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Dynamics of Electoral Polarisation in Climate Policy Discourse: A Temporal Network Analysis

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Abstract

Climate policy is a deeply polarised issue that intertwines ideological positions with social identities. This division is intensified by election campaigns, highlighting social identities and ideological conflicts. Previous research has shown an increase in polarisation during such campaigns and a decrease after an election. However, evidence suggests that campaigns do not significantly impact already highly polarised issues such as climate policy. Moreover, by focusing on polarisation between partisan groups, existing research often overlooks the multi-actor system of climate governance, in which diverse non-partisan actors are also central to shaping the discourse. To address these gaps, this study examines climate policy discourse on Twitter during the 2021 German federal election. It employs a temporal network analysis to compare polarisation between partisan and non-partisan groups. The findings show that the climate discourse is divided into a pro-climate camp, dominated by environmental activists, scientists, and journalists, and an anti-climate camp, dominated by right-wing bloggers and climate sceptics. This study reveals a dual dynamic in the climate policy discourse. Partisan polarisation intensified temporarily, reaching its peak during the election campaign before declining again, while the deep divide between pro- and anti-climate camps remained largely stable. The findings suggest that the polarisation during an election campaign for a highly polarised issue may differ from previous research findings. This underscores the importance of exploring non-partisan structures, as their polarisation dynamics can differ significantly from those observed within traditional partisan groups.

Keywords

climate policy; election campaign; Germany; polarisation; public discourse; social media

1. Introduction

Climate policy is ideologically polarised and connected to social identities, making it a controversial topic in political discourse (Bliuc et al., 2015; Chinn et al., 2020; McCright et al., 2016; Vesely et al., 2021). These divisions are amplified by election campaigns, which emphasise contrasting positions and social identities. In addition, an election represents a conscious channelling of political conflict and provides a structured framework for settling disagreements through the democratic process (Przeworski, 2011). Previous studies suggest a dynamic where partisan polarisation increases during election campaigns due to heightened political conflict (Hansen & Kosiara-Pedersen, 2017; Sood & Iyengar, 2016), before decreasing again afterwards (Hernández et al., 2021). However, recent findings from the US challenge this pattern. Fasching et al. (2024) demonstrated that in already highly polarised environments, where political attitudes are deeply intertwined with social identity, polarisation is only minimally affected by campaigns and remains largely stable. A stable polarisation that does not change even at the peak of political conflict would indicate how deeply divided the climate policy discourse is and how established the positions already are. In such a scenario, the election of the opposing camp can be perceived as an attack on one's identity, posing significant risks to democratic processes, which depend on compromise and acceptance of majority voting. This can lead to political gridlock, reinforcing the status quo, and threatening the ability to act on climate policy (Judge et al., 2023; Lee, 2015). In light of the potential significance of stable polarisation, this study explores how election campaigns influence polarisation in climate discourse.

To investigate this, I take a dual approach, examining polarisation along two distinct societal divisions. The first perspective addresses partisan polarisation, which has been a focus of numerous previous studies (T. H. Y. Chen et al., 2021; Darius, 2022; Reiljan, 2020; Wagner, 2021). By considering traditional party-political lines and the left–right spectrum, I establish a connection with existing research, and it becomes possible to investigate the role of election campaigns on partisan polarisation in climate policy. However, climate policy is also shaped by non-partisan actors that engage in cooperation, competition, or conflict and contribute to conflict resolution (Dorsch & Flachsland, 2017). In accordance with this perspective, Dellmuth and Shyrokykh (2023), drawing on the Intergovernmental Panel on Climate Change (2022, p. 2910), define climate governance as "the structures, processes, and actions through which private, public, and hybrid actors interact to address societal goals related to climate change." This broader understanding acknowledges that influential participants are not limited to political parties and politicians, but that activists, scientists, and other non-partisan actors play key roles in shaping the discourse (K. Chen et al., 2023; Vu et al., 2020). Accordingly, the second perspective is connected to climate governance research and examines polarisation between what this study refers to as discourse-evolving groups. In contrast to pre-defined partisan lines, these groups evolve organically from interactions within public discourse. Their boundaries emerge around shared beliefs and collective identities, revealing where natural fault lines occur. In climate policy discourse, these groups form two opposing camps: a pro-climate and an anti-climate camp. Focusing on these discourse-specific groups reflects the broader landscape of climate governance, in which non-partisan actors such as activists, scientists, and the media shape the discourse alongside political parties.

Much of the existing literature relies heavily on survey data, using self-reported attitudes to calculate polarisation (e.g., Lelkes, 2016; Reiljan, 2020; Wagner, 2021). However, Wagner (2024) argued that while citizens express polarised positions in surveys, this does not necessarily reflect their actual behaviour. This

argument also applies to public discourse, since survey responses do not automatically translate into political communication. While public discourse involves different channels, such as traditional media or parliamentary speeches, social media is becoming increasingly important, particularly during election campaigns (Jungherr, 2016; Kreiss et al., 2018). An important platform is Twitter (now X, but referred to as Twitter throughout this article to reflect the period of data collection and the platform conditions at that time), with its role in norm diffusion, opinion leadership, and the formation of public opinion in climate debates highlighted by Dellmuth and Shyrokykh (2023) as having the potential to influence climate governance. Political actors increasingly use Twitter not just to inform but to frame issues, mobilise support, and exert influence on governance outcomes (Dellmuth & Shyrokykh, 2023). Non-party actors also significantly contribute to shaping climate governance via targeted use of social media, generating public awareness, mobilising supporters, and influencing political decision-making processes (Barrie et al., 2024; Dellmuth & Shyrokykh, 2023; Falkenberg et al., 2022; Padilla-Castillo & Rodríguez-Hernández, 2023). However, Twitter's user base does not represent the general population (Taddicken et al., 2019). Nevertheless, despite the resulting selection bias, focusing on Twitter enables (nearly) complete coverage of a debate on a platform, including positions that are difficult to sample in surveys.

This study builds on prior work using network analysis to investigate social media polarisation (Barberá, 2015; Conover et al., 2011; Williams et al., 2015). While other studies have created networks at different time points to observe the development of polarisation over time (T. H. Y. Chen et al., 2021; Darius, 2022; Falkenberg et al., 2022; Svozil et al., 2025), this study differs from analyses of isolated time periods by modelling the discourse as a temporal network. By treating time periods as sequentially coupled layers, the chronological order of interactions is preserved, thereby capturing the temporal dependencies in the evolution of polarisation structures.

Finally, while studies on social media polarisation have concentrated mainly on the US (Kubin & von Sikorski, 2021), research on how election campaigns affect polarisation has examined cases in the US and Denmark or across countries (Fasching et al., 2024; Hansen & Kosiara-Pedersen, 2017; Hernández et al., 2021; Sood & Iyengar, 2016). By selecting the climate policy debate in the German federal election campaign of September 2021 as a case study, this study extends the literature on polarisation by providing an additional perspective. Furthermore, this work contributes to a deeper understanding of climate policy polarisation in a country that plays a key role in international climate governance (Liefferink & Wurzel, 2017).

Section 2 introduces the concept of polarisation in public discourse and reviews the relevant literature, focusing on the interplay between ideology and social identity. Subsequently, I examine how election campaigns affect polarisation, distinguishing between partisan and discourse-evolving groups. Section 3 presents the empirical part of the study, outlines data, network construction, and polarisation metrics. Section 4 reports the results, indicating a persistent division between pro- and anti-climate camps. Polarisation between the left- and right-wing partisan camps peaked during the election campaign, subsequently declining to stabilise at a level slightly above its initial baseline.

2. Theoretical Framework

Polarisation is often subdivided into two different types. The first is affective polarisation, which is based on social identity theory and describes the extent of positive feelings within a group compared to negative

feelings towards an out-group (Billig & Tajfel, 1973; Tajfel et al., 1971). According to social identity theory, social identity is a part of the self-concept, which involves different social groups that are hierarchically structured (Tajfel & Turner, 1979). These hierarchical relationships are determined by consensus within or across groups (Tajfel & Turner, 1979). Relationships between groups can be influenced by various factors, such as the salience of the group, threats from other groups (e.g., different value systems), or competition for resources (Gaertner et al., 1993; Oakes, 1987; Riek et al., 2006). Thus, affective polarisation measures the effect of various factors that describe the relationship between social groups based on the groups' sentiments towards one another.

The second type is ideological polarisation, which describes polarisation based on ideological consistency or ideological divergence (DiMaggio et al., 1996; Iyengar et al., 2012; Lelkes, 2016). As ideology is a coherent system of beliefs, values, and attitudes, ideological polarisation describes how strongly ideologies differ (Converse, 1964; DiMaggio et al., 1996). These are reflected in the cohesion of the in-group, characterised by consistent positions on issues and interrelated attitudes, and in the separation from the out-group, evident in the degree of overlapping attitudes (DiMaggio et al., 1996).

Both affective and ideological polarisation can have far-reaching consequences. The "us-versus-them" attitudes that arise from affective polarisation can impede political progress and lead to democratic backsliding (McCoy et al., 2018). Additionally, growing ideological polarisation can reduce support for democratic processes, impede the ability to reach agreements, and ultimately cause political gridlock (DiMaggio et al., 1996; Torcal & Magalhães, 2022). Therefore, several studies have examined polarisation in different countries (Dalton, 2021; Reiljan, 2020; Wagner, 2021) as well as the long-term development of polarisation over time (Boxell et al., 2024; DiMaggio et al., 1996; Garzia et al., 2023; Munzert & Bauer, 2013).

Polarisation can be understood both as a state and as a process in which groups or individuals display large gaps in terms of their ideological positions or social identity, or experience an increasing distance over time, thus resulting in decreased proximity (DiMaggio et al., 1996). In this context, ideological or substantive proximity reflects the degree to which political, cultural, economic, and other attitudes align, while social identity proximity refers to the affiliation with particular social groups, which is expressed through affect. Notably, ideological positions and social identity are often closely linked. For example, someone with liberal or conservative attitudes often identifies with the corresponding group. Accordingly, several cross-national studies have shown that affective and ideological polarisation are correlated but not congruent (Reiljan, 2020; Riera & Madariaga, 2023; Wagner, 2021). Further, affective polarisation of the masses is associated with ideological extremes at the elite level (Riera & Madariaga, 2023), and the ideological distance between positions is positively correlated with a negative out-group feeling and a positive in-group feeling (Algara & Zur, 2023; van Erkel & Turkenburg, 2022). Others have even argued that ideological positions and affect between social identities are inextricably linked, making them difficult, if not impossible, to measure separately (Dias & Lelkes, 2022; Orr et al., 2023; Orr & Huber, 2020).

2.1. Interaction of Ideological Positions and Social Identities in Public Discourse

Individual discourse behaviour also reflects the interplay between an ideological or substantive position and social identity. Both one's substantive position and social identity shape the way one communicates messages to the outside world and interacts with others (Brüggemann & Meyer, 2023). The similarity

between two people also influences how they interact and communicate (Rogers & Bhowmik, 1970). Both the person presenting the argument and the substantive position determine whether one's argument is accepted, and thus, this combination determines whether their message is spread further (Cohen, 2003; Rekker, 2021). People also prefer to consume information from sources close to their positions, due to both their ideological position as well as their social identity (Dvir-Gvirsman, 2019). Additionally, trust in people who are perceived as different from oneself decreases with increasing affective and ideological polarisation (Hooghe & Oser, 2017; Rapp, 2016). Social identity and substantive positions also play a role in whether a discussion takes place at all, since people prefer to talk to those with similar political orientations (Settle & Carlson, 2019). This can even lead to people choosing their social environment according to their political beliefs (Santoro, 2023).

