TUM School of Social Sciences and Technology
TUM School of Management

Munich Papers in Political Economy
Working Paper No. 05/2023

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October 2023

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September 23, 2023

Abstract

To reach the goals of the Paris agreement more ambitious climate policies will need to be implemented. In an experimental survey that is representative for the population at the sub-national level in Germany (N=15,000), we investigate how a change from existing climate policies to more ambitious policies drives public support. Using different descriptions of policies, we demonstrate that in general, more ambitious policies reduce public support. This effect is stronger if the focus is on an increase of carbon prices compared to a focus on a policy mix to reduce the emission of greenhouse gases. Economic preferences (i.e., reciprocity, trust, risk and patience) and other individual characteristics (e.g., experience of recent hazards, belief in climate change) as well as regional characteristics (i.e., Eastern Germany, macro-economic indicators, cohesion policies, and climate change) are substantially correlated with public support. This demonstrates challenges for the communication of tighter climate policies and underlines the need to address an audience with heterogeneous preferences and diverse regional backgrounds.

JEL Codes: Q01, Q54, Q58, C99

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1 Introduction

Global warming and human-caused climate change are significant threats our world is facing today. To mitigate the worst environmental, economic, and social consequences of climate change, numerous international agreements have been established. However, global greenhouse gas (GHG) emissions have yet to reach their peak. To meet the goals set forth in the Paris Agreement, it is essential that more ambitious climate policies be implemented on a global scale (McCollum et al., 2018; Robiou du Pont et al., 2017). One example of more ambitious policies is the *Fit-for-55* plan proposed by the Commission of the European Union (EU) in July 2021. It is part of the *Green Deal* that mandates to drastically reducing GHG emissions by at least 55% by 2030, compared to 1990 levels. These ambitious climate policies will influence how we consume, drive, built, produce goods and services, and manage forests and land. However, one important factor for the successful implementation of ambitious climate policies is the level of public support (Bernauer, 2013; Leiserowitz, 2006; McCright and Dunlap, 2011; McCright et al., 2016; Stehr, 2015).

Previous empirical research identified the perception of climate policy and its attributes such as benefits, costs, effectiveness, fairness and potential revenues as important factors of public support (Drews and Van den Bergh, 2016). Studies found that the public strongly rejects the instruments of carbon taxes and carbon pricing (Cantner and Rolvering, 2022; Carattini et al., 2018; Douenne and Fabre, 2020; Klenert et al., 2018; Levi, 2021; Maestre-Andrés et al., 2019; Mildenberger et al., 2022; Rhodes et al., 2017; Stadelmann-Steffen and Dermont, 2018). Nevertheless, the EU and countries like Germany pursue carbon pricing but the the lack of acceptability results so far in relatively low-price levels and only partial coverage of emissions. While prices will have to increase, a significant aspect has been neglected: how do people change their support when supranational entities such as the EU change their climate policies towards more ambitious goals?

Using a large-scale online survey experiment representative of the German population at the sub-national level, this study shows how the exposure to information about more ambitious policies causally affects public support for these policies. The results reveal that information about more ambitious climate policies – as for example proposed by *Fit-for-55* – decreases public support. This decrease is stronger if increasing carbon prices are emphasized compared to a policy mix with a focus on the reduction of greenhouse gases. Furthermore, our results show that policy support is substantially associated with economic preferences (i.e., reciprocity, trust, risk and patience) and other individual characteristics (e.g., experience of recent hazards, belief in climate change). In addition, we show correlations between regional characteristics (i.e., Eastern Germany, macro-economic indicators, cohesion policies, and climate change) and public support for ambitious climate policies.

Related literature

Meta-studies and reviews have shown that an individual's climate change assessments, such as their level of concern, risk perception, belief in the seriousness of the issue, and knowledge about the topic, play a crucial role in determining public acceptance for climate change policies (Bergquist et al., 2022; Drews and Van den Bergh, 2016; Houser et al., 2022). According to various theories in the social sciences, these assessments form the basis of behavioral intentions and resulting behaviors. For example, the value-belief-norm theory postulates that values influence behavior mostly indirectly trough more specific beliefs, attitudes, and norms (e.g., Stern, 2000; Stern et al., 1999). The theory of planned behavior asserts that attitudes, subjective norms and perceived behavioral control shape intentions to perform an action (Ajzen, 1991). Other theories, especially prevalent in economics, center around individual preferences as the driver of behavior. These preferences are not only applied for the comparisons between goods, but also exist in the form of time preferences, risk preferences, and social preferences (Barsky et al., 1997; Dohmen et al., 2009, 2011; Falk et al., 2018; Figlio et al., 2019). Yet, systematic empirical comparisons between the impact of economic preferences and the impact of previously identified factors on the public support for climate change policies is missing.

Addressing environmental problems entails a trade-off between immediate and longer-term interests (Van Lange et al., 2013). When making inter-temporal trade-offs, future impacts are often considered distant and discounted in present decision-making and policy design. Thus, an individual's discount rate is an important factor of individual support for climate policies. A meta-analysis shows that future time perspective has a stronger influence on pro-environmental attitudes and behaviors than a combined score of past-present perspective (Milfont et al., 2012). Studies found that temporal focus also largely explains the political gap between liberals and conservatives in attitudes towards and behaviors regarding climate change (Baldwin and Lammers, 2016; Rickard et al., 2016). In addition, many climate policies include outcomes that involve a large degree of uncertainty. For example, individuals have to make investment decisions while future carbon prices are uncertain or insurance decisions related to increasing numbers of natural climate disasters. Previous experimental research shows that communicating increasing levels of uncertainty about future climate change events undermines pro-environmental behavior (e.g., Barrett and Dannenberg, 2014; Morton et al., 2011). Finally, results from a recent experiment in Germany suggest that respondents are generally in favor of an earlier coal-phase out, especially so when it entails a higher number of new jobs. However, with increasing costs and an increasing amount of jobs lost, support for the phase-out decreases (Rinscheid and Wüstenhagen, 2019). Consideration of risk and time preferences must therefore be an important component in the design of effective environmental policy.

Social preferences, including trust, altruism, and positive and negative reciprocity, are important factors that influence social interactions and cooperation. Reciprocity can be seen as an evolutionary stable strategy (e.g., Gintis et al., 2003) with positive reciprocity capturing the predisposition to cooperate conditionally on other's cooperation and negative reciprocity as the willingness to punish violations of cooperative norms, even if costly (Fehr and Gintis, 2007). Both positive reciprocity (Fehr and Fischbacher, 2003) as well as altruistic punishments and sanctioning institutions (Fehr and Gächter, 2002; Gurerk et al., 2006) promote cooperative behavior. Similarly, trust has been linked to cooperation (Glaeser et al., 2000), and although this view is contested (Bauer et al., 2019), social trust is held to be *"an important lubricant of a social system"* (Arrow, 1974) and a crucial component of social capital (Putnam et al., 2001). These foundations of human cooperation must be considered in solutions to the collective action problem of climate change. We contribute to this literature by examining how social preferences are connected to the support for climate policies.

In addition to measures of economic preferences, we also included other individual factors that have been previously identified in the academic literature as influencing support for climate change policies. Civic engagement and political orientation belong to the most important factors. Civic engagement incorporates various forms of interaction with people, from informing and listening through dialogue, debate, and analysis to implementing jointly agreed solutions (Hügel and Davies, 2020). Previous studies showed that civic engagement is positively associated with values, attitudes and behaviors (e.g., Andre et al., 2021; Corner et al., 2014; Nisbet, 2009). Lee et al. (2015) provide empirical evidence that civic engagement is one of the most important predictors of climate change awareness in the USA, Sweden and Sierra Leone. Engels et al. (2013) showed that climate change skepticism correlates negatively with political participation in Germany. Regarding political orientation, McCright et al. (2016) showed that left-orientated citizens reported stronger belief in climate change and support for action than right orientated citizen in Western European countries. Studies conducted in the USA found growing partisan and ideological polarization within the US population and that liberals and Democrats are more likely to express concerns about climate change compared to conservatives and Republicans (McCright and Dunlap, 2011).

While trust as an economic preference is measured as general trust towards strangers, trust can also be directed towards specific institutions. Previous meta-analysis showed that trust in scientists predicts climate change beliefs (Hornsey et al., 2016) and trust in governments predicts adaptation behavior (van Valkengoed and Steg, 2019). Finally, Cologna and Siegrist (2020) find correlations for trust in scientists, environmental groups, and institutions with adaptation strategies. Our design allows us to investigate whether economic preferences influence individual support for climate policies in addition to these important individual factors of public support.

Climate-related events are regularly impacting people and in the future these incidences will most likely increase. Being personally harmed by or exposed to floodings, heat waves or droughts influences people's perception of climate change (Capstick et al., 2015; Lujala et al., 2015) and support for policies (Owen et al., 2012). Similar to climate hazards, the COVID-19 pandemic might influence policy support. Besides direct health consequences, the pandemic lead to income losses (Almeida et al., 2021; Josephson et al., 2021) and increased mental stress of citizens (Daly et al., 2022; Ravens-Sieberer et al., 2022). We investigate the impact of these recent disaster experiences on public support for ambitious climate policies.

Finally, our sample, which is representative of the German population at the sub-national level allows us to investigate regional correlates of individual support for climate change policies. Studies measuring public support for climate policies are typically conducted at the country-level with nationally representative samples (Bechtel and Scheve, 2013; Bechtel et al., 2021; Capstick et al., 2015; Lee et al., 2015; Lorenzoni and Pidgeon, 2006; Poortinga et al., 2019). Only few studies investigate regional differences in public support at the sub-national level. Using Bayesian approaches to compile data from national surveys, it can be shown that public opinion in the US about climate change varies across and within states (Howe et al., 2015). Similarly, data from the Cooperative Election Study demonstrates that public support for renewable energy policies varies in the US with state-level energy policies (Stokes and Warshaw, 2017). We add to this literature, by investigating how regional economic, policy, and climate indicators influence public support for supranational climate policies.

2 Methods

Information provision experiments

The goal of experiments in the behavioral sciences is typically to change some features of the choice environment to causally study how participants form beliefs and make choices. Information experiments achieve this by varying the information set available to participants. One very powerful application of information experiments is to generate exogenous variation in perceptions of real world environments such as climate change and public policies (Haaland et al., 2022).

For instance, information experiments have been widely used to study the effect of i) climate change information on policy support (Shwom et al., 2008), ii) perceived effectiveness and fairness of climate policies on public support (Huber et al., 2019; Rhodes et al., 2017), iii) social norms and values on preferences for climate policies (Cole et al., 2022; Rinscheid et al., 2021), iv) civil society involvement on popular legitimacy (Bernauer and Gampfer, 2013; Bernauer et al., 2016) and v) misinformation on policy support, climate change beliefs, and scientific consensus (Cook et al., 2017; Deryugina and Shurchkov, 2016; Van der Linden et al., 2017).

Sampling and experimental survey design

The effect of information provision about ambitious climate policies on public support is measured with a pre-registered online survey experiment in Germany. The data for the survey was collected from the 24th of August to the 23rd of October 2021. All information and survey questions were presented in the German language. Our sample is regionally representative of the resident population aged 18 and older. In particular, respondents are representative for gender and three different income groups (less than 1,500 Euro, 1,500 - 4,000 Euro, more than 4,000 Euro) across 38 NUTS2 regions [1]. National quotas deviate by less than 0.5 %. Quotas on NUTS2 level deviate by a maximum of 11.8 % with a median

[1] The NUTS classification (Nomenclature of territorial units for statistics) is a hierarchical system for dividing up the economic territory of the EU. NUTS2 represents basic regions for the application of regional policies.

deviation of less than 1.8 %[2]. The survey was answered by a total of 15,007 respondents who were recruited by the market research institute respondi using the online surveying platform Qualtrics. One person had to be excluded because she did not finish the questionnaire. Another six participants were dropped due to unreasonable age specifications of more than 100 years. This leaves a total of 15,000 respondents.

In our experiment, we use vignettes in which respondents were asked to state their support for EU climate policies under different (hypothetical) scenarios. Figure 1 provides a summary of the survey experiment. Respondents were randomly allocated between the Policy-Mix (PM) treatment and Carbon Price (CP) treatment (see Table S?? in SI for a randomization check across treatments). For each vignette, we elicit the respondent's support twice: First, under a scenario of low emission reduction goals (L), second, under an ambitious scenario of high emission reduction goals (H). In PML (PMH), respondents receive information about several different instruments (i.e., expansion of renewable energy, investment in energy efficiency and the Emissions Trading System, ETS) that aim to reduce GHG emissions by 40 % (55 %) in 2030 compared to 1990. In CPL (CPH), respondents receive only information about the ETS and the price for CO2 of 55 Euro per ton which will be held constant (increase to 80/105/130 Euro) until 2030 [3]. By taking the differences in support between PML (CPL) and PMH (CPH), we measure the effect of more ambitious EU climate policies on respondent's support. Analyzing the difference between PM and CP allows us to compare the effects of a mix of instruments and the carbon price instrument on public support. Having different carbon prices (80/105/130 Euro) in CPH allows us to estimate the responsiveness to increased carbon prices. In addition, for each treatment arm we introduced a control group. In the control group the low emission reduction goal (PML and CPL) was repeated to the respondents. The control treatment allows us to rule out that changes in public support are

[2]National and NUTS2 quotas for gender and population are based on data from eurostat, the statistical office of the European Union, from 2020. National and NUTS2 quotas for income are based on data from the German General Social Survey (ALLBUS) from 2018.

[3]see section 1.1 and 1.2 in the supplementary information (SI) for more details about the information presented to the respondents.

driven by the repeated elicitation and not by the changes in the described policy.[4]

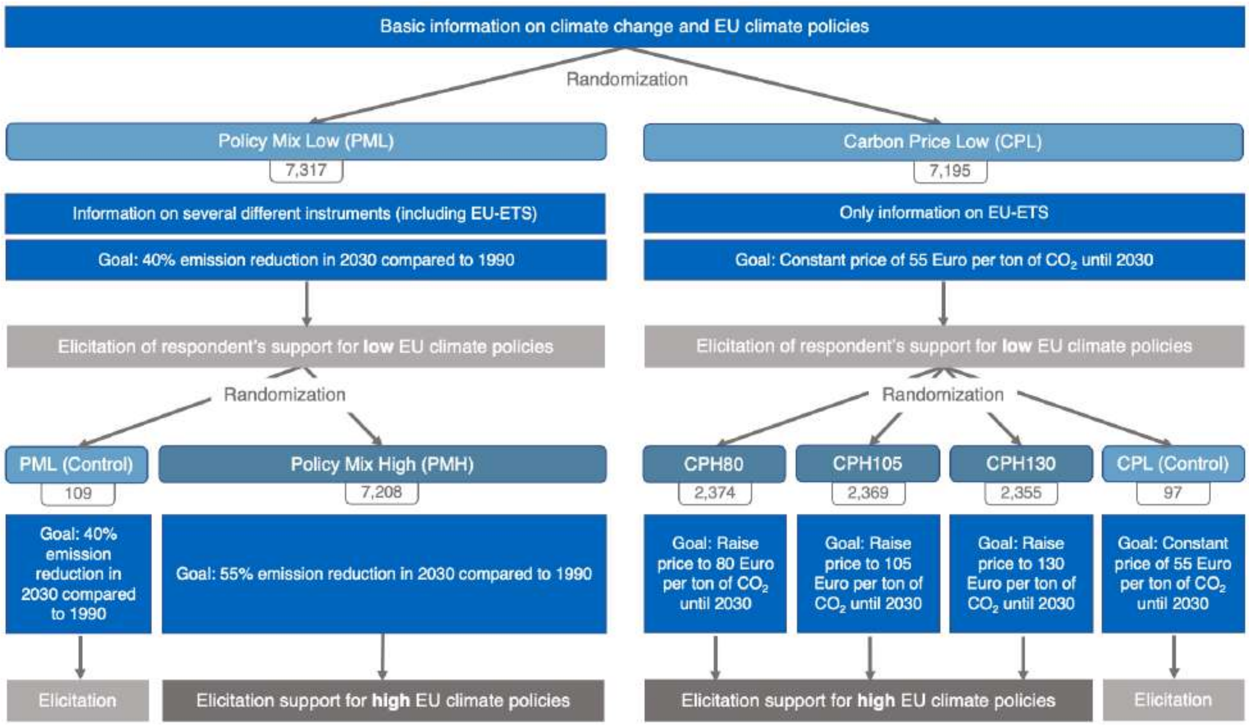

Figure 1: Experimental design of the survey (including number of observations per treatment arm).

