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EU Citizen support for climate-friendly agriculture (Farm) and dietary options (Fork) across the left-right political spectrum

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ABSTRACT

This paper aims to improve understanding of how EU citizens' left-right political positions and ideological polarization on climate change affect their views on both agriculture and diet in the context of climate change policy. It uses the methods of survey research and quantitative analyses of the data (principal components and regression analysis). The work combines the Farm- and Fork-related branches of Eurobarometer 93.2 (2020) and focuses on citizens' responses to a more climate-friendly agriculture and their ideas about 'eating a healthy and sustainable diet'. The analysis revealed different degrees of citizen support for a more climate-friendly agriculture and climate-friendly dietary options (including meat reduction). Citizens' left-right political position correlated negatively with support for a more climate-friendly agriculture and support for climate-friendly dietary options, but only in the Northwestern European countries. In these countries, the expected positive correlations between level of education and pro-environmental variables were found, but these correlations were not observed among the right-leaning participants. However, the positive correlation between support for a more climate-friendly agriculture and support for climate-friendly dietary options was less strongly affected by left-right political positions. Hence, public opinion is moving in the direction of EU climate policy over time; however, citizens did not fully acknowledge the priority of meat reduction in this context.

Key policy insights:
- Political and ideological polarization has seriously interfered with attempts to promote a more climate-friendly agriculture (Farm) and changes in dietary thinking including meat reduction (Fork). To promote these changes, more work must be done on the role of cultural identities in relation to climate issues.
- Yet, EU citizens showed an increasing support for more climate-friendly agriculture, which correlated positively with support for climate-friendly dietary options across the left-right political spectrum. Science-based information regarding climate risks and/or loyalty to local farmers may play a role in shaping these opinions.
- The priority of meat reduction needs considerably more attention to achieve the EU's climate objectives. For citizens, both nutritional (health) and environmental (i.e. climate change, as well as species decline and farm animal welfare) reasons can be strong motivating factors to consider meat reduction.

1. Introduction

Climate change is a scientific issue that has become polarized along the left-right political and ideological dimensions in advanced industrialized countries (Drummond & Fischhoff, 2017; McCright et al., 2016;

Sanford et al., 2021), resulting in increasing differences in opinions between groups with different political views. Although attention to climate change and its politicization seem to be more dramatic in English-speaking countries (e.g. Huber et al., 2020), similar processes are reported to occur in non-English-speaking Western European countries (Aasen, 2017; Smith & Mayer, 2019). Of special concern is that individuals with a higher level of education and science literacy display more polarized beliefs than others (Drummond & Fischhoff, 2017). Hence, the process cannot simply be viewed as a knowledge deficit matter. Currently, there is a movement away from criticism of climate science towards criticism of climate solutions. As a consequence, political and ideological polarization may seriously interfere with the promotion of both a more climate-friendly agriculture (production, i.e. Farm) and dietary options (consumption, i.e. Fork) in line with the European Union's (EU) new Farm-to-Fork (F2F) Strategy (European Commission, 2020a). The F2F strategy has the ambition to tackle climate change, protect the environment, and preserve biodiversity at the same time (European Commission, 2020a). This strategy is at the heart of the EU's new, sustainable and inclusive growth strategy, the Green Deal (European Commission, 2019). Although F2F has a strong focus on the production side of food systems, it also aims to change consumption patterns. It states: 'Moving to a more plant-based diet with less red and processed meat and with more fruits and vegetables will reduce not only risks of life threatening diseases, but also the environmental impact of the food system' (European Commission, 2020a). The reduction of meat and dairy consumption will become increasingly important in EU policy-making; the EU was recently criticized by its European Court of Auditors (2021) that it still promotes animal products and fails to achieve its own objectives. Achieving its objectives will require a substantial reduction of livestock production in the EU and this should be combined with reductions in meat and dairy consumption to prevent the impacts of reduced production levels in the EU to be neutralized by higher imports (European Court of Auditors, 2021). Hence, climate policy-makers have to address urgent questions about how major shifts in diet can be supported, given the traditional preferences for meat (Graça et al., 2019; Päivärinta et al., 2020). These preferences may already have led to (social) media protests against climate mitigation through meat reduction (Sanford et al., 2021; Sievert et al., 2022) and accusations of 'anti-meat agendas' (Garcia et al., 2019; Olausson, 2018).

The present paper aims to gain a better insight into how EU citizens' positions across the left-right political spectrum are associated with their views on a climate-friendly agriculture and diet, hampering the adoption of meat reduction. Using survey data from the EU in the year 2020 (Eurobarometer 93.2), we analyse the relationships between left-right political position, level of education, and two variables that were constructed from survey items, i.e. support for a more climate-friendly agriculture and support for climate-friendly dietary options (including meat reduction). The analyses were guided by the following research questions:

(1) Can EU citizens' responses to the items on agriculture and climate change be interpreted in terms of a certain support for a more climate-friendly agriculture?

