

# Climate Change Communication Among European and American Politicians from 2015 to 2020 on X

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## Abstract

Climate change is a multifaceted issue that encompasses environmental, social, cultural, and political dimensions. Greater involvement and awareness have been fostered among online community members thanks to the rise of the internet and the use of social media networks. Among these, X (formerly known as Twitter) stands out as a catalyst for creating shared knowledge, connectedness, and concern among its members, contributing to a greater sense of responsibility. Much attention has been paid to the influence of X on politicians, who use it as a vital political tool to engage with the public, set agendas, and signal policy intentions.

This paper delves into an analysis of climate change communication on X by 36 politicians from the EU and the U.S. It seeks to determine whether there is a correlation between language use and geographical location based on the assumption that the European Union has had a more stable and coherent concern about climate change over time, compared to the United States (Wendler, 2022). By means of corpus linguistics and discourse analysis, based on a modern-diachronic approach, multiword expressions extracted from an *ad hoc* corpus of 163 753 tweets are examined to identify their lexical saliency (Baker, 2006).

Despite limitations, this paper is an attempt to shed light on the communicative strategies employed by politicians in addressing climate issues and highlights the need for further investigation into climate change communication on a global scale.

**Keywords:** climate change communication, X, Twitter, discourse analysis, corpus linguistics, politicians

## 1. Introduction

Most research on climate change communication has primarily focused on media portrayal. However, with the advent of the internet and the surge in social media usage, people are now provided with the tools to actively participate in the climate change debate. The interconnectedness fostered by social media platforms and the increase in dialogue not only raise awareness but also foster a sense of responsibility within social networks, thereby encouraging greater engagement and involvement among individuals (Geiger & Swim, 2016). Indeed, considerable attention has been directed to global climate strikes and protests stemming from the extensive engagement and interconnectedness facilitated by social networks on a global scale (Boulianne, Lalancette, & Ilkiw, 2020; Pickard, 2021). Moreover, some scholars have emphasized the tendency of news media to focus on the nexus between politics, climate change, and their impacts on the economy and businesses (Chen et al., 2022; Chinn, Hart, & Soroka, 2020). By contrast, common social media platforms are able to enhance users' connectedness while conveying emotions and perceptions regarding climate change. Specifically, among the many platforms, X exemplifies the reinforcement of a metaphorical "social glue" through its distinctive features, such as hashtags and mentions (Klein, 2000). These characteristics symbolize a shared knowledge, connectedness, and sense of responsibility and concern among members of the online community (Bennett & Segerberg, 2012).

## 2. X and the Climate Change Portrayal by Politicians

Currently, social networking-based communication channels generate vast amounts of data daily, covering a wide array of topics. X is notably one of the most popular platforms for academic research due to its numerous application programming interfaces (APIs) that facilitate data retrieval. In addition, the proliferation of sophisticated data analysis tools and statistical applications tailored to this platform further support the exploration of social media data. In particular, Twitter, an American microblogging and social networking service renamed X

in 2023, allows users to post and engage with messages called “tweets”. Launched in 2006, the platform initially constrained tweets to 140 characters, but this limit was expanded to 280 characters in November 2017. The posts provide information about the content generated by users, news and information from other sources, conversations held on specific topics, and network relationships. Furthermore, X serves as a platform where scientific topics, including discussions on climate change, are accessed and debated online (Anderson & Huntington, 2017).

Thanks to its characteristic brevity, i.e., concise phrases and brief comments, images, and video links, X can be considered a public, straightforward, interactive, networked, and evocative mode of communication. It has evolved into an essential political instrument, serving as the favored platform for politicians to interact with the public (Carrasco-Polaino, Mera Fernández, & Parratt Fernández, 2018). Moreover, according to a 2018 BCW (Burson Cohn and Wolfe, a multinational public relations and communications firm) Twiplomacy study, 951 Twitter accounts were held by heads of state, government officials, and foreign ministers from 187 countries. Among these, 372 were personal accounts and 579 official accounts, collectively representing 97 percent of all UN member states with a combined audience of 485 million followers. In fact, politicians wield significant influence on social media platforms by acting as agenda setters. By raising specific topics, they not only attract the attention of news media but also signal the importance of certain issues for public consideration. This agenda-setting function is further magnified by journalists who frequently refer to politicians’ posts for content. Additionally, politicians often use X in particular in the form of concise press releases that outline their policy intentions (Golbeck, Grimes, & Rogers, 2010). Consequently, the issues highlighted by politicians in their posts can exert a considerable influence on public perception and discourse, and their posts serve as a crucial predictor of governmental action (Stoutenborough, Bromley-Trujillo, & Vedlitz, 2014).