Further, the interaction between substantive positions and the role of social identities in individual behaviour can be applied to public discourse in social media. According to Kaakinen et al. (2018), the formation of groups is not determined solely by similarities in opinion but rather by social identity, which leads to a preference for information that confirms one's own group. As such, people also tend to avoid interacting with accounts that have different substantive positions than their own or have opposite social identities (Brüggemann & Meyer, 2023). This combination of interacting only with people who agree on substantive positions and have proximal social identities also helps explain why people interact with each other on social media.

Accordingly, in this article, I consider polarisation in public discourse not as separate affective and ideological polarisation but as the combined result of both types of polarisation. As this interaction between the polarisation types is already expressed in individual interactions between people on social media, it is unsurprising that in a network like Facebook, which is primarily based on existing social relationships, a *like* can be interpreted not only as an expression of positive agreement with the substantive position of a post but also as a signal of the relationship between the people involved (Sumner et al., 2018). Likes offer a low-threshold way for likers to communicate with posters and present their identity to the outside world (Sumner et al., 2018). On Twitter, the content and the relationships between accounts drive people's decisions to retweet a tweet (Shi et al., 2017). In addition to the tweet's substantive content, the account from which the tweet originated must be considered credible and trustworthy (Metaxas et al., 2015). People are also more likely to retweet tweets that have already been retweeted by their own social group (Rudat & Buder, 2015). Interactions such as liking or retweeting suggest a positive relationship between accounts, demonstrating similarity in terms of both substantive positions and social identities. While quoted retweets can serve as criticism, users often prefer posting screenshots of an account's original tweet to avoid increasing its reach. Although some accounts explicitly state that retweets do not mean endorsement, the fact that such disclaimers exist suggests that retweets are generally perceived as a form of endorsement (Metaxas et al., 2015). Even though some retweets may be intended negatively, in established literature on public Twitter discourse, they are generally interpreted as expressions of positive connections (T. H. Y. Chen et al., 2021; Conover et al., 2011; Darius, 2022; Falkenberg et al., 2022; Kubinec & Owen, 2021). Thus, in this study, retweets indicate proximity between accounts, capturing both shared positions on substantive issues and similarities in social identities.

2.2. Camps of Public Climate Policy Discourse

This article examines polarisation in climate policy discourse from two distinct perspectives: one based on partisan lines and the other on discourse-evolving groups. The analytical foundation for defining the opposing camps in both perspectives is the interplay between substantive positions and social identity, which reflects the combined ideological and affective dimensions of polarisation in public discourse and constitutes a deep divide in society that extends beyond differences in belief alone.

The first perspective considers partisan camps structured along a traditional left–right spectrum, which in multi-party systems extends beyond the parties themselves, resulting in the development of cross-party social identities and ideological groups (Bantel, 2023; Renström et al., 2021; Vegetti & Širinić, 2019). This structural division of the political system is also evident in climate policy, in which one's ideological position is strongly related to both the belief in anthropogenic climate change and the willingness to mitigate it (McCright & Dunlap, 2011a; McCright et al., 2016; Poortinga et al., 2019). People on the right of the political spectrum are less likely to believe in anthropogenic climate change and, consequently, less likely to support policies that protect the climate. A person's ideological position also influences their perception of climate change as a serious problem (Lewis et al., 2019): Left-wing or green party voters in Europe tend to be more concerned about anthropogenic climate change and its impacts than right-wing or conservative party voters (Fisher et al., 2022). Although the economic and cultural attitudes within the political camps show similar patterns, differences exist in how individuals perceive the effects of climate change (Fisher et al., 2022). Further, individuals' positions on climate change are not solely based on substantive standpoints but are also closely linked to their social identities (Bliuc et al., 2015; Fielding & Hornsey, 2016; Vesely et al., 2021). Hornung (2022) even showed that European Parliament members' social identity played a significant role in their voting behaviour on climate policy.

The second perspective—informed by climate governance research on the crucial role of non-partisan actors—focuses on discourse-evolving groups. These form organically around shared beliefs and identities, creating two opposing camps: a pro-climate camp and an anti-climate camp. The pro-climate camp is primarily supported by actors who perceive climate change as a threat to humanity and advocate for climate policy measures. However, it is also sustained by the broad societal pro-climate consensus in Europe (Fisher et al., 2022; Poortinga et al., 2019; Tranter & Booth, 2015). This camp is not homogeneous but comprises various actors, including NGOs, scientists, international organisations, politicians, and activists (K. Chen et al., 2023; Falkenberg et al., 2022; Vu et al., 2020). Non-partisan actors are particularly influential because climate positions and actions are closely linked to social identities (Bamberg et al., 2015). How strongly climate policy positions are part of one's own social identity and how salient they are strongly influence climate policy attitudes and actions (Barth et al., 2021; Fielding & Hornsey, 2016). The more important it becomes for someone's identity to belong to a group, the more their behaviour tends to reflect this. In this context, the Fridays for Future movement plays a particularly noteworthy role in the German climate policy discourse: Fridays for Future has helped raise public awareness of climate change and is gaining prominence in the political centre (Schürmann, 2023; Schwörer, 2024). On social media platforms such as Twitter, climate activists have been particularly successful in attracting attention and mobilising supporters (Barrie et al., 2024; Falkenberg et al., 2022; Padilla-Castillo & Rodríguez-Hernández, 2023).

The connection between substantive beliefs and social identity is not unique to the pro-climate camp. For the anti-climate camp, rejecting climate protection measures is closely tied to perceiving them as a threat to one's identity (Feygina et al., 2010; Forchtner et al., 2018; Hoffarth & Hodson, 2016; Lockwood, 2018). Thus, denying climate change among conservative white men also serves to protect their own group identity and justify a social system that favours their group; it is, therefore, an integral part of their identity (Krange et al., 2019; McCright & Dunlap, 2011b). This feeling is particularly strong among right-wing populists, as climate protection is often interpreted as a constraint imposed by the liberal elite (Forchtner et al., 2018; Lockwood, 2018). Rejecting climate protection measures as the dictates of the liberal elite is also widespread in right-wing populist circles in Germany (Forchtner et al., 2018; Küppers, 2022). In this context, climate change denial is often closely linked to distrust of environmental institutions, driven by right-wing and populist anti-establishment attitudes (Krange et al., 2021). Furthermore, people with right-wing attitudes have less trust in climate science, and this trust decreases further with decreasing trust in the government (Pechar et al., 2018).

2.3. Polarisation of the Discourse on Climate Change in the Election Campaign

Building on the apparent conflicts in climate discourse, this section formulates the study's research questions. This section develops the theoretical assumption that election campaigns have a differential impact on the polarisation between partisan camps compared to the discourse-evolving pro- and anti-climate camps.

During an election campaign, political competition and information increase, highlighting substantive differences and increasing the salience of social identity (Huddy, 2015). Further, party identification increases, which leads to stronger party cohesion and more mobilisation (Michelitch & Utych, 2018; Singh & Thornton, 2019). The salience of social identities can influence political support for climate protection measures by activating political identities and thereby consolidating or reinforcing existing positions (Diamond, 2020; Unsworth & Fielding, 2014). Such campaigns not only strengthen the cohesion of the in-group, but negative campaigns also increase aversion towards the out-group and, thus, lead to increasing affective polarisation (Lau et al., 2017). This dynamic is further reinforced when opposing positions are perceived as threatening to one's identity, as in climate politics (Krange et al., 2019; Riek et al., 2006). According to Renström et al. (2021), a perceived threat to one's in-group, such as an opposing camp gaining influence through an election, increases cohesion across party lines and social groups.

In addition to election campaigns increasing the salience of social identities, they also directly influence ideological positions. Voters' political knowledge increases during an election campaign, and voters are more likely to be able to categorise the parties' positions thematically (Hansen & Pedersen, 2014; van der Meer et al., 2016). This facilitates voters' decisions in favour of a party and leads to sorting along party lines, and it also fosters cohesion by encouraging individuals to focus on their own position. In addition, voters tend to consume content aligning with their position, which reinforces their views and, in turn, contributes to the homogenization of opinions at the group level (Jost et al., 2022). Further, Hernández et al. (2021) argued that parties increase ideological polarisation by highlighting ideological and substantive differences to persuade voters. In this context, framing can also lead to issues being viewed from a particular perspective, increasing the distance between positions (Feinberg & Willer, 2019).

After an election, public political conflict tends to decline, and, in multi-party systems, coalition negotiations begin to form a government. Several studies have shown that both coalitions and the signalling of coalitions between parties can reduce affective polarisation (Gidron et al., 2023; Hahm et al., 2024; Wagner & Praprotnik, 2024). Accordingly, partisans' willingness to compromise increases with the start of coalition negotiations, suggesting a decline in partisan cohesion (Plescia et al., 2022). As mobilisation and partisan demarcation decline the further one gets from an election, so too does party identification (Michelitch & Utych, 2018; Singh & Thornton, 2019). Correspondingly, Hernández et al. (2021) found that ideological polarisation declines if the temporal distance from an election grows. This ideological decline explains most of the subsequent decline in affective polarisation, which is consistent with studies on the correlation between affective and ideological polarisation (Reiljan, 2020; Wagner, 2021). Research by Hansen and Kosiara-Pedersen (2017) and Hernández et al. (2021) indicates that polarisation between partisans' political attitudes increases during an election campaign but approaches pre-election levels afterwards. Thus, the impact of an election on partisans' level of information and mobilisation leads to the following research question:

> RQ1: Does polarisation in climate policy discourse on Twitter between left-wing and right-wing partisans temporarily intensify during election campaigns?

Within a democratic system, different groups may be polarised to different degrees (Wagner, 2024). This suggests that polarisation might exhibit different dynamics in election campaigns. Discourse-evolving groups that have naturally formed in the public discourse on climate policy due to their social identities and ideological positions have deeply rooted climate-related beliefs. Thus, a climate-friendly stance is either viewed as integral to one's identity or correspondingly rejected. Furthermore, the issue's relevance is maintained in public debate via ongoing public discourse, regular mobilisation campaigns, and persistent media attention, as climate change is often linked to threats such as food and water security (Hase et al., 2021; Schäfer et al., 2016). For example, Fridays for Future has been successfully mobilising large numbers of people both offline and online for years, thereby shaping the public discourse (Barrie et al., 2024; Padilla-Castillo & Rodríguez-Hernández, 2023; Schürmann, 2023). Conversely, the ongoing visibility of this mobilisation and any associated shifts in social structures can evoke a sense of threat, thus increasing resistance within the anti-climate camp (Gaertner et al., 1993; Krange et al., 2019; Oakes, 1987; Renström et al., 2021), and the issue's high salience strengthens group cohesion on both sides, thereby consolidating positions already established before an election campaign and maintaining a persistently high level of polarisation.

This effect of sustained prominence is enhanced by social media incentives and algorithms that strengthen the formation of distinct camps in the public discourse (Cinelli et al., 2021). These highly entrenched camps within public discourse increase polarisation between groups and also encourage an environment in which misinformation and conspiracy theories spread. In such contexts, different perceptions of what counts as factual information enable some groups to construct coherent but exclusionary worldviews that actively dismiss alternative viewpoints, undermining the possibility of shared dialogue and accelerating the breakdown of public discourse (Nguyen, 2020; Van Bavel & Pereira, 2018). In this type of environment, short-term campaigns may be unlikely to significantly impact the polarisation between pro- and anti-climate camps in public climate discourse. This is consistent with observations from highly polarised systems such as the US, where high party identification results in election campaigns having minimal influence on partisan polarisation (Fasching et al., 2024). This leads to the following research question:

RQ2: Is the climate policy discourse on Twitter between pro-climate and anti-climate camps characterised by consistently high and stable levels of polarisation throughout election campaigns?