(2) Is support for a more climate-friendly agriculture related to a left-right political position in a way that indicates political and ideological polarization?

(3a) Is support for a more climate-friendly agriculture related to level of education, and (3b) does the strength of this relationship vary across the left-right political spectrum?

(4) What patterns can be observed in citizens' support for green dietary options (including meat reduction)?

(5a) Is support for climate-friendly dietary options (including meat reduction) related to the variables left-right political position, level of education, and support for a more climate-friendly agriculture, and (5b) does the strength of these relationships vary across the left-right political spectrum?

The work is based on theoretical insights on political and ideological polarization (Section 2), quantitative analysis methods and Eurobarometer data (Section 3). Section 4 presents the results of the analyses, Section 5 discusses, and Section 6 concludes. The Supplementary Material contains the tables referred to in this paper.

2. Insights on political and ideological polarization

Recent political developments and the highly politicized COVID-19 pandemic have significantly increased the scientific attention given to political and ideological polarization processes in current societies, both from the political science (Iyengar et al., 2019; Lockwood, 2018) and psychological perspectives (Drummond & Fischhoff, 2017; Pennycook et al., 2022). Political conflicts are normal phenomena in Western countries, but it is

considered remarkable that the left-right political dimension of progressives versus conservatives has proven capable of incorporating many types of ideological conflict (Knutsen, 1995; Weber & Saris, 2015). In the words of Knutsen (1995), abstract concepts such as 'left' and 'right' may help people to orient themselves in a complex political world. While in the 1970s and early 1980s environmental issues were seen as neither left nor right, the meaning of left and right has gradually changed to associate environmentalism within a leftist identity (Dalton, 2009; Rootes, 2004). This was partly a result of the transformation of the ecological movement into parliamentary parties, and partly a result of the emergence of New Right parties which formalized an opposing right-authoritarian pole on many of the cultural issues advocated by Green parties (Cole, 2005; Dalton, 2009). These dynamics may help to explain in part why the opinions of the public about climate change have become associated with the left-right political dimension in many countries where the left-right identification has more or less the same meaning (i.e. not in former Communist countries) (McCright et al., 2016).

Political and ideological polarization may seriously interfere with the potential positive effects of education on pro-environmental beliefs and actions, which relate to both cognitive competencies and socialization experiences. The cognitive competencies enable individuals to acquire information and an elementary understanding of complex issues (Pennycook et al., 2022). Under normal circumstances, these competencies tend to have positive implications for environmental issues, although they may also be used to defend positions motivated by nonscientific concerns (Drummond & Fischhoff, 2017; Pennycook et al., 2022). The relevant socialization experiences provided by education institutions relate to the transmission of the core values of a society, which in Western societies include pro-social and pro-environmental values (Gifford & Nilsson, 2014; Meyer, 2015; Weakliem, 2002). Hence, it is a cause of concern for researchers and policy-makers if it appears that the usual positive correlations between education and pro-environmental opinions now only exist among individuals on the political left, whereas for those on the political right, these correlations are weak or negative (Czarnek et al., 2021; Hamilton, 2011). The present work further investigates the effects of the left-right political positions in the context of climate policy.

3. Methods and data

This study uses the methods of survey research and quantitative analyses of the data (principal components and regression analysis). The survey questions were asked as part of the (1) Farm-related and (2) Fork-related branches of the 2020 Eurobarometer 93.2 survey carried out among 27,237 European citizens aged 15 years and older in the 27 Member States of the EU. The survey is described in a report about the farm-related branch, which presents the opinion of Europeans about agriculture (including the relationships between agriculture and climate change), (European Commission, 2020b) and a report about the Fork-related branch, which describes their beliefs about what 'eating a healthy and sustainable diet' involves (European Commission, 2020c). The present analysis is the first to bring these branches together, using the data from the archived file, which is publicly available (European Commission, 2021).

3.1 Fieldwork

The fact that the survey was carried out during the COVID-19 pandemic in 2020 required special attention. The fieldwork was organized by research firm Kantar between 3 August and 15 September 2020. The normal procedure is that the participants (around 1000 in each country and 500 in the three smallest countries) are interviewed face-to-face at home in their mother tongue, based on a multi-stage, random (probability) design, providing a representative sample at the regional and national levels (European Commission, 2020c). However, as a result of the situation in some countries, alternative interview modes to face-to-face were necessary. In these countries, participants were interviewed online, mostly after recruiting them in a probabilistic way by telephone. The literature on mixed method research (online and face-to-face) shows that differences between the modes are partly related to recruitment, as persons with a high education level (tertiary education) tend to be over-represented in online panels while persons with lower levels of education are under-represented (Luijkx et al., 2021). Another difference is the presence of an interviewer who can motivate respondents to answer and help when a question is hard to answer, but whose presence might also lead to

interviewer effects, such as socially desirable responding. In the analysis, potential mode effects were taken into account (Hox et al., 2015).