From an ecolinguistic perspective, when focusing on the communicative function of a tweet, the attention should be drawn to how tweeters use the language on a daily basis to talk about “ecological and environmental matters and the role of speaking and writing in the active engagement of people in conversations about such matters” (Harré, Brockmeier, & Mühlhäusler, 1999, p. 3).

Most scholars have analyzed climate-related tweets based on the retrieval of messages containing specific keywords such as “climate change” and “global warming” (Jang & Hart, 2015; Veltri & Atanasova, 2015; Yu et al., 2021; Ghoraba, 2023) or hashtags (Kirilenko & Stepchenkova, 2014), with reference to specific main events (Pearce, Niederer, Özkula, & Sánchez Querubín, 2014, Kirilenko, Molodtsova, & Stepchenkova, 2015). The number and content of tweets posted by climate activists, influencers and social movements foster climate change awareness and have been extensively analyzed. As highlighted by Fownes, Yu and Margolin (2018), research concerning politicians’ use of X mainly contrasts it with grassroots movements seeking to influence politics. Thus, little attention has been paid to how politicians address themes raised by activists and influencers on climate issues. It is worth analyzing how specific users, namely politicians, use language “to make politics, to create signs and symbols that shift power balances, to render events harmless or, on the contrary, to create political conflict” (Hajer & Versteeg, 2005, p. 179) in relation to climate change. Although it may be considered that politicians adopt a vague style since they are “aware that they are playing a language game” (Baker, 2006, p. 122).

### **3. Case Study: Climate Change Communication Among Politicians**

Generally speaking, the climate debate on X has increased since the adoption of the Paris Agreement in 2015, which was the first universal agreement to address the issue and set out a framework for countries to work together to reduce greenhouse gas emissions and adapt to the impacts of climate change. For instance, the European Union has committed to reducing its greenhouse gas emissions by at least 55% by 2030, whereas the United States has had a complex relationship with the Paris Agreement. As pointed out by Wendler (2022, p. 9), the European policy may be defined as “stable and progressive” compared to the “fragmented and contested” one in the U.S. A possible way to analyze whether there are any differences in terms of language use among politicians from the United States and the European Union in relation to climate change is through corpus linguistics techniques and discourse analysis.

This study asks:

RQ: Are there any differences in terms of language use among politicians from the United States and the European Union in relation to climate change?

#### *3.1 Methodology*

This study illustrates, through a series of examples, how U.S. and European politicians act and engage directly with their audience through language, and identifies the types of interests they defend, as well as who they assign blame to. It also determines whether there is a relationship between language use and geographical location. A

method likely to verify this assumption is based on the analysis of typical words extracted from a specialized corpus, that identify the lexical saliency (Baker, 2006). The analysis of the most salient lexical phrases aims to reveal the meanings conveyed about a complex issue such as climate change and to define how it is represented. To do so, the salient lexical phrases in a specialized corpus were identified through the *keywords* tool in the software Sketch Engine, which detects keywords and multi-word terms and calculates them through a simple mathematical method that allows a focus on either higher or lower frequency words (Kilgarriff, 2009). In particular, the multi-word terms were extracted from a specialized climate-related corpus, consisting of 163 753 tweets from American, European, and international users of predefined groups, including activists, social movements, NGOs, news sites, politicians, and organizations.

