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INVESTIGATING THE ECOLINGUISTICS DIMENSIONS OF PAKISTAN'S CLIMATE CHANGE POLICY (2021): A TRANSITIVITY ANALYSIS

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Abstract
This study employs transitivity analysis and an Eco linguistics viewpoint to analyse the language used in Pakistan's National Climate Change Policy (NCCP) of 2021. The study looks at how actions, responsibilities, and contextual factors are formed inside policy papers using transitivity patterns, exposing the strategic communication methods used by Pakistani policymakers and the types of processes addressed. According to the study, there are very few mental and relational processes, while there is a dominance of material processes, which suggests an emphasis on concrete commitments related to climate change. The study also reveals that the policy is primarily consistent with a beneficial discourse framework. The methodology identifies important linguistic patterns and their possible influence on policymaking by combining qualitative and quantitative assessments of the NCCP. It highlights the importance of language in determining the social climate and policy narratives.
Keywords: *Eco linguistics, National Climate Change Policy, Transitivity Analysis, Discourse, Beneficial Discourse.*

1. Introduction
1.1 Background
The growing global issues of environmental degradation and climate change have made environmental communication an important field of research. While policy discussions are frequently held in formal settings, the language used in policy documents has a significant impact on environmental perceptions and behaviors. This study examines Pakistan's place in the global environmental system and focuses on the discursive construction of environmental notions within its climate policy. Based on Qazi (2024), this study examines the transitivity patterns of the 2021 NCCP, using Stibbe's discourse analysis to better understand how the policy's language generates human and non-human actors and their responsibilities in connection to the environment.

1.2 Rationale for Transitivity Analysis
The idea of transitivity analysis, which comes from systemic functional linguistics, offers a framework for examining how language constructs meaning about the people, events, and situations that are present in texts. This approach allows for the identification of who is responsible for specific activities, the context of those actions, and how environmental concerns are

conceptualized. This study intends to uncover Pakistan's voice in tackling climate change, as well as its beliefs and priorities, by analysing transitivity patterns in the 2021 policy. This method aids in identifying the actors, their roles, and the context in which they are located, such as national and worldwide climate action plans. This helps to explain how policymakers' choices influence public and governmental reactions to the environment, as well as the types of discourses utilized in the NCCP.

1.3 The Significance of Eco Linguistics

Eco linguistics is the scientific discipline that explores the impact of language on interactions that are essential for people's existence, as well as interactions with other organisms and the environment (Alexander & Stibbe, 2014). As a newly developed interdisciplinary field, Eco linguistics examines how ecological ideologies are constructed and reflected through language. Although Nash (2016) aptly describes it as "an old linguistics wine freshly housed in new ecologically focused bottles" (p. 38), its timely emergence makes it particularly appropriate for analysing crucial policy documents like the NCCP 2021.

Fundamentally, Eco linguistics emerged as a direct response to escalating ecological crises, advocating for a profound shift in language usage and production towards greater ecological sensitivity and rationality. It involves evaluating linguistic forms that contribute to environmental decline while simultaneously promoting new language that motivates people to protect the environment (Stibbe, 2015). The critical importance and ongoing necessity of such a field are deeply rooted in the historical observation that the profound connection between human language and environmental issues has often been overlooked in systematic academic discourse. This oversight was keenly highlighted by Trampe (2006), who noted:

As far as I am aware, a systematic linguistics debate about the phenomenon of ecological crisis has not yet taken place. Consequently, we are at present still far removed from seeing the close connection that exists between the violation, destruction, and estrangement from our natural environment and linguistic actions. (p. 232).

This foundational perspective powerfully underscores the critical need for fields like Eco linguistics to bridge this analytical void and meticulously examine how language perpetuates or mitigates ecological challenges. To this end, transitivity analysis, a key method in Eco linguistics research, aids in understanding how language constructs actions and subjects, making it eminently useful for examining environmental policies like Pakistan's NCCP. Through this linguistic lens, this study investigates how the NCCP 2021 characterizes acts, assigns responsibilities, and organizes human and non-human actors within ecosystems.