3.2 Variables

The variable 'support for a more climate-friendly agriculture' was constructed from survey questions that asked the participants whether they agreed or disagreed with statements that agriculture is one of the major causes of climate change; that EU farmers need to change the way they work; and that they are prepared to pay 10% more for agricultural products produced in a way that limits their carbon footprint. These statements were largely derived from Eurobarometer 72.5 carried out at the end of 2009, which may serve as a basis for comparison (to be reiterated in Section 5). All statements had four answer categories.

The variable support for climate-friendly dietary options was constructed from the answers to a question that was introduced by the following text: 'We often hear people talking about the importance of eating a healthy and sustainable diet. What do you think 'eating a healthy and sustainable diet' involves?' The participants were shown fifteen answer categories, such as 'Eating more fruit and vegetables', from which they could freely choose. The answers were coded as binary (yes – no) variables. The options were to a certain degree climate-friendly. Three items were meat-related: 'Eating meat less often'; 'Eating vegetarian or vegan'; and 'Eating foods with a low carbon footprint'. For the analysis it was assumed that the participants in considering their responses to the list intuitively developed some conceptual organizing principles, for instance, based on familiar nutritional and environmental terms, which they could use when they were choosing their answers. This was examined by a statistical analysis of co-occurring answers (see below).

The other variables in the analyses were gender, age, highest level of education completed (recoded into four categories: primary or lower secondary, upper or post-secondary, short tertiary, and long tertiary education), and left-right political position (e.g. In political matters people talk of 'the left' and 'the right'. How would you place your views on this scale?). Two versions of the scale are used in this paper: the full version (10 pts) and a condensed version (5 pts) – where a refusal or 'don't know' were treated as missing values.

3.3 Addressing differences between the EU countries

The analysis had to take into account that the results would partly depend on historically grown differences between the EU countries. Recent research (Cling et al., 2020) shows that many differences between the countries can be expressed through indicators of how they are performing in terms of the Sustainable Development Goals of the United Nations (UN SDGs). Cling et al. (2020) used a broad set of indicators adapted to the EU context and applied statistical analyses to examine distances in performance between the countries. The analyses revealed a split between (1) the Northwestern European countries (henceforth NWE countries) and (2) the Eastern and Southern European countries (henceforth E&SE countries). The first group was relatively homogeneous and consisted of the 11 (in 2019) richest countries in the EU with the highest scores on economic and social sustainable development indicators, but their indicators relating to the environment in a broad sense (i.e. energy, climate, life on land) were much more heterogeneous (Cling et al., 2020). Taking the results of Cling et al. (2020) as a starting point, all the subsequent analyses were done separately for citizens in the NWE and the E&SE countries. The NWE countries are Sweden, Finland, Denmark, Ireland, Belgium, The Netherlands, Luxembourg, Germany, Austria, and France. As the impacts of political and ideological polarization are expected to occur in those parts of Europe where the left-right political dimension may be considered to have roughly the same meaning (McCright et al., 2016), the analysis of these relationships focused on NWE countries.

3.4 Quantitative survey data analyses

All calculations were made by SPSS 26 for Windows. From a statistical perspective, the nested structure of the country-based sample design means that the 27,237 respondents cannot be treated as independent observations. The present study takes this into account by pooling data in the NWE and E&SE regions, controlling

for additional country differences by including country-specific intercept dummy variables in the analyses (see Bryan & Jenkins, 2016).

To understand and interpret the responses to the statements on agriculture and climate change (research question 1) and to be able to relate these to possible drivers such as left-right political position (question 2), a principal component analysis (PCA) was used. This method can reveal whether the questions are answered in a consistent way that allows for the construction of a meaningful summated score. Instead of standard PCA, Categorical Principal Components Analysis (CATPCA) is applied, which is also appropriate for ordinal and nominal variables (Linting & van der Kooij, 2012; Meulman et al., 2004). The output is comparable to PCA output. The analysis also uses the feature that CATPCA allows for passive (supplementary) variables, which do not influence the components but just show how they are related to the active variables. In this way, it is possible to examine whether the country dummies and the interview mode could have made a significant difference. To consider the internal consistency of the items, Cronbach's alpha is calculated (Cronbach, 1951; Sijtsma, 2009). The component scores are used to calculate correlations with other variables.

