

# Do Politicians Appeal to Discrete Emotions? The Effect of Wind Turbine Construction on Elite Discourse

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## Abstract

Do political actors appeal to discrete emotions? In this study, I investigate how politicians adapt their emotional rhetoric to increased political conflict over climate change. To do so, I apply transformer-based machine learning classifier to a large dataset of text data coming from German Members of Parliament in order to measure discrete emotional appeals. Relying on staggered difference-in-difference models, I find robust results showing that local constructions of wind turbines cause the strongest opponents of climate change mitigation policies (radical-right MPs) to appeal to a specific negative moral emotion. Less robust evidence suggests a similar effect for the strongest proponents (Green MPs), however, appealing to a different discrete emotion. The effects range between 0.5 to 1.5 percentage points per additional wind turbine. These findings indicate the importance of distinct emotional framing in political communication with important implications for societal polarization and healthy political discourse.<sup>1</sup>

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<sup>1</sup>This paper has been pre-registered. An anonymous version of it has been uploaded along with the manuscript.

# Introduction

The way political issues are framed has been found to impact public opinion and behavior (Slothuus and de Vreese 2010). In particular, the emotional framing of messages has been shown to be a powerful tool shaping opinions, attitudes, and political behavior (Van Kleef, van den Berg, and Heerdink 2015; Brader, Valentino, and Suhay 2008; Arceneaux 2012). However, we know little about whether politicians actually appeal to *discrete* emotions. Discrete emotions are understood as bounded domains, each with specific causes and consequences (Lazarus 1991). A typical example is anger and fear, two distinct emotions elicited by different circumstances and leading to different, even diverging, (political) consequences (see e.g. Druckman and McDermott 2008). In this study I argue that politicians do in fact appeal to discrete emotions, namely those that resonate with their respective supporter base. This, in turn, should make these emotional appeals more persuasive (Day et al. 2014) and mobilizing (Jung 2020; Enke 2020).

This argument builds on two strands of literature. A small but growing field investigates how parties use emotive content of political messages strategically. This strand perceives the emotional tone in political communication as a (non-policy) component of party competition (Kosmidis et al. 2019) which parties and politicians use to attract attention and potentially persuade or mobilize listeners. Yet, a majority of these studies focus either on general ‘emotionality’ (in comparison to rationality) Gennaro and Ash (2022) or on positive versus negative sentiment (Kosmidis et al. 2019; Crabtree et al. 2020).

A second strand of literature provides evidence for the importance of discrete emotions. Distinct emotional appeals matter for decision making, political attitudes, political behavior (Vasilopoulos et al. 2018; Marcus, Neuman, and MacKuen 2000; Valentino et al. 2011; Druckman and McDermott 2008; Petersen 2010) as well as for the moralization of issues (Horberg et al. 2009; E. J. Horberg, Oveis, and Keltner 2011; Keltner, Horberg, and Oveis 2006). So-called *moral emotions* are emo-

tions that are elicited by moral actions or transgressions and, importantly, are less focused on the *self*. Instead, they are linked to the interests and welfare of society or specific groups within society (Haidt 2003). Moral emotions play a crucial role in the process of ‘moralization’ (D’Amore, van Zomeran, and Koudenburg 2021; Wisneski and Skitka 2017; Feinberg et al. 2019), which connects (political) issues to fundamental values and strong moral judgments (Petersen 2010). Importantly, research argues that moral emotions are necessary in order for moralization to take place (D’Amore, van Zomeran, and Koudenburg 2021; Clifford 2019).

Thus, politicians should have incentives to make use of discrete moral emotions in their communication that target distinct moral values among their supporter base. Moral Foundation Theory (MFT) argues, that citizens systematically endorse distinct moral values depending on their ideology (Graham, Haidt, and Nosek 2009). Activating these moral values through specific emotional appeals should help elites minimizing the moral-emotional distance between themselves and their voters (Enke 2020). This, in turn, should influence the persuasiveness of their messages (Voelkel et al. 2021; Clifford and Jerit 2013), impact political convictions and citizens’ political engagement (Jung 2020; Skitka 2010), as well as vote choices (Enke 2020).

To test whether politicians use distinct moral-emotional appeals that target their specific supporter base, I look at the case of climate change. Climate change is one area where emotional and moral concerns of citizens matter for policy preferences (Feinberg and Willer 2013; Sabherwal, Pearson, and Sparkman 2021). Green issues have in recent years become ever more salient topics, among the public and in political campaigns. However, prior research focused predominantly on policy standpoints of parties (Carter 2013) or the salience of green topics in political campaigns (Spoon, Hobolt, and Vries 2014). Yet, if parties’ emotional rhetoric can lead to the moralization of green issues, political actors should be strategic about emotional appeals. I use the construction of wind turbines in German electoral districts as a local experience of climate-mitigation policies, which is expected to bring the political conflict over global warming to the forefront (i.e. make

climate change more salient). As soon as climate change becomes publicly more salient, political actors are expected to ‘ride the wave’ (Ansolabehere and Iyengar 1994) and use discrete emotional appeals which resonate among their target group in order to maximize their electoral support.

I rely on a dataset connecting information on wind turbines with parliamentary speeches from the beginning of 19th legislature of the German Bundestag (September 24, 2017) until the end of 2020, including political speeches from more than three years. Using a transformer-based machine learning classifier (Widmann and Wich 2022), I measure discrete emotional appeals in the political debate. Importantly, this allows me to go beyond mere sentiment to measure distinct emotions. Furthermore, I employ two-way fixed effects models with actor and time fixed effects (staggered difference-in-difference models) which allow me to isolate the effect caused by the construction of wind turbines on the rhetoric of Members of Parliament (MPs).

The findings provide robust support for one of the hypotheses: The staggered difference-in-difference models show that the construction of wind turbines in electoral districts consistently cause members of the German radical-right party to increase appeals to the moral emotion of disgust, which resonate with their own supporters’ moral and emotional concerns. Less consistent are the findings for members of the Green party who, depending on the model specification, show increasing appeals to the moral emotion of anger which is linked to the moral concerns of their supporters. Nevertheless, the findings largely support the idea that politicians choose discrete moral-emotional language which promise to have the most persuasive and mobilizing effect on their supporter base. Emotional framing in political communication is hence a dynamic and versatile tool for political actors to potentially influence opinions and rile up electoral support. A series of additional tests aim at demonstrating the robustness of these findings and test the underlying strategic considerations.

Overall, these findings suggest to move research on political elites’ rhetoric beyond valence towards distinguishing between discrete emotional appeals. Furthermore, the results further solid-

ify moral-emotional framing as an important component of parties' framing tool kit and emphasize the important connection between emotions and morality, which carry numerous implications for political behavior, polarization, and democratic discourse in general.

## Emotions in Political Communication

A growing strand of literature emphasizes the importance of investigating the emotive content of political messages, since emotional rhetoric can be a powerful tool in persuading individuals (Van Kleef, van den Berg, and Heerdink 2015; Brader, Valentino, and Suhay 2008; Arceneaux 2012). Recent research further argues that the emotional framing of messages should be seen as a non-policy component of party competition (Kosmidis et al. 2019), as parties use emotional rhetoric to garner support or draw boundaries between themselves and political opponents.

Crabtree and coauthors (2020), for instance, argue that parties adapt their emotional rhetoric according to incumbency status, policy positions, and the situation of the economy. Government members frame the state of the world in more positive light (using more positive emotive language), hoping to shape voters assessment of the incumbent parties and to increase chances of reelection. Valentim and Widmann (2021) show that politicians use emotional rhetoric as a strategy to distance themselves from political opponents, thereby claiming moral superiority over radical parties and riling up support. A similar mechanism has also been brought forward by Kosmidis and coauthors (2019), showing that emotive rhetoric increases as the ideological distance between parties shrinks. Other studies propose that emotional rhetoric is strategically used to appeal to voters, for example in high-profile legislative debates (Osnabrügge, Hobolt, and Rodon 2021) or televised debates (Gennaro and Ash 2022).

Yet, these studies focus either on emotionality versus rationality Gennaro and Ash (2022) or on sentiment, i.e. positive versus negative emotional rhetoric Kosmidis et al. (2019). The former per-

ceive emotionality as a broad concept (in contrast to rationality) where differences in valence are not meaningful since the mere presence of “‘loaded’ language” (Osnabrügge, Hobolt, and Rodon 2021) can have certain effects on their audience. The latter acknowledge the importance of valence and distinguish between effects of negative or positive emotional rhetoric, yet, ignore the consequences of discrete emotional categories.

This study is based on research in political psychology which has provided ample evidence for the diverging consequences of discrete emotions. For instance, discrete emotions can shape partisan identities (MacKuen et al. 2010), voter turnout (Valentino et al. 2011), or vote choice (Vasilopoulos et al. 2018), as well as the moral convictions held by individuals (Horberg et al. 2009; E. J. Horberg, Oveis, and Keltner 2011; Keltner, Horberg, and Oveis 2006).

## **Moral Emotions**

Moral convictions are important for politics. Prior research found that morally convicted citizens are more committed to their standpoints and show more political engagement (Skitka 2010) which suggests that moralization can be used to foster electoral support (Jung 2020). Furthermore, political actors can make use of moralized attitudes to bind their partisans even closer: moral conviction increases the unwillingness to compromise and the wish to punish political opponents (Ryan 2017), while strengthening the wish for social distance from disagreeing others (Skitka, Bauman, and Sargis 2005).

Prior research found that emotions play a key role in moralization processes (Clifford 2019)- i.e. the process through which political issues or attitudes become connected to individuals’ core values and moral judgments Skitka (2010). The experience of strong moral emotions toward new information can push attitudes into the moral domain (Haidt 2003; Rozin et al. 1999; Rozin 1999; D’Amore, van Zomeren, and Koudenburg 2021). Experimental studies show how individuals moralized their attitude on specific issues (e.g. abortion or meat eating) when they responded with

strong moral emotions to morally disruptive material about the relevant issue (Feinberg et al. 2019; Wisneski and Skitka 2017). Further experiments show that emotions are key mediators in moralization processes without which moral conviction (D'Amore, van Zomeren, and Koudenburg 2021; Clifford 2019) or downstream (political) consequences would not occur (Skitka and Wisneski 2011). Hence, I argue that specific discrete moral emotions in political communication act as 'necessary moralizers' - that means that these emotional appeals enable the moralization of the issue under discussion (in this case climate change) for the receiving audience in the first place.

For moral-emotional rhetoric to benefit parties and politicians, however, the appeal needs to be credible to receivers and resonate with their moral values. Looking at 'Moral Foundation Theory' (MFT) in particular (Graham, Haidt, and Nosek 2009), research shows that moral arguments resonate differently depending on the ideology of individuals. MFT argues that moral intuitions are based on five psychological systems, or foundations (care, fairness, loyalty, authority, and sanctity), which developed throughout human history due to different challenges humans faced (Haidt and Joseph 2004). In modern times, MFT has been used to describe differences between political liberals and conservatives (predominantly in the US): liberals base their morality on the first two foundations, while conservatives value all five foundations (Graham, Haidt, and Nosek 2009). A consequence of this, as Haidt and Graham argue (2007), is that liberals and conservatives often do not understand each other and their arguments remain effectless, as they simply do not recognize the opposing site's moral concerns.

If, however, moral concerns are being met (i.e. a message is framed in moral-emotional appeals that resonate among a given target group), attitudes can be swayed. For instance, a study examining moral conviction and environmental attitudes shows that there are large attitudinal differences between liberals and conservatives in the US regarding climate change (Feinberg and Willer 2013). However, these differences disappear as soon as pro-environmental arguments are being reframed in terms of sanctity, a moral domain that resonates most strongly among conservatives. Thus, in

order to moralize issues in relation to the ‘right’ (i.e. most resonating) moral foundation for a given target group, politicians should use discrete emotions that are associated with this specific moral domain.

Disgust is linked to the moral concern of ‘sanctity’ (Haidt and Graham 2007), which is about the protection of physical and mental purity and the preservation of the ‘natural order’ (Haidt and Graham 2007; E. J. Horberg, Oveis, and Keltner 2011). Originally, disgust evolved for pathogen avoidance by motivating individuals to keep away from poisonous and infectious material (Rozin, Haidt, and McCauley 2008). ‘Moral disgust’, however, moves beyond simply protecting oneself from contamination to condemning any object or person that may have been associated with ‘impure’ behavior (Haidt 2003). Experimental research found that disgust moralizes actions and objects that otherwise would have been perceived as non-moral (Feinberg et al. 2019; Horberg et al. 2009; Wisneski and Skitka 2017), however it does so primarily in relation to ‘sanctity’. Disgust does not cause the moralization of other moral domains (Horberg et al. 2009; Wisneski and Skitka 2017).

Anger, on the other hand, relates to moral concerns of ‘fairness’ and ‘care’ (Rozin et al. 1999; E. J. Horberg, Oveis, and Keltner 2011). Moral anger has been found to predict greater moral condemnation of unjust behavior (Horberg et al. 2009), which does not necessarily need to happen to oneself (Haidt 2003). Anger has been numerous times identified as the primary emotional response to cheating or injustice, even when involving a third-party victim (Gummerum et al. 2016; Petersen 2010). Similar to disgust, moral anger is also considered a ‘prosocial’ emotion (Haidt 2003): it serves to regulate social behavior and is “designed to manage social rule violations” (Petersen 2010, 358) and protecting the moral order if threatened. It also has been found to mobilize people to fight against injustices and boost preferences for justice-restoring policies (Desteno et al. 2004). Hence, it is considered the “most prototypical moral emotion” (Haidt 2003, 859) as it passes clear moral judgement and motivates direct action to repair the moral order.



Following the theory outlined above, I expect politicians to appeal to discrete emotions that trigger a moral foundation best suited to benefit them politically when climate issues become more salient. If they “ride the wave” and address salient issues, politicians might appear more “concerned, responsive, and informed” (Ansolabehere and Iyengar 1994, 337). Ansolabehere and Iyengar conclude that the optimal strategy for politicians is to communicate information, that “resonates well with citizens’ prior knowledge” (p. 356). I argue that the same holds for emotional content of messages. Talking in a moral and emotional language which resonates among supporters will potentially make the politician appear as more concerned and responsive. Research suggests that this resulting moral-emotional distance can even shape electoral support (Enke 2020).

Climate-change skeptical politicians are therefore expected to increase appeals to disgust, an emotion linked to the moral foundation of ‘sanctity’ once the conflict over climate change becomes more salient. This is the most persuasive moral foundation for conservative (climate-change skeptical) citizens when it comes to environmental attitudes (Feinberg and Willer 2013). On the other hand, pro-environmental left-leaning parties, and the Greens in particular, are expected to increase appeals to anger, an emotion linked to the moral foundations of ‘care’ and ‘fairness’. These are moral concerns that should resonate more among more left-leaning partisans (Graham, Haidt, and Nosek 2009), which generally support climate change mitigation policies. In contrast, non-moral emotions should not be in the focus of politicians’ framing strategy as they do not moralize political topics and therefore do not carry the downstream political benefits of moral convictions.

**Anger Hypothesis:** A rise in the salience of climate change will increase anger appeals in the speeches of politicians from left-leaning, pro-environmental parties when talking about climate change. This effect should be the strongest for members of the Green party.

**Disgust Hypothesis:** A rise in the salience of climate change will increase disgust appeals in the speeches of politicians from climate-change skeptical parties when talking about climate change.

Even though one could expect that pro-environmental politicians also appeal to positive emo-

tions, the hypotheses focus solely on negative emotions. As emotional appeals are perceived in this study as strategic decisions in the framework of party competition, politicians are expected to appeal to emotions that are most beneficial. Negative emotional appeals can help in lowering the evaluations of political opponents (Lau and Rovner 2009) and in claiming moral superiority over them.

Appealing to positive emotions, on the other hand, can constitute a risky strategy as parties run danger of benefiting political opponents. If, for instance, Green MPs voice out joy and enthusiasm about the construction of wind turbines, they frame actors perceived as responsible for the construction in positive light. Since responsibilities are often attributed to incumbents (Crabtree et al. 2020), positive emotional appeals might benefit parties who are in government.<sup>2</sup> It might be therefore less risky to choose negative moral emotions (to attack opponents and moralize attitudes among the supporter base) over positive emotions.

## Data & Methods

The topic of climate change has transitioned into a political conflict, where ideology shapes increasingly the mobilization strategy of parties. I expect that this political conflict between ideological camps becomes more pronounced once new wind turbines are being constructed in electoral districts. The underlying assumption is that wind turbine constructions make climate change more visible among the public. That national MPs react to local events in their constituencies has been shown by Schürmann and Stier (2022). Their findings indicate that German MPs regularly refer to their home constituency by using regionalized wording and geographic references. Similar results have been found in a study by Zittel and co-authors who show that MPs use geographic references

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<sup>2</sup>During the period of research, the German conservative party (CDU/CSU) formed a government with the social democrats (SPD). Politicians from these incumbent parties could be expected of increasing positive emotional appeals after the construction of wind turbines, as it potentially helps them in framing their track record in positive light (see Crabtree et al. 2020). Opposition parties, on the other hand, are expected to refrain from positive emotional appeals. However, this expectation has not been pre-registered in the pre-analysis plan.

to secure electoral support (Zittel, Nyhuis, and Baumann 2019).

In Germany, climate change and renewable energies have been particularly salient and controversial issues. As in other countries, NIMBY (“Not In My Backyard”) protests against the construction of wind turbines occurred also in Germany. Moreover, Germany’s radical-right party ‘*Alternative für Deutschland*’ (AfD) is a sturdy opponent of wind turbines (Hess and Renner 2019). The party openly denies the existence of anthropogenic climate change, opposes climate mitigation policies as threats to the livelihood of the “little guy”, and claims that continued reliance on fossil fuels was necessary to ensure a stable power supply (Forchtner 2019).

The German party system consists momentarily of six major parties represented in parliament. All major parties besides the AfD, including the Christian Democratic Parties (CDU/CSU), the social-democratic party (SPD), the radical-left party ‘The Left’ (Die Linke), the liberal party (FDP), and the Green party, acknowledge human-made climate change and emphasize their commitment to international efforts such as the Paris agreements and to the long-term transition to renewable energies (Hess and Renner 2019). The Greens are - unsurprisingly - strong supporters of alternative energy sources. The remaining parties have positioned themselves between the two opposite poles of the Greens and AfD (Otteni and Weisskircher 2022).