1.4 The Focus on National Climate Change Policy

Pakistan's updated NCCP (2021) is notable because it highlights the country's approach to sustainable development and climate change, such as the Ten Billion Tree Tsunami Program and the Clean Green Pakistan Movement. This policy is essential for defining Pakistan's environmental policies, defining national and international environmental discussions, and ensuring that Pakistan's policies are in line with global sustainability frameworks. This study applies Eco linguistics to examine how Pakistan negotiates its environmental responsibilities from the perspective of language and communication policy. Other countries can use this policy as a model for creating or evaluating their environmental policies, particularly those in the developing world.

1.5 Purpose of the Study

The objective of this study is to investigate the intricate relationships that exist between language choices, ecological rhetoric, and how environmental processes are portrayed in the

NCCP. The main goal is to critically assess the NCCP by applying Eco linguistics and transitivity analysis frameworks, with an emphasis on how language affects how environmental policies are understood and applied. This study also aims to contribute to the existing literature by offering a deeper understanding of how language in the NCCP develops and reveals environmental concerns. The study also uses Stibbe's (2015) ecological discourse analysis approach to investigate how language choices impact how environmental issues are perceived and handled. To determine who is shown as in charge and how mitigation and adaptation procedures are portrayed, this study will use transitivity analysis to examine how different actors and processes associated with climate change are portrayed. The goal of this research is to aid in the creation of more effective and culturally aware climate policy.

1.6 Research Objectives

The specific objectives are
1. To identify and analyse the transitivity patterns used in the NCCP to describe environmental issues and actors.
2. To explore the impact of linguistic choices on perceptions related to environmental issues as reflected in the policy document.
3. To contribute to Eco linguistics literature by applying Stibbe's ecological discourse framework to the language of Pakistan's climate change policy, highlighting specific ecological discourses present.

1.7 Research Questions

The study is guided by the following questions:
- Which transitivity patterns are employed to describe the environment within the NCCP?
- How do linguistic choices in the policy document impact perceptions regarding environmental issues and climate change?
- To what extent do the linguistic representations in climate change policy align with the discourses explained by Stibbe?

1.8 Significance of the Study

This study is a pioneering attempt to investigate the relationship between ecolinguistics and transitivity analysis in the context of Pakistan's NCCP. This study uses transitivity analysis and Stibbe's discourse framework to examine how language shapes environmental reality and attitudes toward environmental challenges. This study also investigates how different processes (material, mental, and relational) are used and how they contribute to the various discourses used. The findings can be used by policymakers to better future regulations, as well as environmental groups to help shape discourse on environmental legislation. The study will propose recommendations to policymakers, using Eco linguistics and transitivity analysis to establish more effective climate policies.

2. Literature Review

2.1 Language and the Environment

This section examines discourse types, Eco linguistics, and ideology in relation to language and the environment. In addition to being a means of communication, language is essential for controlling the consequences of environmental degradation. The paper investigates how linguistic analysis might advance social transformation and environmental awareness. Eco linguistics uses research from psychology, ethnography, and cognitive studies to analyse the cultural and shared aspects of human interaction. It tries to understand how individuals interact with information and how language influences our perception of the environment.

2.2 The Development of Eco Linguistics

Eco linguistics is a discipline of science that reconciles two radically different aspects of human existence, the environment and language. It looks at the language structures that define and regulate how individuals reason and interact with the surrounding environment (Stibbe, 2015, p. 1). In the past, human beings have reaped the benefits of centrality due to their distinctive attributes: These are language, reason, civilization, time, and creed, respectively (Stibbe, 2015, p. 7). Eco linguistics focuses on how communication impacts the natural world. It takes a normative approach to safeguarding the systems upon which humans and other kinds of life rely. Song and Tang (2020) defined areas that Eco linguistics focuses on how people use language to explain the environment, as well as its issues and challenges. Eco linguistics mainly concerns how these discursive practices are causing the pathways towards industrialization and therefore environmental degradation (Fill & Penz, 2017). However, it also emphasizes the significance of looking for linguistic elements that could help protect the environment and inspire people to take social action against the increasing levels of industrialization. This area, which focuses on how language affects the environment, developed as a separate branch of linguistics. Einar Haugen coined the word "Eco linguistics" in 1972, initially to describe the context of language use. Furthermore, when he formalized Eco linguistics in 1990, Halliday accepted language as a means of addressing the escalating environmental issues. However, it has now expanded to incorporate the usage of language and surroundings. Early research in the field highlighted how language can contribute to ecological degradation by promoting specific grammatical patterns that may not accurately depict the Earth as a living thing.

