, ensuring that human activity stays within ecological limits. Its key ideas are the conservation of biodiversity and ecosystems, responsible use of natural resources, waste management, pollution control, and climate change mitigation. Economic sustainability entails balancing economic growth and profit generation with the long-term impact on the environment and people. It involves supporting economic systems that promote prosperity without undermining social or environmental systems. Finally, social sustainability concerns human well-being, equity, and social justice and is conceived as improving the quality of life for all communities, ensuring that development (including healthcare, education, housing, and human rights) benefits everyone fairly.

This framework has been criticised for lacking theoretical grounding, oversimplifying a complex trade-off, and treating each aspect separately and as equally salient (Rupprecht, et al. 2020). A challenging aspect is understanding how the three dimensions interact with and depend on one another at local, regional, and global scales. Furthermore, a crucial question is whether economic development should be allowed to substitute for environmental integrity, and

if so, to what extent (Wu 2013). Two different approaches have been introduced to answer these questions: weak and strong sustainability. Weak sustainability considers the economic system as a closed, isolated system that can grow indefinitely, views natural resources as superabundant or substitutable with other forms of capital and supports maximising monetary compensation for environmental degradation. What is essential for future generations is that the sum of natural and human-made capital must not decline over time if we are to have sustainable development. Such a position leads to maximising monetary compensation for environmental degradation. In addition, from a weak sustainability perspective, technological progress is assumed to continually generate technical solutions to environmental problems (Pelenc, Ballet and Dedeurwaerdere 2015) (Figure 1b). By contrast, proponents of strong sustainability postulate that natural capital is not merely a stock of resources to be exploited, and is qualitatively very different from manufactured capital, since its consumption is usually irreversible. Natural capital is seen as vital for the welfare and well-being of future generations. Therefore, if we want to have sustainable development, neither natural nor human-made capital must decline over time. Moreover, a careful balance between economic growth and the preservation of natural resources is considered paramount (Figure 1c).⁵

Hence, there are some crucial differences between the two views. The first difference has to do with substitutability, i.e. “weak sustainability assumes that manmade and natural capital are basically substitutes,” while “strong sustainability assumes that manmade and natural capital are basically complementary” (Daly 1995, 49). Moreover, the second difference concerns environmental ethics. Specifically, in weak sustainability, nature has instrumental value and is valuable only insofar as it provides benefits to humans.

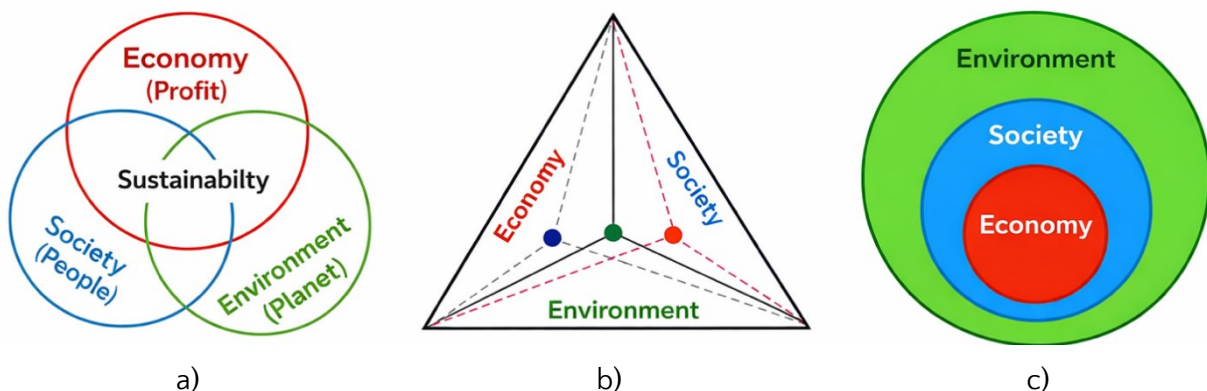


Fig.1: Different representations of sustainability: a. Triple Bottom Line, b. Weak Sustainability, and c. Strong Sustainability, adapted from Wu (2013)

⁵ Multiple intermediate positions exist between the ‘hardcore’ weak and strong sustainability views. For more details, see Pelenc, Ballet and Dedeurwaerdere (2015).

These different views of sustainability have fundamental repercussions, especially when we consider business stakeholders and the specific message they want to convey. It is these specific differences that will be investigated in our corpus-based study.

The polysemous character of *sustainability* emerged relatively recently (Gries 2019; Croft and Cruse 2004) as the term specialised across different fields. Thus, unlike proper polysemy, it rather revolves around mechanisms of figure and ground (Talmy 2000) or perspectivisation (Fillmore 1977), whereby one specific dimension or pillar is given greater prominence than the others, while all three remain presupposed as meaningful elements in the background. Moreover, the evolution of the recent meanings of *sustainability* is consistent with Croft's (2000) evolutionary theory of language change, which posits language change as a two-step process involving a) innovation, that is, the functional production of variation *via* altered replication and b) the propagation of a specific variant *via* selection. Propagation, in Croft's (2000) framework, is a social process related to the social structure of speech communities and to the speakers' desire to identify with a particular speech community. Propagation of a variant, in this respect, begins when new forms are re-analysed as having a social value. This is consistent with the development of specific views of sustainability across fields that, to some extent, are involved in tackling the climate crisis. What is peculiar, however, is that these new meanings did not develop from one that emerged from the *parole* (Saussure 1916) as autonomous grassroots innovations by speakers later accepted within the speech community. Conversely, they were introduced from 'above' in a report produced by a restricted group of individuals with a given scientific and power authority (Verschuere 1985).

Nowadays, *sustainability* is differently characterised across scholars and disciplines. Its features fit with Pollitt and Hupe's (2011) definition of "magic concept". Magic concepts are key terms pervasive among academics and practitioners, which "are very broad, normatively charged, lay claim to universal or near application, [...] and do not easily admit opposites" (Pollitt and Hupe 2011, 643). They are typically characterised by the following features:

- *Broadness*: they cover a huge domain, have multiple and often conflicting definitions, and a large scope;
- *Normative Attractiveness*: they have an overwhelmingly positive connotation;
- *Implication of Consensus*: they overcome earlier policy conflicts;
- *Global Marketability*: they are fashionable and feature prominently in official policy documents, reform project titles, and new units in both governmental and university departments.

Sustainability indeed displays these features: it has a core definition, but also many more specific ancillary senses, sometimes at odds with one another; it has a positive connotation; and it is not easy to oppose it without delegitimising a century of climate and weather science. Moreover, it carries an implication of consensus, as “by placing itself in opposition to environmental, societal and economic collapse, and by never fully defining itself, it does not leave room for opposition” (Tøllefsen 2021, 49) and is fashionable.

At the same time, while operating as a broadly shared normative ideal – such as in the notion of ‘sustainable development’ – that temporarily unifies heterogeneous and potentially conflicting demands without resolving their underlying tensions (Laclau 2005), *sustainability* has been viewed as a floating signifier, namely a signifier that “means different things to different people, fluctuating between different forms of articulation in different projects” (Laclau 2005, 133), where none of these meanings fully dominates. Its meaning is continuously contested and renegotiated across environmental, economic, and political discourses, and its effectiveness lies precisely in this dual character.

3. Theoretical background

This study synergically integrates theories from Critical Discourse Analysis (CDA), an interdisciplinary research framework to the study of language that examines how discourse both reflects and shapes power relations and ideological processes in society (Wodak and Meyer 2009; Wodak 2007; Van Dijk 2001; Fairclough 1995), with corpus linguistics techniques, defined very generally as the quantitative study of language based on the use of large language corpora and computational tools (McEnery and Hardie 2012).

CDA, which combines multiple heterogeneous approaches, is committed to analysing how language reflects, reinforces, and challenges hidden power structures, inequality, dominance, and ideology in society, revealing how social realities are built and maintained through discourse. It looks beyond literal meaning to uncover power embedded in vocabulary, grammar, text structure, and even non-verbal cues. It sees language as a social practice that can both legitimise and resist social hierarchies (Fairclough 1995) and focuses on “opaque as well as transparent structural relationships of dominance, discrimination, power and control, as they are manifested in language” (Wodak 2007, 209). Thus, CDA typically entails a qualitative study of discourse through a close, detailed examination of a small number of texts.

Discourse structures, in CDA and, in particular, in Van Dijk’s (2024; 2001) framework, are the organised linguistic and semantic patterns through which social knowledge, ideologies, and power relations are expressed, processed, and reproduced. These structures operate at multiple levels and interact with social cognition (shared mental models, attitudes, and ideologies).

Another crucial concept, in this respect, introduced within the cognitive linguistics paradigm, is that of frame. Frames are mental structures that provide a lens through which we interpret information, understand situations, and guide our actions, simplifying reality to make it manageable and actionable. They act as cognitive shortcuts through which we interpret reality and are activated by the recurrent use of specific words and expressions, defining what we see as a problem, what is at stake, and what solutions are possible, influencing our interpretation of reality (Stibbe 2021; Lakoff 2014).

Corpus Linguistics, as a long-established computer-assisted method for identifying linguistic patterns in large-scale corpora (Egbert, Biber and Gray 2022; McEnery and Hardie 2012), when linked to CDA, may facilitate and integrate the qualitative study of language and discourse. This combination is usually referred to as corpus-assisted discourse studies (henceforth CADS), and its aim is the uncovering, in the discourse type under investigation, of what we might call “non-obvious meaning, that is, meaning which might not be readily available to naked-eye perusal” (Partington 2008, 191). Research integrating the usage of corpus techniques with discourse analytical methodologies from different perspectives is now well established in the literature as an effective means of unravelling the complexities of discourse structures and power relations (Baker and McEnery 2015; Partington, Duguid and Taylor 2013; Baker, et al. 2008; Baker 2006; Partington 2004, among others).

This approach entails not only a cross-feeding of quantitative and qualitative analytical perspectives but also an interrelated set of analytical processes, procedures, and techniques. On the one hand, corpus analysis comes in to solve the problem of the limited number of texts analysed in CDA, and of the representativity of discourse patterns, since, as Stubbs argues, “repeated patterns show that evaluative meanings are not merely personal and idiosyncratic, but widely shared in a discourse community. A word, phrase or construction may trigger a cultural stereotype” (Stubbs 2001, 215).

On the other hand, qualitative CDA methods can provide a better understanding of how patterns identified through quantitative measures are used in context or reveal patterns that quantitative analysis did not identify. For example, in the analysis of collocations, namely the “frequent co-occurrence of two lexical items in the language” (Greenbaum 1974, 82), automatic detection softwares are currently unable to discriminate between literal and figurative uses of a given term, or to account for the different frames a lexeme may evoke. We contend, in this respect, that the analysis of collocations and co-occurrence patterns of *sustainability* and *sustainable* in the specialised corpora selected may provide helpful insights for discriminating among different definitions of *sustainability*.

4. Data presentation and methodological outline

To investigate the meanings of sustainability and sustainable in discourse-specific English and shed light on the specific senses of the terms emerging in context, four specialised English-language corpora were selected for analysis. A detailed examination of co-occurring patterns and lexemes aims to shed light on whether any of the three pillars of sustainability outlined in Section 2 prevail in the emerging senses.

The corpora available on the corpus manager and text analysis tool Sketch Engine (Kilgariff, et al. 2004) are the following:

- The EcoLexicon English Corpus (EEC), a text corpus of contemporary environmental texts prepared by the LexiCon Research Group at the University of Granada for the development of a terminological knowledge base on the environment. It consists of 28,616,037 tokens.
- The Environment Corpus, a domain-specific corpus of English texts related to environmental science, collected from the Internet by SpiderLing in 2011. It consists of 70,559,441 tokens.
- The Elsevier OA CC-BY Corpus (henceforth Elsevier Corpus), an English corpus consisting of 40,000 scientific open access research papers published by Elsevier journals, which are a representative sample from across scientific disciplines. It contains articles published between 2014 and 2020 in scientific, technical, and medical research fields. It consists of 232,511,611 tokens.
- The United Nations Parallel Corpus (UNPC) – English, an English corpus from the multilingual collection of 6 sentence-aligned parallel corpora created from official records and other parliamentary documents of the United Nations between 1990 and 2014. It consists of 798,630,043 tokens.

The selected corpora are designed to cover the main dimensions or pillars that shape the variety of contemporary definitions of *sustainability*, namely the environmental, economic/institutional, and social aspects. However, the distinction cannot necessarily be clear-cut.

Admittedly, the selection of corpora presents some limitations. First of all, although all the corpora feature contemporary texts, the data for each were not collected over the same period. Secondly, none of the corpora available on Sketch Engine provides data exclusively related to the economic domain or the social aspects. In this respect, the UNPC corpus was chosen primarily to represent the economic/institutional domain. However, given the broad scope of United Nations policy debates, it is also expected to include instances in which social

sustainability is presupposed. By contrast, the Elsevier Corpus is expected to represent the social aspect.

At the same time, it is necessary to point out that two corpora were selected to represent the environmental aspect, rather than one, to balance, as far as possible, their sizes with the others.

Table 1 below provides details on the size and overall reference domain(s) of the selected corpora.

Corpus	No. of Tokens	Reference Domain(s)
EcoLexicon English Corpus (EEC)	28,616,037	Environment
Environment Corpus	70,559,441	Environment
Elsevier Corpus	232,511,611	Social
United Nations Parallel Corpus (UNPC) – English	798,630,043	Economic/ Institutional – Social

Tab. 1: Size and typology of the corpora analysed

Operatively speaking, the study integrates qualitative and quantitative methodologies in an ‘eclectic’ approach (Baker 2006, 16) which combines the tools and techniques of corpus linguistics with the theoretical and analytical framework of critical discourse studies.

The methodology can be outlined in the following stages:

1. Data examination and description. The selected corpora were queried through the Sketch Engine interface, examining word sketches of the lexemes *sustainability* and *sustainable* to reveal the most statistically frequent collocations and the most relevant discourse patterns. A collocation refers to the statistically significant co-occurrence of lexical items within a defined textual span in a corpus, reflecting patterned language use rather than intuitive judgments alone (Hoey 1991; Sinclair 1991). The principle of collocation is based on the idea that many of the patterns we use to encode meanings occur with remarkable frequency, as speakers draw upon a relatively limited repertoire of conventionalised “ways of saying” (Sinclair 1991, 108). Furthermore, it revolves around the idea that “many, if not most, meanings require the presence of more than one word for their normal realisation, and patterns of co-selection among words, which are much stronger than any description has yet allowed for, have a direct connection with meaning” (Sinclair 1998, 4).
2. Interpretation. The patterns outlined were interpreted using concordance and microtext analyses within the CDA framework, based on a random sample of the data for each corpus.
3. Explanation of the findings. The patterns outlined were explained in light of the available linguistic context.

5. *Sustainability* and *Sustainable* in specialised corpora: analysis

From a statistical point of view, before focusing on each lexeme in a dedicated subsection, it is worth examining the number of occurrences of the two key lexemes in the selected corpora, as reported in Table 2.

Corpus	<i>Sustainability</i> No. of Occurrences	<i>Sustainable</i> No. of Occurrences
Environment Corpus	18,661	48,615
EcoLexicon	993	2358
Elsevier Corpus	11,763	15,339
UNPC	36,446	321,440

Tab. 2: Number of occurrences of *sustainability* and *sustainable* in the selected corpora

What clearly emerges from these data is that both lexemes exhibit a high number of occurrences relative to the size of the corpora. Moreover, discussion around sustainability appears salient not only in strictly environmental or climate-related corpora but also across all sectors at stake. At the same time, however, the occurrences of the adjective *sustainable* significantly exceed those of *sustainability* in all four corpora examined, testifying (perhaps) to a higher level of perceived clarity of the term due to the possibility of employing it in more ‘concrete’ domains. *Sustainable* can, in fact, be found in adjective-noun combinations with a range of more concrete nouns, such as *tourism*, *agriculture*, *yield*, *forestry*, *use*, *technology*, and *transition*, among others (as will be examined in 5.2), which may shed light on the meaning nuances of the sustainability concept. The following two subsections report and discuss the data on the most frequent collocates for each term considered and present the most relevant co-occurrence patterns.

5.1 *Sustainability* in specialised corpora

Our analysis begins by examining the most relevant co-occurring patterns of *sustainability* across the four selected corpora, assuming that, given the term’s high level of underspecification and polyfunctionality, co-occurring terms may provide helpful insights into its interpretation. Specifically, as we are analysing the behaviour of a noun, it is worth considering specific syntactic constructions, namely verbs in transitive constructions where the term features as the direct object, pre-modifiers, that is, elements placed before the head noun other than determiners, notably in this case adjectives or nouns (Biber, et al. 1999; Quirk, et al. 1995), and nouns modified by *sustainability*.

Table 3 reports the most frequent verbs in transitive verb + *sustainability* syntactic patterns.

Environment Corpus	EcoLexicon	Elsevier Corpus	UNPC
Verb+ <i>sustainability</i>	Verb+ <i>sustainability</i>	Verb+ <i>sustainability</i>	Verb+ <i>sustainability</i>

<i>ensure</i>	276	<i>assess</i>	22	<i>improve</i>	204	<i>ensure</i>	3,883
<i>improve</i>	204	<i>ensure</i>	19	<i>ensure</i>	147	<i>achieve</i>	555
<i>promote</i>	171	<i>achieve</i>	12	<i>assess</i>	119	<i>promote</i>	495
<i>achieve</i>	161	<i>improve</i>	11	<i>achieve</i>	87	<i>enhance</i>	446
<i>reduce</i>	89	<i>promote</i>	7	<i>increase</i>	80	<i>maintain</i>	247
<i>increase</i>	83	<i>advance</i>	6	<i>evaluate</i>	77	<i>guarantee</i>	185
<i>enhance</i>	49	<i>threaten</i>	6	<i>promote</i>	69	<i>threaten</i>	175
<i>incorporate</i>	45	<i>regard</i>	5	<i>enhance</i>	56	<i>integrate</i>	168
<i>embrace</i>	42	<i>meet</i>	4	<i>affect</i>	37	<i>increase</i>	167

Tab 3: Most frequent verbs in verb+*sustainability* constructions across corpora

All the featured verbs, ranging from *ensure*, to *improve*, *enhance*, *advance* and *guarantee*, among others, display the prominence of sustainability as a societal driver and an ideal outcome which cannot be taken for granted, and for which society as a whole must work together, be the featured sense related to the economic, the social, or the environmental aspect, as testified by excerpts (1) and (2) (Stibbe 2021).

- (1) New Zealand considers that it is imperative that the two further sessions of the Conference, which are scheduled for 1994, result in the adoption of strengthened measures to regulate high-seas fishing activities, thereby ensuring the sustainability of resources that are becoming increasingly scarce. (UNPC)
- (2) Natural ecosystems are theoretically self-sustaining, but increasing human interference is threatening their sustainability in many parts of the world, and various methods of ecosystem management have been introduced in an attempt to preserve and protect characteristic natural ecosystems. (EcoLexicon)

The 10 most frequent pre-modifiers with *sustainability* in the four corpora examined are reported in Table 4. Across the selected corpora, with figures consistent with their respective size, *environmental* emerges as the most frequent pre-modifier, followed by *long-term* in three corpora, except in UNPC, where the second most recurrent pre-modifier is *debt*. These data indicate that the environment is generally perceived as the most salient sustainability dimension among those at play. At the same time, there is a widespread emphasis on the temporal aspect across corpora.

Environment Corpus		EcoLexicon		Elsevier Corpus		UNPC	
Pre-mod+ <i>sustainability</i>		Pre-mod+ <i>sustainability</i>		Pre-mod+ <i>sustainability</i>		Pre-mod+ <i>sustainability</i>	
<i>environmental</i>	935	<i>environmental</i>	45	<i>environmental</i>	630	<i>environmental</i>	4,836
<i>long-term</i>	215	<i>long-term</i>	13	<i>long-term</i>	206	<i>debt</i>	2,762
<i>ecological</i>	162	<i>weak</i>	12	<i>social</i>	193	<i>long-term</i>	2,232
<i>economic</i>	113	<i>ecological</i>	8	<i>economic</i>	114	<i>financial</i>	770
<i>global</i>	112	<i>strong</i>	8	<i>financial</i>	85	<i>economic</i>	285

<i>social</i>	79	<i>financial</i>	7	<i>global</i>	66	<i>global</i>	281
<i>corporate</i>	68	<i>corporate</i>	6	<i>corporate</i>	65	<i>social</i>	264
<i>urban</i>	63	<i>future</i>	5	<i>ecological</i>	59	<i>fiscal</i>	181
<i>seafood</i>	43	<i>overall</i>	4	<i>urban</i>	57	<i>ecological</i>	123
<i>community</i>	42	<i>agricultural</i>	4	<i>water</i>	56	<i>future</i>	95

Tab 4: Most frequent pre-modifiers of *sustainability* across corpora

Detailed examination of a random sample of the data across all the corpora highlights that even in corpora from different operative fields, discussion about the environment, and specifically the phrase ‘environmental sustainability,’ is often complemented by other keywords that may clarify its meaning nuances, such as *greenhouse emission* in (3) from the UNPC, and *climate change* and *green* in (4) from the Environment Corpus. *Green*, however, as a lexeme, may be associated with the same ambiguity and misleading appeal that sustainability is usually accused of, and assessing the trustworthiness of those who employ it solely on the basis of verbal or written claims is not always easy (Parguel, B  noit-Moreau and Russell 2015; Baum 2012).

At the same time, multiple factors broadly connected to the so-called three pillars of sustainability (Purvis, Mao and Robinson 2019) can be detected in the same sentence, as in (5), which displays that sustainability is typically viewed as a broad-ranging issue encompassing multiple interrelated aspects.

- (3) Environmental sustainability is also becoming an increasingly alarming issue in the region, which is responsible for 34 per cent of global greenhouse gas emissions and is home to 7 of the 15 major global emitters of such emissions. (UNPC)
- (4) The adverse effects of climate change on environmental sustainability and human wellbeing are forcing most countries to move away from the “brown” or traditional economy to the “green” economy – a viable option for sustainable development. (Environment Corpus)
- (5) Timely forest monitoring is a required precondition to the successful implementation of national policies and international agreements toward the ultimate goal of balancing economic development and environmental sustainability. (Elsevier Corpus)

As a pre-modifier, *long-term* is used consistently across all the corpora examined, with durability as a prominent feature. However, not all examples are equally clear about the specific reading of this expression and the kinds of resources it implies. Specifically, while in (6) from the EcoLexicon Corpus, the context provides valuable insights that shed light on its intended meaning, in policy-related discourse of the type featured in (7) from the UNPC, despite the

presence of such indexical words as *measures*, *management* and *conservation*, the meaning of the expression still appears rather vague and underspecified.

- (6) Noxious weeds increase soil erosion and soil sedimentation. Protecting and conserving the surface soil are critical to the long-term sustainability of healthy, functioning ecosystems. Soil provides nutrients and moisture necessary for plant growth. (EcoLexicon)
- (7) We are all aware of the need to establish appropriate measures to secure such conservation and management as a means of promoting the long-term sustainability of the resources. (UNPC)

After the first couple of most frequent co-occurring pre-modifiers, the corpora tend to differentiate themselves in line with their respective fields of specialisation. In this respect, the adjective *financial* appears as a very common pre-modifier in UNPC. In (8), however, the topic at stake is women's economic independence, a key element of social sustainability (see Section 2). At the same time, in (9), the sense of social sustainability is clarified through references to human needs and an inclusive society.

- (8) Local committees managed over 60 per cent of the women's programme centres, as well as all community rehabilitation and youth activity centres, with the Agency providing financial and technical support and actively promoting self-management and financial sustainability. (UNPC)
- (9) In the development of [district name], particular focus will be given to social sustainability with special reference to the development of an inclusive society where basic human needs are fulfilled. (Elsevier)

Adjectives such as *weak* and *strong* occur in numerous attestations as pre-modifiers only in the EcoLexicon (10), where the 'academic' meaning of the two views of sustainability, as discussed in Section 2, is reported (Pelenc, Ballet and Dedeurwaerdere 2015). The absence of these terms in the other corpora may indicate that distinguishing between these two core approaches is crucial in environmental and climate-related circles, as well as in academic circles. By contrast, corporations or policymakers may not necessarily wish to clarify whether they subscribe to a weak or strong sustainability policy as a strategic move to avoid losing widespread consensus,

since, it must not be forgotten, we are dealing with a magic concept (Tøllefsen 2021; Pollitt and Hupe 2011) with a broad-ranging appeal hard to counter.

- (10) The requirements for weak sustainability are met when a tree (natural capital) is cut for the construction of a frame house (human-made capital). However, if the tree is cut and cast aside in a land-clearing project, the requirements for weak sustainability are not met. Strong sustainability requires that depletions of one sort of natural capital be compensated for by increases in the same or similar natural capital. (EcoLexicon)

The three founding pillars of sustainability appear together in many instances of the term, as in (11) and (12), even when other social and economic aspects are not explicitly mentioned as sustainability dimensions (Purvis, Mao and Robinson 2019). This phenomenon, consistently with the broad-ranging scope of the UN sessions and documents, is particularly evident in the UNPC.

- (11) It urges all Governments to adopt and/or strengthen integrated national shelter strategies based on the enabling approach and principles of social, economic and environmental sustainability, and to review them regularly with a view to ensuring the improvement of living conditions, particularly of the rural and urban poor, women and the homeless. (UNPC)
- (12) The programme includes four focus areas aligned with the strategic plan and with the United Nations Development Framework: (a) rule of law and participation; (b) reduction of inequality gaps for cohesion, inclusion and quality of life; (c) environmental sustainability, resilience, and risk management; and (d) sustainable and equitable economic development. (UNPC)

In other corpora as well, sustainability is widely perceived as multifactorial, as shown in excerpt (13), where a commitment to environmental sustainability is coupled with a reference to science and technology.

- (13) Now, however, the greatest technological challenge is to reconcile technology with environmental sustainability consequences. The survival of humankind and of the planet that supports it now requires that the established two-way interaction between science and technology become a three-way relationship, including sustainability through the application of green science and technology. (EcoLexicon)

When the lexeme occurs without pre-modifiers, more senses may appear intertwined, as in (14). Here, the concept of ‘sustainable development’ is defined. However, although environmental concerns are more prominent, other elements seem to be at stake (social, economic, and political). The same pattern emerges in (15), where the economic and social aspects co-occur as crucial elements of sustainability.

- (14) The PAC has stated that its environmental policy would adopt a holistic approach, committing itself to the conservation of ecosystems and biotic diversity and accepting the concept of sustainable development, that is, the wise and non-destructive use of resources, with the understanding that a prerequisite for sustainability is that disparities in social, economic and political development be ended. (UNPC)
- (15) The efficiency of the utilisation of human resources depends on how the benefits of economic growth are distributed and how that affects human conditions, which are an important determinant of the sustainability of economic development and social progress. (UNPC)

Table 5 outlines the most frequent nouns in *sustainability* + noun patterns across the four corpora. These data show that sustainability is often viewed as an issue, or a challenge, as evidenced by predicative clauses (featuring such nouns as *issue*, *concern*, *challenge* and *goal* as the main predicative expressions), which are not reported here because they are not relevant to all the corpora analysed.

Environment Corpus	EcoLexicon	Elsevier Corpus	UNPC
<i>Sustainability</i> + noun	<i>Sustainability</i> + noun	<i>Sustainability</i> + noun	<i>Sustainability</i> + noun
<i>issue</i> 324	<i>indicators</i> 11	<i>transition</i> 492	<i>framework</i> 328
<i>initiative</i> 242	<i>science</i> 11	<i>assessment</i> 324	<i>analysis</i> 303
<i>program</i> 186	<i>assessment</i> 11	<i>issue</i> 192	<i>issue</i> 294
<i>strategy</i> 172	<i>debate</i> 8	<i>practice</i> 168	<i>criterion</i> 202
<i>goal</i> 155	<i>issue</i> 8	<i>strategy</i> 165	<i>reporting</i> 181
<i>effort</i> 145	<i>criterion</i> 7	<i>criterion</i> 163	<i>indicator</i> 151
<i>report</i> 105	<i>principle</i> 6	<i>challenge</i> 134	<i>assessment</i> 110
<i>standard</i> 104	<i>index</i> 6	<i>goal</i> 122	<i>goal</i> 90
<i>plan</i> 104	<i>guideline</i> 5	<i>indicator</i> 117	<i>report</i> 84
<i>criterion</i> 92	<i>process</i> 5	<i>requirement</i> 105	<i>challenge</i> 75

Tab. 5: Most frequent nouns in *sustainability*+noun patterns across corpora

Among the various nouns, *indicator* is especially relevant for clearly specifying the measures adopted to improve sustainability (16). However, other nominals shed only partial light on the

intended sense of sustainability or clarify whether specific measures or criteria have been employed to determine whether an activity is effectively sustainable.

