

Discursive construction of technological optimism in environmental discourse: An ecolinguistic analysis of corporate environmental communication in Kenya

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ABSTRACT

The increasing reliance on technological innovation in addressing environmental challenges has generated discourses that position technology as a primary solution to ecological crises. While such technological optimism may encourage innovation, excessive emphasis on technological solutions may downplay the social, behavioural, and institutional responsibilities required for effective environmental conservation. This study investigated the discursive construction of technological optimism in corporate environmental communication among listed corporations in Kenya. The study adopted an explanatory sequential mixed methods research design. A purposive cross-sectoral sample of 36 corporate environmental reports was selected for analysis. Quantitative textual analysis was conducted using AntConc version 4.3.2 to examine word frequencies, collocations, and lexical patterns associated with technology, while qualitative discourse analysis was subsequently used to interpret the identified patterns. The analysis was guided by Critical Discourse Analysis and the ecolinguistic framework. The findings showed that technological optimism was constructed through positive evaluations of technology, quantification of technological interventions, the use of technical vocabulary, and future-oriented and hope-based language. The qualitative analysis further revealed that technology was predominantly represented as a solution to environmental challenges and that technological optimism was reproduced through interdiscursive practices and narratives of hope. These discursive patterns presented corporations as proactive environmental actors while simultaneously shifting attention towards technological solutions and away from broader questions of corporate environmental responsibility. The study concludes that technological optimism in corporate environmental communication can shape perceptions of ecological sustainability by foregrounding technological solutions while potentially obscuring the social and institutional responsibilities associated with environmental protection. The findings contribute to ecolinguistic research by extending its application to corporate environmental communication and demonstrate the importance of examining how linguistic choices influence representations of environmental responsibility. The study recommends the adoption of ecolinguistic audits of corporate environmental communication to identify and minimise narratives that promote technological solutions without clearly articulating measurable and ecologically sustainable goals.

Keywords: Ecolinguistics, Environmental Discourse, Ecological Framework, Techno-Optimism

I. INTRODUCTION

Globally, corporations contribute to the environmental crisis dialogue through the production of environmental reports. These include the dissemination of sustainability reports, Corporate Social Responsibility (CSR) reports, and Environmental, Social and Governance (ESG) communications. Corporate reports about the environment provide information about a company's environmental conservation and sustainability efforts or operations. These reports are meant to enhance stakeholder engagement and enable companies to attain a social licence to operate (SLO), as emphasized by Wolniak and Hąbek (2016). However, the language used has been shown to be biased and rhetorical, as it is embedded with ideological sentiments such as techno-optimism, which may exacerbate environmental degradation. The critical perspective of ecolinguistics promoted by Halliday (2001) has its roots in the weak version of the Sapir-Whorf hypothesis. This perspective accounts for the link between language, thought, and reality, where language is seen as instrumental in the creation of reality. Halliday (2001) emphasized the role of language in the environment, which goes beyond reflecting social realities. He demonstrated that lexico-grammar influences experiences and translates our perceptions into real meanings. This implies a constructivist interpretation of the function of language in how society construes world experiences.

Among these constructions is the presentation of technology as a solution to prevailing ecological challenges—technological optimism. This perspective supports the invention of man-made scientific and technological interventions to resolve problems such as climate change and biodiversity loss. Such views, however, present a risk of prioritizing technology at the expense of other fundamental social and cultural transformations, such as indigenous knowledge. Ecolinguistics applies linguistic frameworks to examine environment-related texts and discourses to reveal any implicit

ideologies or ‘stories we live by’ (Stibbe, 2015). These differ from normal explicit stories, as they are subconscious mental structures with several possible interpretations.

Although numerous studies have investigated the link between language and the human environment (Wakoko & Mudogo, 2021), limited attention has been paid to the ecological implications of the corporate discourse of listed corporations by linguists, both locally and internationally. Consequently, the present study sought to examine the discursive construction of techno-optimism in environmental communication. Drawing on a corpus of ESG reports of listed corporations, the research set out to demonstrate the effect of techno-optimism on the public’s interpretation of ecological sustainability.

1.1 Statement of the Problem

Corporate environmental reports are increasingly used to communicate organisational responses to climate change and ecological sustainability. However, research shows that corporate environmental discourse can frame technological innovation as a solution to environmental problems while giving limited attention to the social and structural changes required for sustainability. Such techno-optimistic framing may shape how environmental responsibility and possible solutions are understood by stakeholders (Wakoko & Mudogo, 2021). Despite growing research on techno-optimism in corporate environmental communication, limited attention has been given to how listed corporations in Kenya linguistically construct and reproduce techno-fix narratives, particularly in relation to institutional power and ecological responsibility. This study therefore examines the linguistic representation of techno-optimism and investigates how techno-fix narratives discursively reinforce institutional power and shape representations of ecological protection and degradation.

1.2 Research Objective

- i. To investigate the linguistic representation of techno-optimism.
- ii. To evaluate how the techno-fix narrative discursively reinforces institutional power and its impact on promoting ecological degradation or protection.