Table 1. European and U.S politicians and total number of tweets

EU		US	
Adina Valean	96	Al Gore	819
Catharina Sikow Magny	488	Alexandria Ocasio-Cortez	464
Charles Michel	168	Barack Obama	380
David Sassoli	71	Bernie Sanders	925
Ditte Juul Jorgensen	28	Deb Haaland	455
Frans Timmermans	430	Donald Trump	408
Jean Lambert	299	Ed Markey	2154
Kadri Simson	343	Andrew Wheeler	311
Mairead McGuinness	278	Gina McCarthy	659
Margaritis Schinas	68	Hillary Clinton	270
Mariya Gabriel	321	Jennifer Granholm	318
Stella Kyriakides	96	Joe Biden	290
Ursula von der Leyen	154	John Kerry	256
Valdis Dombrovskis	477	Michael S. Regan	796
Virginijus Sinkevičius	416	Mike Pence	85
Antonio Guterres	643	Nancy Pelosi	200
Andreea Strachinescu	1066	Rep. Frank Pallone	1459
Miguel Arias Cañete	644	Scott Pruitt	197
<b>Total</b>	<b>6086</b>	<b>Total</b>	<b>10446</b>

The corpus included the tweets of 36 politicians, as illustrated in Table 1. Following non-random sampling methods chosen to ensure representation of key perspectives on climate policy (Patton, 1990; Miles & Huberman, 1994; Onwuegbuzie & Leech, 2007), users were selected based on their governmental roles or specific climate change duties. As noted by Onwuegbuzie and Collins (2007, p. 287), “if the goal is not to generalize to a population but to obtain insights into a phenomenon, individuals, or events [...], then the researcher purposefully selects individuals, groups, and settings for this phase that maximize understanding of the underlying phenomenon”. Therefore, the population was identified and divided into groups *a priori*. All posts were manually annotated with a geographical label (EU or U.S.) based on their origin. The time frame of 2015–2020 was selected as a representative period to capture key political dynamics surrounding the current climate crisis.

Table 2. Most salient lexical phrases

Item	Frequency (focus corpus)	Frequency (reference- enTenTen20)	Keyness Score
1 climate crisis	5669	37513	777.54
2 climate action	1687	36066	235.99
3 big polluter	818	1899	201.76
4 clean energy	2800	115 638	195.2
5 fossil fuel	4986	290 405	165.35

Through this approach, a cross-section of the most salient expressions of the entire corpus was extracted, and then compared to politicians’ use of them to analyze how they shaped their discourse. The reference corpus adopted was the English Web 2020 (enTenTen20) and the first five multi-words were considered, as can be seen in Table 2.

#### 4. Findings

The politicians involved in this study posted 16532 tweets in total. Specifically, U.S. politicians tweeted 10446 times (63%) in 6 years, while the European ones 6086 times (37%).

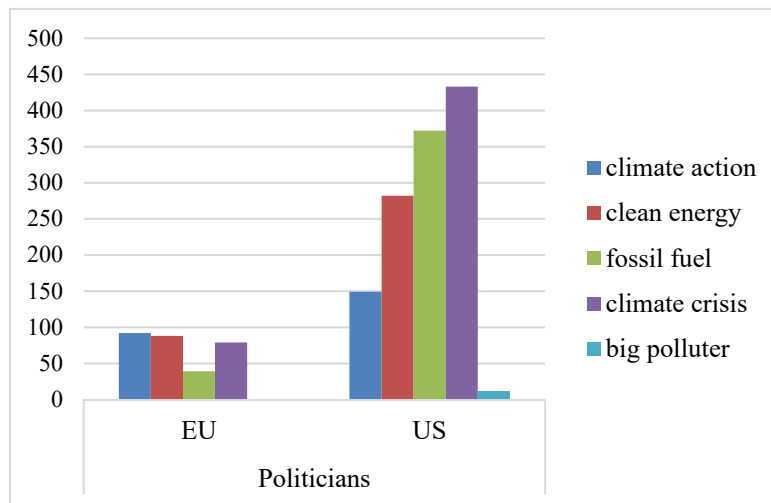


Figure 1. Lexical Phrases by politicians

The RQ asked whether there were any differences in terms of language use among the selected politicians. As shown in Figure 1, the most frequent lexical phrases were mainly used by U.S. politicians.