## Data

To answer how increased salience of climate change impact elite rhetoric, I rely on a dataset connecting information on wind turbines with parliamentary speeches from the German Bundestag. To do so, I collected speeches from the beginning of the 19th legislature starting with the elections on September 24, 2017 until the end of December 2020. The *ParlSpeech* data set (Rauh and Schwalbach 2020) includes speeches from the German parliament until the end of 2018. I collected speeches after this date by scraping them from the website of the German Bundestag. The total number of speeches included is 24,834. This data set consists only of speeches from actual

MPs, interjections from parliamentary chairs are excluded.

Relying on parliamentary speeches offers a number of advantages. For instance, manifestos are only released in election years. Speeches are more susceptible to changes over time - for instance due to the construction of wind turbines. Furthermore, they reach larger audiences through mass media, e.g. through national newspapers or TV news programs (Salmond 2014). In addition, previous research has shown that politicians make use of emotive rhetoric in the parliamentary arena strategically, especially in high-profile debates, in order to appeal to voters (Osnabrügge, Hobolt, and Rodon 2021). Lastly, legislative speeches provide individual-level data which allows for measuring the change in rhetoric for individual legislators across time.

Data on wind turbines have been collected from the the German Federal Network Agency (BNetzA) which provides data on different energy sources. From the ‘Renewable Energy Installations Core Dataset’ (BNetzA 2021) I collected information on all wind turbines that have been built on-shore (excluding off-shore units) after September 24, 2017 in Germany. This includes information about the date of construction and postal codes.

Subsequently, this information will be combined with information on the electoral districts and their respective candidates. Under Germany’s system of election, MPs are either elected via state lists or via one of 299 constituencies (electoral districts), each of which elects one member of the Bundestag by first-past-the-post voting. Most MPs run on state lists and run for candidacy in one of the electoral districts, which allows me to assign most of the MPs to one ‘home constituency’. Members of the German Bundestag that only ran on state lists and not in a specific electoral district have been excluded from the analysis.

## **Text Analysis**

Since the above described hypotheses are only expected to apply to the debate on climate change and renewable energies, I need to identify speeches that address green issues. To do so, I will

make use of Structural Topic Models (STM) (Roberts, Stewart, and Tingley 2014). More details on pre-processing steps and topic model settings can be found in Online Appendix A.

To measure emotional appeals in speeches, I make use of the transformer-based Electra model trained by Widmann and Wich (Widmann and Wich 2022). Electra models are extended versions of BERT (Bidirectional Encoder Representations from Transformers), which is a new form of machine learning models that set new standards in computational text analysis when released (Devlin et al. 2019). Widmann and Wich (2022) trained their Electra model on almost 10,000 sentences from German political communication which have been classified according to eight different discrete emotions (anger, fear, disgust, sadness, joy, enthusiasm, pride, hope) by crowd-workers. In their study, they firstly show the superiority of the transformer-based Electra model in comparison to other approaches (e.g. dictionary and word embedding classification); secondly they show how customized approaches outperform off-the-shelf dictionaries. Overall, the applied Electra model has been validated extensively and exhibits significantly better performance in measuring discrete emotions in German political text compared to other available tools.

## **Empirical Strategy**

The construction of new wind turbines functions as ‘treatment’ in the context of this study. A Member of Parliament is considered as ‘treated’ as long as at least one wind turbine has been built in their electoral district after the parliamentary elections on September 24, 2017.

The left panel of Figure 1 shows the electoral districts of the 19th German legislature (map from (Votta 2019)) and indicates districts in which at least one wind turbine has been constructed (orange). In dark blue electoral districts, no new wind turbine has been built during the period of research. The right panel indicates the treatment as a continuous variable ranging from dark blue (zero or few new wind turbines) to orange (high number of new wind turbines).

In total, 175 out of 299 electoral districts belong to the treatment group. The maximum number

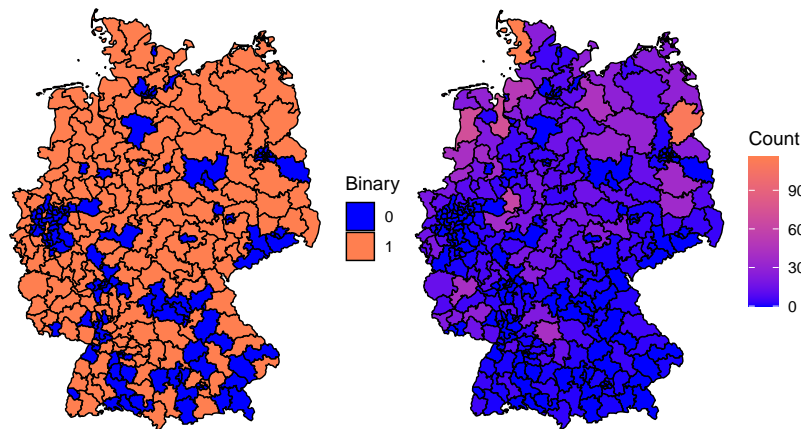


Figure 1: Construction of additional wind turbines in German electoral districts (September 24, 2017 - January 1, 2021)

of wind turbines per electoral district is 116, the average number per electoral district is 7.5. Even though the left panel indicates a fairly even distribution of new wind turbines throughout the whole of Germany, the right map shows a certain imbalance between the north and the south. Especially the state of Bavaria has been slow of allocating land for new wind turbine construction, thereby only reaching an average number of 1.02 new wind turbines per electoral district during the period of research. However, there is no major difference between the East and West of Germany. For instance, the electoral district with the highest number of new wind turbines lies in the Western state of Schleswig-Holstein (electoral district 02: Nordfriesland – Dithmarschen Nord). Furthermore, the allocation of new wind turbines is relatively evenly distributed among electoral districts with most constituencies receiving only a small number of wind turbines (only five constituencies received more than 50 wind turbines during the period of research).

Germany represents an ideal setting to study the effect of wind turbines on politicians' communication. Private actors can apply for permits through a process that entails limited interference from local politicians and authorities. Companies or private individuals who want to construct wind turbines need to apply for an 'immission control approval' at the responsible rural district

office. This approval involves a number of other public regulations (BMWK 2022). Most of these regulation are decided on the national or state level. If the project complies with the requirements of public law, the applicant has a legal right to the permit, which will be given by the local administrative authority. The degree of control local actors have over the approval of these projects is even more limited in the case of sites with less than 20 wind turbines. In these cases, the regulations only require a “simplified procedure” without public participation and without an environmental impact assessment (EIA) study (RPD 2021). The approval is thus not ‘political’ in nature, as no local or national politicians (from the respective electoral district) are involved in permitting wind turbines. This should reduce the endogeneity bias as electoral results or popularity of parties/politicians in a given electoral district are independent from the construction of new wind turbines.

To assess the impact of wind turbines on emotional appeals in parliamentary speeches on climate change, I rely on two-way fixed effects regression models (staggered difference-in-difference) with time and MP fixed effects. This allows for investigating how individual MPs change their rhetoric once exposed to wind turbines while controlling for unobserved factors.

To do so, I firstly collapse the sentence data per month. The resulting dataset will give me the average proportion of appeals to each emotion per individual MP within a given month. Then I run the fixed effects models which estimate the average treatment effect of an additional wind turbine. The equation is the following:

$$Y_{i,t} = \alpha + \tau A_{i,t} + \delta_i + \gamma_t + \epsilon_{i,t}$$

where  $A$  is the value of treatment (count data indicating the number of wind turbines);  $\delta$  is an actor-level fixed effect that controls for unobserved heterogeneity;  $\gamma$  is a month fixed effect that accounts for change over time; and  $\tau$  is the treatment effect. Standard errors will be clustered by individual politician.

## Findings

Before I estimate the effect of increased salience of climate change on the usage of emotional appeals by politicians, I turn to the results of the topic model. Topics include typical issues for parliamentary debates ranging from welfare (topic 40) to discussions on housing (topic 46) and the European Union (topic 5). Furthermore, there are two word clusters that refer to environmental issues: topic 56 deals with the climate and climate change; Topic 16 deals with renewable energies and the German ‘climate transition’. Table A1 in Online Appendix A presents a selection of identified topics and terms associated with each cluster, as well as labels chosen by the author.

Figure 2 illustrates the effect of wind turbines on topic proportions. As illustrated in the left panel, topic 56 (Climate change) is - unsurprisingly - most often addressed by the Green party. Between the remaining parties, the radical-left party The Left shows the highest level of salience on this topic, yet without large differences to other parties. The plot in the right panel gives a first indication that increased salience of climate change had some effect on the communication of politicians. As can be seen, treated MPs are more likely to talk about climate change than untreated MPs.

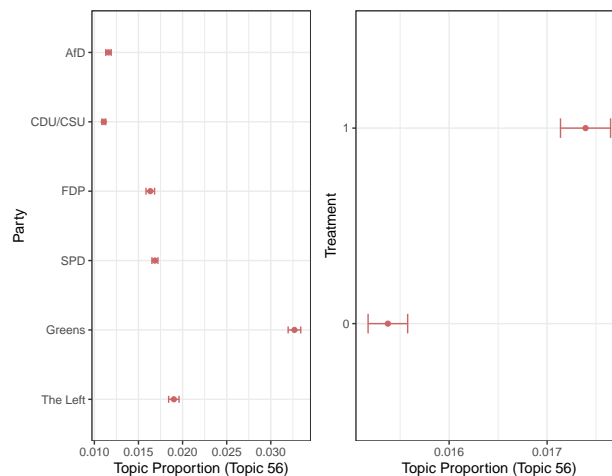


Figure 2: Topic Proportions (Topic 56) by Party and Treatment

In an additional model, I interacted the treatment variable with party affiliation and plotted the



outcome to see whether the effect of treatment is driven by specific parties (see Figure A1 in the Online Appendix). Figure 2 and A1 are furthermore replicated in Online Appendix A for Topic 16 and for Topic 16 + 56 combined, respectively.

I will now turn to the effect of increased climate change salience on emotional rhetoric employed by individual politicians. For this analysis, I only include sentences from speeches addressing topic 56 and 16. I do so because I expect that wind turbines only change politicians' rhetoric in regards to green issues. Hence, I assign to each speech the topic with the highest  $\theta$  value. These values can be extracted from the topic model and represent the probability of a topic given the document. Subsequently, I run the two-way fixed effects regression analysis for the speeches addressing environmental issues.

Figure 3 shows the effect of increased climate change salience on the usage of moral emotional appeals (anger + disgust) made by MPs from different parties in parliamentary speeches. As can be seen, most coefficients are insignificant and close to zero. Nevertheless, the graph provides first support for the disgust hypothesis stated above. With each additional wind turbine, MPs of the radical-right AfD increase disgust appeals by 0.61 percentage points. As expected, wind turbines have no effect on anger appeals by members of the AfD. On the other hand, the anger hypothesis is not supported as the Green party and other left-wing parties do not significantly increase appeals to anger after the construction of wind turbines in their electoral district. Online Appendix B presents the regression table of the main analysis.

Figure 3 further indicates an increase in disgust for the liberal party (FDP). Even though this effect is very small in comparison to the effect for AfD politicians, it reaches statistical significance. This unexpected finding can be potentially explained by previous research. Otteni and Weisskircher (2022) analyzed citizens' attitudes towards renewable energy and party identification. In their results, they show that favoring the transition to renewable energies decreases the likelihood of identifying with two parties: the AfD and, to a significantly smaller extent, the liberal party FDP

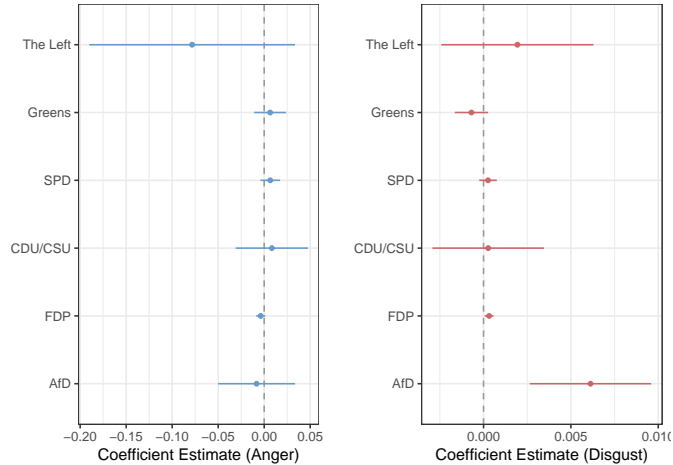


Figure 3: Effect of one additional wind turbine per electoral district on the usage of emotional appeals by Green and AfD MPs (Parliamentary Speeches)

(p. 9). Thus, this shows that parts of the supporters of the FDP are in fact against the transition to renewable energies, which in turn can explain the small increase in disgust from FDP politicians.

To investigate whether moral emotions are indeed in the center of politicians' rhetorical change due to increased salience of climate change in their home constituencies, I also test the effect on non-moral emotions. To do so, I firstly check whether politicians increasingly appeal to non-moral negative emotions: fear and sadness. Figure C1 in the Online Appendix C illustrate that the usage of fear and sadness in parliamentary speeches does not significantly change after the construction of new wind turbines (the only significant coefficients are negative). Moreover, Figure C2 further illustrates the effect of one additional wind turbines on positive non-moral emotions. As can be seen, there are again no positive coefficients. These findings indicate that the effect of constructing wind turbines is limited to negative moral emotions. These findings stress the need to investigate discrete emotional language as parties do not just become more negative in general but appeal to distinct emotions.

Next, I repeat the analysis without relying on the unsupervised topic model approach. By using keyword strings, I employ a supervised approach of identifying parliamentary speeches that deal with climate change and renewable energies. This enables a more precise selection of documents,

where the minimum amount of keywords that need to be present can be adjusted manually. The findings of this analysis are illustrated in Figure C5 in Online Appendix C.

As can be seen, the results for the radical-right AfD are consistent. With each additional wind turbine, MPs of the radical-right AfD increase disgust appeals by 0.77 percentage points, while significantly decreasing anger appeals. This illustrates the importance of the emotion of disgust to the detriment of anger (an emotion the radical-right normally relies on for support). Figure C3 also lends first support for the anger hypothesis. As hypothesized, Green MPs increase anger appeals with each additional wind turbine by 1.5 percentage points. MPs of other left-wing parties, however, do not increase appeals to anger.

In a next step, I replicate the main analysis using Twitter data by individual German MPs. To do so, I analyze more than one million tweets from all available MP accounts during the same research period (details can be found in Online Appendix D). Again, I firstly used a structural topic model to identify topics within tweets. Table D1 presents a selection of the identified topics. After filtering tweets addressing climate issues, I test for the effect of increased local climate change salience on emotional appeals on Twitter. As can be seen in Figure D1, the results remain very similar to the main analysis. The construction of one additional wind turbine causes radical-right politicians to increase appeals to disgust by 0.51 percentage points. However, there is no support for the anger hypothesis: Green MPs and MPs from other left-leaning parties do not significantly increase appeals to anger. Figure D2 and Figure D3 further show that other negative emotions and positive emotions are again not impacted. These findings are important, as they show that the main results can also be replicated with other text sources, indicating that the findings are not only an artifact of the parliamentary debate and its specific legislative rules.

Overall, the results provide large support for one of the proposed hypotheses. Increased local salience of climate change causes radical-right MPs to increase disgust appeals, which is consistent throughout all analyses. The anger hypothesis is only supported in one model specification.

Regarding the size of the changes, the effects might at first appear relatively small. Yet, in average approximately seven wind turbines were constructed in each treated electoral district. This speaks for a sizable increase in negative emotional discourse.

### **Robustness Tests**

To test the robustness of the findings, I conducted a number of additional tests. Firstly, Online Appendix E presents event study plots. These plots compare pre- and post-treatment trends between treated and control groups graphically. Ideally, pre-treatment coefficients should be insignificant from zero showing that the control and treated groups are statistically the same before treatment. After treatment, coefficients should become significant for AfD MPs indicating the treatment effect for treated units. Figures E1 and E2 lend support to this assumption, which strengthens the credibility in assuming parallel trends.

Next, I tested whether directly elected MPs (via first-past-the-post voting) show a stronger effect in comparison to MPs elected via state lists. If the effects are indeed driven by the construction of wind turbines, one should expect stronger effects for directly elected MPs, as they have higher incentives of reacting to local events in their electoral districts (Schürmann and Stier 2022). Online Appendix F confirms these expectations showing a significant, positive effect for directly elected MPs.

In addition, Online Appendix G presents the results of a placebo test investigating whether the main effects also occur in speeches unrelated to climate change. If the main effects are indeed driven by the construction of wind turbines, the change of emotions should not occur in speeches on other topics. Figure G1 supports this assumption.

Lastly, Online Appendix H shows an additional test using the approval date of wind turbines as the date of treatment, rather than the actual construction date. However, Figure H1 shows no significant effects for the approval date, which can be explained by the non-political and non-public

nature of the decision process regarding wind turbine constructions.

### **Testing the Strategy**

In a next step, I aim at investigating whether politicians use emotional appeals strategically and whether they indeed link these emotional appeals to moral concerns. To do so, I firstly examine the data in a more qualitative fashion. If politicians of the radical right strategically appeal to the moral emotion of disgust (as indicated in the findings above), one should be able to find examples of corresponding moral appeals in the text documents. To do so, I draw on speeches and tweets that come from radical-right MPs and that have been classified as containing at least one disgust appeal.