II. LITERATURE REVIEW

2.1 Theoretical Review

The present study integrated Critical Discourse Analysis, Fairclough (2003) and Stibbe (2015) ecological framework as the theoretical basis for examination and analysis. CDA helped to account for ideologies, exposing underlying assumptions that establish specific worldviews about the environment. The ecolinguistic perspective revealed the impact of the discourse on ecological well-being. The definition of ideologies under the ecological framework further shaped the identification of ideologies concerning the environment. By combining the two theories, the two-pronged approach ensured integration, in terms of ideological analysis of the discourse. This eclectic approach therefore unveiled the underlying communication strategies employed, in addition to ecosophically evaluating their support for ecological protection or ecological destruction. Stibbe’s (2021)’s *Living!*, provided the guiding ecosophy for the present study. The Ecosophy emphasizes the wellbeing of both humans and non-humans and prioritises interdependence in the ecosystem.

2.2 Empirical Review

2.2.1 The Notion of Technological Optimism

Technological optimism as conceptualized by Marcos (2025) is a world view which equates technological advancements to environmental care and ultimately sustainability. This narrative places technology as a tool for dealing with environmental challenges. According to Marcos, 2025, techno-optimism constitutes a conventional assumption that science and technology will resolve the prevailing environmental and social problems. This definition suggests that ecological challenges attributable to industrialization, are to be matched with further expansion and growth in industry.

Existing literature on the ideological realization of techno-optimism has extensively examined the phenomenon from the discursive psychology perspective. However, other researchers have employed critical discourse analysis to examine environmental and climate change communications, though techno-optimism in sustainability reports has not received much scholarly attention. Technological solutionism as argued by Supran and Oreskes (2021) is classified as a discourse of climate delay, closely related to individualism and fossil fuel solutionism. In their study of the rhetorical and grammatical designs of Exxon Mobil corporation’s communications, the two scholars noted emphasis on technologies research. The *scientific uncertainty* rhetorical frame realized in Exxon’s advertorials was keen to promote scientific and technological innovations that were hypothetical and insubstantial. In a similar vein, Johnston (2020) posits that environmental discourse rhetorically represents technology and innovation as progress. The grammatical and rhetorical representation of this ideology was also manifest in climate change policy debates investigated by Nielsen

(2023). The grammatical strategies in the debates were found to reinforce the role of technological innovation, equilibrium, interventions and ecosystem dynamics whereas an optimistic outlook was developed rhetorically.

Riemens (2024) cites the language of ‘whole-systems thinking’ in Silicon Valley, this was developed through a specific vocabulary which featured cybernetic concepts such as *interventions*, *equilibrium* and *ecosystem dynamics*. Based on their corpus-based investigation of National intelligence council reports, McKeown (2018) opined that the reports took a techno-optimist stance concerning the future role of technology. Moreover, propositional certainty in the reports represented the future as a closed inevitability where discourse about the future was handled as a projection of the past and the present. Also Kyyrö (2025) examined reports to conclude that sustainable future in Trends report constituted various types of meanings including hope, fear and opportunities. Their study also highlighted the emphasis placed on technical solutions, with non-technological solutions being clearly downplayed.

2.2.2 Techno-Optimism Ideology in Environmental Discourse

In the ecolinguistic context, techno-optimism is developed and realized linguistically, with its impact being felt in the public’s perceptions about the environment. Indeed, Haslbeck (2026) argued that techno-optimism may downplay the public’s willingness to participate in climate change mitigation activities. The techno-optimistic view has been shown to lack the critical vigor required to bring out underlying economic and political goals of environmental talk. This was noted to reinforce the scientists’ authority, in addition to constructing innovation as the panacea to climate – related challenges. Cologna et al (2024) showed that emphasis on science and technology undermined the structural transformations required to promote pro-environmental behavior. Their study demonstrated the significance of cultivating a positive attitude in climate change mitigation. However, the above studies emphasized behavioral analysis as opposed to linguistic analysis, which necessitated the present study.

Nielsen et al (2023) posited that techno optimism acts as a delay tactic when used in climate change discourse. Based on their examination of climate change policy discourse, techno optimism was also deemed as a discourse of delay by Lamb et al (2020). Additionally, Stoddard (2021) cited techno-economic perspectives as one among many reasons for failures experienced in the journey towards climate change mitigation and emissions reduction. Further Peeters et al., (2016) analysed techno optimism as a ‘technology myth’ discourse that provided a faulty promise on ecological sustainability with reference to the aviation industry. Supran & oreskes (2021) established that Exxon Mobil corporate communications indicated renewable energy, EV, nuclear energy and other innovations as the solutions to the climate dilemma. The study also highlighted the effect of over -reliance of technology, noting it as an impediment to political and public considerations. However, their study was guided by rhetorical analysis and framing theory. The ideology provides technological innovations as a solution for addressing ecological degradation at a global scale. However, some scholars such as Dryzek (2013), have pointed out the weakness of this school of thought. For instance, they highlight technology as the major driver for the capitalistic and growth-oriented processes witnessed in contemporary society. Furthermore, such narratives contravene Stibbe’s (2021) ecosophy of *Living*, since they prioritise man’s needs at the expense of nature. Consequently, they may be categorized as destructive discourses.

From the above review of existing studies, it is apparent that research the ideological and behavioral aspects of techno optimism have been extensively investigated. However, scholarly attention on the linguistic construction of techno-optimism as an ideology has been minimal. Moreover, its presence and implications to corporate environmental reporting in the African and Kenyan contexts has also received little attention. The current study therefore analysed the linguistic and discursive realization of the techno-optimism ideology from a critical ecolinguistic perspective. The three level approach consisting of the textual, discourse practice and social practice levels also guided the analysis of discourse in the sampled reports.