Individual level data

The dependent variable in this study is individual support for EU climate policies. We asked participants whether they rejected or supported the measures taken by the European Union under the presented scenario. Responses were measured on a 5 point-scale ranging from 1 to 5 (completely oppose to completely support with neutral option). To measure time, risk and social preferences (positive reciprocity, negative reciprocity, altruism and trust), we used experimentally validated measures of the Global Preference Survey (GPS) (Falk et al., 2018, 2016; Falk and Hermle, 2018). The items of the GPS are based on a validation procedure which involved conducting multiple incentivized choice experiments for each preference and testing the relative abilities of a wide range of different question wordings and formats to predict behavior in these choice experiments (Falk et al., 2016). For ease of interpretation, we follow Falk et al. (2018) and standardize (z-score) each preference measure at the individual

[4]Since we do not analyze individual correlates in the control treatment, a smaller sample size is sufficient.

level (see materials and methods of SI for more details). Recent hazard experience was measured by asking respondents about financial losses related to the COVID-19 pandemic (5-point-scale) and whether they were directly or indirectly affected by the flood disaster in Germany in July 2021 (5-point-scale).[5] Left-right political orientation was measured on a 10-point scale. The scale is frequently used in political and social surveys such as the German General Social Survey or the Eurobarometer. For the other individual-level measures, we computed the following summary indices: To measure beliefs in climate change, we construct an index from responses (4-point-scale) to 12 statements about climate change. Engagement in climate change action is a summary index consisting of seven questions measuring personal actions to protect the climate (5-point-scale). Both indices are based on statements that are taken from the detailed politics module developed as part of the Climate Change in the American Mind Project (Leiserowitz et al., 2013). Attitudes towards EU climate policies is a summary index consisting of four questions (4-point-scale) taken from the Special Report on Climate Change of the Eurobarometer. The summary index for trust in international (national) institutions is based on two (three) general trust questions related to the EU and United Nations (UN), respectively (city, state and national government). Institutionalized trust questions are frequently asked in the German General Social Survey as well as in the Eurobarometer. We provide summary statistics, reliability scores and more details about the construction of the variables in the materials and methods section of the SI.

Regional level data

We collected the following variables on the sub-national (NUTS2) level. The information on average GDP (per capita) over the years 2015 to 2019 is taken from the Eurostat database (Eurostat, 2022). The variables on the percentage of people employed in agriculture, fishing and mining, manufacturing, and services is based on values from 2016 and taken from the

[5] In the period between 12th and 19th July 2021, several floods and flash floods occurred in Europe. Total losses are estimated as 54 billion dollars, making it the second most expensive natural disaster in 2021 after Hurricane Ida in the US (NatCatSERVICE, 2022). At least 243 people died including 196 in Germany. The biggest impact of the flood disaster occurred in the regions of North Rhine-Westphalia and Rhineland-Palatinate in the west of Germany.

Quality of Governance (QoG) dataset from the University of Gothenburg (QoG, 2016). EU cohesion policies in EUR (per capita) is a summary index over four EU structural funds (Fund for European Aid to the Most Deprived (FEAD), European regional development fund (ERDF), European social fund (ESF), European agricultural fund for rural development (EAFRD)) for the programming period of 2014 to 2020. The data is taken from the website of the European Commission (European Commission, 2016). The climate variables measure the differences in the mean precipitation and temperature between the periods 1985-1994 and 2005-2014, respectively. The climate data is taken from the website of the EU's Copernicus Project (EU Copernicus, 2022). We provide summary statistics and more details about the construction of the variables in the materials and methods section of the SI.

Empirical strategy

The effect of information provision

First, we investigate treatment effects of our information provision experiment by applying parametric tests (t-tests) and regression analysis. Our within-subject design allows us to model the data as a panel. Using panel estimations for experimental data with multiple observations per individual is a common approach in experimental studies (Burlig et al., 2020; Charness et al., 2012). The statistical model underlying the results in Table 2 is

$$Support_{irs} = \alpha + \beta ClimatePolicyScenario_{is} + \gamma' x_{ir} + \epsilon_{ir} \tag{1}$$

where $Support_{irs}$ is the support for climate policies by individual i (living in region r) receiving information s. *ClimatePolicyScenario* is a dummy variable which takes on the value 0 for information about low emission reduction goals (L) and 1 for information about ambitious emission reduction goals (H). Thus, the coefficient β represents the treatment effect of information about more ambitious climate policies (H) on individual support. The constant α represents the mean support for the low emission reduction goal scenario (L). x_{ir} is a vector of control variables. It includes socio-demographic characteristics (gender (two dummy variables representing female and diverse with male being the omitted category), age (indicator variable for above-median values), income (indicator variable for above-median values), education level (indicator variable for tertiary education)), NUTS2 regional fixed effects, survey week fixed effects, and dummies for different levels of carbon prices (when applicable). Regional fixed effects and survey week fixed effects control for omitted variable bias that is specific to regions or the interview time.[6] Standard errors are clustered at the regional NUTS2 level[7]. We run equation (1) for the pooled data (PM + CP), PM treatment, CP treatment and the control group (see Table 2).

Individual factors of support

Next, we investigate the association of individual factors with support for climate policies. We focus our analysis on more ambitious climate policies (H) as the goal of these policies is to reach the Paris agreement of keeping global warming to a minimum of 1.5 degrees. For the individual-level analysis, we regress the dependent variable on our individual-level measures. The statistical model underlying the results in Figure 3 is

$$\begin{aligned} Support_{ir} =& \alpha + \beta' EconPreferences_i + \delta' RecentHazards_i \\ &+ \zeta' OtherFactors_i + \lambda InitialSupport_{ir} + \gamma' x_{ir} + \epsilon_{ir} \end{aligned} \tag{2}$$

where $Support_{ir}$ is the support for ambitious climate policies (PMH or CPH) by individual i (living in region r). $EconPreferences_i$, $RecentHazards_i$ and $OtherFactors_i$ are vectors of the measures listed in Figure 3. In addition, *InitialSupport* is the initial individual support for low emission reduction goals (L) to control for pre-beliefs about EU climate policies. Thus, estimated coefficients represent the estimated change in support as a result of more ambitious climate policies (H). x_{ir} is a vector that includes the following control variables:

[6]The fixed effects approach is an alternative to the multi-level model. A multilevel model assumes that there is neither unit-specific nor group-specific unobserved heterogeneity. Although we have randomized experimental data at the regional level, we can not rule out that unobserved factors such as migration patterns may violate the assumptions of the multilevel model. Table S**??** in the SI compares estimates of the fixed effects model and the multilevel model. Results remain qualitatively the same.

[7]We also applied clustered standard errors at the individual level. Results remain essentially unchanged.

gender (two dummy variables representing female and diverse with male being the omitted category), age (indicator variable for above-median values), income (indicator variable for above-median values), education level (indicator variable for tertiary education), NUTS2 regional fixed effects, survey week fixed effects, and dummies for different levels of carbon prices (when applicable). Futhermore, we standardized all explanatory variables except for the indicator variables, i.e. to have a mean of zero and a standard deviation of one (z-score), so the coefficients of standardized variables can be interpreted as the change in supporting rates associated with a one standard deviation change in the explanatory variable.[8] Standard errors are clustered at the regional NUTS2 level.[9] The regression is run twice, once for the PM and once for the CP treatment. We run separate regressions to analyze the heterogeneity of individual factors across the two treatments.[10]

Regional level correlates

Finally, we explore possible explanations for cross-regional differences in individual support for EU climate policies. We conducted a series of OLS regressions in which a given regional-level variable was regressed onto individual support for ambitious climate policies (H). Previous experimental studies that investigated cross-country differences in behavior and beliefs followed a similar approach (e.g., Cohn et al., 2019; Gächter and Schulz, 2016). The statistical model underlying the results in Figure 4 is

$$Support_{ir} = \alpha + \beta RegionalFactor_r + \lambda InitialSupport_{ir} + \gamma' x_i + \epsilon_{it}. \tag{3}$$

where $Support_{ir}$ is the support for ambitious climate policies (PMH or CPH) by individual i (living in region r). $RegionalFactor_r$ is one of the average regional factors in region r (NUTS2 level) as shown in Figure 4. Again *InitialSupport* includes initial individual support for low

[8] Qualitative interpretation of our results remain the same if we follow Gelman (2008) and re-scale with two standard deviations, see Figure S?? of SI.

[9] We also applied clustered standard errors at the individual level. Results remain essentially unchanged, see Table S?? of SI.

[10] We also run a pooled regression and interacted each individual factor with a treatment indicator. Results remain essentially the same (see Table S?? in SI). However, in terms of simplicity and visualization of results we present the results as described above and outlined in Figure 3.

emission reduction goals (L) as a control.[11] x_{ir} is a vector that includes the following control variables: gender (two dummy variables representing female and diverse with male being the omitted category), age (indicator variable for above-median values), income (indicator variable for above-median values), education level (indicator variable for tertiary education), survey week fixed effects, and dummies for different levels of carbon prices (when applicable). We excluded NUTS2 fixed effects in equation (3) to explore the variation of different regional factors. Again, we standardized the non-binary explanatory variables to have a mean of zero and a standard deviation of one, so the coefficients can be interpreted as the difference in supporting rates associated with a one standard deviation change in the explanatory variable. Standard errors are clustered at the NUTS2 regional level. The regressions are repeated separately for the PM and the CP treatment [12]. We also run regressions where we adjust the p-values for multiple hypothesis testing (see Figure S**??** in SI).

3 Results

More ambitious EU climate policies decrease public support

Table 1 reports descriptive statistics on the mean support and within-subject differences in mean support for EU climate policies (measured on a 5-point scale). As expected, no meaningful pre-post change in individual support was observed in the control group. These results rule out potential effects related to repetition. All treatment groups show significant pre-post differences.[13] This holds when we pool the treatments and for each treatment separately.[14] Moreover, the mean support in the low emission reduction goal treatments (L) is statistically not different from the control group means (overall: 3.521 vs. 3.539, mean dif-

[11]Results remain consistent when we exclude initial support (see Figure **??** in SI).

[12]We also run a pooled regression and interacted the regional factors with a treatment indicator. Results remain essentially the same (see Table **??** in SI).

[13]It is worth pointing out that our results would also be significant with a much smaller sample size. Post-hoc power analyses reveal necessary sample sizes of $N = 85$ for PML vs PMH and $N = 51$ for CPL vs CPH (both with $\alpha = 0.05$ and $1 - \beta = 0.8$).

[14]All results reported based on t-tests are robust to using non-parametric Wilcoxon tests (for more details see supplementary analysis in SI) Pre-post differences are also significant for the different carbon prices see (Table **??** in SI).

ference (MD) = -0.018, 95% confidence interval (CI) (-0.175, 0.138), two sample two-sided t-test = -0.228, P = 0.819; PM: 3.825 vs. 3.817 , MD = 0.008, 95% CI (-0.190, 0.207), two sample two-sided t-test = 0.082, P = 0.935; CP: 3.212 vs. 3.227; , mean MD = -0.015, 95% CI (-.243, 0.213), two sample two-sided t-test = -0.129, P = 0.897). This indicates that participants were successfully randomized across treatments.

	Observations	Policy Scenario L mean support		Policy Scenario H mean support		Difference		T-test p-value
Control group (overall)	206	3.539	(1.137)	3.519	(1.167)	0.019	(0.407)	0.494
Control group (PM)	109	3.817	(1.029)	3.789	(1.089)	0.028	(0.253)	0.259
Control group (CP)	97	3.227	(1.177)	3.216	(1.183)	0.010	(0.530)	0.849
Treatment group (overall)	14306	3.521	(1.137)	3.119	(1.305)	0.401	(1.136)	0.000
Treatment group (PM)	7208	3.825	(1.050)	3.579	(1.173)	0.246	(0.792)	0.000
Treatment group (CP)	7098	3.212	(1.139)	2.653	(1.266)	0.559	(1.384)	0.000

Table 1: Pre-post differences in public support for climate policies across treatments. Standard deviations are in parentheses. P-values are based on one sample two-sided t-tests. 95 % Confidence Interval. Note that the low emission policy scenario was repeated in the control group. CP policy scenario H reports mean over all higher prices of 80/105/130 Euro per ton.

Figure 2 shows the distribution of individual support for EU climate policies before (PML, CPL) and after the information provision (PMH, CPH) [15]. The mean support in PML is 3.82 and 3.58 in PMH (MD = 0.25, 95% CI (0.23, 0.26), one sample two-sided t-test = 26.37, P < 0.0001). The mean support in CPL is 3.21 and 2.65 in CPH (MD = 0.56, 95% CI (0.53, 0.59), one sample two-sided t-test = 34.02, P < 0.0001). Responses in the support and completely support category drop from 70% (46%) to 59% (29%) in the PM (CP) treatment. Thus, information provision about ambitious policies leads to a decline in public support. Turning to the comparison between treatments, public support is lower for the policy instrument of carbon pricing compared to general emission reduction goals as proposed by a mix of different policy measures (CPL vs. PML: MD = -0.61, 95% CI (-0.65, -0.57), two sample two-sided t-test = -33.50, P < 0.0001; CPH vs. PMH: MD = -0.92, 95% CI (-0.96, -0.86), two sample two-sided t-test = -45.67, P < 0.0001).

[15] For the distribution of individual support across the 5-point scale in the control group see Figure S??).

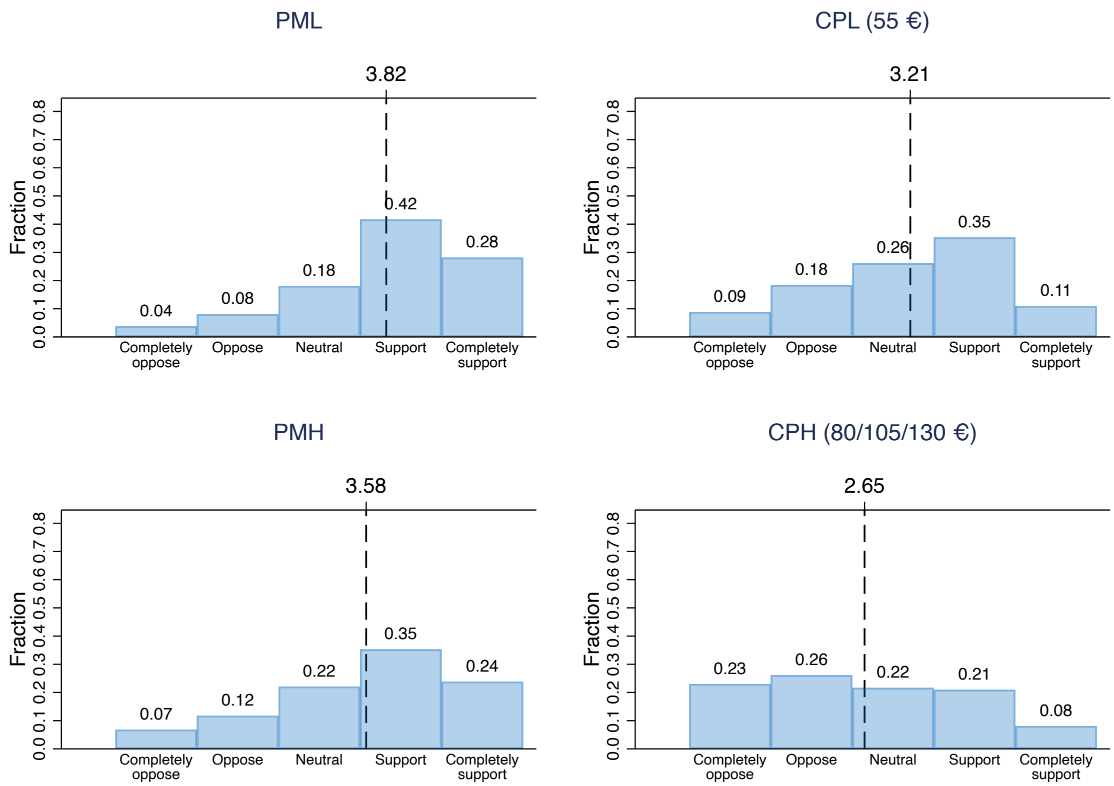

Figure 2: Public support for climate policies across treatments. The figure shows the distribution of public support in the PML (PMH) treatment and CPL (CPH) treatment (average across different carbon prices). Support is measured on a 5-point scale (completely oppose to completely support with neutral option). Each panel indicates the average support as vertical lines (dashed).

	(1) Control	(2) Pooled	(3) PM	(4) CP
Constant (Policy Scenario L)	3.358***	3.549***	3.868***	3.173***
	(0.163)	(0.044)	(0.052)	(0.060)
Policy Scenario H	-0.019	-0.401***	-0.246***	
	(0.027)	(0.010)	(0.010)	
Policy Scenario H: CPH80				-0.465***
				(0.023)
Policy Scenario H: CPH105				-0.567***
				(0.028)
Policy Scenario H: CPH130				-0.644***
				(0.025)
Female	-0.084	0.112***	0.111***	0.093***
	(0.162)	(0.019)	(0.027)	(0.025)
Diverse		0.012	0.463	-0.329+
		(0.237)	(0.328)	(0.175)
Age (median)	0.039	-0.041+	-0.019	-0.068*
	(0.155)	(0.023)	(0.036)	(0.025)
Income (median)	0.007	0.029	0.037	0.041
	(0.174)	(0.018)	(0.024)	(0.027)
Tertiary education	0.171	0.237***	0.204***	0.251***
	(0.204)	(0.020)	(0.027)	(0.030)
Test of equality of coefficients				
CPH80 vs. CPH105				0.103**
				(0.032)
CPH80 vs. CPH130				0.179***
				(0.032)
CPH105 vs. CPH130				0.077
				(0.039)
Survey week FE	Yes	Yes	Yes	Yes
Nuts2 FE	Yes	Yes	Yes	Yes
R^2	0.242	0.047	0.039	0.075
Observations	412	28594	14410	14184

Table 2: The impact of ambitious climate policies on public support. The coefficients are based on OLS regressions. The specification is based on equation (1). The dependent variable is individual support for climate policies (5 point scale). Note that the low emission policy scenario was repeated in the control group. The Wald tests reported at the bottom of the table are run on the null hypothesis that pairs of dummy coefficients identifying a treatment are equal to each other. Standard errors clustered at the sub-national level. *** denotes $p < 0.001$, ** denotes $p < 0.01$, * denotes $p < 0.05$.