The analysis shows how radical-right MPs combine appeals to disgust with the moral condemning of their political opponents. For instance, the AfD is declaring the German government and, especially, the green party as morally bankrupt by accusing them multiple times of “betraying” and “de-humanizing” German workers (e.g. in the coal or car industry) and German taxpayers. They also refer to mainstream politicians as “liars” and as having “double moral standards”. More importantly, however, they connect emotional appeals with purity concerns. The sanctity domain encompasses the belief that people ought to protect purity in bodies and minds and act in accordance with the natural order (Horberg et al. 2009). It is therefore immoral to behave in a way that is un-natural. Yet, wind turbines are described as exactly this, violating the purity of the body, the mind, and nature in general. A good example of this is a paragraph from a speech held on September 10, 2019, by AfD MP Marc Bernhard:

*“[...] The truth hurts. That’s right. Where is your protest against these thousands of hectares, against this immense destruction of the environment? Where is your protest against the destruction of thousands of hectares of forest? The fact that you approve of this shows all your double standards. People living in the vicinity of wind industrial plants suffer from infra-sound and grueling light reflections, not to mention the countless animals that are shredded in these industrial plants day after day. For example, 250,000 bats are killed in agony every year because of burst lungs and*

*other internal organs. 1,200 tons of insects every year: that means 5 billion to 6 billion bees, grasshoppers and beetles every day. 600 000 birds such as storks, red kites and buzzards are hacked to pieces every year by wind turbines [...]*

This paragraph clearly reflects how disgust appeals (shredding or hacking animals, burst lungs and other organs, etc.) are connected to accusations of acting immorally (e.g. double standards). In another speech, AfD MP Martin Hohmann brings forward a quote that refers to wind turbines as a “brutal outrage against landscape and people” and describes the electricity produced by them as “blood electricity” (July 03, 2018). Furthermore, pro-environmental actors are described as violating the purity of the mind by being members of “religious cults” (December 19, 2019). They also refer to pro-environmental measures multiple times as “hysterical”, “insane”, “delusional”, and even “fascist”. Taken together, the radical-right emotional framing exemplifies the close relationship between the emotion of disgust and the moral foundation of sanctity (Feinberg et al. 2019; Horberg et al. 2009) and aims at amplifying and triggering moral concerns against measures that violate the sanctity of the body, the mind, and the natural order. Simultaneously, they portray themselves as the sole protectors of “the natural foundations of life in our society” fighting against “ideological insanity”.

Further text examples from AfD speeches and tweets, as well as an analysis of communication from Green MPs, can be found in Online Appendix I. Lastly, I corroborate the qualitative analysis by applying a moral dictionary for German language (Bos and Minihold 2022) to check - using computational tools - whether wind turbines in fact cause radical-right MPs to increase corresponding moral language. The results of this exercise (Online Appendix J) fully support the qualitative findings as well as the theoretical expectations. The increased salience of climate issues causes radical-right MPs to increase moral words in relation to the sanctity domain, where left-wing politicians increase moral language of care and fairness.

Finally, as a last step to investigate whether politicians use these emotional appeals strategically, I run additional analyses using data coming from ordinary citizens and party supporters. The theoretical framework of this study rests on the assumption that politicians appeal to emotions which resonate among their supporters. To do so, however, politicians need to know the “moral-emotional” preferences of their supporters, or else they risk losing support (Enke 2020). To see whether citizens’ emotional demands fit the emotional framing of elites, I make use of differently sampled groups of party supporters on Twitter. Online Appendix K provides a detailed description of the different data used as well the tools to analyze disgust related language.

In a first analysis, I analyze nearly 20 million replies to politicians’ tweets (twitter dataset used in Appendix D). The results paint a clear picture. I find that AfD politicians receive significantly more disgust related replies to their tweets, when talking about climate change and renewable energies, than politicians from other political parties. This means that discussions of AfD followers (below AfD tweets) about green issues are tinted to higher levels in disgust language than discussions by followers of other parties. Furthermore, comparing among different topics, one can see that green issues cause more disgust related replies to AfD tweets than other commonly discussed political topics. Green issues therefore stand out in the amount to which they attract disgust language from AfD supporters.

Secondly, I find that - analyzing random samples of party supporters and politically interested citizens on Twitter - AfD supporters use significantly more disgust related language than other partisans when discussing green issues. However, when the same partisan groups discuss other topics (e.g. immigration, the EU, housing etc.) disgust levels are similar and statistically non-significant. These results show that disgust - when discussing green issues - is an important emotion radical-right supporters rely on (more than partisans of other parties). Since these discussions take place

“below” tweets from radical-right politicians or publicly on social media, it is further reasonable to assume that AfD politicians have knowledge about this specific moral-emotional environment among their supporters. Prior research has supported this assumption by showing that national politicians are generally aware of ‘what’ their supporters write on Twitter and adapt their tweets to it (Barberá et al. 2019). Furthermore, previous studies indicated that there are strong strategic considerations underlying parliamentary debates (Proksch and Slapin 2012). Thus, this provides altogether some careful evidence suggesting that the change in emotional framing is part of politicians’ strategic communication, rather than some spontaneous emotional response to local events.<sup>3</sup>

## Discussion

The emotional framing of political issues carry important implications for political opinions, attitudes and behavior. Prior research however, focused either on emotionality as a broad concept or on sentiment (negative versus positive valence). In this article, I test whether politicians appeal to discrete moral emotions which are expected to resonate among their supporters when the salience of contested issues increases.

The main findings of this study show that politicians indeed appeal to discrete (moral) emotions which are expected to benefit them in mobilizing support among their partisans. Members of the radical right focus on the emotion of disgust which is linked to the moral concern of purity (sanctity foundation). These results are robust and can be replicated using different text sources and model specifications. Multiple robustness tests further corroborated the findings. Further careful evidence

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<sup>3</sup>I remain agnostic about whether politicians adapt their framing to fully crystallized moral-emotional demands of their supporters, or whether citizens are also influenced in their framing by politicians. There is a possibility that a bi-directional influence exists, with elite rhetoric molding partisan discourse and vice versa.



suggests that the main effect might be driven by strategic incentives. Politicians adapt their emotional framing to their base, as disgust is linked to their underlying moral values and a key emotion for radical-right supporters when talking about climate change. Radical-right MPs therefore speak an emotional language their supporters ‘understand’. On the other hand, the expectations for left-leaning MPs (especially Members of the Green party) and their focus on the moral emotion of anger only hold for one specific text source and only for identifying speeches with keyword strings.

The results of this study make nevertheless several noteworthy contributions. Firstly, it contributes to the existing literature on emotional rhetoric in political communication (Crabtree et al. 2020; Kosmidis et al. 2019; Osnabrügge, Hobolt, and Rodon 2021; Müller 2022; Gennaro and Ash 2022). By examining the public salience of contested issues, this study reveals that political actors appeal to the emotions that are expected to benefit them the most. This highlights the importance of investigating discrete emotions rather than merely sentiment and emphasizes the versatility of emotional framing. Parties, or party families, need not rely solely on one emotion for electoral support. The findings of this study demonstrate that the appeal of the radical right is not exclusively based on anger. Rather, radical-right actors can adapt their framing and employ different emotional appeals depending on what is most advantageous in a given situation. This suggests that emotional framing in political communication is more versatile and more fine-grained than previous studies assumed.

Secondly, the study provides further evidence for the important connection between morality and emotions in politics. Moral emotions can cause and amplify distinct moral concerns. If these moral concerns resonate among the target group, political messages can become particularly convincing and persuasive (Feinberg and Willer 2013), increase political activism and partisan turnout (Jung 2020; Skitka and Wisneski 2011), and shape voting behavior (Enke 2020). This clearly re-

flects a potential for political elites as they can use distinct (moral) emotions in targeting specific audiences in given situations.

However, it is important to note that whether elites actually succeed in eliciting the precise moral emotion in their target audience is beyond the scope of this paper. Recent studies suggest that political rhetoric and politicians can indeed cause emotional responses in their audience (Bakker, Schumacher, and Rooduijn 2020), but how precise this triggering process can be is difficult to measure. Recent research suggests that negative emotions often emerge together, which speaks for a more general negative affect towards certain treatments (Bakker, Schumacher, and Homan 2020).

One limitation of this study is that the analysis has been limited to one European case only. However, I believe that the findings potentially travel to other European and North American countries, where one can find similar climate-skepticism among the far right (Forchtner 2019) and polarization among elites and the public in terms of global warming. Nevertheless, future research should set out to conduct larger comparative analyses. In a similar vein, future research should take other contested issues into consideration and analyze how other discrete emotions take the role of ‘most beneficial’ for other political topics.

These limitations notwithstanding, I believe that these findings carry broader implications for democracy in general. Negative emotions can carry important implications for political trust and democratic values (Webster 2020). More morally convicted attitudes and higher levels of moral-emotional appeals can further exacerbate polarization (Clifford 2019) and lower the willingness to compromise (Ryan 2017). Negative moral emotions in particular, can make the author or speaker appear less open-minded and less worthy of a political conversation for outgroup members (Brady and Van Bavel 2021). Hence, increasing levels of negative moral emotions can harm inter-group discourse. This effect might be particularly strong when the moral rhetoric employed by politicians

does not resonate with the moral world view of the opposing outgroup. Such communication leads the public to perceive sharper ideological distinctions between parties than actually exists (Finkel et al. 2020). Considering the growing salience of global warming and its consequences in the future, these findings potentially foreshadow increasing societal divisions between pro-environmentalists and climate change skeptics.

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## Online Appendix

Do Politicians Appeal to Discrete Emotions?  
The Effect of Wind Turbine Construction on  
Elite Discourse

## A Topic Model Results

Structural Topic Models (STM) (Roberts, Stewart, and Tingley 2014) belong to the family of unsupervised topic models, which assign topics to documents based on co-occurring clusters of words in the texts. Based on these discriminating words, researchers can identify specific topics for each individual document.

Moreover, STM allow for the possibility of incorporating metadata, defined as additional information about each document. Since I assume that topic salience is strongly influenced by the political party of the speakers and by the construction of wind turbines, I included the party variable and the treatment variable (as a binary variable) as topical prevalence factors. I also pre-processed the text corpus before running the model. I used the inbuilt textProcessor function of the stm package for R (Roberts, Stewart, and Tingley 2014). The pre-processing steps included the removal of German stopwords, numbers, and punctuation. All words have been reduced to their root form (stemming) and transformed into lowercase letters. Using the prepDocuments function, I further removed very rare and very frequent terms that appear in less than 50 or in more than 5000 speeches, respectively.

Since topic models belong to the family of ‘unsupervised methods’, there are only a few decisions made by the researcher. One of the most consequential manual decisions, however, is setting the number of topics (k) included in the topic model. This somewhat arbitrary decision has the power to influence not only how many topics there are, but how also how substantively meaningful they are. One way of ‘automating’ this arbitrary decision is setting k to 0, thereby using the algorithm by Lee and Mimno (2014) which automatically selects the number of topics.

Below are the results of the topic model using parliamentary speeches and setting k to 0 (Mimno and Lee 2014). The total number of identified topics is 85.

Topic	Terms	Labels
5	europe, european, union, together, france, british, brexit	EU
6	patients, doctors, medical, doctors, care	Medical + Care
8	research, innovation, science, area, new	Research + Innovation
16	energy transition, energy, eeg, electricity, renewable, fuel	Renewable Energies
33	companies, enterprises, bank, finance, loan, profit	Economy + Finance
40	social, life, poverty, children, basic income	Welfare
41	army, soldiers, minister, troops, duty, drones	Military
46	apartment, tenants, build, rent, rental price	Housing
56	climate protection, climate, climate change, coal phase out, global warming	Climate
63	mission, afrika, united, nations, region, help, mali, south sudan	Military Interventions

Table A1: Selection of Topics, Parliamentary Speeches (k=0)

Figure A1 displays the results for the treatment variable interacted with party affiliation. As can be seen, the increase in salience of climate issues is largely driven by left-wing parties (the Greens and The Left). Furthermore, MPs from radical-right AfD also increase their focus on climate change once wind turbines are constructed in their electoral district. As can be seen in Figure A1, mainstream right parties (as well as the social democrats) do not significantly change their focus on this topic.

Figure A1: Topic prevalence (Topic 56) by party

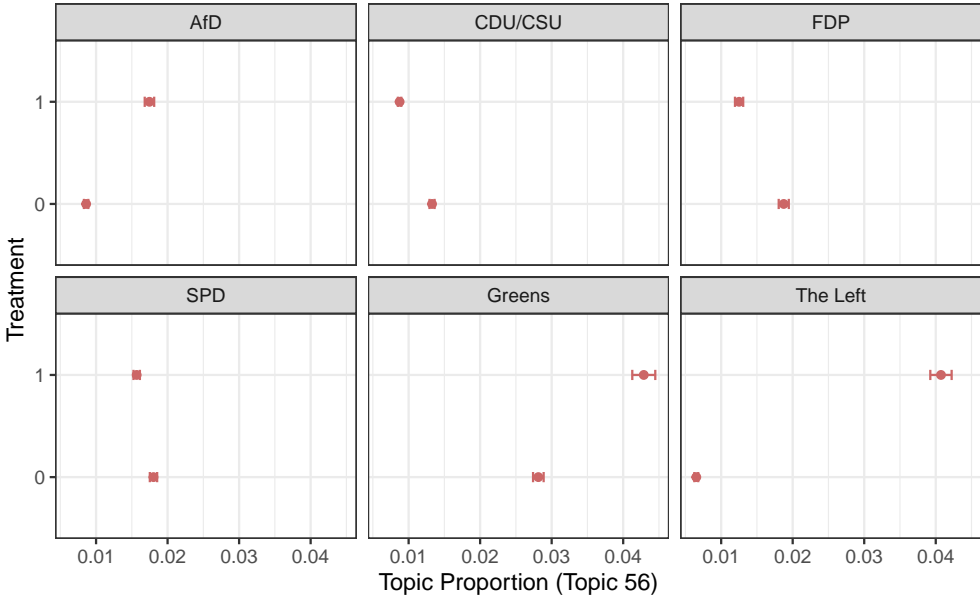


Figure A2: Topic Proportions by Treatment

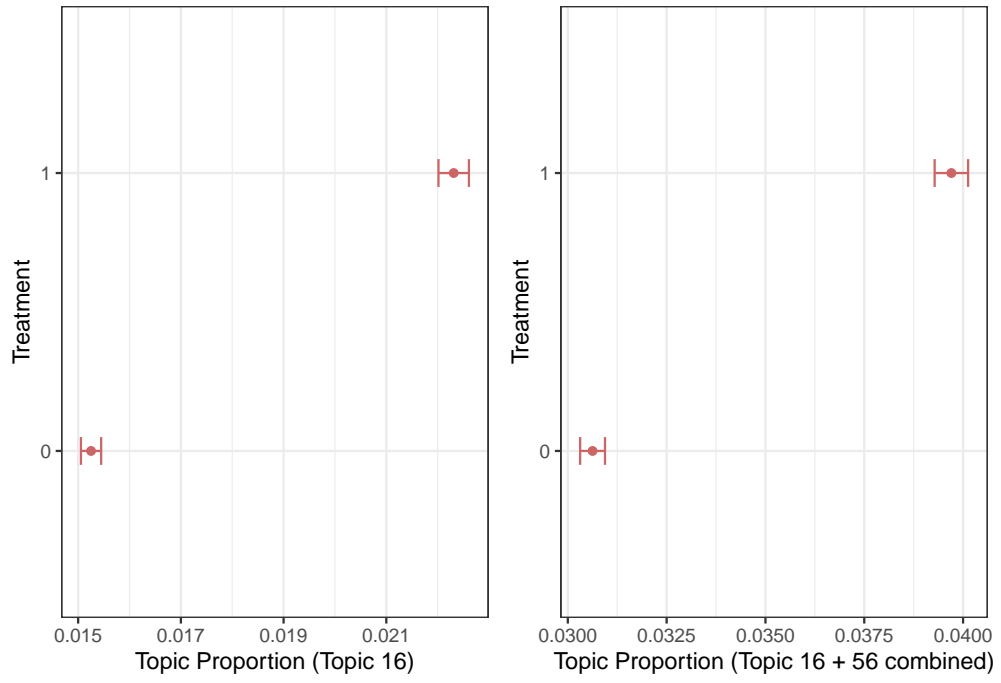


Figure A3: Topic Proportions by Party

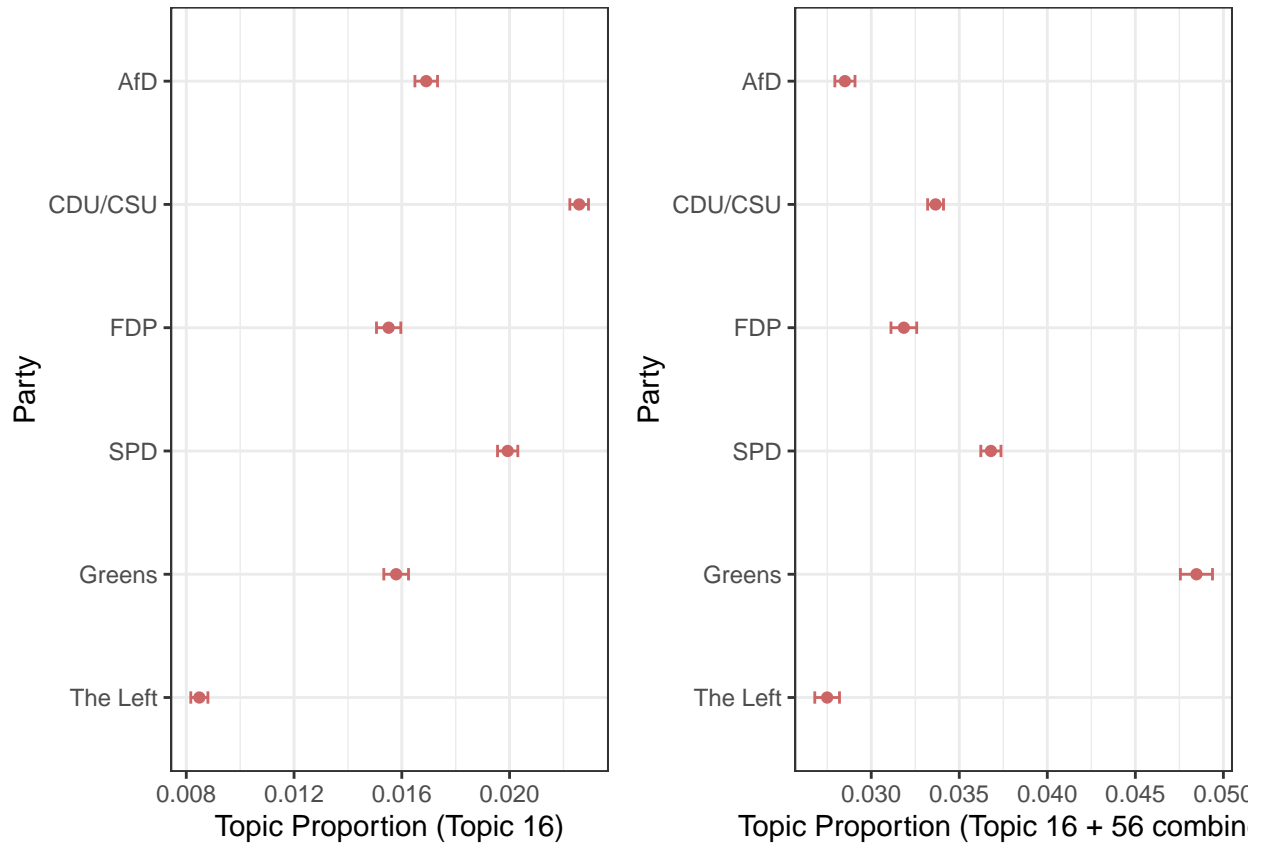




Figure A4: Topic Proportions by Treatment and Party (Topic 16)