- (16) Suggested sustainability indicators for the oil industry are: - proportion of gas to OIL held and sold on an 'ENERGY equivalency' basis; - estimated CARBON content of the oil and gas portfolio; - renewables content of the energy portfolio on an energy equivalency basis. (UNPC)
- (17) The authors appeal to common EU sustainability criteria, including solid biomass, to make the consumption of biomass in the electricity and heating/cooling sectors more flexible and efficient. (Elsevier)

Overall, the corpus analysis of the term, together with an examination of its co-text and context of use, reveals that, in the majority of instances, determining the specific reading of the term presupposed, let alone whether the author of the text endorses a weak or a strong sustainability viewpoint, is not always a straightforward task. In most of the instances examined, multiple aspects seem to be at stake, corresponding to the three main pillars of sustainability (Purvis, Mao and Robinson 2019), confirming the polysemous and flexible character of *sustainability* as an encompassing lexeme and concept. In the next section, the behaviour of the adjective *sustainable* is discussed.

5.2 Sustainable in specialised corpora

As reported in Table 1, occurrences of *sustainable* significantly exceed those of *sustainability* in the corpora analysed. Examining the most frequent co-occurring pre-modifiers (Table 6), which in this case are adverbs, instances of *environmentally* are the most numerous across corpora. At the same time, *ecologically* and *socially* feature as the second- and third-most-frequent pre-modifiers. These results, coupled with the high frequency of *economically* across all corpora, further corroborate the analysis of *sustainability* presented in 5.1, in which the environmental aspect emerged as the most salient dimension. At the same time, they attest to the salience of the social and economic dimensions.

Environment Corpus		EcoLexicon		Elsevier Corpus		UNPC	
Pre-mod+sustainable		Pre-mod+sustainable		Pre-mod+sustainable		Pre-mod+sustainable	
<i>environmentally</i>	778	<i>environmentally</i>	29	<i>environmentally</i>	248	<i>environmentally</i>	2,258
<i>ecologically</i>	253	<i>ecologically</i>	14	<i>socially</i>	63	<i>socially</i>	223
<i>truly</i>	252	<i>economically</i>	6	<i>economically</i>	36	<i>ecologically</i>	222
<i>economically</i>	110	<i>truly</i>	4	<i>ecologically</i>	34	<i>truly</i>	197
<i>socially</i>	58	<i>technically</i>	4	<i>financially</i>	31	<i>economically</i>	164

<i>highly</i>	39	/	<i>truly</i>	29	<i>financially</i>	151
<i>genuinely</i>	34	/	<i>fully</i>	13	<i>fiscally</i>	35
<i>fully</i>	33	/	<i>relatively</i>	9	<i>politically</i>	26
<i>financially</i>	28	/	<i>highly</i>	8	<i>genuinely</i>	25
<i>fiscally</i>	12	/	<i>strongly</i>	6	<i>fully</i>	22

Tab. 6: Most frequent pre-modifiers of *sustainable* across corpora

Moreover, the presence of an epistemic stance adverbial (Biber, et al. 1999) like *truly*, among the most frequent co-occurring adverbials is worth mentioning, testifying that mere claims that an object or activity is green or sustainable are not necessarily trustworthy, unless corroborated by specific requirements, as in excerpt (18) (Machin and Liu 2024; Parguel, B  noit-Moreau and Russell 2015; Baum 2012).

- (18) For a corporation to be truly sustainable, management systems and processes must be continually reviewed to ensure their effectiveness. (Environment Corpus)

Examining the most frequent co-occurring pre-modifiers reveals that more apparent meanings emerge as the various adverbials qualify the specific reading of *sustainable* intended, as in (19), (20), and (21). At the same time, in (21), the specific features of *socially sustainable* are further elucidated by the presence of other adjectives, whereas in (19) and (20), the inextricable connection between the economy and the environment is shown in senses that feature multiple elements together.

- (19) Since July 1992, the Department has continued to promote the objectives of environmentally sustainable economic development through a broad range of information activities designed to maintain the momentum and satisfy the heavy demand for information on this issue worldwide. (UNPC)
- (20) The most important question facing political and business leaders today is if the renewable energy technologies and environmentally sustainable agricultural and business practices are largely available, why are we largely failing to adopt the measures needed to head off catastrophe? (Environment Corpus)
- (21) Making manufacturing a central part of the future of work means developing work environments that are technically efficient and socially sustainable: creative, flexible, safe, and welcoming to personal and professional development despite differences in competence, degrees, age, or culture. (Elsevier)

Table 7 presents data on the most frequent nouns modified by *sustainable*. Not surprisingly, given the impact of this phrase across numerous perspectives in contemporary discourse, the collocation ‘sustainable development’ by far exceeds all the others.

Environment Corpus		EcoLexicon		Elsevier Corpus		UNPC	
Sustainable+noun		Sustainable+noun		Sustainable+noun		Sustainable+noun	
<i>development</i>	7,344	<i>development</i>	660	<i>development</i>	1,479	<i>development</i>	16,4521
<i>management</i>	1,499	<i>management</i>	130	<i>goal</i>	782	<i>management</i>	15,878
<i>practice</i>	1,244	<i>use</i>	111	<i>management</i>	657	<i>use</i>	8,424
<i>use</i>	1,181	<i>yield</i>	101	<i>use</i>	455	<i>goal</i>	5,186
<i>future</i>	1,090	<i>agriculture</i>	84	<i>system</i>	394	<i>consumption</i>	4,541
<i>agriculture</i>	811	<i>planning</i>	59	<i>production</i>	320	<i>growth</i>	3,778
<i>community</i>	714	<i>system</i>	49	<i>practice</i>	291	<i>energy</i>	3,507
<i>solution</i>	653	<i>approach</i>	42	<i>intensification</i>	199	<i>strategy</i>	3,159
<i>energy</i>	613	<i>policy</i>	35	<i>solution</i>	199	<i>livelihood</i>	2,895
<i>design</i>	581	<i>production</i>	32	<i>innovation</i>	190	<i>peace</i>	2,776

Tab 7: Most frequent nouns in *sustainable*+ noun constructions across corpora

Based on the available data, it is sometimes possible to determine the specific sense of the phrase ‘sustainable development,’ as in (22).

- (22) Similarly, it has been stated that “sustainable development implies using renewable resources in a manner which does not eliminate, or degrade them, or otherwise diminish their usefulness for future generations.” (Elsevier)

Since many co-occurring nouns refer to more ‘concrete’ situations or activities, such as *agriculture*, *yield*, or *practice*, the initial expectation was that this feature might be crucial for clarifying the intended sense of *sustainable* presented. However, as shown in example (23), this is not always the case. From this example, we only understand that sustainable agriculture combines technology and tradition, but we do not learn how or to what extent. Thus, while also introducing the ambiguous adjective *green*, this example does not actually contribute to clarifying the term’s intended sense.

- (23) Reinvest in research geared toward leading a global movement in sustainable agriculture, combining technology and tradition to create a new and meaningful Green Revolution. (Environment Corpus)

At the same time, as shown by excerpts (24) and (25), sometimes multiple senses seem to be blended, encompassing features of the environment and the economy in the first place.

- (24) Energy efficiency is a policy priority in Europe, with the goal to secure renewable and sustainable energy supply by reducing greenhouse gas (GHG) emissions, saving costs and encouraging economic competitiveness. (UNPC)
- (25) Sustainable land management is at the foundation of societal goals to produce food, fuel, and fodder in an environmentally sound and supportable manner over the long-term. (Elsevier)

Overall, the expectation that disentangling the meaning of *sustainable* across the various corpora would identify specific nuances and the kind of sustainability approach endorsed by the author of a given message is only partially met. While the presence of co-occurring adverbs such as *environmentally* or *economically* indicates specific aspects considered, multiple dimensions seem to be presupposed in the background and are hinted at by other keywords.

At the same time, while *sustainable* tends to co-occur not only with abstract nominals but also with more concrete ones, such as *yield* or *agriculture*, in the corpora analysed, the references remain rather general and vague, hindering a clear understanding of the approach pursued.

6. Concluding remarks

Based on the data examined, *sustainability* is consistently framed as a pivotal societal driver across corpora, with greater prominence attributed to the environment, generally deemed the root of sustainability. At the same time, our analysis confirms that experts and stakeholders from the most disparate fields tend to recur to the same expressions and collocations – to the point that they may even become trite and sometimes be labelled meaningless by other authors (Owen 2011), when they are fashionable, have a positive aura and the power to mobilise around a purportedly shared commitment (Tøllefsen 2021; Pollitt and Hupe 2011).

Comparing the empirical findings from the analysis of *sustainability* and *sustainable* in four different corpora of specialised discourse conducted in this study, several points emerge. For both terms, instances that seem to favour an environmental orientation are predominant, as evidenced by keywords related to climate or ecology, thereby demonstrating the priority given to the environmental pillar of sustainability (Purvis, Mao and Robinson 2019). However, many attestations in the corpora indicate references to multiple dimensions at the same time, thus testifying to the powerful impact and the apparent difficulty of distancing oneself from the definition of sustainability popularised by the Brundtland report (1987) and of producing more transparent definitions. The Brundtland definition paved the way for the application of the concept across multiple, diverse spheres of interest, where flexible, underdefined senses

subsequently emerged. *Sustainability* combines strong normative appeal with conceptual vagueness and broad applicability. Like other widely mobilised concepts such as *resilience*, *transparency*, or *green growth*, it derives much of its symbolic power from its apparent ability to bridge the gaps among competing objectives, such as economic growth, social equity, and ecological protection, without clearly specifying the trade-offs required to achieve them (Pollitt and Hupe 2011).

This encompassing character and the simultaneous pointing at all the so-called pillars through ‘figure and ground’ dynamics, however, seem to hinder clarity. Disentangling the specific sense of *sustainability* referred to across the various corpora examined or determining whether the texts analysed endorse a weak or strong sustainability perspective proved extremely difficult and often impossible within the scope of a single paper, due to the flexibility with which the term is used. Another reason for this difficulty is that, contrary to initial expectations, the four corpora, selected to broadly cover the various fields of application (and pillars) of sustainability, do not necessarily focus on a single aspect; rather, they tend to be wide in scope. This feature is particularly evident in the case of UNPC, given the broad focus of the UN policies and debates.

What is significant, however, is that precision is enhanced by the presence of specific nominals in *sustainability* + noun constructions. These nominals, such as *indicators*, *criteria*, and *thresholds*, among others, foster an operational definition of the term by explicitly specifying certain parameters. This is also consistent with the idea that many meanings emerge in combination, and that patterns of co-selection affect meaning generation (Sinclair 1998).

The initial research hypothesis in this study was that, especially with the adjective *sustainable*, the disambiguation of the intended meaning might be a more straightforward task, since the lexeme often co-occurs with qualitative adverbials as pre-modifiers, and with nominals that refer to concrete objects or artefacts (cars, houses, yields) or more pragmatic professional activities (agriculture, industry). However, this hypothesis is only partially confirmed. While the expression ‘sustainable development,’ another flexibly applied buzzword, is the most frequent collocation across all the corpora examined, in many occurrences of the adjective with nominals, ecology is combined with general references to business or to inclusiveness in society, thus confirming the rhetorical flexibility of ‘sustainable’ as well.

Therefore, was the empirical analysis combining the tenets of CDA with a corpus-assisted methodology effective in disambiguating and clarifying the senses in which *sustainability* and *sustainable* are employed in the corpora examined? The answer to this question is ‘only partially.’ In most cases, references to the three main pillars of sustainability appear intertwined within the same passage. Even when other indexical keywords co-occur with the terms, the predominant sense cannot always be easily detected. What is more, and perhaps even

more important, especially when we deal with corporate stakeholders, the observed instances do not allow us to determine whether the featured sense presupposes weak or strong sustainability, and thus which specific pillar is prioritised.

The study also displays some limitations. On the one hand, the different size of the corpora hinders further comparisons. Moreover, the Elsevier corpus, selected to cover the social pillar, also encompasses other fields, as does the UNPC. As a consequence, social sustainability, when not combined with the other aspects, appears to be underrepresented in some corpora compared with the other dimensions. Furthermore, upon closer inspection, the academic, formal style of the language encountered in the corpora examined, some of which are admittedly based on academic texts, has a typically abstract, general overtone that does not foster clarity and understanding of the actual senses of the terms at stake.

Finally, a problematic aspect that emerged during the analysis concerns corpus analysis and the size of the linguistic co-text. It was observed that, to enhance clarity and gain further insights into the specific senses of the terms, expanding the size of the linguistic co-text was pivotal, as multiple elements could be discovered only in a broader context, not corresponding to the size of the sentence, but at least of a paragraph. Such a requirement, thus, makes detailed analysis of a large number of texts problematic.

Future analysis may focus on how sustainability is contrastively framed, examining English and Italian, and analysing corporate documents, such as sustainability reports for specific companies in both languages, to pinpoint a more precise field of analysis that may foster clarity of expression.

Overall, it can be argued that the analysis suggests that *sustainability* and *sustainable* can be viewed as examples of complex lexemes, whose meanings, like complex systems, emerge from the interrelation of multiple features according to ‘figure and ground’ dynamics (Talmy 2000), with all of them still presupposed in the background. However, the vagueness, magical flexibility, and all-encompassing character of sustainability risk turning it into an illusion and a potentially useless concept (Owen 2011; Redclift 2005) rather than into a transformative driver. In this way, unless it is anchored in explicit metrics, institutional constraints, and enforceable commitments, sustainability risks depoliticising fundamentally distributive and ethical questions through empty slogans that do not alter core practices.

Bionote

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“Shades of Green”

Greenness in Sustainability Discourse in British and Italian Media

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Abstract

Within sustainability discourse, *green* is frequently employed in combination with a wide range of nouns, acting as a versatile signifier of attention to environmental issues (Fuoli and Beelitz 2023; Bevitori 2012). Its literal meaning metonymically grounds it in the physical environment, allowing it to stand in for the natural world, and this mapping underpins the conceptual metaphor GREEN AS GOOD FOR THE PLANET (Augé 2019) or GREEN AS SUSTAINABLE. This study aims to understand how greenness is constructed in sustainability discourse, through the analysis of a comparable corpus of articles in British and Italian newspapers containing the words *sustainability/sustainable development* and the Italian equivalents. The collocational behaviour of *green* was examined to uncover patterns of usage, which were further investigated through concordances.

Findings show that metaphorical uses predominate, with collocations relating predominantly to the semantic domains of economy and finance, policy, energy and technology. While both languages also present a number of literal uses for, respectively, *green* and *verde*, Italian divides its semantic space by employing the borrowed adjective *green* with the exclusive function of unambiguously signalling a connection to sustainability. The notion of greenness is in a few cases extended creatively, with the aim of conveying more nuanced understandings of sustainability efforts. Nonetheless, overall lexical patterns suggest that *green* operates as a floating signifier, similarly to *sustainability* (Catenaccio 2019), evoking ethicality while simultaneously avoiding engaging concretely with environmental issues.

1. Introduction

The association between the colour green and environmental sustainability concerns has become firmly established in contemporary discourse (Duarte Silva and Almeida 2020; Bevitori 2012). According to the Oxford English Dictionary (OED), these ties can be traced back to political movements in the 1970s in West Germany such as the Grüne Aktion Zukunft (Green Campaign for the Future) (OED *green*). The Brundtland Report (WCED 1987, 98), which introduced the current notion of sustainable development, references a “Green Revolution,” while climate science policy documents use the expression “Greening government” as early as

1995 (Shaw and Nerlich 2015, 37). More recently, the term has been used in the aftermath of the 2008 global financial crisis in "Green New Deal," coined by New York Times columnist Thomas L. Friedman (2007), and "green recovery" (Shaw and Nerlich 2015, 37), referring to economic stimulus packages aimed at addressing environmental problems and exemplifying the prevailing tendency to integrate environmental action with the imperatives of economic growth. Since its inception, the use of *green* in sustainability discourse has relied upon the principle of the "greening of growth" (Feindt and Cowell 2010, 191), the assumption that the best means to address environmental problems are technological improvements and market mechanisms (Jänicke 2008). Climate change mitigation is conceptualised as a driver of growth and a source of competitive advantage (Shaw and Nerlich 2015). This discursive framing contributes to a narrative of a "painless 'transition' to low carbon world" (Shaw and Nerlich 2015, 38), achievable without requiring major structural changes. The transition is framed as constituting an opportunity rather than a disruption to current mechanisms: individuals and countries could be "richer by being greener" (Nerlich 2012, 40) and "make healthy profits as an ethical investor" (*The Daily Mail* 2015 qtd. in Diprose, et al. 2018, 677).

The same tendencies are reflected in green marketing. In 1988, *The Green Consumer Guide* (Elkington and Hailes 1988) consolidated this trend by identifying the emerging figure of the environmentally responsible consumer. Since then, a company's environmental reputation has exerted increasing influence on consumers' purchasing behaviour, leading companies to position themselves as *green* in order to build brand loyalty (Sahakyan 2016). Corporate discourse has been shown to employ *green* as a flexible marker of environmental commitment, collocating with a wide variety of business-related terms (Fuoli and Beelitz 2023). Green products are often promoted as sustainable, encouraging a form of "green consumerism" (Atanasova 2019, 701). British media, for instance, were found to frequently use both *green* and *sustainable* in headlines, contributing to the consolidation of a false sense of progress with regard to the reduction of carbon emissions (Koteyko 2012). The term has thus been established as a shorthand that enables businesses to present an environmentally conscious attitude, and consumers to become part of the solution by buying products that are sanctioned as being 'good for the environment.' Overall, green discourse appears to be characterised by an overarching notion of "turning 'green into gold'" (Nerlich 2012, 33), consolidating a discursive tendency where labelling something as *green* simultaneously endows it with the positive marker of environmentalism while still ensuring that it will contribute to growth and profit. This operates across levels, from international and national policy to market dynamics.

These framings have been however subject to sharp criticism: evaluating the impact of the Green New Deal, Feindt and Cowell note that these schemes maintained consumption and failed to promote more fundamental changes necessary for genuine "ecological restructuring"

(2010, 195). The market-based approach to climate change is unlikely to actually contribute meaningfully to sustainable climate mitigation (Nerlich 2012). Similarly, green advertising has been criticised for relying on "the subjective perception of the producer and the consumer" (Akenji 2014, 16), rather than objective sustainability metrics, and for placing an undue burden on individual consumers and their choices, as though they alone could determine the success of the transition (Akenji 2014). This prevailing approach is criticised due to the inherent conflict between the lifestyle oftentimes marketed as 'green' and the actual demands of environmentalism. As Monbiot (2007) observes, "giving things up is an essential component of going green." These fundamental contradictions between the messaging being conveyed and the actual changes required to address climate issues lead to widespread misuse of the *green* label. It is often invoked without substantial proof to back the claim, contributing to the establishment of greenwashing (Pérez-Sobrino 2013). In Italian, the adjective *green* is used to provide a generic semantic link to the environment (Niceforo 2023), while the presence of Anglicisms in promotional texts has been recognised as a sign of greenwashing that projects an image of authoritativeness and reliability (Caimotto and Molino 2011).

Newspapers often uncritically reproduce the rhetoric of corporate advertising (Koteyko 2012, 33). Mass media serve as a crucial mediator in this communication process, functioning not merely as a conduit for reporting events but rather providing interpretative portrayals that reflect underlying ideological perspectives (Baker, Gabrielatos and McEnery 2013, 3). A significant link between the focus of media attention and public perceptions on the relevance of an issue has long been identified (Atwater, Salwen and Anderson 1985) and media discourse thus remains a privileged vehicle for introducing dominant views into society (van Dijk 2005). When newspapers unquestionably transmit 'green growth' and 'green consumerism' narratives, this concept becomes established in public discourse and less likely to be challenged by counter discourses.

2. Metonymy and metaphor

Metonymy is generally understood as "a process which allows us to use one well-understood aspect of something to stand for the thing as a whole, or for some other aspect of it, or for something to which it is very closely related" (Littlemore 2015, 4). Different types of metonymies, leveraging different kinds of relations between the referent and the element chosen to metonymically represent it, can be identified, with two over-arching categories: WHOLE AND PART and PART AND PART (Radden and Kövecses 1999). Within the former, one possible metonymy type entails the salient property of a category being used to refer to the category as a whole (Littlemore 2015). A specific SALIENT PROPERTY FOR CATEGORY metonymy,

COLOUR FOR OBJECT, motivates the use of *green*, which stands for vegetation and the environment more generally (Duarte Silva and Almeida 2020; Hamilton 2016), instantiating a "GREEN FOR THE ENVIRONMENT metonymy" (Augé 2019, 1). Since this metonymy has become so entrenched in language, its positive associations are now systematically exploited when it collocates with abstract words such as economy, taxes and rhetoric (Augé 2019). Attributing to something the property of greenness equates to positively characterising it as environmentally-friendly; therefore, when the referent to which greenness is attributed does not inherently possess any material connection to the colour, the interaction between metonymy and metaphor is used to establish the conceptual metaphor GREEN AS GOOD FOR THE PLANET (Augé 2019, 1), or GREEN AS SUSTAINABLE.

This constitutes a "metonymy-based metaphor" (Deignan 2005, 67): the term has a literal sense, describing entities that are physically characterised by the colour green, and a figurative sense, denoting something that is "of, relating to, or supporting environmentalism, esp. as a political issue" or "of a product, service, etc.: designed, produced, or operating in a way that minimizes harm to the natural environment" (OED *green*). The metaphor is based on the metonymy inasmuch as it is grounded in the association between the colour and nature; however, there is no "continuum of meaning between the two senses" (Deignan 2005, 68), since, when contextualised, the collocates can readily be associated with either one sense or another.

3. Data and methodology

To investigate the use of *green* and *verde* in sustainability discourse, two comparable corpora of Italian and English news articles were created. The articles were collected in a three-month timeframe, starting on the 2nd of May 2022, when the 8th EAP, Environment Action Programme to 2030, entered into force as the "EU's legally agreed upon common agenda for environment policy until the end of 2030" (European Commission 2022), and ending on the 31st of July 2022. Four British and four Italian newspapers were selected: *Financial Times (FT)*, *The Independent*, *The Guardian*, *The Telegraph*, *Il Sole 24 Ore*, *Corriere della Sera (CdS)*, *La Repubblica*, *Il Giornale*.

The selection was designed to capture a reasonably broad range of perspectives within each country's media landscape, with each sample including a right-leaning newspaper (*The Telegraph*; *Il Giornale*), a left-leaning one (*The Guardian*; *La Repubblica*), a centrist publication (*The Independent*; *CdS*), and a business-oriented outlet (*FT*; *Il Sole 24 Ore*), drawing on reader perception surveys (Massara 2019; Smith 2017) and classifications adopted in previous studies of the British and/or Italian press (Koller 2024; Mancini et al. 2017). For each newspaper, all articles mentioning the search terms *sustainability* or *sustainable development* and the Italian

equivalents were collected (through the database *MyDesk24* for *Il Sole 24 Ore*, with the *Bootcat* toolkit for *Repubblica* and *Il Giornale*, and through the database *Nexis Uni* for the remaining five), resulting in two comparable corpora of, respectively, 1,106,277 tokens for the Italian corpus (ITA) and 808,402 tokens for the English corpus (ENG). Table 1 details the composition of the corpora.

Newspaper	Articles	Tokens
<i>Il Sole 24 Ore</i>	479	317,529
<i>Financial Times</i>	138	138,156
<i>Corriere della Sera</i>	533	326,001
<i>The Independent</i>	281	281,156
<i>Il Giornale</i>	90	80,584
<i>The Telegraph</i>	83	86,757
<i>La Repubblica</i>	441	382,163
<i>The Guardian</i>	213	302,333
TOTAL (ITA)	1543	1,106,277
TOTAL (ENG)	715	808,402
TOTAL	2,258	1,914,679

Tab. 1: Corpus composition: number of articles and tokens for each individual newspaper source and for the two corpora

The analysis aimed to answer the following research questions:

1. What is the collocational behaviour of *verde* and *green* in ITA and ENG, and what does it reveal about their discursive functions in sustainability discourse?
2. What are the shared patterns and the differences between English and Italian newspapers in their use of these terms?
3. What is the role of linguistic creativity, and what rhetorical or persuasive functions does it serve beyond conventional usage?

To this end, the SketchEngine platform (Kilgariff et al. 2014) was used to obtain Word Sketches of *verde* and *green* in ITA, and *green* in ENG. Word Sketches are tools that provide a synthetic overview of the grammatical and collocational behaviour of words by processing the context in which a word usually occurs (Kilgariff et al. 2010). Focussing on the analysis of the words with which a word of interest frequently collocates can help shed light on the discourses surrounding it and the landscape of concepts with which it is associated (Brookes and McEnery 2020).

The collocational behaviour of these adjectives was compared at two levels: an intra-corpus comparison contrasting *verde* and *green* within ITA, and an inter-corpus comparison examining *verde/green* (ITA) against *green* (ENG). Political orientation was a criterion at the level of corpus construction, ensuring representativeness across the mainstream spectrum, but the primary

variable under investigation in the analysis is cross-linguistic, since the study aims to provide a better understanding of language-level patterns in the discursive construction of sustainability. While SketchEngine also offers a Sketch Difference function, which allows pairwise comparison of two items within a corpus, the present study opted for individual Word Sketches. Since the analysis involved a three-way comparison across two corpora (*verde* and *green* in ITA, *green* in ENG), individual Word Sketches provided a more consistent and transparent analytical framework, applicable to both the intra-corpus and the inter-corpus level of comparison. The analysis examines the nouns modified by *green* and *verde*; this represents the consistently most productive category, both by total frequency and by number of collocates, for all three adjectives, and is the grammatical pattern that most directly identifies what entities, processes, and concepts are labelled as *green*.

After identifying general collocational patterns and investigating them through concordances, examples of more creative instantiations were identified.

