

Sustainability Strategic Framing in Corporate Communication: Contextual Semantics of Twitter in the Energy Sector

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Abstract

Sustainability has become the prevailing paradigm, a model of conduct, and a central theme in social and media discourses within the past decade. However, it is still a marginal development concept in the interdisciplinary research field dealing with sustainability communication, especially with meaning-making processes in relevant communicative, for example, in corporate and industry contexts. This paper focuses on how the idea of sustainability is framed, anchored, and disseminated in energy companies' communication via social media channels and how the linguistic methods used by energy corporations concerning sustainability co-create their symbolic value. Specifically, this study has aimed to understand how the sustainability topic was discussed in the Twitter sphere of the most prominent energy companies in 2020. This study makes a three-fold contribution to sustainable research and practice. First, the study identifies the framing structure of sustainability content in social media communication in the energy sector. Secondly, the study identifies social media data as a viable source of sustainability conceptualization and its understanding through communication. Finally, this study illustrates how text mining and natural language processing (NLP) can be used as a research method for managing big text data and a tool for discovering latent communication structures. Sustainability is present and visible in the communication of the energy industry identified by (1) the semantic construction of phrases in communication that show a future, green, and clean orientation, but it is also strongly declarative, referring to what will be and can be done, and with positive emotions related to the communicated messages; and (2) decoupling from climate change and thus avoiding the industry's responsibility for the impact of global warming but promising clean, sustainable energy transformation and to avoid negative emotional connotation. However, one gets the impression that it takes on the character of a rhetorical art form related to the concept of decorum. In this view, the idea of sustainability is interpreted and shaped through the needs of the industry and as a rhetorical tool in building a positive narrative about companies and is used to gain legitimacy.

Keywords

Sustainable Communication, Corporate Communication, Sustainability, Energy Sector, Social Media.

1. Introduction

Sustainability is becoming the prevailing paradigm, a model of conduct resulting in corporations and industries taking on a much greater dimension of responsibility not only in the economic dimension but also in the social, environmental, governance, and cultural dimensions (Rasche *et al.*, 2016; Rasche; Morsing; Moon, 2017; Weder; Einwiller; Eberwein, 2019). Sustainability as a field of interdisciplinary inquiry provides a broad cross-section of studies related to, among



many, sustainable communication (**Christensen; Morsing; Thyssen, 2017; Weder; Dobrić, 2021; Weder; Rademacher; Schmidpeter, 2023; Fischer et al., 2021**). Furthermore, in recent years, we could have observed increased legal action on the mandatory obligation to report sustainability information (**European Council, 2014; 2022**) that creates institutional pressures and standards for sustainability communication. However, a communication perspective to analyze sustainability is crucial as the narrative drive is at the core of the idea (**Herrick; Pratt, 2013**), and the perception of sustainability concept as being “the most recent communicative framework” (**Adom̂ent et al., 2014**), narrative which stimulates new discourses and paradigms. Sustainability communication shapes our perception and can drive change (**Weder, 2017**). Linguistic imagination often complements symbolic means, such as narratives, numbers, and visuals, and creates our future perceptions of reality and possibility (**Hajer; Versteeg, 2019**) so we can observe the rise of communicative, linguistic and semantic studies focused on how language is used to manipulate and influence opinion especially in a context of uncertainty (**Costa-Sánchez, 2020; Sampio; Carratalá, 2022**). Business organizations are an integral part of communicative context creation. Therefore, they respond and co-create the narrative around sustainability. New digital communication channels have also opened a new path to imaginative and modern communication forms and fulfill functions of information management, relationship and identity management, and participation management (**Schmidt, 2018**). The impact of the narrative, which has always played a significant role, may now have an even greater impact due to the opinion-forming capabilities of modern information technology and social media (**Couldry, 2010**). Social media platforms have messages, conversations, and ideas about numerous subjects that create research opportunities for social measurement (**Schober et al., 2016**).