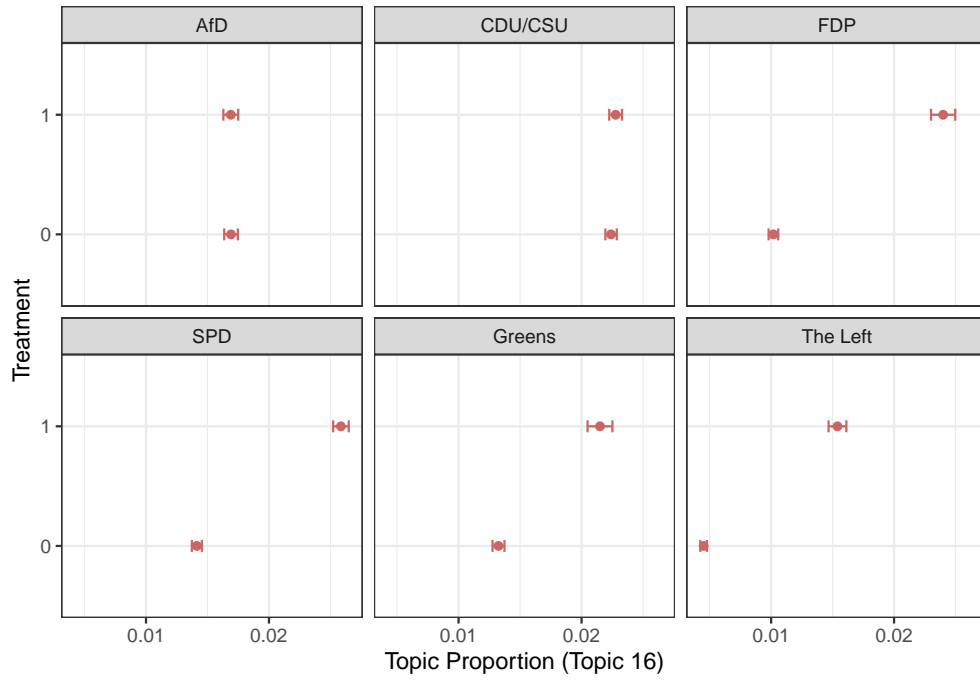
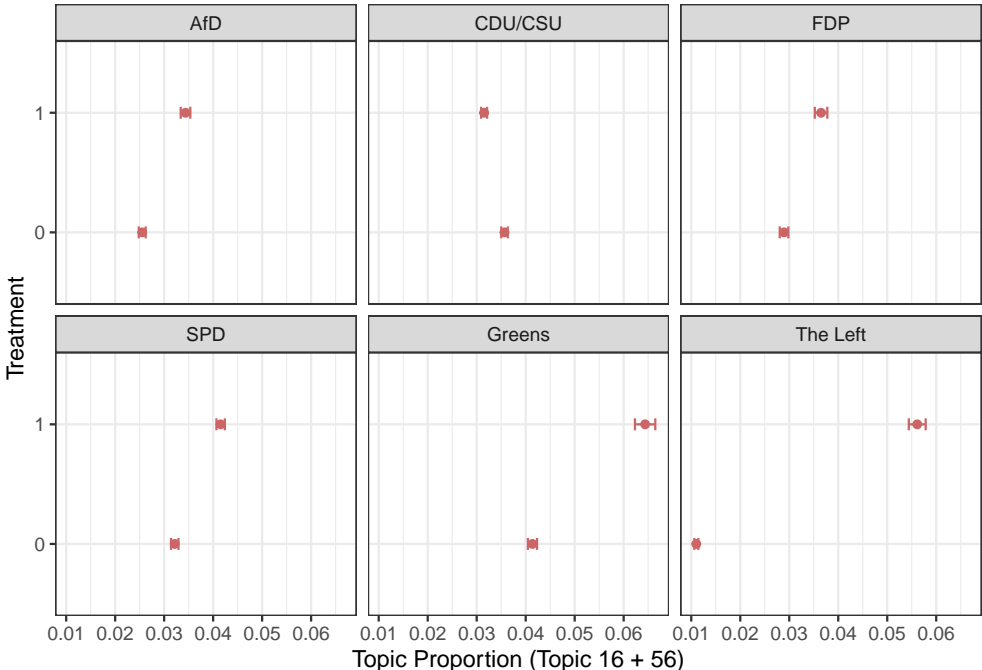


Figure A5: Topic Proportions by Treatment and Party (Topic 16 + 56 combined)



## B Regression Table

Online Appendix B presents the regression table of the main analysis using parliamentary speeches as text source.

Anger						
	<b>Greens</b>	<b>AfD</b>	<b>CDU/CSU</b>	<b>FDP</b>	<b>SPD</b>	<b>The Left</b>
Additional wind turbine	0.006	-0.008	0.008	-0.004	0.007	-0.078
	(0.009)	(0.021)	(0.020)	(0.003)	(0.005)	(0.057)
Num.Obs.	449	433	483	434	496	432
R2	0.001	0.001	0.001	0.002	0.003	0.010
R2 Adj.	-0.528	-0.587	-0.579	-0.571	-0.509	-0.552

+ p < 0.1, \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001

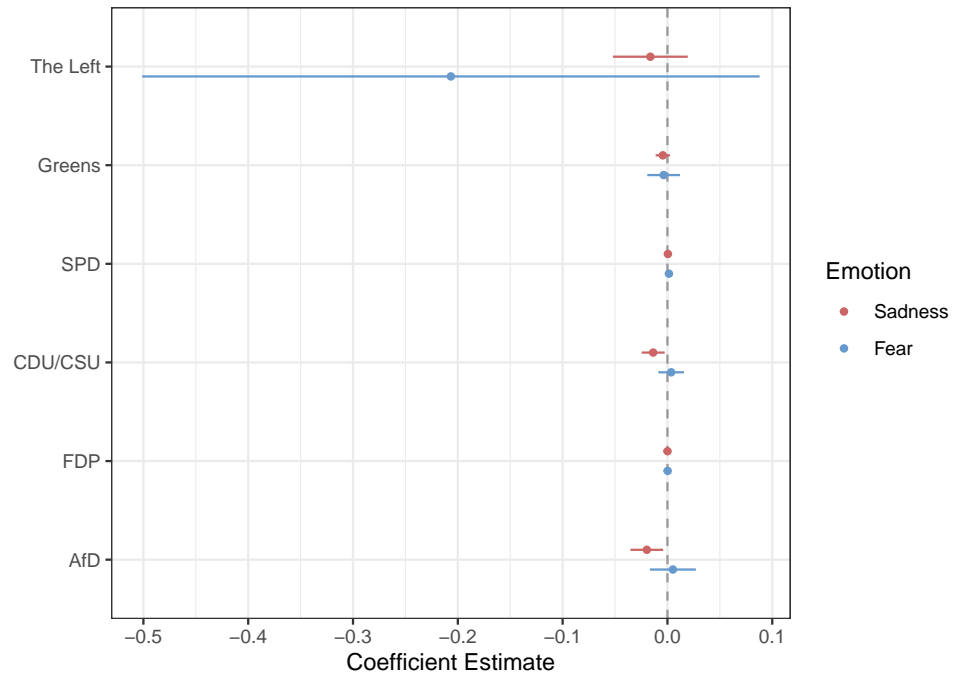
Disgust						
	<b>Greens</b>	<b>AfD</b>	<b>CDU/CSU</b>	<b>FDP</b>	<b>SPD</b>	<b>The Left</b>
Additional wind turbine	-0.001	0.006***	0.000	0.000*	0.000	0.002
	(0.000)	(0.002)	(0.002)	(0.000)	(0.000)	(0.002)
Num.Obs.	449	433	483	434	496	432
R2	0.001	0.021	0.000	0.001	0.000	0.000
R2 Adj.	-0.528	-0.555	-0.580	-0.572	-0.513	-0.567

+ p < 0.1, \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001

## C Additional Analyses

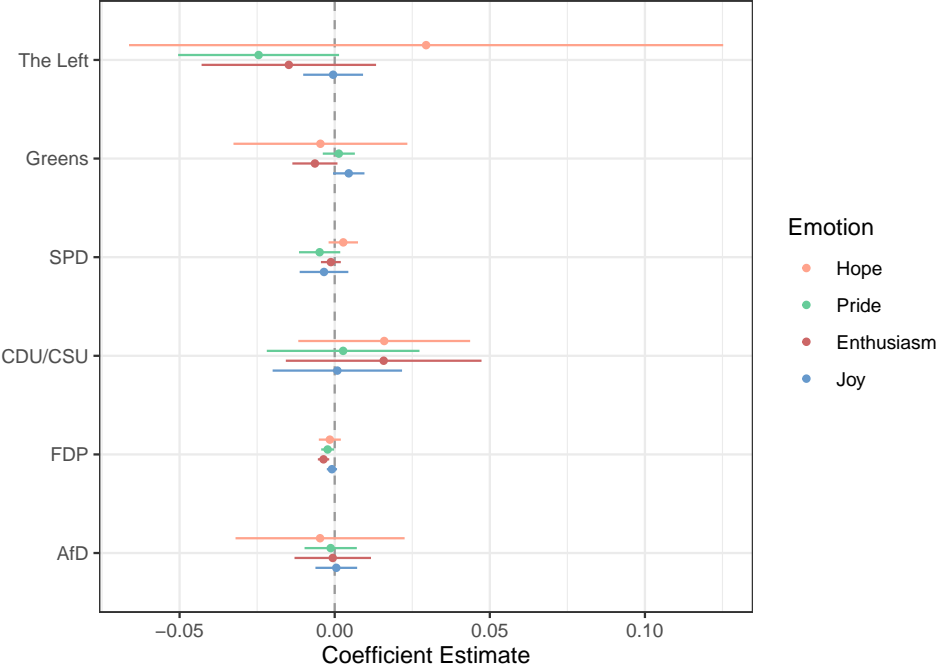
### C.1 Fear + Sadness

Figure C1: The effect of one additional wind turbine on non-moral negative emotional appeals (Fear + Sadness) by party (Parliamentary Speeches)



## C.2 Positive Emotions

Figure C2: The effect of one additional wind turbine on positive emotions by party (Parliamentary Speeches)



### C.3 Keyword Analysis

Topic models are often criticized for being intransparent and inconsistent. Running the same topic model with a different number of topics, or even with a different seed often leads to divergent results. Researchers have little insight in how clusters are formed and to what extent these clusters are coherent. A more supervised approach of identifying topics is the dictionary approach, i.e. using keyword strings that contain words in relation to the relevant issue. In addition to the structural topic model, I therefore repeat the analysis with the ‘dictionary approach’. The applied keyword string is the following:

The keywords used to identify speeches that address green issues are the following:

German: *“klima”, “umwelt”, “erderwärmung”, “umweltverschmutzung”, “eeg”, “solar”, “windkraft”, “windenergie”, “windpower”, “windanlage”, “erneuerbar”, “strom”, “elektri”, “kwk”, “ökol”, “repowering”, “emission”, “photovoltaik”, “fotovoltaik”, “wärme”, “kraftstoff”, “shore”, “kohle”, “erwärmung”, “wasserkraft”, “wasserenergie”, “geothermie”, “kraftwerk”, “turbine”, “kernkraft”, “kernenergie”*

Translated to English: *“climate”, “environment”, “global warming”, “pollution”, “eeg”, “solar”, “wind power”, “windenergy”, “windpower”, “wind installation”, “renewable”, “electricity”, “kwk”, “eco”, “repowering”, “emission”, “photovoltaic”, “heat”, “fuel”, “shore”, “coal”, “warming”, “hydropower”, “hydroelectric”, “geothermal”, “power plant”, “turbine”, “nuclear power”, “nuclear energy”*

Figure C3 and C4 replicate the Figure 2 and 3 from the main text, illustrating the effect of additional wind turbines on topic proportions. Topic proportions, in this case, are calculated using the keyword approach. Speeches are counted as regarding climate change when at least eight keywords (multiple counting possible) from the keyword string below are included. This high threshold has been chosen as it helps in identifying speeches that pertain with a high probability to the topic of climate change, while still including enough speeches for each party. As can be seen in the left panel, treated MPs again indicate a higher salience of climate issues. Furthermore, the Green party again shows the highest salience among all parties on climate issues. Figure C4 indicates that the treatment effect holds for all parties. Figure C5 presents the effects of new wind turbines on emotional appeals.

Figure C3: Topic Proportions by Treatment (left panel) and by Party (right panel) using Keyword Approach

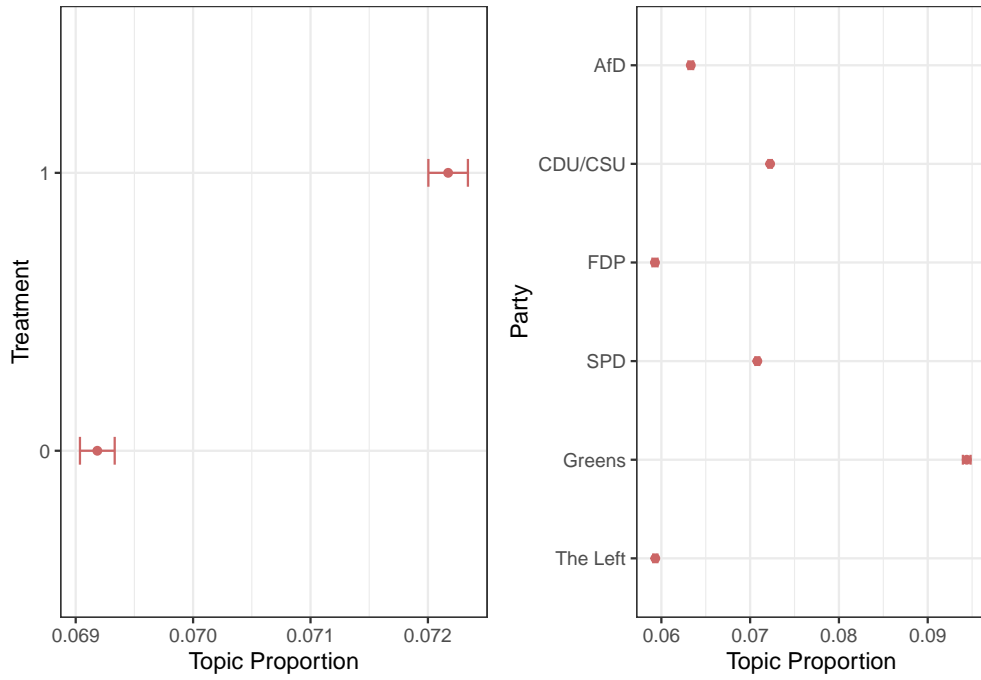


Figure C4: Topic Proportions by Treatment and by Party using Keyword Approach

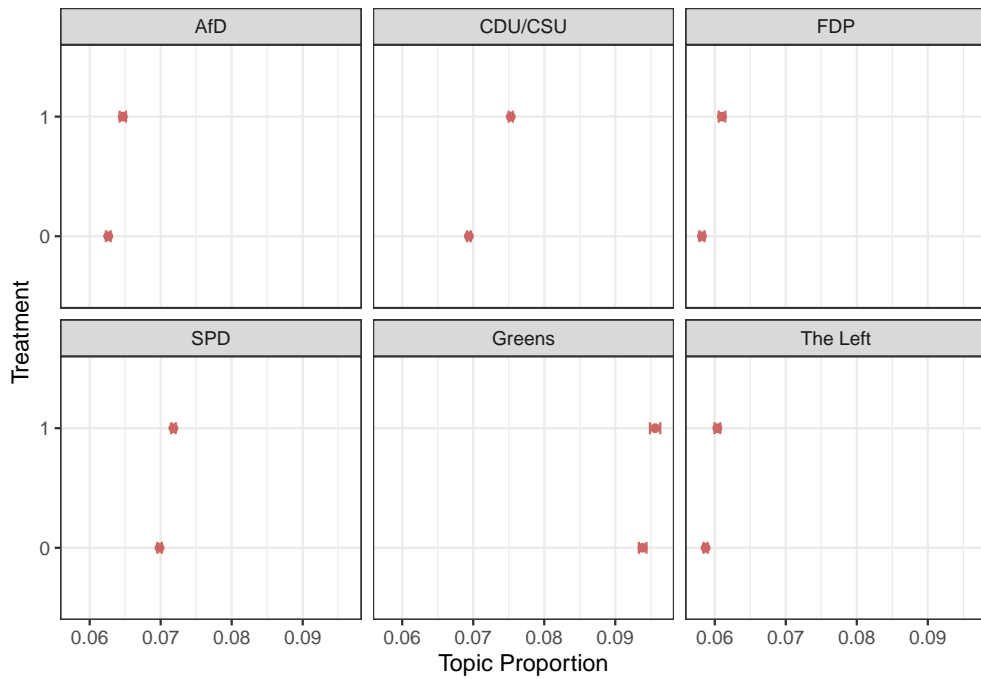
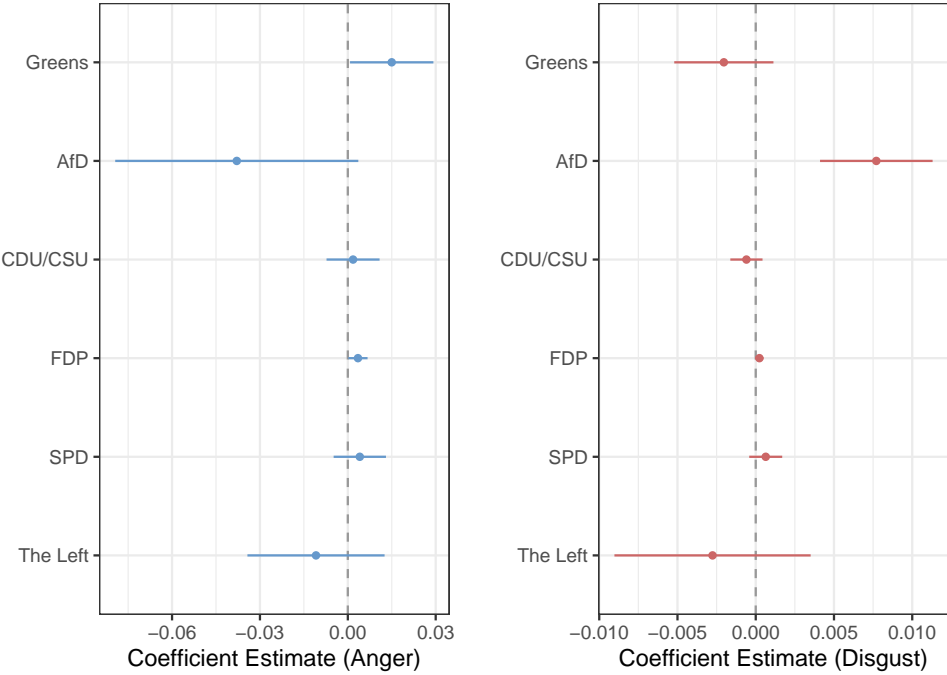


Figure C5: Effect of one additional wind turbine per electoral district on the usage of emotional appeals (Keyword Approach, Parliamentary Speeches)





## D Analysis using Twitter data

To see if the main results also hold for different text data, I replicate the main analysis with tweets from all available MP accounts. Twitter is one of the most important social media networks for political discussions. Importantly, Twitter is often used by political elites to communicate and set the agenda (Barberá et al. 2019).

