Md. Sabid Mahmud*

Corpus-assisted ecolinguistics and media framing: mapping climate narratives in Bangladesh

https://doi.org/10.1515/jwl-2025-0058
Received October 20, 2024; accepted November 1, 2025; published online December 17, 2025

Abstract: This study employs a corpus-assisted ecolinguistic analysis of Bangladeshi media discourse to reveal the frames of climate news. Drawing on a corpus of national English-language newspapers, the analysis examines the collocations and semantic fields of key terms such as *climate*, *finance*, *adaptation*, and *loss and damage*. By integrating corpus-assisted ecolinguistic approach with framing theory, the study identifies how linguistic choices construct relationships between environment, economy, and national identity. The findings show that climate discourse in Bangladesh is predominantly economized, aligning environmental recovery with financial growth and policy frameworks rather than ecological restoration. Representations of justice and adaptation are often reframed as matters of funding and investment, thereby translating moral and ecological imperatives into administrative and fiscal concerns. The analysis also shows that nonhuman nature has limited agency, as human-centered narratives of governance, progress, and responsibility remain dominate. By uncovering these discursive patterns, the study demonstrates how national media normalizes particular narratives of climate action and sustainability, thereby shaping the moral and political conceptions of environmental responsibility in the Global South.

Keywords: Bangladesh; climate change; corpus-assisted ecolinguistics; framing; media discourse

1 Introduction

For the last two decades, anthropogenic climate change has become an ever-present topic worldwide, demanding urgent attention across diverse contexts. The importance of addressing this issue has steadily increased, as it threatens ecological

***Corresponding author: Md. Sabid Mahmud**, Department of English and Modern languages, International University of Business Agriculture and Technology, Dhaka, Bangladesh, E-mail: shaonmahmudsabid@gmail.com

stability and human livelihoods. Consequently, climate change has become a central concern not only in environmental science and policy but also within the humanities and social sciences, reflecting what scholars have termed an "ecological turn" (He 2021; Penz and Fill 2022; Stibbe 2021; Zhou 2021). Ecolinguistics, an emerging field, has contributed meaningfully to this turn by examining how language shapes human relationships with the natural world and by uncovering the underlying narratives that sustain or endanger ecological well-being (Steffensen 2024, 2025; Stibbe 2021, 2024).

The least responsible countries for climate change are often the most severely affected. Bangladesh exemplifies this paradox. Bangladesh is one of the most climate-vulnerable countries due to its low-lying deltaic topography, dense river networks, and monsoonal climate (Alam et al. 2017). Over recent decades, the country has experienced a mean temperature increase of about 0.20 °C per decade and irregular rainfall patterns, heavier in the monsoon, yet colder and drier in winter, which leads to more frequent and severe weather extremes (Chowdhury et al. 2022). People living in coastal and riverine areas are at great risk due to the limited adaptive resources (Hoque et al. 2019). Approximately 60 % of the coastal population relies on agriculture for their livelihoods, leaving them particularly exposed to salinity intrusion, crop failure, and erosion (Hoque et al. 2019). Sea-level rise of 0.29–1.1 m by the end of the century threatens wetlands, floods, and shoreline erosion, displacing communities and exacerbating gendered vulnerabilities, as men migrate for work and women face heightened social and economic insecurity (Rahman 2013).

The media serve as the most powerful tool in shaping societal understanding of such complex issues (Peters and Heinrichs 2005). As van Dijk (2015) argues, media discourse occupies a frontline role in constructing and negotiating social meaning, partly because of the public's trust in media credibility and its pervasive influence on everyday life (Fairclough 1989). With the expansion of global ecological problems, news media have not only maintained their function as channels of information but have also become active agents influencing values, attitudes, and lifestyle choices. Stibbe (2021) maintains that the media's language and storytelling have immense potential to reflect and promote ecological consciousness.

Mass media are particularly crucial for climate discourse because climate change lies largely beyond most individuals' direct experience or "life-world" (Moser 2010; Neverla and Schäfer 2012). Consequently, public understanding of the issue depends heavily on mediated communication (Anderson 2011; Schäfer 2012). Media coverage thus becomes a central forum for the discussion, legitimation, and even contestation of climate governance (Nanz and Steffek 2004; Schneider et al. 2007; Steffek 2009). By broadcasting the voices of diverse social actors – scientists, policymakers, NGOs, and communities – the media influence how societies perceive climate urgency and responsibility. Moreover, media debates can create

circumstances "where it is conducive for governments to act, or hard for them not to act in the face of perceived pressure to initiate a policy response" (Newell 2000: 94).

In Bangladesh, where climate change poses significant risks to livelihoods and food security, the media's representational practices acquire particular importance. As the country's vulnerability is well documented, this study investigates the manner in which the print media linguistically represent climate-related threats and opportunities. By examining how language, ideology, and ecology converge in the press, the study contributes to an understanding of media framing in a highly climate-vulnerable context.

Accordingly, this study employs an ecolinguistic approach to examine how Bangladeshi English-language newspapers report on climate change. Drawing on both corpus-assisted and framing analyses, it investigates the most frequent words, expressions, and recurring linguistic patterns in news stories, and considers how these shape broader portrayals of climate crisis. By integrating quantitative word analysis with qualitative interpretation, the study aims to reveal how news narratives construct either anthropocentric (human-centered) or ecocentric (nature-centered) framings of climate change in Bangladesh.

2 Literature review

Ecolinguistics has become increasingly important as a discipline for examining how language interplays with ecological issues (Steffensen 2024, 2025). The term itself came into more common use in the 1990s, although its roots date earlier. Haugen (1972: 325) first conceptualized ecolinguistics as the study of language and its interaction with its environment, especially emphasizing the psychological and sociological settings over mere physical surroundings. Halliday (2001 [1990]) expanded on this by arguing that language, especially English, has features that "construe reality in a certain way" that may no longer be healthy for humans and other species. More recently, the discourse-analytic branch of ecolinguistics has defined its scope to include "the role of language in the life-sustaining interactions of humans, other species, and the physical environment" (https://www.ecolinguistics-association.org/). Although Critical Discourse Studies (CDS) and ecolinguistics share concerns with justice, power, and ideology (Alexander and Stibbe 2014; Stibbe 2014), ecolinguistics moves beyond anthropocentric priorities by extending its commitment to justice and wellbeing to nonhuman animals and ecological systems (Poole and Micalay-Hurtado 2022).

Corpus-assisted ecolinguistic research has leveraged quantitative tools (frequency, collocation, N-grams, concordance) to reveal subtle patterns of meaning, ideology, and framing in ecological discourse (Poole 2022). Much corpus-assisted

ecolinguistic research has explored the discourse of climate change (e.g. Gillings and Dayrell 2024), representations of nonhuman animals (e.g. Goatly 2002; Sealey and Oakley 2013) and plants (e.g. Poole and Micalay-Hurtado 2022), political and corporate discursive treatment of the environment (e.g. Collins and Nerlich 2015; Franklin et al. 2022; Fløttum et al. 2014; Koteyko et al. 2010, 2013), as well as studies of ecology-relevant key terms (e.g. Gilquin 2022; Liu and Huang 2022). In the realm of mass media, several corpus-assisted ecolinguistic investigations provide useful precedent. For example, Liu and Huang (2022) analyzed the framing differences between "climate change" and "global warming" in *The New York Times*. Kramar (2023) examined how leading UK and US news outlets construct agency in climate change discourse. Gillings and Dayrell (2024) investigated discourse fluctuations in UK press coverage from 2003 to 2019. Hambali et al. (2025) analyzed Indonesian print-media coverage and found a strong prevalence of war and threat metaphors regarding climate change, yet noted limited agency attributed to local actors or to nature itself. These studies highlight the role of media language in shaping public understanding of climate crisis.

Framing and salience are crucial for understanding how media shape perceptions of climate change. Entman (1993) defines framing as selecting certain aspects of an issue while excluding others, thereby influencing how audiences notice, interpret, and respond to it. Frames should be made explicit for reflection rather than judged as right or wrong, as several scholars emphasize that framing directs attention to particular causes, problems, or remedies and may embed moral evaluations within these selections (Borah 2011). Salience refers to making information more noticeable, meaningful, or memorable, which increases the likelihood that audiences will perceive, interpret, and retain it (Fiske and Taylor 2013). Importantly, what a frame omits can be as influential as what it includes, as omissions may obscure alternative problem definitions, explanations, or solutions, thereby guiding public understanding and political action (Gamson 1992). By making frames explicit, scholars can critically reflect on the power of discourse to prioritize certain realities over others, a process particularly relevant for analyzing climate change reporting in Bangladeshi newspapers, where linguistic choices may foreground anthropocentric or ecocentric perspectives (Entman 1993; Hulme et al. 2018).

Corpus-assisted ecolinguistic research in Bangladesh remains limited. Sadath et al. (2013) analyzed forest and climate media framing in Bangladeshi and global newspapers from 1989 to 2010 but did not employ corpus-assisted linguistic methods. Miah et al. (2011) examined major climate-change issues in Bangladeshi daily newspapers using thematic content coding. Al-Zaman and Khan (2022) conducted a topic modeling analysis of environmental news in Bangladeshi media from 2013 to 2021, identifying dominant themes such as monsoon impacts and urban environmental issues.

Given the state of existing research, two key gaps emerge in the context of Bangladeshi media: (1) Few studies use corpus-linguistic tools (frequency, collocation, n-gram, concordance) to examine how linguistic choices frame climate change, especially in terms of non-human agency and ecological interdependence. (2) Many studies focus on what topics are covered (themes, issues) rather than how they are linguistically represented (agent-passivity, metaphor, lexical patterns).

This study aims to address both gaps by employing a corpus-assisted ecolinguistic approach to analyze Bangladeshi English-language newspaper articles on climate change. It will explore frequent lexical items, collocation, n-gram patterns, and concordance lines, and interpret framings in terms of anthropocentric and ecocentric perspectives.