Research questions 2 and 3 are addressed through correlation analysis, controlling for country dummies, visual inspection of the bar charts, and ordinary regression analysis to quantify the explanatory power between variables. The analysis also examines whether the strength of the relationship between support for a more climate-friendly agriculture and level of education varies across the left-right political spectrum, using a standard procedure (Aiken & West, 1991).

CATPCA is also applied to identify distinct patterns of the answers to the question on a healthy, sustainable diet (research question 4). In this case, the analysis aims to reduce the fifteen possible answers (all nominal variables) into a smaller set of uncorrelated components, based on statistical considerations (Linting & van der Kooij, 2012). The component scores are used to reveal to what extent the participants focused on climate-friendly dietary options.

Research question 5 investigates how support for climate-friendly dietary options (including meat reduction) is related to the variables left-right political position, level of education, and support for a more climate-friendly agriculture. The analysis also examines whether the strength of these relationships varies across the left-right political spectrum. This is addressed by the same procedures as used for research question 3.

4. Results

4.1 Research question 1 (support for climate-friendly agriculture)

The responses to three of the four statements on agriculture and climate change and one additional item on priorities of the CAP indicated different degrees of support for a more climate-friendly agriculture (See Supplementary Table 1). Although half of the participants were not convinced that agriculture is one of the major causes of climate change, many agreed that changes are necessary and that they were prepared to pay more for food. One ambiguous statement (see below) was left out. The other items showed an adequate degree of 'interrelatedness' (Cronbach's alpha = .63 and .58 in NWE and E&SE countries, respectively). The ambiguous statement 'Agriculture has already made a major contribution in fighting climate change' correlated negatively ($r = -.18$, $p < .001$) with support for a more climate-friendly agriculture in NWE countries but positively ($r = .18$, $p < .001$) in E&SE countries. This difference suggests that the latter agreed with the farmers' current contributions, whereas the former tended to have the opinion that farmers were not doing enough.

4.2 Research questions 2 and 3(evidence for polarization)

Support for a more climate-friendly agriculture decreased with more right-leaning political positions on the left-right-dimension in NWE counties ($r = -.26$, $p < .001$), but showed no correlation in E&SE countries ($r = .01$). The left-hand side of Figure 1 illustrates that the differences in support between the left- and right-wing adherents were symmetric around the mean. However, the figure suggests that an exception might have to be made for those who chose the most leftist position, taking into account that fighting climate change is not an issue 'far left'. Unfortunately, the data do not allow a definitive finding on this.
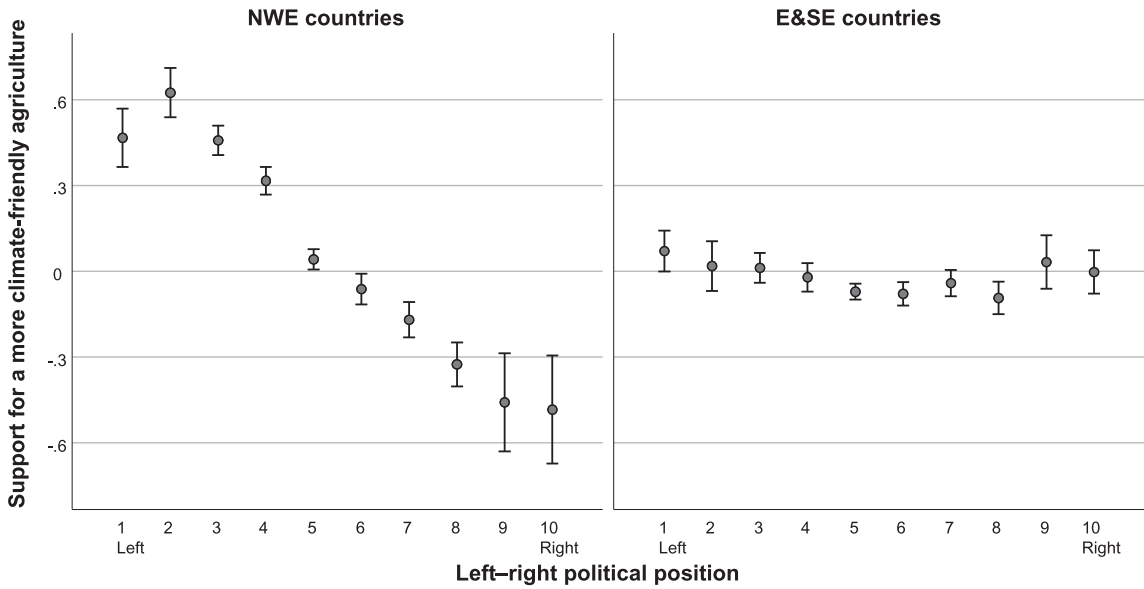
Figure 1. Mean support for a more climate-friendly agriculture (standardized $M = 0$, $SD = 1$) as a function of left-right political position: Error bars with 95% confidence intervals in NWE ($N = 10,013$) and E&SE countries ($N = 14,607$).