Corporate and industry contexts are among the leading forces that stimulate and shape the discourse and narratives around sustainability, complementing it with imagery imaginations. Corporate messages can change the way ideas are conceptualized and influence cognitive processes. Suitably shaped, let us feel emotions; thus, they will influence our normative behavior. Therefore, studies focusing on corporate sustainability from a company communication perspective are crucial for fully understanding and conceptualizing sustainability theory and its communication. Despite growing research on communication in a context related to sustainability, the dominant positions are marketing-oriented (**Kong; Witmaier; Ko, 2021; Finkler; Aitken, 2021**), especially when Social Media and sustainability communication are analyzed, the focus is on the role of message appeal and message source (**Kapoor; Balaji; Jiang, 2021**). A few publications are devoted to conceptualizing sustainable communication (**Godemann; Michelsen, 2011; Weder; Krainer; Karmasin, 2021**), and there is not enough attention addressed to the corporate context of sustainability discourse, its interrelation with politics and how corporate sustainability communication constructs and enables social representations and practices.

This paper focuses on how the idea of sustainability is framed, anchored, and disseminated in energy companies' communication via social media channels and how it affects the general discourse about sustainability. Specifically, this study has aimed to understand how the sustainability topic is discussed in the Twitter-sphere of the most prominent energy companies based on their communication on Twitter. This study makes a three-fold contribution to sustainable communication research and practice. First, the study identifies the framing structure of sustainability content in social media communication in the energy sector. Second, the study identifies social media data as a viable source of sustainability conceptualization and its understanding through communication. Finally, this study illustrates how text mining and natural language processing (NLP) can be used as a research method for managing big text data and a tool for discovering latent communication structures.

2. Literature Review

Sustainability has been one of the central themes in the social and media discourses within the past decade. Sustainability communication can be perceived as “all communication about specific issues (social, environmental, cultural, and economic issues), which thematizes, problematizes, discusses, and negotiates the principle of sustainability (**Weder, 2022**)”. Communication is about information, knowledge, problems, and expert solutions to solve problems, maintain relationships, and create a social situation. On the other side, as **Weder et al. (2023)** point out, sustainability is “currently one of the most challenging terms and labels used and abused in various public communication efforts” and often labeled as a futile word (**De Burgh-Woodman; King, 2013**) or “wicked problem” (**Herrick; Pratt, 2013**) in a multidimensional societal discourse. It is essential to notice that while the discourse and narratives around human-environment relations are carried out, there is little analysis of sustainable communication and even “fewer dealing with meaning-making processes in relevant communicative contexts and specific countries or cultural settings.”

Additionally, communication creates ideological framings by taking the experiences and activities of subjects and reframing them in an intuitively appealing way that maintains existing power relations (**Eagleton, 2007**) through coercion and consent frames in communication can affect frames in thought (**Scheufele, 1999**). It is a form of manipulation of collective belief systems to instill a common-sense worldview that is perceived beneficial for all despite not being so. However, as **Jaques; Islar, and Lord (2019)** notice, those common-sense worldviews constantly fluctuate and must be habitually reconstructed and reinforced by the hegemonic apparatuses within civil society and the state. How the information is formed and framed in an organized and publicly shaped discourse is significant. Theoretical concepts focus on *agenda setting* (**McCombs; Shaw, 1972; Weder; Dobrić, 2021**) and *framing* research paradigms within the

field of media studies (**Schlichting**, 2013; **De Vreese**, 2005; **Muñiz**, 2020; **Hoppe**; **Kleinen-von Königslöw**, 2023). Besides, digital technologies allow the production of curated and framed messages, ideas, and identities. However, insufficient studies deal with sustainability communication, especially meaning-making processes in relevant communicative corporate and industry contexts through strategic communication.

The language used by companies through their corporate communications can be considered constitutive and reproductive (**Ferguson**; **Sales de Aguiar**; **Fearfull**, 2016). **Entman** (1993) defined framing as "select[ing] some aspects of a reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation." Besides, organizational communication frequently occurs in the aftermath of complex sensemaking processes involving organizational members and can be approached as the reflexive micro-process of meaning construction (**Apostol et al.**, 2021). Vocabulary selection matters and reflects the logic of action and thought patterns as discourse performs essential persuasive functions in the communication processes of a modern organization and also serves to achieve specific organizational goals. **Pilger** (1998) points out that modern communication often represents a discursive seduction used strategically to reassure the public and stakeholders that ecological and sustainable issues like climate change are the subject of discussion, study, and industry activities. **Jacobson et al.** (2019) showed that positively framed sustainability messages are more persuasive as they generate more robust public support for environmental conservation. **Parsons and Moffat** (2014) point out that corporate sustainability communication has a strategic and legitimizing orientation.