3 Theoretical foundations

3.1 Corpus-assisted ecolinguistics

Ecolinguistics is "the study of how language impacts on the natural ecology in ways that change the conditions for life on Earth" (Steffensen 2024: 522). Within the discourse analytic strand of ecolinguistics, language is viewed as both reflecting and shaping human relationships with the natural world (Halliday 2001 [1990]). This approach examines whether discourses perpetuate harmful ecological beliefs (e.g. domination and exploitation) or encourage sustainable practices (e.g. coexistence and respect for non-human agency) based on the analysts' ecosophy. This study applies Stibbe's (2021, 2024) ecosophy, "Living!", as a criteria to evaluate climate narratives in Bangladesh.

Corpus-assisted ecolinguistics "draws from the methodological repertoire of CADS [Corpus-assisted Discourse Studies] and the theoretical frameworks of ecolinguistics and CDS to enable an expanded ecolinguistic research enterprise for the study of language and its impacts, both negative and positive, on well-being and sustainability" (Poole 2022: 24). It attempts to "demonstrate how the complexity of attitudes, beliefs, and ideologies which contribute to climate change, species loss, and ecological degradation are reflected, normalized, and perpetuated in language use" (Poole and Micalay-Hurtado 2022: 2). The corpus-assisted ecolinguistic approach integrates quantitative methods (e.g. keyword analysis, frequency measures, and concordancing analysis) applied on large corpora and qualitative methods used to interpret overall trends identified with quantitative methods (Steffensen 2025). This study employs a corpus-assisted ecolinguistic approach to examine the representation of climate change in Bangladeshi newspapers by analyzing word frequency, collocations, and n-grams.

3.2 Framing theory

Framing theory (Entman 1993; Goffman 1974) provides the interpretive foundation for linking linguistic patterning to meaning construction within the media's climate discourse. In this study, the theory functions not merely as a conceptual definition but as an analytical tool for identifying how specific discursive selections and emphases structure public understanding of environmental issues. Drawing on Entman's (1993) notion that framing foregrounds certain aspects of reality while backgrounding others, the analysis examines how recurring linguistic patterns and collocations reproduce particular frames identified by Hulme et al. (2018).

Hulme et al.'s (2018) typology of climate framings such as economic and financial challenge, national security concern, technological opportunity, and moral or ethical dilemma serves as a comparative framework for interpreting concordance patterns emerging from the corpus. Through concordance analyses of sentences and multi-word clusters, the study explores how Bangladeshi news discourse constructs climate change not simply as an environmental phenomenon but as a socio-economic and moral problem. The integration of framing theory with corpus-assisted ecolinguistic approach thus enables a systematic examination of how linguistic choices (e.g. collocates of *climate*, *finance*, *threat*, or *responsibility*) reflect and reinforce broader ideological orientations in climate communication.

4 Methodology

4.1 Data collection

For the purposes of this research, I assembled an original corpus of 446 climate-related news articles drawn from five leading English-language newspapers in Bangladesh, resulting in 329,045 running words. Following the SCImago Media Rankings, the selected outlets – *The Daily Star, Bangladesh News 24, The Financial Express, Dhaka Tribune,* and *The Daily Sun* – represent the country's top-ranked English newspapers in terms of readership, influence, and journalistic credibility. The key term "climate change" was used as the primary search keyword to retrieve relevant articles. Articles that merely mentioned the term without a substantial discussion of environmental or climatic issues were excluded.

4.2 Corpus building

After data collection, the dataset underwent a manual cleaning process to remove non-linguistic components such as reporter names, dates, advertisements, and hyperlinks. Each text was compiled into a single document file and subsequently uploaded to AntConc (version 4.3.1.0) for analysis. While this approach of combining all articles into a single corpus aligns with the study's aim to describe national-level discourse rather than inter-outlet variation, it inevitably limits the ability to assess dispersion across publications or diachronic shifts in representation. These aspects are therefore acknowledged as avenues for future research. Table 1 summarizes the distribution of articles and their proportional contributions from each newspaper outlet.

4.3 Analytical tools and procedures

The corpus was analyzed using AntConc (version 4.3.1.0). Three principal corpus-linguistic functions were employed: word frequency, collocation, and n-gram analysis. These procedures were applied sequentially and comparatively to uncover lexical frequencies, collocational tendencies, and discursive frames that illuminate the anthropocentric or ecocentric orientations shaping Bangladeshi climate reporting.

4.3.1 Frequency analysis

The first stage involved generating a word frequency list to identify the 50 most frequent content words (nouns, verbs, adjectives, and adverbs). Function words were filtered out to focus on semantically loaded lexical items. The minimum frequency threshold was set at 100 occurrences to ensure that the words analyzed were representative rather than incidental. Such thresholding is consistent with corpus-

Table 1: Distribution of articles.

Newspaper	SCImago rank	Number of articles	Percentage of articles
The Daily Star	440	83	18.61 %
Bangladesh News 24	545	92	20.63 %
The Financial Express	1,713	90	20.18 %
Dhaka Tribune	2,079	90	20.18 %
The Daily Sun	3,047	91	20.41 %

based convention that frequency cut-offs should balance representativeness with interpretability, as seen in prior studies that adopt thresholds around comparable scales depending on corpus size and research goals (Biber and Barbieri 2007; Cui and Kim 2023).To capture related lexical forms that did not appear in the initial top 50 list, the lemmas of these frequent words were also used to retrieve morphologically related variants (e.g. using economic* to include economically). This ensured a more comprehensive representation of semantically connected terms within the corpus. Frequency counts allow an overall idea of thematic salience of what topics dominate climate coverage and serve as entry points for framing interpretation.

4.3.2 Collocation analysis

The second stage examined collocational patterns surrounding key lexical items central to climate discourse, including climate, environment, carbon, disaster, and policy. Collocation refers to the statistically meaningful co-occurrence of lexical items within a defined span, which can reveal ideologically salient semantic associations and discursive framing tendencies. A collocational window of five words to the left and right (5L–5R) was applied, following established practice in corpus-linguistic research (Gablasova et al. 2017). To ensure reliability and interpretability of results, only collocates occurring at least 20 times in the corpus were retained, consistent with the approach recommended by Baker (2016) to focus on reasonably high-frequency patterns while avoiding spurious low-frequency co-occurrences.

Collocational strength was evaluated using the Log-Likelihood (LL) statistic, which estimates whether a co-occurrence is significantly more frequent than would be expected by chance (Dunning 1993; Gries 2013). LL was selected as the primary association measure given its robustness with medium-to-large corpora and topical convergence (Gablasova et al. 2017). Values above 6.63 ($p < 0.01$) were treated as statistically significant.

In line with Corpus-Assisted Discourse Studies (CADS) methodology, which combines quantitative corpus outputs and qualitative interpretation (Ancarno 2020), the quantitative collocate list was subsequently subjected to qualitative interpretive filtering to assess thematic relevance to climate-related frames including finance, governance, adaptation, and vulnerability. This combined quantitative–qualitative procedure supports the identification of lexicogrammatical patterns through which agency, responsibility, and environmental relations are constructed.

4.3.3 N-gram analysis

Four-word clusters (4-grams) were extracted from the corpus with a minimum frequency threshold of 20 occurrences to identify recurring multiword patterns in

Bangladeshi newspaper coverage of climate change. These clusters capture extended lexical sequences beyond simple word co-occurrence, allowing for systematic examination of phraseological patterns. Following standard practice in corpus-based bundle studies, a threshold of 20 was adopted to balance the inclusion of meaningful recurring patterns with the exclusion of low-frequency, potentially idiosyncratic sequences (Liu et al. 2023). Frame identification was conducted inductively by examining the co-occurrence and thematic proximity of these clusters. Concordance lines and surrounding co-texts were iteratively reviewed to ensure that recurring patterns were captured consistently. These patterns were then prepared for further analysis to examine how linguistic choices may reflect relationships between humans and the environment, particularly regarding anthropocentric and ecocentric perspectives.

5 Findings and discussion

5.1 Lexical frequency and discursive framing of climate change

To identify salient lexical indicators of dominant frames, the fifty most frequent content words (minimum frequency = 100; see Section 4.3.1) were extracted and analyzed for thematic relevance (Table 2). The column "Word (merged form)" consolidates related morphological forms under a single lexical entry, with specific included variants provided in the "Included Forms" column.

5.1.1 Key framing patterns in climate change coverage

To extend the lexical findings, this section analyzes how the most frequent content words function within their immediate textual environments. Using concordance lines extracted from the top-ranked items in Table 2, dominant thematic frames such as security, food and agriculture, gender, migration, and economic loss were identified. This concordance-based reading uncovers how the lexical items participate in constructing distinct discursive frames. Collectively, these patterns represent the key interpretive frames through which climate change is articulated in Bangladeshi media.

(1) Just 1-degree centigrade increase of global temperature and further sea level rise will result in inundation of a large area of Bangladesh and thus displacement of 40 million people by the end of this century, the ambassador said. (*The Daily Star*, 27 January 2019)

Table 2: 50 most frequent words.