4. Results and discussion

4.1 The collocational behaviour of *verde* and *green* in the Italian corpus

Noun (_verde)	Frequency	Score	Noun (_green)	Frequency	Score ¹
transizione (‘transition’)	21	9.69	deal	41	11.5
area (‘area’)	19	9.94	transizione (‘transition’)	20	9.52
spazio (‘space’)	18	10.1	<i>economy</i>	14	10.22
energia (‘energy’)	15	9.53	svolta (‘turn’)	8	9.37
Spighe (‘wheat spikes’)	15	10.6	rivoluzione (‘revolution’)	8	9.22
polmone (‘lung’)	14	10.49	ottica (‘perspective’)	8	9.42
investimento (‘investment’)	8	8.8	<i>bond</i>	7	9.23
rivoluzione (‘revolution’)	7	9.2	tecnologia (‘technology’)	5	8.03
bandiera (‘flag’)	7	9.42	estate (‘summer’)	5	8.61
oasi (‘oasis’)	4	8.74	turismo (‘tourism’)	5	8.55
svolta (‘turn’)	4	8.62	mobilità (‘mobility’)	5	8
misura (‘measure’)	4	8.38	progetto (‘plan’)	5	7.82
città (‘city’)	4	8.07	energia (‘energy’)	4	7.5
fisco (‘taxation’)	3	8.34	ambassador	4	8.48
tassonomia (‘taxonomy’)	3	8.33	trasformazione (‘transformation’)	4	8.07
anima (‘soul’)	3	8.27	trasporto (‘transport’)	4	8.05
tetto (‘roof’)	3	8.27	futuro (‘future’)	4	8.05
edilizia (‘construction industry’)	3	8.16	iniziativa (‘initiative’)	4	8.05
gas (‘gas’)	3	7.98	vessillo (‘banner’)	3	8.05

¹ The typicality score is logDice (Rychlý 2008), quantifying the strength of the association between the keyword and the collocate within a given grammatical relation by comparing how often the two words co-occur in that relation against how often each occurs independently in any grammatical relation.

percorso ('path')	3	7.74	building	3	8.07
spiga ('wheat spike')	2	7.76	skill	3	8.05
cintura ('belt')	2	7.75	community	3	8.05
contabilità ('accounting')	2	7.75	costume ('swimsuit')	3	8.03
Stella ('Star')	2	7.75	ambito ('sphere')	3	7.64
speranza ('hope')	2	7.75	tema ('topic')	3	7.5
bollino ('sticker')	2	7.75	prodotto ('product')	3	7.17
vessillo ('banner')	2	7.73	gas ('gas')	2	7.18
<i>obbligazione</i> ('bond')	2	7.73	<i>technologies</i>	2	7.49
onda ('wave')	2	7.71	jobs	2	7.49
nota ('note')	2	7.71	rooftop	2	7.49
corridoio ('corridor')	2	7.71	station	2	7.48
cuore ('heart')	2	7.66	claim	2	7.48
superficie ('surface')	2	7.57	rivestimento ('coating')	2	7.48
via ('route')	2	7.43	campus	2	7.45
Italia ('Italy')	2	7.35	filosofia ('philosophy')	2	7.44
tecnologia ('technology')	2	6.86	packaging	2	7.42
<i>economia</i> ('economy')	2	6.68	opzione ('option')	2	7.42
sostenibilità ('sustainability')	2	6.55	lato ('side')	2	7.42
			acquisto ('purchase')	2	7.39
			moda ('fashion')	2	7.36
			tematica ('theme')	2	7.31
			offerta ('offer')	2	7.21
			visione ('vision')	2	7.2
			design	2	7.19
			tessuto ('fabric')	2	7.14
			impegno ('commitment')	2	7.14
			intervento ('intervention')	2	7.12
			sede ('headquarters')	2	7.09
			competenza ('expertise')	2	6.99
			evento ('event')	2	6.93
			soluzione ('solution')	2	6.68
			impresa ('company')	2	6.61
			azienda ('company')	2	6.27
TOTAL	197		TOTAL	233	

Tab. 2: Collocates for *verde* and *green* in ITA, with absolute frequencies and typicality scores²

Table 2 shows the collocates for *verde* and *green*, with the frequency threshold ≥ 2 . In the table, collocates in bold appear with both adjectives, while those in italics constitute cross-linguistic pairs: English loanwords collocating with *green*, and their Italian equivalents collocating with *verde* (e.g., *green economy* and *economia verde*). Three collocates were excluded as irrelevant to

² The "nouns modified by" column within the WordSketch identifies collocates on the basis of grammatical relations rather than a fixed collocational window. The rule, as stated in the Sketch Grammar for Italian, comprises two patterns, reflecting both pre-nominal and post-nominal adjective positions. In the former, *verde* (tagged as a non-possessive adjective) precedes an optional proper noun and then the target noun. In the latter, the target noun is followed by an optional adverb and then *verde* (again tagged as a non-possessive adjective). Both patterns also apply to *green* in ITA.

environmental discourse: references to the composer *Giuseppe Verdi*, *numero verde* (toll-free telephone number), and *Green Pass* (Italy's digital COVID-19 certificate system). Conversely, proper names with environmental meanings were retained. This methodological choice was guided by the intention of documenting as accurately as possible the establishment of green terminology within Italian, which has extended to numerous proper names that sanction environmentally friendly practices. However, it is important to note the differences between constrained and free lexical choices: while proper names may employ similar semantic mappings and discursive constructions, their usage reflects prior naming decisions rather than speakers' active selection among available options. For *verde*, this concerns 4 collocates totalling 31 occurrences: *Spiga Verde* ('Green Spike') and *Bandiera Verde* ('Green Flag'), awards recognising Italian localities promoting sustainable practices; *Michelin Stella Verde* (Michelin Green Star), an award for restaurants committed to sustainable gastronomy; and *rivoluzione verde*, referring to "Green Revolution and Technological Transition," one of the six missions of Italy's PNRR (National Recovery and Resilience Plan). For *green*, proper names encompass 4 collocates totalling 48 occurrences, dominated by the *Green Deal* (41 occurrences), the European Commission's flagship climate neutrality initiative targeting 2050, followed by the considerably less frequent *vessillo green* (3 occurrences), an alternative name for the Bandiera Verde award; *World Green Rooftop Day* (2), an international awareness campaign for sustainable urban infrastructure; and *Green Station* (2), a sustainability hub.

4.1.1 The intra-corpus comparison of *verde* and *green*

How does the English loanword *green* structure the semantic space alongside *verde*? Notably, *green* has substantially more collocates (53) than *verde* (38), and collocational patterns reveal a functional division between the two adjectives. *Verde* exhibits both metonymic and metaphorical uses, while *green* functions exclusively metaphorically. 10 of *verde*'s 38 collocates, such as *area* ('area') or *spazio* ('space'), designate physical spaces containing greenery, accounting for 69 of 197 total occurrences (35%). Three of the six most frequent collocates fall into this category:

- (1) Arbolia, società benefit impegnata nella creazione di nuove aree verdi in Italia, ha realizzato un bosco urbano con oltre 3.600 piante a Roma (La Repubblica 26 May 2022)
Arbolia, a benefit company committed to the creation of new green areas in Italy, has created an urban forest with over 3,600 trees in Rome³

³ In the examples, the node (*green/verde*) appears in italics, and the collocate is underlined. The English translation is presented in italics; consequently, the node appears in roman type within the translation so as to preserve the same visual distinction.

As example (1) shows, uses typically reference public spaces such as urban parks and nature reserves, a function that is allocated entirely to *verde*. The remaining collocates for *verde*, and all collocates for *green*, operate metaphorically, referring to more abstract notions relating to environmental sustainability rather than literal greenery.

Excluding the proper name *Green Deal*, the most frequent collocate for both adjectives is *transizione* ('transition,' 21 with *verde*, 20 with *green*). *Transizione* qualifies an array of measures constituting the broad shift toward a low-carbon economy, resource efficiency, and environmental sustainability. It functions as a deliberately vague umbrella term, bundling heterogeneous processes together, from policies to research and development, under a single forward-moving narrative. The framing emphasises steady, controllable change toward a new economic model, highlighting solutions as achievable and reasonable:

- (2) "Eni, nessuna frenata nella transizione verde" (Il Sole 24 Ore 13 July 2022)
"Eni, no slowdown in the green transition"
- (3) Cresce l'impegno delle imprese per la transizione verde: sono 441.000 quelle che negli ultimi cinque anni hanno investito in prodotti e tecnologie green (CdS 7 giugno 2022)
Corporate commitment to the green transition is growing: 441,000 companies have invested in green products and technologies over the past five years

In (2) Eni, the Italian energy company, though still primarily an oil and gas company, is discursively positioned as a proactive participant in the energy transition, since it has begun diversifying into renewables. The transition is operationalised as forward progress, implicitly suggesting continuity with the existing system rather than a break from it, reinforcing the framing of transition as incremental progress rather than structural rupture, and establishing Eni's commitment through the notion that there will be 'no slowdown.' This framing is extended in (3) by presenting it as a general trend embraced by an increasing number of companies, with commitment substantiated through concrete investment in 'green products and technologies.' This example additionally foregrounds another prominent semantic field in the results, that of energy and technology; *energia* ('energy'), *gas*, and *tecnologia/technologies* appear with both adjectives, totalling 7 collocates, with 20 occurrences for *verde* and 13 for *green*.

- (4) Con il *Green Deal* sono cominciati i primi segnali di risveglio, poi la pandemia ha innescato la solidarietà tra i Paesi e ha indicato la strada della doppia transizione verde e digitale per rendere l'economia più forte (Il Sole 24 Ore 20 giugno 2022)

With the Green Deal, the first signs of awakening began; then the pandemic triggered solidarity among countries and pointed the way toward the twin green and digital transition to make the economy stronger

Where (2) and (3) reflect the tendency, well documented in the literature, for newspaper discourse to reproduce a corporate register in which green functions as a marker of ethical positioning and environmental commitment, (4) introduces two further dimensions. The Green Deal, the single most frequent collocate overall with 41 occurrences, is identified as the initial impulse of the 'green and digital transition,' which, crucially, is not an end in itself but rather the mechanism through which the economy can be strengthened. Equally significant is the pairing of the green and digital transitions as twin processes: by placing them in an explicit parallel relationship, the example frames the implementation of green measures as inseparable from technological advancement and digitalisation, positioning environmental progress as part of a broader modernising trajectory

However, critical counterpoints to these predominantly positive framings emerge.

- (5) Ma per affrontare la sfida della transizione verde occorre ci vengano dati gli strumenti per raggiungere gli obiettivi (Il Sole 24 Ore 31 May 2022)
But to face the challenge of the green transition, we need to be given the tools to meet the objectives

- (6) Sulla transizione verde è emerso il timore dell'impatto sull'occupazione: la forza lavoro va riqualificata e va data particolare attenzione alle pmi (Il Sole 24 Ore 21 June 2022)
Regarding the green transition, concern has emerged over the impact on employment: the workforce needs to be retrained, and particular attention must be paid to SMEs

Example (5) frames the green transition as contingent: its success is presented as dependent on the provision of adequate instruments, implicitly acknowledging that these may currently be lacking. Example (6) extends this critical dimension to the social sphere, foregrounding concerns about the employment impact of the transition and the need for workforce retraining, with particular attention directed at SMEs (small and medium enterprises) as a potentially vulnerable category. Despite the prevailing tendency to frame the transition as a series of necessary and beneficial measures paired with economic development, newspaper discourse also registers awareness of its risks and unresolved challenges.

Issues also emerge in connection with the finance world, represented by collocates such as *investimento* ('investment') and *economia* ('economy') co-occurring with *verde*, totalling 17 occurrences, and *economy* and *bond*, co-occurring with *green* and totalling 21 occurrences.

(7) Investimenti verdi per finta? (Il Sole 24 Ore 1 June 2022)

Make-believe green investments?

The article addresses a greenwashing investigation into Deutsche Bank, following a whistleblower's accusation that products were being presented as greener than they actually were, exploiting ambiguities to attract sustainability-oriented investors without genuinely meeting the criteria those investors expected. Although the interrogative form allows the newspaper to signal that the allegation remains unproven, the rhetorical force of 'make-believe' in the headline foregrounds doubts about the validity of the green investments in question, pointing to the measurable financial consequences of definitional ambiguity.

Other collocates frame sustainability in aspirational rather than instrumental terms. Terms like *anima* ('soul'), *futuro* ('future'), and *filosofia* ('philosophy') construct environmental discourse as a matter of values and worldviews. Furthermore, *green*'s 15 additional collocates enable connections to semantic domains absent from *verde*. These include references to mobility, work, consumerism, and tourism. This concentration of consumer-oriented and lifestyle collocates reinforces the notion that newspapers promote a form of 'green consumerism' in which environmental sustainability is enacted by individuals primarily through market-based choices.

In summary, within Italian sustainability discourse, *verde* functions both metonymically and metaphorically, with a prevalence of the latter function, while *green* is allocated a semantic space connected to environmental discourse, operating exclusively in the metaphorical register.

Despite this more focused semantic range, *green* appears more frequently overall (233 vs. 197 occurrences) and collocates with more lexical items (53 vs. 38), enabling broader discursive reach across multiple domains. Notably, all English loanwords appear exclusively with *green*, whether as proper names (*Green Deal*), technical terminology (*green bond*, *green economy*), or domain-specific terms (*green skill*, *green claim*). This pattern suggests that Anglicisms function to confer technical authority and international legitimacy within Italian environmental discourse, as noted by Caimotto and Molino (2011), positioning *green* as the privileged marker of globally shared sustainability frameworks.

4.2 The collocational behaviour of green in the English corpus

Noun	Frequency	Score
credential	13	10.21
space	11	9.57
strategy	11	9.54
economy	11	8.86
energy	10	8.04
claim	9	9.55
Deal	9	8.66
investment	9	8.36
bond	7	9.43
transition	7	8.87
technology	6	8.57
finance	6	9.25
future	6	9.06
roof	5	9.11
trade	5	8.85
job	5	8.8
cement	4	8.79
hydrogen	4	9.06
agenda	4	8.65
field	4	8.62
flag	3	8.31
guide	3	8.3
activist	3	8.17
option	3	7.82
policy	3	7.56
development	3	7.55
way	3	7.44
revolution	2	7.73
candelabra	2	7.83
upgrade	2	7.76
thinking	2	7.75
recovery	2	7.7
island	2	7.68
campaigner	2	7.64
resort	2	7.61
skill	2	7.61
power	2	7.45
infrastructure	2	7.45
initiative	2	7.36
rating	2	7.15
practice	2	7.12
fuel	2	6.89
issue	2	6.88
TOTAL	199	

Tab. 3: Collocates for green in ENG, with absolute frequencies and typicality scores⁴

Table 3 shows the collocates for *green*, with the frequency threshold ≥ 2 , resulting in 43 collocates overall. Similarly to Italian, collocates unrelated to environmental discourse were removed:

⁴ The rule applied for the “nouns modified by” column, as stated in the Sketch Grammar for English, is the following: *green* (tagged as an adjective) followed by up to three modifying elements (adjectives, adverbs, or commas), then up to two nouns, and finally the target noun, followed by a non-nominal element.

green tea and *green light*. Only one proper name appears in the results: *Green Deal* (9 occurrences). Generally speaking, English *green* necessarily demonstrates broader functional range than either Italian *verde* or *green*, encompassing both metonymic and metaphorical uses.

Green designates literal green spaces through collocates like *space* or *field*:

- (8) In some circumstances, *green spaces* can even mitigate natural disasters by, for example, absorbing flood water (The Guardian 4 June 2022)

The most frequent collocate, *credentials* (13 occurrences), refers to the domain of business and work and reveals a predominantly critical discourse. Although the term might suggest straightforward validation of environmental practices, *green credential* functions instead as a site of contestation. In 10 of 13 instances, the phrase appears in sceptical contexts involving greenwashing accusations, regulatory scrutiny, or authenticity challenges.

- (9) Regulators have launched a probe into whether fashion giants Asos, Boohoo and George at Asda are misleading their customers over their *green credentials* (The Independent 29 July 2022)
- (10) Interest in environmental, social and governance (ESG) investing has taken off in recent years, with assets managed in ESG-labelled funds globally reaching \$2.7tn, but the industry has also been hit by claims its *green credentials* are inflated (FT 15 June 2022)

Instead of representing assurances of sustainability, in (9) and (10) *credential* collocates with adjectives and verbs of doubt and deception (*misleading*, *inflated*), which, together with other instances of negatively connotated verbs, *touting* and *overstated*, establish a markedly negative semantic prosody. *Fashion giants* are presented as potentially *misleading* customers in (9), and *ESG-labelled funds* as inflating their green credentials in (10), pointing to systematic problems across sectors. Only a minority of instances presents credentials as unproblematic achievements (e.g., established restaurants or festivals), linking them to *solid ethics* and *environmentally friendly approach*. This critical viewpoint echoes the questioning of purported green investments identified in (7).

These tensions around legitimacy and representation extend into the treatment of the transition, where financial terminology frames environmental action as economic opportunity or financial instrument through collocates such as *economy*, *investment*, or *finance*.

- (11) Transitioning to a *green economy* will create new industries and new jobs - and avoid costs down the track (The Guardian 3 June 2022)
- (12) The *green transition* cannot come at the cost of basic security. And if the situation forces us to do so, then we must not hesitate to return temporarily to traditional sources of energy (FT 5 July 2022)

The transition is framed as much as a potential burden as an opportunity, with divergent perspectives being voiced. Example (11) foregrounds optimism, presenting the transition as a generator of *new industries and new jobs*, reinforcing the connection of environmental action with economic opportunity. Example (12) introduces instead a conditional note: the transition must be weighed against *basic security*, and, if the two come into conflict, the latter concern should prevail, reverting to relying on traditional sources of energy. This choice is presented as the most responsible one. The juxtaposition of these two framings reflects a broader tension between opportunity and caution in the treatment of the transition, with economic and security considerations remaining central to the framing of sustainability.

4.3 The inter-corpus comparison

Noun	Absolute Frequency	Normalised frequency	Noun	Absolute Frequency	Normalised frequency
<u>transizione</u> (‘transition’)	41	37.06	credential	13	16.08
<u>Deal</u>	41	37.06	<u>space</u>	11	13.61
area (‘area’)	19	17.17	strategy	11	13.61
<u>energia</u> (‘energy’)	19	17.17	<u>economy</u>	11	13.61
<u>spazio</u> (‘space’)	18	16.27	<u>energy</u>	10	12.37
<u>economia/</u> <u>economy</u>	16	14.46	claim	9	11.13
Spighe (‘wheat spikes’)	15	13.56	<u>deal</u>	9	11.13
<u>rivoluzione</u> (‘revolution’)	15	13.56	<u>investment</u>	9	11.13
polmone (‘lung’)	14	12.66	<u>bond</u>	7	8.66
<u>svolta</u> (‘turn’)	12	10.85	<u>transition</u>	7	8.66
<u>obbligazione/ bond</u>	9	8.14	<u>technology</u>	6	7.42
<u>tecnologia/</u> <u>technologies</u>	9	8.14	finance	6	7.42
<u>investimento</u> (‘investment’)	8	7.23	<u>future</u>	6	7.42
ottica (‘perspective’)	8	7.23	roof	5	6.19
bandiera (‘flag’)	7	6.33	trade	5	6.19
Gas	5	4.52	<u>job</u>	5	6.19
<u>vessillo</u> (‘banner’)	5	4.52	cement	4	4.95
estate (‘summer’)	5	4.52	hydrogen	4	4.95
turismo (‘tourism’)	5	4.52	agenda	4	4.95

mobilità ('mobility')	5	4.52	field	4	4.95
progetto ('plan')	5	4.52	flag	3	3.71
oasi ('oasis')	4	3.62	guide	3	3.71
misura ('measure')	4	3.62	activist	3	3.71
città ('city')	4	3.62	<u>option</u>	3	3.71
ambassador	4	3.62	policy	3	3.71
trasformazione ('transformation')	4	3.62	development	3	3.71
trasporto ('transport')	4	3.62	way	3	3.71
futuro ('future')	4	3.62	revolution	2	2.47
iniziativa ('initiative')	4	3.62	candelabra	2	2.47
anima ('soul')	4	3.62	upgrade	2	2.47
fisco ('taxation')	3	2.71	thinking	2	2.47
tassonomia ('taxonomy')	3	2.71	recovery	2	2.47
tetto ('roof')	3	2.71	island	2	2.47
edilizia ('construction industry')	3	2.71	campaigner	2	2.47
building	3	2.71	resort	2	2.47
percorso ('path')	3	2.71	<u>skill</u>	2	2.47
<u>skill</u>	3	2.71	power	2	2.47
community	3	2.71	infrastructure	2	2.47
costume ('swimsuit')	3	2.71	initiative	2	2.47
ambito ('sphere')	3	2.71	rating	2	2.47
tema ('topic')	3	2.71	practice	2	2.47
prodotto ('product')	3	2.71	fuel	2	2.47
			issue	2	2.47

Tab. 4: Collocates for *verde+green* in ITA and for *green* in ENG, with absolute and normalised frequencies (per million)

Table 4 shows the cross-corpus comparison with aggregated frequencies for *verde* and *green* in the Italian corpus. While Italian combined occurrences total 430 across 84 collapsed collocates, only those with frequency ≥ 3 are shown here, resulting in 42 collocates displayed. All collocates for *green* in English are shown instead, with 199 occurrences across 43 collocates. Given the differing corpus sizes (ITA: 1,106,277 tokens; ENG: 808,402 tokens), normalised frequencies per million tokens are provided to enable meaningful comparison. Underlined items appear in both ITA and ENG; bold items collocate with both *verde* and *green* in ITA; italicised items represent loanwords pairs in ITA, where the English form collocates with *green* and its Italian equivalent collocates with *verde*. Comparing normalised frequencies reveals a higher overall tendency to use *verde/green* in the Italian corpus. *Green Deal* appears 41 times in Italian (37.06 per million) versus 9 times in English (11.13 per million), while *transizione/transition* (aggregating *verde* and *green*) appears 41 times in Italian (37.06 per million) versus 7 times in English (8.66 per million).

Commonalities include the metonymic function fulfilled by *verde* in Italian and *green* in English, both referring to physical spaces. Both corpora foreground systemic transformation

through *transition* and *revolution*, while Italian *svolta* ('turn') has no direct English equivalent in the data. Both corpora frame environmental action through financial mechanisms, with shared collocates including *economy/economia*, *bond/obbligazione*, and *investment/investimento* appearing at broadly comparable normalised frequencies. Similarly, business and employment appear across both corpora through *skills* and *jobs*. While *credentials*, the most frequent collocate in English, is entirely absent from Italian, *claim* appears in both corpora, though more prominently in English (11.13 per million) than in Italian (1.81 per million).

Energy and technology constitute another major focus in both corpora. While Italian favours generic terms (*energia*, *gas*), English gravitates toward more specific energy sources and technologies (*hydrogen*, *fuel*, *power*). Alongside these technological framings, policy-related collocates appear in both corpora with different frequencies. In ENG, *agenda*, *deal*, *policy*, and *recovery* total 18 occurrences (22.27 per million), while Italian policy terms total 48 occurrences (43.39 per million), a higher frequency which is almost entirely attributable to *Green Deal*. Additionally, *tassonomia* ('taxonomy,' 2.71 per million) appears only in ITA. This pattern can be linked to the UK's post-Brexit position: although the Green Deal was announced while it still technically remained an EU member state during its transition period, the UK did not participate in its implementation. Thus, while still affected by EU decisions, the UK was already less directly engaged with EU policies.

4.4 Creative elaborations

Due to the literal meaning of the colour adjective, an intuitive extension of the basic mapping exploits one of the main features of the source concept to introduce nuance in the target: just as a colour can have hues, and thus objects can be different shades of green, so can green concepts be more or less intense. This is most evident in the use of the following variants, that rely on a general mapping INTENSITY OF COLOUR IS INTENSITY OF CONCEPT. The comparative form appears with different frequencies across corpora:

- ITA *più green*: 34 occurrences (30.73 per million), *più verde*: 10 occurrences (9.04 per million); 44 combined (39.77 per million)
- ENG *greener*: 39 occurrences (48.24 per million)

In Italian, the loanword is adapted to grammatical rules with *più green* rather than *greener*. The comparative form is relatively more frequent in English than in Italian, notwithstanding the combined use of *più green* and *più verde*. This usage introduces two ideas simultaneously: that a quality of *green* has already been reached, signalling implemented progress, but also that the activity has been intensified, indicating a higher level of commitment. In Italian, the use is

further reinforced by the addition of *sempre* ('always') and *ancora* ('even') 13 times, foregrounding the constant effort to improve. The comparative appears across several semantic domains, where it can be applied to intensify, for instance, technological solutions, consumption practices, business operations, financial mechanisms, and mobility infrastructure. One notable collocate is *future*, reinforcing aspirational framing through phrases like *greener future*.

Beyond the comparative form, more creative instantiations exploit colour gradation as a shorthand for varying degrees of environmental commitment. The phrase *shades of green* in (13) constructs the notion of multiple approaches rather than a binary green/not-green distinction.

- (13) *Shades of green* on a voyage to the Arctic; Cruise holidays. On a small ship with a focus on sustainability, Patricia Cleveland-Peck is smitten by Norway (The Telegraph 16 July 2022)

This title employs a metaphor that is also topic-triggered, connecting to the aurora borealis visible in the Arctic. The article emphasises multiple environmental practices such as fuel sustainability, a smaller environmental footprint, and plant-based and locally sourced dining. In the article, the ship in question, MS Maud, is positioned as *greener* than cruise "behemoths which, in one day, can belch out more noxious emissions than a million cars," presenting the wider cruise industry as less green-tinged, a foil against which MS Maud's green credentials can be measured. *Shades* thus operates on two levels. First, it refers to different ways this cruise operator demonstrates environmental responsibility. Second, it establishes an implicit comparison between the greener MS Maud and its sustainability practices, and other operators; their varying degrees of commitment to sustainability 'colour' them different shades of green. The feature of colour gradation in the source domain is thus exploited as shorthand for constructing varying degrees of seriousness in approaches to environmental issues, suggesting multiple possible levels of engagement.

The colour gradient also maps onto scales of environmental commitment in regulatory and political contexts, with *dark green* and *light green* in (14) representing different levels of intensity, a coherent approach with *shades of green*, where darker conveys stronger commitment and lighter indicates less stringent requirements.

- (14) La quota di fondi azionari è la più alta sia per i prodotti classificati come articolo 9 del regolamento Sfdr (sono i fondi con un esplicito obiettivo di investimento sostenibile, i cosiddetti *dark green*) [...] sia per quelli classificati come articolo 8 (sono i fondi che promuovono caratteristiche ambientali e sociali, i cosiddetti *light green*) (CdS 13 June 2022)

The share of equity funds is highest both for products classified as Article 9 of the SFDR regulation (these are funds with an explicit sustainable investment objective, the so-called dark green) [...] and for those classified as Article 8 (these are funds that promote environmental and social characteristics, the so-called light green)

In sustainable investing, these terms designate different commitment levels based on the EU's SFDR (Sustainable Finance Disclosure Regulation): while *dark green* funds have explicit sustainable investment objectives, *light green* ones promote environmental and social characteristics, without having sustainability as the main objective.

The following expressions in (15-17) extend the mapping beyond colour, to include features of paint. In (15), the expression *tingere* ('to tinge') in the title emphasises environmental transformation as a process rather than a state.

(15) Beachwear sostenibile: l'estate si tinge di verde (Repubblica 16 May 2022)

Sustainable Beachwear: summer is tinged with green

A temporal dimension is added, mapping the adoption of sustainable practices onto the gradual process of colour spreading or infusing, thus presenting change as incremental rather than radical. Just as dye permeates textile material, environmental sustainability permeates the summer season. The expression *si tinge di verde* ('is tinged with green') indicates that the summer season, particularly beachwear fashion, is embracing ecological values through recycled materials and sustainable practices.

While *tingere* suggests genuine and lasting permeation with far-reaching effects, *paint* conveys superficiality and deception. The idiomatic expression *paint itself green* in (16) means to falsely portray oneself as environmentally friendly.

(16) The industry uses a range of corporate social responsibility initiatives to *paint itself green* (The Guardian 26 May 2022)

The article details how the tobacco industry is significantly contributing to pollution through mining of materials for batteries and the production of waste leaching into soil and water. However, the industry uses CSR (Corporate Social Responsibility) initiatives such as reforestation projects and sustainability index listings (Dow Jones Sustainability Index, Climate Disclosure Project) to create the pretence of an environmental consciousness. *Paint* emphasises the superficial nature of these efforts, comparable to applying a coat of paint to cover what lies underneath rather than making genuine improvements.

This usage extends to financial contexts:

- (17) Even some former industry insiders have broken ranks *to paint ESG as mere "greenwashing."* Tariq Fancy, BlackRock's former chief investment officer for sustainable investing, now calls sustainable investing "a dangerous placebo." (FT 28 May 2022)

Here there is direct reference to the term most commonly used to qualify such deceptive practices, "*greenwashing*." Similarly to tobacco companies' CSR initiatives, ESG becomes a deceptive coat of paint misrepresenting underlying actions and consequences. The criticism identifies ESG not merely as inadequate or ineffective, but as decorated or disguised to appear sustainable when it is not, resulting in hollow performance of sustainability rather than substantive environmental action. Tariq Fancy's characterisation of sustainable investing as *dangerous placebo* further compounds this assessment, strengthening the notion of its inefficacy. Thus, *tingere* and *paint* occupy opposite poles: the former suggests environmental values genuinely permeating an industry or season, while the latter exposes superficial greenwashing that conceals unchanged practices beneath cosmetic initiatives.