Support for a more climate-friendly agriculture increased slightly with level of education ($r = .12$, $p < .001$) in NWE countries. In E&SE countries, the correlation was weaker at $r = .07$ ($p < .001$). Similarly, very weak correlations were found with the variables gender and age (i.e. women and youth showed slightly more support, see Supplementary Table 2). Level of education also correlated very weakly with left-right political position ($r = -.07$, $p < .001$) in the NWE counties, but not in the E&SE countries ($r = .02$).
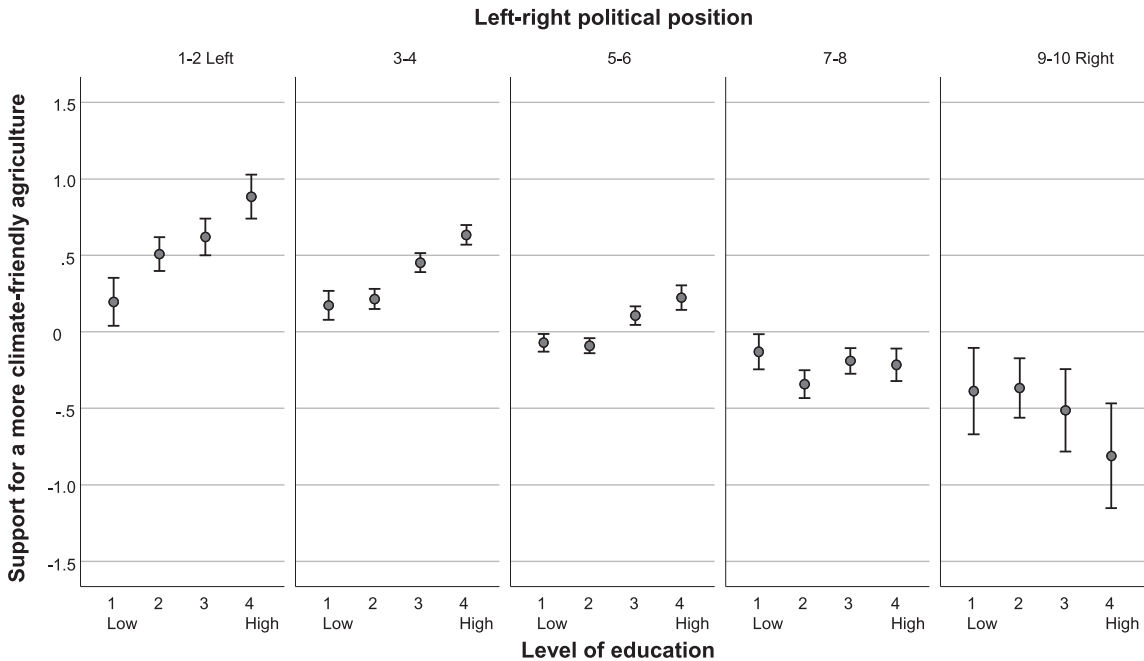

Figure 2. Support for a more climate-friendly agriculture ($M = 0$, $SD = 1$) with level of education by left-right political position: Error bars with 95% confidence intervals in NWE countries ($N = 10,013$).

Figure 2 shows that the strength of the positive relationship between support for a more climate-friendly agriculture and level of education in the NWE countries varied across the left-right political spectrum. The correlations decreased from $r = .20$ ($p < .001$) among the left-leaning participants to $r = –.02$ among the right-leaning ones. The statistical analysis of these relationships is presented in Supplementary Table 2.

4.3 Research question 4 (patterns of dietary thinking)

Survey participants were free to select as many of the fifteen items of dietary thinking as they wanted. Many chose about five items, but overall, the numbers varied between zero and fifteen. The percentage of times each item was selected is presented in Supplementary Table 3, with the output of CATPCA and some explanatory notes. In both regions, the analysis revealed three patterns: the participants had different degrees of focus on (1) daily intake issues (e.g. selecting 'Eating fish more often'); (2) 'light green' issues (e.g. selecting 'Avoiding wasting food'); or (3) 'deeper green'' issues (e.g. selecting 'Eating meat less often'), respectively. Light green issues refer to pro-environmental choices that may require just a few compromises on points such as time, costs, or effort, whereas deeper green issues require more than that and are more climate friendly. The degree to which the participants selected deeper green issues was taken as a measure of their support for climate-friendly dietary options. It should be noted that those who selected 'Eating meat less often' were not only higher on this measure, but also had a higher focus on daily intake issues, which may reflect nutritional concerns.