Serial	Word (merged form)	Frequency	Included forms
1	climate	6,342	climate, climatic, climatologists, climates, climatically, climatologist, climatology
2	change	3,444	–
3	Bangladesh	2,075	–
4	country	1,751	country, countries, countryside, countrywide
5	global	1,191	global, globally, globalisation, globalization
6	finance	997	financial, financing, finance, finances, financed, financially, financiers, financer, financers
7	world	985	world, worldwide, worlds, worldview
8	nation	923	nations, nation, national, nationally, nationwide, nationality, nationism, nationalist
9	develop	919	development, developments, developmental, develop, develops, developed
10	people	891	people, peoples
11	impact	847	impact, impacts, impacted, impacting, impactful
12	need	791	need, needs, needed
13	adaptation	753	adaptation, adaptations
14	environment	690	environmental, environment, environmentally, environmentalists, environments, environmentalism
15	action	690	action, actions, actionable, actionaid
16	government	649	governments, government, governmental
17	water	642	water, waters, waterlogging
18	risk	635	risk, risks, risking, risky
19	level	580	level, levels
20	emission	573	emission, emissions
21	temperature	565	temperature, temperatures
22	heat	564	heat, heatwave, heatwaves, heating, heats, heatstroke, heated
23	international	532	international, internationally, internationalists, internationalization
24	project	530	project, projects
25	health	487	health, healthcare, healthy, healthier
26	human	467	human, humans, humanity, humankind, humanitarian
27	million	466	million, millions
28	loss	442	loss, losses
29	area	435	area, areas
30	vulnerable	425	–
31	billion	424	billion, billions
32	research	421	research, researchers, researcher, researches researching, researched
33	warming	395	warming, warming
34	carbon	381	–

Table 2: (continued)

Serial	Word (merged form)	Frequency	Included forms
35	economic	377	economic, economics, economically
36	women	366	–
37	energy	365	–
38	extreme	354	extreme, extremes, extremely
39	support	352	support, supported, supports, supporting, supportive
40	damage	343	damage, damages, damaged
41	time	335	–
42	cop	331	–
43	weather	328	–
44	sea	328	sea, seabed, seawater, seafood, seabird
45	green	323	green, greener, greenery, greenland
46	sustainable	321	sustainable, sustainably
47	rise	317	rise, rises, risen
48	future	316	future, futures
49	food	295	food, foods, foodgrain
50	coastal	259	–

Note: The top 50 words appear to lean towards an anthropocentric orientation, where lemmas like: governance, policy, finance, development, people, etc., occur far more frequently than ecocentric terms. Terms such as biodiversity (83), species (75), animal (51), ecology (22), and restoration (12) do not reach the set frequency threshold, which could imply that nature-related vocabulary enjoys comparatively less importance in the discourse. While these results should be viewed cautiously, they are broadly consistent with prior corpus-based studies showing that frequency thresholds tend to highlight high-frequency patterns (Liu et al. 2023). The disparity could also be read in light of Stibbe's (2021) "stories we live by" concept, where the 'stories' of human priorities shape the narratives.

(2) […] in coastal regions, around 3.6 crore people are now at heightened risk due to rising sea levels, river erosion, severe cyclones, and saltwater intrusion. (*The Daily Star*, 12 November 2024)

These narratives in Examples (1) and (2) present climate change as a direct threat to national security and stability, intensifying its discursive weight. Stibbe (2021) notes that security framing often elevates climate discourse's prominence.

(3) Bangladesh, as one of the most climate-vulnerable countries globally, faces climate impacts such as floods, cyclones, sea-level rise and salinity intrusion that frequently affect its agriculture, water resources and coastal areas. (*The Daily Star*, 11 November 2024).

In Example (3), climate is clearly tied to food production and security, water resources – not just environment but subsistence. This framing makes climate intimately relevant to rural livelihoods and state stability.

(4) In regions with acute water crisis, it is the women who have to walk miles to collect a pitcher of water, and this extra load gnaws away at whatever time or energy they have left after their already gruelling work hours. (*The Daily Star*, 18 April 2024)

The lens in Example (4) shows how women have to suffer more due to climate change. This aligns with global feminist climate discourse, which consistently demonstrates that women experience heightened exposure and reduced adaptive capacity due to socio-economic inequalities and gendered labor divisions (Arora-Jonsson 2011; Dankelman 2010; MacGregor 2010).

(5) Climate change has influenced […] permanent migration causing economic losses […] and vulnerability." (*Dhaka Tribune*, 4 August 2022)

(6) Tackling climate change and its consequences will take an astonishing amount of investment – far more than the world has budgeted so far. (*BD News*, 28 November 2023)

Examples (5) and (6) reveal that climate change is linguistically framed through an economic-loss narrative, where impacts are quantified in terms of financial depletion, productivity decline, and investment needs rather than ecological degradation or ethical accountability. Consequently, the "solution" to climate change is portrayed through a financial lens, positioning mitigation and adaptation as budgetary challenges instead of ecological imperatives.

This reflects what Olausson (2014) terms the economic rationalization of climate risk, where media prioritize cost, funding, and compensation as the dominant grammar of climate action. Similarly, Boykoff and Boykoff (2007) show that news discourse often translates environmental processes into policy-finance problems to engage institutional actors. Carvalho (2008) further notes that such economic framing reinforces administrative rationalism. Collectively, these tendencies reveal that Bangladeshi media mirror a global pattern where economic security overrides ecological security, sustaining what Stibbe (2021) calls an anthropocentric "story we live by".

(7) […] the people of the Sundarbans region, over the last 15 years, have been hit by cyclones once every 17 months, and been victims of floods, river erosion or erratic rainfall almost every year. (*The Daily Star*, 11 December 2023)

(8) Rising waters washed away homes, livelihoods, farmlands, roads, and critical infrastructure, leaving around 7.2 million people in the Sylhet region severely impacted. (*The Daily Star*, September 2022)

In Examples (7) and (8), "erratic rainfall" and "rising waters washed away homes" linguistically position natural forces as grammatical agents where rainfall and water perform destructive actions while humans are depicted as passive victims. This grammatical construction effectively naturalizes the crisis, attributing agency and blame to nature rather than to socio-political or industrial causes.

Such agentive representations of nature are common in media discourse. Carvalho (2008) argues that this framing depoliticizes climate responsibility by diverting attention from systemic human drivers to natural phenomena. Stibbe (2021) also observes that these "destructive stories" grammatically erase human accountability, turning ecosystems into threatening agents rather than living systems in distress. In the Bangladeshi context, such language reproduces a "victimhood narrative" (Alexander and Stibbe 2014), where people appear as helpless targets of an uncontrollable natural enemy. This narrative not only obscures anthropogenic responsibility but also hinders ecocentric understanding by linguistically constructing nature as the source rather than the sufferer of crisis.

5.2 Collocation analysis

Collocational patterns were analyzed following the procedure outlined in Section 4.3.2. While both Log-Likelihood (LL) and Mutual Information (MI) are standard association measures (Gries 2013), LL was prioritized because MI tends to overemphasize rare co-occurrences while downplaying frequent, formulaic patterns (Brezina et al. 2015). Consistent with CADS methodology, collocates were selected not only based on LL significance (values > 6.63, $p < 0.01$; Dunning 1993) but also for their thematic relevance to established environmental frames (finance, governance, adaptation, vulnerability).

In the collocation tables (see Table 3), the asterisk (*) denotes a word stem or wildcard used in AntConc to capture morphological variants. For instance, climat* retrieves climate, climatic, and climatology, while financ* includes finance, financial, and financing. This approach enables the analysis to generalize across morphological variations that convey similar conceptual meanings within a given frame. An Appendix A has been included to provide an expanded list of keywords along with their full sets of collocates, offering a more comprehensive view of the associative patterns that structure climate-related discourse in the corpus.

5.2.1 From ecology to economy: the financialization of climate discourse

The collocational pattern of Climat* and Financ* clearly restates that Bangladeshi climate discourse is linguistically dominated by an economic frame. The Climat*

Table 3: Frequent collocates.

Serial	Keyword	Collocate	Frequency LR (total)	Frequency L	Frequency R	Log-likelihood	Mutual information (effect)
1	Climat*	impacts	361	196	165	443.408	1.914
		finance	364	61	303	416.002	1.834
		financing	75	27	48	37.887	1.145
		action	263	58	205	233.032	1.578
		justice	117	19	98	180.725	2.202
		fund	180	48	132	139.752	1.462
		funds	109	37	72	76.708	1.382
		budget	69	23	46	67.666	1.677
		adaptation	302	80	222	135.723	1.071
		adapt	57	52	5	31.161	1.197
2	Governmen*	organizations	41	3	38	177.513	4.467
		local	54	51	3	158.602	3.408
		agencies	23	1	22	91.574	4.211
		development	26	9	17	12.529	1.129
		action	21	10	11	11.611	1.221
3	Financ*	adaptation	87	52	35	106.739	1.945
		international	50	43	7	48.568	1.692
		development	46	27	19	29.71	1.333
		developing	25	4	21	20.436	1.529
		support	45	4	41	82.424	2.498
		green	41	21	20	60.168	2.174
		sustainable	26	21	5	20.073	1.479
4	Flood*	cyclones	66	28	38	331.902	4.982
		droughts	58	29	29	109.198	3.956
		extreme	39	28	11	96.059	3.032
		heat	33	23	10	60.129	2.493

Table 3: (continued)

Serial	Keyword	Collocate	Frequency LR (total)	Frequency L	Frequency R	Log-likelihood	Mutual information (effect)
		storms	33	16	17	161.953	4.898
5	Adapt*	mitigation	153	66	87	651.561	4.394
		plan	57	12	45	129.283	2.866
		actions	30	7	23	51.746	2.406
		strategies	24	5	19	61.938	3.122
		fund	32	10	22	29.956	1.656
6	Health	public	47	41	6	174.577	4.011
		mental	34	32	2	206.706	5.74
		people	27	14	13	11.679	1.062
		human	26	23	3	40.502	2.259
		risks	26	7	19	60.282	2.915
7	Water	food	38	26	12	97.934	2.323
		climate	36	19	17	93.271	−1.824
		drinking	28	25	3	170.506	5.727
		scarcity	27	6	21	154.409	5.469
		sea	20	8	12	17.939	1.616
8	Energy	renewable	112	98	14	783.613	6.383
		clean	32	29	3	174.57	5.305
		climate	30	16	14	29.088	−1.213
		water	21	7	14	20.157	1.682
		solar	20	9	11	89.981	4.607
9	Emission	greenhouse	138	124	14	745.425	5.238
		carbon	100	92	8	359.738	3.914
		global	70	50	20	79.257	1.853
		reduce	66	66	0	278.741	4.389
		zero	27	20	7	119.918	4.555

Table 3: (continued)

Serial	Keyword	Collocate	Frequency LR (total)	Frequency L	Frequency R	Log-likelihood	Mutual information (effect)
10	People	climate	99	50	49	35.375	−0.778
		young	69	66	3	297.821	4.445
		vulnerable	37	31	6	35.679	1.685
		displaced	36	20	16	158.897	4.519
		affected	23	11	12	32.642	2.131
		coastal	21	5	16	18.195	1.583

node most strongly collocates with impacts (LL = 443.41), finance (LL = 416.00), action (LL = 233.03), justice (LL = 180.73), fund (LL = 139.75), budget (LL = 67.67), and adaptation (LL = 135.72). Similarly, Financ* frequently co-occurs with adaptation (LL = 106.74), support (LL = 82.42), green (LL = 60.17), and sustainable (LL = 20.07). These statistically strong collocations prove that climate discourse is portrayed through monetary and administrative frames, where the problem and its solution are both represented through financial discourse rather than ecological renewal.