5. Conclusion

This study examined the collocational behaviour of *verde* and *green* in Italian and English newspaper discourse on sustainability, revealing how these terms structure environmental framings through both conventional and creative usage. The findings confirm and extend previous research on green discourse while offering a systematic comparative account of both *verde* and *green* in Italian sustainability discourse and their functional distribution.

The analysis substantiates key claims regarding the "greening of growth" framework (Feindt and Cowell 2010). Both corpora demonstrate that *green* operates primarily within market-based sustainability models, where environmental action is presented as compatible with, and indeed driving, economic growth. This manifests through dominant collocational patterns with financial mechanisms and business strategy, positioning sustainable practices as embedded within capitalist frameworks rather than challenging them. The emphasis on technological solutions is equally pronounced. Energy and technology-related collocates appear consistently, reinforcing the framing of technology as the ultimate solution for environmental issues. This aligns with the principle that technological improvements and market mechanisms, rather than fundamental structural change, constitute the primary means of addressing environmental problems (Jänicke 2008). The presence of consumerism-related collocates, particularly in

Italian, substantiates Diprose et al.'s (2018, 683) characterisation of media discourse as promoting sustainable consumerism as a "panacea for problems caused by overconsumption."

However, closer examination of concordances reveals critical voices challenging these dominant framings. The transition, though often presented as an opportunity, is at times contested, raising concerns about the provision of adequate policy instruments and possible damaging effects on companies and workers. The authenticity of green investments and commitments is frequently contested; *credential* carries a predominantly negative semantic prosody, appearing in contexts involving greenwashing accusations, regulatory scrutiny, and authenticity challenges. Similarly, *claim* appears in sceptical contexts questioning corporate environmental assertions. These critiques are echoed by the creative uses of *paint itself green* and *paint ESG as "mere greenwashing,"* exposing corporate social responsibility initiatives and ESG investing as deliberately misleading and superficial, concealing unchanged practices rather than genuine environmental improvements.

Within Italian, the English loanword *green* substantially outranks *verde* (233 vs. 197 occurrences) despite *verde*'s broader semantic range. Critically, *verde* retains exclusive metonymic function for physical green spaces, while *green* operates solely metaphorically for environmental sustainability. Creative instantiations extend the basic colour metaphor to convey nuanced sustainability gradations. The comparative forms (*più green/più verde/greener*) introduce the INTENSITY OF COLOUR IS INTENSITY OF CONCEPT mapping, signalling both progress achieved and intensified commitment. *Shades of green* constructs multiple approaches rather than binary distinctions, while regulatory *dark green* vs. *light green* categories formalise commitment hierarchies. Overall, although creative elaborations and critical counterpoints introduce more nuanced understandings, lexical patterns suggest *green* generally operates as a floating signifier (Catenaccio 2019), evoking ethicality while simultaneously avoiding concrete engagement with environmental issues. The recognition that genuine environmental action demands real sacrifice (Monbiot 2007) is largely absent from newspaper discourse, which tends to emphasise painless transitions, profitable sustainability, and consumer-driven solutions. *Green* terminology thus predominantly perpetuates, rather than challenges, the contradictions between environmental messaging and the structural changes climate action actually requires.

Bionote

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We Reduce, We Achieve, We Commit

A Corpus-assisted Discourse Analysis

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Abstract

This study explores how sustainability reports construct persuasive corporate identities that promote environmental and social responsibility. The analysis draws on a 455,000-token corpus of nine 2023 reports from companies listed in the Dow Jones Sustainability Index (DJSI), compiled and processed via Sketch Engine (Kilgariff, et al. 2014; 2004). Methodologically, this research integrates Corpus-Based Discourse Analysis (Baker 2023; 2014; Egbert and Baker 2020), the Appraisal Framework (Martin and White 2005) and Critical Genre Analysis (Bhatia 2017; 2014; 2008) to uncover both quantitative patterns and qualitative discursive strategies. Findings reveal that sustainability reports give rise to a coherent and future-oriented narrative identity (McAdams and McLean 2013), in which the corporation emerges as an ethical, proactive and people-centred actor. First-person plural forms (i.e., *we*, *our* and *us*) dominate the corpus, thereby pointing to categories such as agency, collective responsibility and ownership. These frequently co-occur with material process verbs that project transformative intent (Halliday and Matthiessen 2013) and with adjectives portraying the company as sustainable, inclusive and innovative (Stibbe 2015). The discursive interplay of these features builds an ethotic argument that positions the company as trustworthy and committed. Additionally, frequent references to 'science-based' goals serve to contract dialogic space and reinforce corporate credibility and ethical alignment, thus reducing interpretive openness (Fuoli 2018; Martin and White 2005). While such reports are framed as informative, this analysis suggests they increasingly adopt persuasive strategies typical of promotional genres. In line with Critical Genre Analysis, they exemplify genre bending (Bhatia 2008), revealing how corporate sustainability discourse functions as a tool for identity negotiation and reputational management.

1. Introduction

Sustainability reporting has become one of the most influential communicative arenas in which corporations negotiate their environmental and social legitimacy. As regulatory pressure intensifies and stakeholder expectations diversify, sustainability reports have evolved from technical disclosure documents into strategic narratives that articulate how organisations understand responsibility, frame their commitments and justify their actions to the public. In

line with institutional theory, this communicative function is deeply connected to legitimacy-building processes, whereby organisations depend on socially recognised norms of appropriateness to secure moral and cognitive standing (Suchman 1995; Meyer and Rowan 1977). From a critical perspective, sustainability communication is increasingly described as a rhetorical and ideological space in which companies attempt to shape stakeholder perceptions, promote corporate identity and position themselves favourably within contested debates on environmental responsibility (Higgins and Coffey 2016; Wright and Nyberg 2015).

Within environmental discourse studies, it is well established that sustainability narratives are shaped by broader socio-political imaginaries that influence what counts as legitimate environmental action. Scholars such as Hajer and Versteeg (2005) and Alexander (2010) demonstrate how discursive constructions of ecological challenges are embedded in dominant cultural frameworks that circumscribe agency, responsibility and desirable futures. These imaginaries often stabilise managerialist interpretations of sustainability by foregrounding technological solutions, incremental improvements and corporate self-regulation. The complexity and fragmentation of the notion of sustainability across discourse communities further complicate these communicative processes, creating tensions in how organisations frame ecological challenges and articulate their commitments (Krieg and Toivanen 2021; Godemann and Michelsen 2011).

Parallel developments in ecolinguistics and environmental communication highlight the role of language in shaping the “stories we live by” (Stibbe 2021), the cultural narratives that underpin our relationship with nature and inform collective understandings of environmental issues. Corpus-assisted approaches to ecolinguistics (Poole 2022; 2017) have shown how linguistic patterns may subtly naturalise particular framings of ecological value, prioritise certain actors or marginalise others. These insights have contributed to a growing recognition that sustainability reports are not neutral repositories of information but discursive artefacts in which language, ideology and institutional pressures converge.

Despite this rich body of research, relatively little attention has been devoted to how large multinational corporations construct corporate identity, agency and epistemic authority in sustainability reports through patterned lexico-grammatical choices. Existing studies have examined how sustainability discourse blends accountability and persuasion (Catenaccio 2019; Higgins and Coffey 2016) and highlighted the hybrid nature of corporate sustainability communication (Bhatia 2017; 2014; 2008). Corpus-based research has also provided valuable insights into CSR reporting, particularly in relation to stance and (im)personalisation strategies (Castagnoli 2021a, 2021b; Castagnoli and Magistro 2019). However, these studies tend to focus on specific linguistic features or cross-linguistic comparisons. Building on this work, the present study adopts an integrated corpus-assisted discourse approach to examine how a broader range

of linguistic resources operates across reports produced by high-performing, Dow Jones Sustainability Index (DJSI)-listed firms under stringent reporting frameworks.

The present study addresses this gap by conducting a corpus-assisted discourse analysis of sustainability reports produced in 2023 by companies listed in the Dow Jones Sustainability Index (DJSI). These firms offer an analytically significant sample: they are subject to mature reporting practices, external scrutiny and well-established environmental, social and governance (ESG) evaluation criteria, making them ideal for examining how discursive strategies operate within highly codified communicative environments. Drawing on Corpus-Based Discourse Analysis (Baker 2023; 2014; Egbert and Baker 2020), Appraisal Theory (Martin and White 2005), Systemic Functional Linguistics (Halliday and Matthiessen 2013), Critical Genre Analysis (Bhatia 2017; 2014; 2008) and narrative identity theory (McAdams and McLean 2013), the study explores how linguistic choices frame the corporation as an agentive, responsible and forward-looking subject.

Specifically, this study addresses the following research questions:

- RQ1. What lexico-grammatical patterns characterise sustainability reports produced by multinational corporations listed in the DJSI?
- RQ2. How do pronoun choices, verbal processes and evaluative adjectives contribute to the construction of corporate identity, agency, ethical positioning and epistemic authority?
- RQ3. In what ways does sustainability reporting blend informational and promotional discourse, and how does this hybridity relate to broader legitimacy-oriented communication strategies?

2. Materials and methods

2.1 Data collection

Data for this study were collected through the collaboration of a consultant working in the sustainability services sector, who facilitated access to a set of corporate sustainability reports published in 2023. While the consultant acted as an intermediary, all documents analysed in this study are publicly accessible through the respective companies' websites or sustainability disclosure portals. The role of the intermediary was therefore limited to curation rather than provision of non-public material, ensuring full transparency and replicability of the corpus.

The dataset consists of nine sustainability reports produced by companies listed in the DJSI, a globally recognised benchmark for evaluating the ESG performance of major multinational firms. The decision to focus on DJSI-listed companies was grounded in three procedural considerations. First, these companies operate under some of the most mature and institutionalised sustainability reporting frameworks, offering a corpus where discursive

conventions are highly stabilised. Second, DJSI firms are regularly subjected to external assessments, ratings and benchmarking exercises, which exert pressure towards uniformity, transparency and strategic communication. Third, the selection of established and internationally visible corporations allows for the analysis of sustainability discourse in communicative environments characterised by high reputational stakes and sophisticated corporate identity work.

The nine companies included in the corpus represent a diverse but coherent subset of the DJSI universe: 3M, Cisco Systems, The Coca-Cola Company, Dow Inc., Goldman Sachs, Johnson & Johnson, Pfizer, Verizon Communications and Volkswagen Group. These firms were selected at random from within the index to avoid thematic or sectoral bias, while the shared DJSI membership ensures comparability in terms of reporting practices, adherence to ESG standards and accessibility of data. Although sectoral diversity is present, this feature is analytically valuable, as it enables the detection of cross-sector discursive patterns that may characterise sustainability reporting as a genre rather than as an industry-specific practice.

Each report was downloaded in its original PDF format and subjected to a two-step cleaning process. First, texts were extracted using automated text-recognition tools to remove formatting artefacts such as headers, footers and page numbers. Second, the extracted material was manually inspected to ensure consistency and comparability across texts. Where visual or layout-based elements did not contribute continuous running text (i.e., tables, graphs and figures), the corpus was restricted to the main narrative text, while retaining any embedded linguistic content where relevant for analysis. This workflow ensured that the resulting corpus was both linguistically coherent and computationally suitable for corpus-assisted discourse analysis.

The cleaned files were then merged into a unified dataset, referred to as the *Sustainability Reports Corpus DJSI 2023*, and uploaded to the corpus linguistic software Sketch Engine (Kilgarriff, et al. 2014; 2004), which was selected for its analytical capabilities, including frequency profiling, concordancing, collocation analysis and grammatical pattern identification. The final corpus comprises 455,269 tokens across the nine reports.

Because all texts are publicly available and contain no personal or sensitive information, the study does not raise ethical concerns related to confidentiality or data protection. The use of already-public corporate documents also aligns with established practices in discourse analysis, whereby institutional texts are treated as part of the public communicative landscape.

2.2 Methodology

This study adopts an integrated corpus-assisted discourse-analytic methodology designed to identify recurring lexico-grammatical patterns in sustainability reports and to interpret how

these patterns contribute to the construction of corporate identity, agency and epistemic authority. The methodological rationale follows the principle that corpus methods provide empirical grounding and pattern-recognition capabilities, while discourse-analytic frameworks offer the interpretive tools needed to contextualise those patterns within broader communicative and ideological practices. Ensuring transparency and coherence throughout the process was a key concern, especially given the hybrid nature of the methods involved.

After the corpus of reports was compiled and cleaned, all texts were uploaded to the Sketch Engine platform (Kilgariff, et al. 2014; 2004), which was used for the entirety of the corpus analysis. As mentioned earlier, Sketch Engine was selected because it enables systematic examination of linguistic patterns through frequency lists, concordance lines and grammatical relations. These analytical functions were employed not to produce statistical generalisations beyond the corpus, but to identify recurrent features in the dataset and provide empirical evidence for subsequent qualitative interpretation. The absence of a suitable external reference corpus for sustainability reporting, and the highly specialised nature of the genre, meant that the analysis focused exclusively on internal corpus dynamics rather than on keyword comparisons. This approach is consistent with established practices in corpus-assisted discourse studies, where the primary objective is often to uncover recurrent linguistic behaviour within a specific genre rather than to compare it against general-language norms (Baker 2023; Partington, et al. 2013; Stubbs 1996). As noted in genre analysis and specialised discourse research, internal patterning is sufficient when the aim is to describe how a communicative domain constructs meaning through its own conventionalised linguistic resources (Bhatia 1993; Biber 1988).

The first stage of the analysis consisted of mapping salient forms through frequency exploration. Particular attention was devoted to three linguistic features that displayed notable prominence across the corpus: first-person plural pronouns, material process verbs and evaluative adjectives. These categories were selected not only on the basis of frequency, but also for their theoretical relevance: first-person plural pronouns function as key resources for constructing collective corporate identity and positioning the organisation as a unified actor (Koller 2004; De Fina 2003), material process verbs encode agency and action within a systemic functional framework (Thompson 2014) and evaluative adjectives realise Appraisal resources that contribute to stance, legitimacy and ethical positioning (Hunston and Thompson 2000; Thompson and Hunston 2000). Frequency information was used heuristically, not inferentially, to identify which items warranted closer qualitative attention. Once these candidates emerged, concordance analysis was performed to investigate how the terms functioned in their immediate co-texts. This step was crucial, as it allowed the investigation of semantic preference, evaluative prosody, transitivity structures and patterns of narrative positioning. No automated

categorisation was accepted uncritically; instead, quantitative findings were repeatedly cross-checked through manual inspection to avoid misinterpretation of ambiguous or polysemous items.

The corpus findings were then interpreted through a set of complementary theoretical perspectives. Appraisal Theory (Martin and White 2005) was employed to examine evaluative language, stance-taking and dialogic strategies. This framework was particularly helpful for analysing attitudinal lexis, lexical choices that amplify commitment, and expressions that contract dialogic space, such as references to science-based goals. In addition, Lee (2015) informed a more fine-grained analysis of Appreciation, particularly the ways in which evaluation may be realised indirectly through domain-anchoring and the signalling of relevance, rather than through overt attitudinal markers. Systemic Functional Linguistics (Halliday and Matthiessen 2013) underpinned the analysis of transitivity, especially the marked predominance of material processes across the corpus. This allowed a detailed understanding of how agency and intentionality are grammatically encoded, shedding light on the discursive construction of corporations as transformative and proactive actors. Critical Genre Analysis (Bhatia 2017; 2014; 2008) provided the analytical framework for examining the hybrid communicative nature of sustainability reports, where informational and promotional purposes coexist and interact. This perspective supported the identification of genre bending strategies and the embedding of reputational aims within ostensibly factual reporting. Narrative Identity Theory (McAdams and McLean 2013) facilitated the analysis of temporal coherence, enabling exploration of how corporations construct a consistent self through coordinated references to past performance, present commitments and future aspirations. Finally, theoretical insights from ecolinguistics (Stibbe 2021; Poole 2022; 2017) allowed the analysis to engage with the ideological dimensions of environmental discourse and to consider how linguistic patterns contribute to the normalisation of particular *stories we live by* (Stibbe 2021) relating to ecological responsibility.

Throughout the analysis, a reflexive stance was maintained. While corpus methods provide a high degree of transparency in identifying recurrent textual features, interpretation necessarily involves researcher judgement. For this reason, all qualitative interpretations were triangulated with multiple types of corpus evidence to reduce the risk of over-interpreting isolated occurrences. Particular caution was applied when dealing with rhetorically salient but infrequent expressions. In such cases, the analysis foregrounds their qualitative significance rather than extrapolating frequency-based claims. This methodological balance ensures that the study remains empirically grounded while still capturing the genre-specific discourse characteristic of sustainability reporting.

Overall, this integrated methodology enables a rigorous and multidimensional examination of how linguistic choices contribute to the identity work, legitimacy-building strategies and epistemic positioning of corporations within sustainability discourse. The combination of systematic corpus analysis and theoretically informed interpretation provides a coherent framework for understanding sustainability reports not simply as informational documents, but as complex discursive artefacts shaped by institutional pressures, communicative intentions and ideological assumptions.

3. Analysis

3.1 First-person pronouns

A prominent feature emerging from this corpus is the high frequency of first-person plural pronouns, particularly *we* and *our*. The frequency lists generated in Sketch Engine show that *our* is the most frequent of the three inflectional forms, occurring 13,734.74 times per million words (pmw), followed by *we* at 9,234.10 pmw, whereas *us* appears only 810.51 pmw. Although these values are interpreted as exploratory indicators rather than statistical proof, they highlight a consistent pattern: this corpus of DJSI-listed companies' 2023 reports favours constructions that foreground corporate agency and ownership, while downplaying grammatical contexts in which the corporation is positioned as an object.

This distribution was further examined through concordance analysis, which revealed dense clusters of *we* and *our* in proximity to verbs of action, commitment and responsibility. Drawing on Appraisal Theory (Martin and White 2005) and Systemic Functional Linguistics (Halliday and Matthiessen 2013), these pronouns can be seen as central resources for constructing stance and projecting an agentive corporate identity. *We* typically functions to foreground the corporation as an agentive Actor, frequently occupying clause-initial position and introducing material processes that describe strategic action or sustainability initiatives. This pattern is evident in the following excerpt from the 3M report:

- (1) From the bottom to the top of **our** organization, **we're** dedicated to following **our** related principles and policies and pursuing **our** related goals and risk-mitigation efforts. **We take** industry-leading actions to **measure** and **reduce our** greenhouse gas (GHG) emissions, and **we offer our** customers a wide range of innovative products. **We work** collaboratively with governments and global partners to **advance our** impact in meeting this important global challenge. (3M CSR 2023)

Here, the repeated clause-initial *we* combines with high-transitivity material verbs (*take, measure, reduce, offer, work*) to construct a corporate self that is purposeful, competent and continuously engaged in forward movement.

By contrast, *our* anchors sustainability efforts within a frame of internal ownership and accountability. Its very high normalised frequency reflects the reports' discursive emphasis on principles, assets, operations and achievements attributed to the corporate collective. This is illustrated in the following example:

- (2) We are purchasing these EVs at a rate aligned with available products and charging infrastructure suitable for **our** operations.

Verizon's Circular Supply Chain team partners with Corporate Sourcing to incorporate terms into **our** supplier contracts for the responsible end-of-life management of **our** products. (Verizon)

Such uses reinforce the idea that sustainability performance is structurally embedded within corporate processes and capabilities.

The contrast with *us*, which is comparatively rare, is equally revealing. In this corpus, *us* appears in contexts where the corporation is grammatically realised as a non-subject participant, typically in object or complement position, rather than as an initiating Actor. In the few instances where *us* appears, it tends to occur in contexts where the corporation is a beneficiary rather than an initiator of action:

- (3) This paved the way for **us** to begin construction on the world's first net-zero Scope 1 and 2 GHG emissions integrated ethylene cracker and derivatives site. This helped **us** gain more accurate and comprehensive insights into our supply chain's carbon footprint, identifying opportunities for improvement. (Dow)

The low normalised frequency of *us* (810.51 pmw) should be interpreted with caution, as it partly reflects the grammatical constraints on object pronouns in English, rather than a purely discursive preference. However, within these constraints, its distribution in this corpus still suggests a tendency to background the corporation's agentive role, as *us* occurs primarily in constructions where action is enabled by external factors or processes.

Taken together, these quantitative and qualitative patterns reveal a clear rhetorical orientation in sustainability reporting across this corpus. The saturation of discourse with *we* and *our* and the relative avoidance of *us* construct a corporate identity rooted in agency, responsibility and intentionality. Such linguistic choices support what could be described as

ethotic positioning, whereby corporations cultivate an image of trustworthiness, moral investment and strategic competence. In this way, first-person pronouns function not merely as grammatical elements, but as key discursive mechanisms through which sustainability reports articulate leadership and reinforce legitimacy.

3.2 Material verbs

A second salient pattern revealed by the corpus concerns the predominance of material process verbs. In Systemic Functional Linguistics, material processes construe actions involving concrete or metaphorical change, with an Actor who actively brings about an outcome (Halliday and Matthiessen 2013). Frequency lists generated in Sketch Engine show that several material process verbs occur frequently across the dataset and concordance analysis indicates that they often appear in clause-initial or otherwise rhetorically salient positions. To provide empirical transparency, Table 1 reports both raw frequencies and normalised frequencies per million words (pmw) of the most frequent verbs in the corpus. Following established corpus-assisted discourse analytical practice (Baker 2023; Partington, et al. 2013; Biber 1988), these values are interpreted as exploratory indicators of salience rather than as evidence of statistically robust distributional patterns.

Verb	Frequency (raw)	Frequency per million tokens (pmw)
be	6,804	14,945.01
have	1,811	3,977.87
include	1,672	3,672.55
provide	914	2,007.60
help	848	1,862.64
support	799	1,755.01
use	787	1,728.65
work	747	1,640.79
reduce	570	1,252.01
continue	516	1,133.40
create	498	1,093.86
make	470	1,032.36
identify	462	1,014.78
improve	440	966.46
drive	415	911.55
do	382	839.06

Tab. 1: Most frequent material verb lemmas in the *Sustainability Reports Corpus DJSI 2023*

As shown in Table 1, verbs encoding action and organisational activity, such as *provide*, *support*, *work*, *reduce* and *create*, are among the most recurrent lexical items in the corpus.¹ The prominence of material verbs substantiates a broader analytical pattern: the sustainability reports in this dataset consistently foreground the corporation as an Actor engaged in purposeful, future-oriented and often improvement-oriented activity. The discursive effect is not merely descriptive, but identity-building: by repeatedly associating themselves with high-transitivity processes, organisations construct a narrative of dynamism, competence and continuous advancement.

This pattern is particularly evident in examples where clusters of material verbs create a progressive temporal sequence, presenting sustainability as both an ongoing effort and a trajectory of measurable improvement. Consider the Coca-Cola report:

- (4) We are **working** to **reduce** our carbon footprint in line with science to avoid the worst impacts of climate change. As of 2022, we **reduced** our emissions across Scopes 1, 2 and 3 by 7%, **making** progress toward our science-based reduction target of 25% by 2030 against a 2015 baseline. Our ambition is to **achieve** net zero emissions by 2050. (Coca-Cola)

Here, *working*, *reduce(d)*, *making progress* and *achieve* create a cumulative effect that moves from present engagement to demonstrated results and anticipated future achievement. The sequencing of these material processes constructs a logic of improvement, while simultaneously reinforcing the organisation's stance as proactive and aligned with institutionalised climate goals. A similar strategy appears in the Dow report:

- (5) We also are **innovating** ways to **offer** products that **support** our customers' efforts to **reduce** their GHG emissions and to **accelerate** reductions along the supply chain. Our newly launched Water & Nature strategy is designed to **achieve** water resilience while also positively **impacting** the communities and ecosystems where we **operate**. (Dow)

The dense concentration of material verbs (*innovating*, *offer*, *support*, *reduce*, *accelerate*, *achieve*, *impact*, *operate*) exemplifies a kind of actionalisation, that is the discursive representation of institutional actors primarily through acts of doing. These verbs situate the company as a

¹ Although *be*, *have* and *include* are the most frequent forms overall, they are not material verbs; their frequency reflects their grammatical and discourse-organising roles (i.e., attribution, possession, listing), which are typical of corporate reporting discourse.

catalyst of change, both internally and across its value chain. The Goldman Sachs report reinforces this orientation:

- (6) We've **continued** to **advance** our commitment to **enhance** and **expand** sustainable finance expertise across our business segments and **launched** our inaugural Sustainability Bond and Goldman Sachs Sustainability Issuance Framework in 2021.
(Goldman Sachs)

Here, *continue*, *advance*, *enhance*, *expand* and *launched* again foreground a logic of purposeful progression. Several of these verbs carry positive semantic prosody, particularly *enhance* and *expand*, thereby blending informational reporting with promotional discursive strategies and supporting the organisation's ethic positioning as a forward-looking and responsible financial actor.

In aggregate, the quantitative analysis of material processes and their recurrent discursive functions indicate that the sustainability reports in the corpus construct corporate agency through patterned representations of continuous action, improvement and innovation. Material verbs thus play a central role in narrating organisational identity: they enable companies to present themselves not simply as compliant or accountable, but as transformative agents actively shaping environmental and social futures.

3.3 Adjectives

A further pattern emerging from the corpus concerns the semantic clustering of high-frequency adjectives. Although adjectives are typically less central than verbs in construing agency, they play a crucial role in shaping evaluative stance, defining domains of relevance and signalling the discursive priorities of sustainability reporting. Frequency lists generated in Sketch Engine reveal that a relatively small group of adjectives accounts for a disproportionately large share of adjectival usage in the corpus. Rather than functioning as random lexical variation, these items form recognisable semantic clusters that contribute to the construction of legitimacy, value and organisational identity. To provide transparency, Table 2 summarises the most frequent adjectives together with their normalised frequencies.

Adjective	Frequency (raw)	Frequency per million tokens (pmw)
global	761	1,671.54
sustainable	651	1,429.92
environmental	570	1,252.01

new	548	1,203.68
healthy	501	1,100.45
total	467	1,025.77
human	419	920.34
social	409	898.37
corporate	399	876.40
inclusive	371	814.90
fiscal	352	773.17
key	311	683.11
responsible	307	674.33
renewable	302	663.34
diverse	300	658.95
good	296	650.17

Tab. 2: Most frequent adjectives in the *Sustainability Reports Corpus DJSI 2023*

A first cluster consists of evaluative and ethical adjectives such as *sustainable*, *healthy*, *responsible*, *inclusive*, *renewable*, *diverse* and *good*. Interpreted through Appraisal Theory (Martin and White 2005), these items can be associated with resources of Appreciation and Judgement, contributing to the positive evaluation of corporate actions and organisational conduct. Frequency patterns suggest that such adjectives are recurrent in the corpus; however, their evaluative force is best understood in context. To illustrate how these items function discursively, a selected concordance example is presented below:

- (7) By building a **diverse** team that reflects the world in which we live and fostering an **inclusive** culture where everyone can grow and thrive, we are able to create innovative solutions and deliver long-term business growth and success. (Dow)

In this example, *diverse* and *inclusive* express positive evaluation in Appraisal terms, presenting the organisation as socially aware and ethically responsible. Their use as pre-modifiers (*diverse team*, *inclusive culture*) weaves this evaluation into what appears to be neutral description, making the positive stance less overt. In terms of Lee (2015), these items can be interpreted as instances of Valuation, specifically Sociality Valuation, as they construe the practices described as socially desirable and aligned with broader community values rather than assessing aesthetic qualities or technical effectiveness. At the same time, these adjectives occur alongside material processes (*building*, *fostering*, *create*, *deliver*), which portray the company as actively producing both social and economic outcomes. Together, this pattern links

ethical values with performance and growth, helping to construct a credible and positively evaluated organisational identity.

A second cluster comprises salience-marking adjectives such as *total*, *key*, *high* and *significant* (the latter just below the cut-off of Table 2 but frequent in the corpus). These adjectives frequently operate as resources of Appreciation, contributing to the evaluation of entities and processes in terms of their relevance and importance in the reporting framework. The following example illustrates how these items function in discourse.