Table 2 provides results of an OLS regression based on equation (1). This exercise is done to test if our main findings are robust against potential confounders at the individual and regional level. The following main findings stand out: i) no significant effect in the control group (column 1), ii) negative and significant effect of ambitious climate policies on individual support (columns 2-4), and iii) significant decreasing support for increasing levels of carbon prices (column 4). The mean support rate decreases from -0.43 in the 80 Euro condition to -0.57 in the 105 Euro condition and -0.68 in the 130 Euro condition. On average, an increase of 25 Euro between the range of 55 Euro and 130 Euro leads to a decrease in support of about 0.22 on a 5-point scale, i.e., 4.4%. A Wald test at the bottom of Table 2 confirms that the coefficients of higher carbon prices are significantly different from each other.[16]

Economic preferences are substantially correlated with public support

Figure 3 reports the results of OLS regressions explaining public support for more ambitious climate policies through individual factors. We provide separate estimates for PMH and CPH.[17] Recall that the regressions control for the initial support of low emission reduction goals (L) and coefficients, therefore, capture the change in support as more ambitious climate change policies (H) are introduced.

Economic preferences are related to individual support for more ambitious climate policies. Prosocial preferences - as measured by their levels of positive reciprocity, altruism and trust - are significantly correlated with individual support.[18] However, the coefficient of altruism is only statistically significant in the PMH treatment. Negative reciprocity, capturing different types of norm enforcement, is positively correlated with individual support for ambitious climate policies. Patience and risk-taking are positively correlated with individual support, but patience is only statistically significant in the CPH treatment. We only observe treatment heterogeneity in preferences for altruism and patience.

[16] The difference between CPH105 and CPH130 is at the boderline of significance (P=0.060).

[17] Results are robust to OLS and ordered logistic regression models using different specifications regarding regional and experimental control variables (see Table S**??** and Table S**??** in SI).

[18] We follow previous studies and refer to prosocial preferences as positive other-regarding behaviors and beliefs, see (Fehr and Fischbacher, 2002; Kosse et al., 2020; Kosse and Tincani, 2020)

Recent experiences with hazards related to the COVID-19 pandemic and the flood disaster in Westphalia are significantly correlated with public support. Financial stress related to the COVID-19 pandemic significantly decreases support in CPH but is not significant for PMH. The direct and indirect experience of the flood event is positively correlated with individual support across both treatments, but significantly more in the carbon price treatment. These patterns confirm the important role of experience-based perception of hazards in explaining public support for climate policies (Demski et al., 2017).

Finally, and in line with previous empirical studies (Drews and Van den Bergh, 2016), factors such as belief in climate change, attitudes towards EU policy instruments, engagement in climate change action, and political ideology are significantly correlated with public support for climate policies. Interestingly, trust in supranational institutions is associated with higher public support in both PMH and CPH, while trust in national institutions is associated with more negative support in PMH. The first relationship is not surprising as our vignettes are based on EU policies. The latter relationship might point to potential conflicts between the national states and the EU.

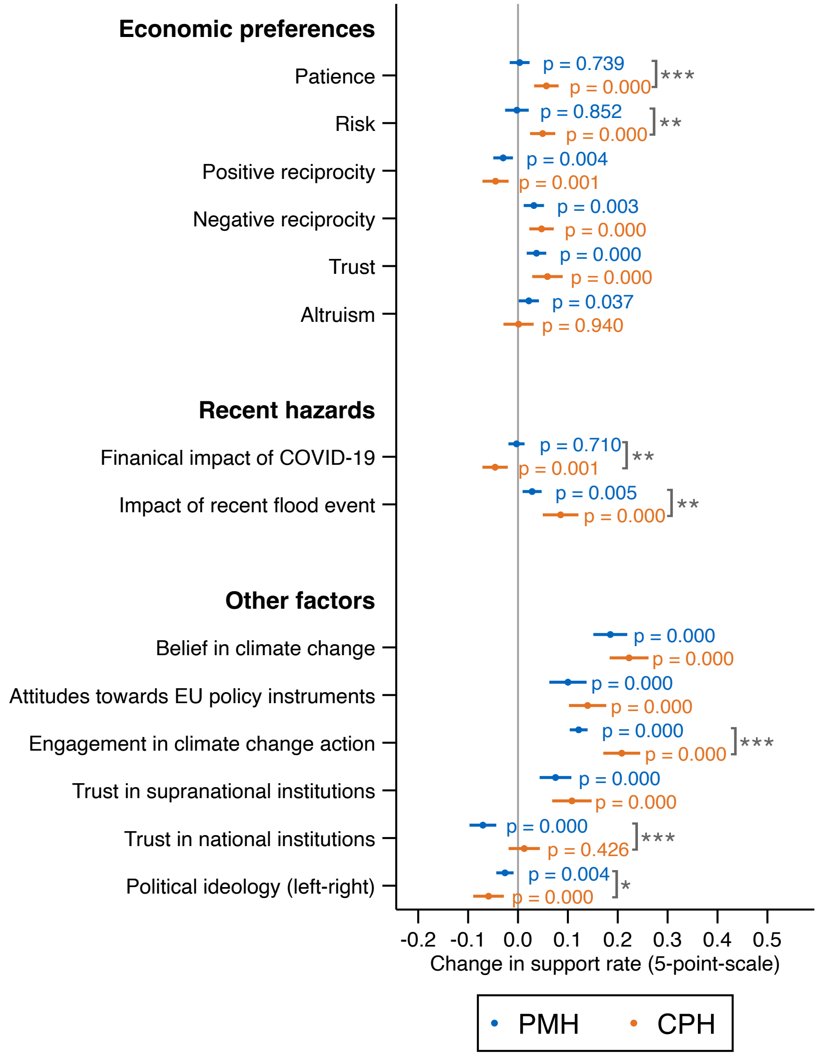

Figure 3: Association between individual factors and support for ambitious climate policies. The figure plots coefficients based on an OLS regression. The specification is based on equation (2). The dependent variable is individual support for climate policies (5 point scale). The coefficients of the non-binary explanatory variables are standardized (z-score). They can therefore be interpreted as the difference in support rate associated with a one standard deviation change in the explanatory variable. Error bars indicate 95% confidence intervals obtained from standard errors that are clustered at the sub-national level. Stars indicate statistically significant differences between coefficients of PMH and CPH (*** denotes $p<0.001$, ** denotes $p<0.01$, * denotes $p<0.05$). Observations: PMH = 7,007; CPH = 6,919.

Regional factors are correlated with public support

Figure 4 reports the results of OLS regressions for regional correlates with individuals' support for more ambitious climate policies (PMH, CPH), while Figure S?? in the SI reports regional correlates with the level of individuals' support for low emission reduction goals (PML, CPL). We briefly focus on the support for the low emission reduction goals. Support is significantly lower in East Germany compared to West Germany and generally significantly lower in less wealthy regions measured via the GDP per capita or via the amounts received from the EU cohesion funds (i.e., the per capita sum over EU Fund Aid to Most Deprived, EU Regional Fund, EU Social Fund, and EU Agricult. Fund for Rural Dev.). Besides economic variables, climate variables are correlated with the support for low emission reduction goals in the regions. Regions that experienced a drop in rainfall are correlated with higher support, as well as regions that experienced an increase in temperatures.

The regressions in Figure 4 control for the initial support of the low emission reduction goals (L) and coefficients show the change in support when more ambitious climate change policies (H) are introduced. Again, we provide separate estimates for PMH and CPH.[19]

The estimates reveal that more ambitious policies amplify the differences in public support already present for the low emission reduction goals. Regions in East Germany have a stronger decline in support than regions in West Germany. Regional economic characteristics measured as GDP per capita, employment in economic sectors, and received EU cohesion funds per capita are significantly associate with changes in public support in at least one of our treatments. While the change in temperature has no additional impact beyond the already lower support for the low emission reduction goals, less rainfall (more draughts) increases support in CPH even more. These results provide empirical evidence that regional macro-economic and climate change indicators are important correlates of public support for supranational climate policies.

[19]Results are robust to using ordered logistic regressions (see Figure S?? in SI) and remain essentially the same when we adjust the p-values for multiple hypothesis testing (see Figure S?? in SI).

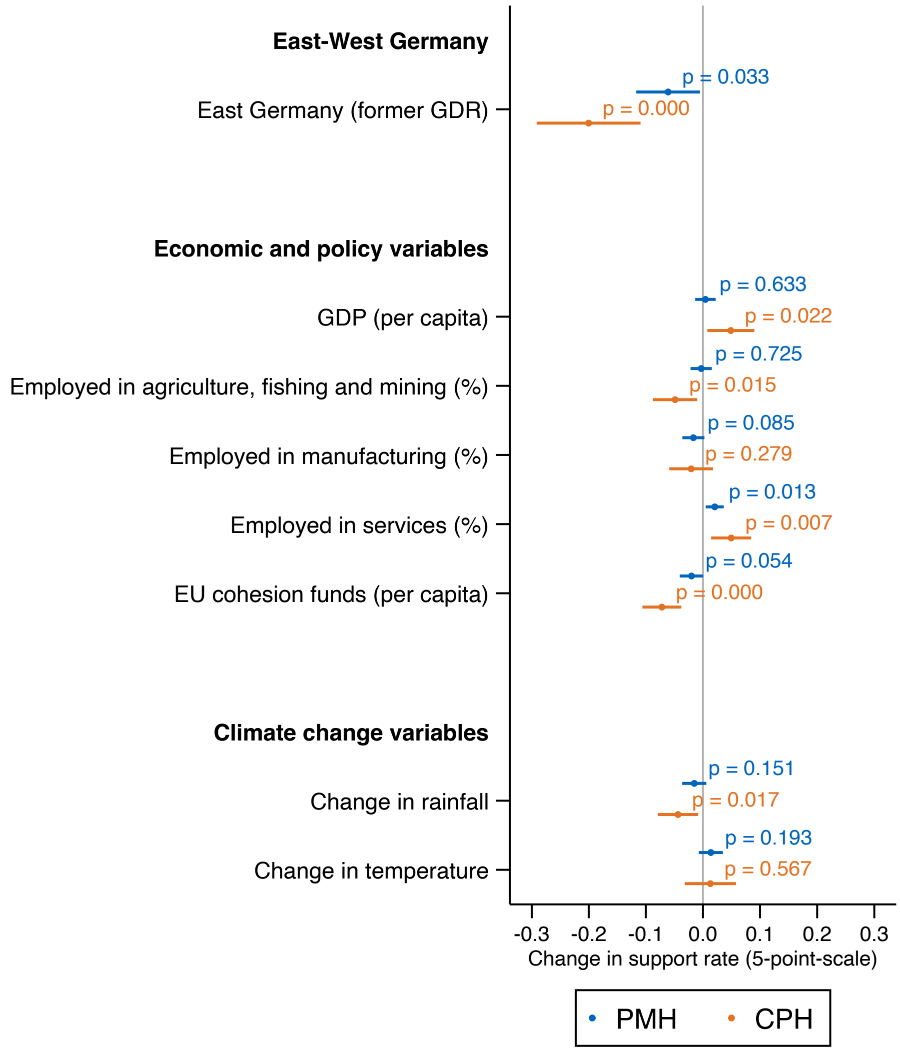

Figure 4: Regional correlates of public support for ambitious climate policies. The figure plots coefficients based on an OLS regression. The specification is based on equation (3). The dependent variable is individual support for climate policies (5 point scale). Each coefficient has been estimated separately, non-binary explanatory variables are standardized (z-score). They can therefore be interpreted as the difference in support rate associated with a one standard deviation change in the explanatory variable. Error bars indicate 95% confidence intervals obtained from standard errors that are clustered at the sub-national level. Observations: PMH = 7,205 (6,489 where 5 regions are missing), CPH = 7,092 (6,389 where 5 regions are missing).

4 Discussion and Conclusion

To address the impacts of climate change, various international agreements have been established and various policies have been implemented. Previous research primarily focused on public support for these policies (see e.g., Drews and Van den Bergh, 2016). However, as more ambitious policies are required to meet the goals of the Paris Agreement, it is important to understand how public support changes. This study aims to fill this gap by examining how public support changes as more ambitious policies in addition to already existing policies are implemented.

In this study, more ambitious climate policies resulted in decreased support for these policies. This decline in support was more pronounced when the focus was on carbon prices rather than on a policy mix of different instruments to reduce greenhouse gases. When descriptions of more ambitious policies were provided, the share of subjects who (completely) supported the climate policies dropped from 70% to 59% for the policy mix, and from 46% to 29% for the focus on carbon prices. Our findings are consistent with previous research demonstrating the unpopularity of carbon prices (Cantner and Rolvering, 2022; Carattini et al., 2018; Klenert et al., 2018; Levi, 2021; Maestre-Andrés et al., 2019; Mildenberger et al., 2022; Rhodes et al., 2017; Stadelmann-Steffen and Dermont, 2018), but also show that more ambitious policies are likely to further increase this unpopularity. This is particularly evident when we consider the percentage of subjects who (completely) oppose these policies. More ambitious policies increase the share from 12% to 19% when the policy mix is communicated, and dramatically from 27% to 59% if the focus is on carbon prices.

Carbon pricing is a key strategy advocated by most economists for addressing climate change, as it helps to incentivize the reduction of greenhouse gas emissions by putting a price on carbon-intensive activities (Economists, 2019a,b). However, our research suggests that an overemphasis on carbon prices in public debates, rather than emission reduction targets, could erode public support for climate policies. A description of carbon prices was present in all of our treatment arms, but the most drastic drop in support for climate change policies occurred when the emphasis was on actual prices and costs. This is in line with the results from a recent choice experiment also conducted in Germany (Rinscheid and Wüstenhagen, 2019). The study revealed that respondents expressed a preference for an earlier coal-phase out, which might initially appear contradictory to our own results. However, the results also show that respondents' acceptance is sensitive to the costs of the energy transition. Specifically, when presented with the prospect of reducing job losses by half, people tend to support a delay in the phase-out process. Exploring preferences for redistribution of carbon tax revenues in Germany, Sommer et al. (2022) find decreasing support for increasing carbon taxes - which is in line with our results. Thus, to increase public support for ambitious emission reduction goals, policy makers may want to shift the focus of their communication from the cost side to the various co-benefits of these policies, such as technological innovation, green jobs, improved health outcomes, more affordable public transport, and reduced reliance on fossil fuel imports (Bain et al., 2012, 2016; Karlsson et al., 2020; Myers et al., 2012). Yet, carbon pricing will remain an important tool in the fight against climate change and appropriate ways of communication need to be identified. Recent evidence suggests that highlighting the efficiency argument behind carbon prices can increase public support (Cantner and Rolvering, 2022). As carbon prices are likely to increase due to more ambitious climate policies, it will be particularly important to communicate the benefits of these prices to the public. This might counteract the adverse effects on public support documented in our study and needs to be investigated in future studies. In addition, this study is the first to systematically examine economic preferences, including time preferences, risk preferences, and pro-social preferences, as important factors in determining individual support for climate change policies. Our results suggest that individuals who are more patient, less risk averse, and more pro-social are more likely to support public policies aimed at combating climate change. These findings are particularly relevant in the context of the costs and benefits of climate change mitigation, as discussed in previous research by Stern (Stern, 2015; Stern and Stern, 2007) and Nordhaus (Nordhaus, 2007). For example, individuals with lower discount rates, who place more value on the future, may be more willing to support ambitious climate policies that have higher immediate costs in the present but may also lead to reduced damages in the future. Therefore, cultivating economic preferences within the population through climate policies may increase the likelihood of their successful implementation and potentially improve the welfare of society as it confronts the challenges of emission reduction goals.

While we found consistent associations between economic preferences and policy support, other individual factors such as belief in climate change, personal engagement in climate action, attitudes towards the EU's climate policies and clean energy plans, and trust in supranational institutions are even more strongly associated with public support for climate policies. However, these factors may be influenced by economic preferences (see correlations in Table S **??**). Previous studies have found correlations between economic preferences and various pro-environmental behaviors and attitudes (Andre et al., 2021; Fischbacher et al., 2021; Lades et al., 2021; Schleich et al., 2019). Therefore, it is important to consider these relationships and disentangle them in future research in order to better understand the drivers of public support for climate policies (Broomell et al., 2015).

Our results also show that recent experiences with hazards such as financial stress caused by the COVID-19 pandemic and the flooding in parts of Westphalia are related to public support for climate policies. The latter finding is also reflected in our analysis of regional correlates of public support. Less rainfall and higher temperatures at the sub-national level are associated with more willingness to support supranational climate policies. A recent meta-analysis of about 300 studies confirms that the experience of hazards and changes in temperature are significantly correlated with the awareness of climate change (Xia et al., 2022). These findings suggest that policy makers need to address both - personal hazard experiences and regional climate change - when communicating climate change policies. Making communications about climate change more proximal and concrete increases public perceptions which is critical to combat climate change (Spence et al., 2012) .

Other regional factors are also correlated with public support. We observe lower support for climate policies in East Germany, which is in line with previously reported lower concerns for the consequences of climate change in these regions (Kountouris, 2021). Regions with lower economic development, either measured by the regional GDP or the received sum from EU cohesion funds are also associated with lower support. In addition, public support is associated with a region's economic activity when measured as employment in economic sectors. These findings are again stronger if an increase in carbon prices is highlighted and stress the importance of considering regional factors in the communication of supranational climate policies. For example, if broad public support across regions is necessary for the successful implementation of ambitious climate change polices a stronger focus should be put on regions with lower economic development. One potential strategy could be to emphasize the potential benefits for economic development in these specific areas. This could also include measures that combine funding from EU cohesion funds with increased support for the (re-)location of green economy businesses in these regions.