3. Empirical Approach

Twitter data was collected during 2021, covering the climate policy debate nine months before and three months after the German federal election (election day was 26 September 2021). At the time of data collection, all data was publicly available. The data query for the year 2021 searched for all tweets containing *Klima* (German for climate), regardless of case. Since German naturally forms compound words, this approach also captured related terms such as *Klimakatastrophe* and *Klimawandel* (German for climate catastrophe and climate change). This method covers a broader range of words than a strict keyword search (see Supplementary File, Appendix A). In addition to the original tweets, the dataset contains all retweets. A total of 498,084 unique tweets were identified, which were shared 2,034,050 times via retweets.

There is no official start or end to election campaigns in Germany, so the pre- and post-election periods were determined using alternative indicators. The nominations of the front-runners, which took place between April and June 2021, served as the start of the campaign. To establish a benchmark, the observation period started in January 2021. The election outcome was formally realised once the new parliament was inaugurated in October, the coalition negotiations ended, and the new government was formed in early December. In addition, studies focusing on the post-election period suggest that electoral effects decline relatively soon thereafter (Hernández et al., 2021; Michelitch & Utych, 2018). To capture this dynamic, this study uses a three-month post-election observation period.

3.1. Network Creation

On Twitter, users can form connections with each other in various ways, such as by following and mentioning other users; both of these actions have been previously used to investigate polarisation (Barberá, 2015; Conover et al., 2011). However, a widely used approach to investigate polarisation on Twitter is examining retweets as an endorsement of the original poster's message to represent interactions (T. H. Y. Chen et al., 2021; Conover et al., 2011; Darius, 2022; Falkenberg et al., 2022; Kubinec & Owen, 2021). In many social media data studies, it remains unclear what kind of polarisation is being studied through these connections (Kubin & von Sikorski, 2021). As described in Section 2.1, I assume that a retweet is both a signal of a substantive endorsement and a signal of proximity to one's social identity. In this context, a retweet creates a positive connection (edge) between social identities and between the substantive position of two accounts (nodes) in a network. At the same time, however, a negative attitude towards another account or even a rejection of its position cannot be measured directly. Accordingly, different accounts with similar substantive positions and similar social identities have denser connections than accounts representing other positions or other opposing social identities. The denser the connections, the greater the proximity.

Isolating these groups of dense connections in the network, also called communities, and calculating the network polarisation is possible by applying the Leiden algorithm (Traag et al., 2019). To capture the dynamics of polarisation in an election, the directed network is divided into time points (Figure 1). The retweets and accounts are then assigned to the corresponding time points, and a separate network is

created for each time point. Accounts that appear at multiple time points are linked across times (Mucha et al., 2010). Thus, a complete network is created that allows communities to be identified at any point in time, with temporal dependencies accounted for in the calculation. This creates time-constant communities, but accounts can move between communities (Mucha et al., 2010). This flexible assignment reflects the dynamics of public discourse, where a person's proximity to different groups can change over time. The approach improves the accuracy of polarisation measurements by capturing realignment processes and varying degrees of group proximity that static community structures would otherwise obscure.

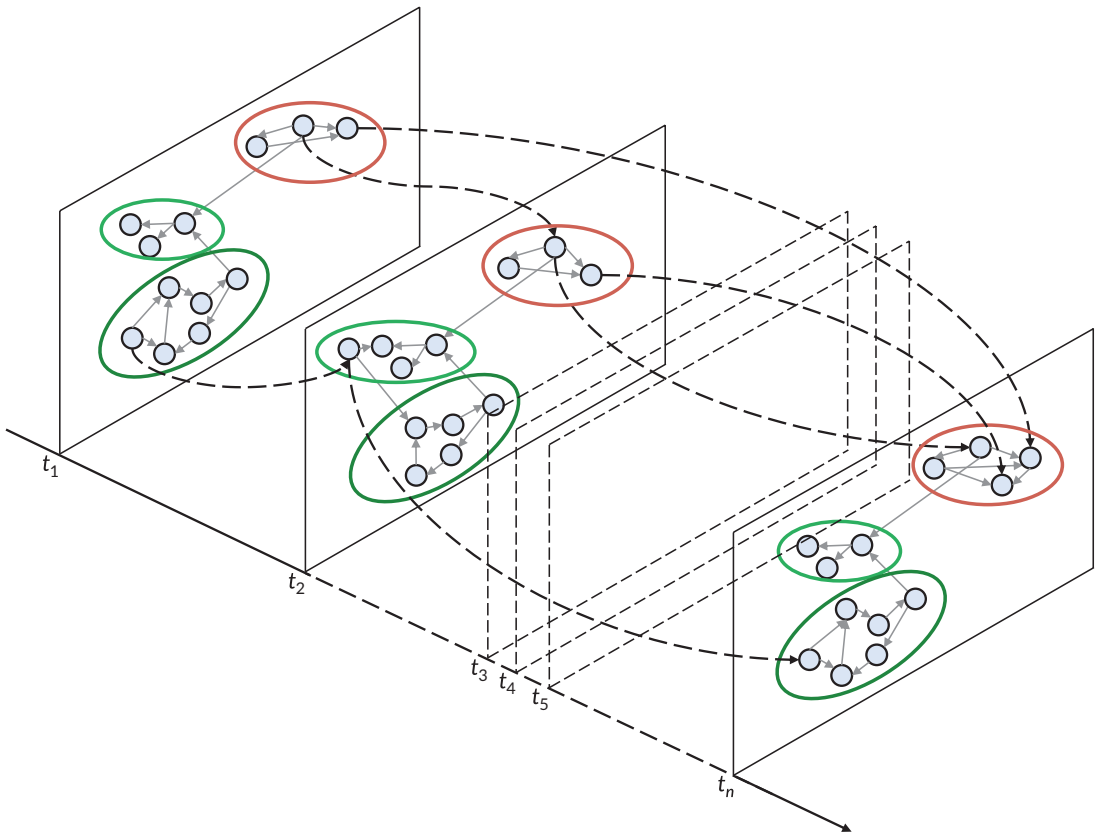

Figure 1. Illustration of the temporal network approach based on Mucha et al. (2010). Note: Extended by the possible movements of nodes based on the leidenalg documentation for temporal community detection (Traag et al., 2023).

Communities represent accounts with a dense network of retweets, which implies proximity in substantive positions and social identity. To determine these communities, the study applies two different approaches. First, to identify the discourse-evolving groups in the climate discourse network, the Leiden algorithm was applied unchanged (Traag et al., 2019). Second, partisan communities were determined by using the candidates of the parties involved in the climate discourse during the federal election as anchors (Sältzer et al., 2023). These partisan anchors represent the following parties: Sozialdemokratische Partei Deutschlands (Social Democratic Party; SPD), Bündnis 90/Die Grünen (The Greens), Die Linke (The Left), Freie Demokratische Partei (Free Democratic Party; FDP), Christian Democratic Parties (CDU/CSU), and Alternative für Deutschland (Alternative for Germany; AfD). This means that at the start of the Leiden algorithm, each party represented a distinct community. During community detection, the partisan communities were created based on a dense network of retweets with these partisan anchors. Thus,

partisan communities include densely connected accounts centred on candidates, reflecting both shared political views and a common social identity with the party. The 20 most retweeted tweets from the five most influential (most retweeted) accounts were reviewed, and candidate influence was analysed to evaluate partisan community quality. To address RQ1 and RQ2, the partisan and discourse-evolving communities were manually divided into two camps. This created a network divided into left- and right-wing camps based on partisan communities and a network divided into pro- and anti-climate camps. The communities' classification was based on the analysed tweets from the most influential accounts and the community affiliation of the federal election candidates. An alternative approach would be to use a large language model to determine the alignment of the different communities. However, this approach would distort the influence of tweets in the climate discourse or, if weighted by influence, lead to a methodologically more complex but conceptually comparable approach that would also have required even more extensive validation.

However, the Leiden algorithm faces a methodological limitation inherent in algorithmic community detection. Modularity optimisation methods are subject to the "resolution limit," a phenomenon where algorithms tend to merge small, well-defined communities into larger ones (Fortunato & Barthélemy, 2007). Varying the resolution parameter does not fully resolve this issue; instead, it introduces a dilemma: A low value reinforces the merging of small groups, while a high value artificially splits large, cohesive ones (Lancichinetti & Fortunato, 2011).

This challenge was addressed using a two-step approach. First, the Leiden algorithm identified partisan and discourse-evolving communities, yielding a granular microstructure. Although the resolution limit influences the precise size and composition of these communities, their formation was not arbitrary. These communities are internally coherent and clearly distinct from one another, revealing the internal structure of the overarching camps. Second, these algorithmically identified communities were assigned to their corresponding, theoretically grounded superordinate camps. This assignment was based on theoretical considerations regarding the division of the partisan spectrum into left- and right-wing camps as well as distinguishing between pro- and anti-climate camps.

3.2. Measuring Polarisation in Temporal Networks

Both affective and ideological polarisation result from the relation between in-group cohesion and distance to the out-group (DiMaggio et al., 1996; Iyengar et al., 2012; Lelkes, 2016). In this study, polarisation was calculated accordingly. In a network, the cohesion of a given community can be understood as in-group strength (*IS*), determined by the number of interactions within a community. The number of connections from one community to another then describes the out-group strength (*OS*). An increase in in-group or out-group strength describes an increase in connections within or between the communities. Since a connection, or a retweet, reflects an agreement with the substantive position and a similar social identity, an increase in strength indicates a more cohesive community or more significant similarity between two communities in terms of substantive position and social identities.

Although people prefer to interact with like-minded individuals, the intensity of these interactions depends on how many options are available. If only a few such communities exist, the connections between them strengthen. To account for this when calculating polarisation, the in-group strength at time t was calculated

as the ratio of the observed interaction to the possible interactions, where A is the adjacency matrix, C_n^t is the set of nodes in community n, and s_n^t is the number of nodes in that community:

$$IS_n^t = \frac{1}{s_n^t\left(s_n^t - 1\right)} \cdot \sum_{i \neq j \in C_n^t} A_{i,j}^t$$

Fransson et al. (2018) and T. H. Y. Chen et al. (2021) used the approach of considering the strength of connections between and within communities, but it has been adapted here for the directed network. The time component was implemented as in Fransson et al. (2018). The out-group strength of one community (n) to another (m) is calculated by dividing the sum of the observed interactions from one community to the other by the number of possible interactions between them (Fransson et al., 2018):

$$OS_{n,m}^t = \frac{1}{s_n^t \cdot s_m^t} \cdot \sum_{i \in C_n^t,\, j \in C_m^t} A_{i,j}^t$$

As a retweet represents substantive agreement and similarity between social identities, an increase in in-group strength signals growing proximity of social identities and alignment on substantive positions. This is reflected in increasing cohesion within the community and, thus, an increase in polarisation. On the contrary, if the out-group strength between two communities increases, the communities are closer to each other, and polarisation decreases.

To calculate the polarisation of a community within the network, the difference between the in-group and out-group strength of community n and all other communities in the network was computed. The polarisation index (P) is based on the formulation by Reiljan (2020), but adapted for network-specific conditions, is calculated for each community n at time t as follows:

$$P_n^t = \sum_{m\,=\,1,\,m\,\neq\,n}^{M} \left[\left(\frac{IS_n^t - OS_{n,m}^t}{IS_n^t + OS_{n,m}^t}\right) \cdot \left(\frac{\text{com\_ share}_m^t}{1 - \text{com\_ share}_{nc}^t - \text{com\_ share}_n^t}\right)\right]$$

According to Krackhardt and Stern (1988), normalisation allows for comparison between communities. As a result, P is between −1 and 1, where a strength of 1 indicates complete separation and 0 indicates balanced in-group and out-group strength. As in Reiljan (2020) and Wagner (2021), the share of out-group communities (com_ share$_m$) was considered to capture the influence on polarisation. However, as interactions were not present between all communities, both the share of community n (com_ share$_n$) and the share of communities for which there was no contact (com_ share$_{nc}$) were included in the calculation.