- (8) Any **significant** changes in the measurement methods and/or data values applied to **key** environmental metrics from previous years are disclosed in the report. (3M)

In this example, *significant* and *key* realise Appreciation: Valuation, specifically Salience Valuation, as they construe the changes and metrics as important in the field of sustainability reporting. In line with Lee (2015), such items appear to evaluate the social and institutional significance of entities and processes, rather than simply scaling their intensity. Their placement in pre-modifying noun phrases (*significant changes*, *key metrics*) integrates evaluation into technical description, making the evaluative stance less overt. At the same time, the clause is framed through a reporting structure (*are disclosed*), which reinforces a discourse of transparency and procedural rigour. As a whole, this configuration presents importance as an inherent property of the reported elements, supporting a form of evaluation that remains consistent with the conventions of formal, ostensibly objective reporting.

A third cluster includes domain-anchoring and futurity-oriented adjectives such as *environmental*, *social*, *human*, *corporate*, *fiscal*, *global*, *new* and *digital* (the latter also just below the cut-off). These items do not so much express evaluation as place corporate activities in recognisable institutional and knowledge domains. As conceptualised by Lee (2015), these items can be interpreted as instances of Appreciation: Valuation, specifically Sociality Valuation, not primarily because they encode overt evaluation, but because they position entities and processes in socially recognised domains of relevance (i.e., *environmental*, *social*, *human*). As Lee (2015) shows, Sociality Valuation often operates through such domain anchoring, where the value of an entity is implied through its association with established fields of knowledge and practice rather than explicitly stated. Their frequent use suggests a tendency to ground sustainability discourse in familiar domains of expertise while also signalling alignment with wider societal and technological developments. In this sense, they contribute to what Bhatia (2017) describes as “interdiscursive competence,” that is, the ability of organisations to draw on and combine different specialised discourses in order to enhance credibility. The following example illustrates how these resources work in context:

- (9) As a world-leading materials science company, we understand that **natural** resources, such as water and biodiverse ecosystems, are critical to many products important to everyday life and **human** progress. (Dow)

In this example, *natural* and *human* function as Sociality Valuation, anchoring the statement in broadly recognised domains (environment and society). The expression *world-leading* introduces a more explicit evaluative element, positioning the company as authoritative, while *critical* signals the importance of natural resources and can be read as Salience Valuation. These meanings are embedded in a declarative structure (*we understand that...*), which presents them as generally accepted rather than subjective. This helps the text build credibility by bringing the organisation in line with shared priorities, while maintaining a neutral, informational tone.

Together, the distribution of adjectives in the corpus reveals that the sustainability reports investigated in the corpus do not merely describe organisational attributes; they strategically deploy adjectival resources to construct value, amplify significance, denote field-specific legitimacy and signal futurity or innovation. The recurrent clustering of evaluative, quantitative and domain-specific adjectives supports the broader view that the sustainability reports in this corpus can be regarded as a hybrid genre where informational aims interact with promotional and reputational strategies. Adjectives therefore contribute to the construction of a discursive environment in which corporate actions are framed as desirable, impactful and in unison with collectively sanctioned visions of sustainable development.

3.4 Narrative identity in corporate discourse

One more pattern emerging from the corpus is the construction of a coherent corporate *narrative identity*. Following McAdams and McLean (2013), Narrative Identity Theory refers to the interpretive frameworks through which actors organise past, present and future events into a meaningful, morally inflected storyline. Although sustainability reports are ostensibly informational documents, their linguistic patterns reveal a pronounced narrative structuring of organisational self-presentation. The recurrent use of clause-initial *we*, the clustering of material verbs encoding purposeful action and the saturation of attitudinal adjectives collectively position the corporation as a stable, agentive and forward-looking protagonist.

Across the corpus, this narrative identity is organised around a three-part temporal configuration. First, companies frequently evoke a retrospective anchoring, framing sustainability commitments as longstanding, principled and embedded within organisational culture. For example, one report states:

- (10) **For over a decade**, we have **strengthened** our commitment to **responsible** growth

by integrating environmental and social considerations into every major business decision. (Johnson & Johnson)

Here, the temporal marker *for over a decade* situates present actions within a longer historical trajectory, while the material verb *strengthened* retrospectively attributes consistency and deliberate reinforcement to corporate conduct. The evaluative adjective *responsible* reinforces moral continuity across time. Second, the present is depicted as a moment of accountability, active implementation and strategic purpose. Present-oriented clauses are saturated with high-transitivity material processes, as is evident in the following excerpt:

- (11) We are **implementing** new circularity initiatives across our operations and **expanding** partnerships to **accelerate** progress toward our 2030 goals. (Pfizer)

The sequence *implementing*, *expanding* and *accelerate* constructs the corporation as currently embedded in dynamic, measurable action. The adjective *new* conveys renewal and innovation, while *circularity* grounds the discourse in a recognisable environmental domain and economy.

Third, future-oriented projections articulate aspirational trajectories and map current actions onto desired outcomes, as illustrated in the extract below:

- (12) **By 2050**, we **aim to achieve** net-zero emissions and contribute to a more **resilient**, **inclusive** and **sustainable** global economy. (Volkswagen Group)

The phrase *by 2050* establishes a concrete future horizon; *aim to achieve* projects intentionality and directionality; and the cluster of evaluative adjectives (*resilient*, *inclusive*, *sustainable*) frames the projected future as normatively desirable. This rhetorical configuration produces what can be described as a *teleological narrative*: present commitments are positioned as necessary steps toward an anticipated future aligned with institutionalised visions of sustainability.

These three temporal layers (i.e., retrospective grounding, present enactment and future aspiration) combine to produce a cohesive narrative identity in which the corporation appears purposeful, morally invested and strategically oriented toward improvement. The narrative is further stabilised by the evaluative environment established by high-frequency adjectives such as *responsible*, *inclusive*, *renewable* and *key*, which infuse the storyline with positive moral and strategic valuation. Such attitudinal saturation consolidates the representation of the corporation as a consistent and trustworthy actor whose actions are guided by enduring principles.

To assess whether this configuration extends beyond isolated instances, a corpus-assisted quantitative analysis was conducted. As shown in Table 3, futurity markers (i.e., *will*, *aim to*, *plan to*, *targets*, *by + year*) occur 399 times across the corpus, corresponding to a normalised frequency of 876.40 occurrences per million tokens. As reported in Table 4, these future-oriented segments show a high degree of evaluative saturation: 312 instances (685.31 pmw) contain at least one evaluative adjective, while coordinated adjectival clustering is also frequent, with 201 occurrences (441.50 pmw) of two or more adjectives and 96 occurrences (210.86 pmw) of three or more. By contrast, as illustrated in Table 5, non-future contexts display substantially lower levels of evaluative density, with only 92 instances (202.08 pmw) of two-adjective clustering and 28 instances (61.50 pmw) of three-adjective sequences. Taken together, these findings indicate that future-oriented discourse is not merely informational but constitutes a privileged site for intensified positive evaluation.

Marker	Frequency (raw)	Frequency per million tokens (pmw)
will	142	311.90
aim / aims / aiming	36	79.07
plan / plans / planning	41	90.06
target(s)	89	195.49
by + year	64	140.58
looking ahead / forward-looking	27	59.31
Total futurity markers	399	876.40

Tab. 3: Distribution of lexical and grammatical markers of futurity (i.e., *will*, *aim to*, *plan to*, *targets*, *by + year*) identified across the *Sustainability Reports Corpus DJSI 2023*

Category	Frequency (raw)	Frequency per million tokens (pmw)
≥1 evaluative adjective	312	685.31
2+ adjectives (clusters)	201	441.50
3+ adjectives (stacked clusters)	96	210.86
No evaluation	87	191.10

Tab. 4: Distribution of evaluative adjectives and adjectival clustering in corpus segments containing futurity markers

Category	Frequency (raw)	Frequency per million tokens (pmw)
≥1 evaluative adjective	184	404.16
2+ adjectives	92	202.08
3+ adjectives	28	61.50
No evaluation	216	474.44

Tab. 5: Distribution of evaluative adjectives and adjectival clustering in corpus segments without futurity markers

These distributional patterns lend empirical support to the interpretation of futurity as a key site of evaluative intensification, reinforcing the broader narrative configuration outlined above. From a genre perspective, this narrative configuration exemplifies Bhatia's (2017) observation that institutional genres often embed private intentions, here, reputational enhancement, in public, informational text types. In the texts analysed, sustainability reporting does not simply enumerate discrete initiatives; rather, it positions those initiatives within a broader, value-laden storyline that frames the corporation as both stable and progressive. In this dataset, narrative identity thus emerges as a central mechanism through which these reports respond to the dual demands of accountability and promotion, enabling organisations to present themselves as coherent, future-oriented actors operating within a moral and developmental arc.

3.5 The discursive function of 'science-based'

A further dimension of discourse in the corpus concerns companies' strategic use of the lexicon of *science* and *science-based* methodologies, typically through terms such as *science-based targets*, *science-based carbon budgets*, *science-based emissions-reduction targets*, and references to the Science Based Targets initiative (SBTi). These formulations perform a crucial discursive function: they anchor sustainability claims within an external epistemic regime, thereby enhancing credibility and reducing the potential for contestation. In Appraisal Theory terms (Martin and White 2005), such formulations enact *dialogic contraction*, presenting propositions as grounded in authoritative, verifiable knowledge rather than in corporate judgement or discretionary interpretation.

Across the corpus, the lemma *science-based* occurs 37 times, corresponding to a normalised frequency of 81.27 occurrences per million words. Although relatively low in absolute terms, its distribution across our corpus indicates that the expression is not confined to a single report but constitutes a recurrent feature. Concordance analysis reveals a strong tendency for *science-based* to occur in pre-modifying noun phrases, most frequently in combinations such as *science-*

based targets, science-based approach, science-based emissions reduction target and science-based methodology.

These patterns show that the expression is primarily embedded in technical and goal-oriented constructions, where it functions to qualify corporate commitments and strategies rather than to describe empirical processes. In many cases, it co-occurs with lexical items related to planning and commitment (i.e., *target, goal, plan, commitment*), often in forward-looking statements.

From a discourse perspective, this pattern suggests that *science-based* operates as a legitimising resource, indexing alignment with externally validated frameworks (notably the Science Based Targets initiative, explicitly referenced in several concordance lines). Consider the following example:

- (13) As of 2022, we reduced our emissions across Scopes 1, 2 and 3 by 7%, making progress toward our **science-based** reduction target of 25% by 2030 against a 2015 baseline. Several of our bottling partners have announced their own **science-based** targets [...] (Coca-Cola)

The repeated reference to *science-based* benchmarks contracts dialogic space by invoking an externalised standard that is positioned as objective and non-negotiable. In Martin and White's terms, this constitutes a *bare assertion*, whereby the writer presents the proposition as one that has no dialogistic alternatives which need to be recognised or engaged with. The corporation's performance is thus framed not merely as progress, but as progress as defined by science. This stance implicitly limits alternative interpretations of emissions data or target adequacy by pre-aligning the reader with a specific epistemic authority. A similar dynamic emerges in the extract below:

- (14) The referenced 2° and 1.5° pathways are based on Goldman Sachs' Carbonomics research, which starts with the same **science-based** carbon budgets from IPCC as other research scenarios [...] (Goldman Sachs)

Here, scientific authority is used both intertextually (invoking IPCC budgets) and interdiscursively (linking financial research to scientific modelling). The effect is to position the corporation's scenario planning as derivative of, and therefore legitimised by, a universally recognised scientific institution. This move reduces the reader's opportunity to question the assumptions underlying the pathway modelling by presenting them as already validated by the

scientific community. Another example illustrates how the invocation of science is used to guide stakeholder expectations:

- (15) We look forward to progressing through the **Science Based** Targets initiative (SBTi) validation process in 2024. (3M)

This formulation constructs scientific validation as an external checkpoint that the company willingly submits to. The stance is one of transparency and accountability, but it also functions rhetorically to pre-empt criticism: if targets are validated by SBTi, then they implicitly meet the highest standards of scientific rigour. The company thereby positions itself within a regime of external scrutiny that is framed as both desirable and authoritative. Finally, consider the following example:

- (16) All sectors have a responsibility to address the climate crisis [...] promoting **science-based** plans, goals and commitments. (Cisco)

The use of *responsibility* and *science-based* casts adherence to scientific guidance as both ethically required and normatively universal. This move constructs science as a moral compass, where deviation from science-based planning is implicitly irresponsible. The discursive effect is to strengthen the corporation's moral identity by aligning its actions with established principles of environmental responsibility.

Overall, these examples illustrate how references to *science-based* function not only as epistemic resources but also as resources for Judgement: Social Sanction (Martin and White 2005). Social Sanction concerns the evaluation of behaviour in relation to normative systems, typically realised through Veracity (truthfulness, credibility) and Propriety (ethical correctness, responsibility). In the present data, these values are not expressed through explicit moral adjectives, but are indirectly invoked through alignment with authoritative scientific frameworks. In examples (13) and (14), references to *science-based targets* and IPCC-derived carbon budgets construe corporate actions as grounded in externally validated knowledge, thereby invoking Veracity: the company's claims are positioned as truthful and reliable because they are anchored in science. At the same time, in examples (15) and (16), the emphasis on validation processes (i.e., SBTi) and sector-wide *responsibility* frames adherence to scientific standards as a matter of appropriate conduct, thereby invoking Propriety. In this way, scientific alignment becomes a proxy for ethical behaviour: to act in accordance with science is implicitly to act responsibly. Crucially, these Judgements are evoked rather than inscribed. The text does not explicitly state that the company is 'honest' or 'ethical,' instead, it constructs these meanings

through repeated association with science as an authoritative and morally loaded domain. Through this pattern, corporate practices are simultaneously legitimised as factually sound (Veracity) and ethically appropriate (Propriety), reinforcing a dual positioning of the organisation as both credible and responsible.

More broadly, the strategic deployment of scientific discourse can be interpreted as part of the genre's hybrid promotional-informational character. By embedding their commitments within a framework of scientific authority, companies borrow epistemic legitimacy from external institutions, thereby enhancing the persuasive force of their sustainability narratives. This fits with broader trends in corporate communication in which scientific frames are used to reinforce organisational trustworthiness, reduce interpretive ambiguity and stabilise the discursive construction of corporate responsibility.

4. Conclusion

This study has examined how sustainability reports in the *Sustainability Reports Corpus DJSI 2023* construct corporate identity and legitimacy through a patterned interplay of linguistic resources, combining corpus-assisted methods with qualitative critical discourse analysis. The findings demonstrate that organisational agency is foregrounded through the dense use of first-person plural pronouns, high-transitivity material processes and evaluative adjectives, which together generate a representation of corporations as purposeful, competent and continuously improving actors. The analysis also shows that these reports organise their claims through a recognisable narrative structure, integrating past achievements, present actions and future aspirations into a coherent storyline that supports a teleological vision of sustainability as both directional and morally invested. Furthermore, the strategic invocation of science and science-based methodologies operates as a powerful mechanism of dialogic contraction, narrowing the scope for alternative viewpoints and enhancing corporate credibility by aligning organisational decisions with external epistemic authorities.

Taken collectively, these discursive tendencies illustrate the hybrid communicative nature of sustainability reporting, which must simultaneously inform, persuade and legitimise. The repeated mobilisation of evaluative adjectives, the embedding of corporate action within future-oriented narratives and the reliance on scientific frames indicate that sustainability communication is not merely descriptive but also constitutive of organisational identity and purpose.

Beyond its theoretical contribution, the study offers practical insights for stakeholders engaged in producing, evaluating or teaching sustainability reporting. For corporate communication teams, the recurrent linguistic patterns identified here shed light on how

textual choices actively shape the organisation's projected identity, helping them become more aware of the persuasive force behind this genre. Such awareness can support more balanced reporting practices that maintain transparency while avoiding inadvertent promotional drift. For auditors, ESG analysts and regulators, the study provides a set of linguistic indicators, such as dialogic contraction through *science-based* formulations, that can serve as analytical tools when assessing the credibility and framing of sustainability claims. The findings also furnish educators and students with empirical materials for illustrating how sustainability discourse operates as a hybrid genre, strengthening pedagogical approaches in discourse analysis, ecolinguistics and corporate communication.

Several limitations must also be acknowledged. Sustainability reporting has already been extensively examined as a discursive, rhetorical and genre-hybrid practice, and a substantial body of literature has documented its role in legitimacy construction, identity work and reputational management (i.e., Poole 2022; 2017; Stibbe 2021; 2015; Catenaccio 2019; Fuoli 2018; Bhatia 2017; 2014; 2008; Higgins and Coffey 2016; Wright and Nyberg 2015). From both critical discourse-analytic and corpus-assisted perspectives, scholars have convincingly shown how sustainability communication blends accountability with promotional strategies and embeds corporate action within ideologically charged narratives of responsibility. In this respect, the present study does not claim to introduce a fundamentally new object of inquiry, nor to challenge the core insights of this established research tradition.

Rather, its contribution should be understood as incremental and complementary. The added value of this study lies in the systematic integration of corpus-assisted analysis with Appraisal Theory, Critical Genre Analysis and Narrative Identity Theory, applied to a homogeneous yet analytically significant set of DJSI-listed corporations operating under mature reporting regimes. By focusing on patterned lexico-grammatical choices across reports produced by high-performing firms, the analysis provides fine-grained empirical evidence of how agency, ethical positioning and epistemic authority are routinely enacted at scale.

At the same time, the analytical scope of the study necessarily circumscribes the reach of its findings. While the corpus comprises a sample of companies included in the DJSI, it remains relatively restricted in size and scope, which limits the generalisability of the results to other sectors, geographies or reporting standards. Moreover, the focus on high-frequency lexico-grammatical features inevitably sidelines lower-frequency but potentially meaningful discursive strategies. Finally, the exploratory nature of the quantitative component means that the conclusions advanced here are interpretive rather than statistically inferential.

Future research could expand the corpus to include reports from a broader range of industries, regional contexts or sustainability maturity levels, allowing for comparative analyses of narrative and evaluative strategies. Additional work might also investigate

multimodal elements, such as visuals, charts and layout as well as their interaction with the linguistic construction of identity and authority. Finally, integrating stakeholder reception studies could help clarify how audiences interpret and respond to the discursive strategies identified here, thereby enriching our understanding of how sustainability communication shapes perceptions of organisational legitimacy.

Overall, this study demonstrates that sustainability reports rely on a sophisticated repertoire of linguistic and rhetorical resources to articulate a coherent, science-aligned and future-oriented corporate self. In doing so, they reveal not only how organisations represent their sustainability performance, but also how they construct the very identities through which such performance becomes meaningful.

Bionote

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The Sustainable Development Goals in Light of Global Mining Activities

A Radical Shift?

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Abstract

The Sustainable Development Goals (SDGs) constitute a milestone in sustainable development governance. The seventeen goals shape how humanity sees and measures sustainable development. All-encompassing as the SDGs are, they have influenced mining company reporting practices. Mining is a major industrial sector with substantial direct emissions (Scope 1 and 2), which increase with decreasing ore grades and increasing production (Norgate and Haque 2010).

The present paper investigates how mining companies have adapted their sustainability reports in response to the SDGs. The paper examines the framing of sustainability discourse through keyness (log likelihood) and dispersion analysis (DP_{norm}), relative frequency, and statistical strength of collocates (MI3). For this purpose, a 774,016 token corpus was assembled. Subsequently, the adopted corpus linguistic approach is complemented with Critical Discourse Analysis: the mining company sustainability reports over a period of eight years are investigated with reference to the timeframe before and after the ratification of the SDGs as a diachronic evolution of sustainability discourse in corporate texts.

Results do not suggest a shift in the overall volume of sustainability discourse but in its framing, notably through institutionalization and SDG alignment. Environmental concerns remain frequently subordinated to economic priorities, rendering the former physically and linguistically erased.

1. Introduction

1.1 Sustainable development

Human activities have left a definite mark on our planet and led to the transgression of several ecosystems and the disruption of ecosystem services (Matson, et al. 2016, 33). Climate change and biodiversity loss, deemed core planetary boundaries in 2015 (Steffen, et al. 2015, 1), are now among transgressing limits already at or in the high-risk zone (Richardson, et al. 2023, 1).

In 2015, the Sustainable Development Goals (SDGs) were adopted by all 193 United Nations Member States to foster sustainable progress until 2030. But how is sustainable development

in this framework defined?

Sustainable development is how we must live today if we want a better tomorrow, by meeting present needs without compromising the chances of future generations to meet their needs. The survival of our societies and our shared planet depends on a more sustainable world. (UN 2015)

The SDGs are a guiding framework that significantly shaped how sustainability is communicated. In light of present radical changes to the ecosystem, the SDGs may provide a plan towards a sustainable Anthropocene. In a never-before-seen acceleration, human actions have led to social (increase of population and GDP), ecological (increase in surface temperature and loss of biodiversity), and technological (increase in mineral extraction and telecommunication) changes (Steffen, et al. 2015). These substantial alterations demand radical transformations. A radical change demands a holistic, joint and global effort (McPhearson, et al. 2021). What would such a radical shift be considering current mining practices that still aim for a maximization of profit while ecosystem deterioration is an accepted symptom? The belief in constant economic growth seems to justify the need for weak sustainability, i.e. the exchange of one sustainability pillar for the other. Thus, subordinating nature and social needs is a practice in need of radical shifting. I hereby define ‘radical shift’ as a new orientation in underlying economic beliefs, otherwise named ‘transformation.’ Thus, an expansion of the sustainability debate to large discussions of the economic system cannot be disregarded, as such discussions are fundamental for sustainable development (Schneidewind 2019, 67) and stem directly from the origins of the “Great Transformation” (Polanyi 1944), in which Polanyi analysed the interaction of political and economic dynamics. A radical shift is therefore a conceptual reorientation of the role corporations play. Along with Stibbe, I argue that “profound changes are needed to hold back or reverse the tide of ecological destruction” (2015, 3). This paper proclaims that such changes will not suffice to alter unsustainable practices instantly. However, they are intrinsic and radical, changing development at the core, echoing Göpel (2016, 155), who calls for “radical, incremental change” by which she means multiple steps eventually evolving the current economy into a future-oriented system. Does sustainable development disguise sustained economic growth, or does it represent a genuine transition from the overproduction needed to maintain the current economy (Pineault 2023) toward a more responsible use of resources in pursuit of inclusive human well-being (Matson, et al. 2016)? By doing so, Matson et al. focus strongly on the anthropocentric view of nature being an asset to “humanity’s ‘life support system’” (2016, 52). In this paper, an ecosophy of more-than-humans is postulated, and thus the definition of sustainability is one of inclusive well-being for all species. In Pineault’s (2023) understanding, the economic production needs cannot be countered

by calls to change consumption behaviour, but rather through radical changes of production and corporate structures.

Reviewing the global impact human actions have on the Earth, resource use and mining initially stand out. Mining poses threats to the environment by consuming vast amounts of energy and resources, generating GHG emissions such as CH₄, NO_x and CO₂, and sourcing large amounts of water. Additionally, post-mining waste can be harmful to both people and the planet. Socio-economically, increasing well-being due to a rise of employment possibilities can result in trade-offs due to environmental harm and loss of overall well-being connected to industrial activities (Lo, et al. 2024). Mining operations connect to sustainability in two ways: first, they supply the needed material for the facilitation of the energy transition and second, they contribute through their own efforts to operate sustainably.

The seventeen ambitious SDGs (UN 2015), with 169 targets, have attracted praise and criticism. Spaiser et al. (2016) have assessed the incompatibility of socio-economic progress and environmental sustainability. The authors state that within a business-as-usual scenario, the 2030 Agenda risks failure, revealing that while economic growth fulfils socio-economic goals, it can also hinder environmental goals (2016, 14). Gladkova (2017) sees a vast playing field for the private sector in SDGs-as-governance since finance and indicators offer room for private pressure to focus on company interests and promote neoliberal realities dressed up as sustainable development. Additionally, and especially in the case of the linguistic focus of the present study, the evolution that the term *development* has undergone should be noted. Schultz (2001) notes how apparently neutral words can be used to connote a non-exploitation stance, whereas in reality they are employed very differently as a way to legitimise the commercial use of the environment. This is the case for *development*, which connotes something positive by erasing negative side effects. Adding *sustainable*, a collocation that has become mundane since its use in the Brundtland Report, renders *development* even more acceptable. Nevertheless, as will be shown, companies clearly interpret the phrase as “sustained development” (Schultz 2001, 110).

However critical one might be, the SDGs have contributed to the metalevel discourse on sustainability rhetoric (Munro 2023). As such, they provide a perspective on sustainability, categorising targets and dividing the broad term sustainability into seventeen goals. Since their launch, the use of the SDGs has widened in corporate sustainability reporting. It remains to be seen if the contribution to the SDGs is transformational and radical for the sector’s sustainability discourse.

1.2 A short history of sustainability reporting

The business sector has addressed environmental concerns of the public sphere by increasing transparency via sustainability reporting, which is used as a means to secure a social licence to operate (SLO). SLO refers to a societal consent towards a business' operations. This dynamic of seeking legitimacy and consent has been investigated under the term "social contract theory" (Demuijnck and Fasterling 2016, 675). Early reports on ecological topics were written by multinational corporations in the 1980s. In the 1990s, sustainability reporting increased driven by rising public interest in environmental as well as social matters. Meanwhile, in 1997 Elkington coined the term "Triple Bottom Line" (1997, 2), which proposes the three bottom lines of people, planet, and profit as performance indicators for companies.

In 2000, the United Nations Global Compact was founded to create collective business impact by supporting the Ten Principles on human rights, environment, labour and anti-corruption, and the SDGs¹. In 2000, the GRI published the first global, albeit voluntary, framework for sustainability reporting. Therefore, not legal obligations but public pressure made reporting a necessity for companies. In 2001, the European Commission defined CSR as "a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis" (2006), framing the European way forward. Subsequently, CSR was formalised into ISO 26000. Unlike other ISO standards, it is not certifiable; instead, it serves as guidance for organisations and businesses to define and implement CSR². In the European Union, the Non-Financial Reporting Directive (NFRD) marked a turning point from voluntary to required reporting in 2014. In 2016, the GRI transitioned from guidelines to standards, which, though voluntary, are continuously updated. This background provides a context for the present paper, which approaches CSR as a specialized discourse genre that has significantly developed to an institutionalized practice (Contrafatto 2014).

1.3 A brief outline of sustainability reporting in the mining sector

The 1990s saw a rise in environmental awareness, placing pressure on the mining sector to improve its ecological and social performance and to act with greater transparency. To demonstrate their responsibility, some companies complied to voluntary resource management standards, effectively earning a SLO (MMSD 2002, xiv).

In the 1990s, the Global Mining Initiative (GMI) conducted a project called "Mining, Minerals

¹ UN Global Compact. "The Ten Principles of the UN Global Compact." <https://unglobalcompact.org/what-is-gc/mission>. Last visited 20/05/2026.

² "ISO 26000 Social Responsibility." International Organization for Standardization (ISO). <https://www.iso.org/iso-26000-social-responsibility.html>. Last visited 20/05/2026.

and Sustainable Development” (MMSD³), to be carried out by the International Institute for Environment and Development (IIED) with the aim of formulating the sector’s sustainability definition. As a result, the Toronto Declaration was adopted, and the International Council on Mining and Metals (ICMM) was formed to continue the MMSD’s work and implement its findings, with the goal to “enhance the contribution of mining & metals to sustainable development” (ICMM n.d.). A phase of analysis and consultations resulted in the publication of *Breaking New Ground* (2002) presenting MMSD’s analysis and policy recommendations. Today, the ICMM’s Mining Principles share core convictions with the SDGs:

Each SDG connects with or can be directly influenced by ICMM’s Mining Principles. Unlike many other sectors, there is no primary point of connection between mining and a single SDG. Instead, operations have the extraordinary potential to contribute to several goals at once. (ICMM⁴)

This claim is grounded in the high importance of metals and minerals in today’s society and the impact that mining operations have on communities, ecosystems, and the economy. Whether negative or positive, the influence of mining on the SDGs is undeniable (ICMM n.d.).