##### 4.1 Climate Crisis

*Climate crisis* is the most typical expression, with a score of 777.54; it appears 5669 times in the whole corpus. However, among politicians, there is a significant difference: 81 times (1.3%) in the EU and 451 (4.3%) in the U.S. In particular, most of the U.S. Democratic politicians used this collocation. Not surprisingly, Al Gore tweeted messages referring to climate crisis 249 times (2.3%) since 2015. His engagement was also highlighted in the movies *An Inconvenient Truth* and its sequel released in 2006 and 2017, respectively, following his efforts to address climate change issues. For instance, his first tweet in 2015 addressed the scientific facts of global warming and emphasized the necessity to act:

1) Confirmed: 2014 was the hottest year EVER recorded. The reality of the **climate crisis** is undeniable. We must act now. (16/01/2015 Al Gore)

Yet, in the following years, discussions of the climate crisis became increasingly tied to political choices and expressions of discontent:

2) The choice in this election is whether we will solve the **climate crisis** in time or whether the United States will move backwards. (04/11/2016 Al Gore)

3) The Trump administration justifies its rollback of methane standards by saying it will be a cost-saver for industry. But what about the costs to our health, and the costs of the **climate crisis**? We need to put people and our planet over polluters' profits. (19/09/2018 Al Gore)

In 2019, political dissent is also heightened by other politicians such as Alexandria Ocasio-Cortez, Bernie Sanders, and Joe Biden:

4) This is what the **climate crisis** is doing, and will do, to American infrastructure. This is why we need a #GreenNewDeal that invests in a solution on the scale of the problem - and can help our nation transition, adjust, and prevent further damage in the **climate crisis**. (20/07/2019 Alexandria Ocasio-Cortez)

5) When we take back the White House, we will not only rejoin the Paris Agreement. We will launch the decade of the Green New Deal to lead the world in averting the **climate crisis** and create 20 million new jobs. Read our plan (04/11/2019 Bernie Sanders)

6) President Trump's failure to lead on the **climate crisis** is inexcusable - it endangers the future of our country

and planet. As president, I'll rejoin the #ParisAgreement and rally the world to push our progress further and faster. (01/07/2019 Joe Biden)

Donald Trump posted a tweet referring to the *climate crisis*. However, this message, addressed to an environmentalist, highlighted Trump's view of climate change as a hoax:

7) Patrick Moore, co-founder of Greenpeace: The whole **climate crisis** is not only Fake News, it's Fake Science. There is no **climate crisis**, there's weather and climate all around the world, and in fact carbon dioxide is the main building block of all life. Wow! (12/03/2019 Donald Trump)

Simultaneously, these politicians demonstrated a broad network of relationships, including with young activists, which may be interpreted as collective action. Research in this area has mainly focused on the concept of collective action among activists, social movements, and NGOs (Bennett & Segerberg, 2012; Boulianne, Lalancette, & Ilkiw, 2020), who take advantage of the digital connectivity provided by social media to express opinions, share values, and mobilize a wider public through prolific environmental activism and political engagement. The examples below illustrate how politicians connected with activists:

8) @GretaThunberg's passion and courage have inspired millions and sparked a youth-led movement for change in every corner of the globe. This honor is well-deserved and serves as a reminder of the urgent, drastic action we must take to address the **climate crisis**. (11/12/2019 Joe Biden)

9) I know so many people who feel hopeless, and they ask me, "What should I do?" And I say: "Act." It was such an honor to share this conversation with you, @GretaThunberg. Thank you for being one of the leading voices on climate action today. (29/06/2019 Alexandria Ocasio-Cortez)

In contrast, significant differences emerged in the European context. Firstly, the phrase *climate crisis* was found in European politicians' tweets only in 2019 and 2020. Secondly, the number of users was less than half of the Americans. Lastly, the discourse is markedly different, presumably due to the overall political landscape. In this instance, climate issues are not part of political campaigns and disputes. Instead, European politicians seem to seek broader political collaboration, also framing the issue in terms of economic relevance.

10) Over the last 10–15 years we have had many discussions about what the EU is good for. I believe if there is one area where we can convince citizens of our value it is in tackling the **climate crisis**. More than 90% of our citizens want us to act on this! (08/10/2019 Frans Timmermans)

11) The **climate crisis** and rising inequality can only be tackled together. Today in Rome I called on national governments to be ambitious on the next long-term EU budget. The @Europarl\_EN will not approve if it doesn't address these challenges and boost growth and cohesion. (07/02/2020 David Sassoli)

However, in one tweet by Jean Lambert, EU MP, the climate activist Greta Thunberg was mentioned:

12) #EP hears from @GretaThunberg in packed meeting. Urges us "unite behind the science" & go for radical change to combat **climate crisis** created by 'buying & selling'. #ExtinctionRebellion (16/04/2019 Jean Lambert)

#### 4.2 Climate Action

Generally speaking, climate action refers to global efforts to reduce or mitigate the impacts of climate change. Despite having a high keyness score of 235.99, the term *climate action* was used 97 times (1.6%) by European politicians and 162 times (1.5%) by American politicians. In the U.S., the tone of discourse around climate action appeared closely linked to changes in presidential administrations. In fact, the efforts to act on climate were welcomed and encouraged in 2015 and 2016, reflecting a sense of trust and approval in political policies, as shown in the examples below:

13) @POTUS @EPA CleanPowerPlan is a signal to the world that America will lead the global effort for **climate action**. #roadtoparis (21/09/2015 Edward Markey)

14) Powerful words from President Obama at a critical time for **climate action**. Together, we can solve this crisis. #ActOnClimate (21/01/2015 Al Gore)

15) Today, the EU voted to ratify the #ParisAgreement turning our climate hope into **climate action**. Now, together, we must get to work! (04/10/2016 Al Gore)

However, from 2017 a feeling of accusation and discontent arose among politicians towards Donald Trump, who was by then the new president of the United States. In fact, during the Trump administration (2017–2021), approximately 100 environmental rules were either rolled back or relaxed, as in the case of the withdrawal from the Paris Agreement, the weakening of the Clean Water Rule, the reduction of the borders to the Bear Ears National Monument, and the approval of the construction of the Keystone XL pipeline (Note 1). This type of resentment,

and yet the strong will to fight, are perceptible in some tweets as reported below:

16) We need a president who will face down the greed of fossil fuel executives and the billionaire class who stand in the way of **climate action**. I welcome their hatred. We will enact the #GreenNewDeal and bring the world together to defeat the existential threat of CC. (22/08/2019 Bernie Sanders)

17) Trump's #ClimateDenial and rollback of Obama emissions standards is now hurting the auto industry and putting jobs at risk. Now is not the time to turn back the clock on **climate action**. (07/06/2019 Frank Pallone)

Again, politicians also expressed a sense of connectedness with young activists and voters soliciting environmental and political shifts:

18) Young people around the world achieved something extraordinary on Friday: A strike to demand **climate action** that touched all corners of the globe. Countries around the world should listen and act. "There is no Planet B." (18/03/2019 Hillary Clinton)

19) Young voters sent a clear message on Election Day for urgent and aggressive **climate action**. They know there is no time for half measures - the era of the Green New Deal is here. Proud to stand alongside @IENearth @ggjalliance @CJAOurPower @greenpeaceusa (20/11/2020 Edward Markey)

Analogously to the American scenario, this phrase mainly occurred in Europe in 2019 and 2020. Miguel Arias Cañete, European Commissioner for Energy and Climate Action (2014–2019), posted the highest number of tweets on this topic (1.2%). However, unlike the American discourse, the European discussion is marked by a sense of unity, emphasizing mutual support and collaboration with other countries to achieve climate action as a shared economic goal:

20) Developed and developing countries at Major Economies Forum: we are #CommittedtoParis and determined to push global **climate action**. #COP22 (Miguel Arias Cañete 16/11/2016)

21) Looking forward to enhancing EU's cooperation with India at today's summit. Coronavirus response, **climate action**, digital agenda, economic relations, strengthening rules-based multilateralism, foreign & security challenges – we have a lot to discuss @narendramodi, @eucopresident! (15/07/2020 Ursula von der Leyen)

#### 4.3 Big Polluter

The expression *big polluter* has a keyness score of 201.76, occurring 818 times in the corpus. Nevertheless, it was used exclusively in the U.S. From the perspective of American politicians, the big polluters are likely to be identified as corporations (e.g., ExxonMobil) and countries (e.g., China) and, in these cases, they are brought into play based on the relationship between them and former President Trump:

22) @POTUS, @SenateDems block #GOP & **big polluter** push to roll back #CleanWaterRule that will protect drinking water of 117M Americans (21/01/2016 Edward Markey)

23) From Day One, the Trump Admin has sold out our children's health to enrich special interests & **big polluters** pushing their toxic agenda. (30/08/2019 Nancy Pelosi)