4.4 Research question 5 (impacts on support for climate-friendly dietary options)

The participants' support for climate-friendly dietary options was positively correlated with their support for a more climate-friendly agriculture ($r = .30$ in NWE countries and $r = .14$ in E&SE countries, both p's < .001). It was also positively associated with level of education ($r = .13$, in NWE countries and $r = .07$ in E&SE countries, both p's < .001). In the NWE countries, it was negtively correlated with left-right political position ($r = –.19$, $p < .001$), but the correlation was 0 in the E&SE countries. Hence, the following analyses will deepen analysis of the NWE countries, exclusively, to better understand this result.

The above relationships varied across the left-right political spectrum. This result is statistically described in Supplementary Table 4. The correlation between support for climate-friendly dietary options and level of education decreased from $r = .23$ ($p < .001$) among the left-leaning participants to $r = .04$ among the right-leaning ones. This result can be illustrated with error bars resembling the ones in Figure 2 (therefore not shown). However, the correlation between support for climate-friendly dietary options and support for a more climate-friendly agriculture decreased only slightly from $r = .30$ to $r = .25$ (both p's < .001). This pattern is visualized by the error bars presented in Figure 3, which illustrate this decreasing relationship. The three meat-related items included in the variable support for climate-friendly dietary options also had this pattern of results (not shown).

5. Discussion

5.1 Polarization around climate change

The analysis laid out above helps to improve our understanding of how citizen's political positions and ideological polarization on climate change affect their views on both agriculture and diet in the context of climate change policy. In agreement with earlier studies, this research shows that climate-related beliefs and support for mitigating action are correlated with the left-right political dimension in NWE countries (Birch, 2020; McCright et al., 2016), and that political and ideological polarization interferes with the usual positive correlations between education and pro-environmental opinions (Czarnek et al., 2021; Hamilton, 2011).

This research also derives new insights about components of dietary thinking. The participants had different degrees of focus on 'deeper green' issues, which included the meat-related options. These answers were used as a measure of support for climate-friendly dietary options. In the NWE countries, this measure was correlated
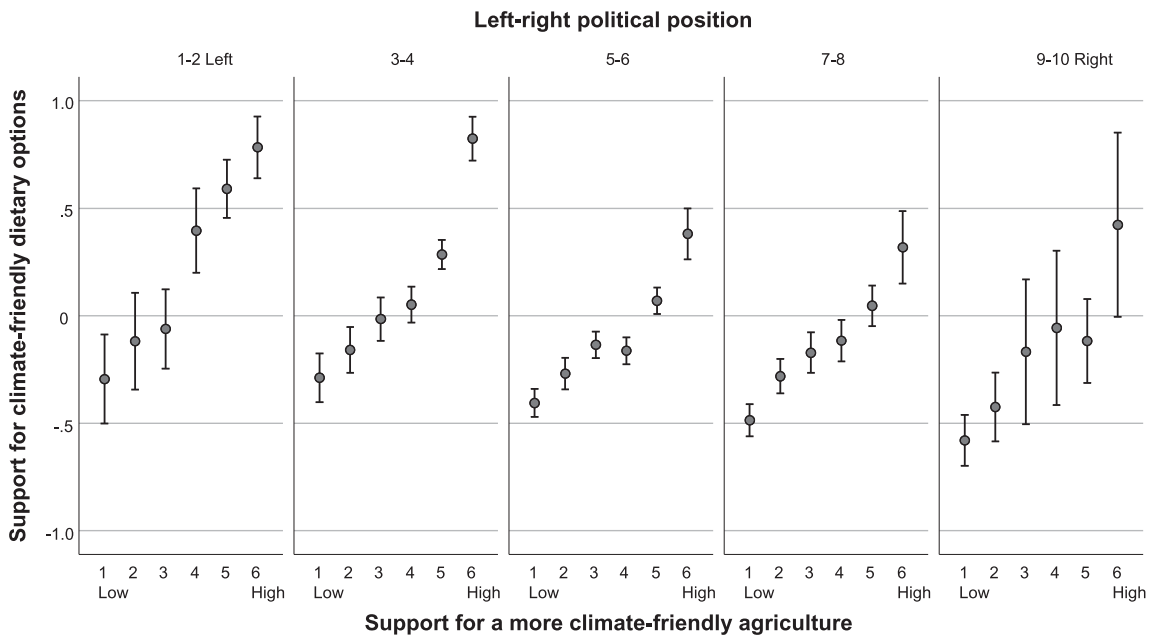
Left-right political position

Figure 3. Support for climate-friendly dietary options (*M* = 0, *SD* = 1) as a function of support for a more climate-friendly agriculture (scores recoded into 6 categories wich are 1 *SD* or ½ *SD* below or above the mean) across five categories of left-right political position in NWE countries (*N* = 10,013); Error bars with 95% confidence intervals.

positively with level of education and support for a more climate-friendly agriculture, but these correlations were differently affected by positions on the left-right political spectrum. The correlation of education and support for climate-friendly dietary options was found just among the left-leaning participants. However, the correlation of support for a more climate-friendly agriculture and support for climate-friendly dietary options was stronger among the left-leaning group but not completely absent among the others. These results indicate that processes in support of climate-friendly diet changes were partly but not wholly vulnerable to diverging political positions and ideological polarization.