To access tweets of individual politicians I first collected all available twitter accounts by manually typing in the name of each politician and subsequently checking for existing accounts. In total, 506 accounts are included in the data set. I then scraped these accounts using the R package *academictwitteR* (Barrie and Chun-ting Ho 2021) which accesses the Twitter v2 API endpoint for the Academic Research Product Track. Tweets in other languages than German have been removed. A total number of 1,245,995 tweets are included in the data set, posted between September 24, 2017 and the end of 2020.

Before the analysis, I further remove all retweets from the dataset to only include tweets written by the respective politician. In order to retrieve only tweets that deal with environmental issues and climate change, I again rely on structural topic models (Roberts, Stewart, and Tingley 2014), setting  $k$  to 0. In the case of twitter data, the total amount of identified topics is 64. Table D1 presents a selection of different topics for Twitter data.

Topic	Terms	Labels
2	vote, parties, voices, EU elections, regional elections, eligible to vote	Elections
3	army, security, mission, afghanistan, soldiers	Military
19	democracy, society, solidarity, police, hatred, militant democracy	Democracy
38	euro, money, millions, billions, tax, income, VAT	Money, Budget, and Taxes
43	covid, pandemic, vaccination, test, doctor's office, biontech	Covid-19
46	climate, climate protection, goal, coal, renewable, energy	Climate Change

Table D1: Selection of Topics, Tweets ( $k=0$ )

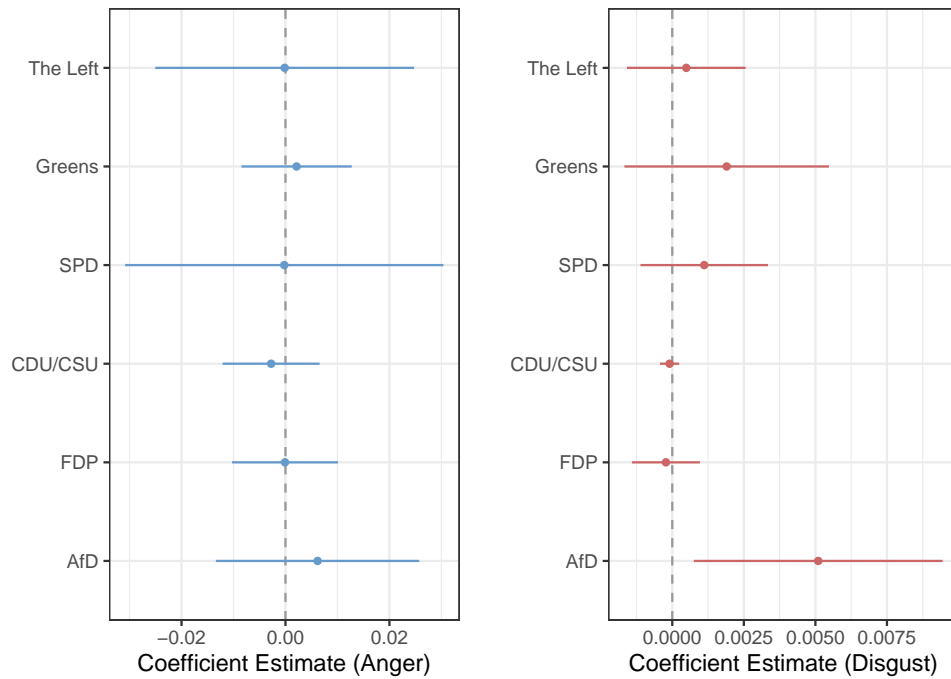
In general, the distinction between different policy arenas is less clear-cut on Twitter. This might be due to the style of communication on social media, where politicians talk less formally and mix professional communication with private messages. Nevertheless, there is a clear climate change and renewable energy topic (Topic 46).

After filtering tweets that have been associated with Topic 46, I repeat the two-way fixed effects regression model for all parties. Figure D1 presents the results using Twitter data.

## D.1 Anger + Disgust

As can be seen, members of the radical right AfD are again increasing disgust appeals, but not anger appeals. With each additional wind turbine, MPs of the AfD increase disgust appeals by 0.51 percentage points in their twitter communication. On the other hand, there is again no support for the anger hypothesis: Green MPs and members of other left-wing parties do not increasingly appeal to anger.

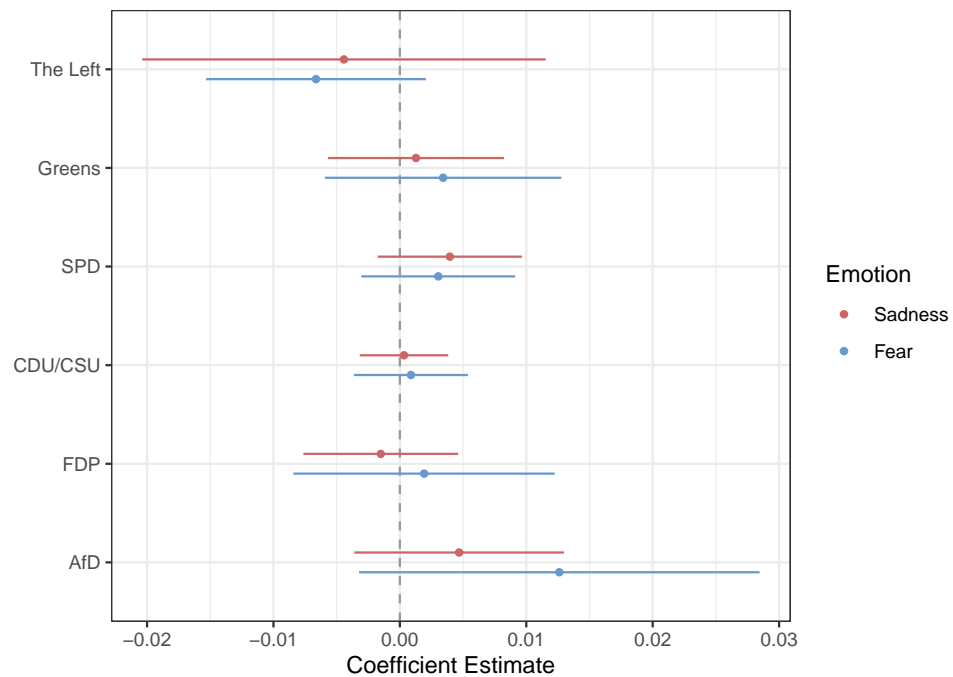
Figure D1: Effect of one additional wind turbine per electoral district on the usage of anger and disgust appeals by party (Twitter Data)



## D.2 Fear + Sadness

Figure D2 indicates that other negative non-moral emotions are again not impacted. All coefficients remain insignificantly different from 0.

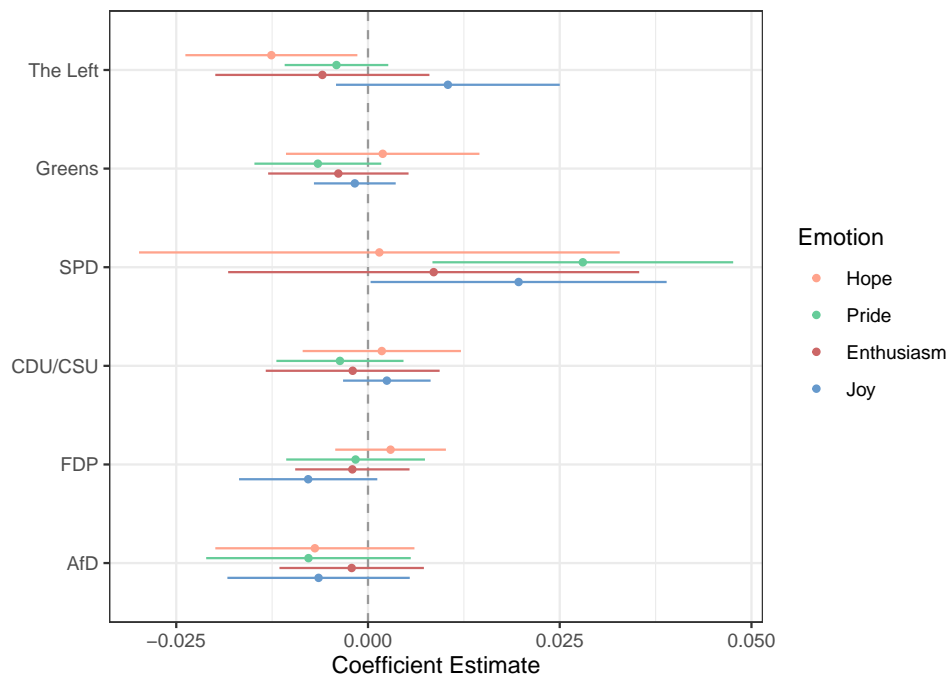
Figure D2: Effect of one additional wind turbine per electoral district on the usage of fear and sadness appeals by party (Twitter Data)



### D.3 Positive Emotions

Figure D3 shows that most positive emotions are not impacted. Most coefficients remain insignificantly different from 0. The only significant coefficient indicates an increase in pride and joy appeals for the incumbent Social Democrats (SPD). This results can be potentially explained by the SPD being in government during the period of research. Incumbent parties have more incentives to frame their achievements in positive light (Crabtree et al. 2020), as a more positive track record can increase their support during elections. Hence, politicians from the pro-environmental party SPD might celebrate wind turbines with positive emotions, trying to claim their construction as their achievement.

Figure D3: Effect of one additional wind turbine per electoral district on the usage of positive emotions by party (Twitter Data)



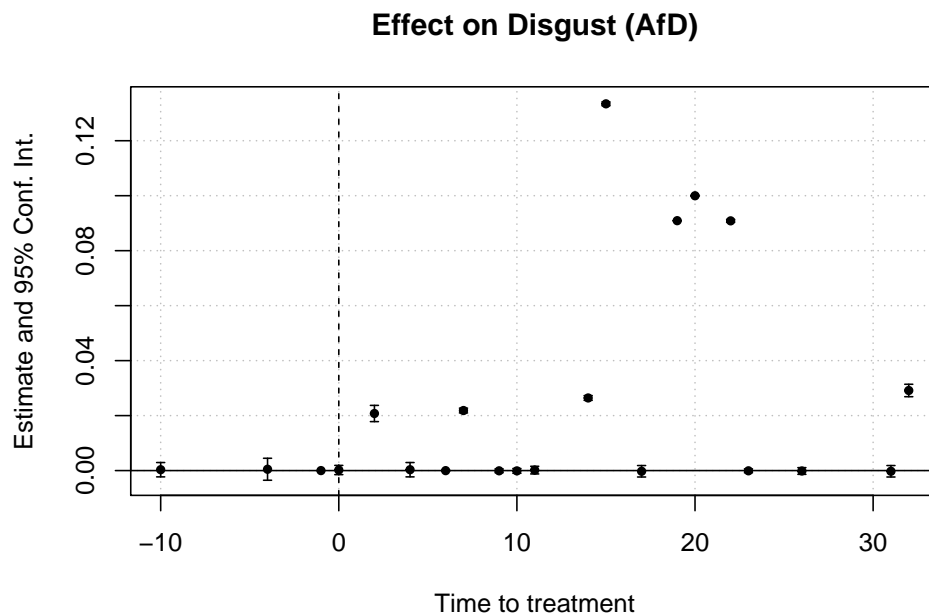
## E Event Study Plots

Event study plots are often used in staggered difference-in-difference (DiD) designs to test for parallel trends. The parallel trend assumption is important in DiD designs to ensure internal validity. It requires that in the absence of treatment, the difference between the treated and control units is constant over time. However, in contrast to regular DiD, staggered DiD have groups of units which adopt the treatment at different points. This makes the comparison of pre-treatment trends more difficult. One possibility is an event study plot, which includes a regression model that includes treatment leads and lags. The graphical presentations illustrate the effects and confidence intervals of the two-way fixed effects regression models for each time period before and after the treatment period.

If the assumptions hold, pre-treatment coefficients should be insignificant from zero, whereas they should become significant post-treatment. In concrete terms, these plots can show that prior to treatment, the two groups of politicians in treatment and control were similar with regards to their emotional appeals but started to diverge after wind-turbines were built in their electoral district. In the model below, I present Sun-Abraham models which correct often occurring biases in two-way fixed effects models with leads and lags (Sun and Abraham 2021).

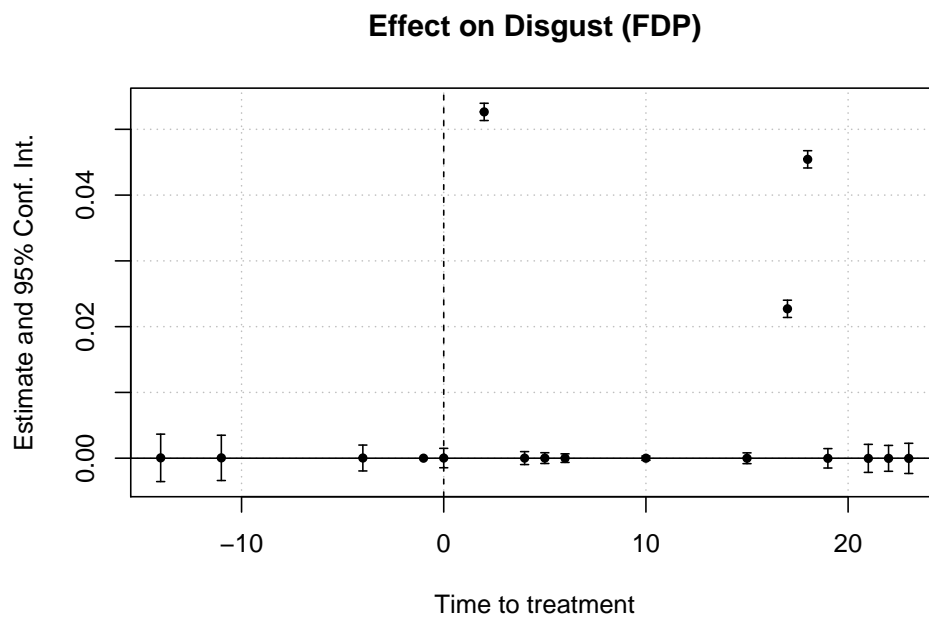
Figure E1 presents the results for AfD politicians. Since FDP politicians also showed a small, but statistically significant effect in the main analysis, I also included the event study plot for these MPs in Figure E2. As can be seen, the figures lend support to assuming parallel trends. Coefficients are insignificant to 0 before the treatment, and positive treatment effects can be observed post-treatment.

Figure E1: Event Study, Staggered Treatment (Sun and Abraham 2021)



Significant, but small effects can be observed for politicians from the liberal party FDP.

Figure E2: Event Study, Staggered Treatment (Sun and Abraham 2021)



## F Direct MPs versus state list

In this exercise, I test whether MPs elected directly in their respective electoral district (via first-past-the-post voting) show a stronger effect in comparison to MPs elected via state lists. If the effects are indeed driven by the construction of new wind turbines, one should expect stronger effects for directly elected MPs, as they have higher incentives of reacting to local events in their electoral districts (Schürmann and Stier 2022).

As can be seen, the heterogeneous effects for AfD MPs are indeed significant, showing a larger increase of disgust for directly elected MPs. Interestingly, there is also a significant negative effect on anger appeals. Directly elected MPs decrease anger significantly, which further emphasizes the importance of disgust in this specific setting.

For this exercise it is important to note, however, that especially smaller parties have only a small number of directly elected MPs. For instance, in the period of research the AfD only had two directly elected politicians in the German Bundestag. Thus, the figures below are based on comparing these two directly elected MPs to the remaining MPs.