Several aspects of English grammar have been critiqued for their separation of humans from the natural world. The concept of surface ecologisation was explained by Fill as "linguistic strategies used to make products appear greener – products, in most cases, which are not particularly environmentally friendly in themselves" (p.70). The concept of "greenwashing," or fabricated environmentalism, and the linguistic voids within it, have been analysed as well. Another constructive strategy used by Eco linguistics is the acquisition of "proper" lexical items. Schultz (2001, p. 111) used a correctness approach and posited that rather than using the term "clearing" in relation to forests, we should use a more accurate expression, such as 'native vegetation removal." This includes analysing the language used in advertising. It also looks at how language can promote positive forms of writing that motivate people to protect ecosystems.

2.3 Language and Environmental Concerns

Language is essential in improving understanding of environmental issues and the processes that contribute to climate change. The field of Eco linguistics emphasizes the need to evaluate linguistic forms that intensify environmental decline, while also promoting language that motivates individuals to protect the environment. A central aspect of Eco linguistics involves the ecological evaluation of discourse, which Stibbe (2015) categorizes into three primary types: destructive discourse, beneficial discourse, and ambivalent discourse. Eco linguistics necessitates an ecological inspection and evaluation of each discourse to be practiced.

The way language is used to report on climate change is significant and cannot be overlooked. This is particularly evident in how politicians frequently urge scientists to use language that is easily understood by the public. As Nerlich et al. (2010) contend, there is no way communication on climate change can be overlooked, and politicians are forever calling on scientists to use language the man on the street can understand. Such accessible language is crucial for fostering public understanding, helping individuals relate to scientists, and encouraging them

to become proactively involved in environmental matters, thereby promoting good citizenship. However, this imperative for clarity is not without its complexities. Politicians may also leverage this accessible language strategically to achieve their own political objectives, for example, by calling for stricter policy measures to gain public support on climate action. This demonstrates how the strategic communication of climate issues through language, whether by scientists aiming for public understanding or politicians seeking political outcomes, directly shapes public perception and mobilizes action, influencing whether the prevailing discourse aligns with beneficial, ambivalent, or even destructive patterns.

2.4 Ideology and Discourse

"Discourses are practices that systematically form the objects which they speak" (Foucault, 2013, p. 54). Discourses are influenced by the ideologies that shape perceptions of events or situations. According to Stibbe (2015), ideologies are the expressed or implied system of belief regarding the nature of the existence of a particular society or a group of people. According to Stibbe (2015), there are three types of discourses: destructive, ambivalent, and beneficial. Mainstream green discourses often contain paradoxes, such as advocating for lower emissions while perpetuating growth paradigms. According to Stibbe (2015), Destructive Discourses can include narratives of blame displacement and anthropocentric views. Ambivalent Discourses contain conflicting narratives that may or may not support ecological goals. Beneficial Discourses include stories that respect nature and promote environmental protection.

2.5 Environmental Discourse

Eco linguistics examines environmental discourse in a variety of contexts, including politics, religion, media, and education. Proverbs and religious writings are analysed to better understand cultural attitudes toward nature. Alghamdi (2019) provided a qualitative interpretation of the proverbs in the Al-Bahah region to identify how animals are depicted and, therefore, the interaction between human beings and animals. Policy and political discourses, like those of the European Union, have been examined to study the construction of identity and climate change positions. In addition, Krzyżanowski (2015) pointed out the identity construction of the European Union by referring to its position on climate change. To that end, their policy and political discourse are subjected to critical discourse studies. Thus, the findings show that the EU is a conscious and active global leader. Profit and non-profit organizations' campaigns, as well as vegan initiatives advocating for ecological protection, have all been studied. Nature writing and media discourses have different portrayals of nature. Here, Goatly (2000) conducted a comparative analysis of newspaper and poetic discourse. He found out that nature is depicted as passive in "The Times," and it is linked to only the weather conditions. In contrast, Wordsworth interpreted his romantic writing to bring forth in his writing the components of nature in active bodily forms. Therefore, he proposed Wordsworth's take on nature: "to survive we had better take note of Wordsworth, rethink and respeak our participation in nature before it rethinks or rejects our participation in it" (Goatly 2000, p. 301).