The presence of political divergences across the left-right spectrum is not the only form of polarization, as divergences may also be related to religious, ethnic, and other identity-related cultural divides within a society (Iyengar et al., 2019). Some authors suggest that the rise in polarization and climate scepticism may be related to general economic and cultural processes in society, including technological developments, globalization, as well as anti-globalization and the Great Recession of 2008 (Duijndam & van Beukering, 2020; Noury & Roland, 2020). The moral aspects of the COVID-19 pandemic also had politically and ideologically polarizing impacts on people around the world (Pennycook et al., 2022; Prosser et al., 2020). Some psychological studies indicate that the role of cognitive competencies, such as basic science knowledge, is not very convincing (Pennycook et al., 2022), whereas the role of strategies used by political leaders together with differences in information environments and selective social media exposure is more important (Kubin & von Sikorski, 2021; McCoy & Somer, 2021). These various processes may interfere with the role of education in increasing individuals' support for society's core values and institutions (Mayne & Hakhverdian, 2016; Meyer, 2015; Weakliem, 2002).

Right-wing parties are now often identified with populist politics that counters 'real people' versus the establishment (Kulin et al., 2021; Lockwood, 2018). In this context, climate change and climate policy have become symbolic targets of nationalistic arguments, anti-elitism and anti-establishment rhetoric, authoritarianism, distrust of institutions and distrust of science (Huber et al., 2021; Lockwood, 2018; Vowles & Hultman, 2021). Right-wing populism is prominently associated with the protection of animals, but this applies mainly to animals that are characterized as vulnerable and grateful beings and not to species used for meat production (Krämer et al., 2021). Yet, although adherents to right-wing parties are often not positively active in environmental issues, they

still might be responsive to certain themes, such as biodiversity loss and landscape deterioration (Forchtner, 2019; Franzen & Mader, 2020), which could be relevant for more sustainable food choices. In addition, there is currently also an important overlap between populist identity politics and pro-environmental activism in many countries, such as revealed by the worldwide diffusion of climate protest (e.g. 'Fridays for Future' since 2018), which might in particular appeal to left-wing democrats (Baiardi & Morana, 2021; Buzogány & Mohamad-Klotzbach, 2022).

European citizens' support for a more climate-friendly agriculture was also assessed in 2009 (Eurobarometer 72.5). In comparison with this survey, agreement with the statement about agriculture as one of the major causes of climate change increased from 27% (European Commission, 2013, question B12.1) to 44% in NWE countries in 2020. Agreement with the statement that EU farmers need to change the way they work in order to fight climate change even if that means that EU agriculture will be less competitive increased from 67% (European Commission, 2013, question B12.4) to 70%. Also, the willingness to pay 10% more for agricultural products if they are produced in a way that 'does not increase climate change' increased from 63% (European Commission, 2013, question B12.6) to 73%, who were willing to pay 10% more for agricultural products that are produced in a way that 'limits their carbon footprint'.

The results here show increasing support for a more climate-friendly agriculture and its positive correlation with support for climate-friendly dietary options across the left-right political spectrum, and suggest some important cultural developments. The findings can be interpreted in at least two ways. One interpretation is that there might be political polarization and ideologically motivated reasoning among people with right-wing styles of thought, but that scientific information about the risks of climate change still has a viable role to play in promoting climate engagement and action (Lewandowsky, 2021; Ogunbode et al., 2020; Ranney & Velautham, 2021). In other words, some science-based evidence and observations are difficult to dispute. Another interpretation is that right-leaning citizens tend to value in-group loyalty (Dickinson et al., 2016) and that being loyal to local farmers plays a role. For instance, they may have the opinion that 'we' should feel good about 'our' meat industry and reduce imports of foreign meat (Olausson, 2018). This compilation of 'better meat but less' would fit into Lewandowsky's (2021) proposal to combat climate change disinformation by, among other things, culturally aligned messages and messengers (i.e. designed to align with an individual's cultural frame of reference).