In our study, we present the findings from a German survey experiment that uses a representative sample at the regional level to examine support for more ambitious EU climate change policies. Our design allows us to investigate support for realistic policy changes. However, it is important to note that the results may not be generalizable to other countries or regions, and to policies outside of the EU. Furthermore, our dependent variable is based on self-reported support, which may not accurately reflect actual behaviors and actions taken to support these policies. These limitations call for further research to explore the generalizability of our results. Additionally, the results of our study indicate the potential challenges of communicating increasing carbon prices. Future research should investigate ways to minimize this decline in support while effectively communicating the benefits of carbon pricing.

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Supplementary Information:

Public support for more ambitious climate policies

September 23, 2023

Contents

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1 Materials and Methods

1.1 Experimental instructions

The following paragraphs outline the experimental instructions as shown to participants. Instructions have been translated from German. Screenshots of the original instructions are shown in Section SI1.2.

1.1.1 Pre-treatment: Basic information on climate change and EU climate policies (all respondents)

Information about climate change

Since the beginning of industrialization people have been emitting large amounts of greenhouse gases, for example by burning coal, oil, and gas. An example for greenhouse gases is carbon dioxide (CO2). These greenhouse gases cause a gradual increase of the average global temperature. Since 1900, the earth's temperature has risen around 1°C.

The average European household produces around 15.5 tons of CO2 per year. This indicator is known as carbon footprint or ecological footprint.

Further developments depend in particular on the amount of greenhouse gases being emitted in the future. If the current trend continues, the average global temperature is likely to increase by up to 3°C by the end of this century.

1.1.2 PM treatment: Information provision on EU policy instruments

Information about European Union politics

To curb the consequences of climate change the European Union (EU) plans to reduce the emission of greenhouse gases. Despite the current COVID-19 pandemic, the EU wants to stick to their climate targets.

To reduce greenhouse gases, the EU relies on the following measures:

Expansion of renewable energies

Sustainable climate policy should further expand bioenergy, geothermal energy, hydropower, ocean energy, solar energy, and wind energy.

Increase of energy efficiency

Energy efficiency should be increased in the following areas: i) public and private transport, ii) energy efficient buildings and in iii) industrial processes.

Expansion of emissions trading

Emissions trading requires the presentation of a valid emission allowance for each ton of CO_2 emitted by a group of greenhouse gas producers. The EU determines how many tons of CO_2 may be emitted by this group in total. These emission certificates can be bought via emissions trading. If CO_2 is emitted without a certificate, penalty payments are required. Emitting little CO_2 leads correspondingly to spending little on certificates. **A reduction in the amount of emission certificates usually results in a higher price per ton of CO_2 emitted and thus increases the costs for greenhouse gas producers.**

The EU Emissions Trading System:

- includes 30 European countries and covers around 40% of the greenhouse gas emissions in the EU.
- limits emissions from around 11.000 plants in the energy sector and in the manufac-

turing industry as well as emissions from air carriers.

- **should also consider emissions from housing and transport in the future and can therefore affect the prices of fossil fuels (e.g. heating oil) and fuels (e.g. petrol and diesel).**

Current trend of greenhouse gases

In this figure you can see the development of greenhouse gas emissions (in million tons of CO2) in the EU from 1990 to 2020. The figure shows that by 2020 already 20% less greenhouse gases have been emitted than in 1990.

Now, the EU plans to further reduce greenhouse gas emissions until 2030. In the figure, this year is marked with a red line.

Figure: Development of greenhouse gas emissions

1.1.3 CP treatment: Information provision on EU-ETS

Information about European Union politics

To curb the consequences of climate change the European Union (EU) plans to reduce the emission of greenhouse gases. Despite the current COVID-19 pandemic, the EU wants to stick to their climate targets.

To reduce greenhouse gases, the EU relies on expansion of emissions trading:

<u>Expansion of emissions trading</u>

Emissions trading requires the presentation of a valid emission allowance for each ton of CO2 emitted by a group of greenhouse gas producers. The EU determines how many tons of CO_2 may be emitted by this group in total. These emission certificates can be bought via emissions trading. If CO_2 is emitted without a certificate, penalty payments are required. Emitting little CO_2 leads correspondingly to spending little on certificates. **A reduction in the amount of emission certificates usually results in a higher price per ton of CO_2 emitted and thus increases the costs for greenhouse gas producers.**

The EU Emissions Trading System:

- includes 30 European countries and covers around 40% of the greenhouse gas emissions in the EU.
- limits emissions from around 11.000 plants in the energy sector and in the manufacturing industry as well as emissions from air carriers.
- **should also consider emissions from housing and transport in the future and can therefore affect the prices of fossil fuels (e.g. heating oil) and fuels (e.g. petrol and diesel).**

Development of the CO_2 price

This figure shows the price per ton of CO_2 over the last 10 years. At the moment the price per ton of CO_2 is around 55 Euro. The figure shows that the price per ton of CO_2 has risen from around 10 Euro to 55 Euro in the last 10 years.

Now, the EU plans to further reduce greenhouse gas emissions until 2030. In the figure, this year is marked with a red line.

Figure: Price per ton of CO_2

1.1.4 PML/CPL treatment: Introduction of first hypothetical scenario

Now we ask about your opinion on EU climate policy.

As a reminder:

- The expansion of [renewable energies, the increase in energy efficiency and the expansion of emissions trading are key measures/the expansion of emissions trading is a key measure] of EU climate policy.
- A reduction in the amount of emission certificates through EU policies usually results in a **higher price per ton of CO2 and in higher costs for greenhouse gas producers.**
- The average European household produces around 15.5 tons of CO2 per year.

Please consider the following hypothetical scenario:

The EU plans to [**reduce greenhouse gases by up to 40%** until 2030 compared to 1990/keep the **price per ton of CO2** in emissions trading (including housing and transport) **constant at 55 Euro** until 2030] (see figure). Assume that besides the industry, households are also influenced by the measures.

Other countries outside the EU (e.g. China, USA) are pursuing climate targets to reduce emissions as well.

Figure: Reduction of greenhouse gas emissions by 40% until 2030/ CO2 price of 55 Euro until 2030

1.1.5 PMH/CPH(80/105/130 treatment): Introduction of second hypothetical scenario

Now we ask about your opinion on a <u>changed</u> EU climate policy.

As a reminder:

- The expansion of [renewable energies, the increase in energy efficiency and the expansion of emissions trading are key measures/the expansion of emissions trading is a key measure] of EU climate policy.
- A reduction in the amount of emission certificates through EU policies usually results in a **higher price per ton of CO2 and in higher costs for greenhouse gas producers.**
- The average European household produces around 15.5 tons of CO2 per year.

Please consider the following hypothetical scenario:

With the European 'Green Deal', the EU wants to create a more ambitious climate target. Therefore, the EU plans to [**reduce greenhouse gas emissions** in 2030 **by up to 55%** instead of 40% compared to 1990/increase the **price per ton of CO2** in emissions trading (including housing and transport) **up to (80/105/130) Euro** instead of 55 Euro until 2030] (see figure). Assume that besides the industry, households are also influenced by the measures.

Other countries outside the EU (e.g. China, USA) are pursuing climate targets to reduce emissions as well.

Figure: Reduction of greenhouse gas emissions by 55% until 2030/ CO2 price of 80/105/130 Euro until 2030

1.1.6 Control Group PM/CP: Introduction of second hypothetical scenario

Now we ask about your opinion on EU climate policy again.

You get to see the same information again. This is for verification of the data quality and helps to better understand your answers. It is not an error.

As a reminder:

- The expansion of [renewable energies, the increase in energy efficiency and the expansion of emissions trading are key measures/the expansion of emissions trading is a key measure] of EU climate policy.
- A reduction in the amount of emission certificates through EU policies usually results in a **higher price per ton of CO2 and in higher costs for greenhouse gas producers.**
- The average European household produces around 15.5 tons of CO2 per year.

Please consider the following hypothetical scenario:

The EU plans to [**reduce greenhouse gases by up to 40%** until 2030 compared to 1990/keep the **price per ton of CO2** in emissions trading (including housing and transport) **constant at 55 Euro** until 2030] (see figure). Assume that besides the industry, households are also influenced by the measures.

Other countries outside the EU (e.g. China, USA) are pursuing climate targets to reduce emissions as well.

Figure: Reduction of greenhouse gas emissions until 2030/Development of CO2 price until 2030

Examples for figures

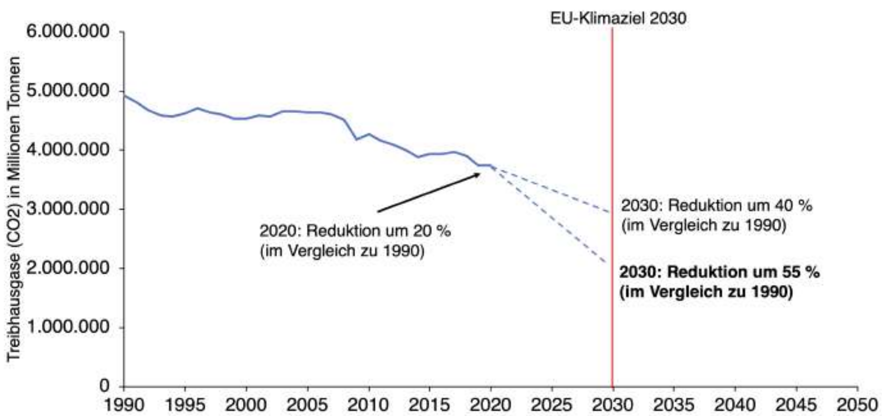


Figure for PMH

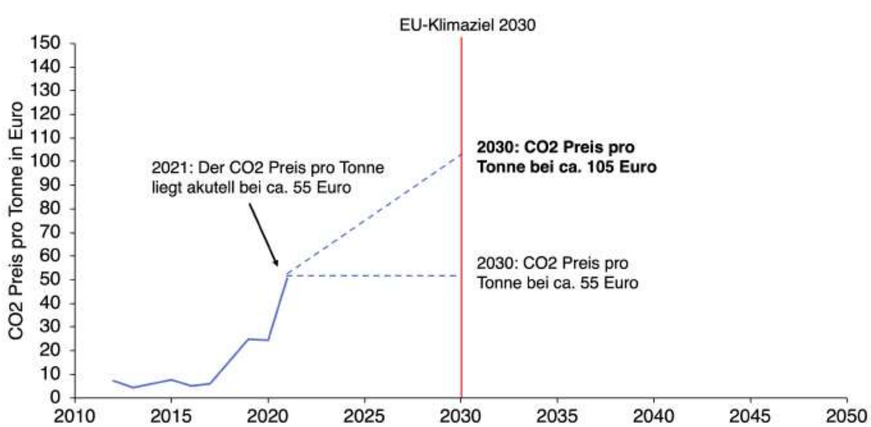


Figure for CPH105 (80/130 would be displayed accordingly)

1.2 Survey Screenshots (CPL/CPH130) treatment in German language

Screen 1

Nun folgen einige einführende Informationen zum Klimawandel und der Klimapolitik der Europäischen Union.

Bevor Sie im Folgenden zu Ihrer Meinung befragt werden, bitten wir Sie, die folgenden Informationen über den Klimawandel und die Klimapolitik der Europäischen Union aufmerksam durchzulesen.

→

Screen2

Informationen zum Klimawandel

Seit dem Beginn der Industrialisierung stoßen Menschen beispielsweise durch das Verbrennen von Kohle, Öl und Gas große Mengen von Treibhausgasen aus. Ein Beispiel für Treibhausgase ist Kohlendioxid (CO_2). Diese Treibhausgase bewirken, dass die durchschnittliche Erdtemperatur allmählich ansteigt. Seit 1900 ist die Erdtemperatur im Durchschnitt um etwa 1°C gestiegen.

Der durchschnittliche Haushalt in Europa produziert ca. 15,5 Tonnen CO_2 pro Jahr. Dieser Indikator wird auch als CO_2-Fußabdruck oder ökologischer Fußabdruck bezeichnet.

Die weitere Entwicklung hängt insbesondere davon ab, ob in Zukunft wenig oder viel Treibhausgase ausgestoßen werden. Wenn der derzeitige Trend anhält, steigt die durchschnittliche Erdtemperatur bis Ende dieses Jahrhunderts wahrscheinlich um bis zu 3°C an.

→

Screen 3

Informationen zur Politik der Europäischen Union

Um die Folgen des Klimawandels einzudämmen, plant die Europäische Union (EU) den Ausstoß von Treibhausgasen zu senken. Trotz der aktuellen Corona-Pandemie will die EU an ihren Klimazielen festhalten.

Zur Reduktion von Treibhausgasen setzt die EU auf den Ausbau des Emissionshandels:

Ausbau des Emissionshandels

Beim Emissionshandel muss eine Gruppe von Treibhausgasproduzenten für jede ausgestoßene Tonne an CO_2 eine gültige Emissionsberechtigung vorlegen. Die EU legt fest, wie viele Tonnen CO_2 von dieser Gruppe insgesamt ausgestoßen werden dürfen. Diese Emissionsberechtigungen können im Emissionshandel gekauft werden. Wird ohne Berechtigung CO_2 emittiert, sind Strafzahlungen fällig. Wer wenig CO_2 emittiert, muss entsprechend wenig für Berechtigungen ausgeben. **Eine Verringerung der Menge an Emissionsberechtigungen führt in der Regel zu einem höheren Preis pro ausgestoßener Tonne CO_2 und erhöht damit die Kosten für Treibhausgasproduzenten.**

Das EU-Emissionshandelssystem:

- umfasst 30 europäische Länder und deckt ca. 40% der Treibhausgasemissionen in der EU ab.
- begrenzt die Emissionen von rund 11.000 Anlagen im Stromsektor und in der verarbeitenden Industrie sowie die Emissionen von Luftfahrtunternehmen.
- **soll in Zukunft auch Emissionen aus Wohnen und Verkehr berücksichtigen und kann somit die Preise von fossilen Brennstoffen (z.B. Heizöl) und Kraftstoffen (z.B. Benzin und Diesel) beeinflussen.**

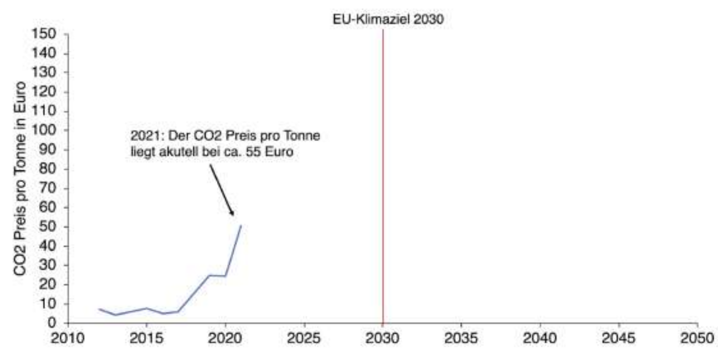
→

Screen 4

Entwicklung des CO_2 Preises

In dieser Abbildung ist der Preis pro Tonne CO_2 der letzten 10 Jahre zu sehen. Im Augenblick liegt der Preis pro Tonne CO_2 bei ca. 55 Euro. Aus der Abbildung wird ersichtlich, dass der Preis pro Tonne CO_2 in den letzten 10 Jahren von ca. 10 Euro auf 55 Euro gestiegen ist.

Die EU plant, nun den Ausstoß von Treibhausgasen bis in das Jahr 2030 weiter zu verringern. In der Abbildung ist dieses Jahr mit einer roten Linie gekennzeichnet.



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Screen 5

Nun fragen wir Sie nach Ihrer Meinung zur EU Klimapolitik.

Zur Erinnerung:

- Der Ausbau des Emissionshandels ist eine zentrale Maßnahme der EU Klimapolitik.
- Eine Verringerung von Emissionsberechtigungen durch die EU-Politik führt in der Regel zu einem **höheren Preis pro Tonne CO_2 und zu höheren Kosten für Treibhausgasproduzenten.**
- Der durchschnittliche Haushalt in Europa produziert ca. 15,5 Tonnen CO_2 pro Jahr.

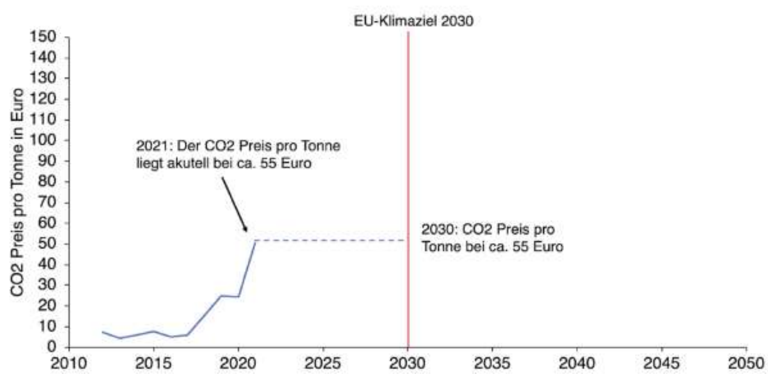
→

Screen 6

Bitte nehmen Sie folgendes hypothetisches Szenario an:

Die EU plant im Emissionshandel (inklusive Wohnen und Verkehr) den **Preis pro Tonne CO_2 konstant bei 55 Euro** bis in das Jahr 2030 zu halten (siehe Abbildung). Nehmen Sie an, dass neben der Industrie auch die Haushalte durch diesen Preis beeinflusst werden.

Andere Länder außerhalb der EU (z.B. China, USA) verfolgen ebenfalls Klimaziele zur Reduktion von Emissionen.