III. METHODOLOGY

3.1 Research Design

The study adopted an explanatory sequential mixed methods research design, in which quantitative corpus analysis was followed by qualitative discourse analysis. The quantitative phase involved the analysis of word frequencies and collocations to identify patterns associated with technological discourse in the selected corporate environmental reports. The qualitative phase subsequently examined the identified linguistic patterns within their broader textual and discursive contexts. This sequential approach enabled the qualitative analysis to explain and contextualize the patterns emerging from the quantitative corpus analysis. The design was appropriate for examining both the observable linguistic patterns and the underlying discursive construction of technological optimism in corporate environmental communication.

3.2 Study Area

The study focused on corporations listed on the Nairobi securities exchange, meaning they are publicly traded. Such corporations disseminate environmental reports as part of their annual reporting practices. The Nairobi securities exchange consists of 65 corporations that have met the legal requirements to trade and engage with shareholders.

3.3 Target Population

The study population was a corpus of 182 reports disseminated by the 65 companies listed in the Nairobi Securities Exchange (NSE) in the sampled period of the years 2020-2024. To ensure representativeness, the present study sought to sample data from corporations in all the 12 macro-economic sectors represented on the NSE. However, the selection was subject to availability of Environmental reports. The study therefore picked three reports from each sector to provide a purposive sector-stratified sample of 36 corporate reports constituting 49013 tokens or words. This was informed by the fact that linguistic data from the same population such as a genre (environmental reporting genre) exhibits a level of homogeneity. As noted by Cavaglia (2005) the representativeness of a sample increases when its source population is homogenous in nature. This implies that further sampling or inclusion of more reports for data is likely to yield similar or very closely related results.

3.4 Research Instruments

AntConc software (Version 4.3.2) a corpus analysis tool was used in collection of textual data. The software provided for extraction of word frequencies and collocations of words relevant to the study. An observation schedule was also designed to collect contextual data on the most prevalent words. A pilot study based on five company reports was conducted to enhance the validity and reliability of study instruments. Further manual coding was carried out in conjunction with an experienced coder. This allowed for discussions and agreement concerning the linguistic features identified in the data. The triangulation of qualitative and quantitative methods enhanced validity whereas cross validation of findings between the two approaches further reinforced the reliability of the study.

3.5 Data Analysis

Data analysis focused on frequencies and percentages (descriptive statistics) which revealed the most prominent phrases and constructions. The frequency of occurrence and collocations of specific words phrases and eco-relevant terms were examined and manually coded for ecological constructs. The qualitative analysis of observed collocations and contexts of words and phrases was based on discourse analysis as guided by Fairclough (2003) CDA.

3.7 Ethical Considerations

The study sought ethical approval from the school of postgraduate studies in Machakos University as well as the National Commission for Science, Technology and Innovation (NACOSTI). The ESG and sustainability reports are publicly available on the corporations' website implying no need for any special privacy or security measures.

IV. FINDINGS & DISCUSSION

4.1 Findings

4.1.1 Positive Evaluation of Technology/Optimistic Tone

In the context of managerial discourse, an optimistic tone is associated with language that evaluates the corporation and its technological innovations positively. According to Hossain et al. (2021), a positive tone is a delivery style that utilises words which agree with the optimistic disposition of management. This may include exaggerated narratives in relation to company growth or profits. Henry (2008) added that a positive tone indicates positive sentiment which can be evaluated on the basis of the frequency of positive words used. The current study examined the environmental reports for positive words associated with technology to bring out the techno-optimism perspective. The study focused on adjectives which acted as premodifiers of the term 'technology' as well as aspects of innovation. These were evaluated as employed by the selected corporations in their proposal of technological solutions to the prevailing environmental crisis. The findings were summarized as in the table below.

Table 1

Positive evaluation of technology/Optimistic Tone

Rank	Positive Evaluative Adjective	Frequency	Percentage
	Efficient	15	48%
	Low carbon	4	12%
	Smart	4	12%
	Advanced	4	12%
	Clean	4	12%

In Table 1 above, the term *efficient* was the most frequent in the positive evaluation of technology or technological innovations. This may be linked to its meaning which translates to cost savings for corporations. In second place, *low-carbon* was also used to premodify nouns and noun phrases related to technology. This was attributed to the expectation of reduced effects on the environment, since we expect low-carbon to translate into less environmental degradation. The adjective *Smart* was also used to qualify technological solutions as an indication of their effectiveness in comparison to traditional methods. Lastly, *clean* as adjective occurred as a positive evaluation specifically used in energy-related reports. These were further illustrated through the excerpts below.