2.6 Transitivity

Transitivity is a concept used to study the choices language users make about their experiences. It both mimics and defines since the social behaviours and speech that are made public are political, social, cultural, and ideologically influenced (Fairclough, 1992b). Transitivity analysis shows how language users manage language concerning reality and their impressions (Bloor & Bloor, 2013). The six processes of transitivity, which include happening, doing, perceiving, feeling, being, and becoming, show how choices in grammar are associated with

language meta functions (Samimi, 2013). Eggins (2004) outlines a systematic plan for doing transitivity analysis that involves the identification of participants, processes, and circumstances in clauses. It indicates that experienced sentences are constructed around processes that are represented through verbal groups; participants are referred to through nominal groups while circumstances are expressed through adverbial phrases (Eggins, 2004).

2.7 Halliday's Meta functions

According to Halliday's Systemic Functional Linguistics theory, language has three main meta functions: textual, interpersonal, and ideational. The ideational meta function, which is connected to operations, events, and activities, is examined using transitivity analysis. Processes are categorized as material (physical actions), mental (cognitive states), relational (relationships and properties), verbal (communication), existential (existence), and behavioural (conduct).

2.8 Previous Studies and the Gap in the Literature

Previous studies have examined climate change discourse and policy, and some have used transitivity analysis. For instance, Nasir et al. (2021) explored the representation of environmental problems in Pakistani newspapers by using Stibbe's Eco linguistics model. Similarly, Yahya and Roselani (2024) examined the climate policy documents of Indonesia (PBI). And Jabeen (2024) analysed the portrayal of environmental problems and concerns in English newspapers in the Saudi context. Mujahid and Janjua (2024) analysed the environmental issue of smog presented in a chapter of the PCTB 7th-grade English textbook. However, more needs to be done to understand language in climate policies, particularly in the context of developing countries.

There is a gap in understanding how transitivity choices affect policy representation in Pakistan's climate change policy. Although social construction has been used in earlier studies to examine discourse patterns, more research is required to fully understand how ideology and discourse interact in Pakistan's climate change policy. Further research is needed to bridge this gap and understand the relationship between language, ideology, and policy communication.

3. Materials and Methods

3.1 Research Design

This study examines the NCCP's language and implications using a mixed-method research approach that combines quantitative and qualitative analysis. Quantitative analysis uses statistical techniques to quantify the frequency of important phrases and themes. The relevance of concepts and themes is the main emphasis of qualitative analysis, which also looks at how this affects the narrative of the policy. A thorough grasp of the NCCP and how it creates environmental narratives is provided by this dual approach.

3.2 Data Collection

The updated 2021 edition of the NCCP documents provided the data for this analysis. To make sure the information was reliable, official government websites and repositories were consulted. Only public records were utilized to ensure that research ethics were followed.

3.3 Methodology

The analytical theory used in this study is the transitivity system of Halliday, along with the ideas from SFL. According to Halliday's Transitivity System, actors, participants, and processes can be classified as behavioural, existential, relational, verbal, mental, or material. This study positions Eco linguistics as both a methodological approach and a globally recognized alternative to conventional linguistic paradigms. In the words of Zhou (2019), Eco linguistics provides a much better understanding of the effects of language on or concerning environmental issues through the integration of ecological perspectives into linguistic analysis. This study

describes how those actions are framed within the NCCP. This study's primary methodology is the identification, analysis, and classification of the NCCP utilizing Halliday's Transitivity System. This framework makes it possible to analyse grammar, syntax, vocabulary, and intertextuality.