(9) Promised climate finance is still scant, geared towards mitigation, and comes in the form of loans and non-concessional instruments. (*Dhaka Tribune*, 11 June 2023)

Example (9) linguistically constructs finance as the missing agent of progress, reinforcing what Stibbe (2021) terms the "more-is-better" story we live by – the belief that growth and funding inherently represent improvement. Such discourse naturalizes expansionary economics as the route to climate recovery, even though this same logic contributes to ecological degradation (see Example 10).

(10) Climate finance refers to local, national or international financing drawn from public, private and alternative sources of financing to support mitigation and adaptation actions for combating climate change. (*Dhaka Tribune*, 1 July 2024)

This again strengthens the tie of solution with economy.

(11) Bangladesh suffered economic losses worth $3.72 billion and witnessed 185 extreme weather events due to climate change. These warrant justice for Bangladesh. (*Daily Sun*, 9 October 2024)

(12) Climate finance is also needed for mitigation. The Adaptation Gap Report 2023 estimates that due to growing adaptation finance needs and limited flows, globally the current finance gap is around US$194-366 billion per year for adaptation only. (*The Financial Express*, 25 November 2024)

In Examples (11) and (12), justice and adaptation have been commodified by reframing moral and ecological objectives in economic terms. This aligns with Boykoff and Boykoff's (2007) finding that media narratives frequently equate environmental responsibility with financial compensation, and with Carvalho's (2008) argument that policy discourse tends to administratively rationalize ecological crises. Here, justice is achievable through money, not through structural or ecological transformation.

A related subcluster emerges around Financ* and green (LL = 60.17); and Governmen* and development (LL = 12.53).

(13) Progress in Bangladesh is hindered by limited capacity at the central bank […] calling for greater development of green financial instruments. (*The Financial Express*, 18 July 2023)

(14) Bangladesh urgently needs to integrate climate change issues within the development process. (*Daily Sun*, 30 October 2022)

Examples (13) and (14) reflect a national-interest orientation, where climate solutions are incorporated within the framework of economic modernization. The appeal to "green bonds" and "integration within development" foregrounds financial innovation over ecosystem repair. Nerlich et al. (2010) describe this as the "green growth" narrative, in which sustainability is domesticated within neoliberal logic.

5.2.2 Constructing human vulnerability through climate change narratives

Beyond the financial and disaster framings, the collocational results reveal that Bangladeshi climate discourse frequently ties climate change to essential life domains such as education, health, and social vulnerability. Strong associations such as education with children (LL = 87.49), health with public (LL = 174.58), health with mental (LL = 206.71), and women with girls (LL = 135.80) highlight that climate change is linguistically framed through its effects on human welfare rather than on ecological systems. Similar human-interest framings have been noted across global media, where climate coverage increasingly emphasizes human impacts to enhance emotional engagement and moral salience (O'Neill et al. 2015; Schäfer and O'Neill 2017). In doing so, it can mobilize empathy, public concern, or calls for action in ways that pure economic framings might not.

This pattern is exemplified in the *Dhaka Tribune*'s report:

(15) Record-breaking heat last month that prompted governments in Asia to close schools offers fresh evidence of how climate change is threatening the education of millions of children. (*Dhaka Tribune*, 10 May 2024)

In Example (15), the education and children collocation transforms a climatic event into a social crisis, showing how a fundamental right like education is jeopardized by environmental change. Such framing aligns with Boykoff (2011), who observes that journalists often domesticate climate narratives by linking them to everyday life domains.

A similar strategy appears in gendered framings. For example:

(16) Women and girls are always backbenchers in case of any emergency. Women and children are 14 times more vulnerable during disasters in developing countries. (*Dhaka Tribune*, 6 February 2023)

Example (16) positions women and children as emblematic victims, echoing findings from Arora-Jonsson (2011) and Dankelman (2010), who argue that media and policy discourses often construct gendered vulnerability to evoke empathy and justify intervention. The strong co-occurrence of women with children thus reproduces what Pepermans and Maeseele (2016) call "humanization framing," where social categories stand in metonymically for climate impacts on society at large.

Overall, these collocational trends demonstrate that Bangladeshi newspapers not only frame climate change as an economic and environmental issue but also as a threat to everyday life such as education, health, and gendered well-being. These positive emotional framings support O'Neill et al.'s (2013) view that human-centered narratives can enhance perceived relevance and motivate engagement with climate action.

5.2.3 Disaster narratives and moral displacement in climate reporting

The collocational profile of Flood with cyclones (LL = 331.90) and droughts (LL = 109.19) reveals a dominant frame of disaster victimhood, where natural phenomena are foregrounded as causal agents of human suffering.

(17) Droughts, floods and other extreme weather events are also expected to hit global crops, leading to rising hunger […]. (*Dhaka Tribune*, 10 November 2024)

(18) Droughts, floods and river erosion across the region have left millions of children homeless, hungry, lacking healthcare and safe water – and in many cases out of school, UNICEF officials said. *(Bangladesh News24*, 9 May 2022)

In Examples (17) and (18), nature is seen as the agent of destruction and human loss. Through such material process constructions, climatic elements (droughts, floods, erosion) perform destructive actions, while human subjects are grammatically positioned as patients or victims.

Similarly, human displacement is frequently attributed to climatic forces, which are linguistically foregrounded as the causal agents of social disruption. For instance:

(19) The country is already seeing the effects of climate change on migration, with deadly and destructive hurricanes driving migrants to leave their homes in Central America and flee to the United States through Mexico. (*Bangladesh News 24*, 22 October 2021)

In Example (19), hurricanes, as natural phenomena, are explicitly described as "deadly" and "destructive," which positions them as the main drivers of migration. By attributing agency to hurricanes and other natural events, the press effectively

portrays these occurrences as causal forces. This approach aligns with Hulme's (2008) analysis, which identifies the prevalent framing of climate change as a catastrophic event. Such a discourse emphasizes the immediate and severe impacts on human societies, thereby reinforcing an anthropocentric perspective where ecological events are considered significant primarily for their consequences on human populations, rather than their intrinsic ecological value.

However, a subtle change in agency occurs in Example (20):

(20) Many residents of Bangladesh, Mozambique, and Pakistan do not even own cars, yet they are suffering from the floods, cyclones, and rising sea levels that have resulted from developed-country emissions. (*Dhaka Tribune*, 29 December 2022).

Here, human agency emerges, but in a distal and abstract form of "developed-country emissions" which deflects culpability from local to global actors. Such distributed accountability, while ethically charged, remains grammatically passive, framing humans as sufferers rather than participants in ecological processes. This linguistic pattern reflects a moral displacement within Bangladeshi climate discourse: nature is the proximate villain, and humanity, though implicated, remains rhetorically insulated from direct blame (Stibbe 2021).

5.2.4 From crisis to care: constructing ecological responsibility in climate narratives

Beyond crisis narratives, solution-oriented framings are also evident in the corpus, supported by prominent collocational patterns. The Energy node shows high LL values with renewable (783.61), clean (174.57), efficiency (135.92), transition (82.84), and solar (89.98), reflecting a discourse of technological optimism and sustainable transition. Likewise, Emission collocates with greenhouse (745.43), reduce (278.74), zero (119.92), and cut (99.14), signifying an emphasis on mitigation and responsibility.

(21) "Greenhouse gas emissions from factories have brought us dangerously close to irreversible changes in the environment, hinting at more climate-related disasters like tidal floods, wildfires, droughts, hurricanes, heat waves, extreme rainfall, etc" (*Bangladesh News 24*, 24 October 2022)

As the Example (21) illustrates, agentive nominalization (e.g. factories, emissions) linguistically attributes accountability to human activity rather than abstract natural processes. This pattern is consistent with ecolinguistic analyses of environmental responsibility (Halliday 2001 [1990]).

(22) Unless countries urgently reduce their planet-heating emissions, extreme weather "will only become more intense", she said. Greenhouse gas emissions from burning fossil fuels are the main cause of climate change. (*Bangladesh News 24*, 6 September 2024)

Similarly, Example (22) foregrounds human agency in mitigation, aligning with the reconstructive discourse Stibbe (2021) advocates, where language promotes ecological care rather than destruction.

These positive framings echo findings by Fløttum et al. (2016) and Nerlich and Koteyko (2009), who note that climate journalism increasingly blends risk and responsibility frames, presenting energy transition as both a necessity and an opportunity for sustainable reform.