EDGE certification will allow for retrofitting of specifically the commercial properties with climate-resilient and energy-efficient technologies, therefore promoting sustainable resource management to address climate change impacts. MANU 3. By investing in low-carbon technologies, engaging in community and CSR activities, innovating sustainable products, and maintaining transparent and accountable practices, CIC Group demonstrates its commitment to a sustainable future. INSU 3. Conducted training on various digital energy platforms such as Microsoft Power BI. Deployed 218 smart meters to the network. ENER 3. Promote investment in energy infrastructure and clean energy technology. BAN 3

In excerpt 1, the proposed technological solution is heavily pre-modified through compounded adjectives; *climate-resilient* and *energy-efficient*. These were meant to show the positive evaluation of the type of technology that the corporation has put in place. Moreover, the corporation stated that the technology was expected to have a positive impact on their resource management in addition to aiding in addressing the environmental concern of climate change. In excerpt 2, the term *low-carbon* was used to describe the technology adopted by the corporation. This adjective was expected to enhance the concept of technology by relating it to the prevailing sustainability concerns. Excerpt 3 described newly introduced meters as *smart*, signaling positive expectations to the reader. In excerpt 4, the selected company described their technological solution as *clean energy*. The positive connotation was also expected to influence the shareholders to support the corporation in its decisions due to its climate-sound installations. These excerpts demonstrated that the listed companies employ positive connotations in an effort to depict a positive outlook for the company. The depiction of technology as the solution to the sustainability challenges facing the company and its society was enhanced by the use of positive sentiments linked to the technology proposed.

These findings were in line with Huang et al (2024), who asserted that tone is a key textual attribute of corporate sustainability reports. They proposed that optimistic language aids in tone projection, which correlates with management's sentiments about the company's financial future. In fact, tone has been shown to be a major determinant of stakeholder perception and comprehension of the contents of these reports. Avdalyan (2024) also identified the use of positive vocabulary in company Annual reports, which was meant to reinforce the claims made by the corporation. Some of the most popular positive vocabulary in his study were the adjectives *confident*, *unique*, *better* and *strong*. Wu et al. (2018) affirmed these findings, with their claim that the language used in these reports is strategically persuasive, geared towards positive developments in the company and silent on negative factors. However, they clarified that a decrease in the number of positive words does not necessarily mean a reduction in the rhetorical elements in company reports. We therefore see a correlation between positive evaluation at word level and the overall tone of the ESG reports which sums up to a technologically optimistic presentation.

4.2 Lexical Choice

Fairclough (2000) counted lexical choice as one of the fundamental textual features of a discourse, which links it to its ideological disposition. The analysis of words chosen as part of the formal features of a discourse reveals the author's value system as well as their ideological frame. In the current study, lexical choice analysis set out to examine the use of technological terms in the reports and their implications for the overall environmental discourse. The choice of words in the construction of the ESG reports was therefore instrumental in presenting technology as an ideal solution for the environmental problems. Environmental issues in the current study were realized as technical challenges that required digital or scientific solutions. One of the major social practices that marked this world view was the emphasis on data-driven or science-based management styles. The reports advocated for the use of data, technology and other digital options as reliable solutions to the environmental crisis.

Table 2
Lexical Choice

Rank	Technical terminology	Frequency	Percentage
	Scope 1,2 or 3	152	36%
	Data	73	17%
	GHG Emissions	66	16%
	Footprint	51	12%
	Net zero	40	9%
	Digital	18	4%
	Effluent	12	2%
	Decarbonize	5	1%
	Digitalization	5	1%

In the summary above, the word *scope* was the most prevalent technological term with its variants- *scope 1*, *scope 2* and *scope 3*. The term was used in the categorisation of emissions, detailing the impact of the corporations to the environment. However, the meaning of this term was barely expounded in the reports, thereby compromising comprehension. The term *data* was also used with 73 appearances, showing the scientific and research element of the reports' contents. In third place, *GHG emissions* occurred 66 times in the reports, indicating that emissions cut across all corporations as an ecological concern. *Footprint* was also a term that was used for its technical meaning in the reports. The term was to be contextually understood as it co-occurred with a variety of words. The term was realised in carbon foot print, environmental footprint and ecological footprint, thereby necessitating a contextual interpretation. *Net zero* was in 40 incidences in the text, a technical expression that was used in the context of ecological goals.

The term *digital* and its morphological variant *digitalization* occurred 18 and 5 times respectively. This was likely used in relation to the introduction of new technological solutions, meant to resolve the ecological problems faced by the corporations. Another term that was typical of the reports was the use of the term *effluent*, which appeared 12 times overall in the reports. The preference for this term as opposed to the negatively evaluative on- *pollutant* was likely linked to the need to implicitly present a positive image of the corporations. The environmental discourse under investigation relied heavily on technical register from the science and technology fields which aided in the construction of the overall perspective of the text as illustrated in the excerpts below. 0% reduction in Scope 1 & 2 CO₂e emissions by 2030 (vs 2020 baseline) • 50% reduction in Scope 3 emissions by 20230 (vs 2020 baseline) • Carbon neutral operations by 2030 comprising Scope 1 & 2 CO₂e equivalent emissions MANU 2

Digitised energy data to facilitate remote monitoring. • Rolled out data centre infrastructure management (DCIM) to six sites to monitor, measure, manage and control energy consumption in real-time. COMM 2 while CIC Group acknowledges the negative environmental impacts of its operations such as GHG emissions as a result of energy consumption by office buildings and vehicles, it is steadfast in its efforts to mitigate these through comprehensive sustainability initiatives INSU 3. We are committed to Fly Carbon Net Zero by 2050 through its partnership with the International Air Transport Association (IATA (COMM 2) KCB Group's total carbon footprint was determined to be 11,510,506 kgCO₂ eq compared to the Group's footprint of 10,617,906 kgCO₂ eq in 2022. The increment in the Group's carbon footprint was attributed to the increase in staff numbers. BAN 2

In excerpts 5-9, the word *emission* was cited as a focal point of the corporations' agenda. The choice of these technical terms was likely due to the need for the company to show expert-understanding concerning environmental issues. By reporting new developments and expected achievements by 2030, the company provided a positive outlook for the reader to consider. The corporation provided its estimated improvement using technical language to indicate its control over the concern. In excerpt 6, the corporation reports about digitised data and rolled out data, all which were expected to enhance its sustainability efforts. The corporation therefore backed its optimism through research, which was indicated by their choice of the term *data*. GHG emissions in excerpt 7, was also presented as manageable by the corporation. By using the technical term, the corporation was able to control the narrative as opposed to the word *pollution* which would be detrimental to its reputation and image.