24) @realDonaldTrump cares more about **big polluters** than the well-being of our communities" -- @LCVoters #climatechange (28/03/2017 Jennifer Granholm)

Although it may well be true that European politicians do not refer to this lexical phrase, to this end, it is important to examine the content of tweets posted by the European social movement to determine whether it is a non-existing expression in that area, or intentionally not used. For instance, already the American activist Xiye Bastida tweets about big polluters while expressing indignation against a country at that time still part of the EU, i.e., the United Kingdom:

25) So let me break it down for you: 1) Only \*one\* **big polluter**, the **UK**, released a plan to cut carbon emissions by 2050. 2) Article 6, which decides whether or not "human rights" are to be included in carbon markets, was inconclusive. Hint: human rights are a \*must\* (15/12/2019 Xiye Bastida)

Similarly, the social movement 350Europe denounces possible relations between the EU and the "big polluters". However, the main intent in the U.S. is to blame the President's administration who is believed to promote financial and legislative maneuvers at the expenses of the people. Whereas, in Europe the focus is mainly on offering wider visibility to disagreeable companies:

26) BREAKING It's just been revealed that **big polluters** like BP & Shell are being seriously considered as key sponsors for the UN climate talks. Take action now & sign to #KickPollutersOut of @COP26 @Cult\_Unstained (01/10/2020 350Europe)

27) Will Merkel cave in to **big polluters**? (07/05/2015 350Europe)

#### 4.4 Clean Energy

The lexical phrase *clean energy*, with a 195.2 score, appeared predominantly in tweets from American politicians, with 313 tweets (3%) compared to 97 tweets (1.6%) in the EU. The topic of *clean energy* is highly related to the economy and business themes, highlighting the relationship between climate change and economies in both areas. This includes discussions on financial stability, divestment from fossil fuels, and carbon emissions reduction. Additionally, this lexical phrase also includes mentions of green job opportunities, improved health outcomes, and reduced pollution. As a result, most tweets convey positive meanings as addressing climate change solutions. A number of examples are provided below ranked by year.

In 2015:

28) Acting on climate isn't only about risk. **Clean energy** & innovation mean better jobs, stronger economies & better health. #AMS2015 (07/01/2015 Gina McCarthy)

29) Investing in the **clean energy** industry is an important way to #ActOnClimate. (16/06/2015 Barack Obama)

30) EU diplomacy mobilised to support our #EnergyUnion goals: diversification, safety, security, climate and **clean energy** (20/07/2015 Miguel Arias Cañete)

In 2016:

31) Offshore wind power will create **clean energy** jobs & help combat #ClimateChange NJ needs to embrace this opportunity (11/01/2016 Frank Pallone)

32) EU-China climate and **clean energy** leadership now more important than ever. We agreed to boost our cooperation, announcements soon. #COP22 (14/11/2016 Miguel Arias Cañete)

In 2017:

33) We're already feeling impacts of climate change. Exiting #ParisAgreement imperils US security and our ability to own the **clean energy** future (01/06/2017 Joe Biden)

34) We need to create a solid #industrial basis in support to #CleanEnergy transition. Launch next year of "**clean energy** industrial competitiveness forum" @ristori20 #CEDEnergy #EnergyUnion #CleanEnergyEU #IndustryEU #CEERegion (11/12/2017 Andreea Strachinescu)

In 2018:

35) A year ago today, Trump announced America would leave the #ParisAgreement. Despite his best efforts, many of our states, cities & citizens are continuing to look to the future, invest in **clean energy** & fight #climatechange. Let's keep it up. We'll always have Paris... #StillIn (01/06/2018 Edward Markey)

36) Politics can show the direction but industry will deliver the innovation needed for the **clean energy** transition #energyforeurope (27/09/2018 Miguel Arias Cañete)

In 2019, although the Europeans kept focusing on the same theme, *clean energy* related to the climate issues became an instrument of political dissent in the U.S. This shift may be related to the upcoming presidential elections:

37) To Donald Trump, the #GreenNewDeal is a just political football. To the people who have had homes destroyed by flooding, hurricanes, and wildfires, for kids with asthma, for workers in **clean energy**, it's about their futures. (22/03/2019 Edward Markey)