To capture the polarisation in the overall network, the polarisation score of each community was weighted by the community's share of the overall network, as suggested by Wagner (2021) and Reiljan (2020), and summed across all communities:

$$P^t = \sum_{n\,=\,1}^{N} \left[\sum_{m\,=\,1,\,m\,\neq n}^{M} \left[\left(\frac{IS_n^t - OS_{n,m}^t}{IS_n^t + OS_{n,m}^t}\right) \cdot \left(\frac{\text{com\_ share}_m^t}{1 - \text{com\_ share}_{nc}^t - \text{com\_ share}_n^t}\right)\right]\right] \cdot \text{com\_ share}_n^t$$

In this article, I considered polarisation at different levels. The polarisation index then describes either the polarisation in the system as a whole (P^t) or the polarisation of communities (P_n^t). The polarisation of a community describes the relationship between cohesion and distance from other communities. Therefore, community polarisation always refers to a community's polarisation in relation to at least one other community. Accordingly, the polarisation of the overall system is the weighted sum of the polarisation of the communities. The polarisation of individual communities towards others was used to understand the

underlying structures of the polarisation of the overall debate. This included an analysis of the in-group and out-group strengths as a normalised index. In this context, the out-group strength of a community is the weighted average of the out-group strength of the community relative to the others. Research questions (RQ1 and RQ2) regarding polarisation between the partisan camps and between the pro- and anti-climate camps were analysed descriptively by examining the time series for structural breaks and changes in variance.

4. Results

The 10 accounts with the most retweets were analysed to identify the most influential accounts in the climate policy debate across the network (Table 1). The most influential account belonged to Luisa Neubauer, one of the most prominent German activists from Fridays for Future. The Fridays for Future Germany account also held a significant position in the network, ranking third most influential. Three additional influential accounts were associated with researchers and science communicators, while one belonged to a journalist. Among the 10 most influential accounts in the climate policy discourse, Karl Lauterbach's account was the only one representing a professional politician. The remaining accounts included those of a cultural creator, an activist association, and a satirical profile.

Table 1. The 10 most influential accounts in climate discourse, according to the number of times they were retweeted.

Account	Number of retweets	Description
Luisa Neubauer	62,054	Climate activist (Fridays for Future)
Özden Terli	35,261	Meteorologist and weather anchor
Fridays for Future Germany	29,889	Main account of Fridays for Future in Germany
Prof. Stefan Rahmstorf	29,792	Climate researcher (Potsdam Institute for Climate Impact Research) and Professor of Physics of the Oceans (Potsdam University)
Volker Quaschning	24,121	Professor for renewable energy systems at the Berlin University of Applied Sciences
Prof. Karl Lauterbach	21,374	Member of the German parliament (SPD)
Mario Sixtus	18,062	Journalist, scriptwriter, and filmmaker
Campact	16,662	An association committed to progressive politics and democracy
Sara Schurmann	16,333	Journalist
Kaffeecup	15,128	Humorous and satirical account

A better understanding of the different currents in the climate discourse can be gained by examining individual discourse-evolving communities. The Leiden algorithm automatically determines the number of communities, preventing forced assignments. It detected 4,478 communities; 98% contained a maximum of 10 accounts, while the 20 largest consistently contained between 97% and 99% of all accounts. The polarisation was therefore calculated across all communities with weights proportional to their respective size. Four of the top 20 communities were classified as discourse in Switzerland or Austria and

were thus removed. The analysis focused on the six largest communities, representing between 63% and 88% of all accounts; from April to October, they consistently represented over 72% of all accounts. The results indicate that community sizes underwent marked changes throughout the election campaign (see Supplementary File, Appendix B). A modest increase in community size was apparent in February, followed by a pronounced expansion from May to June. After the campaign ended with the election, there was a decrease in community size. Simultaneously, the average number of retweets per account increased steadily from May to September but declined significantly post-election.

The five accounts with the most retweets per community were considered to identify the orientation of the communities. The mainstream and largest community was a mix of climate activists, satirical, and journalistic accounts. The third-largest community was a combination of scientists and science journalism accounts related to climate policy. The fourth- and sixth-largest communities were party-based, whereby the fourth was connected to The Greens, and the sixth to The Left. Therefore, accounts belonging to politicians or political parties were the most influential in these communities. The country's major newspapers dominated the fifth-largest community. The second-largest community comprised far-right bloggers and conspiracy theorists (Table 2). This community also included Germany's largest tabloid newspaper. The community of right-wing bloggers and conspiracy theorists was characterised by statements against climate protection measures, by describing climate discourse as hysterical and exaggerated, and by casting doubt on scientific findings. This community also included the majority of the accounts belonging to federal election candidates who can be assigned to the FDP, CDU/CSU, and AfD.

Table 2. Most influential accounts in the right-wing and conspiracy community.

Account	Number of retweets	Description
Neverforgetniki	14,523	Right-wing blogger
Roland Tichy	12,108	Editor of a right-wing alternative magazine
Boris Reitschuster	12,032	Right-wing blogger
Hartes Geld	7,827	Right-wing blogger
Ulrich van Suntum	5,955	Emeritus professor of economics

To better understand the polarisation of discourse-evolving groups in the climate policy discourse, I examined the polarisation of the different discourse-evolving communities in relation to each other (Figure 2). Pairwise polarisation scores for each community are given in Supplementary File, Appendix C. Strikingly, the right-wing and conspiracy community (red line) was highly polarised against all other groups, and its polarisation level remained constant throughout the campaign. All other communities showed lower polarisation towards communities other than the right-wing and conspiracy community. The mainstream community (green line) was characterised by the lowest polarisation towards the others. Except for the right-wing and conspiracy community, all other groups showed decreasing polarisation towards each other from May onwards, and polarisation returned to original levels after the election concluded in October. This declining polarisation occurred due to both an increasing number of interactions between the communities (out-group strength) and a decreasing number of interactions within the communities (in-group strength). The clear separation of the right-wing and conspiracy community from the other communities was characterised by a consistently low out-group strength with the other communities and a relatively stable in-group strength.

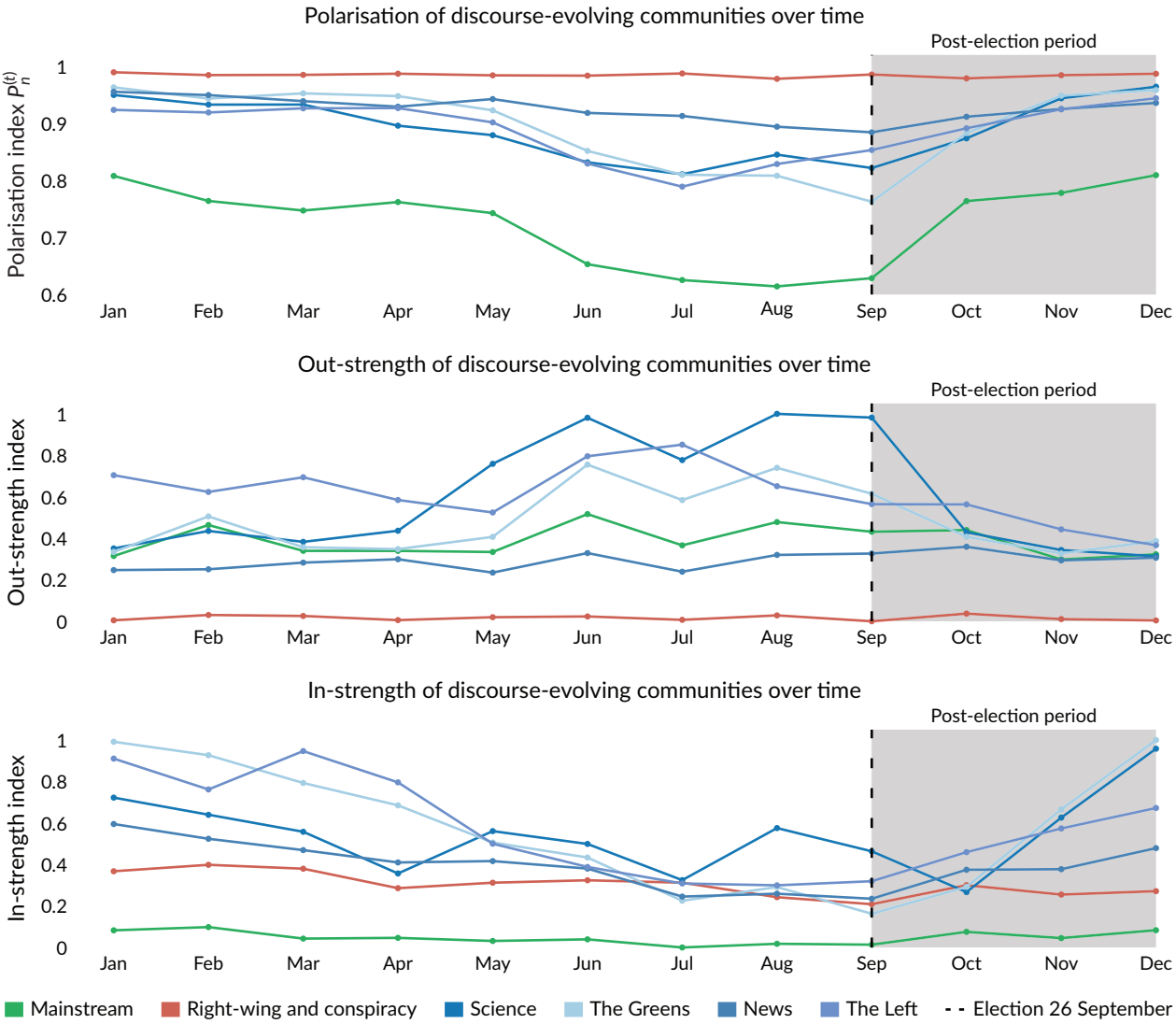

Figure 2. Polarisation, out-strength, and in-strength of discourse-evolving communities over time. Notes: The top diagram shows the overall polarisation index for each of the six largest discourse-evolving communities (a representation of the individual communities' polarisation towards each other can be found in the Supplementary File); the middle diagram shows the normalised out-group strength; the bottom diagram shows the normalised in-group strength.

Similar to the Figure 2 analysis of discourse-evolving community polarisation, the picture among partisan communities is also mixed (Figure 3). Communities coloured in red were assigned to the right-wing partisan camp, consisting of Christian Democrats (CDU/CSU), Liberals (FDP), and right-wing populists (AfD). Communities coloured in green represent the left-wing partisan camp, including social democrats (SPD), Leftists (The Left), and The Greens. While polarisation decreased among left-wing partisans from May onwards and increased from October onwards, polarisation among right-wing partisans remained constant. The decreasing polarisation among left-wing parties is attributable to the increasing interaction between these parties and, above all, to the increasing out-group strength of The Greens and the SPD. A slight decrease in out-group strength occurred for the right-wing parties between May and September. In-group strength constantly declined for all partisan communities from the beginning of the year until the month of the election.