→

Screen 7

Nun fragen wir Sie nach Ihrer Meinung zu einer veränderten EU Klimapolitik.

Zur Erinnerung:

- Der Ausbau des Emissionshandels ist eine zentrale Maßnahme der EU Klimapolitik.
- Eine Verringerung von Emissionsberechtigungen durch die EU-Politik führt in der Regel zu einem **höheren Preis pro Tonne CO_2 und zu höheren Kosten für Treibhausgasproduzenten.**
- Der durchschnittliche Haushalt in Europa produziert ca. 15,5 Tonnen CO_2 pro Jahr.

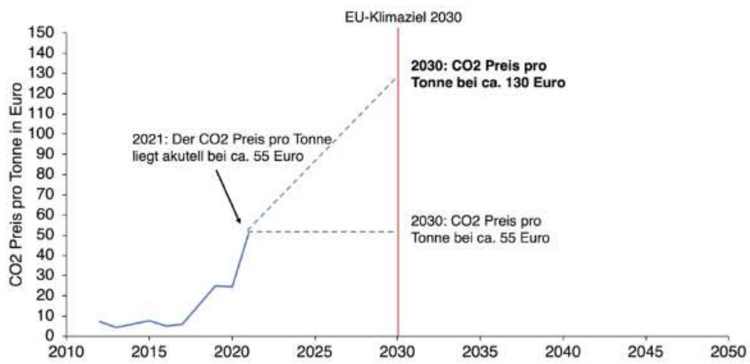
→

Screen 8

Bitte nehmen Sie folgendes hypothetisches Szenario an:

Mit dem europäischen „Green Deal" will die EU das Klimaziel ambitionierter gestalten. Das heißt, die EU plant im Emissionshandel (inklusive Wohnen und Verkehr), anstatt 55 Euro pro Tonne CO_2, den **Preis pro Tonne CO_2 auf 130 Euro** bis in das Jahr 2030 zu erhöhen (siehe Abbildung). Nehmen Sie an, dass neben der Industrie auch die Haushalte durch diesen Preis beeinflusst werden.

Andere Länder außerhalb der EU (z.B. China, USA) verfolgen ebenfalls Klimaziele zur Reduktion von Emissionen.



→

1.3 Wording of survey items and construction of summary indices

1.3.1 Socio-demographic characteristics

Female: Dummy variable that is coded as 1 if the respondent stated "female" as their gender and 0 otherwise.

Diverse: Dummy variable that is coded as 1 if the respondent stated "diverse" as their gender and 0 otherwise.

Age (median): Dummy variable that is coded as 1 if the respondent is above median age and 0 otherwise.

Income (median): Dummy variable that is coded as 1 if the respondent earns above median income and 0 otherwise.

Education level (tertiary): Dummy variable that is coded as 1 if the respondent has at least a university degree, meaning any kind of university degree, doctor's degree or habilitation, and 0 otherwise.

1.3.2 Economic preferences

Adopted from the Global Preference Survey (GPS) which was implemented as part of the Gallup World Poll 2012 (Falk et al., 2018).

<u>Survey items</u>

The questions labeled "Willingness to act" are measured on a scale from 0 to 10, where 0 means "completely unwilling to do so" and 10 means "very willing to do so". The questions labeled "Self-assessment" are also measured on a scale from 0 to 10. However, here 0 means "does not describe me at all" and 10 means "describes me perfectly".

Patience:

1. Sequence of five interdependent quantitative questions: "*Suppose you were given the choice between receiving a payment today or a payment in 12 months. We will now present to you five situations. The payment today is the same in each of these situations. The payment in 12 months is different in every situation. For each of these situations we would like to know which you would choose. Please assume there is no inflation, i.e, future prices are the same as today's prices. Please consider the following: Would you rather receive 100 Euro today or x Euro in 12 months?*" The precise sequence of questions was given by a "tree" logic.

2. Willingness to act: "*How willing are you to give up something that is beneficial for you today in order to benefit more from that in the future?*"

Risk:

1. . Similar to self-assessment: "*Please tell me, in general, how willing or unwilling you are to take risks. Please use the following scale from 0 to 10, where 0 means 'completely unwilling to take risks' and a 10 means you are 'very willing to take risks'.*"

2. Sequence of five interdependent quantitative questions: "*Please imagine the following situation. You can choose between a sure payment of a particular amount of money, or a draw, where you would have an equal chance of getting amount x or getting nothing. We will present to you five different situations. What would you prefer: a draw with a 50 percent chance of receiving 300 Euro, and the same 50 percent chance of receiving nothing, or the amount of x as a sure payment?*". The precise sequence of questions was given by a "tree"logic.

Positive Reciprocity:

1. Self-assessment: "*When someone does me a favor I am willing to return it.*"

2. Hypothetical situation: "*Please think about what you would do in the following situation. You are in an area you are not familiar with, and you realize you lost your way. You ask a stranger for directions. The stranger offers to take you to your destination. Helping you costs the stranger about 20 Euro in total. However, the stranger says he or she does not want any money from you. You have six presents with you. The cheapest present costs 5 Euro, the most expensive one costs 30 Euro. Do you give one of the presents to the stranger as a 'thank-you'-gift? If so, which present do you give to the stranger?*" Answer options: No present / The present worth 5 / 10 / 15 / 20 / 25 / 30 Euro.

Negative Reciprocity:

1. Self-assessment: "*If I am treated very unjustly, I will take revenge at the first occasion, even if there is a cost to do so.*"

2. Willingness to act: "*How willing are you to punish someone who treats you unfairly, even if there may be costs for you?*"

3. Willingness to act: "*How willing are you to punish someone who treats others unfairly, even if there may be costs for you?*"

Altruism:

1. Hypothetical situation: "*Imagine the following situation: Today you unexpectedly received 1,000 Euro. How much of this amount would you donate to a good cause?*" Values between 0 and 1000 are allowed.

2. Willingness to act: "*How willing are you to give to good causes without expecting anything in return?*"

Trust:

Self-assessment: "*I assume that people have only the best intentions.*"

Preference measures

After the imputation of missing values (we follow the procedure of Falk et al. Falk et al. (2018)), the following preference measures are constructed by computing the z-scores of each item on the individual level and weighing them using the weights resulting from experimental validation:

Patience	= 0.7115185 × Staircase patience + 0.2884815 × Will. to give up sth. today
Risk	= 0.4729985 × Staircase risk + 0.5270015 × Will. to take risks
Pos. reciprocity	= 0.4847038 × Will. to return favor + 0.5152962 × Size of gift
Neg. reciprocity	= 0.6261938/2 × Will. to punish if oneself treated unfairly + 0.6261938/2 × Will. to punish if other treated unfairly + 0.3738062 × Will. to take revenge
Altruism	= 0.6350048 × Will. to give to good causes + 0.3649952 × Hypoth. donation
Trust	= The survey included only one corresponding item.

1.3.3 Other individual factors

Recent hazards

Financial impact of COVID-19: "*Did you experience any financial losses regarding your salary or otherwise in connection with the COVID-19 pandemic?*" Measured on 5-point scale from 1 to 5 where 1 means "no" and 5 means "very much so".

Impact of recent flood event: "*Have you been or are you directly or indirectly affected by the flood catastrophe that took place in some regions in Germany in July of this year?*" Measured on 5-point scale from 0 to 4 where 0 means "not at all" and 4 means "very much so".

Other factors

Belief in climate change: Standardized sum of the opinion on 12 statements about climate change, each measured on a 4-point scale where 1 means “completely disagree” and 4 means “completely agree”. The higher the score, the more the respondent beliefs in and worries about climate change. The statements are:

1. *“I am concerned about climate change."*
2. *"The consequences of climate change can cause great harm to people in the EU."*
3. *"It is important that the EU climate goal is met."*
4. *"If we act in unison, it is possible to attain the EU climate goal."*
5. *"The actions of a single person have an impact on climate change."*
6. *"Humankind is responsible for climate change."*
7. *"Scientific predictions of climate change are trustworthy."*
8. *"There is a great deal of disagreement among scientists about whether climate change is actually happening."* (Reversely coded)
9. *"I am sure that climate change exists."*
10. *"Climate change is exaggerated in the media."* (Reversely coded)
11. *"Our children should be learning about the causes, effects and potential solutions of global warming in school."*
12. *"There is a link between global warming from greenhouse gas emissions and the more frequent occurrence of extreme weather events such as heavy rainfall."*

Attitudes towards EU policy instruments: Standardized sum of the opinion on four statements about climate policy instruments, each measured on a 4-point scale where 1 means "completely disagree" and 4 means "completely agree". The higher the score, the more the respondent generally supports climate policies. The statements are:

1. *"Funding additional research on renewable energy sources, such as solar or wind energy."*

2. *"Phasing out coal production for energy supply (coal phase-out)."*

3. *"Payment of a CO2 tax by fossil fuel producers which is used to reduce other taxes (e.g. income tax) by the same amount."*

4. *"Tax breaks for people who buy energy efficient vehicles or solar panels."*

Engagement in climate change action: Standardized sum of the opinion on seven potential actions that could be taken to protect the climate, each measured on a 5-point scale where 1 means "definitely would not" and 5 means "already doing this". The potential actions are:

1. *"Publicly display a T-shirt/car sticker/pin/bracelet/sign about climate change."*

2. *"Donate money to an organization concerned with climate change."*

3. *"Volunteer at an organization concerned with climate change."*

4. *"Discuss climate change with an elected official or government member (via letter, email, phone, or in person)."*

5. *"Attend a political rally, speech, or organized protest about climate change."*

6. *"Write a letter to the editor of a newspaper or magazine, or call in to a live radio broadcast to share your opinion on climate change."*

7. *"Share information about climate change on social media."*

Trust in supranational institutions: Standardized sum of the answer to two questions on trust in institutions, i.e. the UN and EU. Both are measured on a 4-point scale where 1 means “completely distrust” and 4 means “completely trust”.

Trust in national institutions: Standardized sum of the answer to three questions on trust in institutions, i.e. the city, state and national government. All three are measured on a 4-point scale where 1 means “completely distrust” and 4 means “completely trust”.

Political ideology (left-right): “*When you think about your own political orientation where would you position yourself?*” Measured on a 10-point scale from 1 to 10 where 1 means “Left” and 10 means “Right”.

1.3.4 Regional correlates

For summary statistics for these variables see Table S2.

<u>East-West Germany</u>

East Germany (former GDR): Dummy variable that is coded as 1 if the respondent lives on the territory of the former GDR and 0 otherwise.

<u>Economic and policy variables</u>

GDP (per capita): Average GDP over the years 2015 to 2019 in purchasing power parity per capita. Source: Eurostat (https://ec.europa.eu/eurostat/de/web/regions/data/database).

Employed in agriculture, fishing and mining (%): Employment in agriculture, forestry and fishing, mining and quarrying, as percentage of total employment in 2017 on NUTS2 level. Source: Quality of Governance (QoG) Institute at the University of Gothenburg and EU Labour force survey (LFS) (https://www.gu.se/en/quality-government/qog-data/data-downloads/eu-regional-dataset).

Employed in manufacturing (%): Employment in manufacturing, as percentage of total employment in 2017 on NUTS2 level. Source: Quality of Governance (QoG) Institute at the University of Gothenburg and EU Labour force survey (LFS) (https://www.gu.se/en/quality-government/qog-data/data-downloads/eu-regional-dataset).

Employed in services (%): Employment in services, as percentage of total employment in 2017 on NUTS2 level. Source: Quality of Governance (QoG) Institute at the University of Gothenburg and EU Labour force survey (LFS) (https://www.gu.se/en/quality-government/qog-data/data-downloads/eu-regional-dataset).

EU structural funds (per capita): Per capita sum of four EU structural funds (Fund for European Aid to the Most Deprived (FEAD), European regional development fund (ERDF), European social fund (ESF), European agricultural fund for rural development (EAFRD)) in EUR for the programming period of 2014 to 2020. Source: European Commission (https://cohesiondata.ec.europa.eu/Other/Historic-EU-payments-regionalised-and-modelled/tc55-7ysv).

<u>Climate change variables</u>

Change in rainfall: Difference in the mean depth of rain water accumulated on a flat, horizontal and impermeable surface per unit area in meters between the periods 1985-1994 and 2005-2014 on NUTS2 level. Source: EU Copernicus Project (https://cds.climate.copernicus.eu/cdsapp!/dataset/energy-derived-reanalysis?tab=overview).

Change in temperature: Difference in the mean ambient air temperature near to the surface, typically at height of 2m, in kelvin between the periods 1985-1994 and 2005-2014 on NUTS2 level. Source: EU Copernicus Project (https://cds.climate.copernicus.eu/cdsapp!/dataset/sis-energy-derived-reanalysis?tab=overview).

The climate variables for the NUTS2 region of Bremen were missing in the Cpernicus data. We replaced the values for Bremen with observations from the dataset collected by (Kalkuhl and Wenz, 2020).

2 Supplementary Analysis (robustness checks)

This section describes the details of the supplementary analysis. The main purpose of the supplementary analysis is to test against potential confounders that may affect our results.

2.1 Randomization check

Table S1 shows summary statistics across treatments and for the total sample. The last column includes p-values from a Pearson's χ^2 test for the null hypothesis that socio-demograhpic characteristics are different across treatments. The null hypothesis can be rejected at conventional levels of statistical significance ($p < 0.05$).

2.2 Non-parametric tests

The results of Figure 2**Public support for climate policies across treatments.** The figure shows the distribution of public support in the PML (PMH) treatment and CPL (CPH) treatment. Support is measured on a 5-point scale (completely oppose to completely support with neutral option). Each panel indicates the average support as vertical lines (dashed). Observations: PML = 7,268; PMH = 7,259; CPL = 7,171; CPH = 7,198.figure.caption.3 are robust to using non-parametric tests instead of t-tests. The mean support in PML is 3.82 and 3.58 in PMH (mean difference (MD) = -0.25, Wilcoxon matched-pairs signed-rank test, z = -35,24, P < 0.0001, n = 7208). The mean support in CPL is 3.21 and 2.65 in CPH (MD = -0.56, Wilcoxon matched-pairs signed-rank test, z = -35,24, P < 0.0001, n = 7208).

Turning to the comparison between treatments, public support is lower for the policy instrument of carbon pricing compared to general emission reduction goals as proposed by a mix of different policy measures (CPL vs. PML: MD = -0.61, Wilcoxon rank-sum test, z = -33,20, P < 0.0001, n = 14,439; CPH vs. PMH: MD = -0.92, Wilcoxon rank-sum test, z = -42,64, P < 0.0001, n = 14,457).

Findings of Figure 3**The relationship of carbon prices and support for ambitious climate policies.** The figure shows the change in the mean support rate between CPL (zero line) and CPH80, CPH105, and CPH130, respectively. Support is measured on a 5-point scale ranging from 1 to 5 (completely oppose to completely support with neutral option). Error bars indicate 95% confidence intervals. Observations: CPH80 = 2,374; CPH105 = 2,369; CPH130 = 2,355.figure.caption.4 reporting the mean support rates between CPL (55 Euro) and CPH (different levels of carbon prices) are also robust to using non-parametric tests. The mean support rate decreases from -0.43 in the 80 Euro condition to -0.57 in the 105 Euro condition and - 0.68 in the 130 Euro condition (CPH80 vs. CPH105: MD = 0.14, Wilcoxon rank-sum test, z = 4.00, $P < 0.0001$, n = 4,743; CPH80 vs. CPH130: MD = 0.25, Wilcoxon rank-sum test, z = 6.78, $P < 0.0001$, n = 4,729; CPH105 vs. CPH130: MD = 0.11, Wilcoxon rank-sum test, z = 2.65, $P < 0.01$, n = 4,724).

2.3 Change in public support

For the OLS regressions displayed in Table S5, the statistical model underlying the results is

$$\Delta Support_i = \alpha + \gamma' x_i + \epsilon_i \tag{1}$$

where $\Delta Support_{irt}$ is the change in support for climate policies by individual i and x_{irt} is a vector of socio-demographic characteristics (gender (two dummy variables representing female and diverse with male being the omitted category), age (indicator variable for above-median values), income (indicator variable for above-median values), education level (indicator variable for tertiary education)). The regressions are run separately for the PM and the CP treatment. The constant describes the difference in pubic support between PML (CPL) and PMH (CPH). It is statistically significant, negative and stable in size for all six regressions presented, i.e. for both the CP and the PM treatment and when including all or some of the socio-demographic variables or none of them.

2.4 Control group

To rule out potential effects related to repetition, we provided the same information of PML and CPL twice to a control group. The results presented in Figure S1 and Table S6 replicate the procedure of Table S5 and are thus likewise based on equation 1. The results show that the constant is close to zero and statistically not significant across all specifications (including socio-demographic variables).

2.5 Policy mix of instruments vs. carbon price

Table S7 shows the results of OLS regressions based on the following statistical model:

$$Support_i = \alpha + \beta * PM + \gamma' x_i + \epsilon_i \tag{2}$$

In this case $Support_i$ is either support for the low (L) or the high (H) emission reduction goals. PM is a dummy variable taking on the value of 1 if the respondent is in the PM treatment, and 0 if she is in the CP treatment. Thus, The coefficient β indicates the difference between PM and CP. The coefficient is always statistically significant and positive and has similar effect sizes across specifications.