In response to the ratification of the SDGs, the United Nations Development Programme (UNDP), in cooperation with the ICMM, published a white paper entitled *Mapping Mining to the Sustainable Development Goals: An Atlas* (2016). Its aim was to inspire and share best practices on how mining companies can include the SDGs in their actions and business. The Atlas asserts that mining operations are related to all SDGs, and “the mining industry has the opportunity and potential to positively contribute to all the 17 SDGs” (United Nations Development Programme 2016, 3). The Atlas provides examples of all SDGs on two tiers: firstly, on the incorporation of the goals into the core business, and secondly, on the promotion and support for achieving the SDGs through collaboration and partnerships. The Atlas is an influential work for the perception of mining companies’ sustainable contribution.

2. State of the art

This section briefly outlines the theoretical and methodological approaches relevant to this paper and its contribution. Baker et al. (2008) analysed the discursive presentation of asylum seekers and refugees using Corpus Linguistics (CL) to provide a statistically evident selection of examples for Critical Discourse Analysis (CDA). Following the corpus-driven paradigm of CL

³ “Mining, Minerals and Sustainable Development (MMSD).” International Institute for Environment and Development. <https://www.iied.org/mining-minerals-sustainable-development-mmsd>. Last visited 20/05/2026.

⁴ “ICMM – Supporting Sustainable Development through Mining and Metals.” ICMM. www.icmm.com/en-gb/our-work/sustainable-development-goals. Last visited 20/05/2026.

(Tognini-Bonelli 2001), the study follows statistical patterns and relative frequencies of thematic words. A similar angle is adopted in the present study, using keyness and collocations. Baker et al. (2008) argue for a combination of CL and CDA along the lines of mutual benefit. Partington favours the term “statistical methodological philosophy” (2013, 8), which informs corpus analysis in the search for linguistic patterns.

Corpus-assisted discourse studies (CADS) is defined by the aim of “uncovering non-obvious meaning” (Partington 2013, 11) and the ad hoc compilation of specialized corpora due to the lack of available data collections, which is true in the present case. CDA, however, is concerned with the study of underlying power structures of language use, which are determined by the language users rather than language itself, viewing language use as social practice. As such CDA bridges the gap between social analysis and text analysis by examining text materials, seeking to discuss the socially constructed and performative aspects of language use (Fairclough 2004). The approach draws from different theories and concepts to analyse text and language as a social process with the aim to uncover existing power structures in different domains (Wodak 2013; Baker, et al. 2008). Wodak defines CDA as “demystifying ideologies and power” (2013, xxi).

At the centre of ecolinguistics approaches, one can place this quote by Steffensen and Fill: “Do linguistic patterns, literally, affect the survival and well-being of the human species as well as the other species on Earth?” (2014, 9). This paper applies ecolinguistic discourse analysis (Stibbe 2015) to investigate how language frames sustainability in the context of ecological relations. The analysis focuses on salience and erasure in the interplay of economic activity and nature. To this end, the analysis aims to uncover salient, erased and potentially destructive stories being told by mining company sustainability reports.

This paper investigates a corpus of corporate sustainability reports through critical and ecological lenses. By applying quantitative methods from CADS and CL, the study identifies emerging linguistic patterns and explores how mining corporations construct and frame sustainability in their reports. In this way, the study integrates the approaches discussed above by combining quantitative corpus analysis with critical discourse perspectives. Ecolinguistics extends this analytical view by examining how discourse shapes human interactions with the more-than-human world.

Focusing on corporate texts, Jaworska’s (2020) work is influential with respect to studying the social implications and power dynamics of corporations’ contribution to sustainability discourse. She sees discourse as the key tool for executing corporate goals.

A growing body of linguistic research on sustainability discourse in corporate reporting indicates increasing academic interest in this field. As environmental concerns become more prominent in both academia and public debate, understanding the ways in which corporate

narratives influence sustainability discourse is of relevance not only to researchers, but also to the wider public. The beginning of this thought can be traced back to Howard Bowen in 1953, who coined the term “corporate social responsibility” as the concept of businesses’ social responsibility recognising the powerful impact on society. Therefore, he called for a change in their decision-making, which should include considerations of their impact (Latapí Agudelo, et al. 2019).

Focusing on the extractive sector, Livesey (2002) concludes that Shell employs the concept of sustainability in the reconciliation of sustainable development, aligning it with economic growth. Buhr and Reiter’s (2006) account of the Noranda mines uses a discourse analysis along three dimensions: moral responsibility, empirical objectivity and aesthetic judgement. Milne et al. (2009) provide a relevant contribution to the field through their analysis of the early triple bottom line reports. They state that businesses use sustainability in a pragmatic way that perpetuates dominant business discourse rather than altering it. The authors conclude that financial worth and growth remain imperative factors of discourse (Milne, et al. 2009). Onn and Woodley (2014) conducted a discourse analysis of ICMM members’ sustainability reports and the journal *Resources Policy*. Their findings suggest that sustainability in the business context is constructed as compatible with traditional profitability (2014). The authors of the paper admit that sustainability is no longer seen as mining incessantly or profitability. Nevertheless, there still seems to be no discussion on the contribution of mining companies to the sustainability agenda (Onn and Woodley 2014, 125). Poole’s work (2016) is notable as the analysis uses EDA to cluster grammatical and semantic fields in the discourse of corporate and activist side to reflect beliefs and perceptions of the environment. The current paper follows a similar line of thought, regarding sustainability reports in a critical light and analysing collocations of the semantic field of sustainability.

Additionally, Tost et al. (2018) investigated how the mining sector frames environmental sustainability and compared the results across sectors via keyword analysis. They argue that the SDGs themselves are a hybrid of weak and strong (overall weak but strong, especially in climate change and biodiversity). The authors further conclude that the mining companies examined, including those analysed in the present study, express support for the SDGs in line with current societal expectations; however, the concrete measures through which these goals are to be achieved remain unclear. They suggest a stronger commitment to climate action and the use of natural resources by considering the consequences of strong sustainability in business models (Tost, et al. 2018). The distinction between weak and strong sustainability is relevant for the following study. Weak sustainability postulates that natural capital can be substituted by other forms of capital such as economic or social capital. In contrast, strong sustainability rejects this notion and considers natural capital to be irreplaceable (Neumayer, 2013). This

distinction is especially useful in the context of assessing the framing of nature in the sustainability reports of mining companies. Finally, Niceforo (2025) has contributed to the field by her analysis of sustainability language in different genres including corporate texts. However, there is a lack of studies investigating diachronically how the SDGs have reshaped sustainability discourse in the mining sector using corpus-assisted ecolinguistic discourse analysis.

3. Presenting Rio Tinto, Glencore and Vale

The sustainability reports of the companies Rio Tinto, Glencore and Vale were chosen to form a corpus (RGV corpus) because they represent the largest global mining companies based on revenue in the defined cut-off year 2021. Economic success was chosen as a selection criterion because it is achieved through the Earth's exploitation and it may perpetuate narratives of destruction for the cause of wealth creation. Against this feedback loop of resource sourcing and narrative spinning, corporations have generated an immense capital surpassing financial resource of states: Already in 2018, a revenue-based list showed that 157 of the top 200 economic entities are not countries but corporations (Global Justice Now 2018). In the context of current climate challenges, with many states pursuing climate neutrality, such imbalanced power relations pose an additional threat.

All three companies have been reporting on sustainability matters in the chosen years. All companies have incorporated the SDGs into their reporting. However, the SDGs are neither legally binding nor devised for companies. As a result, the wide use of the global goals in companies is noteworthy and leads to the present research question of their framing. These companies can be seen as representatives of the mining industry, which is aligning its operations to responsible sourcing: All are members of the ICMM and commit to its principles of sustainable performance. The companies do not exclusively mine coal and have plans to divest from coal assets (Kinch 2021; MarketLine 2021).

4. Data selection for the RGV corpus

In the years analysed, all companies adhered to GRI and produced sustainability-themed reports. Rio Tinto changed its reporting policy in 2019 and ceased publishing an exclusive sustainability report, but issues an annual, strategic, and specific climate report. To achieve comparability in the corpus for all companies, Rio Tinto data for 2019 and 2020 was obtained from the strategic report, covering similar topics as sustainability reports. It was considered that strategic and sustainability reports may differ in genre and audience, but both feature sustainability issues. Data was collected by downloading the reports from the company websites

and subsequently preparing them by deleting pictures and graphics to limit noise and ease the text analysis in LancsBox v. 6.x (Brezina, et al. 2021).

This paper further focuses on a comparison of sustainability language differences between two sub-corpora representing pre-2015 and post-2015 discourses. Therefore, the RGV corpus was split in the subcorpora RGVb (2013, 2014, 2015) and RGVa (2016, 2019, 2020), each comprising three reporting years. The SDGs were ratified only in September 2015 at the United Nations 70th General Assembly (Fukuda-Parr and McNeill 2019, 9). In this context, the SDGs cannot have influenced the reporting year 2015 as it was already under way as the UN Framework became official on 1 January 2016 (UN.org 2026). The 2015 reports on the year 2015 could not include adaptation to the SDGs yet. The years 2017 and 2018 were deliberately excluded to create two contrasting corpora of equal size and to achieve a long-term perspective, leaving time for the companies to adapt to the SDGs. The resulting corpus RGV consists of 740,711 tokens. The two subcorpora, RGVb (before) and RGVa (after) the launch of the SDGs, are comparable in size: RGVb: 346,528 tokens and RGVa: 394,183 tokens.

5. Methodology

This study adopts a CADS approach and aims to critically assess the development and framing of sustainability discourse by quantitatively examining a sustainability corpus and qualitatively analysing concordance lines identified through corpus linguistic methods. CL methods include keyness and dispersion analysis, relative frequency, and statistical strength of collocates, which were used to identify recurring linguistic patterns and discursive frames. CADS combine CL and CDA in order to identify recurring linguistic patterns and critically analyse their ideological significance. The analysis further draws on ecolinguistics as a means of making sense of ‘the stories we live by’ from a critical environmental perspective. Concepts such as salience and erasure (Stibbe 2015) were applied to identify foregrounded, backgrounded or omitted sustainability aspects. The use of an ecolinguistic lens points to the more-than-human world and investigates where destructive stories perpetuate ecological damage. Adopting this methodology, the paper hopes to contribute to the understanding of sustainability discourse, highlighting how “communication (verbal and non-verbal) gives shape, texture, potential and relevance to events, participants, features and relations; and it can also background, obfuscate or erase situations, actors, connections and causality relations” (Bortoluzzi and Zurru 2024, 2).

The analysis focused on institutional framing of sustainability, responsibility and the dynamic between economic and environmental sustainability. Following Stibbe’s comment on the relevant link between ecolinguistics and critical discourse analysis, this paper is concerned with “discourses which have an impact on how humans treat each other, other organisms and

the physical environment” (2014, 4) as it observes the sustainability reporting of large multinational corporations. These global economic actors possess extensive financial capital, which grants them power not only economically, but also through their discursive influence and hegemonic construction of meaning.

The SDGs were used as a focal lens to investigate how sustainability is framed in the discourse because the SDG icons provide companies with public representability (Barta, et al. 2023). The fact that public pressure is a driver in sustainability accounting, especially so for mining companies, gave rise to these research questions:

- How did the publication and ratification of the UN’s SDGs influence the language of sustainability reporting in the corpus?
- What lexemes are used to convey sustainability terms and the SDGs in the RGV?
- How do these differ between the two sub-corpora representing pre-2015 and post-2015 discourses?

5.1 Frequency, keyness and dispersion

Firstly, to address the use of sustainability-related terms before and after the SDGs, the RGV corpus, as well as its subcorpora were compared to samples of the Corpus of Contemporary American English (here named COCAS) and each other, to generate keywords. COCAS is compiled from the Corpus of Contemporary American English (COCA). COCAS was used because it enabled a comparison between general English and the specific business language of the sustainability reports. In the comparison, resulting keywords are specific to the corpus of mining companies and to COCAS and can provide essential topics. Lastly, the RGVb and RGVa were compared to identify differences between the time frames. To investigate the framing of sustainability pre- and post-SDG corpora, the relative frequencies of sustainability-related terms were measured. As even normalised frequencies are skewed when comparing distinctly sized corpora, keyness and dispersion were added to augment the analysis and subcorpora comparison.

5.2 Collocation analysis

The corpus was searched for *sustainability* and *sustainable* to find noun, verb, and adjective collocations pre- and post-SDG corpora. Collocation analysis pointed to changes in semantic associations. For these analyses, the MI3-score was chosen to assess the strength of association, because it is less sensitive to low-frequency bias than MI, which highlights rare words. In addition, a T-test was performed to assess the stability of the association and reduce the influence of low-frequency collocations. In the literature, a T-score of two or more is often used as a heuristic indication of significance and serves as a guideline in the present paper. The

combined use of measures allowed a balanced comparison and identification of statistically robust and linguistically meaningful collocations in the subcorpora RGVb and RGVa. Both measures are not strictly inferential, and as such, no fixed significance threshold was applied. Values were instead interpreted comparatively.

6. Results

6.1 Keyword analysis

The keyword analysis showcased the aboutness of the corpora, assessing the most relevant words. The following lists of keywords reveal the core topics of the corpus RGV compared to COCAS (see Tab. 1).

Number	RGV corpus keywords	COCAS keywords
1	.	@
2	<i>vale</i>	<i>you</i>
3	<i>management</i>	<i>he</i>
4	<i>operations</i>	<i>she</i>
5	<i>mining</i>	<i>my</i>
6	<i>emissions</i>	<i>his</i>
7	<i>rio</i>	#
8	<i>communities</i>	<i>her</i>
9	<i>sustainability</i>	<i>it's</i>
10	<i>2019</i>	<i>me</i>

Tab. 1: Keyword analysis of the RGV corpus compared to COCAS

It can be observed that RGV reflects ESG and business topics, whereas COCAS shows general English. The keywords of RGV describe themes on management of organisations (*management*, *operations*, *communities*), environmental assessment (*emissions*), and *sustainability*, which all refer to the genre of sustainability reports. The words *vale* and *rio* are part of company names. The next table (Tab. 2) illustrates a comparison between the sustainability reports of the years before (RGVb) and after (RGVa) the launch of the SDGs with COCAS, respectively.

Number	RGVb keywords	COCAS keywords	RGVa keywords	COCAS keywords
1	.	@	.	@
2	operations	he	vale	you
3	Vale	your	2019	he
4	Rio	my	2020	she
5	mining	she	management	her
6	management	i	operations	his
7	emissions	#	emissions	#
8	communities	his	mining	my
9	2014	he	sustainability	it's
10	Tinto	it's	safety	me

Tab. 2: RGV corpus was split in RGVb (before) and RGVa (after) and each part was in turn compared to COCAS

The word *emissions* is featured in both lists, as well as *mining* and *operations*. *Sustainability* appears in RGVa's keywords, as well as *safety*. A last keyword analysis (Tab. 3) compared the two subcorpora, RGVb and RGVa, to each other.

Number	RGVb keywords	RGVa keywords
1	2013	2019
2	2014	2020
3	r	2018
4	xstrata	covid-19
5	2015	2021
6	2012	sdg
7	cent	underlying
8	t	brumadinho
9	railway	esg
10	waste	2016

Tab. 3: Comparison of the two subcorpora RGVb (before) and RGVa (after) to each other

Naturally, the years appear in the respective corpora of the year of report publication. The keywords identified include the expected keywords *SDG* and *ESG*, but also *underlying*, *covid-19*, *brumadinho*. The latter two refer to detrimental events: the COVID-19 pandemic and the Brumadinho dam break at the company Vale, which resulted in more than a hundred deaths and devastating environmental hazards in Brazil (Silva Rotta, et al. 2020, 11).

6.2 Frequency of terms and themes

Relative normalised frequencies (per 10.000 words) of the search terms *sustain**, *sustainability*, *sustainable*, *sustainable development*, *SDG*, *sustain* + SDG* were investigated to detect possible changes in pre- and post-SDG corpora.

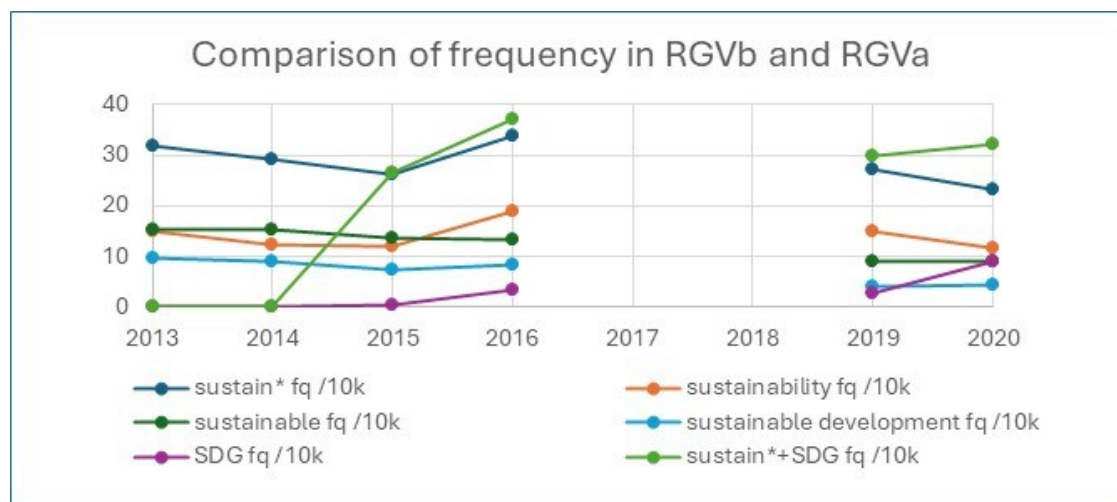


Fig. 1: Graph showing the normalised frequency of the words/lemma *sustain**, *sustainability*, *sustainable*, *sustainable development* and the aggregated abstract analytical category *sustain*+SDG*. The years 2017 and 2018 were deliberately not included to allow the SDG framework to have an impact

Fig. 1 shows the relative normalised frequencies for all search words decline slightly until 2015, followed by a minor increase in 2016. Subsequently, most terms gradually decline, but not strongly, as a relatively stable use in 2019 and 2020 suggests. This pattern does not indicate a disappearing sustainability discourse but rather fluctuations of emphasis over time. The green line shows the combined relative frequency of *sustain** + *SDG* and was used as inclusive indicator of sustainability discourse in order to detect a general trend. Here the values after 2016 vary from the slightly declining terms (*sustain**, *sustainability*, *sustainable*, *sustainable development*) but do not provide strong evidence for a continued increase or decline in sustainability discourse. Note that differences in text length can influence frequency counts, even if normalised. To address this shortcoming, the analysis was complemented by a keyness analysis (based on log-likelihood) and dispersion measure (using DP_{norm}) to compare pre- and post-SDG corpora⁵. Tab. 4 shows *sustainability* has moderate keyness (LL=5,28, $p<0,05$), suggesting a stable use of the term. Keyness for the terms *sustainable*, *sustainable development*, and *SDG* is high, indicating a strong prominence of sustainability discourse linked to the framework terms in RGVa (post-SDG). The united category *sustain** was used to gather the wider sustainability discourse, which reported no significant keyness (LL=1,06, $p>0,05$), showing no meaningful difference in pre- and post-SDG corpora. However, the combination of *sustain**+*SDG* showed a significant increase in the post SDG corpus (LL=8,39, $p<0,01$) indicating that while the overall use of sustainably language is stable, the explicit combination with the SDG framework-related language shows statistically significant elevation.

Search terms	Keyness (LL)	Dispersion RGVb (DP_{norm})	Dispersion RGVa (DP_{norm})
<i>sustain*</i>	1,06	0,0003	0,0004
<i>Sustainability</i>	5,28	0,2676	0,1399
<i>Sustainable</i>	29,73	0,2016	0,1502
<i>sustainable development</i>	24,82	0,2757	0,2316
<i>SDG</i>	228,10	0,9799	0,3759
<i>sustain*</i> + <i>SDG</i>	8,39	/	/

Tab. 4: Keyness and dispersion for selected search terms

⁵ Apart from *sustain** and *sustain**+*SDG* keyness was computed automatically using LancsBox comparing RGVa as target and RGVb as reference corpus. The lexical bundle *sustainable development* was automatically analysed using the N-grams function. Since LL is not additive, expected frequencies and LL calculation for *sustain** and *sustain**+*SDG* were done manually after aggregating frequencies. The latter case, *sustain**+*SDG*, marks an abstraction as distinct lexical items are aggregated to identify a discourse trend. Dispersion for *sustain** was calculated manually, the other search terms values were generated in LancsBox. The aggregated category *sustain**+*SDG* was not computed but rather interpreted via the dispersion values of its components.

Furthermore, Table 4. includes DP_{norm} values for the chosen search terms. *Sustainable*, *sustainable development* and *sustainability* are evenly distributed in the whole corpus (DP_{norm} is low for all terms $\sim 0,15-0,29$). *Sustain** has even lower values and is also evenly distributed. Sustainability discourse is approximately evenly spread across all reports. Contrastingly, *SDG* is unevenly distributed in RGVb ($DP_{norm}=0,9799$) but is much more distributed as dispersion increases over time in RGVa. This indicates a spread of *SDG* usage.

6.3 Collocations

The following results were generated to answer the research question of how sustainability reports frame sustainability terms and the SDGs. Therefore, in RGVb and RGVa noun, verb, and adjective collocations (± 5 -word range) of the search terms *sustainability* and *sustainable* were identified. The ten most frequent collocations, sorted by frequency, were analysed, and comparisons between RGVb and RGVa were made via a lemma-based search. For this reason, the corpus was PoS-tagged.

6.3.1 Collocations of sustainability

The most frequent collocation in the subcorpora is *report*, with equal statistical significance in both subcorpora, indicating the nature of corporate sustainability reports. The target word *sustainability* is more frequent in RGVa. The collocation of the target word with itself (*sustainability* MI3: 17,432 vs. 14,523, T-test: 7,227 vs. 4,779) suggests a dense discourse. Overall, higher MI3 and T-test values of collocations suggest that associations become stronger. *Approach*, *committee*, and *strategy* are stronger collocates in RGVa and with the addition of *policy*, *operational*, and *lead* as emerging collocates, a semantic field of governance can be defined, revealing institutionalisation of sustainability discourse. Furthermore, an extensive list of new adjective collocations (*operational*, *global*, *annual*, *lead*, *selected*, *social*, and *economic*) points towards a diversification of the semantic field framing sustainability. A second semantic field focuses on action with stable verb collocations in terms of frequency and MI3 values for *include*, *promote*, and new collocations post-SDG, such as *oversee*, *provide*, and *contain*. This hints at a linguistic change towards implementing sustainability. Lastly, a category of responsibility and future-orientedness can be detected in the collocates of *sustainability* (*long-term*, *responsible*) in RGVa.

Collocations with *approach* can be traced back to the phrase “our approach to sustainability” in reports of Rio Tinto and Glencore, which frequently refers to another published document by the companies. A notable quote however, mentions:

- (1) Transition to a low-carbon future: Climate change constitutes an important part of our sustainability approach. Climate change risks have formed part of our strategic thinking and investment decisions for over two decades. The transition to a low-carbon future presents both challenges and opportunities for our portfolio over the short to long term. Key areas of uncertainty include future climate change regulation and policies, the development of low-carbon technology solutions and the pace of transition across our value chains, in particular the decarbonisation pathways across the steel sector. (Rio Tinto 2021)

Apparent is the focus on climate change. In terms of salience, climate change adaptation measures are highlighted which all refer to business, investment and the continuation of operations. The risks of climate change to humans and more-than-humans are not mentioned. However, an interesting collocation is *long-term*:

- (2) The Board of Directors is confident in Vale's economic and financial capacity, and in the long-term sustainability of Vale, based on its already demonstrated competitiveness and resilience to the price cycle of its products. (Vale 2020)

The salience of profit and competitiveness is sharply enhanced by the erasure of the natural world. In this understanding, sustainability is based on economic success for years to come. The economic framing of resilience, the capacity of a natural system to recover after disturbances, becomes visible when the concept is applied to business stability. Through the use of seemingly neutral terminology such as *resilience*, the commercial exploitation of the environment is discursively legitimised and potentially harmful practices are framed positively (Schultz 2001). The example frames sustainability primarily economically, while environmental and social dimensions remain backgrounded.

6.3.2 Collocations of *sustainable*

The most frequent noun in both subcorpora is *development* (RGVb MI3: 24,677, T-test: 18,413 vs. RGVa MI3: 23,846, T-test: 15,527), suggesting a stable collocation not affected by the SDG launch. Similarly to section 6.3.1., *sustainable* shows semantic fields such as action (*achieve*, *build*, with new collocations *include* and *align*) and SDG alignment (new collocates are *SDG*, *SDGs*, *align*). A look at concordance lines indicates that reports in RGVa are aligned to the Sustainable Development Goals in some cases, such as in the concordance line "The initiative [Mulheres do Maranhão (Maranhão Women Network)] is aligned with the UN Sustainable

Development Goals (SDGs)” (Vale 2016), but referred to other sustainable actions without SDG alignment.

The category of future responsibility could also be found in collocations of *sustainable* (*safety, safe, responsible, future*). It is interesting that *safe* ranks low in RGVb, but it is the most frequent word in RGVa. An explanation could be the aforementioned Brumadinho disaster, which seems to have shifted the discourse towards safety. This argument is also supported by the keyword search comparing RGVa to COCAS: *sustainability* and *safety* appear in RGVa’s keywords. Words that no longer collocate in RGVa are *economic, long-term, global, local, and competitive*. The words *council, business, growth, and world* become much less frequent. Taken together, these changes might suggest a move away from focusing on purely economic gains towards a responsibility for the future. To conclude, the comparison of RGVb and RGVa in terms of collocations for *sustainability* and *sustainable* shows a shift towards an institutionalised as well as responsibility-oriented sustainability discourse. However, by contrasting this with the findings of concordance lines, it becomes apparent that responsibility is predominantly framed in two ways: responsible water use and responsible operations justified by supplying minerals and metals to the low-carbon transition.

- (3) In late 2020, we launched a long-term promotional campaign that provides information about our business, addresses potential concerns about the way we operate, and raises awareness of the importance of our products to enable the transition to a low-carbon economy in a sustainable and responsible way. (Glencore 2020)

This quotation refers to the salience of mined products, which are enablers of a low-carbon economy. The example shows strategic scope ambiguity as it leaves open whether *sustainable* and *responsible* apply to the low-carbon transition, the products or mining operations, or both. Again, the natural environment is absent from the extract. In the next example, the environment is assessed:

- (4) Our assets undertake detailed assessments of their local environmental conditions during the operational changes in their life cycle, to develop water management strategies that maximize the efficient and sustainable use of this important natural resource. (Glencore 2020)

Here, salience is finally given to water, a part of nature. Note that it is framed as a resource, which is important and valuable in its function for the company, not for other reasons. To summarize this section, changes in discursive patterns, such as those seen in the emerging

identified discursive frames, show how mining companies construct sustainability post-SDG in three ways:

FRAME	EXAMPLE	INTERPRETATION
Governance	<i>policy, operational, lead</i>	Sustainability is institutionalised and receives attention and is supported via committees, and strategic positioning.
SDG alignment/Action	<i>achieve, build, include, align, promote, oversee, provide, contain</i>	Action to be in line with the global and esteemed SDG framework creates trust and good reputation.
Responsibility/Risk/Safety	<i>safety, long-term, responsible</i>	The prevention of risk is foregrounded, which is viewed as part of sustainability as is responsible water use. The focus of this frame on human risks is erasing the impact on the ecosystem.

Tab. 5: Summary of the most salient changes in discursive frames: Governance, SDG alignment/Action and Responsibility/Risk/Safety

7. Conclusion

This paper investigated the impact of the Sustainable Development Goals on sustainability reporting in the mining sector, which has a considerable impact on the planet's ecosystems through its operations and ideology. By favouring stories of sustainability that align with production and economic growth in their sustainability report, the companies exercise hegemonic power. These stories become stories we live by. This paper set out to point to discursive patterns which limit an ecologically holistic sustainability that respects the more-than-human world.