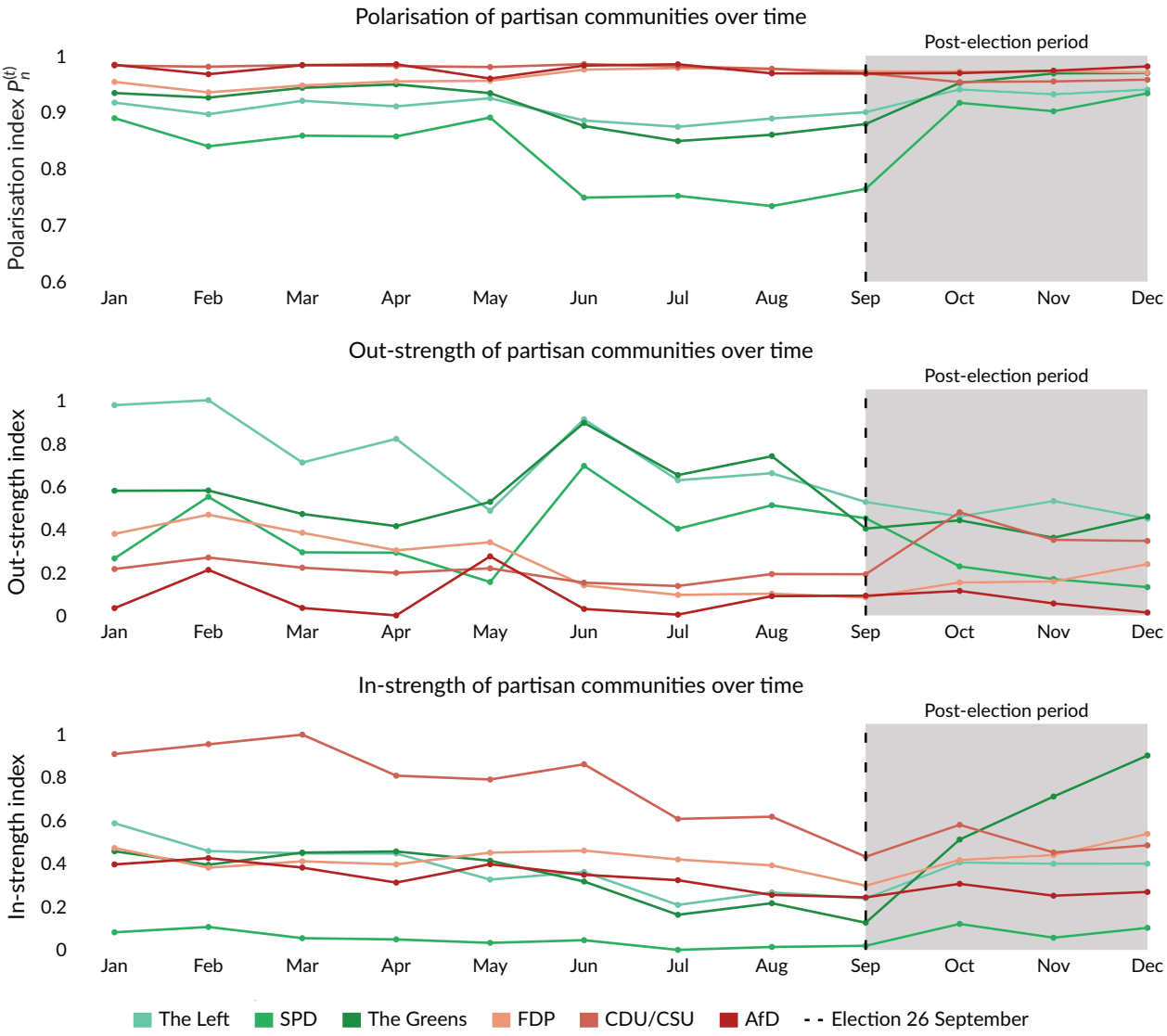

Figure 3. Polarisation, out-strength, and in-strength of partisan communities over time. Notes: The top diagram shows the polarisation index for each of the six partisan communities (a representation of the individual communities' polarisation towards each other can be found in the Supplementary File); the middle diagram shows the normalised out-group strength; the bottom diagram shows the normalised in-group strength.

The polarisation analysis, both among partisans and discourse-evolving communities, showed two opposing camps. The alignment of political parties along the left-right spectrum defined the partisan camps. At the discourse-evolving community level, camps were identified by manually categorising communities based on their most influential accounts and the nature of their tweets. The pro-climate community included a wide range of actors, including Fridays for Future activists, scientists, and the press, extending from left-wing progressive circles to the centre of social discourse. In contrast, the anti-climate community was dominated by right-wing bloggers, who exerted considerable influence within this camp.

Polarisation between the left and right of the partisan spectrum increased from March to June/July and then decreased again until the election in September (Figure 4). Polarisation then stabilised at a slightly higher level than before the election. The increase and subsequent decrease in polarisation are evident for both the right

and the left camp. Compared to the polarisation between left and right partisans, a higher polarisation was found between pro- and anti-climate communities. Furthermore, although the polarisation between pro- and anti-climate showed fluctuations, no trend was identified, and these fluctuations ended in September with the election month. Overall, polarisation from pro-climate to anti-climate and vice versa can be considered stable.

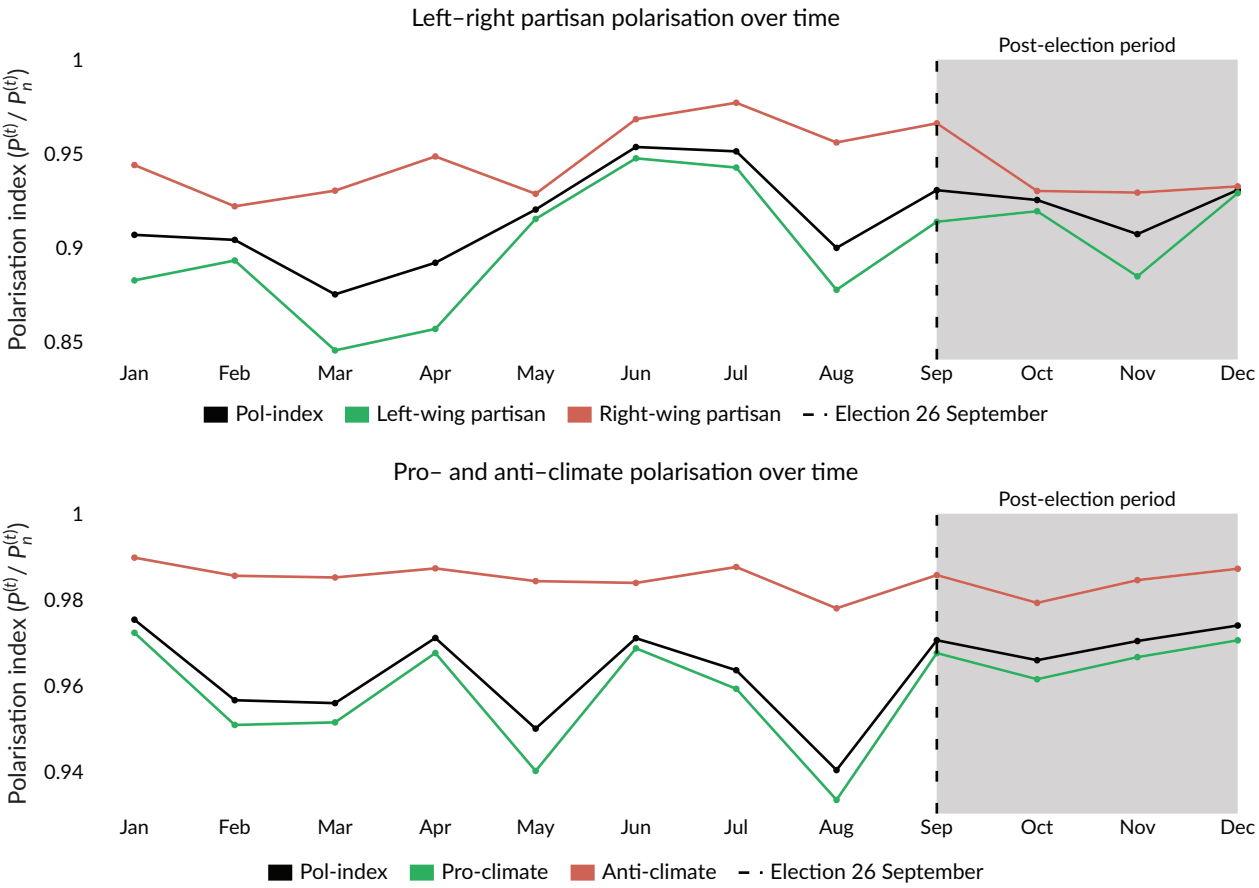

Figure 4. Comparison of polarisation dynamics between partisan (left–right) and discourse-evolving camps (pro- and anti-climate).

5. Discussion

Previous studies have indicated that polarisation increases during election campaigns (Hansen & Kosiara-Pedersen, 2017; Sood & Iyengar, 2016) and then decreases afterwards (Hernández et al., 2021). However, this dynamic is uncertain in areas of high division, such as climate policy, where positions and identities are deeply intertwined. Furthermore, most existing studies have not distinguished between partisan polarisation and polarisation within discourse-evolving camps, based on both substantive proximity and proximity of social identities. This distinction is particularly important in climate policy, where conflicts are not exclusively drawn along party lines.

The temporal analysis of Germany's 2021 climate policy discourse reveals two fundamentally different polarisation patterns. First, partisan polarisation between left- and right-wing partisan camps increased from March to June/July 2021, receding by election day in late September, though stabilising at a slightly higher level than pre-campaign. This variation does indicate that the election campaign intensified the conflict

between partisans, but also that the division into camps was not absolute and that the conflict would subside after the election, leaving room for compromise. Second, this study revealed a more resilient line of conflict throughout the year by examining polarisation through the discourse-evolving camps rather than through partisans. This divide separates a pro-climate camp, supported by activists, scientists, and the media, from an anti-climate camp, influenced mainly by right-wing bloggers. This stable division reflects the close connection between ideology and social identity in climate policy (Bliuc et al., 2015; Chinn et al., 2020; McCright et al., 2016; Vesely et al., 2021). Thus, election campaigns influence partisan polarisation but not the underlying camp structure of the climate policy discourse; this points to a more fundamental conflict within German climate policy on Twitter. Furthermore, the conflict has a pronounced anti-establishment dimension, which Uscinski et al. (2021) identified as a key axis of polarisation beyond classical partisan conflict. Within the anti-climate camp, climate protection measures were often framed as paternalistic and an attack on individual freedom, reflecting patterns of far-right climate communication (Forchtner, 2019).

The influence of non-party-political actors in the climate discourse, observed in both the pro- and anti-climate camps in this study, reflects the overall structure of climate governance. Dellmuth and Shyrokykh (2023) pointed out that previous research suggests that party and non-party-political actors directly influence governance processes via Twitter by diffusing norms, providing opinions to leadership, and shaping public opinion. In this context, this study showed (with one exception) that the influence of party-political actors is largely limited to separate discourse structures within the network. The Greens and The Left were located in the pro-climate camp alongside Fridays for Future activists and the scientific community, but each party had its own distinctive discourse structure. This pattern reflects the importance of climate policy for these parties and also indicates a clear separation between their partisan discourse and other groups in the network that also belong to the pro-climate camp but develop around non-party actors. On the other side, as Darius (2022) also observed, candidates from the CDU/CSU and FDP formed a common discourse structure with the AfD within the right-wing and conspiracy community, in which non-party actors have significant influence. It follows that the discourse structure within the anti-climate camp was less differentiated than that within the pro-climate camp.

