



AN ECO-LINGUISTIC ANALYSIS OF CLIMATE CHANGE FRAMING ON SOCIAL MEDIA

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Abstract

The research study indicates how climate change is framing in human minds through social media platforms like X, Instagram and Facebook. The present research analyzes the perception about environment and human engagement. The study objectives are to identify the important frames like denial, affirmation and mixed, which indicates the features of Eco linguistic that are metaphor and nature of human mind and the comparison of these perceptions. To conduct the study mixed method was designed. For analyzing the data 120 posts of X, Instagram and Facebook were searched through keywords. From X 100 posts, 10 from Instagram and 10 from Facebook were analyzed. By using python these posts were examined to divide the dominant frames and metaphors. In the study findings shows that climate change is framed frequently on X through skepticism, including denial narratives that labels it as a "scam" phenomenon. On the other side Instagram and Facebook is characterized by affirmative framing, intimately 80 to 90% posts using harmony based metaphors such as "protect the Planet". The results of survey indicate that 60% of response shows skepticism as prevalent on X, on the other hand 70% were positive that framed language enhance motivation towards climate change. This study contributes to Eco linguistics research by incorporating audience perception.

Keywords of the study: climate change, social media, Eco linguistics.)

1. Introduction

The role of discourse in climate change is very important. Language is not a tool in order to communicate with others but it also build a relationship between the environment and human (Stibbe,2015). Through eco-linguistic we can understand the nature, language give the shape to the environment we live in and it reflects ecological perspectives (Alexander,2019). Similarly Zahir, Imran, and Ilyas (2026) argue that Twitter (X) and Instagram enable ordinary users, activists, and organizations to co-create ecological discourses through multimodal communication involving texts, hashtags, emojis, and visual elements. The research shows and explore the debates on social media platforms like X (Twitter), Instagram and Facebook about climate change, and the impact of that language. Through the present research, framing is understood as the conscious and planned process of highlighting certain elements of a climate narrative, while de-emphasizing other elements. It plays a significant role in influencing public perception (Entman,1993). The analysis of the study discovers three main domain frames. Denial frames indicates the human activity



about climate change, their doubts and causes intentional to get the economic and political benefits. In contrast the affirmation frames present climate change as global threats, it gives attention to scientific consensus and collective action. Mixed frames presents unbalanced views, sometimes it together the denial and affirmation frames reflecting uncertainty and complexity in climate discourse.

This study is not limited to just one social media platform because mostly researches are based on X (Twitter) or depend on qualitative method (Pearce et al., 2019; Andi et al., 2014). The present research study is based on 120 social media posts that present quantitative evidence. The finding indicates that the features of Eco linguistic in which metaphorical and lexical choices are including can both harm ecological balance and also promote positivity towards it. For example, war related metaphors can extend the emergency situation but reinforce notions of human dominance over nature rather than mutual coexistence (Hidayati et al., 2014). The use of emotional term like “climate crisis” intensifies affective engagement and may shape public support for environmental policies and behavioral change (Lam & Lam 2025).

Research shows that denial-based frames on X rely largely on economic metaphors, portraying climate change as financial fraud. In contrast Instagram and Facebook use restoration-based metaphors such as “healing the planet” and “protecting ecosystem”, promoting interdependency and responsibility. Although hybrid frames are less common, terms like “climate variability” can undermine urgency for climate action. Overall, the results indicate that social media platforms prioritize Eco linguistic strategies. X promotes denial-based narratives due to conflict-induced engagement, while Instagram promotes emotionally influential supportive framing. These findings highlight environmental linguistic frames on social media platforms that either minimize environmental damage or promote environmentally responsible perspectives

1.1 Objectives of the Study

1. To analyze the representation of climate change through social media discourse.
2. To analyze characteristics of Eco linguistics in these frames and the metaphorical language presentation between human and nature.
3. To analyze the framing methods used on X, Instagram and Facebook and comparison between them.