In recent years, we have observed an increased interest in analyzing the communication narrative in the energy industry. Companies representing the energy industry play an important role because their strategic decisions regarding capital investments in high-emission fuels and technologies influence the pace of decarbonization and implementation of sustainable development. It is also a mirror image of global and national societies in terms of the energy-intensive and consumption-based lifestyle of the modern individual, especially in developed countries. The energy sector is also closely related to the institutional environment. As a result, strong interdependencies exist between the energy industry and natural resources, politics, and the economy. The energy sector influences the climate change debate by creating doubt-based disinformation campaigns regarding the presented scientific positions and undermining the credibility of scientists (**Supran**; **Oreskes**, 2017; 2020; 2021). The way the energy industry constructs communication about sustainability impacts overall discourse. It is noticeable that the industry's preference for the term "climate change" over "global warming" (**Jaworska**, 2018) is due to the greater neutrality of the word (**Schuldt**; **Konrath**; **Schwarz**, 2011) and less pressure implication (**Whitmarsh**, 2008).

Additionally, the most prevalent energy companies' disclosures are discursively constructed of climate change as a risk (**Dahl**; **Fløttum**, 2019). Moreover, the energy sector prefers emphasizing shared responsibility and a *win-win* scenario (**Jaworska**, 2018), omitting to eliminate agency and industry responsibility (**Supran**; **Oreskes**, 2021). The companies representing the energy sector present themselves as leaders and innovators in counteracting ecological challenges (**Livesey**, 2002a), even as a "nature protector" by grabbing the language of environmental movements (**Livesey**, 2002b). On top of that, the energy sector distorts itself from current problems and sources (**Alexander**, 2010). Instead, it emphasizes future orientation and the social dimension of sustainable development (**Jaworska**; **Nanda**, 2018). The repeated focus on future goals is based on the message that we are all responsible for tackling climate change. These activities co-created and disseminated ideological viewpoints favorable to energy industry interests (**Farrell**, 2016b), leading to cultural and political polarization **Farrell** (2016a). Moreover, they drew attention to the nature of the relationship between the world of politics, which has become a barrier to approving adequate legislative measures (**Farrell**; **McConnell**; **Brulle**, 2019). Therefore, research on "sustainability" in the strategic communication of companies representing the energy sector is essential to conceptualize sustainable communication fully.

3. Methodology of the Research

The study focuses on the 50 most prominent energy companies, the most important enterprises in the industry, and their international Twitter accounts in 2020. As a platform, Twitter creates a digital space where users can share short messages and multimedia (**Schmidt**, 2014). Research indicates that users are more likely to follow because of the topics of interest and use this platform as a source of information and for opinions rather than keeping an eye on family and friends (**Kwak et al.**, 2010). The energy sector was examined (based on Platts Top 250) and subjected to statistical text mining. S&P Global Platts Top 250 Global Energy Company Rankings ranks listed companies based on asset value, income, profits, and return on capital invested. Above-average results characterize each company listed in the Platts Top 250 ranking. The companies represent the geographic cross-section; four were also ranked in Corporate Knights Global 100, ranking the world's 100 most sustainable corporations (*Vestas et al. A/S, Canadian Solar Inc, Veolia Environnement SA, Orsted A/S*). Table 1 lists the names of all companies and their Twitter accounts.

The study focused on tweets mentioned in Table 1, energy companies that were published in 2020. In that year, the surveyed companies published 42 217 tweets. There were five languages for publishing accounts: English, Spanish, French, Portuguese, and Polish. However, English was dominant as the accounts were selected based on the international recipient

audience. Therefore, statistical text mining was performed on published tweets in English. Of the 42217 tweets, 24949 were classified as retweeted sentences. The other 17268 tweets were used as non-retweeted sentences. Text mining allows us to analyze the connections between words that make recognition possible in the context of the created communication and its narrative character. It is based on examining unstructured text data and data extraction and post-processing to gather information on patterns and topics of interest. We use UDpipe R package that is used for statistical calculations and the creation of graphs. The R software has a rich set of packages for natural language processing (NLP) and the generation of plotting plots incl. word frequency, word cloud, word associations, results, moods, and classification of emotions. First, we used the R package "UDPipe" to analyze post tagging, lemmatization, and co-occurrences. In the udpipe package, we can identify keywords in a text by following three methods: RAKE (Rapid Automatic Keyword Extraction; Rose, Engel, Cramer, Cowley, 2010), Collocation ordering using Pointwise Mutual Information (PMI, Church, Hanks, 1990), and Parts of Speech phrase sequence detection. Therefore, we used these three methods to identify keywords in text. Then, we look for co- occurrences of nouns/adjectives used in the same sentence and N-grams to form the descriptions' most common word pairs (bi-grams). After that, we count sentiment in the captions to reveal whether posters talk positively or negatively about tweets. Then, we perform the analysis using the Bing and NRC lexicon. Finally, to investigate both the comprehensive tweeting behavior and the original tweeting content, we analyzed the data, including retweets and excluding them, and compared both non-retweeted and retweeted data.