In addition to the election campaign and the election itself, other events influenced the climate policy discourse during the observation period. Following the German Constitutional Court ruling in March 2021, the German Bundestag adopted stricter climate targets in June 2021. The polarisation between the scientific community, The Greens, and The Left decreased during this period. At the same time, the distance to the anti-climate camp remained large, which underlines the fundamentally divided discourse. During the flood disaster of July 2021, which caused over 200 fatalities in local areas in Germany and Belgium (Tradowsky et al., 2023), the results showed that while discursive activity increased in the form of more accounts and retweets, no immediate shift in the fundamental polarisation structure was observed. This suggests that while this disaster was reflected in the discourse, it did not change the existing structure of the discourse or polarisation. However, it is conceivable that the decline in polarisation in the subsequent month of August reflects a delayed discursive reaction to this crisis.

The analysis shows that the climate discourse exhibits two different polarisation dynamics: a volatile partisan polarisation between left and right and a persistently stable camp formation between pro- and anti-climate groups. For governance, this means that both levels need to be considered. Traditional negotiation mechanisms can work at the party level, but the discourse-evolving camps can only be reached through formats that appeal

to identities and involve non-partisan actors. Dellmuth and Shyrokykh (2023) argued that these actors shape public opinion on Twitter; if politicians ignore their role, even a cross-party consensus will remain ineffective. Lee (2015) also warned that deep divisions can lead to gridlock if formal majorities fail to gain social acceptance. Effective climate governance must, therefore, allow for partisan compromise while creating durable dialogue formats that address the divisions between camps and actively engage the norm-setting power of non-partisan actors (Cole et al., 2025; Jost et al., 2022). Approaches focusing on the common ground between camps can be particularly effective; for example, those emphasising cross-camp identities can lead to depolarisation (Klar, 2013).

The generalisability of the study's findings is nuanced, as the case study is limited to the German context during a single election. Yet, the distinction made here between partisan polarisation and polarisation between discourse-evolving groups can be transferred to other multi-party systems. This applies where climate policy positions cut across party lines and form pro- and anti-climate camps. In contrast, this distinction likely loses its analytical utility in two-party systems, where climate policy positions and party affiliations more frequently converge. Furthermore, the significance of specific actors in the German climate policy discourse must be assessed contextually. For instance, while the strong influence of the Fridays for Future movement might be specific to Germany, the mechanism behind it is transferable. The study suggests that non-partisan actors can play a structurally significant role in the polarisation dynamics reflected in both climate governance and climate discourse (Dellmuth & Shyrokykh, 2023; Dorsch & Flachsland, 2017; Falkenberg et al., 2022).

6. Conclusion

This study showed that the 2021 German election campaign temporarily increased the polarisation between left and right partisans in the climate debate. However, the election campaign only had a limited impact on the underlying conflict between pro- and anti-climate camps. Polarisation between left and right partisans increased from March to June 2021 and then stabilised just above initial levels. However, polarisation between the pro- and anti-climate camps remained at a high level throughout the year, proving largely resilient to the election campaign and external shocks such as the flood disaster or legislative changes.

Several limitations should be considered when interpreting the results, mainly because the data were collected in a system that could lead to polarised structures. Namely, Twitter's recommendation algorithm might increase polarisation, particularly by displaying tweets that other users with similar profiles have also liked (Shmargad & Klar, 2020). Additionally, the platform's user base does not represent the general population (Taddicken et al., 2019). The Leiden algorithm employed in this study entails methodological limitations that may specifically influence how individual community structures are interpreted. Therefore, future research should pursue three main directions. First, the analysis should be extended to include comparable datasets from other countries and platforms. Second, alternative methodological approaches could provide additional insights. Third, integrating online behavioural data with survey data would enable a more nuanced understanding of the interaction between individual attitudes and political communication.

The findings of this study make three main contributions to the research on political networks, climate governance, and polarisation. First, the results demonstrate that policy areas with strong identity dimensions are more resistant to the mobilisation and de-escalation mechanisms of electoral campaigns. This highlights the analytical need to distinguish between partisan polarisation and the formation of opposing camps that

develop from shared beliefs and identities beyond party politics. Second, the study empirically shows how the discursive power of non-partisan actors, such as Fridays for Future and right-wing bloggers, can superimpose traditional party-political dynamics. By doing so, it links theories of governance to the analysis of conflict and polarisation patterns in digital discourse. Third, the utilised temporal network approach represents an adaptable methodological tool that can be used in other contexts to systematically capture the temporal dimension of such networks and trace their influence on governance processes.

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Conflict of Interests

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GPT-4o and Gemini 2.5 Pro were used for grammar and style improvement. All suggestions were carefully checked to ensure that the substance of the text was not affected.

Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

References

Algara, C., & Zur, R. (2023). The Downsian roots of affective polarization. *Electoral Studies*, *82*, Article 102581. https://doi.org/10.1016/j.electstud.2023.102581

Bamberg, S., Rees, J., & Seebauer, S. (2015). Collective climate action: Determinants of participation intention in community-based pro-environmental initiatives. *Journal of Environmental Psychology*, *43*, 155–165. https://doi.org/10.1016/j.jenvp.2015.06.006

Bantel, I. (2023). Camps, not just parties. The dynamic foundations of affective polarization in multi-party systems. *Electoral Studies*, *83*, Article 102614. https://doi.org/10.1016/j.electstud.2023.102614

Barberá, P. (2015). Birds of the same feather tweet together: Bayesian ideal point estimation using Twitter data. *Political Analysis*, *23*(1), 76–91. https://doi.org/10.1093/pan/mpu011

Barrie, C., Fleming, T. G., & Rowan, S. S. (2024). Does protest influence political speech? Evidence from UK climate protest, 2017–2019. *British Journal of Political Science*, *54*(2), 456–473. https://doi.org/10.1017/S0007123423000376

Barth, M., Masson, T., Fritsche, I., Fielding, K., & Smith, J. R. (2021). Collective responses to global challenges: The social psychology of pro-environmental action. *Journal of Environmental Psychology*, *74*, Article 101562. https://doi.org/10.1016/j.jenvp. 2021.101562

Billig, M., & Tajfel, H. (1973). Social categorization and similarity in intergroup behaviour. *European Journal of Social Psychology*, *3*(1), 27–52. https://doi.org/10.1002/ejsp.2420030103

Bliuc, A.-M., McGarty, C., Thomas, E. F., Lala, G., Berndsen, M., & Misajon, R. (2015). Public division about climate change rooted in conflicting socio-political identities. *Nature Climate Change*, *5*, 226–229. https://doi.org/10.1038/nclimate2507

Boxell, L., Gentzkow, M., & Shapiro, J. M. (2024). Cross-country trends in affective polarization. *The Review of Economics and Statistics*, *106*(2), 557–565. https://doi.org/10.1162/rest_a_01160

Brüggemann, M., & Meyer, H. (2023). When debates break apart: Discursive polarization as a multi-dimensional divergence emerging in and through communication. *Communication Theory*, *33*(2/3), 132–142. https://doi.org/10.1093/ct/qtad012

Chen, K., Molder, A. L., Duan, Z., Boulianne, S., Eckart, C., Mallari, P., & Yang, D. (2023). How climate movement actors and news media frame climate change and strike: Evidence from analyzing Twitter and news media discourse from 2018 to 2021. *The International Journal of Press/Politics*, *28*(2), 384–413. https://doi.org/10.1177/19401612221106405

Chen, T. H. Y., Salloum, A., Gronow, A., Ylä-Anttila, T., & Kivelä, M. (2021). Polarization of climate politics results from partisan sorting: Evidence from Finnish Twittersphere. *Global Environmental Change*, *71*, Article 102348. https://doi.org/10.1016/j.gloenvcha.2021.102348

Chinn, S., Hart, P. S., & Soroka, S. (2020). Politicization and polarization in climate change news content, 1985–2017. *Science Communication*, *42*(1), 112–129. https://doi.org/10.1177/1075547019900290

Cinelli, M., De Francisci Morales, G., Galeazzi, A., Quattrociocchi, W., & Starnini, M. (2021). The echo chamber effect on social media. *Proceedings of the National Academy of Sciences*, *118*(9), Article e2023301118. https://doi.org/10.1073/pnas.2023301118

Cohen, G. L. (2003). Party over policy: The dominating impact of group influence on political beliefs. *Journal of Personality and Social Psychology*, *85*(5), 808–822. https://doi.org/10.1037/0022-3514.85.5.808

Cole, J. C., Gillis, A. J., van der Linden, S., Cohen, M. A., & Vandenbergh, M. P. (2025). Social psychological perspectives on political polarization: Insights and implications for climate change. *Perspectives on Psychological Science*, *20*(1), 115–141. https://doi.org/10.1177/17456916231186409

Conover, M., Ratkiewicz, J., Francisco, M., Goncalves, B., Menczer, F., & Flammini, A. (2011). Political polarization on Twitter. *Proceedings of the International AAAI Conference on Web and Social Media*, *5*(1), 89–96. https://ojs.aaai.org/index.php/ICWSM/article/view/14126

Converse, P. E. (1964). The nature of belief systems in mass publics (1964). *Critical Review*, *18*(1/3), 1–74. https://doi.org/10.1080/08913810608443650

Dalton, R. J. (2021). Modeling ideological polarization in democratic party systems. *Electoral Studies*, *72*, Article 102346. https://doi.org/10.1016/j.electstud.2021.102346

Darius, P. (2022). Who polarizes Twitter? Ideological polarization, partisan groups and strategic networked campaigning on Twitter during the 2017 and 2021 German Federal elections 'Bundestagswahlen.' *Social Network Analysis and Mining*, *12*, Article 151. https://doi.org/10.1007/s13278-022-00958-w

Dellmuth, L., & Shyrokykh, K. (2023). Climate change on Twitter: Implications for climate governance research. *WIREs Climate Change*, *14*(6), Article e848. https://doi.org/10.1002/wcc.848

Diamond, E. P. (2020). The influence of identity salience on framing effectiveness: An experiment. *Political Psychology*, *41*(6), 1133–1150. https://doi.org/10.1111/pops.12669

Dias, N., & Lelkes, Y. (2022). The nature of affective polarization: Disentangling policy disagreement from partisan identity. *American Journal of Political Science*, *66*(3), 775–790. https://doi.org/10.1111/ajps.12628

DiMaggio, P., Evans, J., & Bryson, B. (1996). Have American's social attitudes become more polarized? *American Journal of Sociology*, *102*(3), 690–755. https://www.jstor.org/stable/2782461

Dorsch, M. J., & Flachsland, C. (2017). A polycentric approach to global climate governance. *Global Environmental Politics*, *17*(2), 45–64. https://doi.org/10.1162/GLEP_a_00400

Dvir-Gvirsman, S. (2019). Political social identity and selective exposure. *Media Psychology*, *22*(6), 867–889. https://doi.org/10.1080/15213269.2018.1554493

Falkenberg, M., Galeazzi, A., Torricelli, M., Di Marco, N., Larosa, F., Sas, M., Mekacher, A., Pearce, W., Zollo, F., Quattrociocchi, W., & Baronchelli, A. (2022). Growing polarization around climate change on social media. *Nature Climate Change*, *12*, 1114–1121. https://doi.org/10.1038/s41558-022-01527-x

Fasching, N., Iyengar, S., Lelkes, Y., & Westwood, S. J. (2024). Persistent polarization: The unexpected durability of political animosity around US elections. *Science Advances*, *10*(36), Article eadm9198. https://doi.org/10.1126/sciadv.adm9198

Feinberg, M., & Willer, R. (2019). Moral reframing: A technique for effective and persuasive communication across political divides. *Social and Personality Psychology Compass*, *13*(12), e12501. https://doi.org/10.1111/spc3.12501