5.3 Four-grams analyses

The subsequent analysis focused on refining and interpreting the four-word clusters to identify meaningful phraseological patterns within the corpus. Variants such as *effect of climate change* and *effects of climate change* were merged to ensure interpretive clarity, while purely functional clusters (e.g. *one of the major*) were excluded to foreground semantically meaningful patterns (Sinclair 2004). Multi-word institutional expressions such as *United Nations Framework Convention on Climate Change* (UNFCCC) and *Intergovernmental Panel on Climate Change* (IPCC) were retained as cohesive lexical units, even when they exceeded four-gram limits. This was necessary because these entities appeared in multiple overlapping clusters (e.g. *united nations framework convention*, *framework convention on climate*, *convention on climate change*, *intergovernmental panel on climate*, and *on climate change IPCC*) and thus represented single referential constructs rather than separate phrases. The raw, unmerged cluster list is provided in Appendix B to maintain transparency and replicability.

The clusters in Table 4 were selected based on their thematic salience. Salience here refers to their relevance to identifiable environmental frames such as crisis, policy, finance, or solutions – rather than on frequency alone. This thematically informed filtering follows Baker's (2006) recommendation that corpus findings should be interpreted in light of broader discursive contexts, which ensures that recurrent forms are analytically tied to communicative functions. Thematically guided selection is particularly crucial in ecolinguistic research, where the focus lies not merely on word frequency but on how recurrent phrasal patterns construct ecological or anthropocentric worldviews (Stibbe 2021). It is important to

Table 4: 20 frequent 4-grams.

Serial	Four-grams	Frequency
1	Impact(s) of climate change	366
2	Effect(s) of climate change	228
3	United nations framework convention on CC (climate change)	250
4	Intergovernmental panel on CC (climate change)	103
5	due to climate change	103
6	Bangladesh govt and national strategies	97
7	environment, forest and climate	76
8	To tackle climate change	68
9	to address climate change	49
10	change strategy and action	48
11	Loss and damage (fund)	41
12	climate change trust fund	36
13	to combat climate change	33
14	caused by climate change	31
15	human induced climate change	26
16	the Bay of Bengal	26
17	Climate change in Bangladesh	25
18	of the Paris agreement	21
19	Adapt to climate change	21
20	vulnerable to climate change	20

acknowledge that the study did not incorporate dispersion measures, which could provide additional insight into the distribution of multi-word patterns across texts.

5.3.1 Framing climate change: from financial solutions to moral struggle

The 4-gram cluster profile reinforces the economic preoccupation already evident in the lexical and collocational analyses. Financially charged clusters such as loss and damage fund (41) and climate change trust fund (36) highlight that the imagined "solution" to climate change is constructed through fiscal mechanisms rather than ecological repair.

(23) The country will be vocal in making the loss and damage fund operational with simplified access and regular replenishment cycles. (*The Daily Star*, 11 November 2024)

Example (23) situates environmental recovery within the lens of budgetary circulation and national gain. This pattern corresponds with what Boykoff and Boykoff (2007) call the economization of climate discourse, where environmental action is

linguistically tied to finance, policy, and compensation. It also resonates with Stibbe's (2021) critique of the "more-is-better" narrative, which conflates financial expansion with ecological progress.

Simultaneously, the high frequencies of impact(s) of climate change (366) and effect(s) of climate change (228) index a crisis frame grounded in vulnerability.

(24) The impacts of climate change are a matter of concern for Bangladesh, where lives and livelihoods depend mainly on agriculture, is exposed to a great danger. (*Daily Sun*, 10 February 2018)

Example (24) reveals how existential threats link climate to food security and human survival.

(25) We all know women are more vulnerable to climate change. And UN Women is dedicated to ensuring gender equality and the empowerment of women," said the organisation's programme specialist, Dilruba Haider. (*Dhaka Tribune*, 27 October 2022)

Parallelly, Example (25) brings climate change under gendered precarity discourse, aligning with global feminist climate narratives that foreground disproportionate female suffering (Dankelman 2010). Collectively, these clusters depict climate change as an ongoing humanitarian emergency rather than a planetary imbalance.

Another significant frame evident in the corpus is the war or battle metaphor, where climate action is conceptualized as a collective struggle demanding courage, leadership, and moral commitment. This metaphor is linguistically realized through recurrent lexical clusters such as to tackle climate change (41), to combat climate change (33), and the fight against climate change (27). Examples (26)–(28) illustrate this frame clearly:

(26) It is also important that local women and men are included in designing programmes to tackle climate change and address its impacts, as well as make sure that female-headed households are given the extra support they need. (*Financial Express*, 29 January 2020)

(27) On April 9, the European Court of Human Rights (ECHR) ruled that the Swiss government had violated the human rights of its citizens by failing to do enough to combat climate change. (*Bangladesh News 24*, 3 May 2024)

(28) Bangladesh has acted as a sort of leader in the fight against climate change, which is why we need to double down on this role while making sure we get what we are owed due to the actions of first-world nations. (*Dhaka Tribune*, 2 March 2024)

These examples collectively frame climate action as a battlefront, where human agency is valorized through verbs such as tackle, combat, and fight. The metaphor unites diverse actors like governments, communities, and individuals under a shared sense of moral and strategic commitment. It constructs climate response not merely as policy compliance but as a collective duty, thereby promoting solidarity and national resolve. The Dhaka Tribune excerpt, in particular, extends this metaphor by positioning Bangladesh as a "leader" in this global struggle, reinforcing a sense of national responsibility and pride.

As Nerlich and Koteyko (2009) observe, such militarized rhetoric can be persuasive in mobilizing collective action by evoking urgency and moral purpose. However, this framing also risks simplifying complex ecological dynamics into anthropocentric struggles, emphasizing human control and heroism over ecological interdependence.

A smaller but ideologically significant cluster is human-induced climate change, which highlights anthropogenic accountability.

(29) Advocates of the system believe it could save lives amid fears that human-induced climate change makes heatwaves more frequent, more intense and longer lasting. (*Daily Sun*, 29 July 2022)

(30) There are three ways in which human induced climate change affects us and hence three ways to tackle the problem. (*Dhaka Tribune*, 17 March 2018)

(31) Climate change poses a fundamental threat to places, species and people's livelihoods. The impacts of human-induced climate change have already become a reality and it is occurring on a global scale. It is disrupting national economies and affecting lives. Increased heat waves, droughts, and floods stemming from climate change are exceeding plants and animals' tolerance thresholds, driving mass mortalities in species such as trees and corals. (*Financial Express*, 18 May 2022)

Examples (29)–(31) collectively contribute to what Stibbe (2021) terms "beneficial discourse" – language that foregrounds human responsibility while fostering awareness of interspecies interdependence. They linguistically position humans as causal agents rather than passive victims, signaling a discursive movement toward self-implication and moral accountability. This tendency, though limited in frequency, resonates with critical-ecological framings (Stibbe 2021), which advocate recognition of human agency as a prerequisite for genuine environmental transformation.

In sum, Bangladeshi newspaper coverage of climate change is dominated by anthropocentric lexical and collocational patterns, with economic, security, disaster, and gender frames foregrounding human concerns. While the discourse largely

positions humans as beneficiaries, victims, or moral agents within financial and administrative frameworks, there lies a glimmer of hope in the form of scantly lit beacons of the existing frames, where humans are still at the center but at the center of blame and responsibility that they have to take and fulfill.

6 Conclusions

This study examined how climate change is represented in Bangladeshi newspapers through lexical, collocational, and multi-word cluster analyses. Across all three levels, economic, human welfare, and policy concerns were foregrounded, reflecting an anthropocentric orientation. Climate change was thus framed not only as an environmental crisis but also through economic, social, educational, and gendered lenses, which heightened its perceived urgency. Ecocentric and critically ecological frames were present but limited in number, indicating that coverage of environmental responsibility and interspecies interdependence remains underdeveloped and warrants further amplification. Overall, the findings reveal a media discourse that situates humans as central agents, beneficiaries, or victims while signaling the potential for more robust ecologically informed reporting (Boykoff and Boykoff 2007; Carvalho 2008; Stibbe 2021). The study is confined to print media and does not consider digital or social media platforms, which may exhibit alternative discursive patterns.

While this study remains focused on environmental language, particularly climate change reporting, it approaches the discourse through multiple lenses – economic, social, and ethical. By tracing how human and ecological concerns intertwine within these narratives, the analysis highlights that even explicitly environmental communication can reveal broader patterns of human-nature interdependence and moral positioning in the public sphere.

The findings underscore the value of corpus-assisted ecolinguistics for tracing the discursive construction of climate change. While human-centered narratives dominate, the emergent attention to anthropogenic responsibility offers a basis for fostering more ethically and ecologically informed communication. Future research could extend this approach to diverse media genres, regional languages, and longitudinal analyses to monitor shifts in ecological awareness and inform strategies for sustainable environmental engagement.