Figure F1: Heterogeneous effects of wind turbine construction on disgust appeals interacted with election mode for AfD MPs (Parliamentary Speeches)

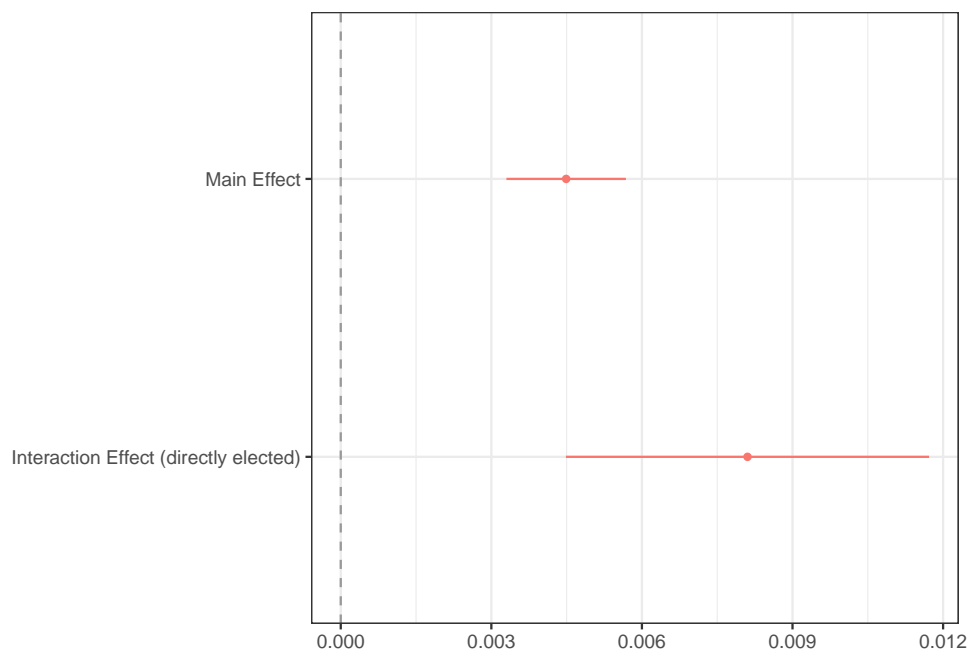
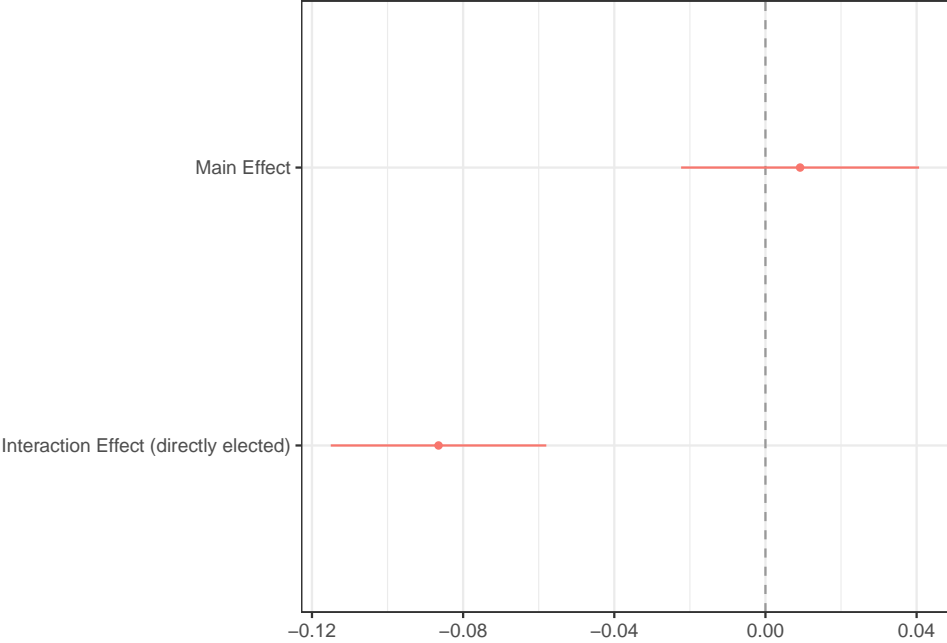


Figure F2: Heterogeneous effects of wind turbine construction on anger appeals interacted with election mode for AfD MPs (Parliamentary Speeches)



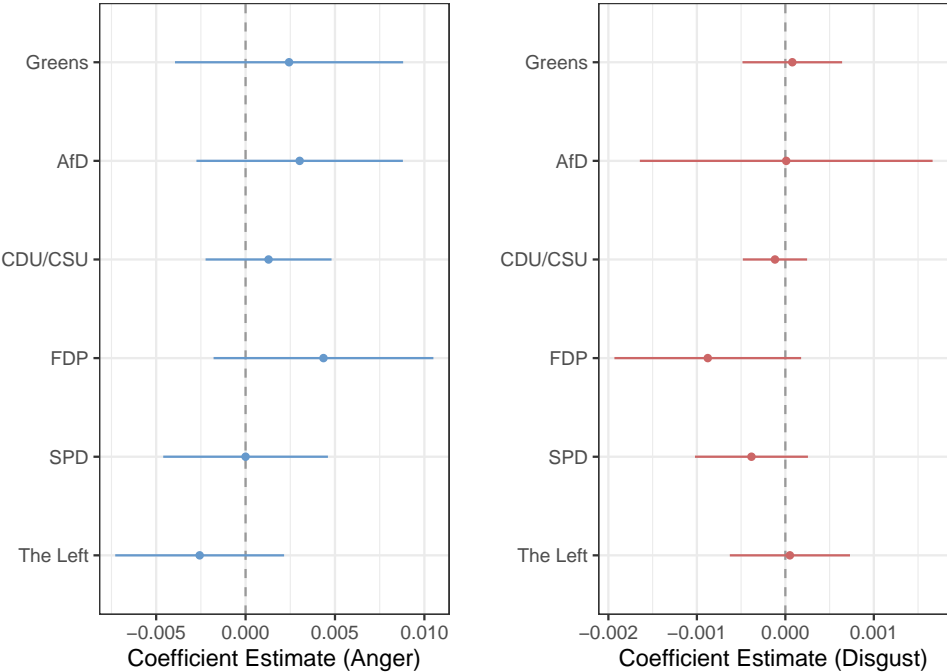


# G Placebo Test: Other Topics

In this exercise, I present the results of a placebo test investigating whether the main effects also occur in speeches unrelated to climate change. If the main effects are indeed driven by the construction of wind turbines, the change of emotionality should not occur in speeches regarding other topics.

For this exercise, I replicate the main analysis excluding climate change related topics (topics 56 and 16) from the corpus of parliamentary speeches. The graph G1 supports the main findings. All coefficients are insignificant and close to zero.

Figure G1: Effect of one additional wind turbine per electoral district on the usage of emotional appeals in unrelated topics (Parliamentary Speeches)

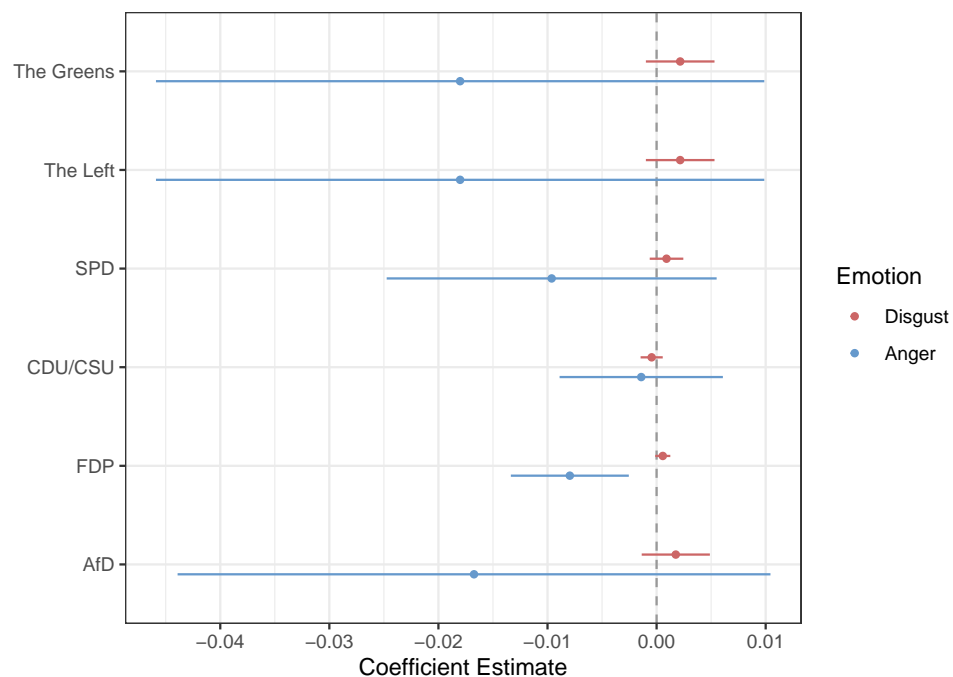


## H Placebo Test: Approval Date

In this test, I use the approval date of wind turbines as the date of treatment, rather than the actual construction date. To do so, I collected the approval dates from the ‘Renewable Energy Installations Core Dataset’ (BNetzA 2021) that I also used for the main analysis. I included all approval dates that lie in the period of research. For this analysis, I also collected additional information about wind turbines that are already approved but not yet built.

However, Figure H1 shows no significant effects for this exercise, which can be potentially explained by the non-political and non-public nature of the majority of decision processes regarding wind turbine construction. As explained in the main manuscript, wind turbines are approved by administrative district offices and do not involve a political decision - nor is the public informed about the approval in most cases. Hence, the approval of wind turbines is - in most cases - not an emotionally arousing nor publicly debated event.

Figure H1: Effect of one additional wind turbine approval per electoral district on the usage of emotional appeals (Parliamentary Speeches)



# I Qualitative Evidence

## I.1 Text Examples AfD

In this section, I present text examples from radical-right MPs (Members of the AfD), which exemplify how emotional appeals are connected to moral arguments of “sanctity/degradation”.

- **Parliamentary speech, Marc Bernhard, September 10, 2019:** Mr. President, Dear Colleagues. Almost exactly a year ago, you from the Greens and the Left massively supported the violent riots in Hambach Forest, and you from the Greens even first approved the clearing of the forest and then **hypocritically** moved your party conference to the edge of Hambach Forest. Don't you think that's pretty **hypocritical** yourself? At the time, the Hambach Forest was about 200 hectares of forest for coal mining. **In contrast, many thousands of hectares of forest have already been cleared in recent years for wind turbines, and you want to destroy many tens of thousands of hectares more in the future. The truth hurts. That's right. Where is your protest against these thousands of hectares, against this immense destruction of the environment? Where is your protest against the destruction of thousands of hectares of forest? The fact that you approve of this shows all your double standards. People living in the vicinity of wind industrial plants suffer from infrasound and grueling light reflections, not to mention the countless animals that are shredded in these industrial plants day after day. For example, 250,000 bats are killed in agony every year because of burst lungs and other internal organs. 1,200 tons of insects every year: that means 5 billion to 6 billion bees, grasshoppers and beetles every day. 600 000 birds such as storks, red kites and buzzards are hacked to pieces every year by wind turbines. Against this background, the quote from your parliamentary group leader Göring-Eckardt - “We want ... every bee and every butterfly and every bird in this country to know: we will continue to stand up for them” - can hardly be surpassed in mendacity. They have long ceased to be an environmental or nature conservation party, but climate hysterics who sacrifice everything - whether human, animal or environmental - on the altar of their climate religion. Now the Germans are supposed to save the world climate with a CO2 tax, practically on their own. This universal tax will put a price tag on all areas of human life, the amount of which the government can set virtually at will, whether for bread, butter, clothing, smartphones or even water, or simply for breathing. After all, almost 10 percent of man-made CO2 is produced simply by breathing. And what is all this for? Just to squeeze even more money out of the citizens. The madness goes even further. The more than 30,000 wind industry plants generate just 18 percent of the electricity in Germany, and you want to generate 100 percent from unstable energy sources in the future. To achieve this, more than 100,000 additional wind turbines would have to be built in Germany. One thing is certain, dear Greens: If you get your way here, there will soon be no more forests, bees, birds or bats, and the children - including your children, if you have any at all - will ask you: Why didn't you do anything about it? Your policy is destroying the environment, killing animals and making people sick and poor. This must finally come to an end.**

- **Parliamentary speech, Martin Hohmann, July 03, 2018:** Madam President, Dear Colleagues. One piece of good news first: I was delighted to learn that the German Cabinet has approved an action program for insect protection. At last! **But how could it have come to such a pass that bee populations in our country have come under such threat?** After all, the Federal Ministry has not just been around since yesterday. The AfD's approach to environmental policy stands for reason, a sense of proportion and scientifically proven facts. **In your budget, Madam Minister, ideology and wishful thinking unfortunately prevail. I would cite the expansion of wind power as an example. Wind power, as the most important part of the so-called renewable energies, is being pushed through as hard as nails against growing resistance from the population. The ideology of supposedly so good energy through ever new wind turbines and ever new power lines is taking its toll. There is especially the disfigurement of the landscape by constantly new wind turbine giants. Enoch zu Guttenberg, unfortunately recently deceased, has set a literary monument to our formerly so wonderful home landscape in the "FAZ". For him, wind turbines are "a brutal outrage against landscape and people". He calls the electricity generated "blood electricity". Electricity prices are at the top of the world. It is the many so-called little people who are virtually exploited for wind energy - a real redistribution of wealth from the bottom to the top. Workers and employees know why they no longer vote SPD, but AfD. - The numbers show it - Consistently and from the beginning only one party opposes the wind power mania: the AfD. [...]**
- **Parliamentary speech, Karsten Hilse, 19.12.2019:** Mr. president! Ladies and gentlemen! Dear compatriots! I will start with a quote from Henryk Broder - I have recited it here before; but of course, figuratively speaking, it fits like a glove today -: this climate story has all the ingredients, all the hallmarks of a faith movement: there are the believing masses, who hold their church days ... there are heroes like little Greta from Sweden, there are the clergy like Mr. Schellnhuber and other scientists or more-or-less-scientists, who take over the role of the priests, and then there are the heretics, the heretics ... as the environmental spokesman of the AfD parliamentary group, I am the heretic-in-chief for them and for many believing journalists, because I simply don't want to believe in their nonsense, but demand proof for their abstruse theory, which they are not able to present, despite decades and billions of dollars of research. Instead, people are supposed to be satisfied with adventurous predictions, although the Intergovernmental Panel on Climate Change itself admits that the climate is a coupled, chaotic, nonlinear system and therefore predictions about future climate states are not - not! - nevertheless, the believers regularly hold their church days, where their priests, against their better judgment, make people afraid of the supposedly imminent end of the world, blame them for it and demand that they do penance and indulge their sins. As the chief heretic of the AfD, I had the dubious pleasure of taking part in this church day. I was allowed to witness live everything that Henryk M. Broder spoke about: thousands of believers, most of whom already sinned by traveling to the church day, because they emitted much more of the devil's product CO<sub>2</sub> than if they had stayed at home. The heroine Greta and many other little heroines of "No Education Friday", climate protection youth, nature protection youth - a little less alcohol in the lunch break; then it works, Mrs. Nissen -, fighters for gender equality in climate, etc. etc. I also got to know the "more-or-less-scientists" who, surprisingly,

didn't want to talk about science at all, but harshly demanded that i finally stop the scientific discussion and instead - - what's going on?vice president dr. hans-peter friedrich:mr. colleague hilse, you don't have to be surprised. this kind of discrediting of colleagues is not okay.karstenhilseafdkarsten hilse:okay; good. they asked me to stand up for climate protection instead, the golden calf of the modern age. the only bright spot at this church day was the meeting with a delegation from the united states of america, which is rather skeptical about this belief. however, the delegates of the old parties put on a diplomatic dark show when they expressed their hope to the americans that they will return to the belief after the next presidential election, i.e. rejoin the paris convention. they were expressing nothing other than the wish that the president, our host, would kindly not be re-elected - an embarrassing faux pas! i told the americans that we are the only party in the german parliament that has taken note of trump's election, fully accepts the decision of the american people and also wants to withdraw from the paris agreement. somehow, this year's church day was a debacle for the faithful,because the world community simply refused to flagellate itself even more. socialist gag demands and gender justice did not find their way into the texts, and even otherwise most states did not feel like committing to anything concrete at all.yet everything had been imagined so beautifully. with a successful church day, it would have been much easier to sell the people on the further plundering that had been planned for them: from 2020, at least 1,000 euros and from 2025, at least 2,000 euros higher living costs per family per year for saving the world.but since it was not possible to come up with a further, even stronger declaration of faith by the world community, people are surprisingly not cheering for the plunderers now after all. some even say that they have taken the precaution of putting on an extra yellow vest.i am very excited and hopeful that their tall tales will soon blow up in their faces, as they have done in other countries. then, perhaps, debates will again be held in this Bundestag on the basis of scientific findings, and for the good of the german people.i will close with another quote from henryk broder: **the climate story is a new global church .and all of you sitting here are allowing this climate sect to abuse this bundestag as a temple for their new religion. at some point, according to henryk m. broder, reason prevails; sometimes it takes a little longer; but eventually it prevails.despite all the differences of opinion, i wish everyone a peaceful and blessed christmas.vice-president dr. hans-peter friedrich:on behalf of the cdu/csu group, my colleague andreas jung speaks.**

- **Parliamentary speech, Karsten Hilse, 26.09.2019:** Mr. president! ladies and gentlemen! dear coal miners, especially in jänschwalde! the un is meeting in new york. the general assembly currently taking place began with a climate summit. to this summit, the unfortunate greta also set off on a billionaire's super sailing yacht, causing at least six times as much of the devilish co2 than if she had taken a plane like most people.on the sidelines of the climate summit, greta spoke in "was erlauben strunz?" manner to the politicians, ngos and lobby representatives glued to her lips. some called it an emotional speech that woke her up, others called it the typical expression of a pitiful child suffering from asperger's syndrome.those who repeatedly drag this child into the limelight, destroy its childhood and use it as legitimation for their sick policies are not legally but morally guilty of child abuse. "the dignity of the human being is inviolable", that is probably the most important sentence in our constitution. you are trampling the dignity of this child with his exhibition.and for what? to enforce your

disastrous politics and the interests of the eco-industrial complex! shame on you! there was also good news in the run-up to the climate summit. a court convicted michael mann, the inventor of the field hockey stick curve, the grail of climate hysterics, of virtual fraud. the curve was supposed to prove that temperatures had been falling slightly in recent centuries and rising steeply since industrialization. the field hockey stick curve has since been used as evidence of unnatural warming and was mentioned nearly 70 times in the third report of the so-called intergovernmental panel on climate change alone. the court, like many scientists before it, had ordered mann to disclose the raw data and algorithms he claimed to have used to calculate his curve. mann refused, and so the field hockey stick curve is dead, dead as a doornail. the climate hysterics who are screaming “we’re burning up” have lost their main argument; they are standing there virtually naked. mr. taalas, secretary general of the world meteorological organization, one of the biggest climate alarmists in the past, warned against climate hysteria and scurrilous demands such as not having any more children because of climate change. yes, there are such demands - triggered by hysteria that has no scientific basis. after all, more than 500 scientists have contradicted the theory of man-made climate change in a letter to un secretary general guterres entitled “there is no climate emergency”, signed among others by former hamburg environment senator fritz vahrenholt of the spd. the letter states: the climate models on which international policy approaches are currently based are inappropriate. it is “cruel and unwise to commit to wasting billions based on the results of such childish models.” on monday, i was at a panel discussion with all the other parties represented in the federal parliament. at the end, the moderator asked me whether we as afd couldn’t pull together with all the other parties on the climate package. i answered her: this energy turnaround is destroying our car industry, our power plant and heavy industry. it is destroying our nuclear and coal-fired power plants. to pull together with the other parties would mean: we are participating in the destruction of our country’s economic existence, and we will never do that. we will oppose this destruction with all our might. my word to that. A friendly “happily ever after” to my homeland, above all to Jänschwalde! thank you very much.