In excerpt 8, the term *carbon net zero* was also utilised as opposed to the layman equivalent which may translate to air pollution. This means that the term allowed the company to downplay the negative impact of its operation. The forecast of the achievement to year 2050 also painted a promising future in the eyes of the shareholders who are the target audience. Finally, in except 9, the term *footprint*, was collocated with the words *carbon* and *group* to further compound its meaning. The term associated with a negative impact on the environment, was applied to further manage the corporation's image. This facilitated a better corporate image by avoiding non-technical and harsher alternatives to the term footprint such as negative effect or negative impact.

These findings reflected the observations of Lemke (2012) concerning technical register and technical discourse. Consistent with the present research, his study identified extensive qualification of nouns as well as nominalization as peculiar features of technical discourse. Yu and Bondi (2019) also indicated that CSR reports featured words from a

specific semantic field which enhances their futuristic meanings. In a similar vein, Acha (2022) noted that specialized terminology may have manipulative goals which are not obvious to the lay reader. He suggested that the lay reader may interpret these terms as semantically neutral whereas the terms were laden with human-centred motives. This content may therefore promote industrialization against the ecological good.

4.3 Quantification of Technology- Statistical Information

Statistical information plays a major role in legitimizing the capacity and ethical standing of a corporation as emphasized by Fontaine & Li (2024). Furthermore, in environmental discourse, Van Dijk (2002) asserted that positive environmental effects are presented as statistics in order to enhance objectivity. The statistics exert corporate authority owing to the precision with which they present information about the company. In the present study, the statistical information was key in presenting a positive outlook to the shareholders. Through quantifiers, numerals and percentages, the reports indicated forecasts of improvements in sustainability practice. The summary of numerals, percentages and quantifiers used in relation to the future performance of the companies driven by technology were as tabulated below.

Table 3

Quantification of technology- statistical information

Rank	Statistics	Frequency	Percentage
1	Quantifiers	5	17.8%
2	Percentages	18	64%
3	Numerals	5	17%

by replacing the use of methane for instrumentation with compressed air, thanks to Qnergy technology. By installing 400 units between now and 2024, emissions will be reduced by 7 kt annually ENER 1 technology, AUSEA4, at all of its operated sites starting in 2022 (see sidebar). Flaring Cold venting Process venting Fugitive emissions Combustion 2020 In kt CH₄ 2010 2015 2021 2025 2030 - 80% vs. 2020 - 50% vs. 2020 2010-2020 - 47% which will reduce the number of haulage equipment required and is utilizing BEV on the haulage level which will enable New Afton to achieve a 30% reduction in GHG emissions compared to our 2020 baseline. EXTF 3 we announced our commitment to reducing GHG emissions by 30 percent by 2030 (from 2020 baseline) through greater electrification and energy reduction strategies. EXTF 1

In excerpt 10, the sampled company provided statistical details concerning its emissions reduction to demonstrate expected improvement as a result of *Qnergy technology*. Excerpt 11 also gave a detailed breakdown of the expected improvements. These future improvements also provided timelines for achievement, further reinforcing the positive outlook of the corporation. In excerpt 12, a percentage was used to estimate the projected *reduction in emissions*, signaling more ecologically friendly operations in the future. Lastly, in excerpt 13, electrification was also expected to bring down emissions by a percentage as quoted-30 %-within a specific timeline. These excerpts therefore demonstrate the interconnection between quantification of technological developments and the establishment of a positive outlook.

Cologna et al. (2024) extended this view in their assessment of techno-optimism and pro-environmental behavior. Their study contended that optimism towards technology may enhance public attitudes towards climate policies and technology itself. Pérez-Urbina (2026) built on the use of metric and quantitative data in developing *techno-supremacy*. He noted that social problems were diminished as they were transformed into quantitative metrics. It is therefore evident that the use of metrics and other quantitative information were key to constructing technology as a solution. Technological solutions were therefore presented as the fundamental technique for optimizing resources for ecological good. However, this perspective was fraught with the danger of reducing all societal issues such including ecological degradation to technical challenges depicted as solvable.

4.4 Modals + Temporal Expression

The pragmatic roles of modal verbs are evident in most discourse types including political and media discourse. Kapranov (2026) attested to the high incidence of modals verbs in climate change-related reports. The role of *will* in environmental discourse is best understood as a booster. This means that *will* enhances the certainty of a proposition in its context. Additionally, *will* strengthens the claim associated with it, thus improving the credibility and certainty of the propositional content. The modal occurs in sustainability discourses in relation to pledges and commitments as noted by Aiezza (2015). He added that the modal reveals the degree of the company's commitment to a pledge.