Appendices

Appendix A: Expanded collocation list

Serial	Keyword	Collocate	Frequency LR (Total)	Frequency L	Frequency R	Log-likelihood (LL)	Mutual Information (Effect)
1.	Climat*	change	3559	194	3365	6557.669	2.423
		climate	556	278	278	455.227	−1.12
		impacts	361	196	165	443.408	1.914
		finance	364	61	303	416.002	1.834
		action	263	58	205	233.032	1.578
		induced	116	36	80	192.814	2.303
		effects	168	137	31	187.247	1.808
		justice	117	19	98	180.725	2.202
		related	163	24	139	171.482	1.747
		crisis	145	12	133	165.581	1.834
		vulnerable	213	95	118	149.421	1.379
		fund	180	48	132	139.752	1.462
		adaptation	302	80	222	135.723	1.071
		resilience	140	38	102	124.14	1.58
		adverse	87	80	7	107.525	1.924
		resilient	103	18	85	103.891	1.705
		fight	68	63	5	98.944	2.123
		impact	140	91	49	92.143	1.33
		against	97	91	6	88.708	1.609
		framework	78	59	19	86.483	1.803
		tackle	68	65	3	82.923	1.908
		tackling	53	52	1	81.533	2.197

(continued)

Serial	Keyword	Collocate	Frequency LR (Total)	Frequency L	Frequency R	Log-likelihood (LL)	Mutual Information (Effect)
		bangladesh	589	262	327	80.324	0.559
		trust	60	8	52	80.124	2.016
		panel	53	42	11	78.675	2.149
		funds	109	37	72	76.708	1.382
		convention	57	52	5	76.302	2.019
		intergovernmental	40	35	5	75.316	2.488
		address	109	96	13	74.804	1.362
		water	36	16	20	73.723	−1.659
		risk	157	47	110	72.593	1.089
		plan	120	37	83	71.286	1.255
		changing	75	64	11	69.053	1.616
		budget	69	23	46	67.666	1.677
		risks	106	33	73	61.619	1.239
		addressing	68	56	12	60.284	1.58
		vulnerability	64	25	39	60.069	1.634
		challenges	99	51	48	54.17	1.198
		combat	44	43	1	53.451	1.904
		mitigation	102	23	79	49.809	1.123
		issues	94	31	63	47.777	1.149
		smart	29	2	27	47.382	2.279
		caused	76	57	19	46.985	1.284
		prosperity	35	4	31	40.912	1.861
		mujib	25	24	1	40.414	2.265
		financing	75	27	48	37.887	1.145
		people	96	49	47	37.609	−0.811

(continued)

Serial	Keyword	Collocate	Frequency LR (Total)	Frequency L	Frequency R	Log-likelihood (LL)	Mutual Information (Effect)
		ipcc	50	14	36	36.835	1.42
		disasters	86	18	68	36.193	1.034
		were	34	12	22	35.008	−1.244
		shocks	28	7	21	34.931	1.935
		environment	116	73	43	33.305	0.837
		policies	68	19	49	31.813	1.097
		mitigate	36	34	2	31.487	1.568
		adapt	57	52	5	31.161	1.197
		plans	56	13	43	30.995	1.206
		migrants	36	5	31	30.709	1.545
		energy	30	14	16	30.025	−1.229
		year	68	38	30	29.35	−0.848
		carbon	33	18	15	28.521	−1.154
		actions	72	27	45	27.69	0.983
		victims	28	17	11	26.968	1.659
		last	24	8	16	26.287	−1.278
		refugees	28	2	26	26.115	1.628
		science	48	21	27	26.049	1.192
		unfccc	41	7	34	24.435	1.257
		during	21	8	13	24.097	−1.304
		strategy	35	3	32	23.78	1.355
		sea	28	8	20	23.708	−1.144
		index	24	2	22	23.489	1.675
		variability	20	3	17	21.91	1.791
		global	285	201	84	21.536	0.41

(continued)

Serial	Keyword	Collocate	Frequency LR (Total)	Frequency L	Frequency R	Log-likelihood (LL)	Mutual Information (Effect)
		temperatures	26	10	16	21.359	−1.129
		policy	81	27	54	21.231	0.797
		migration	46	11	35	20.898	1.079
		level	34	17	17	20.85	−0.992
		million	38	17	21	20.388	−0.935
		human	111	74	37	19.996	0.65
		projects	99	28	71	19.774	0.688
		relevant	25	5	20	19.443	1.465
		emissions	55	30	25	18.77	−0.762
		who	41	25	16	18.586	−0.867
		consequences	41	35	6	18.065	1.061
2.	Governmen*	non	45	25	20	178.088	4.19
		organisations	41	3	38	177.513	4.467
		local	54	51	3	158.602	3.408
		agencies	23	1	22	91.574	4.211
		ngos	21	1	20	82.578	4.174
		private	27	4	23	48.5	2.471
		bangladesh	83	34	49	33.61	1.02
		national	28	22	6	33.421	1.917
		sector	20	6	14	25.525	1.998
		government	26	16	10	19.646	1.461
		international	25	7	18	15.666	1.311
		development	26	9	17	12.529	1.129
		action	21	10	11	11.611	1.221

(continued)

Serial	Keyword	Collocate	Frequency LR (Total)	Frequency L	Frequency R	Log-likelihood (LL)	Mutual Information (Effect)
3.	Finance*	climate	500	375	125	359.334	1.396
		adaptation	87	52	35	106.739	1.945
		change	69	31	38	13.762	−0.596
		private	59	33	26	141.993	2.979
		finance	58	31	27	65.618	1.853
		international	50	43	7	48.568	1.692
		institutions	50	3	47	166.085	3.7
		development	46	27	19	29.71	1.333
		support	45	4	41	82.424	2.498
		sources	44	21	23	123.173	3.295
		green	41	21	20	60.168	2.174
		billion	40	26	14	39.633	1.712
		blended	39	32	7	222.258	5.423
		sector	38	12	26	61.228	2.304
		mitigation	31	16	15	42.154	2.074
		private	59	33	26	141.993	2.979
		banks	30	19	11	82.825	3.265
		need	30	20	10	14.607	1.135
		funds	29	6	23	41.52	2.141
		public	27	15	12	39.72	2.178
		fund	27	13	14	18.852	1.395
		sustainable	26	21	5	20.073	1.479
		developing	25	4	21	20.436	1.529
		risk	25	16	9	11.655	1.108
		resources	25	3	22	27.994	1.843

(continued)

Serial	Keyword	Collocate	Frequency LR (Total)	Frequency L	Frequency R	Log-likelihood (LL)	Mutual Information (Effect)
		bank	22	12	10	29.409	2.053
		provide	22	15	7	33.8	2.238
		access	22	18	4	33.127	2.21
		projects	22	6	16	11.59	1.187
		system	22	3	19	29.602	2.061
		risks	21	7	14	18.015	1.573
		needs	21	3	18	18.878	1.617
		financial	20	7	13	13.195	1.35
4.	Flood*	cyclones	66	28	38	331.902	4.982
		climate	61	35	26	16.243	−0.68
		droughts	58	29	29	321.534	5.354
		extreme	39	28	11	96.059	3.032
		heat	33	23	10	60.129	2.493
		storms	33	16	17	161.953	4.898
		drought	30	12	18	109.198	3.956
		flash	29	24	5	196.32	6.218
		events	27	16	11	70.683	3.159
		disasters	26	21	5	60.95	2.936
		water	26	9	17	20.541	1.499
		sea	25	10	15	40.65	2.321
		erosion	25	6	19	124.331	4.947
		natural	23	17	6	43.834	2.567
		risk	23	10	13	28.118	1.946
		coastal	23	13	10	42.325	2.51

(continued)

Serial	Keyword	Collocate	Frequency LR (Total)	Frequency L	Frequency R	Log-likelihood (LL)	Mutual Information (Effect)
		areas	21	8	13	29.721	2.129
		weather	20	12	8	24.899	1.968
5.	Adapt*	climate	393	243	150	175.012	1.065
		change	207	126	81	82.048	1.005
		mitigation	153	66	87	651.561	4.394
		finance	64	22	42	82.862	2.011
		plan	57	12	45	129.283	2.866
		national	56	55	1	90.888	2.314
		projects	47	8	39	75.435	2.298
		resilience	40	10	30	71.417	2.458
		efforts	39	11	28	77.828	2.639
		impacts	37	8	29	23.29	1.313
		measures	36	6	30	89.752	3.051
		fund	32	10	22	29.956	1.656
		capacity	31	9	22	52.522	2.379
		actions	30	7	23	51.746	2.406
		billion	29	21	8	17.074	1.264
		led	29	27	2	66.792	2.897
		action	29	13	16	12.991	1.083
		need	29	16	13	13.401	1.102
		help	27	22	5	31.87	1.903
		strategies	24	5	19	61.938	3.122
		locally	23	22	1	105.159	4.63
		developing	22	13	9	14.711	1.361
		based	21	16	5	15.32	1.431

(continued)

Serial	Keyword	Collocate	Frequency LR (Total)	Frequency L	Frequency R	Log-likelihood (LL)	Mutual Information (Effect)
		financing	21	12	9	26.757	1.994
		local	20	12	8	13.562	1.372
		sector	20	16	4	13.95	1.394
6.	Education	children	21	10	11	87.492	4.363
7.	Water	water	60	31	29	97.934	2.323
		food	38	26	12	77.71	2.684
		climate	36	19	17	93.271	−1.824
		drinking	28	25	3	170.506	5.727
		change	27	18	9	34.892	−1.374
		scarcity	27	6	21	154.409	5.469
		management	26	3	23	54.983	2.744
		agriculture	21	14	7	28.547	2.076
		energy	21	14	7	16.617	1.501
		land	21	12	9	29.349	2.112
		resources	21	2	19	30.603	2.167
		sea	20	8	12	17.939	1.616
8.	Health*	change	75	45	30	10.026	0.558
		public	47	41	6	174.577	4.011
		mental	34	32	2	206.706	5.74
		world	31	23	8	16.157	1.18
		people	27	14	13	11.679	1.062
		risks	26	7	19	60.282	2.915
		human	26	23	3	40.502	2.259
		health	25	12	13	29.776	1.915
		water	22	7	15	14.195	1.333

(continued)

Serial	Keyword	Collocate	Frequency LR (Total)	Frequency L	Frequency R	Log-likelihood (LL)	Mutual Information (Effect)
		impacts	22	12	10	19.012	1.581
		issues	22	1	21	46.818	2.757
		who	21	3	18	24.06	1.871
9.	Women	girls	22	2	20	135.798	5.821
		women	34	17	17	84.978	3.062
		children	20	6	14	48.527	3.005
10.	Children	million	31	24	7	98.198	3.595
		women	20	14	6	48.527	3.005
11.	Energy	renewable	112	98	14	783.613	6.383
		energy	38	19	19	102.928	3.231
		clean	32	29	3	174.57	5.305
		climate	30	16	14	29.088	−1.213
		efficiency	22	2	20	135.917	5.825
		sources	22	4	18	73.884	3.745
		water	21	7	14	20.157	1.682
		transition	20	4	16	82.837	4.341
		use	20	13	7	44.786	2.851
		solar	20	9	11	89.981	4.607
12.	Emisson	greenhouse	138	124	14	745.425	5.238
		gas	132	127	5	686.334	5.094
		carbon	100	92	8	359.738	3.914
		global	70	50	20	79.257	1.853
		reduce	66	66	0	278.741	4.389
		climate	60	28	32	26.967	−0.863
		reducing	28	28	0	107.164	4.097