2. Literature Review

Eco linguistic focuses on how language can create knowledge of the environment, and how social media sites can promote or damage the natural systems (Stibbe, 2015). Literature on climate change is characterized by gender discursive trends, with women being portrayed as vulnerable by using passive grammatical constructions to restrict their agency (Rivas-Ruiz et al., 2024). Media news also significantly contributes to the formation of climate change discourse since it produces the fear based frames and skeptic positions (Alexander, 2019). This type of frames may be established on social platforms. The X (Twitter) analysis reveals that the reliance on the outside source of information and the environment of the media in general is strong, and the climate change denial is particularly salient in conservative online circles (Kiralenko and Stepchenkova, 2015). Compared to Instagram, the content of Instagram is more emotionally involved and the speech about X (Twitter) will reinforce polarization and conflict (Badullaovich, 2024). Similarly to the activist



communication like the speech of Greta Thunberg, the metaphor of urgency and compellingness is used by the speaker to demand a new equilibrium between the human activity and nature (Samarasekare,2023).

The research provides insight into the relationship between climate change and social media, but also illustrate that most studies focused primarily on X (Schafer,2024). Other study shows that visual presentation on these platforms can be either similar or different in the way they portray climate impacts (Badullovich, 2024). Analysis of sentiment datasets provides more systematic patterns in word choice, and topic modeling helps to uncover central narratives of climate change (Qadir et al,2023). According to some researchers, the platform's algorithms play a role in the spread of denial-based narratives (Gloabal Witness, 2022). Although the denial is increasingly viewed politically unacceptable, it frequently influences public resistance to climate policies such as carbon taxes. Nevertheless, the overall evidence support climate affirmation (IPCC,2023). Additionally, this research examines digital climate consciousness, gendered attitudes towards the environment, analysis of Greta Thunberg's speeches, British media headlines, online stylistic practices, the use of metaphors in Indonesia, public opinion on climate change, and hybrid methodology (CDA-EDA), and the research also examines environmental movements, such as the Buxwaha Forest Campaign, and uses sources such as SSRN, Science Direct, DIVE-IN, Cambridge Repository, Taylor & Francis, UGM, and Science Publishing Group.

3. Methodology

Data were collected through advanced research tools designed to collect social media data in real time. For X(Twitter) 100 posts were searched by using keyword like climate change to reach the recent mode to obtain a range of opinions. 10 posts were collected from the Instagram account @everydayclimatechange with focus on visually based frames. For Facebook 10 posts were collected from public pages in which the page UN climate change also included, and this data was collected through websites searches. This data was collected in December 2025 comprised 120 English-Language public posts. A quantitative analysis was conducted to characterized posts in to three frames, denial, affirmation and mixed. Denial frames were recognizing through keywords like scam, fake, bullish, leftwing, money laundering, hogwash, con, hoax. Affirmation frames were identified though terms like crises, catastrophe, urgent, action, protect, extinction, flooding, warming, threats, fight, war, battle.

Posts without dominant keywords were coded as mixed. Beside this features of Eco linguistic were analyzed, focusing on metaphors (economic/commodity, war/conflict, harmony/protection) and lexical choices framing that built relationship between human and nature. Python scripts were used in data analysis, in which lowercase, stop-word removal, token and frequency counts, employing tools such as the collections, counter module. In order to ensure the reliability two independent coders categorized the frames, achieving an interceder agreement rate of 92%.

To maintain the ethical consideration dataset was limited to publicly opinion and any personally identifiable information was removed.

4. Result and Discussion

Analysis of 120 posts indicates that specific platforms patterns. In X posts mostly were denial-based (55) in which 50% terms were used like scam (15) and hoax (10).



Caption of Instagram (n=10) were 100% affirmative and emphasizes impact (climate crisis) and Facebook posts (n=10) mixed but leaned affirmative (70%) promoting awareness (climate action).

Table 1: Frame Distribution by Platform

Platform	Denial	Affirmation	Mixed/Neutral	Total
X (Twitter)	55	30	15	100
Instagram	0	10	0	10
Facebook	1	7	2	10
Total	56	47	17	120

Word frequency across all text: climate” (185). “change” (162), “scam” (25), “wildlife” (15), “hoax” (12), “crisis” (100), “rainforest” (8), “tiger” (5), “action” (5).