- **Parliamentary speech, Karsten Hilse, 19.12.2019:** Mr. President, Ladies and Gentlemen! Dear compatriots. I’ll start with a quote from Henryk Broder - I’ve recited it here before; but of course, figuratively speaking, it fits like a glove today: **This climate story has all the ingredients, all the hallmarks of a faith movement: There are the believing masses who hold their church congresses ... there are heroes like little Greta from Sweden, there are the clergy like Mr. Schellnhuber and other scientists or more-or-less scientists who take on the role of priests, and then there are the heretics, the heretics ...**As the environmental policy spokesman for the AfD parliamentary group, I am the heretic-in-chief for you and for many devout journalists, because I simply don’t want to believe in your nonsense, but demand proof for your abstruse theory, which, however, you are unable to present despite decades and billions of dollars of research. **Instead, people should be satisfied with adventurous predictions, although the Intergovernmental Panel on Climate Change itself admits that the climate is a coupled, chaotic, nonlinear system and therefore predictions about future climate states are not - not! - possible. Nevertheless, the believers regularly organize their church congresses, where their priests,**

**against their better knowledge, make people afraid of the supposedly imminent end of the world, blame them for it and demand from them penitence and indulgence for their sins. As the chief heretic of the AfD, I had the dubious pleasure of attending this church congress.** I was allowed to experience live everything Henryk M. Broder was talking about: Thousands of believers, who for the most part already sinned by their journey to the Kirchentag, because they thereby emitted much more of the devil's stuff CO2 than if they had stayed at home. The heroine Greta and many other small heroines of "No Education Friday", climate protection youth, nature protection youth - a little less alcohol in the lunch break; then it works, Mrs. Nissen -, fighters for gender justice with the climate etc. etc.. I also got to know the "more-or-less scientists" who, surprisingly, didn't want to talk about science at all, but harshly demanded that I finally stop the scientific discussion and instead - - What's going on? [...] You asked me to stand up for climate protection instead, the golden calf of modern times. The only bright spot at this Church Meeting was the meeting with a delegation from the United States of America, who are rather skeptical about this belief. The delegates of the old parties, however, had a diplomatic dark moment when they expressed their hope to the Americans that they would return to the faith after the next presidential election, i.e., that they would rejoin the Paris Agreement. In doing so, they expressed nothing other than the wish that the president, our host, would kindly not be re-elected - an embarrassing faux pas! I informed the Americans that we are the only party in the German Bundestag that has taken good note of Trump's election, fully accepts the decision of the American people, and also wants to withdraw from the Paris Agreement. Somehow, the Kirchentag this year was a debacle for the faithful, because the world community simply refused to flagellate itself even more. **Socialist gagging demands and gender justice did not find their way into the texts, and most countries did not feel like committing to anything concrete at all. Yet everything had been imagined so beautifully. A successful church congress would have been a much better way to sell the people on the further plundering that had been planned for them: from 2020, at least 1,000 euros, and from 2025, at least 2,000 euros higher living costs per family per year for saving the world. But since it was not possible to come up with a further, even stronger profession of faith by the world community, people are now surprisingly not cheering for the plunderers after all. I am very excited and hopeful that your tall tales, as in other countries, will soon blow up in your face. Then perhaps debates will be held again in this Bundestag on the basis of scientific findings, and for the good of the German people.**

- **Tweet, Leif Erik Holm, April 17, 2018:** "We also have to contend with this wind power scrap in Mecklenburg-Western Pomerania. There, toxic oil apparently leaked into the groundwater for weeks."
- **Tweet, Leif Erik Holm, June 04, 2019:** "#TheGreens - from #environmental activism to #climate fanaticism. #Habeck & Co. are"leaders" of a new #religion, which tolerates only one "truth". Paternalism, #bans and #dogmas - dissenters are stigmatized by you as thought criminals. #AfD"

- **Tweet, Tino Chrupalla, March 23, 2019:** “+++ Frequent serious accidents at wind turbines - authorities are clueless +++”Masts break, rotors crash to the ground, burning debris sometimes flies hundreds of meters”, but politicians don’t want to know about it. #AfD #wind energy #Energiewende #BEW”

## I.2 Qualitative Analysis The Greens

Even though the statistical evidence for the effect of wind turbines on Green politicians was not robust, in this exercise, I draw on speeches and tweets that come from Green MPs and that have been classified as containing at least one anger appeal. I then try to see whether anger appeals are connected to the corresponding domain of “care” and “fairness”. Text examples can be found below.

In the case of Green MPs, I find a very different framing. As expected, members of the Green party link anger appeals to moral concerns of harm and injustice. The domain of justice includes beliefs that people should respect each other and treat others fairly. These morals promote for instance cooperation and reciprocity. The harm/care domain pertains to convictions that people should not harm one another and ought to help others, especially those in need [@horberg2009]. Green MPs accuse the government of a slow process in transitioning to green energy and relying on outdated ways of producing power. They also accuse the government, as well as opposition parties like the liberals or the AfD, of purposefully delaying or blocking the transition for their own interests. These actions, Green politicians argue, subsequently cause “harm” and “injustice” to individuals, to workers, to the economy, and to nature in general. In terms of economy, they emphasize the dramatic costs caused by delaying green energies and the injustice this implies for companies and workers in the green sector. They also refer to injustice committed to people who have to leave their homes due to coal mining. They also particularly focus on harm caused by air pollution such as respiratory diseases. Furthermore, they refer to the injustice of higher energy costs due to fossil power which disproportionately burdens the “poorest in our country”. Lastly, they frequently refer to the unfair and harmful consequences of climate change that affect people in other countries (which leads to increasing refugee numbers) and future generations. In this respect, they often use hashtags such as \#GenerationalJustice. At the same time, they portray themselves as the only party that fights for climate justice and protection of our “children and grand-children” around the world. To do so, they promote “international cooperation” as the only solution (and simultaneously criticize the AfD for its nationalistic stance).

## I.3 Examples The Greens

In this section, I present text examples from Green MPs, which exemplify how emotional appeals are connected to moral arguments of “care/harm”.

- **Parliamentary speech, Oliver Krischer, May 07, 2020:** Madam President, dear colleagues. The climate crisis is not something that is happening somewhere in the Arctic, in the South Seas or in some other distant part of the world. **No, it is happening here in our country,**



**it is threatening people and their livelihoods, it is causing billions in damage, and it is destroying nature on an unimagined scale.** And that, ladies and gentlemen, is why we have to deal with the consequences of the climate crisis. We have now experienced two years of drought on a scale that was previously unimaginable. Even though it has now rained for a few days, we are threatened with the third drought year in a row. The soil under our feet, the soil under the fields, the soil in the forests is dry as dust down to a depth of 1.80 meters, and the entire water system in our country is completely out of joint in many areas. **This cannot leave us cold. We have to take care of that. This is the livelihood of our life and economy in our country.**The consequences of the drought can be seen very clearly if you go to the forest. The forests, especially the coniferous forests and the coniferous plantations, have died over the last few years, area by area, hectare by hectare. You can't miss that anymore. The damage to the timber industry runs into the billions; not to mention the ecological harm. You can also see the harm everywhere in agriculture. When you talk to farmers, they tell you about the drought and dryness in April, and you can see the worry lines on their foreheads. They wonder: is this going to be another disaster year? In some corners of this country, crops are being plowed up because they haven't come up. But the drought is not only affecting the traditional economic sectors of forestry and forestry. No, a group like thyssenkrupp - you wouldn't believe it - suffered additional losses of 100 million euros in 2019 - it has been suffering for many years anyway - because of the drying up of the Rhine, which is why no ore could be delivered to the blast furnaces in Duisburg. There seem to be some who don't care about agriculture, forestry and ecology, but at this point at the latest it must be clear: **The climate crisis is causing economic damage, and it is destroying the basis of our actions and lives. That is why we have to take action, which means above all that we have to reduce greenhouse gas emissions. But it also means that we have to make ourselves more resilient, that our society and our economy need more protection.** Let me make one thing very clear: I never see Mr. Bareiß, Mr. Pfeiffer or Mr. Linnemann in these debates. Now there are calls to slow down a bit with climate protection and to take care of fighting the consequences of the corona crisis. **Let me tell you: Anyone who demands this is sinning against this country, destroying the basis of our economy.** We have to bring together the fight against both crises. This is the task of our time, of our generation. The task now is to build up climate-resilient forests and to advance near-natural forestry; because - as can be seen everywhere; as can be seen by anyone who walks through the forests with open eyes - the near-natural forests are more likely to survive droughts. We need climate-resilient agriculture with better crop rotations, with new crops, and with new systems. What we no longer need are emergency programs that solve problems after the fact. **We need prevention, we need water management, and we need an urban development policy that allows people to breathe and sleep even at 40 degrees plus. All of that is on the agenda now. We have to get to grips with this. We caused the climate crisis through our fossil fuel economy. Now we need to address the impacts. We need to make the country more resilient. That is the challenge of our time.**

- **Parliamentary speech, Ingrid Nestle, November 30, 2018:** Thank you. - Dear Mr. President, Ladies and gentlemen. Dear Matthias Miersch, I would like to clarify one thing beforehand: Robert Habeck in Schleswig-Holstein has by no means introduced or demanded

new distance regulations, but in tough coalition negotiations with the CDU and FDP - now perhaps you will listen to the end before you shout "Aha!"! - the solution was found in such a way that they said for the closest proximity of the villages: There should not be very high mills, but only normal high mills. - That is not a distance regulation that would take out any wind turbine or any wind area. Just because a few people obviously didn't understand that when they read it, this myth is still being perpetuated, and I think that's a shame. Dear Matthias, I would ask you not to do that. We can have a conversation about that, too. I was there during the coalition negotiations. **But actually, it's about something much bigger; actually, it's about the whole thing here today. It's about the climate crisis. The last time in the history of the earth, when the earth heated up a lot, 90 percent of the species in the ocean and 70 percent of the species on land became extinct. There were no humans, no civilization at stake then - unlike today. Today, we are heating the earth 100 times faster. So today, this is also about the causes of flight and internal and external security. It is about prosperity. And yes, of course, it is also about a secure energy supply.** What is at stake today is a secure and affordable energy supply that needs planning security. That's why I find it disturbing how you in the coalition are misusing this issue for your party-political squabbles. What you are presenting here is more of an energy chaos law. With this law, you are not even trying to implement your own goals. Of course, it is good parliamentary custom to argue about the level of the targets. Of course I would like to have more than 65 percent renewables in 2030, but what you can't argue about is that you have to try to achieve your own targets and that you have to create the framework conditions for it. But that's exactly what you're not doing. You're making a few rules for the next few years, muddling around a bit and not creating any planning security. **That is the government's refusal to work. Unfortunately, I have to say, I think it's pure ideology with you. You want to stay in the past at all costs, but not because the facts would support it. It is just the other way around. What did you say? That it was expensive? Hm. When renewables were expensive, we added a lot. Today, when renewables are cheaper than new fossil, we're not expanding them. That's garbage; it's nonsense.** You said: The electricity has to be usable, it has to fit into the grids. - Then make it usable, then at least vote for our motion. Use it instead of switching it off: You can also use the electricity before the grid bottleneck. But that's exactly what you're not doing. Ladies and gentlemen, Mr. Harbarth from the CDU/CSU said that the Bundestag is not a place for experimentation. - And that also applies to the energy transition. It is not a place for experimentation. You have your own concept: 65 percent renewables, coal phase-out, grid expansion. Everything has been agreed, and it is a scandal that you are not implementing your own concept, but are leaving the entire industry in investment uncertainty. **Please think about the future of our children.** Thank you.

- **Parliamentary speech, Ingrid Nestle, April 25, 2018:** Dear Mr. President, Dear colleagues. Minister Schulze, over the weekend you described the idea of a CO2 prize as very plausible. A true word, calmly spoken. Your composure in the face of your coalition partner's statements is all the more remarkable. Loud declarations of support for the 2030 climate target, no discernible efforts to move closer to the 2020 target, and consistent reservations about any measure more concrete than setting up a commission: that's not enough; because

blocking an effective CO2 price in particular is wrong from three points of view. Firstly, it is shabby because at the beginning of the year, together with the Assemblée nationale, we called for “joint initiatives, in particular on the CO2 price” in the resolution on the Élysée Treaty. Now there is silence in the forest, as again the official statement on the meeting of Macron and Merkel last week. It is shabby to value our word so little towards our French partners. Second, your handling of the CO2 price makes Germany look small for no reason at all; because according to the coalition agreement, you want the CO2 price only with the approval of the G-20 countries. So you want to wait for Trump? You make a market-based climate protection policy dependent on the whims of this American president? You are making yourself weaker than the famous rabbit in front of the snake. Now please don't come with the old canard that a CO2 price will only work globally or with Trump. Several neighboring countries are waiting for us. The UK already has a CO2 price, the Netherlands wants to implement it this year, 87 countries currently want to introduce a CO2 price. This is really an old argument. Third, the rejection of a CO2 price is above all highly irrational. CO2 price, that is market economy. Market economy and climate targets, you can't have that without a CO2 price. Which of the two have you actually given up? Be honest at last! Any path to the climate targets without an effective CO2 price would be more expensive, less open to technology, more remote from the market, and subject to gigantic subsidies. Again and again, inventors come to me and say: Here, I have a great energy-saving technology, but it's not catching on in the market. - Usually, this is then linked to the demand for subsidies. Subsidies for every single technology, is that your idea of economic policy? Do you want a flood of subsidies instead of clear market signals? **We don't want that. I'm afraid you're not taking climate protection seriously, and that's disastrous news for our country and our economy. Climate protection is hard-nosed realpolitik, climate protection is security policy, means combating the causes of flight, is nature conservation, is economic policy. We are currently far from limiting warming to 2 degrees; we are on a 4-degree path. A baby born today has a life expectancy until 2100. Even for these people, the effects of the climate crisis would be devastating, and the economic damage would be many times greater than the cost of a carbon price, and the financial resources from this can at least be spent again. Indeed, we want to invest the revenue and give it back to citizens and businesses. Please open up in the interest of all the children of this world; also of those who are already alive today, whom you meet on weekends, and also of the grandchildren.** Open yourself to the charm of logical thinking. Follow the call of your own economic expert Christoph Schmidt, the demand of 52 companies and associations last November, the IHK Hamburg with 162,000 member companies, the BDEW and many, many more. Stand up for an effective CO2 price. Dear members of the CDU/CSU and SPD, you are the government. That means responsibility for the framework conditions, that means backbone, and that means an eye for the simple and good solutions. All the innovations in the pipeline are just waiting for an honest market to finally be created. Create it! Then this legislative term will have been worthwhile for Germany. Thank you very much.

- **Parliamentary speech, Ingrid Nestle, June 08, 2018:** Madam President, Dear Colleagues. The most remarkable thing about this bill is what is not in it. You from the coalition have even actively cancelled the special tenders requested by the Bundesrat. I asked the federal

government: When and how do you want to start achieving your renewable targets? The answer at the beginning of this week was - in short - that everything depends on the power grid. Does everything really depend on the power grid? Let me illustrate with a story. Let's say the renewables are the cornfields; that's where the food is produced. We need them for climate protection; in the story, they are the children. Right now, we have 38 percent renewable energy, so we need 38 children for climate protection. We know: In 2030, we need 65 children, otherwise we can't achieve the goals that you also want to achieve. So we need more cornfields. Now you say: Everything depends on the networks. - In our story, these are the conveyor belts between the grain fields and the children. Yes, something falls down there from time to time. In a year, about 1 percent of the grain falls off; 1 percent of the electricity consumption is currently being cut off. You could take many different approaches. For example, you could put more grain on the conveyors; that's called phase shifters in the power world, smart grids, temperature monitoring. **You could work locally to get the new conveyor belts we need to come faster, instead of complaining here in Berlin that they're not there. You could say: If nothing fits on the conveyor belt anymore, then we'll do something useful with the grain. We give it to other children - I'll call them the heat or traffic children - who urgently need more climate protection. There are lots of players here who want to innovate, for example, power to heat. We could use it in industry, in all kinds of different areas. You can do all that. You can do a lot more, for example, feed in less coal or nuclear power. You can do all of that. But there's one thing you can't do, and that's to say: Well, then we won't plant any new cornfields, we'll just let the climate protection children starve. - After all, these are our children. I think that's where we come back to the real world, because our children's food security also depends on climate protection. [...]**

- **Parliamentary speech, Sylvia Kotting-Uhl, October 08, 2020:** Dear Mr. President, Ladies and Gentlemen. Paper is getting impatient: in 2015, the Sustainable Development Goals were adopted in New York, and also in 2015, the Paris Climate Agreement was reached. **Everyone agreed: we must do much more for climate protection, for justice, for the long-term survival of mankind on our planet.** And what is happening in the German cabinet? CO2 price, coal phase-out, EEG amendment - wherever you could do something strong, Mr. Altmaier, you duck away, which is why your strong statements last Friday on a serious climate policy are simply worth nothing. The best example is your proposal for commissions. You demonstrated how you deal with their recommendations in the end with the coal commission. That's how you frustrate civil society, and that's exactly what we don't need in these times. In your latest amendment to the Renewable Energy Sources Act, you want to get by with half of the 16 gigawatts of expansion per year needed for climate protection. To ensure that this is still enough to generate 65 percent green electricity in 2030, you have simply assumed a reduction in electricity consumption. But, like us, you want electric cars, heat pumps and hydrogen. That doesn't go together. **30,000 jobs in the wind industry, which you drove to the wall along with the flourishing expansion of renewables, were worth nothing to you.** Saving Lufthansa was important to you; but you waived ecological conditions. Reason and tightening today's targets go hand in hand in climate protection. There is no need to seek a balance, Mr. Scheuer. And you create uncertainty in the economy not by

being clear, but by talking about climate protection and doing nothing. The transport sector has not saved anything so far. With your typical comments on the absolutely necessary tightening of CO2 limits for the passenger car fleet, you are not only discrediting yourself, but once again the entire German climate policy. **And you are putting your hand on the long-term survival of the automotive industry by persuading it that the transformation still has time.** Ms. Schulze supports the EU Commission's proposal for a stricter emissions target. Now we have to convince our coalition partners and then be consistent. **Firstly, this means not accepting that reforestation should be counted as a reduction measure. If forests die in the climate crisis and have to be reforested, is that supposed to be a CO2 reduction?- Seriously?** Secondly, it means adapting our national targets and measures to the new EU target and using the opportunity of the EU Council presidency to convince hesitant countries. **And in the run-up to the budget week: finally using the double climate policy and budgetary benefit of reducing climate-damaging subsidies.** Incidentally, an effective CO2 price would also have a double benefit, especially if the revenue per capita is returned to the population and thus creates a social balance. **At the latest, the Corona crisis has shown us how all policy areas are interconnected: without nature conservation no health, without climate protection no social justice. Resilient cities with different mobility are needed, which no longer make children, the elderly and low-income earners the losers of the system because they suffer more than average from noise, bad air, used space and warming. The same applies to agriculture: animal suffering, cheap meat, underpaid workers, overfertilization, groundwater pollution, pollutant and CO2 emissions are the negative peaks of the current system.** They could all be mitigated simply by linking the number of animals to the area. If you then also got your way to phasing out glyphosate and to a pesticide reduction strategy, you would have made not only bees and insects, but also the climate a bit healthier. **But no! Time and again, it is your palpable fear of losing the love of business and society that makes you put on the brakes and not do what you know needs to be done.** Yet in many cases, business and society have long been further along than you: I would mention Fridays/Parents/Scientists for Future, appeals from the scientific community, the World Economic Forum in Davos, the 2° Foundation, and now the heads of 150 international companies such as Google, Apple, and Deutsche Bank, who are calling for a significant reduction in CO2 emissions. **And they are right! Fires all over the world - the rainforest, California, the tundra -, floods in Africa, drought in Brandenburg, forest dieback, heat in German cities - all with only 1 degree average warming. In addition, there may be more frequent zoonotic diseases such as Covid-19, which are related to the repression of natural spaces.** The just published State of Biodiversity Report shows that mass extinction continues, and in addition to all the other fatal damage that the decline in biodiversity means, it also favors the leapfrogging of viruses. **If you haven't heard the gong now, you can't be helped. Take the EU climate protection targets constructively and implement them for Germany. And if you like, take Mr. Altmaier's 20 points and fill them with something other than hot air.** You still have eleven months. I don't want you to continue to fail for tactical reasons; we don't have any more time to lose on this issue, so take this Sustainability and Climate Week as a mandate. Thank you very much.