In the current study, the modal *will* was examined based on its context of occurrence to assess its contribution to the overall optimistic tone of the reports with regard to technology. Furthermore, the combination of *will* with temporal expressions made it a major contributor to the techno- optimistic world view. Temporal expressions consisted of dates of years when the corporations hoped to attain their planned goals. These expressions were key to building an optimistic outlook of the corporation as they anchored the company promises in time. The present study therefore

examined the reports for instances of the modal *will*+ temporal expressions, that explicitly tied technological developments with renewed hope for a better future.

Table 4

Modals + Temporal Expression

Rank	Technical terminology	Frequency	Percentage
1	Will	68	75%
2	Temporal Expressions	23	25

From the analysis above, the modal verb *will* was used in 68 incidences in the context of future time and expectations. This pointed to the overall future-oriented nature of the reports. The temporal expressions appeared in 23 instances where they were used to mark specific dates by which certain goals should have been achieved. These instances consisted majorly of calendar year dates as illustrated below. Thanks to a more than €500 million investment, by 2024 the complex will be organized around four new industrial activities producing new molecules for transportation and plastics from biomass and recycled materials. COMM 2 Instrument gas has been reduced at the sites in Argentina and the U.S. (Barnett) by replacing the use of methane for instrumentation with compressed air, thanks to Qnergy technology. By installing 400 units between now and 2024, emissions will be reduced by 7 kt annually ENER 1. y 2030, provide universal access to safe, inclusive and accessible, green and public spaces. EDGE certification will allow for retrofitting of specifically the commercial properties with climate-resilient and energy-efficient technologies, therefore promoting sustainable resource management to address climate change impact

In excerpt 14, the temporal expression *by 2024* is linked with *will* to show the technological advancement adopted and the expected positive outcome. This technological advancement was expressed as an industrial activity expected to bear positive impact in the near future. Excerpt 15 also featured a newly introduced instrument whose installation was expected to reduce methane emissions by the year 2024. By indicating the exact year, the report's credibility was raised as the achievement was bound in time (between now and 2024). In excerpt 16, the corporation pledged high sustainability returns from the adoption of *energy-efficient technologies*. The temporal expression *by 2030*, gave the timelines for the achievement of the positive outcome based on the adoption of *climate-resilient technology*.

In the excerpts above, the modal verb *will* indicated a firm commitment and projected the intentions of the corporations with certainty. The modal expresses a stronger commitment in comparison with other weaker modals such as *could* or *may* which are more aligned with possibility as opposed to obligation. The preference for *will* was further buttressed by the fact that there is consensus on some of the environmental issues facing listed companies. For example, there is certainty that there is a need to reduce emissions in order to enhance ecological care. This means that corporations have a certainty about the connection between emissions reduction and improved sustainability.

Consistent with these findings, the high frequency of *will* was explained by Juliansyah et al (2020) that *will* provides for scientific certainty in addition to aiding to diminish the negative effects of climate change. The modal therefore matches the level of scientific certainty in the environmental reports. The time references realised through the preposition (of time) *by* plus a year, worked to ascertain the commitment by providing a clear timeline. These specific time points also anchored the company plans or targets to produce forward-looking statements. Wu and Wang, (2025), similarly argued that *will* performs discursive as well as strategic functions. They demonstrated that *will* has the capacity to project confidence and authority which are key stakeholder expectations. However, according to Kondowe (2014) the modal is categorized as medial in the degree of certainty, meaning that it can also be used to express vague commitment. This outlines the need to combine the modal *will* with temporal expressions that make it more concrete and forward-looking. Therefore, *will* is a key futurity marker in corporate environmental communications, whose level of commitment varies with use. *Will* signals genuine commitment to the future when accompanied with measurable targets and timelines.

4.4.1 Future-Oriented Verbs and Present Continuous Tense

Avdalyan (2024) argued that the present continuous tense is one of the most prevalent tense forms in corporate discourse. This was attributed to the fact that the tense shows ongoing action which makes the activity more credible to the reader as opposed to a pledge for a brighter future. For instance, the present continuous tense was used to indicate continuity and signal potential growth. The repetition of present continuous tense was used to make promises and predictions. In the present study, the use of future-oriented verbs was analyzed to assess their impact on the reader's perspective. The research considered future-oriented verbs as well as instances of present continuous tense in relation to the technology-based company's outlook. The most common verbs projecting the future were summarised as below.

Table 5
Future-Oriented Verbs and Present Continuous Tense

Rank	Verb	Frequency	Percentage
1	Aim	42	39%
2	Continue	31	29%
3	Plan	25	23.5%
4	Strive	5	4.7%
5	Commit	3	0.28%

The most occurring future-oriented verb was found to be *aim*, probably stemming from the goal-oriented nature of the environmental reports. *Continue* also appeared 31 times, pointing to the expected longevity and growth of the company. The verb *plan* was also common in the reports in relation to what companies put in place to achieve these set goals. Moreover, instances of simple continuous tense marked by the -ing marker were an indication of the expected progress. These included *implementing*, *accelerating* and *developing*. This was further explained using the excerpts below.