2.6 Change in public support for different levels of carbon prices

For the results shown in Table S8 we run the following statistical model employing OLS once again:

$$\Delta SupportCP_i = \alpha + \beta_1 * CPH105 + \beta_2 * CPH130 + \gamma' x_i + \epsilon_i \tag{3}$$

where $\Delta SupportCP_i$ is the change in public support for climate policies in the CP treatment. $CPH105$ ($CPH130$) is a dummy variable taking on the value 1 if the respondent is in the 105 (130) Euro condition, and 0 otherwise. The constant represents the reference category, i.e., the 80 Euro condition. The constant is negative and statistically significant, i.e., support decreases when the carbon price increases from 55 Euro to 80 Euro. The coefficients of $CPH105$ ($CPH130$) are negative and statistically significant across all specifications. Thus, they are significantly different to the 80 Euro condition. The Wald test at the bottom of Table S8 indicates that $CPH105$ and $CPH130$ are statistically different.

2.7 Robustness checks of individual factors

Table S9 provides the main results of individual factors that are associated with more ambitious climate policies (PMH and CPH). More specifically, the p-values in Figure 4**Association between individual factors and support for ambitious climate policies.** The figure plots coefficients based on an OLS regression. The dependent variable is measured on a 5 point-scale ranging from 1 to 5 (completely oppose to completely support with neutral option). The coefficients of the explanatory variables are standardized (z-score). They can therefore be interpreted as the difference in support rate associated with a one standard deviation change in the explanatory variable. Specifications include the following control variables: gender, age, income , education level, subnational region fixed effects, east-west dummy, and survey week fixed effects. The specification for the CPH treatment controls for different levels of carbon prices. Error bars indicate 95% confidence intervals obtained from robust standard errors. Stars indicate statistically significant differences between coefficients of PMH and CPH (*** denotes $p<0.001$, ** denotes $p<0.01$, * denotes $p<0.05$). Observations: PMH = 7,046; CPH = 7,003.figure.caption.5 are taken from the OLS regressions in columns (3) and (7). As can be seen from the other columns of Table S9, these results are robust to excluding i) regional fixed effects (columns (1) and (5)), ii) the change in support as a control variable (columns (2) and (6)) and iii) clustering by respondent instead of NUTS2 region (columns (4) and (8)).

Table S10 applies the same specification as S9 but with low cliate policies as dependend variable (PML and CPL) in the main results of individual factors that are associated with more ambitious climate policies (PMH and CPH). The resutls show similar patterns particularly for belief in climate change, attitudes towards EU policy instruments, own pro-environmental behavior and trust in supranational institutions.

As can be seen in Tables S11 and S12, significance and direction remain essentially the same when we apply Ologit instead of OLS.

2.8 Robustness checks of regional factors

Figure S6 shows the same results as Figure 5**Regional correlates of public support for ambitious climate policies.** The figure plots coefficients based on an OLS regression. The dependent variable is measured on a 5 point-scale ranging from 1 to 5 (completely oppose to completely support with neutral option). Each coefficient has been estimated separately using standardized explanatory variables (z-score). They can therefore be interpreted as the difference in support rate associated with a one standard deviation change in the explanatory variable. Specifications include the following control variables: gender, age, income, education level, and survey week fixed effects. Specifications for the CPH treatment control for different levels of carbon prices. Observations in each regression: PMH = 7,256 (6,533 where 5 regions are missing), CPH = 7,192 (6,479 where 5 regions are missing). figure.caption.6 in the main text, however, employing Ologit for the regressions instead of OLS. As can be seen, the results remain essentially the same.

We also present adjusted p-values to address concerns related to multiple testing. To do so, we applied the Stata module mhtreg developed by Andreas Steinmayr (link: https://ideas.repec.org/c/b
It is based on the procedure introduced by List et al. (2019) , which considers information about the dependence structure between hypotheses and thus yields greater statistical power

to reject truly false null hypotheses compared to Bonferroni or Holm procedures. Adjusted p-values are calculated using a bootstrap with 10,000 replications. Our statistical inference does not change. Most correlations remain statistically significant at the significance levels of 95 % and 90 %, respectively.

Tables

Table S1: Descriptive statistics and randomization check

	CP80		**CP105**		**CP130**		**PM**		**Total sample**		
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	p-value
Age	49.56	(15.21)	49.01	(15.66)	49.56	(15.51)	49.61	(15.09)	49.49	(15.27)	0.133
Female	0.50	(0.50)	0.50	(0.50)	0.50	(0.50)	0.51	(0.50)	0.50	(0.50)	0.566
Diverse	0.00	(0.05)	0.00	(0.04)	0.00	(0.04)	0.00	(0.04)	0.00	(0.04)	0.536
Income	2990.76	(1717.55)	2970.35	(1705.79)	2981.45	(1709.66)	2959.65	(1706.39)	2970.17	(1708.55)	0.939
Working	0.61	(0.49)	0.61	(0.49)	0.61	(0.49)	0.62	(0.48)	0.62	(0.49)	0.352
Unemployed	0.06	(0.25)	0.07	(0.25)	0.07	(0.25)	0.07	(0.25)	0.07	(0.25)	0.971
Student	0.05	(0.22)	0.06	(0.24)	0.06	(0.24)	0.05	(0.22)	0.05	(0.23)	0.075
Pensioner	0.25	(0.43)	0.25	(0.43)	0.23	(0.42)	0.24	(0.42)	0.24	(0.43)	0.580
Observations	2374		2369		2355		7208		14306		

Notes: "Age" is the age of the respondent ranging from 18 to 90 years. "Female" is coded as 1 if the respondent was female and 0 otherwise. "Diverse" is coded as 1 if the respondent was of non-binary gender and 0 otherwise. "Income" is coded as the mean income of the income section (22 sections from "less than 200 Euro" to "7,500 Euro and more") the respondent selected to be in. "Working" is coded as 1 if the respondent stated to either work full-time or part-time or to be self-employed and 0 otherwise. "Unemployed" is coded as 1 if the respondent is unemployed and either looking for a job or not and 0 otherwise. "Student" is coded as 1 if the respondent stated to either be a student at a university or school or doing an apprenticeship and 0 otherwise. "Pensioner" is coded as 1 if the respondent is a pensioner and 0 otherwise. The last column shows p-values for the null hypothesis of perfect randomization (χ^2-tests).

Table S2: Descriptive statistics for individual and regional factors

	Mean	SD	Min	Max	N
Age	49.4	(15.3)	18	90	14789
Female	0.51	(0.50)	0	1	14789
Diverse	0.0020	(0.044)	0	1	14789
Income	2950.5	(1710.3)	150	8750	14789
Tertiary education	0.29	(0.46)	0	1	14777
Belief in climate change	3.07	(0.65)	1	4	14789
Attitudes towards EU policy instruments	3.01	(0.70)	1	4	14789
Engagement in climate change action	2.22	(0.87)	1	5	14789
Trust in supranational institutions	2.38	(0.75)	1	4	14789
Trust in national institutions	2.48	(0.70)	1	4	14789
Political ideology (left-right)	5.16	(1.76)	1	10	14789
Finanical impact of COVID-19	2.05	(1.20)	1	5	14789
Impact of recent flood event	0.33	(0.84)	0	4	14789
East Germany (former GDR)	0.15	(0.36)	0	1	14789
GDP (per capita)	36149.5	(8083.8)	24740	58500	14789
Employed in agriculture, fishing and mining (%)	1.56	(0.81)	0.50	3.80	13326
Employed in manufacturing (%)	18.9	(5.80)	7.50	29.7	14789
Employed in services (%)	71.4	(6.20)	59.9	86	14789
EU cohesion funds (per capita)	18.3	(10.7)	10.1	50.2	14789
Change in rainfall	0.0015	(0.024)	-0.057	0.061	14789
Change in temperature	0.74	(0.100)	0.48	0.89	14789

Notes: Economic Preferences are excluded from this table as they are standardized by construction. The scores listed here (from "Belief in climate change" to "Trust in national institutions") are constructed as the average answer to the respective questions they consist of for better readability. In the analysis they are employed as the standardized sum of the respective questions they consist of. More information on the construction and scale of the variables can be found in section 1.3.

Table S3: Cronbach's alpha for scores

	Cronbach's alpha
Belief in climate change	0.929
Attitudes towards EU policy instruments	0.806
Engagement in climate change action	0.898
Trust in supranational institutions	0.820
Trust in national institutions	0.849

Notes: Economic Preferences are excluded from this table as they are standardized by construction. The scores listed here are constructed as the standardized sum of the respective questions they consist of. More information on the construction and scale of the scores can be found in section 1.3.

Table S4: Pre-post differences in public support for climate policies across treatments including CP 80/105/130

	Observations	Policy Scenario L mean support		Policy Scenario H mean support		Difference		T-test p-value	T-test Confidence Intervall	
Control group (overall)	206	3.539	(1.137)	3.519	(1.167)	0.019	(0.407)	0.494	-0.036	0.075
Control group (PM)	109	3.817	(1.029)	3.789	(1.089)	0.028	(0.253)	0.259	-0.020	0.075
Control group (CP)	97	3.227	(1.177)	3.216	(1.183)	0.010	(0.530)	0.849	-0.095	0.116
Treatment group (overall)	14306	3.521	(1.137)	3.119	(1.305)	0.401	(1.136)	0.000	0.383	0.420
Treatment group (PM)	7208	3.825	(1.050)	3.579	(1.173)	0.246	(0.792)	0.000	0.228	0.264
Treatment group (CP)	7098	3.212	(1.139)	2.653	(1.266)	0.559	(1.384)	0.000	0.527	0.591
Treatment group (CP80)	2374	3.179	(1.146)	2.746	(1.256)	0.433	(1.297)	0.000	0.381	0.485
Treatment group (CP105)	2369	3.213	(1.122)	2.645	(1.271)	0.568	(1.416)	0.000	0.511	0.625
Treatment group (CP130)	2355	3.244	(1.148)	2.568	(1.265)	0.676	(1.424)	0.000	0.618	0.734

Notes: Standard deviations are in parentheses. P-values are based on one sample two-sided t-tests. 95 % Confidence Interval.

Table S5: OLS regression analyses: Change in public support

	(1) Δ PM	(2) Δ PM	(3) Δ PM	(4) Δ CP	(5) Δ CP	(6) Δ CP
Constant	-0.246***	-0.239***	-0.189***	-0.559***	-0.370***	-0.472***
	(0.009)	(0.018)	(0.023)	(0.016)	(0.032)	(0.039)
Female		0.021	0.014		-0.143***	-0.124***
		(0.019)	(0.019)		(0.033)	(0.033)
Diverse		0.084	0.046		0.524	0.578
		(0.199)	(0.197)		(0.395)	(0.394)
Age (median)		-0.034^{+}	-0.043*		-0.232***	-0.210***
		(0.019)	(0.019)		(0.033)	(0.033)
Income (median)			-0.073***			0.006
			(0.019)			(0.033)
Tertiary education			-0.009			0.266***
			(0.021)			(0.039)
R^2	0.000	0.001	0.003	0.000	0.009	0.016
Observations	7208	7208	7205	7098	7098	7092

Notes: Clustered standard errors in parentheses (NUTS2). *** p<0.001, ** p<0.01, * p<0.05. Columns 1 to 3 show results for change in support in the PM treatment as dependent variable, columns 4 to 6 for change in support in the CP treatment. The dependent variables are generated as the difference between support under a scenario of low emission reductions goals and under a scenario of high emission reductions goals. Support is measured on a 5 point-scale ranging from 1 to 5 (completely oppose to completely support with neutral option).

Table S6: OLS regression analyses: Control group

	(1) Δ PM	(2) Δ PM	(3) Δ PM	(4) Δ CP	(5) Δ CP	(6) Δ CP
Constant	-0.028	-0.000	-0.001	-0.010	-0.163	-0.154
	(0.024)	(0.035)	(0.048)	(0.054)	(0.122)	(0.134)
Female		-0.038	-0.036		0.166	0.117
		(0.049)	(0.050)		(0.113)	(0.111)
Diverse						
Age (median)		-0.025	-0.028		0.129	0.146
		(0.044)	(0.042)		(0.111)	(0.117)
Income (median)			-0.032			0.123
			(0.053)			(0.116)
Tertiary education			0.050			-0.212
			(0.055)			(0.133)
R^2	0.000	0.006	0.016	0.000	0.034	0.070
Observations	109	109	109	97	97	97

Notes: Clustered standard errors in parentheses (NUTS2). *** p<0.001, ** p<0.01, * p<0.05. Columns 1 to 3 show results for change in support in the PM treatment as dependent variable, columns 4 to 6 for change in support in the CP treatment. This table shows the results for the control group, i.e. the group that was informed about the low emission reduction goals scenario two times in a row without any new information. The dependent variables are generated as the difference between support under this scenario shown for the first time and the second time. Support is measured on a 5 point-scale ranging from 1 to 5 (completely oppose to completely support with neutral option).

Table S7: OLS regression analyses: Policy mix of instruments vs. carbon price

	(1) Low	(2) Low	(3) Low	(4) High	(5) High	(6) High
PM	0.610***	0.609***	0.608***	0.925***	0.925***	0.923***
	(0.018)	(0.018)	(0.018)	(0.020)	(0.020)	(0.020)
Female		0.111***	0.130***		0.048*	0.074***
		(0.018)	(0.019)		(0.021)	(0.021)
Diverse		-0.168	-0.126		0.107	0.154
		(0.213)	(0.212)		(0.227)	(0.229)
Age (median)		-0.000	0.020		-0.135***	-0.107***
		(0.018)	(0.019)		(0.020)	(0.021)
Income (median)			0.069***			0.032
			(0.019)			(0.021)
Tertiary education			0.159***			0.286***
			(0.021)			(0.023)
Constant	3.212***	3.157***	3.052***	2.650***	2.696***	2.566***
	(0.013)	(0.020)	(0.024)	(0.015)	(0.022)	(0.026)
R^2	0.072	0.075	0.080	0.126	0.129	0.140
Observations	14439	14439	14429	14457	14457	14448

Notes: Clustered standard errors in parentheses (NUTS2). *** p<0.001, ** p<0.01, * p<0.05. Columns 1 to 3 show results for support under a scenario of low emission reductions goals as dependent variable, columns 4 to 6 for support under a scenario of high emission reductions goals as dependent variable. Support is measured on a 5 point-scale ranging from 1 to 5 (completely oppose to completely support with neutral option). "PM" is coded as 1 if the respondent was part of the PM treatment and 0 in case of the CP treatment.

Table S8: OLS regression analyses: Change in support for different levels of carbon prices

	(1) Δ CP	(2) Δ CP	(3) Δ CP
Constant	-0.433***	-0.241***	-0.345***
	(0.027)	(0.038)	(0.044)
CPH105	-0.135***	-0.139***	-0.135***
	(0.039)	(0.039)	(0.039)
CPH130	-0.243***	-0.244***	-0.242***
	(0.040)	(0.039)	(0.039)
Female		-0.143***	-0.125***
		(0.033)	(0.033)
Diverse		0.495	0.550
		(0.397)	(0.396)
Age (median)		-0.234***	-0.212***
		(0.033)	(0.033)
Income (median)			0.006
			(0.033)
Tertiary education			0.264***
			(0.039)
Test of equality of coefficients			
CPH105 vs. CPH130	0.108	0.106	0.107
	(0.041)	(0.041)	(0.041)
	[0.009]	[0.010]	[0.009]
R^2	0.005	0.014	0.022
Observations	7098	7098	7092

Notes: Clustered standard errors in parentheses (NUTS2). *** p<0.001, ** p<0.01, * p<0.05. For the test of equality of coefficients, the p-values of the Wald test are included in square brackets. The table shows results for change in support in the CP treatment as dependent variable. The dependent variable is generated as the difference between support under a scenario of low emission reductions goals and under a scenario of high emission reductions goals. Support is measured on a 5 point-scale ranging from 1 to 5 (completely oppose to completely support with neutral option). "CPH105" and "CPH130" are treatment indicators. The omitted category is the treatment "CPH80".

Table S9: OLS regression analyses: Individual factors of ambitious climate policies (PMH and CPH).