5.2 The priority of meat reduction

In Northwestern Europe, the item 'Eating meat less often' was mainly selected together with other deeper green issues, but to a lesser degree together with daily-intake issues. The opposite pattern was found in the East and South. This underlines that both nutrition and environment can be motivating factors for citizens to reduce meat eating (i.e. non-moral and moral motivators, see Lai et al., 2020), albeit to different degrees depending on the history of their region in environmental awareness (Rootes, 2004) and on culinary traditions (Turmo, 2012). The analysis of an earlier Eurobarometer survey has shown that climate change and species decline are distinct sources of citizen concerns and that both concerns may support more sustainable food choices (de Boer & Aiking, 2021), in addition to preferences about better farm animal welfare (de Boer & Aiking, 2022). Recent experiments show that citizens are to some degree responsive to persuasive information about these issues and tend to adapt their meal and dietary choices accordingly (Jalil et al., 2020; Lacroix & Gifford, 2020; Morren et al., 2021).

Without targeted information and additional support, however, citizens may lack knowledge about the relative impacts of different kinds of green practices. The meat reduction item was often not considered of particular importance and was not very popular. Citizens may thus not be sufficiently aware of the priority that needs to be given to meat reduction to meet ambitious climate, nutritional, or animal rights goals. For climate change, this information may be provided through carbon labelling, but that approach seems currently a distant possibility (see also Whitmarsh et al., 2011; Wynes et al., 2020). The literature shows that informing restaurant customers (Brunner et al., 2018) or supermarket shoppers (Feucht & Zander, 2018) with carbon labels may have some positive effects, but that citizens are largely incapable of making tradeoffs between different actions (e.g. to process and use information on the number of hamburgers that would be equivalent to a Trans-Atlantic

flight in terms of climate impact) (Wynes et al., 2020). Hence, targeted information should be practical rather than technical.

5.3 Limitations and future research

An important limitation is that the study is based on a secondary analysis, which means that the work is limited to the questions asked by the original investigators, guided by EU policy development. On the one hand, this is a strength, because it might be assumed that the questions are policy relevant. On the other hand, it is a weakness in that the set of variables does not provide information about behaviour. Also, the study did not include politically relevant variables other than the left-right dimension (see Huber et al., 2021).

Future work should pay more attention to the role of cultural identities in relation to climate issues (Lewandowsky, 2021). For instance, the idea of 'better meat but less' can be attractive to citizens who have different interpretations of what 'better' is, whether it is more farm animal-friendly or better for local food projects. Different segments of citizens may see particular practices as strongly related to specific groups. For example, meat-free meals that provide a new taste experience are now offered in the luxury gastronomic industry (Batat, 2020), but citizens who feel an affinity with 'the real people' might find it unacceptable to choose plant-based protein meals associated with the global elite.

6. Conclusions

The results of this analysis demonstrate the additional value of combining the Farm-related and the Fork-related branches of Eurobarometer 93.2 (2020). The results revealed how EU citizens' responses to a more climate-friendly agriculture were related to the main themes of their dietary thinking, in particular regarding meat consumption reduction. Both the Farm-related and the Fork-related branches showed the impact of diverging political positions and ideological polarization on the ways in which citizens in Northwestern European countries respond to climate-related issues. Political and ideological polarization has seriously interfered with attempts to promote more climate-friendly agriculture in combination with changes in Western eating practices. Yet, the results indicate that public opinion is moving in the direction of the EU's F2F strategy. Over the past decade, there was increased support for more climate-friendly agriculture, which correlates positively with support for climate-friendly dietary options (including meat reduction) across the left-right political spectrum. The data do not allow to further explain the results, but the literature suggests that regular access to information regarding climate risks and/or loyalty to local farmers may have played an important role.

This work has some important implications for policy-makers aiming to mainstream the reduction of animal protein or meat consumption. In recent EU policy-making, meat reduction has been carefully placed in a broader context of nutritional, environmental, and farm animal welfare aspects of eating a healthy and sustainable diet. The results demonstrate that this approach matches the beliefs of many citizens about these issues. However, the results also reveal that citizens lack knowledge about the relative impacts of different green practices, in particular those of meat eating. This underlines that the EU, whose policy measures still include promotion of animal products, does not pay enough attention to the special importance of meat reduction for the achievement of its F2F objectives.

This paper identifies different ways to find solutions for some of the challenges the EU faces (apart from economic and legal factors). A general point is that the history of EU regions in environmental awareness and culinary traditions can considerably impact how responsive citizens are to moral and non-moral motivating factors to reduce meat eating. These factors may refer to both nutrition (health) and the environment (i.e. climate change, as well as species decline and animal welfare), and this underlines the importance of targeted information provision. Results from this analysis suggest that citizen targeted information should be practical (such as guidelines and recipes) rather than technical (carbon labels), although background information may be of help to some citizens. Additional support from governmental and other organizations may be necessary to highlight the importance of meat reduction in the context of daily life decision making (e.g. in shops, restaurants, and canteens). It is key to carefully consider the benefits and potential pitfalls of culturally aligned messages and messengers.

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Disclosure statement

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