The need for sustainable actions is apparent, and the mining industry has reflected this fact in its contribution to sustainability in notable publications such as *Breaking New Ground* (MMSD 2002) and *Mapping Mining to the Sustainable Development Goals: An Atlas* (UNDP 2016). An attempt to align operations to the need for sustainable development has been made. It needs to be noted that the corpus does not extend past the year 2020 and thus represents short-term effects.

Normalised frequency data suggest a fluctuation of sustainability discourse over time. Keyword analysis aimed to uncover sustainability-related topics in the corpus. Its results characterise RGV as a business corpus focused on environmental impact management in mining. The diachronic analysis of the subcorpora pre- and post-SDG shows that an environmental perspective is present in both corpora. Supporting the former argument, keyness analysis of the search terms revealed a moderate keyness of sustainability, indicating a robust use over time. Dispersion aligns with this result, as generic sustainability discourse is approximately evenly spread in all reports. Results suggest that the overall use of sustainable language is steady and the explicit combination with the SDG framework-related language indicates a statistically significant rise post-SDG. This means that sustainability discourse is

increasingly expressed in relation to the SDGs. Collocation analysis fine-grained these results. Collocations of *sustainability* and *sustainable* in the subcorpora pre- and post-SDGs indicate a shift towards an institutionalised and responsibility-oriented sustainability discourse that aligns with the SDG framework in some cases. However, the detected ambiguity might lead to greenwashing as to what is meant by *sustainable* and *responsible*. Additionally, the analysis aligns with Niceforo that the specialised meaning of *resilient* is “diluted” (2025, 56) in its use in different contexts. Along with Niceforo (2025), it can be argued that language is not used neutrally, but shapes when moving from expert or academic settings to a corporate context, and as such, it can support or undermine ecological thinking.

Lastly, the impact of the SDGs is visible in the corpus. However, this discursive shift does not imply that company interests have shifted from a business-as-usual scenario, reaffirming Onn and Woodley’s statement of sustainability to “co-exist with traditional profitability” (2014, 125). An expected move away from focusing on purely economic gains towards responsibility for the future could not be found. On the contrary, the analysis of salience and erasure showed that nature is consistently absent in the concordance examples.

A future investigation should aim at a comparison between the development of sustainable actions and the results of this paper. The diachronic development of corporate emissions could demonstrate if company commitment is executed.

Mapping Mining to the Sustainable Development Goals: An Atlas (Columbia Center on Sustainable Investment, 2016) claimed that the mining sector can substantially contribute to all goals. This positive and promising statement seems, considering the results gathered, to describe a development that is not yet achieved. Thus, the change experienced is not radical. The SDGs open sustainability discourse to seventeen goals in which the environment is prominently featured. A similar salience of nature in the reports is absent. Therefore, the results suggest that the analysed mining corporations adopt weak sustainability, substituting the environment with economic development. Finally, the SDGs have been successful in reframing the language of sustainability, but companies have not reframed their sustainability contributions to tell a nature-encompassing story we can live by.

Bionote

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Framing Sustainability, Development, and Growth

Corpus-based Discourse Analysis of Narratives in *The Conversation*

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Abstract

The concept of sustainability is understood as a dynamic, context-specific process that emphasises the interconnectedness and balanced interaction of environmental protection, social equity, and economic development to ensure long-term viability and equity across time and space (Zappettini and Unerman 2016). Scholarly work within Corpora and Discourse Studies in recent years has sought to explore its discursive dimension, analysing how sustainability is conceptualised across domains, with a particular focus on corporate reporting practices (e.g., Fuoli and Beelitz 2024). However, more attention should be paid to how academics frame sustainability and related concepts such as development and growth when translating knowledge outside academic genres. For this reason, this paper investigates how sustainability and its related concepts of development and growth are framed (Entman 1993) within a specialised corpus of 234 research-based articles covering the 2011-2024 timespan from *The Conversation* – an independent, nonprofit news organisation that provides news and analysis co-produced by academics and journalists. A focus on forms of public-oriented research communication may enrich the understanding of how knowledge about sustainability is (re)contextualised across domains and communities, reproducing mainstream business-as-usual discourse or challenging it (Stibbe 2021). To do so, we employ a corpus-assisted approach to framing analysis, investigating how narratives of sustainability, development, and growth feature within climate discourse in research-based news. The analysis examines how the discursive framing of sustainability may reflect societal norms and ideologies, and more broadly, contribute to the construction of social realities that can contribute to reproducing ecocidal approaches or put forward alternative perspectives on socio-environmental assemblages.

1. Introduction¹

The concept of sustainability has gained a central yet deeply contested position in contemporary academic and public discourse. While discussing this topic is an urgent matter, the very concept of sustainability remains fuzzy and vague due to its complex nature. Ever since the so-called

¹ Although this paper is the product of continuous co-operative research and collaboration, Lorenzo Zannini is responsible for writing parts 3, 5 and Martina Russo is responsible for parts 1, 2 and 4.

Brundtland Report (1987) famously defined sustainable development as “the capacity to meet present needs without compromising the ability of future generations to meet their own” (Brundtland 1987, 10), sustainability has been associated with three interrelated dimensions: environmental protection, social equity, and economic development. This multidimensional model has provided a foundational vocabulary for policies, research, and public debate in relation to sustainability. However, it also amplifies complexities, hiding profound tensions among its components and resting on assumptions that are far from ideologically neutral.

Despite being a highly polysemous and negotiable concept whose interpretation varies across institutional contexts, disciplines, and socio-political agendas, sustainability is often invoked as a self-evident notion (Krieg and Toivanen 2021). Recent scholarship stresses that its apparent inclusivity renders it vulnerable to semantic stretching, strategic appropriation, and ideological instrumentalisation, particularly in contexts where economic and financial discourses dominate (Zappettini and Unerman 2016; Christen and Schmidt 2012). Building on this critique, Horton and Horton (2019) urge a more radical reframing of sustainability, that “has to be redefined – meeting the needs of humanity both now and in the future while respecting the existence of the other species inhabiting planet Earth” (2019, 90). The authors’ standpoint foregrounds reciprocity, ecological interdependence, and a biocentric ethic that decentres human exceptionalism. Their proposal reflects a broader shift in sustainability research towards models that emphasise planetary boundaries, relational ontologies, and the intrinsic value of more-than-human life. This perspective challenges the tendency, common in policy and corporate discourse, to treat sustainability primarily as a managerial, technocratic endeavour concerned with mitigating harm while maintaining existing economic trajectories. Instead, Horton and Horton (2019) align with ecological scholarship that regards sustainability as a transformative paradigm demanding structural shifts in socio-economic systems, consumption patterns, and political institutions (Stibbe 2021; Purvis, Mao and Robinson 2019; Hopwood, Mellor and O’Brien 2005). Yet despite the growing influence of such ecological perspectives, the term sustainability continues to function as a conceptual battleground in which competing visions of social futures are articulated and contested.

From a discourse-analytic standpoint, sustainability can be understood as a semiotic resource that shapes, and is shaped by, broader socio-cultural imaginaries. In ecolinguistics, Stibbe theorises these imaginaries as “stories we live by” (2021, 2): culturally shared narratives that shape how societies understand their relationships with the natural world, conceptualise responsibility, and envisage futures. These stories have linguistic manifestations embedded in texts and they can have ideational and ideological consequences. When sustainability is framed as efficiency, innovation, and competitiveness, particular actors and systems (such as corporations, markets, and technocratic governance) are positioned as central agents of change,

while alternative value systems emphasising ecological reciprocity, degrowth, or socio-environmental justice may be marginalised. In this sense, sustainability discourse does not simply communicate facts; it plays a constitutive role in shaping public understandings of environmental crises and in legitimising or contesting dominant socio-economic realities.

Despite this, research on sustainability discourse has mostly focused on genres such as corporate (Del Gaudio 2024; Dahl 2022; Lischinsky and Sjölander 2014; Alexander 2009) and policy (Penz 2022; Poole and Hayes 2022; Harris, et al. 2013) discourse. These studies are essential but reveal only part of the discursive landscape. Far less attention has been devoted to how academics themselves frame sustainability outside strictly academic settings, particularly in hybrid forms of communication where scholarship intersects with journalism. This gap is significant for at least two reasons. First, expert voices carry considerable epistemic legitimacy and therefore exert substantial influence on how complex scientific and socio-environmental issues are introduced and contextualised for the public. Second, when experts communicate through public-facing platforms, their discourse undergoes processes of recontextualisation, simplification, and narrative shaping that may amplify, dilute, or transform the meanings circulating in academic research. As Hyland and Jiang (2019) argue, expert-to-public communication involves not only the engagement and the transfer of knowledge but also the negotiation of stance, voice, and credibility within a media environment structured by news values, accessibility, and audience expectations.

Research-based news outlets are especially relevant in this regard. Halfway between journalism and academia, *The Conversation* produces a hybrid genre in which academics author articles that are subsequently edited by journalists to enhance relevance, clarity, and public reach. Such platforms play a prominent role in climate and sustainability communication, functioning as sites for the popularisation of scientific knowledge and arenas where public understandings of environmental issues are shaped and contested (Zannini and Curry 2025; Curry and Brookes 2025).

Understanding how sustainability and related concepts of development and growth are framed in research-based news is, therefore, essential for assessing how academic knowledge shapes ecological imaginaries in the public sphere. The ways in which sustainability, development, and growth are represented remain central to global debates on the climate crisis and socio-ecological transformation. Development and growth have been particularly critiqued for their historical entanglement with Eurocentric and neoliberal notions of progress that privilege Western epistemologies and marginalise alternative worldviews (Mignolo 2011; Sachs 2010). These dominant models have also been shown to rely on extractivist logics that undermine ecological viability and generate enduring socio-environmental conflicts (Martínez-Alier, et al. 2010), while growth-oriented paradigms more broadly have been problematised for

their incompatibility with planetary limits (Meadows, et al. 1972). Whether scholars challenge or reproduce these narratives when communicating to general audiences is thus a crucial question for both sustainability scholarship and science communication research.

This paper addresses this gap by investigating the discursive construction of sustainability in public-oriented research communication, contributing to a deeper understanding of how knowledge circulates across domains, how environmental imaginaries are shaped, and how academic voices participate in negotiating the terms of socio-ecological futures.

2. Theoretical framework

The theoretical framework adopted in this study brings together sustainability discourse, ecolinguistics, and framing theory within a multidisciplinary and critically oriented perspective, highlighting the concept's contested, ideologically charged, and context-dependent nature.

2.1 *Sustainability discourse*

More than a mere descriptor of socio-ecological practices, sustainability can be conceptualised as a discursive construct shaped through the interaction of knowledge systems, institutional priorities, and culturally embedded imaginaries. Its semantic mobility derives from its role as both a universal policy imperative and a persistent site of ideological contestation. As Krieg and Toivanen (2021, 3) observe, sustainability functions as an “analogue for how concepts circulate apart from contexts,” taking on different meanings as it moves across disciplinary fields, political institutions, and social communities, and can only be understood when situated within the socio-historical, epistemic, and geopolitical conditions that shape its articulation. This contextual sensitivity is perhaps most visible in Zappettini and Unerman's (2016) analysis of integrated reporting, where sustainability is “mixed” and semantically “bent” to foreground financial viability and shareholder value, illustrating how dominant economic discourses can colonise and reshape its meaning, transforming it from a potential catalyst for systemic ecological critique into a legitimising resource for existing socio-economic arrangements. As Christen and Schmidt (2012) and Clingerman and colleagues (2013) further demonstrate, this susceptibility to appropriation is inseparable from the concept's constitutive indeterminacy: its meanings are always mediated by cultural, historical, and linguistic frames that render certain dimensions – ecological constraints, justice, transformation – selectively salient or invisible depending on ideological commitments. In this sense, the field of Ecological Discourse Analysis (EDA) offers a useful theoretical reference. As Song et al.'s (2025) systematic review demonstrates, EDA examines not only the linguistic encoding of ecological phenomena but also the ecological implications of discourse, analysing how language shapes relationships between

humans, other species, and ecosystems. Within this tradition, the Handbook of Sustainability Literacy (Stibbe 2009) collects investigations on how certain ideologies materialise as skills, dispositions, and cultural practices necessary for navigating socio-ecological change, emphasising relational thinking, systems awareness, and ethical reflection as preconditions for sustainability-oriented action. This aligns with Horton and Horton's (2019) call for a paradigmatic shift away from sustainability framed as managerial optimisation towards a recognition of humanity's embeddedness in planetary life-support systems, what they describe as "living in harmony with life on Earth" (2019, 90). Their contribution is crucial because it highlights how dominant interpretations of sustainability often perpetuate anthropocentric, control-oriented worldviews that contributed to the ecological crisis in the first place.

A critical perspective is equally essential for analysing how sustainability discourse intersects with corporate and policy narratives. Ahmed and Khalidi's (2019) critical discourse analysis of sustainable development reveals how the "business case for sustainability" has become a dominant framing that marginalises discourses prioritising ecological integrity or social wellbeing. They show that sustainability is frequently constructed as compatible with existing economic models, thus diluting its transformative potential and legitimising business-as-usual trajectories. This insight is central to understanding sustainability discourse in hybrid expert-public communication: when academics write for media platforms, their arguments may be partially recontextualised to align with dominant news values or normative expectations regarding economic rationality and innovation. Moreover, sustainability as a linguistic and ideological construct remains closely tied to broader developmental imaginaries. As Niceforo (2024) emphasises, terminology such as "growth," "progress," and "development" carries historically traditional meanings that naturalise specific socio-economic pathways, often aligned with Western modernity. Analysing how such lexical and conceptual choices are used by expert authors is thus indispensable for revealing the implicit assumptions and ideological commitments embedded in public-facing academic discourse.

These strands of scholarship support a theoretical framework that treats sustainability as a dynamic, contested discursive field shaped by ideological tensions and diverse institutional power, providing analytical tools for examining how expert-authored public communication both reproduces and reconfigures the meanings of sustainability, development, and growth and their implications for socio-ecological futures.

2.2 Ecolinguistics

Ecolinguistics provides a critical lens for examining the ideological work performed by sustainability discourse. Rooted in the broader linguistic turn in environmental studies, the field investigates

how humans construe and instantiate life-sustaining ecosystems in and through language. At a time when a human-inflicted climate crisis has brought ecosystems to the brink of the sixth mass extinction, this discipline and its principles represent a fundamental area of theoretical and applied research both for academic communities and for society at large. (Bortoluzzi 2026, 1)

As such, ecolinguistics positions language not merely as a vehicle for describing environmental conditions but as an active agent that shapes ecological imaginaries, mediates value systems, and legitimises or contests socio-ecological arrangements.

Stibbe's notion of the "stories we live by" (2021, 2) is foundational in this context. These stories – structured, recurrent patterns of meaning that surface in linguistic forms such as ideologies, frames, metaphors, evaluations, identities, and erasures (Stibbe 2021, 1-18) – organise how individuals and communities conceptualise nature, assign value to ecological relations, and envision possible futures. Crucially, these underlying narrative structures are not neutral: they may reproduce exploitative orientations (e.g. consumers as rational economic actors, ecosystems as extractable resources) or cultivate ecocentric worldviews grounded in mutuality, care, and interdependence. The ecolinguistic task, therefore, involves identifying, evaluating, and, where necessary, resisting destructive stories while promoting alternative narratives aligned with ecological flourishing. Therefore, in analysing sustainability discourse, an ecolinguistic approach allows attention to the implicit, hidden values and assumptions embedded in defining, explaining and proposing solutions related to sustainability. It becomes possible to identify whether discourses reproduce anthropocentric, technocratic, or growth-oriented conceptualisations, or whether they open space for more radical reimaginations of socio-ecological relations. Such analysis is even more crucial in public-facing genres and formats such as public-oriented research communication and research-based news. These texts operate simultaneously as conveyors of scientific information and as mediators that reshape academic knowledge into culturally legible narratives (Curry 2024). Through processes of recontextualisation, simplification, and framing, research-based news articles not only report ecological findings but also construct broader cultural imaginaries of environmental change, responsibility, and possibility. In doing so, they participate in the circulation of narratives that inform public reasoning, emotional response, and political will.

2.3 Framing theory

The concept of framing denotes a series of conceptual and theoretical standpoints and analytical frameworks developed at the intersection of sociology and communication studies, on the one hand, and cognitive psychology, on the other (Sullivan 2023). Framing is widely defined as the way speakers organise experience, build realities, and eventually communicate them in texts

and talk (Entman 1993; Goffman 1986). However, the multifaceted origins of framing theory have led to a series of conceptual and analytical ruptures, earning it a reputation as a fractured paradigm (Entman 1993). For instance, Van Dijk (2023) argues that its conceptual vagueness, lack of interdisciplinary integration and inability to provide novel insights in social movement studies make framing analysis irrelevant if it is not operationalised rigorously. Similarly, Guenther et al. (2024) discuss framing as a way into the whole communication process thanks to its bridging potential that connects textual meaning-making, communicator intentions, audience interpretations, and broader cultural narratives, highlighting the centrality of frames in mediating the social life of climate discourse. However, the authors argue that studies in climate change communication overwhelmingly focus on frame content, disregarding the context of frame production and considering only a handful of communicators and journalists. In so doing, they miss the opportunity to provide a broad-ranging and relevant account of how frames operate across texts, discourses and communicative contexts. Acknowledging these criticisms, this research will present its methodological standpoint in detail and account for the frame in its context of production.

Moreover, research on the framing of environmental issues demonstrates that investigating how sustainability is framed across discursive domains has substantial implications for public perception and policymaking. Certain frames (such as economic opportunity, risk management, or moral responsibility) activate distinct cognitive schemas that can amplify, redirect, or neutralise public engagement. For instance, Lakoff (2010) shows that environmental communication frequently fails not because of insufficient information but because of the dominance of frames that reinforce anthropocentric or market-centred worldviews. Conversely, frames emphasising ecological interconnectedness, collective responsibility, or justice can foster more critical and transformative imaginaries.

For the scope of this research, integrating framing theory and ecolinguistics within the investigation of sustainability discourse in public-oriented research communication enables a deeper analysis of how linguistic constructions intersect with cultural narratives to shape sustainability imaginaries. Framing identifies what is made salient and how meaning is structured, while ecolinguistics interrogates the ecological and ideological implications of those choices. Applied to research-based news, this combined perspective reveals not only how experts define sustainability and its related concepts but also how these definitions align with or challenge dominant socio-economic paradigms. For this reason, we take Stibbe's (2021) view of framing as a discursive device that not only allows to describe certain aspects of reality but also actively reproduces or challenges the stories we live by, underpinning unequal and ecologically unsustainable narratives that shape social understanding of the relationship between the social and the natural.

Taken together, these three theoretical strands inform the analytical procedure of this study in distinct but complementary ways. Sustainability discourse scholarship establishes why the concepts of sustainability, development, and growth are analytically productive entry points, given their documented susceptibility to semantic mobility, ideological bending, and recontextualisation across institutional and social domains. Ecolinguistics allows the analysis to move beyond description and assess whether the framings identified reproduce or contest ecologically destructive narratives. Framing theory provides the operational categories through which actual linguistic manifestations are systematically coded and interpreted. The integration of these three strands means that the corpus-assisted analysis is not merely a frequency exercise but a critically oriented investigation into how public-oriented research communication, within the constraints of a hybrid explanatory genre, constructs, naturalises, or challenges dominant understandings of socio-ecological futures.

3. Data and method

3.1 Data

This research is based on a framing analysis of the *Sustainability Corpus in The Conversation* (SCTC), a corpus of research-based news articles published in the English language editions of *The Conversation*. The SCTC is a subcorpus derived from *The Conversation Corpus of Climate Discourses in English* (CDE; Curry 2024) and contains all the texts in the CDE with tags related to sustainability (e.g. sustainability, food sustainability; sustainable tourism, sustainability reporting) in the UK, US, Australia, Canada (English) and Global editions of *The Conversation*. The corpus is accompanied by metadata including author names and affiliations, date, year, and region of publication, as well as the thematic categories and tags used by *The Conversation* for indexing articles. To reduce noise in the corpus, only the body and title of each article were kept, and advertisements and comments were excluded. In sum, the SCTC is a specialised corpus containing the whole catalogue of articles on sustainability published in *The Conversation* between its foundation in 2011 and January 2024. Table 1 presents a summary of the corpus when analysed with Sketch Engine (Kilgariff, et al. 2014), a widely used corpus linguistics software for the exploration of large textual datasets. It provides tools for generating frequency lists, keyword analyses, concordances, and collocation patterns. In this study, it was primarily employed to extract frequency and keyword lists, enabling the identification of salient lexical items and patterns that informed the subsequent framing analysis.

Corpus Data	SCTC
Tokens	243,489
Blogs	234
Authors	348
Affiliations	174
Dates	174
Years	14
Regions	5
Themes	19
Topics	1102
Translated Texts	2

Tab. 1: The Sustainability Corpus in *The Conversation*

3.2 Analytical approach

3.2.1 Keyword analysis

To examine the discourse of sustainability in the SCTC, we first conducted a keyword analysis. Keywords are defined as items that occur more frequently in a target corpus when compared to a reference corpus and serve as a gateway to understanding the “aboutness” of a corpus (Scott 1997). The keyword analysis was performed using Sketch Engine (Kilgarriff, et al. 2014) and further refined with a custom-built Excel script. Since we aimed to explore the distinctive features of sustainability discourse in *The Conversation*, we adopted the remainder approach and used the rest of the CDE (Curry 2024) as the reference corpus. To organise the Sketch Engine output and retain only highly significant and distinctive keywords, we implemented a three-step process. First, keywords were filtered using Loglikelihood (LL) ($\alpha=0.0001$), adjusted with the Bonferroni correction. LL enabled us to retain only keywords that occurred significantly more frequently in the target corpus (Brezina 2018). However, LL does not indicate the magnitude of this difference. Therefore, we complemented LL with two effect-size measures to assess the size of the frequency difference between the target and reference corpora. Hence, the second step involved calculating the Log Ratio (Hardie 2012). Log Ratio estimates the size of frequency differences based on relative frequency expressed as multiplicative factors, where a Log Ratio of 1 signifies that an item in the target corpus occurs twice as often as in the reference corpus. Only keywords with a Log Ratio above average were kept after this step. Finally, we calculated %DIFF (Gabrielatos 2018), which quantifies the magnitude of differences in percentage terms and offers a stable, reproducible estimate. As with Log Ratio, only keywords with an above-average %DIFF were retained.

This process resulted in a manageable list of highly significant and highly distinctive keywords (n. 20) that characterise the discourse of sustainability in *The Conversation*. Table 2 shows the keywords and the relevant matrices.

Keyword	Freq. (focus)	PTW	Freq. (reference)	PTW	LL	LR	%DIFF
Sustainability	526	2.16026186	648	0.09318812	1992.25747	3.14336447	91.7292932
Sustainable	631	2.59149284	1535	0.22074655	1765.63492	2.46297416	84.3010127
Products	182	0.74746703	879	0.12640796	320.601615	1.77717574	71.0695554
Goals	179	0.73514615	972	0.13978218	284.393181	1.65998395	68.0471698
Consumption	198	0.81317842	1237	0.17789152	274.482214	1.51977661	64.1011166
Business	249	1.02263347	1570	0.22577986	341.920351	1.51057595	63.8293094
Waste	166	0.68175564	1047	0.15056784	227.871719	1.51025753	63.8198739
Agriculture	161	0.66122084	1398	0.20104474	150.80383	1.19056039	53.3682551
Development	317	1.30190686	2804	0.40323996	289.352572	1.17205348	52.7031982
Companies	264	1.08423789	2370	0.34082692	235.966912	1.15725782	52.1668179
Growth	309	1.26905117	2851	0.40999897	265.431641	1.12987014	51.1629866
Urban	178	0.73103918	1684	0.24217407	147.2957	1.10481031	50.2320654
Cities	246	1.01031258	2421	0.34816117	191.540748	1.06534953	48.742304
Food	404	1.65921253	4324	0.62182937	273.819473	0.98143265	45.4784787
Green	251	1.03084739	2704	0.38885907	168.202634	0.97491945	45.2197925
Social	266	1.09245182	3111	0.44738927	153.272232	0.89275076	41.8915015
Environmental	474	1.94669985	5682	0.81712176	260.214636	0.86810271	40.8701517
Economy	199	0.81728538	2435	0.3501745	104.797595	0.84755674	40.0108725
Production	201	0.8254993	2506	0.36038492	101.809072	0.82881573	39.2208926
Economic	315	1.29369294	3955	0.56876392	157.19951	0.82179071	38.9232652

Tab. 2: Final keyword list

To organise the keywords and inform the research design for this paper, keywords were inductively categorised into seven thematic categories as summarised in Table 3. For the purpose of this paper, only keywords in the “concepts” category were considered for the framing analysis.

Theme	Keywords
Concepts	Sustainability, development, growth
Attributes	Sustainable, urban, green, social, environmental, economic
Outcomes	Products, waste, food
Measures	Goals
Activities	Business, agriculture, economy, production, consumption
Actors	Companies
Places	Cities

Tab. 3: Thematic coding

3.2.2 Framing analysis

For the aim of this study, we adopt a critical perspective on framing analysis that both acknowledges its limits and exploits the possibilities afforded by this approach. In particular, we take a two-layer approach to framing analysis to investigate the discursive construction of

the keywords, namely sustainability (n=526), development (n=317) and growth (n=309). First, a sample of extended concordance lines using a 95% confidence interval was drawn. Then, a pilot study was conducted on a 20% sample to develop and refine the analytical categories for the study. On this basis, the full sample was analysed.

The first step of the analysis involved a structured, top-down process (Gillings and Mautner 2023) in which concordance lines were tagged with *a priori*-defined framing activities. The concept of framing activities refers to Entman's (1993) discussion of the role of framing in texts and discourse. Entman (1993) argues that frames “*promote a particular problem definition, causal interpretation, moral evaluation and/or treatment recommendation* for the item described” (emphasis in the original, 1993, 52) through patterns of selection and salience. For this work, these categories were redefined based on Curry and Brookes' (2025) framing analysis of the climate-health poly-crisis in *The Conversation*. Specifically, the authors found that three core framing activities were performed in research-based news: defining and contextualising, representing causes and effects, and proposing solutions.

The second step involved a structured, bottom-up approach (Gillings and Mautner 2023) based on developing categories emerging from the thematic (Guenther, et al. 2024) and semantic (Sullivan 2023) characteristics of the co-text surrounding each keyword. Bottom-up categories were developed during the pilot phase of the analysis and then refined and applied recursively throughout the analysis of the full sample. Given the highly interpretative nature of this coding, both authors analysed the full samples, and all final decisions were based on extensive consultation and consensus (Stemler 2004). Table 4 summarises the sample analysed.

Keyword	Total	Performing Function	%
Sustainability	222	147	66
Development	175	113	64
Growth	175	145	83

Tab. 4: Sample analysed

4. Results

Adapting Entman's model (1993), the analysis examines how expert-authored research-based news articles frame sustainability, development, and growth through three core functions. The table below shows how each concept is framed across the three functions²:

- Growth is mostly defined and contextualised (51% of meaningful occurrences) and frequently linked to causes and effects (34%) but is rarely presented as a solution (13%).

² Due to space constraints, only a limited number of illustrative excerpts are presented in this paper. These examples are selected as representative of the broader patterns identified in the dataset and serve to exemplify the dominant framings discussed in the analysis.

This suggests it is mainly discussed as a concept to explain or problematise, rather than to resolve issues.

- Sustainability is relatively balanced across all three functions (40%/31%/29%), indicating it is both defined, explained, and used to propose solutions.
- Development is less defined (38%) and less tied to causality (27%), but is strongly solution-oriented (34%), meaning it is primarily framed as a pathway for action or intervention.