	(1) PM	(2) PM	(3) PM	(4) PM	(5) CP	(6) CP	(7) CP	(8) CP
Patience	0.008	0.009	0.003	0.003	0.056***	0.057***	0.057***	0.057***
	(0.012)	(0.012)	(0.010)	(0.009)	(0.013)	(0.013)	(0.012)	(0.013)
Risk	0.017	0.018	-0.002	-0.002	0.053***	0.052***	0.049***	0.049***
	(0.012)	(0.013)	(0.012)	(0.010)	(0.013)	(0.013)	(0.012)	(0.014)
Positive reciprocity	-0.047***	-0.047***	-0.030**	-0.030**	-0.047***	-0.046**	-0.045**	-0.045**
	(0.013)	(0.013)	(0.010)	(0.010)	(0.013)	(0.013)	(0.013)	(0.014)
Negative reciprocity	0.032*	0.033*	0.032**	0.032***	0.051***	0.049***	0.047***	0.047***
	(0.013)	(0.012)	(0.010)	(0.009)	(0.012)	(0.013)	(0.012)	(0.014)
Trust	0.045***	0.046***	0.037***	0.037***	0.061***	0.064***	0.059***	0.059***
	(0.012)	(0.012)	(0.010)	(0.010)	(0.016)	(0.016)	(0.015)	(0.014)
Altruism	0.046***	0.047***	0.022*	0.022*	0.007	0.008	0.001	0.001
	(0.013)	(0.013)	(0.010)	(0.010)	(0.015)	(0.015)	(0.015)	(0.015)
Finanical impact of COVID-19	-0.022*	-0.025*	-0.003	-0.003	-0.046***	-0.047***	-0.046***	-0.046***
	(0.010)	(0.011)	(0.008)	(0.009)	(0.012)	(0.012)	(0.013)	(0.014)
Impact of recent flood event	0.030**	0.030*	0.028**	0.028**	0.088***	0.094***	0.085***	0.085***
	(0.011)	(0.012)	(0.009)	(0.010)	(0.018)	(0.018)	(0.018)	(0.015)
Belief in climate change	0.450***	0.451***	0.185***	0.185***	0.249***	0.247***	0.223***	0.223***
	(0.018)	(0.018)	(0.017)	(0.018)	(0.018)	(0.019)	(0.019)	(0.021)
Attitudes towards EU policy instruments	0.219***	0.221***	0.100***	0.100***	0.159***	0.162***	0.140***	0.140***
	(0.020)	(0.021)	(0.018)	(0.016)	(0.018)	(0.019)	(0.018)	(0.021)
Engagement in climate change action	0.147***	0.146***	0.122***	0.122***	0.218***	0.216***	0.208***	0.208***
	(0.011)	(0.011)	(0.009)	(0.011)	(0.018)	(0.018)	(0.018)	(0.017)
Trust in supranational institutions	0.129***	0.131***	0.075***	0.075***	0.128***	0.124***	0.108***	0.108***
	(0.018)	(0.018)	(0.016)	(0.015)	(0.019)	(0.020)	(0.020)	(0.020)
Trust in national institutions	-0.035*	-0.037*	-0.070***	-0.070***	0.038*	0.037*	0.012	0.012
	(0.014)	(0.014)	(0.013)	(0.014)	(0.017)	(0.016)	(0.015)	(0.020)
Political ideology (left-right)	-0.043***	-0.041***	-0.026**	-0.026**	-0.052**	-0.054**	-0.059***	-0.059***
	(0.008)	(0.008)	(0.009)	(0.010)	(0.016)	(0.016)	(0.015)	(0.014)
Carbon Price: 105 Euro					-0.119***	-0.129***	-0.131***	-0.131***
					(0.022)	(0.022)	(0.022)	(0.030)
Carbon Price: 130 Euro					-0.182***	-0.189***	-0.199***	-0.199***
					(0.032)	(0.031)	(0.029)	(0.031)
Constant	3.618***	3.579***	1.260***	1.260***	2.704***	2.604***	2.078***	2.078***
	(0.039)	(0.039)	(0.081)	(0.083)	(0.065)	(0.065)	(0.083)	(0.094)
Socio-economic controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Survey week FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nuts2 FE	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Baseline	No	No	Yes	Yes	No	No	Yes	Yes
Clustered SE	NUTS2	NUTS2	NUTS2	ID	NUTS2	NUTS2	NUTS2	ID
R^2	0.481	0.487	0.628	0.628	0.321	0.328	0.346	0.346
Observations	7046	7007	7007	7007	7003	6919	6919	6919

Notes: Clustered standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05. Columns 1 to 4 show results for support under a scenario of high emission reductions goals in the PM treatment as dependent variable, columns 5 to 8 for support under a scenario of high emission reductions goals in the CP treatment as dependent variable. Support is measured on a 5 point-scale ranging from 1 to 5 (completely oppose to completely support with neutral option). The coefficients of the explanatory variables are standardized (z-score). They can therefore be interpreted as the difference in support rate associated with a one standard deviation change in the explanatory variable. Depending on the column, specifications include the following control variables: gender, age (median), income (median), education level (tertiary), survey week fixed effects, subnational region fixed effects, and the support for the low goal scenarios. For the CP treatment indicators in columns 5 to 8, the carbon price of 80 Euro is the omitted category.

Table S10: OLS regression analyses: Individual factors of low climate policies (PML and CPL).

	(1) PM	(2) PM	(3) CP	(4) CP
Patience	0.011	0.011	0.002	0.003
	(0.010)	(0.010)	(0.013)	(0.013)
Risk	0.035**	0.035**	0.015	0.013
	(0.012)	(0.012)	(0.013)	(0.013)
Positive reciprocity	-0.029**	-0.029*	-0.006	-0.006
	(0.011)	(0.011)	(0.014)	(0.014)
Negative reciprocity	0.002	0.003	0.013	0.012
	(0.009)	(0.009)	(0.016)	(0.016)
Trust	0.016	0.016	0.028+	0.027+
	(0.010)	(0.010)	(0.014)	(0.014)
Altruism	0.043***	0.044***	0.040*	0.042**
	(0.012)	(0.012)	(0.015)	(0.015)
Finanical impact of COVID-19	-0.035***	-0.036***	-0.004	-0.003
	(0.007)	(0.007)	(0.012)	(0.012)
Impact of recent flood event	0.002	0.003	0.050***	0.051***
	(0.009)	(0.010)	(0.013)	(0.013)
Belief in climate change	0.446***	0.445***	0.149***	0.146***
	(0.017)	(0.017)	(0.023)	(0.024)
Attitudes towards EU policy instruments	0.202***	0.201***	0.136***	0.138***
	(0.017)	(0.017)	(0.018)	(0.018)
Engagement in climate change action	0.038***	0.038***	0.050*	0.051*
	(0.010)	(0.010)	(0.021)	(0.021)
Trust in supranational institutions	0.090***	0.092***	0.102***	0.100***
	(0.015)	(0.015)	(0.021)	(0.021)
Trust in national institutions	0.057***	0.055***	0.144***	0.145***
	(0.015)	(0.015)	(0.018)	(0.019)
Political ideology (left-right)	-0.025*	-0.025*	0.030+	0.031+
	(0.010)	(0.011)	(0.018)	(0.017)
Carbon Price: 105 Euro			0.013	0.010
			(0.031)	(0.031)
Carbon Price: 130 Euro			0.062*	0.061*
			(0.029)	(0.028)
Constant	3.863***	3.867***	3.153***	3.179***
	(0.032)	(0.031)	(0.064)	(0.067)
Socio-economic controls	Yes	Yes	Yes	Yes
Survey week FE	Yes	Yes	Yes	Yes
Nuts2 FE	No	Yes	No	Yes
R^2	0.506	0.509	0.178	0.182
Observations	7048	7048	6978	6978

Notes: Clustered standard errors in parentheses (NUTS2). *** p<0.001, ** p<0.01, * p<0.05. Columns 1 and 2 show results for support under a scenario of low emission reductions goals in the PM treatment as dependent variable, columns 3 and 4 for support under a scenario of low emission reductions goals in the CP treatment as dependent variable. Support is measured on a 5 point-scale ranging from 1 to 5 (completely oppose to completely support with neutral option). The coefficients of the explanatory variables are standardized (z-score). They can therefore be interpreted as the difference in support rate associated with a one standard deviation change in the explanatory variable. Specifications include the following control variables: gender, age (median), income (median), education level (tertiary), survey week fixed effects and subnational region fixed effects. For the CP treatment indicators in columns 3 and 4, the carbon price of 80 Euro is the omitted category.

Table S11: Ologit regression analyses: Individual factors of ambitious climate policies (PMH and CPH).

	(1) PM	(2) PM	(3) CP	(4) CP
End: Support of EU climate policies (1-5)				
Patience	0.012	0.013	0.093***	0.091***
	(0.026)	(0.026)	(0.024)	(0.023)
Risk	-0.017	-0.015	0.097***	0.096***
	(0.031)	(0.031)	(0.025)	(0.025)
Positive reciprocity	-0.061*	-0.061*	-0.111***	-0.112***
	(0.027)	(0.027)	(0.025)	(0.025)
Negative reciprocity	0.076**	0.074**	0.107***	0.107***
	(0.028)	(0.029)	(0.022)	(0.023)
Trust	0.087***	0.089***	0.117***	0.120***
	(0.025)	(0.025)	(0.028)	(0.029)
Altruism	0.068**	0.071**	0.011	0.011
	(0.026)	(0.027)	(0.028)	(0.029)
Finanical impact of COVID-19	-0.010	-0.012	-0.078***	-0.082***
	(0.021)	(0.021)	(0.023)	(0.024)
Impact of recent flood event	0.075**	0.076**	0.154***	0.164***
	(0.025)	(0.027)	(0.031)	(0.033)
Belief in climate change	0.471***	0.477***	0.459***	0.467***
	(0.043)	(0.044)	(0.039)	(0.040)
Attitudes towards EU policy instruments	0.239***	0.243***	0.247***	0.245***
	(0.050)	(0.050)	(0.037)	(0.037)
Engagement in climate change action	0.335***	0.335***	0.361***	0.363***
	(0.025)	(0.024)	(0.034)	(0.035)
Trust in supranational institutions	0.188***	0.190***	0.197***	0.196***
	(0.040)	(0.041)	(0.034)	(0.035)
Trust in national institutions	-0.211***	-0.215***	0.051+	0.046
	(0.037)	(0.036)	(0.029)	(0.030)
Political ideology (left-right)	-0.083***	-0.079***	-0.114***	-0.115***
	(0.021)	(0.022)	(0.025)	(0.026)
Carbon Price: 105 Euro			-0.232***	-0.242***
			(0.039)	(0.040)
Carbon Price: 130 Euro			-0.361***	-0.375***
			(0.056)	(0.054)
Socio-economic controls	Yes	Yes	Yes	Yes
Survey week FE	Yes	Yes	Yes	Yes
Nuts2 FE	No	Yes	No	Yes
Baseline	Yes	Yes	Yes	Yes
R^2	0.323	0.325	0.143	0.146
Observations	7007	7007	6919	6919

Notes: Clustered standard errors in parentheses (NUTS2). *** p<0.001, ** p<0.01, * p<0.05. Columns 1 to 3 show results for support under a scenario of high emission reductions goals in the PM treatment as dependent variable, columns 4 to 6 for support under a scenario of high emission reductions goals in the CP treatment as dependent variable. Support is measured on a 5 point-scale ranging from 1 to 5 (completely oppose to completely support with neutral option). The coefficients of the explanatory variables are standardized (z-score). They can therefore be interpreted as the difference in support rate associated with a one standard deviation change in the explanatory variable. Depending on the column, specifications include the following control variables: gender, age (median), income (median), education level (tertiary), survey week fixed effects, subnational region fixed effects and the support for the low goal scenarios. For the CP treatment indicators in columns 4 to 6, the carbon price of 80 Euro is the omitted category.

Table S 12: Ologit regression analyses: Individual factors of low climate policies (PML and CPL).

	(1) PM	(2) PM	(3) CP	(4) CP
Base: Support of EU climate policies (1-5)				
Patience	0.054*	0.053*	-0.001	0.002
	(0.025)	(0.024)	(0.024)	(0.024)
Risk	0.093**	0.093**	0.038	0.038
	(0.028)	(0.029)	(0.023)	(0.024)
Positive reciprocity	-0.036	-0.034	-0.005	-0.007
	(0.027)	(0.028)	(0.025)	(0.025)
Negative reciprocity	-0.001	0.001	0.025	0.022
	(0.024)	(0.023)	(0.026)	(0.026)
Trust	0.045	0.041	0.060*	0.058*
	(0.028)	(0.028)	(0.025)	(0.025)
Altruism	0.106***	0.110***	0.081**	0.083**
	(0.029)	(0.029)	(0.028)	(0.028)
Finanical impact of COVID-19	-0.098***	-0.101***	-0.017	-0.015
	(0.021)	(0.022)	(0.021)	(0.021)
Impact of recent flood event	-0.005	-0.000	0.101***	0.105***
	(0.022)	(0.024)	(0.023)	(0.023)
Belief in climate change	1.119***	1.118***	0.288***	0.285***
	(0.046)	(0.046)	(0.043)	(0.044)
Attitudes towards EU policy instruments	0.537***	0.538***	0.258***	0.264***
	(0.038)	(0.038)	(0.032)	(0.032)
Engagement in climate change action	0.174***	0.173***	0.122***	0.121***
	(0.030)	(0.030)	(0.037)	(0.037)
Trust in supranational institutions	0.246***	0.252***	0.179***	0.176***
	(0.038)	(0.038)	(0.037)	(0.037)
Trust in national institutions	0.096**	0.090*	0.251***	0.254***
	(0.037)	(0.037)	(0.034)	(0.034)
Political ideology (left-right)	-0.067*	-0.068*	0.059+	0.061+
	(0.027)	(0.028)	(0.032)	(0.031)
Carbon Price: 105 Euro			0.022	0.015
			(0.057)	(0.057)
Carbon Price: 130 Euro			0.112*	0.111*
			(0.055)	(0.054)
Socio-economic controls	Yes	Yes	Yes	Yes
Survey week FE	Yes	Yes	Yes	Yes
Nuts2 FE	No	Yes	No	Yes
R^2	0.249	0.251	0.070	0.071
Observations	7048	7048	6978	6978

Notes: Clustered standard errors in parentheses (NUTS2). *** p<0.001, ** p<0.01, * p<0.05. Columns 1 and 2 show results for support under a scenario of low emission reductions goals in the PM treatment as dependent variable, columns 3 and 4 for support under a scenario of low emission reductions goals in the CP treatment as dependent variable. Support is measured on a 5 point-scale ranging from 1 to 5 (completely oppose to completely support with neutral option). The coefficients of the explanatory variables are standardized (z-score). They can therefore be interpreted as the difference in support rate associated with a one standard deviation change in the explanatory variable. Specifications include the following control variables: gender, age (median), income (median), education level (tertiary), survey week fixed effects and subnational region fixed effects. For the CP treatment indicators in columns 3 and 4, the carbon price of 80 Euro is the omitted category.

Table S13: OLS regression analyses: Individual factors of ambitious climate policies (Pooled).

	(1) PM	(2) CP	(3) Pooled	(4) Pooled
Support(baseline)	0.601*** (0.021)	0.166*** (0.017)	0.321*** (0.013)	0.312*** (0.013)
Patience	-0.004 (0.011)	0.041** (0.014)	0.017+ (0.010)	0.049*** (0.014)
Risk	0.018 (0.012)	0.053*** (0.013)	0.040*** (0.009)	0.057*** (0.014)
Positive reciprocity	-0.031** (0.010)	-0.046*** (0.013)	-0.043*** (0.008)	-0.047*** (0.013)
Negative reciprocity	0.030** (0.010)	0.049*** (0.012)	0.039*** (0.007)	0.051*** (0.013)
Trust	0.035*** (0.010)	0.058*** (0.015)	0.046*** (0.009)	0.054*** (0.014)
Altruism	0.018+ (0.010)	-0.003 (0.016)	0.009 (0.008)	-0.011 (0.016)
Belief in climate change	0.185*** (0.016)	0.214*** (0.018)	0.250*** (0.014)	0.192*** (0.018)
Attitudes towards EU policy instruments	0.099*** (0.018)	0.136*** (0.018)	0.134*** (0.013)	0.113*** (0.018)
Engagement in climate change action	0.120*** (0.009)	0.212*** (0.018)	0.169*** (0.011)	0.207*** (0.019)
Trust in supranational institutions	0.075*** (0.015)	0.111*** (0.019)	0.098*** (0.013)	0.101*** (0.020)
Trust in national institutions	-0.070*** (0.013)	0.016 (0.016)	-0.028* (0.011)	-0.004 (0.016)
Political ideology (left-right)	-0.028** (0.008)	-0.059*** (0.015)	-0.050*** (0.009)	-0.064*** (0.014)
Finanical impact of COVID-19	-0.003 (0.008)	-0.045*** (0.012)	-0.029*** (0.007)	-0.046*** (0.013)
Impact of recent flood event	0.029** (0.009)	0.083*** (0.016)	0.053*** (0.011)	0.078*** (0.016)
Policy Mix			0.731*** (0.016)	0.735*** (0.016)
Policy Mix x Patience				-0.063** (0.018)
Policy Mix x Risk				-0.032 (0.019)
Policy Mix x Positive reciprocity				0.008 (0.017)
Policy Mix x Negative reciprocity				-0.023 (0.019)
Policy Mix x Trust				-0.014 (0.016)
Policy Mix x Altruism				0.042+ (0.023)
Policy Mix x Belief in climate change				0.123*** (0.022)
Policy Mix x Attitudes towards EU policy instruments				0.042 (0.027)
Policy Mix x Engagement in climate change action				-0.077*** (0.020)
Policy Mix x Trust in supranational institutions				-0.003 (0.025)
Policy Mix x Trust in national institutions				-0.049* (0.020)
Policy Mix x Political ideology (left-right)				0.028* (0.013)
Policy Mix x Finanical impact of COVID-19				0.035* (0.016)
Policy Mix x Impact of recent flood event				-0.051** (0.014)
Constant	1.287*** (0.085)	2.067*** (0.088)	1.599*** (0.063)	1.630*** (0.063)
Socio-economic controls	Yes	Yes	Yes	Yes
Survey week FE	Yes	Yes	Yes	Yes
Nuts2 FE	Yes	Yes	Yes	Yes
Baseline	Yes	Yes	Yes	Yes
R^2	0.626	0.336	0.512	0.516
Observations	7007	6919	13926	13926

Notes: Clustered standard errors in parentheses (NUTS2). *** p<0.001, ** p<0.01, * p<0.05. Support is measured on a 5 point-scale ranging from 1 to 5 (completely oppose to completely support with neutral option). The coefficients of the explanatory variables are standardized (z-score). They can therefore be interpreted as the difference in support rate associated with a one standard deviation change in the explanatory variable. Specifications include the following control variables: gender, age (median), income (median), education level (tertiary), survey week fixed effects, subnational region fixed effects and the support for the low goal scenarios. For the CP treatment indicators in columns 3 and 4, the carbon price of 80 Euro is the omitted category.