3.4 Key Analytical Approaches

The transitivity system splits processes into six categories, providing insight into how the policy addresses climate change. Physical actions are part of material processes, whereas cognitive states are part of mental processes. Relational processes outline attributes and relationships while highlighting the roles of various stakeholders. This study also employs ecological discourse analysis to assess the ideological components of the NCCP, using Stibbe's (2015) discourse categories: beneficial, destructive, and ambivalent. This method demonstrates whether a policy advances or impedes national or international environmental objectives.

3.5 Instrument

The UAM corpus tool (version 3.3) was employed to facilitate effective and efficient transitivity analyses of the policy document by supporting various text operations. Text processing involves preparing the raw text for analysis, which typically includes steps such as cleaning, normalizing, or tokenizing the data into manageable units. Following this, text analysis focused on the systematic examination of linguistic patterns within these prepared units, specifically identifying grammatical features pertinent to transitivity. The tool's encoding system was crucial for representing the text in a structured format, which allowed for the addition of linguistic annotations without altering the original content of the policy document. Finally, the UAM tool's tagging systems enabled the assignment of specific linguistic labels or markers to the segmented parts of the text, directly contributing to annotation by applying tags for elements such as participants, processes (including material, mental, and relational types), and circumstances. This was all done as required by Mick O'Donnell's transitivity method. Finally, the diverse array of capabilities within the UAM tool allowed for a detailed annotation and segmentation of the policy text, enabling a complex analysis of its linguistic features and enhancing the understanding of how these features influenced the policy's outcomes.

4. Results and Discussion

4.1 Data Overview

There are 2434 segments and 19,199 tokens in the dataset, with 17,368 of those being words. The average word length of the text is 5.80 characters, and the average segment length is 7.14 tokens, indicating a moderate level of complexity. The high lexical density (64.83%) suggests a dense, information-rich text. Subjectivity analysis indicates an objective tone with modest subjective positivity (0.108) and subjective strength (0.172). Third-person pronouns have a reference density of 0.90 percent, while first and second-person pronouns have a reference density of 0.0%. This highlights a factual, objective style with minimal personal references.

4.2 Grammatical Features

The grammatical analysis indicates that participants constitute 24.94% of the units, with processes trailing slightly behind at 24.49%. Configurations account for 23.38%, while circumstances represent a smaller proportion at 14.15%.

4.3 Clause Types

A significant proportion of the text, approximately 16.49%, comprises material clauses, with Mono transitive processes being the most prevalent at 13.41%, indicating a tendency towards activities that target specific objects. In contrast, intransitive processes are relatively less common, occurring at a rate of 2.67%, whereas ditransitive processes are exceedingly rare, at just 0.41%.

Notably, there are no ergative processes present. Furthermore, mental clauses are relatively uncommon, at 0.70%, with mental-active processes accounting for 0.37% and mental-passive processes accounting for 0.33%. Similarly, verbal clauses are also relatively low in frequency, at 0.41%, with verbal-active processes at 0.29% and verbal-passive at 0.12%. Relational clauses occur at a rate of 3.86%, while attributive clauses are more common, at 3.32%, and possessive clauses are at 0.53%. There are no identifying or circumstantial relational clauses.

4.4 Findings

The significant presence of participants, which are the specific entities—whether persons, groups, or ideas—that either perform or are affected by actions within a text, and processes, which represent the actions or events taking place and help define the narrative, demonstrates that the policy clearly outlines responsibilities and tasks. This balance between "who" and "what happens" ensures explicitness in delineating roles and exact tasks.

The substantial number of configurations, which are structural arrangements that describe the interactions between actors, processes, and conditions, highlights how different elements are interconnected and collectively contribute to the overall meaning of the text. For example, a statement like "The Government of Pakistan shall take the following measures: Develop a national climate change awareness program involving communities, as well as climate change relevant ministries and departments" embodies a configuration, illustrating the interrelation between the participant (Government), the process (Develop), and the context (involving communities, ministries, departments) to achieve a goal.

The policy's preference for simpler structural features, indicated by the absence of "configuration-complex components" that typically involve more complicated patterns of participants, processes, and circumstances, underscores its direct and clear approach to textual organization. The frequent use of Mono transitive processes, where an action is directly received by a single object, demonstrates the document's focus on specific actions aimed at targets. An example is the policy stating, "Develop a national climate change awareness program," where "develop" is the action and "program" is the direct object. Similarly, "support the establishment of a Pakistan Climate Change Fund" directs the action of supporting the fund.