(continued)

Serial	Keyword	Collocate	Frequency LR (Total)	Frequency L	Frequency R	Log-likelihood (LL)	Mutual Information (Effect)
		zero	27	20	7	119.918	4.555
		reduction	26	10	16	97.431	4.037
		net	25	18	7	108.015	4.466
		cut	22	20	2	99.142	4.603
		warming	20	13	7	16.598	1.544
13.	People	climate	99	50	49	35.375	−0.778
		million	79	75	4	187.561	2.952
		young	69	66	3	297.821	4.445
		more	64	49	15	32.393	1.159
		change	52	33	19	21.986	−0.842
		vulnerable	37	31	6	35.679	1.685
		displaced	36	20	16	158.897	4.519
		many	35	30	5	36.387	1.763
		millions	31	31	0	102.23	3.686
		living	30	2	28	82.877	3.269
		billion	24	23	1	11.725	1.137
		affected	23	11	12	32.642	2.131
		areas	23	8	15	17.446	1.464
		livelihoods	22	13	9	54.81	3.052
		coastal	21	5	16	18.195	1.583
		lives	20	9	11	40.325	2.659
14.	Risk*	climate	259	178	81	120.793	1.094
		change	104	55	49	18.105	0.642
		disaster	46	41	5	145.494	3.585
		health	33	24	9	39.782	1.928

(continued)

Serial	Keyword	Collocate	Frequency LR (Total)	Frequency L	Frequency R	Log-likelihood (LL)	Mutual Information (Effect)
		financial	29	13	16	54.149	2.532
		high	27	25	2	45.224	2.364
		related	24	18	6	38.446	2.299
		insurance	24	3	21	90.331	4.047
		management	23	4	19	45.741	2.637
		reduction	23	1	22	76.292	3.707
		impacts	22	5	17	11.695	1.194
		physical	22	21	1	99.026	4.596
		index	21	2	19	100.331	4.798
15.	Migration	climate	45	35	10	19.927	1.064
16.	Mitigate*	adaptation	150	84	66	619.113	4.304
		efforts	29	9	20	98.342	3.769
		actions	27	5	22	93.017	3.811
		change	105	62	43	92.125	1.583
		climate	153	81	72	91.778	1.262
		finance	22	12	10	28.774	2.028
		impacts	21	3	18	28.029	2.054

Appendix B: Raw, unmerged list of 4-grams

Serial	4-grams	Frequency	Normalized frequency
1.	impacts of climate change	148	449.665
2.	effects of climate change	113	343.325
3.	due to climate change	80	243.062
4.	the impacts of climate	74	224.832
5.	of climate change and	71	215.718
6.	impact of climate change	68	206.603
7.	the effects of climate	68	206.603
8.	of climate change the	59	179.258
9.	of climate change on	53	161.029
10.	to address climate change	49	148.876
11.	convention on climate change	48	145.837
12.	framework convention on climate	47	142.799
13.	of climate change in	43	130.646
14.	to tackle climate change	41	124.569
15.	the impact of climate	40	121.531
16.	panel on climate change	39	118.493
17.	climate change and the	38	115.454
18.	environment forest and climate	38	115.454
19	forest and climate change	38	115.454
20	climate change trust fund	36	109.378
21	united nations framework convention	36	109.378
22	intergovernmental panel on climate	35	106.34
23	nations framework convention on	35	106.34
24	to combat climate change	33	100.263
25	caused by climate change	31	94.187
26	climate change is a	30	91.148
27	prime minister sheikh hasina	30	91.148
28	the united nations framework	30	91.148
29	on climate change ipcc	29	88.11
30	on climate change unfccc	29	88.11
31	adverse impacts of climate	28	85.072
32	climate change in the	28	85.072
33	of the most vulnerable	28	85.072
34	to climate change and	28	85.072
35	fight against climate change	27	82.033
36	the bangladesh climate change	27	82.033
37	the government of bangladesh	27	82.033
38	bangladesh is one of	26	78.995
39	human induced climate change	26	78.995
40	the bay of bengal	26	78.995

(continued)

Serial	4-grams	Frequency	Normalized frequency
41	affected by climate change	25	75.957
42	at the university of	25	75.957
43	climate change in bangladesh	25	75.957
44	climate change strategy and	25	75.957
45	consequences of climate change	25	75.957
46	of the united nations	25	75.957
47	the adverse impacts of	25	75.957
48	bangladesh climate change trust	24	72.919
49	change strategy and action	24	72.919
50	in the face of	24	72.919
51	of the climate change	24	72.919
52	strategy and action plan	24	72.919
53	bangladesh climate change strategy	23	69.88
54	for climate change and	23	69.88
55	mujib climate prosperity plan	23	69.88
56	on climate change and	23	69.88
57	the green climate fund	23	69.88
58	the most vulnerable countries	23	69.88
59	to the impacts of	23	69.88
60	adverse effects of climate	22	66.842
61	adapt to climate change	21	63.804
62	loss and damage fund	21	63.804
63	of climate change is	21	63.804
64	of the paris agreement	21	63.804
65	the loss and damage	20	60.766
66	vulnerable to climate change	20	60.766

Research ethics: Not applicable.
Informed consent: Not applicable.
Conflict of interest: The author declares that there is no conflict of interest.
Data availability: The author confirms that the data supporting the findings of this study are available within the article.

References

Al-Zaman, Md. Sayeed & Tamera Khan. 2022. Framing environmental news in Bangladesh. *Media Asia* 49(2). 98–110.

Alam, G. M. Monirul, Khorshed Alam, Shahbaz Mushtaq & Michèle L. Clarke. 2017. Vulnerability to climatic change in riparian char and river-bank households in Bangladesh: Implication for policy, livelihoods and social development. *Ecological Indicators* 72. 23–32.

Alexander, Richard & Arran Stibbe. 2014. From the analysis of ecological discourse to the ecological analysis of discourse. *Language Sciences* 41. 104–110.
Ancarno, Clyde. 2020. Corpus-assisted discourse studies. In Anna De Fina & Alexandra Georgakopoulou (eds.), *The Cambridge handbook of discourse studies*, 165–185. Cambridge: Cambridge University Press.
Anderson, Alison. 2011. Sources, media, and modes of climate change communication: The role of celebrities. *WIREs Climate Change* 2(5). 535–546.
Arora-Jonsson, Seema. 2011. Virtue and vulnerability: Discourses on women, gender and climate change. *Global Environmental Change* 21(2). 744–751.
Baker, Paul. 2006. *Using corpora in discourse analysis*. London: Continuum.
Baker, Paul. 2016. The shapes of collocation. *International Journal of Corpus Linguistics* 21(2). 139–164.
Biber, Douglas & Federica Barbieri. 2007. Lexical bundles in university spoken and written registers. *English for Specific Purposes* 26(3). 263–286.
Borah, Porismita. 2011. Conceptual issues in framing theory: A systematic examination of a decade's literature. *Journal of Communication* 61(2). 246–263.
Boykoff, Maxwell T. 2011. *Who speaks for the climate? Making sense of media reporting on climate change*. Cambridge: Cambridge University Press.
Boykoff, Maxwell T. & Jules M. Boykoff. 2007. Climate change and journalistic norms: A case-study of US mass-media coverage. *Geoforum* 38(6). 1190–1204.
Brezina, Vaclav, Tony McEnery & Stephen Wattam. 2015. Collocations in context: A new perspective on collocation networks. *International Journal of Corpus Linguistics* 20(2). 139–168.
Carvalho, Anabela. 2008. Media(ted) discourse and society: Rethinking the framework of critical discourse analysis. *Journalism Studies* 9(2). 161–177.
Chowdhury, Md. Arif, Md. Khalid Hasan & Syed Labib Ul Islam. 2022. Climate change adaptation in Bangladesh: Current practices, challenges and the way forward. *The Journal of Climate Change and Health* 6. 100108.
Collins, Luke & Brigitte Nerlich. 2015. Examining user comments for deliberative democracy: A corpus driven analysis of the climate change debate online. *Environmental Communication* 9(2). 189–207.
Cui, Xuanjun & Yoonjung Kim. 2023. Structural and functional differences between bundles of different lengths: A corpus-driven study. *Frontiers in Psychology* 13. 1061097.
Dankelman, Irene (ed.), 2010. *Gender and climate change: An introduction*. London: Routledge.
Dunning, Ted. 1993. Accurate methods for the statistics of surprise and coincidence. *Computational Linguistics* 19(1). 61–74.
Entman, Robert M. 1993. Framing: Toward clarification of a fractured paradigm. *Journal of Communication* 43(4). 51–58.
Fairclough, Norman. 1989. *Language and power*. London: Longman.
Fiske, Susan T. & Shelley E. Taylor. 2013. *Social cognition: From brains to culture*, 2nd edn. New York: McGraw-Hill.
Fløttum, Kjersti, Øyvind Gjerstad, Anje Müller Gjesdal, Nelya Koteyko & Andrew Salway. 2014. Representations of the future in English-language blogs on climate change. *Global Environmental Change* 29. 213–222.
Fløttum, Kjersti, Des Gasper & Asun Lera StClair. 2016. Synthesizing a policy-relevant perspective from the three IPCC "worlds" – A comparison of topics and frames in the SPMs of the fifth assessment report. *Global Environmental Change* 38. 118–129.
Franklin, Emma, Joanna Gavins & Seth Mehl. 2022. "I don't think education is the answer": A corpus-assisted ecolinguistic analysis of plastics discourses in the UK. *Journal of World Languages* 8(2). 284–322.