	Sustainability	Development	Growth
Defining and Contextualising	40%	38%	51%
Representing Causes and Effects	31%	27%	34%
Proposing Solutions	29%	34%	13%

Tab. 5: Summary of the framing activities

4.1 Defining and contextualising

4.1.1 Sustainability

As for the defining and contextualising function, sustainability is predominantly framed as a socio-economic challenge, explicitly tied to questions of justice, equity, and intergenerational responsibility (20 cases). These framings foreground sustainability as a complex condition requiring systemic attention to inequalities within and across societies, in instances such as:

- (1) [...] What measures would you recommend governments, and relevant institutions take to allow women to play their critical role in meeting the many challenges associated with climate change? The vulnerable are often the most exposed to climate change and, in many societies, women are among the vulnerable groups. The IPCC found in its special report on managing the risks of extreme events and disasters to advance climate change adaptation that social, economic and environmental sustainability can be enhanced by disaster risk management and adaptation approaches. A prerequisite for **sustainability** in the context of climate change is addressing the underlying causes of vulnerability, including the structural inequalities that create and sustain poverty and constrain access to resources. [...]. (fyK2dT)

Here, sustainability is represented as a condition fundamentally dependent on social structures. The formulation “a prerequisite for sustainability [...] is addressing the underlying causes of vulnerability” constructs sustainability as contingent upon prior socio-political transformation, rather than as an outcome achievable through isolated environmental measures. This frame

reflects the dominant pattern observed in the dataset, whereby sustainability is primarily associated with questions of equity and justice. The lexical choice “prerequisite” is particularly salient, as it establishes a hierarchical relationship in which social justice functions as a foundational condition for sustainability, thereby positioning structural inequality as central to sustainability discourse.

A second major frame positions sustainability as a business problem or opportunity (12 cases), highlighting the central role attributed to markets, corporate practices, and innovation, as in:

- (2) there is little attempt to draw out the implications for business. It appears that each of the parties operate on a jaundiced view of business leaders, which research suggests is very much out of touch. In their 2012 annual worldwide survey of business managers' attitudes to sustainability, MIT Sloan Management Review and the Boston Consulting Group reported that 70% said sustainability was permanently on their management agenda and 33% thought that it contributed to profitability. In 2013 they found that nearly 50% of companies changed their business model as a result of sustainability opportunities – a 20% jump from 2012. Sixty per cent of those that had changed their business model say they have added profit from sustainability. The report also suggests that worldwide, Australian and New Zealand companies are those most likely to profit from a change of business model towards sustainability. The concern is where our politicians get their information on major trends affecting Australian business. (6WKQX8)

In example 2, sustainability is defined and contextualised primarily as a business opportunity, framed in terms of profitability, innovation, and strategic adaptation. By drawing on authoritative business surveys, the text embeds sustainability within managerial and market-oriented rationalities, presenting it as economically advantageous rather than environmentally constraining. The repeated emphasis on business model change and added profit normalises sustainability as compatible with existing economic trajectories. Ecological values are marginalised, appearing only peripherally and without elaboration. In Entman's terms (1993), this frame selectively defines sustainability in economic terms, foregrounding market benefits while backgrounding environmental and ethical dimensions.

Governance-related definitions (9 cases) emphasise institutional responsibility and the need for policy coordination, while emotional/value-laden definitions (7 cases) highlight sustainability as an ethical or moral imperative, as in the case of:

- (3) [...] This gives them a sense of empowerment rather than feeling overwhelmed and helpless, which leads to despair and anxiety. Sustainability education for children can best be approached by helping them understand their place in the web of life, which supports their existence in terms of clean air and water, food and clothes, and other necessities for a decent life. It's about fostering a sense of belonging, respect and care for all living creatures, and an understanding of how to handle material resources in a limited world. Sustainability education is about fostering the world-view that we are in this together. Only through our common actions can despair be turned into hope. Remember the Daily Telegraph's 2013 front page headline "Kick this mob out"? Although some could argue that Labor after the Rudd-Gillard years was in a deep mess and not fit to govern, such a headline was deeply partisan and far from neutral election campaign coverage. (YAqg3p)

In 3, lexical choices such as “empowerment,” “feeling,” “overwhelmed,” “anxiety,” “belonging,” “hope” and “care” foreground affective responses and collective identity, constructing sustainability as a shared moral project. The metaphor of the “web of life” situates humans relationally within ecological systems, reinforcing an ecocentric worldview. This framing defines sustainability by selecting moral values and emotional engagement as salient features. As such, sustainability is contextualised as a matter of shared responsibility and ethical orientation.

Other definitional frames include education gaps (6 cases), environmental issues (4 cases), and economic considerations (3 cases). Overall, sustainability emerges as a porous and multidimensional term whose semantic borders overlap extensively with governance, business, and socio-economic domains. This prevalence of socio-economic and governance framings might result from *The Conversation's* attempt to link expert knowledge with societal relevance and policy applicability, suggesting that genre constraints partly shape how sustainability is publicly defined even by ecologically committed researchers.

4.1.2 Development

Development is defined in similarly heterogeneous ways. It is most frequently framed as a socio-economic challenge involving justice and equity (14 cases). In these frames, development is constructed as an inherently normative project aimed at addressing structural disparities within and between societies. This emphasis positions development as closely aligned with ethical responsibility and social transformation, as illustrated in the following example:

- (4) [...] The UN's Sustainable Development Goal 4.7 target states that by 2030: All learners acquire knowledge and skills needed to promote sustainable development,

including among others through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship, and appreciation of cultural diversity and of culture's contribution to sustainable development. The more we learn about sustainability, the clearer it is that many of our social and environmental challenges, including poverty, gender equality, climate change and quality education are interconnected – as exemplified by the UN's framework of 17 SDGs. And despite the growth in commitment to sustainability from educational institutions, student bodies and individual academics, there is a widespread attitude-behaviour gap when it comes to the sector as a whole. (dy7Wd2)

In this example, by linking development to “poverty,” “education,” “gender equality,” and “global responsibility,” the text constructs it as a systemic condition shaped by social and institutional structures. The reference to the UN SDGs legitimises this frame and situates development within a global justice agenda. Drawing on Entman's model (1993), development is defined through the selective foregrounding of social equity and collective responsibility.

Governance issues appear equally salient (14 cases), reflecting persistent concerns about policy shortcomings, decision-making failures, and institutional inertia. Development also addresses economic (6 cases), value-laden (4 cases), environmental (3 cases), and educational gaps (2 cases). This distribution suggests that development operates within a broad and overlapping semantic field that closely mirrors that of sustainability, with no single dimension clearly delimiting the concept. A particularly salient feature of the discourse is the recurrent characterisation of development as a necessary yet insufficiently specified objective. Expert-authored texts frequently engage in metadiscursive reflection, explicitly signalling uncertainty about what “sustainable development” entails in practical terms and how it can be effectively operationalised across contexts. This metadiscursive uncertainty may reflect the tension academic authors face when translating conceptually contested terms for general audiences, where simplification risks are managed through explicit qualification rather than definitional closure.

4.1.3 Growth

Growth displays the strongest definitional concentration in the dataset, with approximately 51% of occurrences functioning explicitly to define and contextualise the concept. Unlike sustainability and development, which are framed through a wide dispersion of social, institutional, and ethical meanings, growth is more narrowly and consistently constructed as a problematic organising principle of contemporary economies. Both are frequently framed as

socio-economic challenges linked to justice and equity (34 cases). However, they diverge in their representation as economic issues (21 cases), a pattern that contrasts with the framing observed for sustainability and development. An example is:

- (5) If the global economy then grows by 3% to the end of the century, it will be 60 times larger than now. The existing economy is already environmentally unsustainable. It is utterly implausible to think we can “decouple” economic growth from environmental impact so significantly, especially since recent decades of extraordinary technological advancement have only increased our impacts on the planet, not reduced them. Moreover, if you asked politicians whether they’d rather have 4% growth than 3%, they’d all say yes. This makes the growth trajectory outlined above all the more absurd. Others have shown why limitless growth is a recipe for disaster. I’ve argued that living in a degrowth economy would actually increase well-being, both socially and environmentally. (Dhazww)

In this example, growth is defined and contextualised through a strongly critical economic frame that foregrounds its structural unsustainability. Quantitative extrapolation (“60 times larger than now”) is used to render the logic of continued growth implausible, while the rejection of decoupling explicitly challenges a central assumption of mainstream sustainability discourse. Technological progress, often framed as a solution, is recontextualised here as exacerbating environmental harm rather than mitigating it. Political commitment to higher growth rates is portrayed as ideologically entrenched, reinforcing governance lock-in. The text defines growth by selecting economic scale, political preference, and ecological limits as salient features, constructing growth itself as the problem and positioning degrowth as a viable alternative grounded in social and environmental well-being.

Governance-related framings are also prominent (12 cases), while value-laden definitions occur less frequently (5 cases), and explicitly environmental framings remain marginal (2 cases). Overall, this distribution indicates that growth is discursively constructed as a structural source of inequality and systemic risk, rather than as a neutral or inherently desirable objective. That growth receives the most consistent critical framing of the three concepts suggests that authors in *The Conversation* retain a degree of disciplinary critical distance that resists the normalising pressures of journalistic discourse, at least at the definitional level.

4.2 Representing causes and effects

4.2.1 Sustainability

When representing causes and effects, sustainability is predominantly framed as the outcome of systemic shortcomings. Most frequently, sustainability is constructed as a business problem (15 cases), with expert authors highlighting inadequate corporate practices, misaligned incentives, and slow organisational adaptation as key drivers of sustainability failures, as in:

- (6) This kind of corporate hypocrisy – what we call talking green while lobbying brown – is a form of greenwashing, in which companies trumpet their good deeds while hiding their efforts to block progress. As the past and present presidents of the Alliance for Research on Corporate Sustainability, we are concerned that this greenwashing may delay by years or even decades steps that might solve sustainability problems, such as slowing the pace of climate change or ending the ocean plastic pollution crisis. We and our colleagues in the alliance have documented many business initiatives that fall short of the impact they claim. (Fq7IO5)

This example frames sustainability explicitly as a business problem by attributing sustainability failures to corporate practices such as greenwashing and strategic obstruction. Lexical choices, including “corporate hypocrisy,” “talking green while lobbying brown,” and “hiding their efforts to block progress,” foreground intentional misalignment between corporate discourse and action, constructing businesses as active agents in delaying sustainability solutions. The causal link between greenwashing and delayed environmental action situates unsustainability as an outcome of organisational behaviour rather than technological or individual shortcomings. According to Entman (1993), this instance represents the cause of sustainability problems as rooted in corporate power and accountability failures, thereby framing business itself not as a solution provider but as a central obstacle to meaningful sustainability progress.

At the same time, sustainability challenges are framed as disproportionately burdening marginalised communities (13 cases), foregrounding unequal social impacts and reinforcing the link between environmental degradation and social injustice. A further recurrent causal frame identifies a gap in education (9 cases), particularly in sustainability literacy and professional training, positioning knowledge deficits as a significant barrier to the sustainable transition. Less frequently, sustainability is attributed to the lack of effective policies, where weak regulation and insufficient implementation are presented as enabling unsustainable practices. Explicit economic framings are rare (1 case), suggesting that economic causes are largely backgrounded in favour of institutional and social explanations. The near-absence of explicit

economic causation here is notable: it suggests that authors calibrate their causal attributions towards institutional and social actors, perhaps reflecting both disciplinary conventions and an awareness of audience expectations regarding political rather than structural explanations.

4.2.2 Development

When representing causes and effects, development is predominantly framed as a socio-economic challenge rooted in issues of justice and equity (13 cases). In these instances, underdevelopment and uneven development are attributed to structural inequalities, unequal access to resources, and persistent global asymmetries, positioning development outcomes as socially produced rather than economically inevitable. A further prominent causal frame identifies the lack of effective policies (8 cases), with weak regulation, inadequate governance structures, and institutional failure presented as key factors undermining developmental goals. An interesting example is:

- (7) The ever-mounting costs and failures of the “long night” of neoliberal governance are resonating ever more strongly within national politics. Economist John Quiggin believes this is feeding a new, if nascent, appetite for public intervention and ownership. We must hope this desire for restoration of state capacities extends to the cities whose rapidly deteriorating development trajectories threaten national wellbeing. The first necessity is to reinstate capacities for public economic governance. The need is especially great in the areas of infrastructure and urban services, which powerfully shape the general course of urbanisation. After decades of relentless privatisation and deregulation, however, there is little to govern and little to govern with. (SfJ3PU)

This example frames development failures primarily as the result of ineffective governance and policy erosion. The text explicitly attributes deteriorating development trajectories to the long-term consequences of neoliberal governance, privatisation, and deregulation, thereby locating the cause of underdevelopment in institutional dismantling. References to the loss of “state capacities” and the absence of effective public economic governance foreground policy failure as the central explanatory factor.

Development is also framed as an economic issue (7 cases), though typically in a critical sense that highlights dependency and the limitations of market-driven approaches. Explicit environmental framings are comparatively rare (2 cases), suggesting that ecological degradation is less frequently foregrounded as a primary cause or consequence of development

failure. References to gaps in education occur only marginally (1 case), indicating that knowledge deficits play a secondary role in causal explanations.

These patterns emphasise social injustice and governance failure as central explanatory factors, constructing development as a structurally constrained process shaped by political, economic, and institutional conditions. This governance-centred causal framing positions the state, rather than markets or economic structures, as the primary site of failure and potential remedy. This framing aligns with the impact-oriented and policy relevant objective of research-based news.

4.2.3 Growth

When representing causes and effects, growth is predominantly framed in terms of its unequal social consequences, most frequently as a burden for marginalised communities (22 cases). In these framings, growth-driven economic models are depicted as exacerbating inequality, precarity, and social exclusion, with costs disproportionately borne by vulnerable populations. Representative, in this sense, is:

- (8) And economic growth pursued to the neglect of its human and environmental foundations will ultimately prove unsustainable, kicking back to undermine itself through conflict, disaster and stagnation. Economists have long questioned the idea of “growth at all costs.” Dissenting voices have been heard from illustrious figures such as John Maynard Keynes and IDS founding director Dudley Seers to modern-day exponents Joseph Stiglitz and Thomas Piketty. They, and others in between, have argued that unregulated capitalist growth enhances inequalities and is unsustainable in its own terms. A slightly shorter lineage of neoclassical environmental economists, for example the pioneering work of David Pearce and Ed Barbier in the 1980s, has long argued for addressing environmental “market failures” through mechanisms such as carbon and resource taxes and the “polluter pays” principle. Recent debates highlight prosperity, low carbon and green growth. Meanwhile, resilience studies – dominated by ecologists, but with social scientists including economists among them – have questioned linear growth models. (BEwFad)

This example frames growth as a process that undermines its own social and environmental foundations, producing “conflict,” “disaster,” and “stagnation” that disproportionately affect vulnerable populations. By invoking a lineage of critical economic thought, the text legitimises the view that “growth at all costs” enhances inequalities rather than alleviating them. This framing represents the effects of growth as socially uneven and structurally harmful,

positioning marginalised communities as those most exposed to the cascading consequences of unsustainable economic expansion.

Growth is also represented as an economic issue (10 cases), often through critiques of accumulation, instability, and systemic dependence on continuous expansion. Environmental framings (6 instances) further associate growth with ecological degradation and resource depletion, reinforcing its incompatibility with planetary limits. Value-laden representations (5 cases) foreground the ideological and normative commitments sustaining growth-oriented paradigms, while references to the lack of effective policies (4 cases) highlight governance failures in regulating or redirecting growth trajectories. Less frequently, growth is framed as a business problem (2 cases), where corporate practices are implicated in perpetuating unsustainable expansion.

These causal attributions construct growth as a structurally embedded driver of social and environmental harm, with responsibility dispersed across economic systems, political institutions, and dominant value frameworks rather than confined to isolated actors or sectors. The distribution of responsibility across systems rather than individual actors reflects a structural critical stance that is more consistent with academic political economy than with the personalised attributions typical of mainstream journalism, suggesting that disciplinary framing conventions persist even in public-facing genres (Curry and Pérez-Paredes 2025).

4.3 Proposing solutions

4.3.1 Sustainability

When proposing solutions, sustainability is predominantly framed in opportunity-oriented terms, with a strong emphasis on business-led and market-compatible responses. Most frequently, sustainability is framed as a business opportunity (17 cases), positioning innovation, adaptation, and competitive advantage as key pathways to address sustainability challenges. Alongside this, sustainability is framed as an opportunity to tackle socio-economic injustices (14 cases), where proposed solutions emphasise inclusion, fairness, and improved living conditions for disadvantaged groups. Governance-related solutions appear less prominently (7 cases), typically framing sustainability as a responsibility of public institutions to create enabling regulatory and policy frameworks rather than to drive systemic transformation. Education also features as a solution (6 cases), with sustainability framed as an opportunity to strengthen sustainability literacy and professional training across sectors, as in the example:

- (9) Only 29 percent of the readings assigned in our study acknowledged the scientific need for adopting sustainability practices. Even if we stop or reduce greenhouse gas

emissions, global temperatures will continue to rise for 100 or more years due to carbon dioxide emissions already in the atmosphere. Today's business students who will be tomorrow's business leaders are guaranteed to face sustainability challenges. Future business leaders must be equipped with the scientific understanding of how climate change is currently impacting business, how it will impact business in the future and the profound change that is required of business and industry. Professors of these courses should assign readings that communicate the scientific need for businesses to operate in a more sustainable way to address climate change. (pYI43W)

This example frames sustainability education as a key solution by positioning knowledge and scientific literacy as prerequisites for effective sustainability action. The focus on business students as "tomorrow's business leaders" constructs education as a forward-looking intervention aimed at shaping future corporate practices. By emphasising the need for scientific understanding of climate impacts on business, the text aligns sustainability solutions with professional competence and curricular reform rather than behavioural or structural change. The solution proposes sustainability as a challenge that can be addressed through improved training and knowledge transmission across sectors.

Explicitly economic opportunity framings are comparatively limited (4 cases), suggesting that economic growth is not the primary justificatory logic for sustainability action.

These solutions involve reformist, opportunity-based interventions that construct sustainability as a manageable and beneficial endeavour compatible with existing institutional and economic structures.

4.3.2 Development

When proposing solutions, development is most frequently framed as an opportunity to address socio-economic injustices (8 cases), with expert-authored texts emphasising redistribution, inclusion, and improved living conditions as central objectives. Development solutions are also framed as economic opportunities (6 cases), where growth, investment, and innovation are presented as means to support development goals, albeit often with implicit qualifications regarding equity and sustainability. For instance:

- (10) Designers such as Ezio Manzini, Anna Meroni, Tony Fry, and Jurgen Faust now continue the tradition, with encouragement from economists such as Nobel Laureate Muhammad Yunus and Grameen Lab, while economists such as Jeffrey Sachs look for solutions to sustainable development. The answer is simple. While we live in a world that requires economic growth, we do not recognise that economic growth requires

sustainable development. Rather than sell new products repeatedly to the same few wealthy consumers, we could achieve a different kind of growth by selling better and more durable products to larger groups of people. The world requires a return to a productive ethos for economic growth linked to the reduced resource consumption that will make the world sustainable. This may be a challenge, but designers can play their part in change by accepting their responsibilities for ethical engagement. (XcheBK)

The example above frames development as a solution-oriented process. Development is constructed not as an alternative to growth, but as its necessary condition, redefining growth in qualitative terms. By foregrounding durability, reduced resource consumption, and ethical engagement, the text positions development as a transformative project aimed at reshaping production and consumption practices. The solution proposes sustainable development as the mechanism through which economic goals can be aligned with social inclusion and ecological limits, situating designers and innovators as key agents of change.

Governance responsibility appears less prominently (3 cases), typically positioning public institutions as facilitators of development through policy coordination and regulatory frameworks rather than as primary drivers of systemic change. Business opportunity frames (3 cases) further align development with market participation and private-sector engagement, though these remain secondary to justice-oriented narratives. Finally, education is infrequently proposed as a solution (2 cases), suggesting that while capacity-building is acknowledged, development solutions are more commonly located in socio-economic restructuring and economic reform. More generally, development here is represented as a normative project oriented toward social justice, supported, but not dominated, by economic and institutional mechanisms. This justice-oriented but market-compatible framing of development solutions reflects the ambivalent position of academic news blogs navigating between critical academic perspectives and the explanatory register expected in public-oriented research communication.

4.3.3 Growth

When proposing solutions, growth is framed in more heterogeneous and contested ways than sustainability and development, reflecting its problematic status within the discourse. Most frequently, growth is constructed as an opportunity to tackle socio-economic injustices (6 cases), where alternative economic models are proposed as means to reduce inequality and improve social well-being. Growth is equally framed as an economic opportunity (6 cases), though these framings tend to emphasise qualitative change, redistribution, or reoriented economic activity rather than expansion for its own sake. Value-laden growth (5 cases) foregrounds ethical

reflection, collective responsibility, and normative re-evaluation of what constitutes prosperity and progress, as in:

- (11) Today, the framing of climate change has become heavily associated with ideological frames. Talking about energy might just get us beyond the impasse. “Appreciative inquiry” is an educational approach using dialogue and storytelling in a collaborative way. Appreciative inquiry looks at possibilities based upon big-picture thinking by sharing stories instead of critique. Rather than focusing on the deficit model of problem solving, appreciative inquiry encourages listening to other experiences to learn and foster positive growth. Moving away from abstract concepts of climate change and over to concrete ideas of energy change allows conversations to unfold, particularly those about how we collectively live with energy in our daily lives. People know how much it costs to fill the truck, what the electrical bill costs each month or why we need forms of fuel to cook our food. Energy stories also involve environmental threats that impact human lives such as through polluted air or water contamination. (B182i2)

This example depicts growth as potentially connected with ethical reflections. By advocating “appreciative inquiry” and storytelling, the text foregrounds dialogue, shared experience, and normative re-evaluation of how societies conceptualise energy use and everyday prosperity. The shift from abstract climate discourse to lived energy practices situates growth within moral and cultural dimensions of daily life. The solution function of growth selects values, participation, and collective responsibility as salient, constructing alternative pathways to progress grounded in ethical engagement.

Governance responsibility appears less prominently (3 cases), positioning public institutions as enablers of alternative growth trajectories rather than as drivers of conventional expansion. References to education as a solution are rare (1 case), suggesting that growth-related solutions are primarily conceptualised at structural, economic, and normative levels. In sum, in terms of solutions, growth is constructed as a site of ideological contestation where addressing injustice requires rethinking economic values, institutional roles, and the meaning of development itself. The rarity of growth as a proposed solution – only 13% of instances against 51% of definitional and 34% of causal ones – suggests a significant asymmetry: authors are more willing to problematise growth than to articulate alternatives to it, which may indicate the limits of what is discursively speakable in a hybrid genre oriented towards broad public audiences.

5. Discussion

The analysis reveals that sustainability, development, and growth are articulated in research-based news through a shared discursive logic that foregrounds socio-economic, institutional, and market-oriented concerns. Across definitional, causal, and solution-oriented functions, sustainability, development, and growth are frequently treated as interconnected and mutually supportive. While this convergence reflects the multidimensional nature of sustainability debates, it also has important ideological implications, as it tends to normalise compatibility between ecological goals and growth-oriented economic models. From a discourse-analytic perspective, this pattern suggests that public-oriented research communication reflects complexity, shaping the boundaries of what is presented as feasible, legitimate, and desirable in public understandings of socio-ecological futures.

5.1 Convergence of definitions and semantic blending

One of the most salient findings is the degree of semantic overlap among sustainability, development, and growth. Although each concept carries distinct theoretical histories and political implications, in the analysed texts, they are repeatedly framed using similar socio-economic, governance, and business-oriented vocabularies. As a result, their conceptual boundaries become blurred, and they function less as analytically distinct categories than as elements of a shared discourse of rational socio-economic change. Across the corpus, this convergence creates a discursive landscape in which sustainability, development, and growth appear mutually reinforcing rather than potentially conflicting. Such blending risks reproducing what political ecologists have described as the green growth paradigm, the assumption that economic expansion and ecological sustainability are mutually compatible (Martínez-Alier, et al. 2010; Meadows, et al. 1972), thereby obscuring tensions that are central to degrowth and post-development debates. This is visible, for instance, in example 10 in paragraph 4.3.2, where development is framed not as an alternative to growth but as its necessary condition. From an ecolinguistic perspective (Stibbe 2021), this pattern reflects dominant cultural narratives that privilege economic continuity and institutional optimisation, while rendering alternative ecological imaginaries less visible.

5.2 The centrality of economic and institutional frames

The prevalence of business, governance, and economic frames across all three terms demonstrates that academics tend to articulate sustainability challenges within institutional and market-oriented vocabularies. Sustainability as a business opportunity appears repeatedly, and business actors are frequently positioned as key drivers of sustainability transitions, even

more adaptable than governments. Such frames resonate with well-established trends in corporate discourse, where sustainability is incorporated into strategic innovation and risk management (Zappettini and Unerman 2016).

At the same time, this orientation carries limitations. By privileging solutions compatible with existing economic systems, research-based news may implicitly reinforce the assumption that sustainability can be achieved without addressing deeper questions of power, inequality, and consumption. Although governance failures and policy inertia are regularly acknowledged, the emphasis on business-led solutions risks reproducing narratives that foreground market efficiency over ecological regeneration.

5.3 Backgrounding of ecological perspectives

Despite the ecological nature of the sustainability challenge, ecological frames constitute a minority across all functions. Environmental issues appear primarily as consequences of unsustainable practices rather than as frames that shape the conceptualisation of sustainability itself. This asymmetry is significant: it indicates that ecological considerations, although present, do not anchor the core narratives through which experts communicate sustainability to the public. From an ecolinguistic standpoint, this suggests that the ecological story is subordinated to narratives of governance and economics. While these dimensions are essential, their discursive dominance may narrow the horizon of possible socio-ecological transformations and perpetuate anthropocentric imaginaries. There is evidence of critical engagement with mainstream sustainability narratives, such as explicit discussions of growth limits, structural inequality, and intergenerational justice, but these critiques are often embedded within broader discourses that maintain the primacy of economic reasoning. This ambivalence reflects the ambiguous nature of sustainability itself, which simultaneously challenges and reproduces the very systems it critiques.

The presence of alternative frames indicates that *The Conversation* offers openings for transformative imaginaries. Yet these are consistently overshadowed by institutional and economic perspectives, and this asymmetry is not incidental. As established in the literature review, articles published in *The Conversation* are co-produced by academics and editors to enhance public relevance and clarity. This editorial mediation is likely to favour framings that resonate with mainstream news values. From this perspective, the backgrounding of ecological frames may reflect not only the ideological orientations of authors but also the genre constraints of a platform structurally positioned between scholarship and journalism – constraints that render certain stories more speakable than others.

5.4 Implications for sustainability communication

The findings underscore the role of research-based news as a key site where sustainability meanings are not only communicated but also selectively stabilised. In hybrid platforms such as *The Conversation*, public-oriented research communication operates under dual constraints: maintaining academic credibility while conforming to journalistic expectations of clarity, relevance, and solution-oriented narratives. As Curry and Pérez-Paredes (2025) and Curry and Brookes (2025) demonstrate, the genre conventions of research-based news move within academic conventions, cultural frameworks and newsroom procedures that, in turn, shape what counts as a viable response to sustainability challenges. Yet the critical framing of growth at the definitional level, where authors appear to retain greater disciplinary autonomy, indicates that academic ideological orientations also play a role, pointing to a more complex interplay between genre constraints and disciplinary positioning than either explanation alone can account for. Within this communicative context, the convergence observed among sustainability, development, and growth suggests that expert-to-public communication contributes to normalising particular interpretive frames while limiting the visibility of others. Furthermore, from an ecolinguistic perspective, the stories circulating in expert-authored public discourse shape how audiences imagine responsibility, agency, and socio-ecological futures. When ecological concerns are subordinated to economic and institutional logics, engagement may be fostered without fundamentally reconfiguring human-nature relations. Conversely, when relational and ethical framings emerge, they momentarily expand the horizon of what is thinkable and desirable.

Overall, the findings suggest that expert-to-public sustainability communication both opens and constrains the space of socio-ecological imagination, balancing critical awareness with discursive alignment to dominant institutional and economic frameworks.

Bionotes

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