The absence of ergative processes, which depict activities without a clear-cut division between subject and object, and the limited use of ditransitive processes, which involve actions impacting both a direct and an indirect object, further emphasize the policy's straightforward and unambiguous nature. For instance, a ditransitive process like "Promote the development and adoption of environmentally friendly transport technologies and efficient management techniques" shows an action (promote) on a direct object (development of technologies) with an implied indirect beneficiary. The limited presence of mental processes, which relate to internal states such as thoughts, perceptions, or feelings, and verbal processes, which are associated with communication and expression, suggests a stronger focus on concrete actions and policy measures rather than on emotional or communicative aspects. This indicates that the policy prioritizes "what is to be done" over direct discussions or personal interpretations.

The inclusion of attributive relational processes, which describe the characteristics of entities, and possessive relational processes, which indicate ownership or belonging, combined with the absence of identifying relational processes that define or categorize entities and circumstantial relational processes that provide contextual information, points to a focus on describing attributes and relationships. An example is "the country's 'natural capital,'" which highlights both attributes and possession.

Overall, the policy prioritizes outlining concrete actions and the roles of various entities over extensive contextual details or general descriptions of attributes. The policy predominantly uses material processes to describe physical actions and events that modify the environment, indicating a primary interest in tangible activities and their direct relationships. This emphasis aligns with the policy's goal of providing concrete steps and actions to combat climate change, ensuring that proposed strategies are realistic and quantifiable.

4.5 Discussion

Transitivity analysis provides insights into how actions, events, and states are framed through relationships among actors, processes, and conditions. In the NCCP, transitivity is utilized to communicate environmental strategies and obligations. The predominance of material processes in the NCCP indicates a strong commitment to actionable and measurable interventions. Mono transitive processes help to ensure clear and feasible steps in the policy's initiatives. The low frequency of intransitive processes demonstrates the policy's precision in climate action plans, avoiding vagueness. The minimal inclusion of circumstantial processes highlights a prioritization of action over contextual details. The lack of relational processes suggests a policy orientation toward solutions and actions rather than explanatory content. The limited mental and verbal processes indicate a preference for presenting actions and measures over discussions.

The selection of linguistic elements, particularly specialized terminology, significantly influences public interpretation of the issues. The focus on assigning concrete tasks to specific actors can shape beliefs about who is responsible and capable of action. Furthermore, framing climate change either as an impending crisis or a potential opportunity dictates whether the policy evokes a sense of urgency or optimism. In summary, the language choices in the NCCP shape the reader's perception of climate change. Based on Stibbe's framework, this analysis suggests that Pakistan's Climate Change Policy (2021) predominantly aligns with a beneficial discourse, as the policy promotes positive environmental changes and encourages environmental stability and beneficial shifts.

5. Summary, Limitations, and Recommendations

5.1 Summary

This paper explores Pakistan's climate change policy through an examination of transitivity patterns in policy documents from 2021. It underscores the representation of diverse actors within the framework of climate action, identifying a strong inclination toward material processes. These processes denote practical measures, suggesting a deliberate strategy aimed at achieving tangible outcomes. This emphasis shows a willingness to engage with environmental issues in a logical, feasible manner.

5.2 Limitations

The study's applicability is restricted due to its concentration on the 2021 policy, making it less relevant to earlier or later policies. The investigation is restricted to the policy's linguistic features, neglecting broader political, economic, and social determinants that could influence its formulation. Additionally, the subjective nature of event interpretation introduces potential bias into the results. Moreover, the exclusive use of transitivity analysis as an analytical tool might overlook certain Eco-linguistics nuances within the policy, thereby limiting the study's depth.

5.3 Recommendations

Future policy directions should prioritize the integration of economic and environmental aims to meet sustainability goals over the long term. Policymakers should use language that is clear and more understandable to the public. Utilizing evidence-based discourse, particularly

highlighting the significance of natural ecosystems, can amplify the credibility and effectiveness of these policies. The implementation of these recommendations would improve the precision and influence of Pakistan's climate change policies, supporting sustainable development.

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