Feygina, I., Jost, J. T., & Goldsmith, R. E. (2010). System justification, the denial of global warming, and the possibility of "system-sanctioned change." *Personality and Social Psychology Bulletin*, *36*(3), 326–338. https://doi.org/10.1177/0146167209351435

Fielding, K. S., & Hornsey, M. J. (2016). A social identity analysis of climate change and environmental attitudes and behaviors: Insights and opportunities. *Frontiers in Psychology*, *7*, Article 121. https://doi.org/10.3389/fpsyg.2016.00121

Fisher, S. D., Kenny, J., Poortinga, W., Böhm, G., & Steg, L. (2022). The politicisation of climate change attitudes in Europe. *Electoral Studies*, *79*, Article 102499. https://doi.org/10.1016/j.electstud.2022.102499

Forchtner, B. (2019). Climate change and the far right. *WIREs Climate Change*, *10*(5), Article e604. https://doi.org/10.1002/wcc.604

Forchtner, B., Kroneder, A., & Wetzel, D. (2018). Being skeptical? Exploring far-right climate-change communication in Germany. *Environmental Communication*, *12*(5), 589–604. https://doi.org/10.1080/17524032.2018.1470546

Fortunato, S., & Barthélemy, M. (2007). Resolution limit in community detection. *Proceedings of the National Academy of Sciences*, *104*(1), 36–41. https://doi.org/10.1073/pnas.0605965104

Fransson, P., Schiffler, B. C., & Thompson, W. H. (2018). Brain network segregation and integration during an epoch-related working memory fMRI experiment. *NeuroImage*, *178*, 147–161. https://doi.org/10.1016/j.neuroimage.2018.05.040

Gaertner, S. L., Dovidio, J. F., Anastasio, P. A., Bachman, B. A., & Rust, M. C. (1993). The common ingroup identity model: Recategorization and the reduction of intergroup bias. *European Review of Social Psychology*, *4*(1), 1–26. https://doi.org/10.1080/14792779343000004

Garzia, D., Ferreira da Silva, F., & Maye, S. (2023). Affective polarization in comparative and longitudinal perspective. *Public Opinion Quarterly*, *87*(1), 219–231. https://doi.org/10.1093/poq/nfad004

Gidron, N., Adams, J., & Horne, W. (2023). Who dislikes whom? Affective polarization between pairs of parties in western democracies. *British Journal of Political Science*, *53*(3), 997–1015. https://doi.org/10.1017/S0007123422000394

Hahm, H., Hilpert, D., & König, T. (2024). Divided we unite: The nature of partyism and the role of coalition partnership in Europe. *American Political Science Review*, *118*(1), 69–87. https://doi.org/10.1017/S0003055423000266

Hansen, K. M., & Kosiara-Pedersen, K. (2017). How campaigns polarize the electorate: Political polarization as an effect of the minimal effect theory within a multi-party system. *Party Politics*, *23*(3), 181–192. https://doi.org/10.1177/1354068815593453

Hansen, K. M., & Pedersen, R. T. (2014). Campaigns matter: How voters become knowledgeable and efficacious during election campaigns. *Political Communication*, *31*(2), 303–324. https://doi.org/10.1080/10584609.2013.815296

Hase, V., Mahl, D., Schäfer, M. S., & Keller, T. R. (2021). Climate change in news media across the globe: An automated analysis of issue attention and themes in climate change coverage in 10 countries (2006–2018). *Global Environmental Change*, *70*, Article 102353. https://doi.org/10.1016/j.gloenvcha.2021.102353

Hernández, E., Anduiza, E., & Rico, G. (2021). Affective polarization and the salience of elections. *Electoral Studies*, *69*, Article 102203. https://doi.org/10.1016/j.electstud.2020.102203

Hoffarth, M. R., & Hodson, G. (2016). Green on the outside, red on the inside: Perceived environmentalist threat as a factor explaining political polarization of climate change. *Journal of Environmental Psychology*, *45*, 40–49. https://doi.org/10.1016/j.jenvp.2015.11.002

Hooghe, M., & Oser, J. (2017). Partisan strength, political trust and generalized trust in the United States: An analysis of the General Social Survey, 1972–2014. *Social Science Research*, *68*, 132–146. https://doi.org/10.1016/j.ssresearch.2017.08.005

Hornung, J. (2022). Social identities in climate action. *Climate Action*, *1*, Article 4. https://doi.org/10.1007/s44168-022-00005-6

Huddy, L. (2015). Group identity and political cohesion. In R. A. Scott & S. M. Kosslyn (Eds.), *Emerging trends in the social and behavioral sciences* (pp. 1–14). Wiley. https://doi.org/10.1002/9781118900772.etrds0155

Intergovernmental Panel on Climate Change. (Ed.). (2022). Annex II: Glossary. In *Climate change 2022: Impacts, adaptation and vulnerability. Contribution of working group II to the sixth assessment report of the intergovernmental panel on climate change* (pp. 2897–2930). Cambridge University Press. https://doi.org/10.1017/9781009325844.029

Iyengar, S., Sood, G., & Lelkes, Y. (2012). Affect, not ideology: A social identity perspective on polarization. *Public Opinion Quarterly*, *76*(3), 405–431. https://doi.org/10.1093/poq/nfs038

Jost, J. T., Baldassarri, D. S., & Druckman, J. N. (2022). Cognitive–motivational mechanisms of political polarization in social-communicative contexts. *Nature Reviews Psychology*, *1*, 560–576. https://doi.org/10.1038/s44159-022-00093-5

Judge, M., Kashima, Y., Steg, L., & Dietz, T. (2023). Environmental decision-making in times of polarization. *Annual Review of Environment and Resources*, *48*, 477–503. https://doi.org/10.1146/annurev-environ-112321-115339

Jungherr, A. (2016). Twitter use in election campaigns: A systematic literature review. *Journal of Information Technology & Politics*, *13*(1), 72–91. https://doi.org/10.1080/19331681.2015.1132401

Kaakinen, M., Sirola, A., Savolainen, I., & Oksanen, A. (2018). Shared identity and shared information in social media: Development and validation of the identity bubble reinforcement scale. *Media Psychology*, *23*(1), 25–51. https://doi.org/10.1080/15213269.2018.1544910

Klar, S. (2013). The influence of competing identity primes on political preferences. *The Journal of Politics*, *75*(4), 1108–1124. https://doi.org/10.1017/S0022381613000698

Krackhardt, D., & Stern, R. N. (1988). Informal networks and organizational crises: An experimental simulation. *Social Psychology Quarterly*, *51*(2), 123–140. https://doi.org/10.2307/2786835

Krange, O., Kaltenborn, B. P., & Hultman, M. (2019). Cool dudes in Norway: Climate change denial among conservative Norwegian men. *Environmental Sociology*, *5*(1), 1–11. https://doi.org/10.1080/23251042.2018.1488516

Krange, O., Kaltenborn, B. P., & Hultman, M. (2021). "Don't confuse me with facts"—How right wing populism affects trust in agencies advocating anthropogenic climate change as a reality. *Humanities and Social Sciences Communications*, *8*, Article 255. https://doi.org/10.1057/s41599-021-00930-7

Kreiss, D., Lawrence, R. G., & McGregor, S. C. (2018). In their own words: Political practitioner accounts of candidates, audiences, affordances, genres, and timing in strategic social media use. *Political Communication*, *35*(1), 8–31. https://doi.org/10.1080/10584609.2017.1334727

Kubin, E., & von Sikorski, C. (2021). The role of (social) media in political polarization: A systematic review. *Annals of the International Communication Association*, *45*(3), 188–206. https://doi.org/10.1080/23808985.2021.1976070

Kubinec, R., & Owen, J. (2021). When groups fall apart: Identifying transnational polarization during the Arab uprisings. *Political Analysis*, *29*(4), 522–540. https://doi.org/10.1017/pan.2020.46

Küppers, A. (2022). 'Climate-soviets,' 'alarmism,' and 'eco-dictatorship': The framing of climate change scepticism by the populist radical right Alternative for Germany. *German Politics*, *33*(1), 1–21. https://doi.org/10.1080/09644008.2022.2056596

Lancichinetti, A., & Fortunato, S. (2011). Limits of modularity maximization in community detection. *Physical Review E*, *84*, Article 066122. https://doi.org/10.1103/physreve.84.066122

Lau, R. R., Andersen, D. J., Ditonto, T. M., Kleinberg, M. S., & Redlawsk, D. P. (2017). Effect of media environment diversity and advertising tone on information search, selective exposure, and affective polarization. *Political Behavior*, *39*, 231–255. https://doi.org/10.1007/s11109-016-9354-8

Lee, F. E. (2015). How party polarization affects governance. *Annual Review of Political Science*, *18*, 261–282. https://doi.org/10.1146/annurev-polisci-072012-113747

Lelkes, Y. (2016). Mass polarization: Manifestations and measurements. *Public Opinion Quarterly*, *80*(S1), 392–410. https://doi.org/10.1093/poq/nfw005

Lewis, G. B., Palm, R., & Feng, B. (2019). Cross-national variation in determinants of climate change concern. *Environmental Politics*, *28*(5), 793–821. https://doi.org/10.1080/09644016.2018.1512261

Liefferink, D., & Wurzel, R. K. W. (2017). Environmental leaders and pioneers: Agents of change? *Journal of European Public Policy*, *24*(7), 951–968. https://doi.org/10.1080/13501763.2016.1161657

Lockwood, M. (2018). Right-wing populism and the climate change agenda: Exploring the linkages. *Environmental Politics*, *27*(4), 712–732. https://doi.org/10.1080/09644016.2018.1458411

McCoy, J., Rahman, T., & Somer, M. (2018). Polarization and the global crisis of democracy: Common patterns, dynamics, and pernicious consequences for democratic polities. *American Behavioral Scientist*, *62*(1), 16–42. https://doi.org/10.1177/0002764218759576

McCright, A. M., & Dunlap, R. E. (2011a). The politicization of climate change and polarization in the American public's views of global warming, 2001–2010. *The Sociological Quarterly*, *52*(2), 155–194. https://doi.org/10.1111/j.1533-8525.2011.01198.x

McCright, A. M., & Dunlap, R. E. (2011b). Cool dudes: The denial of climate change among conservative white males in the United States. *Global Environmental Change*, *21*(4), 1163–1172. https://doi.org/10.1016/j.gloenvcha.2011.06.003

McCright, A. M., Dunlap, R. E., & Marquart-Pyatt, S. T. (2016). Political ideology and views about climate change in the European Union. *Environmental Politics*, *25*(2), 338–358. https://doi.org/10.1080/09644016.2015.1090371

Metaxas, P., Mustafaraj, E., Wong, K., Zeng, L., O'Keefe, M., & Finn, S. (2015). What do retweets indicate? Results from user survey and meta-review of research. *Proceedings of the International AAAI Conference on Web and Social Media*, *9*(1), 658–661. https://doi.org/10.1609/icwsm.v9i1.14661

Michelitch, K., & Utych, S. (2018). Electoral cycle fluctuations in partisanship: Global evidence from eighty-six countries. *The Journal of Politics*, *80*(2), 412–427. https://doi.org/10.1086/694783

Mucha, P. J., Richardson, T., Macon, K., Porter, M. A., & Onnela, J.-P. (2010). Community structure

in time-dependent, multiscale, and multiplex networks. *Science*, *328*(5980), 876–878. https://doi.org/10.1126/science.1184819

Munzert, S., & Bauer, P. C. (2013). Political depolarization in German public opinion, 1980–2010. *Political Science Research and Methods*, *1*(1), 67–89. https://doi.org/10.1017/psrm.2013.7

Nguyen, C. T. (2020). Echo chambers and epistemic bubbles. *Episteme*, *17*(2), 141–161. https://doi.org/10.1017/epi.2018.32

Oakes, P. (1987). The salience of social categories. In J. C. Turner (Ed.), *Rediscovering the social group* (pp. 117–141). Basil Blackwell.