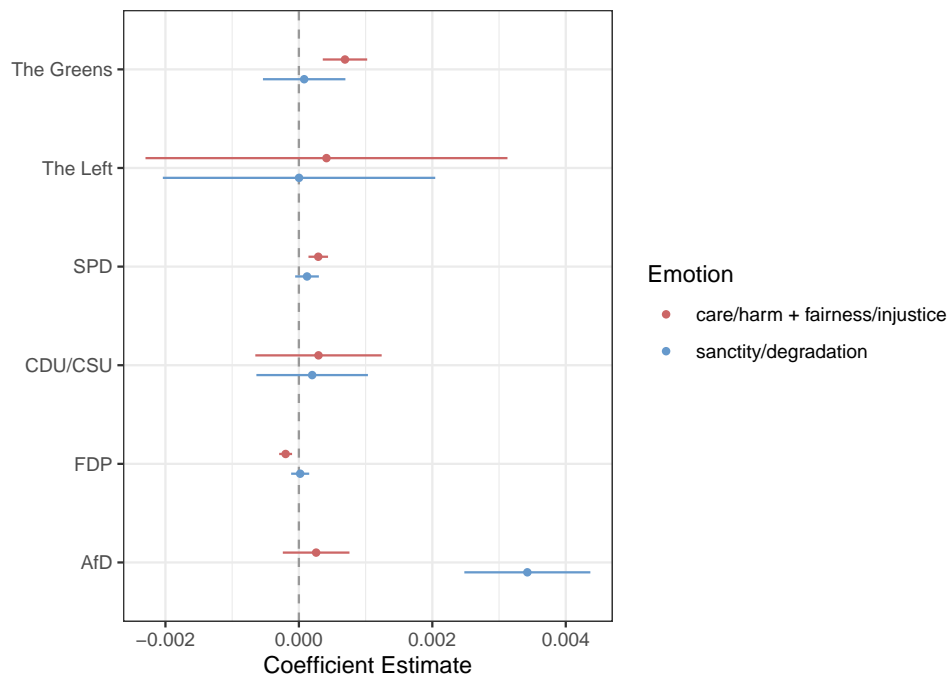
- **Tweet, Filiz Polat, March 21, 2018:** “Today is International #ForestDay: Deforestation is devastating for #climate, biodiversity and distributive justice.”
  
- **Julia Verlinden, February 15, 2018:** “#PolluterPaysPrinciple to be taken seriously: #RWE should take responsibility & shut down coal-fired power plants (largest source of CO2 in Europe in the Rhineland) #coal phase-out #climate protection #generational justice #endcoal”

## J Moral Dictionary

In this exercise, I corroborate the qualitative analysis by using additional computational tools to identify moral language. If emotional appeals by politicians are linked to moral arguments, one should be able to find effects of wind turbines also on corresponding moral rhetoric. This means that wind turbines should also impact how radical-right politicians use moral rhetoric in relation to sanctity/degradation (the moral foundation that is linked to disgust). To do so, I apply a moral dictionary for German language (Bos and Minihold 2022) to see - using computational tools - whether wind turbines in fact cause radical-right MPs to increase corresponding moral language. Figure J1 presents the results of this analysis.

As can be seen, the results fully support the qualitative findings as well as the theoretical expectations. New wind turbines cause radical-right MPs to increasingly use moral words related to the moral foundation of “sanctity/degradation” which is connected to the moral emotion of disgust (Feinberg et al. 2019; Horberg et al. 2009). Left-wing politicians (politicians from the Greens and the social democratic SPD), on the other hand, make more use of words related to the domain of “care/harm” which is linked to the emotion of anger (Rozin et al. 1999; E. J. Horberg, Oveis, and Keltner 2011).

Figure J1: Effect of one additional wind turbine per electoral district on the usage of moral language (Parliamentary Speeches)



## K Citizen Data

In this exercise, I investigate whether politicians use emotional appeals strategically. To do so, I analyze data coming from ordinary citizens and party supporters. The theoretical framework of this study rests on the assumption that politicians appeal to emotions which resonate among their supporters, in order to mobilize them. To do so, however, politicians need to know the “moral-emotional” preferences of their supporters, or else they risk losing support (Enke 2020). Thus, I test whether I can find similar emotional appeals in text documents about climate change written by radical-right supporters. To do so, I make use of differently sampled groups of AfD supporters on Twitter.

### K.1 Twitter Replies

In a first analysis, I analyze all replies to all tweets from politicians in the period of research. To do so, I collected all replies to tweets in the Twitter data set used in Online Appendix D, which I used in the replication of the main analysis. The twitter data used in Online Appendix D includes 1,245,995 tweets from politicians. Collecting all replies from these tweets results in 19,889,441 replies from followers. All tweets and replies have been collected using the R package *academictwitterR* (Barrie and Chun-ting Ho 2021).

After the collection of these data, I used the ed8 dictionary published by Widmann and Wich (2022) to analyze the tweet replies. Even though the ed8 dictionary achieves lower performance as the transformer model published in the same study (Widmann and Wich 2022), the dictionary approach is significantly faster and computationally cheaper. Analyzing nearly 20 million tweet replies using the transformer model used in the main analysis would exceed the computational power of a normal computer.

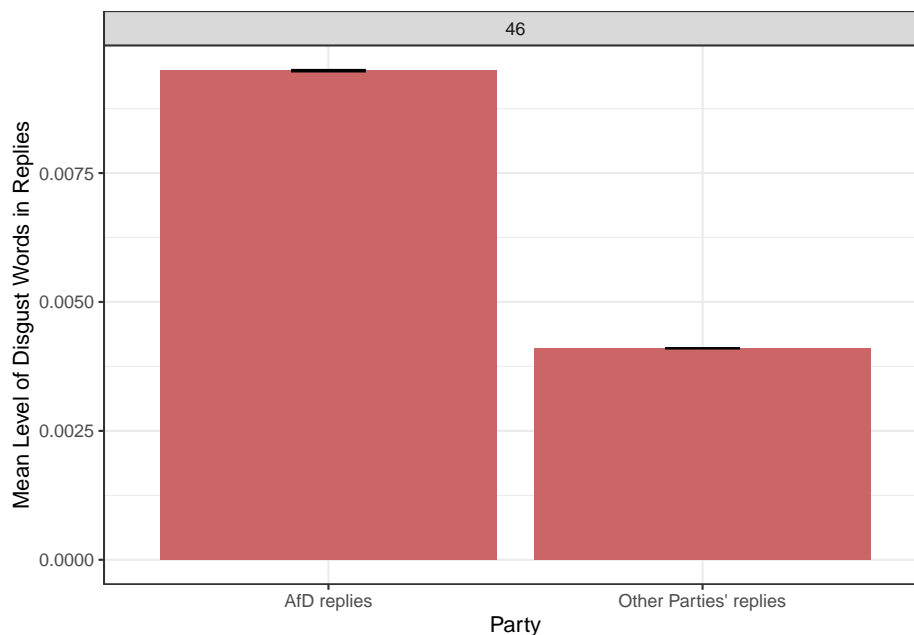
Nevertheless, the ed8 dictionary provides scores for the same eight emotions. To be precise, the ed8 dictionary provides normalized emotional scores for each emotion, which are created by dividing the counts of emotional words by the total word count of each document. I then aggregated the normalized disgust score for the replies to politicians’ tweets for topic 18 and 52 (green issues), respectively. The results can be seen in Figure K1.

The figure shows that AfD politicians receive significantly more disgust related language, when talking about climate change and renewable energies (topic 46), than other political parties. Previous research has shown that partisans often follow the parties or politicians they support (Barberá et al. 2019) and that cross-ideological interactions are rare (Barberá 2015). Thus it is reasonable to assume that politicians receive - at least to a large extent - replies from their own party supporters. This means that “below” AfD tweets, discussions are largely dominated by their own supporters. And AfD partisans’ discussions about green issues are tinted to higher levels in disgust language than discussions by followers of other parties. Thus, it is reasonable to assume, that disgust plays a more important role among AfD partisans.

Furthermore, comparing disgust levels within replies to different topics, one can see that green issues cause more disgust related replies to AfD tweets than other commonly discussed political topics. Green issues therefore stand out in the amount to which they attract disgust related responses



Figure K1: Mean difference in disgust language between replies to AfD tweets and tweets of other parties (by topic)



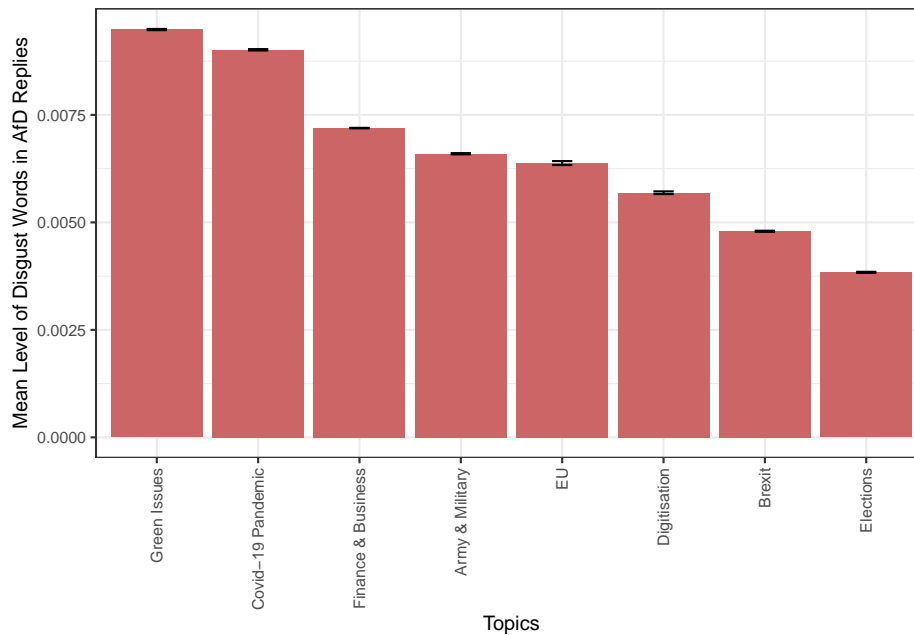
from AfD supporters. The results can be seen in Figure K2. Interestingly, green issues include even more disgust-related language than the topic of Covid-19, which relates to death, illness, and infections.

## K.2 Random Samples of Twitter Users

In the second part of this analysis, I use different sets of twitter users. To be precise, I collected four different user samples: three partisan samples including twitter accounts from followers of the AfD, the SPD, and The Left. The fourth sample consists of ‘politically attentive’ users. The samples have been created following the approach by Barberá and co-authors (2019). The ‘politically attentive’ sample includes 10,000 random Twitter users who are following a major German newspaper (followers of ‘Süddeutsche Zeitung,’ the biggest daily newspaper in Germany; see (Barberá et al. 2019)). The three additional (partisan) samples consist each of 10,000 random followers of their respective party account.

To create the four samples, I firstly collected all followers from the four official twitter accounts (Süddeutsche Zeitung, SPD, The Left, and AfD). Then I dismissed accounts with less than 10 tweets in total, accounts that have been created later than January 2020 to have enough data to collect, and protected accounts since data from these accounts cannot be collected. Subsequently, I randomly sampled 10,000 users from each of the four follower lists, resulting in four samples of 10,000 users respectively. To make the amount of data manageable, I scraped these 40,000 accounts only for the first five months of 2020. After scraping, I dismissed all non-German tweets and retweets (tweets that have not been written by the users themselves). In total, the ‘politically attentive’ dataset (newspaper sample) includes 290641, the AfD supporters dataset includes 672174, the SPD

Figure K2: Mean difference in disgust language in AfD replies between different topics



supporters dataset includes 504538, and The Left partisan dataset includes 615620 tweets. Again, all tweets have been collected using the R package *academictwitteR* (Barrie and Chun-ting Ho 2021).

I analyzed these citizen and partisan tweets by using the transformer models (as in the main analysis). To identify topics for the different tweets, I rely on keyword strings. The keyword strings for the different topics are the following:

Green Issues: same keyword string as displayed in Online Appendix C3.

Immigration: *immigr, migrat, refugee, asylum, guest work, foreign*

Finance & Business: *business, finance, tax, growth, win, profit*

Covid-19: *corona, covid, pandemic, virus, infection*

Brexit & European Union: *europe, european, brussels, brexit*

Housing: *apartment, rent, house building, house purchase*

Military: *army, soldier, troops, drones, foreign deployment, military*

Agriculture: *agriculture, farmer, animal welfare, farming*

After having identified the topics of different tweets, I run a significance test between the four different group means of disgust appeals. I use coefficient plots to show the statistical difference between the SPD group, The Left group, and the politically attentive group to the AfD group. As can be seen in Figure K3, the AfD supporters use significantly more disgust related language than all other partisan groups when discussing green and climate issues (negative and significant coefficients). However, in Figure K4 we can see that when the same groups discuss other topics (e.g. immigration, the EU, housing etc.) disgust levels are similar and statistically non-significant.

The only topic where results significantly differ is Covid-19 which was a topic where radical-right parties' emotional framing significantly differed from the framing of other parties (Widmann 2022).

Overall, these results show that disgust - when discussing green issues - is an important emotion radical-right supporters rely on (more than partisans of other parties). Since these discussions take place “below” tweets from radical-right politicians or publicly on social media, it is further reasonable to assume that AfD politicians have knowledge about the specifics of this kind of emotional framing, which provides further support that AfD politicians use this kind of emotional rhetoric strategically.

Figure K3: Comparing means of disgust appeals between partisan groups (reference group = AfD partisans)

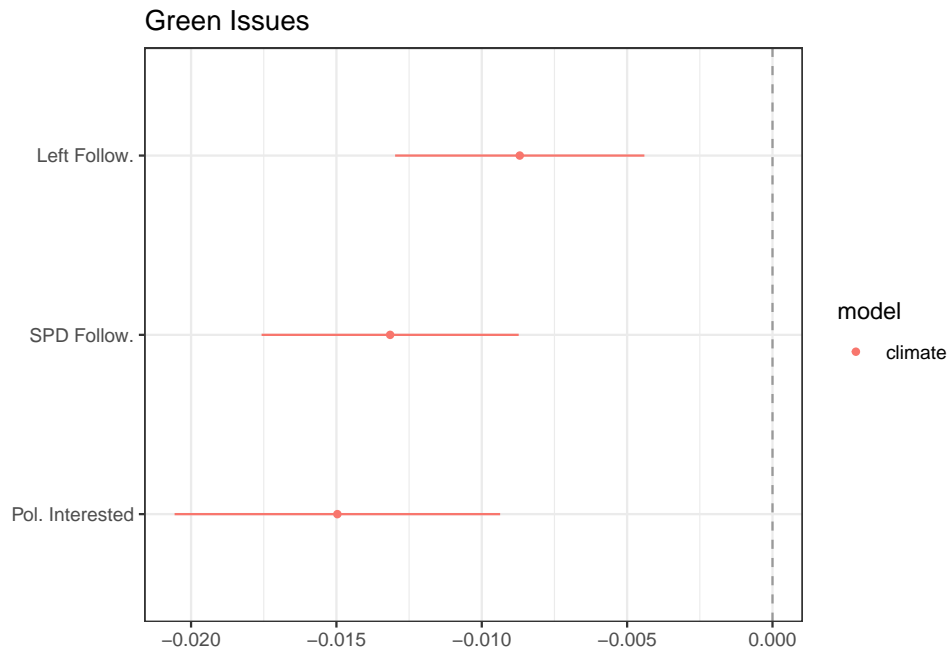


Figure K4: Comparing means of disgust appeals between partisan groups by topic (reference group = AfD partisans)



## **L Deviations from the Preregistration**

The study deviates from the pre-analysis plan in two main ways:

- 1) I changed the formulation of the two hypotheses to make clear that, in this case, the anger hypothesis should hold for pro-environmental parties and the disgust hypothesis for climate-change skeptical parties. This more general formulation makes clear that the hypotheses are not based on parties affiliation with a certain party-family (e.g. radical right), but based on their standpoint towards climate change and climate change mitigation policies.
- 2) In both hypotheses, I replaced “the construction of wind turbines” with “a rise in the salience of climate change” to emphasize the expected theoretical mechanism to be in place, rather than the specific case.
- 3) Additional robustness tests, as well as the exercises to further investigate the strategy of politicians’ framing were not preregistered. They are exploratory in nature in order to better understand the precise mechanism at play. This also includes the replication using twitter data, as well as the citizen-generated twitter messages analyzed in Online Appendix K.

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