Gablasova, Dana, Vaclav Brezina & Tony McEnery. 2017. Collocations in corpus-based language learning research: Identifying, comparing, and interpreting the evidence. *Language Learning* 67(Suppl. 1). 155–179.

Gamson, William A. 1992. *Talking politics*. Cambridge: Cambridge University Press.

Gillings, Mathew & Carmen Dayrell. 2024. Climate change in the UK press: Examining discourse fluctuation over time. *Applied Linguistics* 45(1). 111–133.

Gilquin, Gaëtanelle. 2022. "I never get a thing that ain't been used": A diachronic corpus-based study of second-hand consumption. *Journal of World Languages* 8(2). 254–283.

Goatly, Andrew. 2002. The representation of nature on the BBC world service. *Text* 22(1). 1–27.

Goffman, Erving. 1974. *Frame analysis: An essay on the organization of experience*. Cambridge, MA: Harvard University Press.

Gries, Stefan T. 2013. 50-something years of work on collocations: What is or should be next. *International Journal of Corpus Linguistics* 18(1). 137–166.

Halliday, Michael A. K. 2001 [1990]. New ways of meaning: The challenge to applied linguistics. In Alwin Fill & Peter Mühlhäusler (eds.), *The ecolinguistics reader: Language, ecology and environment*, 175–202. London: Continuum.

Hambali, Muhammad, Arina Istianah, Novi Eka Susilowati & Sholakhuddin Al Fajri Muchamad. 2025. Battling the climate crisis: WAR and THREAT metaphors in Indonesian news media through a corpus-ecolinguistics lens. *Cogent Arts and Humanities* 12(1). 2526143.

Haugen, Einar. 1972. The ecology of language. In Anwar S. Dil (ed.), *The ecology of language: Essays by Einar Haugen*, 325–339. Stanford, CA: Stanford University Press.

He, Wei. 2021. "Shengtai huayu fenxi": Hanlide moshi de zai fazhan [Ecological discourse analysis: Further development of Halliday model]. *Waiyu Jiaoxue* [*Foreign Language Education*] 42(1). 20–27.

Hoque, Muhammad Ziaul, Shenghui Cui, Lilai Xu, Imranul Islam, Jianxiong Tang & Shengping Ding. 2019. Assessing agricultural livelihood vulnerability to climate change in coastal Bangladesh. *International Journal of Environmental Research and Public Health* 16(22). 4552.

Hulme, Mike. 2008. The conquering of climate: Discourses of fear and their dissolution. *The Geographical Journal* 174(1). 5–16.

Hulme, Mike, Noam Obermeister, Samuel Randalls & Maud Borie. 2018. Framing the challenge of climate change in nature and science editorials. *Nature Climate Change* 8(6). 515–521.

Koteyko, Nelya, Mike Thelwall & Brigitte Nerlich. 2010. From carbon markets to carbon morality: Creative compounds as framing devices in online discourses on climate change mitigation. *Science Communication* 32(1). 25–54.

Koteyko, Nelya, Rusi Jaspal & Brigitte Nerlich. 2013. Climate change and 'climategate' in online reader comments: A mixed-methods study. *The Geographical Journal* 179(1). 74–86.

Kramar, Natalie. 2023. Construction of agency within climate change framing in media discourse: A corpus-based study. *Respectus Philologicus* 43(48). 36–48.

Liu, Ming & Jingyi Huang. 2022. Climate change" vs. "global warming": A corpus-assisted discourse analysis of two popular terms in *The New York Times*. *Journal of World Languages* 8(1). 34–55.

Liu, Xia, Shuangling Li, Wenzhang Fan & Qimeng Dang. 2023. Corpus-based bundle analysis to disciplinary variations: Relocating the role of bundle extraction criteria. *English for Specific Purposes* 70. 151–163.

MacGregor, Sherilyn. 2010. Gender and climate change': From impacts to discourses. *Journal of the Indian Ocean Region* 6(2). 223–238.

Miah, Md. Danesh, Md. Humayain Kabir, Masao Koike & Shalina Akther. 2011. Major climate-change issues covered by the daily newspapers of Bangladesh. *The Environmentalist* 31(1). 67–73.

Moser, Susanne C. 2010. Communicating climate change: History, challenges, process and future directions. *WIREs Climate Change* 1(1). 31–53.

Nanz, Patrizia & Jens Steffek. 2004. Global governance, participation and the public sphere. *Government and Opposition* 39(3). 314–335.
Nerlich, Brigitte & Nelya Koteyko. 2009. Compounds, creativity and complexity in climate change communication: The case of 'carbon indulgences. *Global Environmental Change* 19(3). 345–353.
Nerlich, Brigitte, Nelya Koteyko & Brian Brown. 2010. Theory and language of climate change communication. *Wiley Interdisciplinary Reviews: Climate Change* 1(1). 97–110.
Neverla, Irene & Mike S. Schäfer. 2012. Einleitung: Der Klimawandel und das Medien-Klima. In Irene Neverla & Mike S. Schäfer (eds.), *Das Medien-Klima: Fragen und Befunde der kommunikationswissenschaftlichen Klimaforschung*, 9–25. Wiesbaden: Springer VS.
Newell, Peter. 2000. *Climate for change: Non-state actors and the global politics of the greenhouse*. Cambridge: Cambridge University Press.
Olausson, Ulrika. 2014. The diversified nature of "domesticated" news discourse: The case of climate change in national news media. *Journalism Studies* 15(6). 711–725.
O'Neill, Saffron J., Maxwell Boykoff, Simon Niemeyer & Sophie A. Day. 2013. On the use of imagery for climate change engagement. *Global Environmental Change* 23(2). 413–421.
O'Neill, Saffron, Hywel T. P. Williams, Tim Kurz, Bouke Wiersma & Maxwell Boykoff. 2015. Dominant frames in legacy and social media coverage of the IPCC fifth assessment report. *Nature Climate Change* 5(4). 380–385.
Penz, Hermine & Alwin Fill. 2022. Ecolinguistics: History, today, and tomorrow. *Journal of World Languages* 8(2). 232–253.
Pepermans, Yves & Pieter Maeseele. 2016. The politicization of climate change: Problem or solution? *Wiley Interdisciplinary Reviews: Climate Change* 7(4). 478–485.
Peters, Hans Peter & Harald Heinrichs. 2005. *Öffentliche Kommunikation über Klimawandel und Sturmflutrisiken: Bedeutungskonstruktion durch Experten, Journalisten und Bürger*. Jülich: Forschungszentrum.
Poole, Robert. 2022. *Corpus-assisted ecolinguistics*. London: Bloomsbury.
Poole, Robert & Marco A. Micalay-Hurtado. 2022. A corpus-assisted ecolinguistic analysis of the representations of tree/s and forest/s in US discourse from 1820–2019. *Applied Corpus Linguistics* 2(3). 100036.
Rahman, Md. Sadequr. 2013. Climate change, disaster and gender vulnerability: A study on two divisions of Bangladesh. *American Journal of Human Ecology* 2(2). 72–82.
Sadath, Md. Nazmus, Max Krott & Carsten Schusser. 2013. Forest-climate politics in Bangladesh's media discourse in comparison to global media discourse. *Open Journal of Forestry* 3(1). 1–7.
Schäfer, Mike S. 2012. „Hacktivism"? Online-Medien und Social Media als Instrumente der Klimakommunikation zivilgesellschaftlicher Akteure. *Forschungsjournal Soziale Bewegungen* 25(2). 70–79.
Schäfer, Mike S. & Saffron O'Neill. 2017. Frame analysis in climate change communication. *Oxford Research Encyclopedia of Climate Science*. https://oxfordre.com/climatescience/view/10.1093/acrefore/9780190228620.001.0001/acrefore-9780190228620-e-487.
Schneider, Steffen, Frank Nullmeier & Achim Hurrelmann. 2007. Exploring the communicative dimension of legitimacy: Text analytical approaches. In Achim Hurrelmann, Steffen Schneider & Jens Steffek (eds.), *Legitimacy in an age of global politics*, 126–155. London: Palgrave Macmillan.
Sealey, Alison & Lee Oakley. 2013. Anthropomorphic grammar? Some linguistic patterns in the wildlife documentary series *Life*. *Text and Talk* 33(3). 399–420.
Sinclair, John. 2004. *Trust the text: Language, corpus and discourse*. London: Routledge.
Steffek, Jens. 2009. Discursive legitimation in environmental governance: Discourse and expertise in forest and environmental governance. *Forest Policy and Economics* 11(5–6). 313–318.

Steffensen, Sune Vork. 2024. On the demarcation of ecolinguistics. *Journal of World Languages* 10(3). 499–527.
Steffensen, Sune Vork. 2025. Surveying ecolinguistics. *Journal of World Languages* 11(1). 1–49.
Stibbe, Arran. 2014. An ecolinguistic approach to critical discourse studies. *Critical Discourse Studies* 11(1). 117–128.
Stibbe, Arran. 2021. *Ecolinguistics: Language, ecology and the stories we live by*, 2nd edn. London: Routledge.
Stibbe, Arran. 2024. *Econarrative: Ethics, ecology, and the search for new narratives to live by*. London: Bloomsbury.
van Dijk, Teun A. 2015. Critical discourse analysis. In Deborah Tannen, Heidi E. Hamilton & Deborah Schiffrin (eds.), *The handbook of discourse analysis*, 2nd edn., 466–485. Oxford: Wiley-Blackwell.
Zhou, Wenjuan. 2021. Ecolinguistics: A half-century overview. *Journal of World Languages* 7(3). 461–486.