We aim to meter our sites to enhance accurate measurements of water discharged in our facilities. AGRIC 2. We continue to explore reduction opportunities through biofuel and electrification options through the remaining open pit activities. For financed emissions, we plan to set targets in line with the NZBA guidelines by setting 2030 targets. As the NZBA defines 2030 as intermediate, we will plan to use different time horizons that will define our short-term, medium-term and long-term targets. BAN 2. sustainable low-carbon future, so we commit to decarbonising our own operations and to partner with our suppliers to halve the carbon in our supply chain. we believe doing business the right way contributes to a fair and just society MANU 2. The main route to achieving these objectives is developing emissions reduction projects on our industrial sites, using the best technologies available: improving energy efficiency, reducing flaring, reducing methane emissions, supplying renewable electricity and using CCS for residual emissions. ENER 1

In excerpt 17, the corporation cited the objective of introducing ‘meter’ as a technological advancement in order to enhance its sustainability practices. The verb *aim* aided in articulating the goal of the corporation towards a better outlook. Excerpt 18 utilised the future-oriented verb *continue* which shows progression towards emissions reduction. Excerpt 19 articulated the future goals of the corporation, citing the anticipated progressive achievement of its targets. Excerpt 20 featured the verb *commit* which showed a strong alignment with the future goals and plans of the corporation. In excerpt 21, several verbs were used in the simple continuous tense. *Improving*, *reducing*, *supplying* are all indicators of the anticipated impact of technology. The tense contributed to the forward-looking nature of the reports, thereby giving it a futuristic tone.

Other future-oriented verbs present in the corpus were *commit*, *strive* and *aspire*, all geared to show the forward-thinking stance based on which the environmental reports are constructed. In agreement with this assessment of the corporation’s future was Flotum (2014). He argued that there are two extremes to future representation of climate change as an environmental concern in sustainability corporate reporting. These were stated as gloom-and-doom where climate change was presented as a threat or bright future and conceptualised as an opportunity. In line with this Fairclough (2013), emphasized the role of temporal framing as an indication of ideological positioning. He however argued that future-oriented language presents technological solutions as the ideal remedies while ignoring the complexity of problems such as ecological issues. It is therefore apparent that future tense reinforces the positive outlook in ESG reporting despite its implementation-related limitations.

4.5 Discourse Practices

4.5.1 Framing of Technology as Solution

The interpretation of scientific and technological as a human invention that will solve environmental problems is the premise of techno-optimism in Gardezi and Arbuckle (2020). Stemming from the textual analysis, the discourse practice level analysis sought to investigate how technological optimism was produced and distributed. This is addition to analyzing how the shareholders and other members of the general public interpret the discourse. As revealed in the textual level, technological innovations were positively evaluated as the best remedies against ecological destruction. The audience was also meant to view technology as limitless and capable of addressing environmental and social challenges.

The discourse also implicitly down-played solutions that was technology-free in their approach to environmental problems. This further normalized technological innovations as the ideal human interventions to issues such as climate change and biodiversity loss. The discourse was further interpreted as a future occurrence based on the forward-looking statements used in relation to the technological solutions proposed. The ESG reports engaged in forecasting for a better ecological future as an expected outcome of embracing these innovations. This was exemplified in the excerpts below. Our objective is to capitalize on green financing for the adoption of cutting-edge energy

technology. In our pursuit of clean energy, we are exploring investments in green hydrogen and other innovative energy solutions to drive a more sustainable and efficient future AGRIC 2 his involves adopting energy-efficient systems and supporting technological innovations that reduce carbon footprints. For instance, we have: a. incorporated motion sensors in lighting systems leading to energy savings. INSU 3

In excerpt 22, the corporation expressed its optimism for the future, which was predicated on technology. New energy technology was presented as a solution for environmental problems in form of clean energy. Additionally, the corporation's statement can be interpreted by the reader as a positive outlook for company performance that depends on its capacity to adopt technology. In excerpt 23, motion technology was portrayed as an innovative solution that would result in efficiency in addition to reducing the corporation's carbon footprint. Equally, Ribeiro & Soromenho-Marques (2022), established that techno-optimism was discursively created through preference for high level technology as opposed to non-technological techniques. This however posed the problem of 'technowashing' where scientific concepts may be used to manipulate public attitudes. In addition, his study identified the element of subject matter uncertainty associated with techno-optimistic discourses. Moreover, Marcos (2025) also supported this view, stating that techno-optimism fails to acknowledge the role of structural changes in operations, which have an impact on performance.

4.5.2 Circulation of Hope-Oriented Messaging

As proposed by Silva and Lee (2021), language influences our hope-orientation. According to them, the concept of languaging hope entails the circulation of communications and other resources which enact hope. The ideology of technological optimism was also produced, interpreted and circulated as a story of hope in the technological future. Besides portraying ecological crises as solvable at a future date, the discourse presented the audience with a forward-looking message that expanded their expectations. The corporations utilised language to present progress, solutions and other imaginable possibilities attainable in the future. In the present study, stakeholder expectations were rallied towards the perception of a future where technological innovations invented by man, were the ultimate solution. This was further captured as in the excerpts below.

Securing Futures, Building a Sustainable Africa. Investment in Low-Carbon Technologies We have shown a strong commitment to sustainability by investing in low-carbon technologies. INSU 3. Our current generation fleet is derived from a composition of 86.5% green energy and by 2025 is expected to rise to over 91% with additional green power poised to be connected from new power plants in the pipeline. ENER 1

In excerpt 24 above, the corporation narrated its expectations of a *secure future* which was guaranteed by the adoption of *low-carbon technologies*. This constituted hope-oriented messaging, created by the company to communicate hope. However, this hope orientation has been criticized for downplaying other non-technological interventions such as behavioral change. In excerpt 25, the corporation gave a forecast of a sustainable future where shareholders were promised that *green energy* uptake will have risen. The forward-looking nature of this messaging further reinforced technological optimism. In agreement with this, Bergeå et al (2025) contended that there is a connection between hope messaging and pro-environmental behavior and attitudes. However, they cautioned that hope messaging may allow corporations to distance themselves from responsibility due to the construction of hope as passive. Besides, technical talk in these messages, undermined commitment such that the circulated environmental communications failed to specify the entities responsible for the said actions. This implied the need to consume hope-oriented messages with caution and for producers to clarify responsibility.