Table 1: The Surveyed Companies' Names and their Twitter Accounts.

International	Name on Twitter @	International	Name on Twitter @
Marathon Petroleum	MarathonPetro	Valero Energy	ValeroEnergy
Enterprise Product Partners	EProd_Careers	SINOPEC	SinopecNews
OJSC Rosneft Oil&Co	RosneftEN	NESTE	nestecorp
Tokyo Electronic Power Co	TEPCO_English	GAZPROM	GazpromEN
OJSC Lukoil Oil Co	lukoilengl	Ovintiv/Encana	ovintiv
RWE AG	RWE_Group	Suncor	suncorenergy
Electricite de France	EDFOfficiel	Shneider Electric	SchneiderElec
Petrobras (Petróleo Brasileiro SA)	petrobrasglobal	Iberdrola	iberdrola
Coal India Ltd	CoalIndiaHQ	Agnico Eagle Mines Ltd	agnicoeagle
Tenaga Nasional Berhad	Tenaga_Nasional	BP	BP_plc
PG&E Corp	PGE4Me	Oil & Natural Gas Corporation	ONGC
ENGIE SA	ENGIEgroup	Ecopetrol	ECOPETROL_SA
Canadian Natural Resources Ltd	CNRLCareers	TOTAL S.A.	Total
National Grid plc	nationalgriduk	Equinor ASA	Equinor
American Electric Power Co, Inc	AEPnews	Next Era Energy	NextEraEnergyR
Enbridge	Enbridge	Enel	EnelGroup
Indian Oil Corporation	IndianOilcl	ENI	eni
Cenovus Energy	cenovus	EDP - Energias de Portugal S.A. Portugal	energiapt
E.ON	EON_SE_en	Vestas Wind Systems A/S	Vestas
Saudi Aramco	Aramco	Canadian Solar Inc	Canadian_Solar
Exxon Mobile	exxonmobil	Veolia Environnement SA	Veolia
Chevron	Chevron	Orsted A/S	Orsted
Royal Dutch Shell	Shell	PKN ORLEN	PKN_ORLEN
Phillips 66	Phillips66Co	LOTOS	GrupaLOTOS
ConocoPhillips	conocophillips	MOL Hungarian Oil & Gas Co	MOL_Group

4. Results

In presenting the results and describing the communication of the largest energy companies on Twitter, we will analyze the most common words in the published tweets. Table 2 shows the top 20 occurring nouns, verbs, and adjectives. Verbs such as help, thank, read, learn, work, keep, reduce, support, continue are frequently used, indicating that they are best suited for recognizing parts of speech in different linguistic contexts within tweets about sustainability. We can assume and interpret the framing as a form of "work in progress" but also with a need for support.

When moving to analyze the most frequently used nouns, we can notice that # (hashtag), text, and energy are the most used, followed by & amp, emission, world, communities, future, gas, carbon, CEO, innovation, customers, environment, power, project, sustainability, year, oil, and people. We can see that Twitter's communication is focused on energy, the challenges of the industry and its characterizations, and the nature of its future. Its framework points to the industry's general environmental challenges: emissions, world, communities, future, gas, carbon, environment, power, sustainability, and oil. All three dimensions of sustainability: economic (energy, power, gas, oil, CEO, innovation, customers, project, oil), social (communities, people), and ecological (emissions, environment) are present. However, the financial and material dimensions of the economic part are not recognizable. It is worth noting that the noun climate does not rank among the top 20 nouns or transformation or verb/noun change. It suggests that message framing might want to avoid climate and climate change.