38) President Trump continues to deny the scientific evidence in front of his own eyes and attack the progress we've made on climate change. It's unacceptable. In a Biden Administration, we'll turbocharge our efforts to achieve a 100% **clean energy** economy. (21/06/2019 Joe Biden)

39) Europe has pioneered many innovative clean energy solutions available today. As a result, Europe is now home to some of the world's largest clean tech companies. But we have to keep it up to win the global **clean energy** race. My speech at #CEICIF (18/03/2019 Miguel Arias Cañete)

In 2020, *clean energy* strongly resonated with the political propaganda in the U.S.; for instance, this signals a shift from the economic to a more political-oriented discourse (Chen, Molder, Duan, Boulianne, Eckart, Mallari, & Yang, 2022):

40) This pandemic has put our country in an economic hole. We need real leadership - we need @JoeBiden. His #BuildBackBetter plan creates jobs, raises wages, invests in **clean energy**, and helps build a better America for

all. Vote blue -vote #JoeBiden2020. #TeamJoe (09/07/2020 Deb Haaland)

41) The climate emergency requires our urgent action. As president, I will: – Ensure we achieve a 100% **clean energy** economy and net-zero emissions by 2050 - Rejoin the #ParisAgreement and rally the world to go further – Make the largest-ever investment in clean energy (22/04/2020 Joe Biden)

42) Offshore renewable energy is a true European success story. Over the next years, we will aim to turn it into an even greater opportunity for **clean energy**, high quality jobs, international competitiveness, and sustainable growth. #EUGreenDeal #OffshoreRenewableEnergy (19/11/2020 Frans Timmermans)

#### 4.5 Fossil Fuel

As a common lexical phrase in everyday language, *fossil fuel* has a keyness score of 165.35 compared to the reference corpus, which makes it a very common expression in the analyzed corpus. However, it appears 473 times among American and European politicians, and it is mostly used in the U.S. Although the relatively low number of tweets in 2015, *fossil fuel* was fitted in positive tweets considering it as an opportunity to shift to sustainable energy (43) and (44). On the other hand, resentment against the big polluters in terms of accusation arouse (45). However, as shown below, the discourse is strongly economic in nature:

43) We must move away from **fossil fuels** and into energy efficiency and sustainable energy (05/07/2015 Bernie Sanders)

44) European unity can create sustainable society, make us less dependent on **fossil fuels** and external energy providers, and benefit citizens (11/03/2015 Frans Timmermans)

45) #ExxonKnew the truth about **fossil fuels** and climate change and lied to protect their business model at the expense of the planet. (16/10/2015 Bernie Sanders)

The same discourses on economy and resentment emerged in the following years in both areas. Specifically, in the U.S. the discourse is markedly political and references the 2017 U.S. elections, the Trump administration, and ultimately the 2021 elections:

46) THIS: @realDonaldTrump handing energy policy over to climate deniers & **fossil fuel** energy lobbyists @BernieSanders (26/09/2016 Jennifer Granholm)

47) Trump: Want to know what fake news is? Your denial of climate change and the lies spread by **fossil fuel** companies to protect their profits. (19/02/2017 Bernie Sanders)

48) These policies continue to allow **fossil fuel** companies to pollute our clean air, water, and soil with impunity. Our environment may never recover from the damage he has caused. (05/07/2018 Deb Haaland)

49) Today we are putting an end to coal in Europe. As we go #BeyondCoal towards clean energy, capacity mechanisms will not be used as a backdoor subsidy of high-polluting **fossil fuels** - this would go against the #ParisAgreement. Press release (19/12/2018 Miguel Arias Cañete)

50) Donald Trump thinks climate change is a hoax. Donald Trump is bought and paid for by the **fossil fuel** industry. Their time is up. We are going to end the greed of the fossil fuel industry and pass a #GreenNewDeal. (22/08/2019 Bernie Sanders)

51) Joe Biden & Kamala Harris have repeatedly said they're going to abolish fossil fuels & ban fracking. President @realDonaldTrump & I are not going to let that happen & we're going to build on the record that for the first time in over 70 years, the US is a net exporter of energy! (24/10/2020 Mike Pence)