4.5.3 Interdiscursivity

As defined by Fairclough (1993), interdiscursivity encompasses the combination of texts from different genres and discourses from which a document such as the ESG report draws from. Analyzing interdiscursivity facilitates understanding of the production and consumption of the discourse. In the present study, interdiscursivity was indicated by the presence of discourses from different subject matters. These included technology, policy documents, managerial discourse and economics discourse all blended to construct the reports. The amalgamation of these genres and discourses aided in the construction of a positive outlook in the eyes of the shareholders. This was evident as exemplified in the excerpt below.

Net Zero 2050 Ambitious scenario aims to limiting global warming to 1.5 degrees Celsius. Below 2 degrees Gradually increasing stringency of climate policies and provides a 67% chance of limiting global warming. Determined Contributions (NDCs) Assumes the successful implementation of all countries' NDCs as outlined in the Paris Agreement. BAN 3. At Kenya goals • 50% reduction in Scope 1 & 2 CO₂e emissions by 2030 (vs 2020 baseline) • 50% reduction in Scope 3 emissions by 2030 (vs 2020 baseline) • Carbon neutral operations by 2030 comprising Scope 1 & 2 CO₂e equivalent emissions MANU 3

In excerpt 26, the text combined managerial, policy and scientific discourse to articulate the more sustainable future projected. The corporation indicated that it was aligning its operations with specific climate policies, whereas *Net zero* and the temperature parameters were borrowed from climate science discourse. In excerpt 27, the producer of the discourse blended scientific discourse to indicate the future trajectory of the corporation. The terms *scope* 1 and 2, 3,

carbon neutral originated from climate science whereas *baseline* is related to economics discourse. This congruence of diverse discourses affected comprehension by the target audience. The interdiscursivity may have compounded comprehension for the lay reader in addition to normalizing optimism. In fact Algam & Jameel (2025) argued that interdiscursivity fails the objectivity test and acts as an ideological element that legitimizes specific dominant discourse.

From the analysis of the discourse practice, it was apparent that techno-optimism constructs and disseminates narratives of technological innovation as a solution to the prevailing ecological crises. This encourages shareholders to have confidence and fosters a positive outlook. However, this has been noted to discourage non-technological solutions in addition to hindering structural changes needed for ecological protection.

4.5.4 Socio-cultural Integration of Technological Optimism

At the explanation level, the techno-optimism ideology was evident due to legitimization of the place of technology over all other alternative mechanisms of tackling environmental challenges. The discourse epitomizes and frames innovations in technology as the future for sustainable-minded corporations and their shareholders. Moreover, this ideology perpetuated the dominance of the corporations over the shareholder through complex language that blends various genres. Ideological interdiscursivity implies that the ideology favors the corporation at the expense of the pro-environmental citizen. Further to this, the future oriented nature of the ideology builds hope among ordinary citizens whereas the hope discourse is meant to shield corporations from accountability. The future projections articulated through optimistic language have been shown to ease the ecological responsibility burden of the corporations since they are vague in their allocation of responsibilities. To sum up, the techno-optimism ideology may obscure structural changes needed at the social, cultural and economic levels due to the portrayal of technology as the ultimate solution. In agreement Bergeå et al. (2025) stated, that the optimism projected by such an ideology needs to appreciate the roles of accountability and responsibility in achieving the projected goals.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

The study extended ecolinguistic enquiry into the corporate space, by examining how technological advancements were presented as a solution in ESG reporting. Textually, the discourse contained optimistic tone, modals plus temporal expressions, quantification of technology and future oriented expressions. The optimistic tone and future oriented expressions were used to depict a better future where technology provided solutions for all ecological hurdles revealed hope-discourse construction. This was further reinforced by modals and temporal expressions which provided a timeline for achievement of technological ‘miracles’ that would eliminate environmental degradation. At the discourse practice level, the discourse was constructed through interdiscursivity, circulated as a message of hope and interpreted where technology was the ultimate solution. Interdiscursivity aided to reinforce technology as a solution whereas the hope discourse showed technology as the only hope for a sustainable future. At the social practice level, techno-optimism was realized as an ideology where technology and human innovation was shown as one of the dominant discourses in relation to sustainability. The ideology facilitated the deferment of corporate responsibility coupled with marginalization of systemic change for ecological success. The findings therefore affirmed the connection between language and the physical environment, validating the instrumental significance of language in promoting sustainability.

5.2 Recommendations

The study recommends the re-evaluation of the language of environmental communication in the corporate and other contexts. NSE listed corporations as authors of ESG reports should audit the ecological impact of their communications to shareholders perceptions and other readers’ interpretations. Additionally, environmental communication policy implementers including regulators should be keen to ensure a balance between techno optimistic messaging and the actual impact of proposed technological solutions. Further studies could extend the corpus size or investigate specific economic sectors.

Declaration of Interest

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