Table 2 also shows the top 20 occurring adjectives. It indicates that these adjectives are frequently used in tweets. The most used is the R.T., more, new, and sustainable. Furthermore, the words global, social, renewable, and safe are also popular. That indicates the orientation towards progressive ideas framing a better, more social, and environmentally friendly future, in which the sustainable perspective with renewable, clean, green energy seems to dominate. We can reveal the tweeting nature by checking the usage of verbs. Once again, we can notice all three sustainability dimensions with the frequency of adjectives. Besides, sustainability is one of the most frequently used nouns and adjectives. Based

on this, we can conclude that on Twitter, communication sustainability is highly represented, which suggests that all business activities of studied companies are conducted considering the environmental and social dimensions.

Table 2: The most Occurring Verbs, Nouns, and Adjectives.

Most occurring – Top 20								
Verbs			Nouns			Adjectives		
key	freq	freq_pct	key	freq	freq_pct	key	freq	freq_pct
help	2576	1,60	#	54865	12.3	RT	7615	6.9
're	2117	1,32	TEXT	13177	3.0	more	4225	3.8
Thank	1744	1,08	energy	12482	2.8	new	3391	3.1
Read	1581	0,98	&	6429	1.4	sustainable	3088	2.8
Learn	1410	0,88	emissions	3585	0.8	global	1737	1.6
have	1376	0,86	world	2834	0.6	social	1470	1.3
working	1376	0,86	communities	2531	0.6	renewable	1171	1.1
reduce	1307	0,81	future	2359	0.5	safe	1155	1.0
Find	1172	0,73	gas	2084	0.5	first	995	0.9
need	1101	0,68	carbon	1849	0.4	proud	905	0.8
make	1091	0,68	CEO	1834	0.4	local	902	0.8
support	1073	0,67	innovation	1830	0.4	environmental	889	0.8
know	1046	0,65	customers	1822	0.4	clean	876	0.8
keep	997	0,62	environment	1790	0.4	important	790	0.7
do	997	0,62	power	1765	0.4	green	743	0.7
work	955	0,59	project	1695	0.4	low	718	0.6
ensure	948	0,59	sustainability	1600	0.4	digital	687	0.6
continue	905	0,56	year	1538	0.3	other	673	0.6
pour	873	0,54	oil	1489	0.3	key	671	0.6
learn	856	0,53	people	1443	0.3	better	638	0.6

Next, the analysis focused on simple verb phrases that illustrate Figure 1. It shows the top 20 keywords of simple verb phrases that facilitate contextualizing the messages published in the tweets. The most popular simple word phrases are: we are, thank you, we're, we have, this is, we will, we can, you can, it's, is#, we aim, we aim to, we need to.

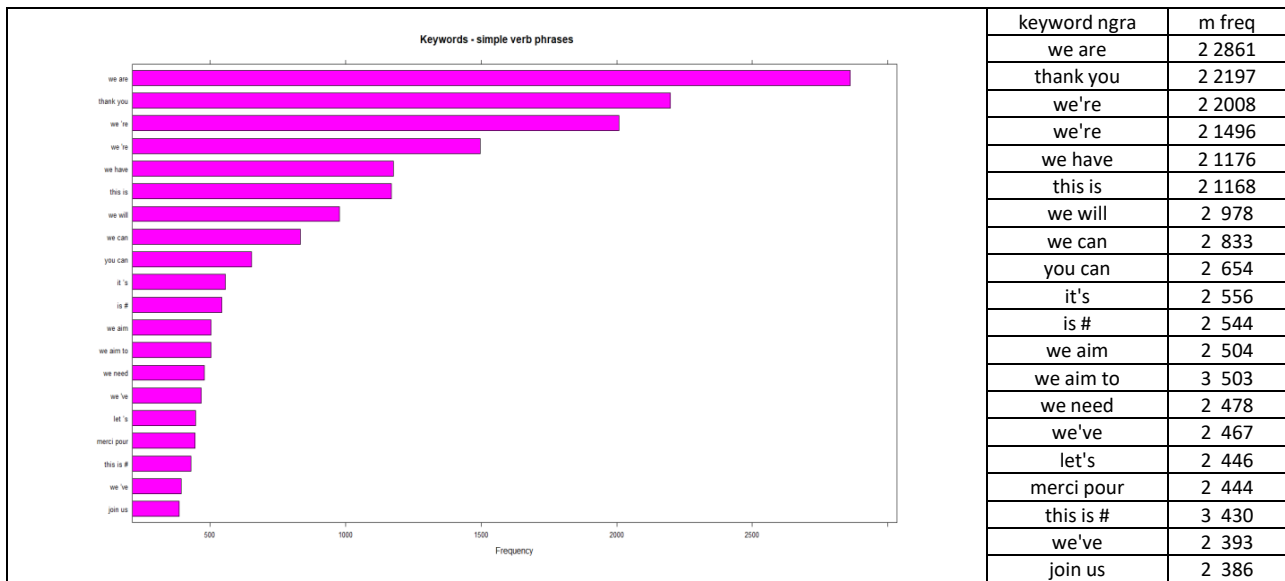


Figure 1: Most Occurring Verbs and Keywords Verb Phrases.