Orr, L. V., Fowler, A., & Huber, G. A. (2023). Is affective polarization driven by identity, loyalty, or substance? *American Journal of Political Science*, *67*(4), 948–962. https://doi.org/10.1111/ajps.12796

Orr, L. V., & Huber, G. A. (2020). The policy basis of measured partisan animosity in the United States. *American Journal of Political Science*, *64*(3), 569–586. https://doi.org/10.1111/ajps.12498

Padilla-Castillo, G., & Rodríguez-Hernández, J. (2023). International youth movements for climate change: The #FridaysForFuture case on Twitter. *Sustainability*, *15*(1), Article 268. https://doi.org/10.3390/su15010268

Pechar, E., Bernauer, T., & Mayer, F. (2018). Beyond political ideology: The impact of attitudes towards government and corporations on trust in science. *Science Communication*, *40*(3), 291–313. https://doi.org/10.1177/1075547018763970

Plescia, C., Ecker, A., & Meyer, T. M. (2022). Do party supporters accept policy compromises in coalition governments? *European Journal of Political Research*, *61*(1), 214–229. https://doi.org/10.1111/1475-6765.12450

Poortinga, W., Whitmarsh, L., Steg, L., Böhm, G., & Fisher, S. (2019). Climate change perceptions and their individual-level determinants: A cross-European analysis. *Global Environmental Change*, *55*, 25–35. https://doi.org/10.1016/j.gloenvcha.2019.01.007

Przeworski, A. (2011). Divided we stand? Democracy as a method of processing conflicts. *Scandinavian Political Studies*, *34*(2), 168–182. https://doi.org/10.1111/j.1467-9477.2011.00265.x

Rapp, C. (2016). Moral opinion polarization and the erosion of trust. *Social Science Research*, *58*, 34–45. https://doi.org/10.1016/j.ssresearch.2016.02.008

Reiljan, A. (2020). 'Fear and loathing across party lines' (also) in Europe: Affective polarisation in European party systems. *European Journal of Political Research*, *59*(2), 376–396. https://doi.org/10.1111/1475-6765.12351

Rekker, R. (2021). The nature and origins of political polarization over science. *Public Understanding of Science*, *30*(4), 352–368. https://doi.org/10.1177/0963662521989193

Renström, E. A., Bäck, H., & Carroll, R. (2021). Intergroup threat and affective polarization in a multi-party system. *Journal of Social and Political Psychology*, *9*(2), 553–576. https://doi.org/10.5964/jspp.7539

Riek, B. M., Mania, E. W., & Gaertner, S. L. (2006). Intergroup threat and outgroup attitudes: A meta-analytic review. *Personality and Social Psychology Review*, *10*(4), 336–353. https://doi.org/10.1207/s15327957pspr1004_4

Riera, P., & Madariaga, A. G. (2023). Overlapping polarization: On the contextual determinants of the interplay between ideological and affective polarization. *Electoral Studies*, *84*, Article 102628. https://doi.org/10.1016/j.electstud.2023.102628

Rogers, E. M., & Bhowmik, D. K. (1970). Homophily-heterophily: Relational concepts for communication research. *Public Opinion Quarterly*, *34*(4), 523–538. https://doi.org/10.1086/267838

Rudat, A., & Buder, J. (2015). Making retweeting social: The influence of content and context information on sharing news in Twitter. *Computers in Human Behavior*, *46*, 75–84. https://doi.org/10.1016/j.chb.2015.01.005

Sältzer, M., Stier, S., Bäuerle, J., Blumenberg, M., Mechkova, V., Pemstein, D., Seim, B., & Wilson, S. (2023). *Twitter-Accounts der Kandidierenden zur Bundestagswahl 2021 (GLES)* [Data set]. Gesis. https://doi.org/10.4232/1.14233

Santoro, L. R. (2023). Do political beliefs drive environment selection? *American Politics Research*, *51*(1), 108–124. https://doi.org/10.1177/1532673X221112394

Schäfer, M. S., Scheffran, J., & Penniket, L. (2016). Securitization of media reporting on climate change? A cross-national analysis in nine countries. *Security Dialogue*, *47*(1), 76–96. https://doi.org/10.1177/0967010615600915

Schürmann, L. (2023). The impact of local protests on political elite communication: Evidence from *Fridays for Future* in Germany. *Journal of Elections, Public Opinion and Parties*, *34*(3), 510–530. https://doi.org/10.1080/17457289.2023.2189729

Schwörer, J. (2024). Mainstream parties and global warming: What determines parties' engagement in climate protection? *European Journal of Political Research*, *63*(1), 303–325. https://doi.org/10.1111/1475-6765.12602

Settle, J. E., & Carlson, T. N. (2019). Opting out of political discussions. *Political Communication*, *36*(3), 476–496. https://doi.org/10.1080/10584609.2018.1561563

Shi, J., Lai, K. K., Hu, P., & Chen, G. (2017). Understanding and predicting individual retweeting behavior: Receiver perspectives. *Applied Soft Computing*, *60*, 844–857. https://doi.org/10.1016/j.asoc.2017.08.044

Shmargad, Y., & Klar, S. (2020). Sorting the news: How ranking by popularity polarizes our politics. *Political Communication*, *37*(3), 423–446. https://doi.org/10.1080/10584609.2020.1713267

Singh, S. P., & Thornton, J. R. (2019). Elections activate partisanship across countries. *American Political Science Review*, *113*(1), 248–253. https://doi.org/10.1017/S0003055418000722

Sood, G., & Iyengar, S. (2016). *Coming to dislike your opponents: The polarizing impact of political campaigns*. Social Science Research Network. https://doi.org/10.2139/ssrn.2840225

Sumner, E. M., Ruge-Jones, L., & Alcorn, D. (2018). A functional approach to the Facebook like button: An exploration of meaning, interpersonal functionality, and potential alternative response buttons. *New Media & Society*, *20*(4), 1451–1469. https://doi.org/10.1177/1461444817697917

Svozil, M., Gronow, A., & Ocelík, P. (2025). Climate polarization on Czech social media after Trump's announcement to withdraw the US from the Paris Agreement. *Environmental Communication*, *19*(4), 749–765. https://doi.org/10.1080/17524032.2025.2456230

Taddicken, M., Kohout, S., & Hoppe, I. (2019). How aware are other nations of climate change? Analyzing Germans' second-order climate change beliefs about Chinese, US American and German people. *Environmental Communication*, *13*(8), 1024–1040. https://doi.org/10.1080/17524032.2018.1561483

Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict. In W. G. Austin & S. Worchel (Eds.), *The social psychology of intergroup relations* (pp. 33–37). Brooks/Cole Publishing.

Tajfel, H., Billig, M. G., Bundy, R. P., & Flament, C. (1971). Social categorization and intergroup behaviour. *European Journal of Social Psychology*, *1*(2), 149–178. https://doi.org/10.1002/ejsp.2420010202

Torcal, M., & Magalhães, P. C. (2022). Ideological extremism, perceived party system polarization, and support for democracy. *European Political Science Review*, *14*(2), 188–205. https://doi.org/10.1017/S1755773922000066

Traag, V. A., Waltman, L., & van Eck, N. J. (2019). From Louvain to Leiden: Guaranteeing well-connected communities. *Scientific Reports*, *9*, Article 5233. https://doi.org/10.1038/s41598-019-41695-z

Traag, V. A., Zanini, F., Gibson, R., Ben-Kiki, O., Kelly, T., Farahdel, B., & van Kuppevelt, D. (2023). *vtraag/leidenalg: 0.10.0* [Computer software]. Zenodo. https://doi.org/10.5281/zenodo.8147844

Tradowsky, J. S., Philip, S. Y., Kreienkamp, F., Kew, S. F., Lorenz, P., Arrighi, J., Bettmann, T., Caluwaerts, S., Chan, S. C., De Cruz, L., de Vries, H., Demuth, N., Ferrone, A., Fischer, E. M., Fowler, H. J., Goergen, K., Heinrich, D., Henrichs, Y., Kaspar, F., . . . Wanders, N. (2023). Attribution of the heavy rainfall events leading to severe flooding in Western Europe during July 2021. *Climatic Change*, *176*, Article 90. https://doi.org/10.1007/s10584-023-03502-7

Tranter, B., & Booth, K. (2015). Scepticism in a changing climate: A cross-national study. *Global Environmental Change*, *33*, 154–164. https://doi.org/10.1016/j.gloenvcha.2015.05.003

Unsworth, K. L., & Fielding, K. S. (2014). It's political: How the salience of one's political identity changes climate change beliefs and policy support. *Global Environmental Change*, *27*, 131–137. https://doi.org/10.1016/j.gloenvcha.2014.05.002

Uscinski, J. E., Enders, A. M., Seelig, M. I., Klofstad, C. A., Funchion, J. R., Everett, C., Wuchty, S., Premaratne, K., & Murthi, M. N. (2021). American politics in two dimensions: Partisan and ideological identities versus anti-establishment orientations. *American Journal of Political Science*, *65*(4), 877–895. https://doi.org/10.1111/ajps.12616

Van Bavel, J. J., & Pereira, A. (2018). The partisan brain: An identity-based model of political belief. *Trends in Cognitive Sciences*, *22*(3), 213–224. https://doi.org/10.1016/j.tics.2018.01.004

van der Meer, T. W. G., Walter, A., & Aelst, P. V. (2016). The contingency of voter learning: How election debates influenced voters' ability and accuracy to position parties in the 2010 Dutch election campaign. *Political Communication*, *33*(1), 136–157. https://doi.org/10.1080/10584609.2015.1016639

van Erkel, P. F. A., & Turkenburg, E. (2022). Delving into the divide: How ideological differences fuel out-party hostility in a multi-party context. *European Political Science Review*, *14*(3), 386–402. https://doi.org/10.1017/S1755773922000121

Vegetti, F., & Širinić, D. (2019). Left–right categorization and perceptions of party ideologies. *Political Behavior*, *41*, 257–280. https://doi.org/10.1007/s11109-018-9451-y

Vesely, S., Masson, T., Chokrai, P., Becker, A. M., Fritsche, I., Klöckner, C. A., Tiberio, L., Carrus, G., & Panno, A. (2021). Climate change action as a project of identity: Eight meta-analyses. *Global Environmental Change*, *70*, Article 102322. https://doi.org/10.1016/j.gloenvcha.2021.102322

Vu, H. T., Do, H. V., Seo, H., & Liu, Y. (2020). Who leads the conversation on climate change?: A study of a global network of NGOs on Twitter. *Environmental Communication*, *14*(4), 450–464. https://doi.org/10.1080/17524032.2019.1687099

Wagner, M. (2021). Affective polarization in multiparty systems. *Electoral Studies*, *69*, Article 102199. https://doi.org/10.1016/j.electstud.2020.102199

Wagner, M. (2024). Affective polarization in Europe. *European Political Science Review*, *16*(3), 378–392. https://doi.org/10.1017/S1755773923000383

Wagner, M., & Praprotnik, K. (2024). Affective polarization and coalition signals. *Political Science Research and Methods*, *12*(2), 336–353. https://doi.org/10.1017/psrm.2023.33

Williams, H. T. P., McMurray, J. R., Kurz, T., & Hugo Lambert, F. (2015). Network analysis reveals open forums and echo chambers in social media discussions of climate change. *Global Environmental Change*, *32*, 126–138. https://doi.org/10.1016/j.gloenvcha.2015.03.006

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