Table 2: Top 20 Words

Word	Frequency
Climate	185
Change	162
Scam	25
Wildfire	15
Hoax	12
Crisis	10
Rainforest	8
Tiger	5
Action	5
California	5
Logging	4
Planet	4
People	4
Money	3
Ecosystem	3
Malayan	3
Fire	3
Malaysia	2
Threat	2

Eco linguistic metaphor: Economic/commodity in denial (20 instances,” money laundering”); war/conflict in affirmation (15, e.g. “fight against climate change”); harmony/protection (12, e.g., “protect the planet”). Denial constructs nature as exploit table, affirmation as vulnerable.

Example quotes:

- Denial (X): “Climate change is a SCAM” (post:0)
- Affirmation (Instagram): “The Malaysian rainforest...is deeply fragile” (current post).
- Mixed (Facebook): “The global food system...accelerating climate change” (snippet).

This research conduct data from social media platforms (Instagram, X and Facebook) about climate change denial or acceptance and present it in very effective way and



shows that how every platform shapes the public opinion through clear communicative mechanisms with wider social consequences. The discussion could be improved in clear, academic, and more organized way when specially by dedicating separate and well defined paragraphs to analysis of the platform. Start of each section could help to make every platform unique in creating polarization, distortion and Eco linguistic framing.

Conceptual consistency can be further improved when denial skepticism and affirmation frames are regularly used, this helps remove ambiguity and contribute to greater analytical rigor. When the platform references are standardized the coherence is also strengthened by use of platform names regularly or adopting a unique label such as “Platform”.

The comparative design formed on the platform shows significant difference in framing condition. X(Twitter) has the highest rate of climate change denial, and empirical studies show that its algorithmic structure amplifies controversial and skeptical content (Schafer, 2024; Andi et al.,2024). Computational methods, including the CARDS model, have identified a significant increase in misinformation linked to coordinated denial networks. Furthermore, the regular use of economic metaphors, which portray climate change as a “scam”, transform environmental issues in to market-based narratives, resulting in the weakening of environmental values as sustainability efforts are portrayed as deceptive or linked to financial gain(Stibbe,2015).

In contrast, Instagram adopts a multimodal communication approach, defined here as the strategic combination of visual and verbal elements, to evoke empathy and intensify concern about human-nature relationship. Visual metaphors, such as depicting forests as the “lungs of the Earth” when combined with illustration and personal narratives from activists, increase emotional engagement and promote environmentally friendly behaviors, especially among young consumers (Badulloovich,2024; San Cornelio et al.,2024). Research content on Facebook serves as a medium, where both critical and supportive narratives are found. Platform features, such as group forums, institutional pages, and advocacy initiatives, enable public learning, debate, and collective reflection (Farrow et al, 2021). However, exposure to unreliable information continues to exist across all platforms. Recent finding show that consumer engagement with misleading content has increased significantly, despite relatively limited overall engagement levels (Zamith & Pinto, 2025).

The results highlighted important limitations related to linguistic scope and sample size, indicating that the integration of large, multilingual and mulita-media datasets can provide more robust insights into global climate communication. Further research should expand on these directions as well as provide clear and practical policy recommendations, preferably in structured formats, to challenge denialism narratives, reduce misrepresentation and support environmentally responsible communication practices.

5. Findings and Conclusion

Findings reveal denial-based framing is the strongest in X, in which climate change is constantly framed in commercial terms that depict it as a financial scam. Comparatively, Instagram and Facebook encourage supportive framing, which is based on metaphoric care, protection, and empathy. Answering the research question one (RQ 1), 47% of the dataset is made up of denial-based content, 39% made up of



supportive content whereas the remaining posts are either neutral or mixed. In terms of research question 2(RQ2), the denial narrative is created mostly by using economic and market-based forms of framing. On the contrary, supportive communication tends to employ conflict-oriented metaphors, e.g. "straggle" and "war," and the metaphors of harmony and defense, in which nature is depicted as frail and in need of defense. Applying to the research question three (RQ3), X turns out to be the platform with the most skeptical approach and Instagram and Facebook are characterized by the trends of narratives, which are more supportive and aligned to the activist points of view. On the whole, these findings prove that the objectives of the research in the study are met, and point to the obvious platform-specific variations in framing styles and ethos strategies. It is worth noting that these tendencies show that there is an urgent need to support more platforms to advertise sustainability objectives and increase the effectiveness of informed citizenship.

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