Both verbs and verb phrases reflect a development, learning, and transition process. Based on the word selection, this process is collaborative and mutual. We all have to engage in it. It is noticeable that verb phrases outline the necessity of future joint action by using almost always we form, supported by we can, and join us. They focus on the present and future time: we will, we aim, we aim to, and also point out the necessity of the action: we need. It instead shows declarative and aspirational framing of communication and sustainable engagement. The phrases with achievement due to past activity (for example, we did) are not significantly recognized. Also, the messages have a motivational character. They encourage recipes to act: we can, you can. When we compare it with the most common words like help, learn, reduce, and support. They focus on collective, the joint action of global society, then specify company or industry engagement.

The next step was analyzing a network of connections between words, which can be represented as ngrams, such as bigrams representing pairs of words. The most commonly used word pairs (bigrams) in a description can be expressed in a heat map or network; an example is presented in Figure 2. The arrows in the grid indicate the words that appear

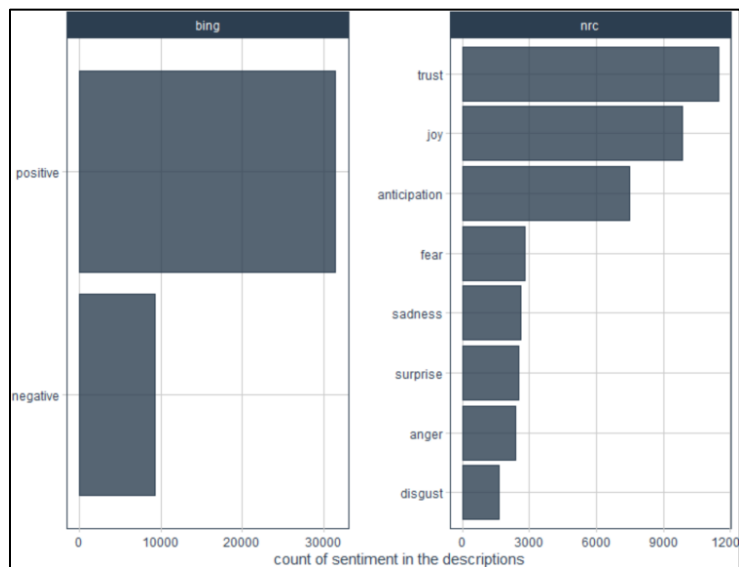


Figure 4: Count of Sentiment in the Descriptions of English Posts/Tweets.

Further analysis of the sentiment of non-retweeted tweets with retweeted ones shows the same general tendency. The positive sentiment of non-retweeted and retweeted posts dominates over the negative one. The communication is rather affirmative, confirmative, and supporting.

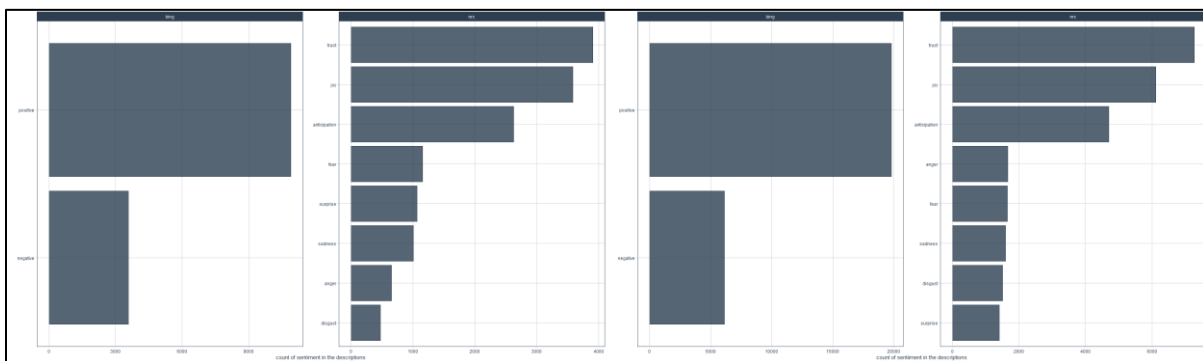


Figure 5: Count of Sentiment in the Descriptions in Non-retweeted Posts (Left) and Retweeted Posts (Right).