## 5. Discussion

The five lexical phrases – *climate crisis*, *climate action*, *big polluter*, *clean energy*, *fossil fuel* – were used to answer the research question: “Are there any differences in terms of language use between the United States and the European Union?”. The findings suggest a general politicization of climate change issues in both areas, and a highly polarized discourse in the U.S. (Chen et al., 2022). Indeed, the results show particular reference to two specific policies: namely the Green New Deal and the Paris Agreement. Moreover, climate change is addressed with economically focused language, especially in Europe, whereas in the U.S. most tweets reveal a more polarized discourse based on blame and dissent, following specific events, such as the U.S. elections. Specifically, the climate change issue is politically and ideologically constrained by the users themselves, connected to the political context of the moment, and to the discontent or approval related to the governmental organization. De facto, this is confirmed in the American context as the posts show a shift from an *emotional* perspective. The messages posted in the first years of the analysis, 2015–2016, could be interpreted with a positive and supportive feeling, expressing political support. Conversely, in the following years, a shift in tone occurred after the 2017 presidential election,



and a discourse of tension emerged. Most users expressing opinions were Democrats, showing approval and alliance with American and European activists, as well. Although tweets from Republicans were also included, the results show little participation in these salient topics. In this scenario, this may be interpreted as a hegemonic discourse which “can be at its most powerful when it does not even have to be invoked, because it is taken for granted” (Baker, 2006, p. 19). The absence of discussion is often interpreted as a form of puzzling denial. Moreover, many scholars have investigated Trump’s political discourse and the concept of *fake news* classifying it as a “rhetorical device for discrediting unfavorable coverage of his presidency” (Davis & Sinnreich, 2019, p. 149) and have also analyzed the use of the same strategy by other Republicans. Specifically, as highlighted by many scholars (Bomberg, 2017; Sarathchandra & Haltinner, 2021; Zhang, Chao, Zheng, & Huang, 2017), climate change as a hoax used by Republicans in the U.S. context is also confirmed in this corpus. Indeed, a similarity with the above reported example (7), i.e., the only tweet where Donald Trump mentioned *climate crisis* and defined it as fake news, is demonstrated in a tweet by another Republican:

52) #ClimateChange is a **hoax**. Can’t respond now though because I have sunscreen all over hands, at the beach in Rehoboth today. #february (24/02/2017 Scott Pruitt)

On the other hand, there is evidence that European politicians adopt a vague style with no accusation of responsibility; their main intent is to provide solutions approaching the *techno-optimism* repertoire, as identified by Ereaud and Segnit (2006). In fact, the discourse around this theme focuses on the promotion of technology or business which are believed to be able to address climate change issues while aiming at green and clean energy. Moreover, especially in Europe, the discourse used aligns with Hajer et al.’s (2015) concept of “cockpit-ism”, that is the tendency to create the illusion that governments have the magic recipe to address climate change in the best interests of the planet.

## 6. Conclusions

The exploration of the data led to confirming that discourses are socially constructed and mainly related to political events. As a matter of fact, European politicians’ discourse remained scientific and economic in nature over the years, and they maintained an elitist political stance, favoring communicative actions with their counterparts. Simultaneously, it may be said that U.S. politicians took advantage of the climate issue for a more exploitative use, in terms of blame and attack of their political counterpart, confirming strong polarization and politicization of the topic. In general, their discourse is closely associated with time and place. On the one hand, European politicians showed constant engagement with environmental issues. Nevertheless, the dominant economic discourse, prompting what is considered to be sustainable technology or business, may deceive into complete acknowledgment and action. Yet, the data suggest these politicians do not extensively tackle the underlying issues represented by the lexical phrases, which are significantly important to other users based on the keyness score.

This study provides a comparative analysis of politicians’ attitudes and actions in an increasingly interconnected world. Also, it contributes to the investigation of politicians’ personal engagement, participation and credibility as representatives of the wider political and economic environment of two world powers.

However, further investigation into climate change communication on a wider scale is needed. Future research could focus on how climate-related political discourses are shaped across different contexts and countries. Moreover, diachronically, the concrete efforts made by politicians, both domestically and internationally, to mitigate climate impacts require further exploration. Such analyses will likely benefit from current computational methods in big data.

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Obtained.

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### Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

### Data sharing statement

No additional data are available.

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### Notes

Note 1. <https://eelp.law.harvard.edu/portfolios/environmental-governance/regulatory-tracker/>

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