However, one exciting but delicately outlined issue appears in interpreting posts retweeted with negative sentiment (Figure 5). Stronger emotions, such as anger, dominate over fear and sadness. Anger and disgust are the least represented sentiments in non-retweeted tweets and general communication. However, anger is the most expressed negative sentiment in retweets that actively engage an audience. It can suggest that messages published by the energy sector are confronted and not always positively received. It can also reflect the defensive approach energy companies can present in their communication.

The above phrases are also reflected in the cloud of sentiments presented in Figure 6. While the positive tone is based on similar words, there are differences in tweeted and retweeted data. The communication framing focuses on affirmative: proud, safe, clean, happy, innovation, improve, award, excited, support, and reliable. It relates to the industry's self-image as a leader and innovator in contracting ecological challenges. Negative sentiments focus on emergency limitations and difficulty. However, an emergency is dominant in all English language tweets, among them the non-retweeted. The different structure of negative sentiments in a retweeted post is reflected in World Cloud and its word construction in contrast to a similar positive one. An emergency is not a dominant word. Instead, we can see negatively connoted words like harmful, limited, and waste. That means retweeted posts evoke a grander scale of positive and negative emotions. However, it should be noted that recipients may contest some of the information published on social media, negatively receive it, and criticize it. Furthermore, this is the case with energy companies, whose part of the published posts is received and commented on negatively. However, this is valuable information for researchers of discourse and narrative, as well as for enterprises that treat organizational communication, including communication in social media, as an integral part of their strategy.

World Clouds with sentiments also show the duality of messaging in Twitter communication. From one perspective, the message is positive and talks about pride, safety, clean energy, innovation, and progress. Other is in a constant state of emergency, harm, crisis, limitation, and waste.

corporations' linguistic strategies concerning sustainability must indicate their symbolic value in the relationship between language and other social processes. Sustainability is present and visible in the communication of the energy industry, as is the environmental dimension; however, one gets the impression that it takes on the rhetorical form of decorum. That rhetoric includes not only entirely crafted individual texts but a general identification system whose persuasive power derives from trivial repetition and boring daily reinforcement rather than exceptional rhetorical skills (Burke, 1969). So, decorum works on two different levels. It is related to the act of communication, its aesthetic form or rhetorical technique, driven by the relativistic impulse to please a particular audience in a particular situation, such as and with behavior, an "act of action" at a specific time to achieve specific political goals. The study shows it by (1) the semantic construction of phrases in communication that show a future, green, and clean orientation, but it is also strongly declarative, referring to what will be and can be done, and with positive emotions related to the communicated messages; and (2) decoupling from climate change and thus avoiding the industry's responsibility for the impact of global warming but promising clean, sustainable energy transformation.

Sustainability is vicariously seen as the master frame of the future, initiating new and modifying old narratives, discussions, and actions, so further complex and more detailed analysis should be conducted, as we can only fully understand sustainable communication through studying various elements that contribute to it. Therefore, further research should be conducted on these areas that should allow a greater focus on the discrepancy between organizational communication and its reception. Such a study would benefit all entities because it may identify areas that indicate a distinction and thus should be improved. Additionally, with new legislation (European Council, 2022), further sustainable communication studies could allow us to recognize how legislative pressures reflect in the semantic construction of organizational communication and track its impact on sense-making and narrative structure. From the point of view of practice, it is worthwhile to use the above analysis as a reference point for a communication strategy.

The present study is not without its limitations, of which the most significant is that the analysis focused on one industry and should expand into other sectors. While social media tends to grow toward expanding scope, at this stage, any research poses us with identifying semantic anchors and logic structure, but not detailed content analysis. It is worth noting that the study of short messages should be supported by a more detailed qualitative analysis extended by other communication channels. The research should also include nonverbal, imaged, and symbolic forms of communication and their emotional dimension as post-written and visual messages are beginning to dominate today.

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