Table S14: OLS vs. multilevel regression analyses: Individual factors of ambitious climate policies.

	(1) PM (OLS)	(2) PM (Mix)	(3) CP (OLS)	(4) CP (Mix)
main				
Patience	0.003	0.003	0.057***	0.057***
	(0.010)	(0.009)	(0.012)	(0.013)
Risk	-0.002	-0.002	0.049***	0.049***
	(0.012)	(0.010)	(0.012)	(0.014)
Positive reciprocity	-0.030**	-0.030**	-0.045**	-0.045***
	(0.010)	(0.010)	(0.013)	(0.014)
Negative reciprocity	0.032**	0.032***	0.047***	0.047***
	(0.010)	(0.009)	(0.012)	(0.014)
Trust	0.037***	0.037***	0.059***	0.059***
	(0.010)	(0.009)	(0.015)	(0.014)
Altruism	0.022*	0.022*	0.001	0.001
	(0.010)	(0.010)	(0.015)	(0.015)
Finanical impact of COVID-19	-0.003	-0.003	-0.046***	-0.046***
	(0.008)	(0.009)	(0.013)	(0.013)
Impact of recent flood event	0.028**	0.028**	0.085***	0.085***
	(0.009)	(0.010)	(0.018)	(0.014)
Belief in climate change	0.185***	0.185***	0.223***	0.223***
	(0.017)	(0.016)	(0.019)	(0.021)
Attitudes towards EU policy instruments	0.100***	0.100***	0.140***	0.140***
	(0.018)	(0.014)	(0.018)	(0.020)
Engagement in climate change action	0.122***	0.122***	0.208***	0.208***
	(0.009)	(0.011)	(0.018)	(0.016)
Trust in supranational institutions	0.075***	0.075***	0.108***	0.108***
	(0.016)	(0.014)	(0.020)	(0.020)
Trust in national institutions	-0.070***	-0.070***	0.012	0.012
	(0.013)	(0.013)	(0.015)	(0.019)
Political ideology (left-right)	-0.026**	-0.026**	-0.059***	-0.059***
	(0.009)	(0.009)	(0.015)	(0.014)
Carbon Price: 105 Euro			-0.131***	-0.131***
			(0.022)	(0.030)
Carbon Price: 130 Euro			-0.199***	-0.199***
			(0.029)	(0.030)
Constant	1.260***	1.260***	2.078***	2.078***
	(0.081)	(0.071)	(0.083)	(0.093)
lns1_1_1				
Constant		-23.999***		-23.321
		(4.215)		(532.812)
lnsig_e				
Constant		-0.333***		0.027**
		(0.008)		(0.009)
Socio-economic controls	Yes	Yes	Yes	Yes
Survey week FE	Yes	Yes	Yes	Yes
Nuts2 FE	Yes	Yes	Yes	Yes
Baseline	Yes	Yes	Yes	Yes
R^2	0.628		0.346	
Observations	7007	7007	6919	6919

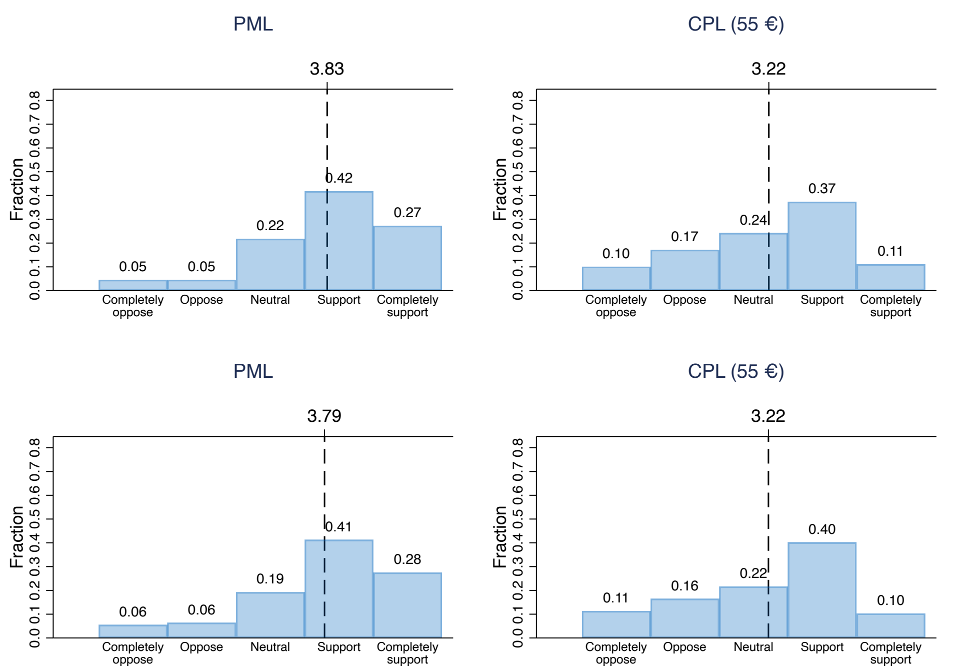
Notes: Clustered standard errors in parentheses (NUTS2). *** p<0.001, ** p<0.01, * p<0.05. Support is measured on a 5 point-scale ranging from 1 to 5 (completely oppose to completely support with neutral option). The coefficients of the explanatory variables are standardized (z-score). They can therefore be interpreted as the difference in support rate associated with a one standard deviation change in the explanatory variable. Specifications include the following control variables: gender, age (median), income (median), education level (tertiary), survey week fixed effects, subnational region fixed effects and the support for the low goal scenarios. For the CP treatment indicators in columns 3 and 4, the carbon price of 80 Euro is the omitted category.

Table S15: Correlation table for economic preferences and other individual factors.

Patience	
Belief in climate change	0.227
Support of EU policy instruments	0.230
Engagement in climate change action	0.158
Trust in national institutions	0.163
Trust in supranational institutions	0.176
Political ideology (left-right)	-0.051
Finanical impact of COVID-19	-0.078
Impact of recent flood event	-0.010
Risk	
Belief in climate change	0.252
Support of EU policy instruments	0.262
Engagement in climate change action	0.280
Trust in national institutions	0.183
Trust in supranational institutions	0.201
Political ideology (left-right)	-0.049
Finanical impact of COVID-19	0.005
Impact of recent flood event	0.065
Positive reciprocity	
Belief in climate change	0.230
Support of EU policy instruments	0.225
Engagement in climate change action	0.076
Trust in national institutions	0.088
Trust in supranational institutions	0.085
Political ideology (left-right)	-0.100
Finanical impact of COVID-19	-0.075
Impact of recent flood event	-0.122
Negative reciprocity	
Belief in climate change	-0.107
Support of EU policy instruments	-0.062
Engagement in climate change action	0.176
Trust in national institutions	-0.032
Trust in supranational institutions	-0.017
Political ideology (left-right)	0.148
Finanical impact of COVID-19	0.115
Impact of recent flood event	0.176
Altruism	
Belief in climate change	0.334
Support of EU policy instruments	0.303
Engagement in climate change action	0.360
Trust in national institutions	0.206
Trust in supranational institutions	0.226
Political ideology (left-right)	-0.156
Finanical impact of COVID-19	-0.023
Impact of recent flood event	0.041
Trust	
Belief in climate change	0.184
Support of EU policy instruments	0.189
Engagement in climate change action	0.242
Trust in national institutions	0.320
Trust in supranational institutions	0.301
Political ideology (left-right)	-0.090
Finanical impact of COVID-19	-0.032
Impact of recent flood event	0.073

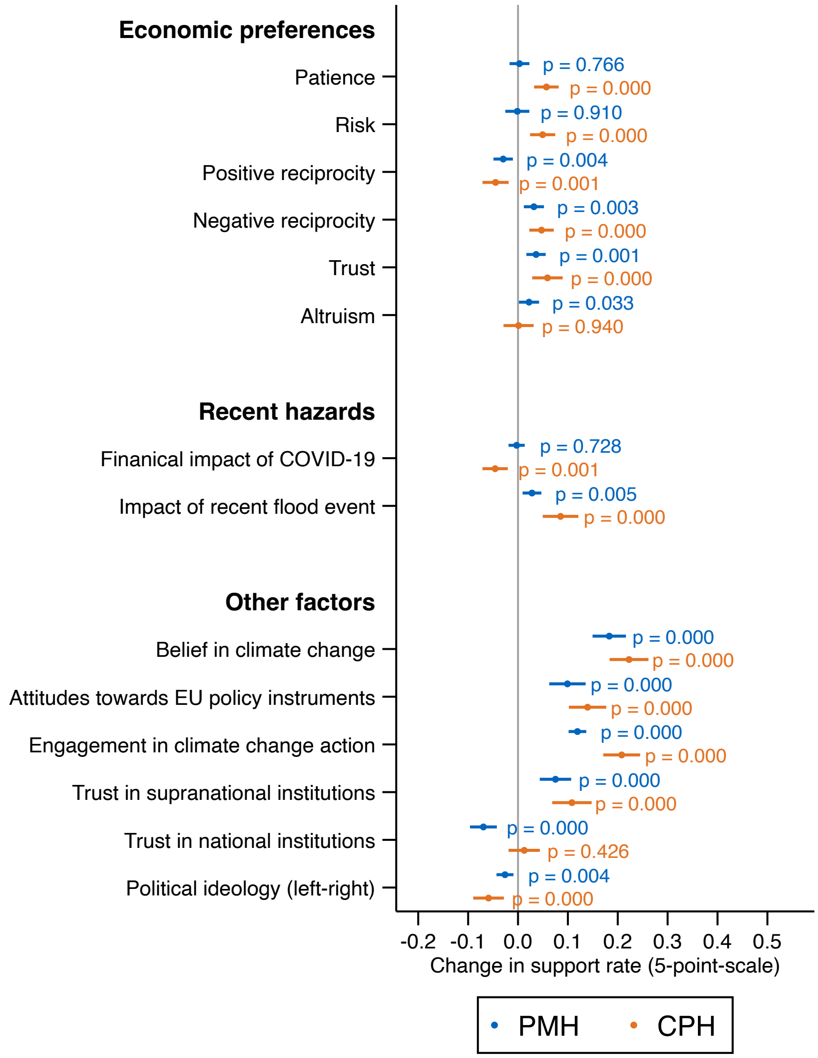
Additional Figures

Figure S1: Treatment effects



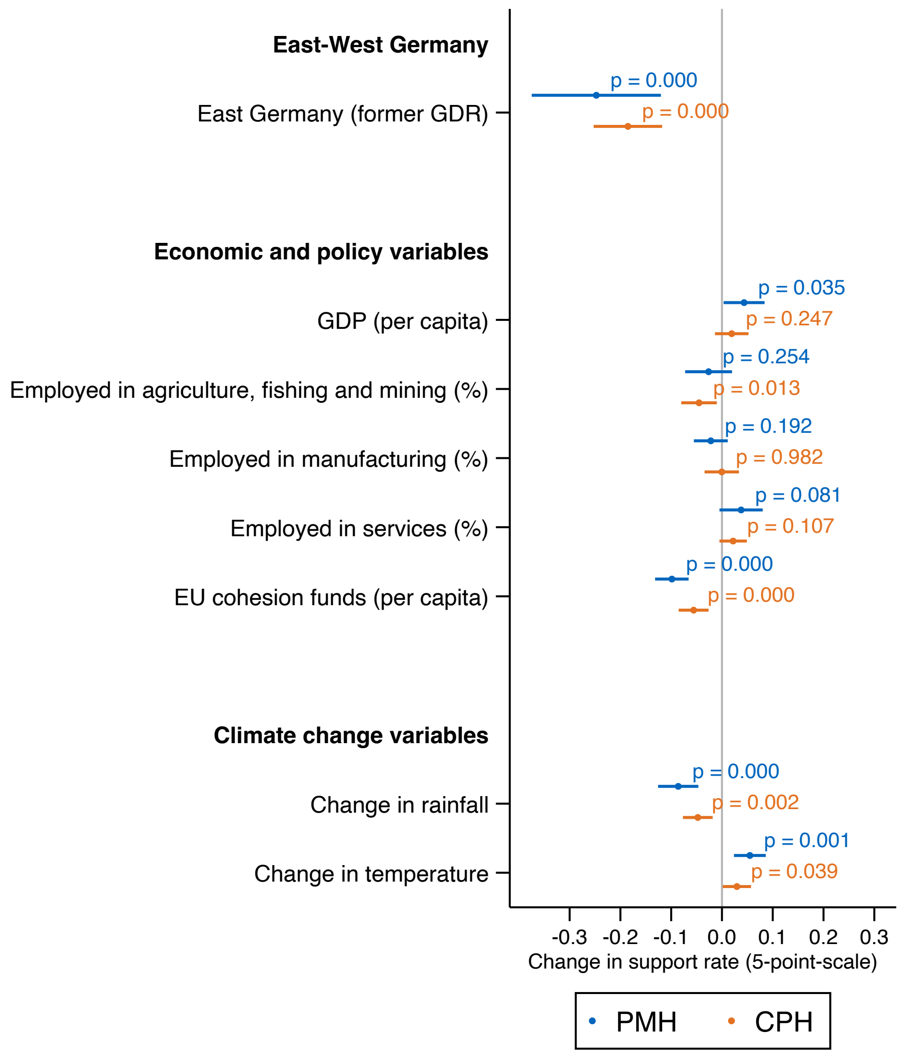
Notes: The figure shows the distribution of public support in the PML and CPL treatment for the control group, i.e. the group that was informed about the low emission reduction goals scenario two times in a row without any new information. The upper two graphs show support for the first time this scenario was shown and the lower two graphs for the second time. Support is measured on a 5-point scale (completely oppose to completely support with neutral option). Each panel indicates the average support as vertical lines (dashed). Observations: upper graphs: PML = 110 ; CPL = 99; lower graphs: PML = 109 ; CPL = 97

Figure S2: Association between individual factors and support for ambitious climate policies: Standardization with 2 SD



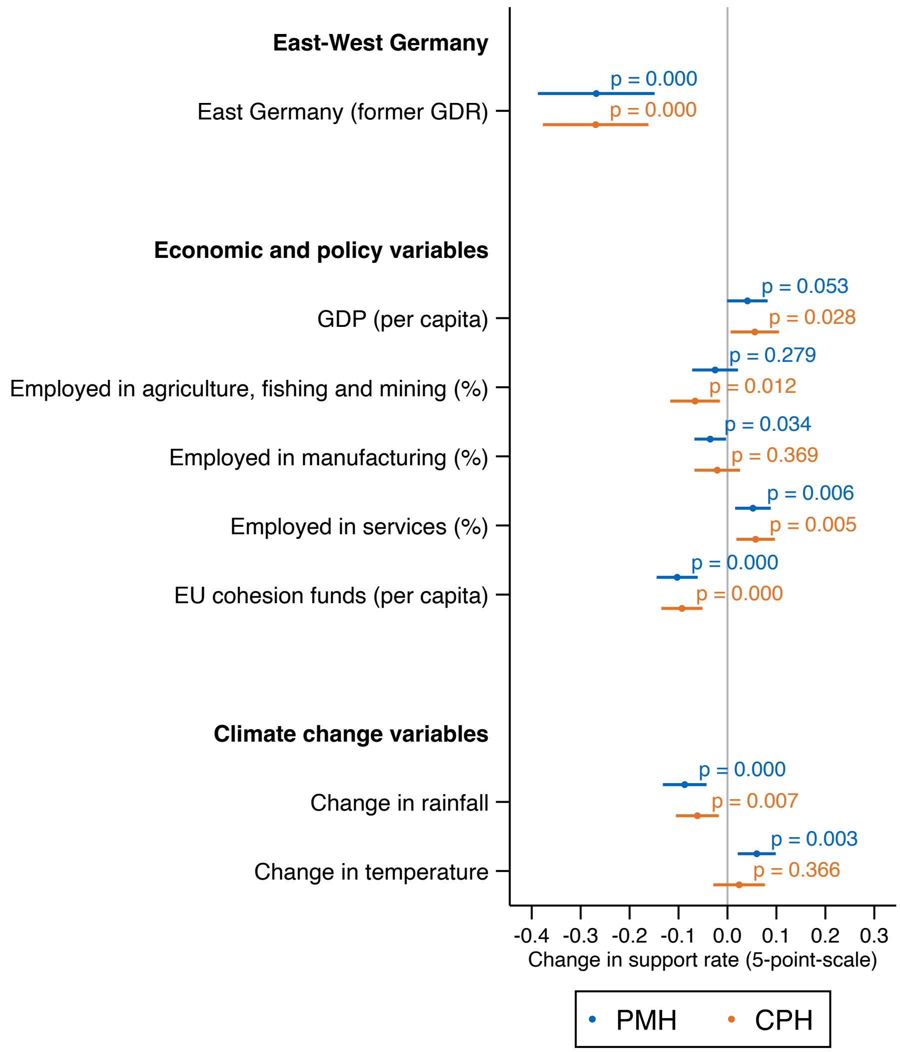
Notes: The figure plots coefficients based on an OLS regression.The specification is based on equaiton (2). The dependent variable is individual support for climate policies (5 point scale). The coefficients of the explanatory variables are standardized (z-score). They can therefore be interpreted as the difference in support rate associated with a one standard deviation change in the explanatory variable. Error bars indicate 95% confidence intervals obtained from standard errors that are clustered at the sub-national level. Stars indicate statistically significant differences between coefficients of PMH and CPH (*** denotes p<0.001, ** denotes p<0.01, * denotes p<0.05). Observations: PMH = 7,007; CPH = 6,919.

Figure S3: Regional correlates of public support for low climate policies



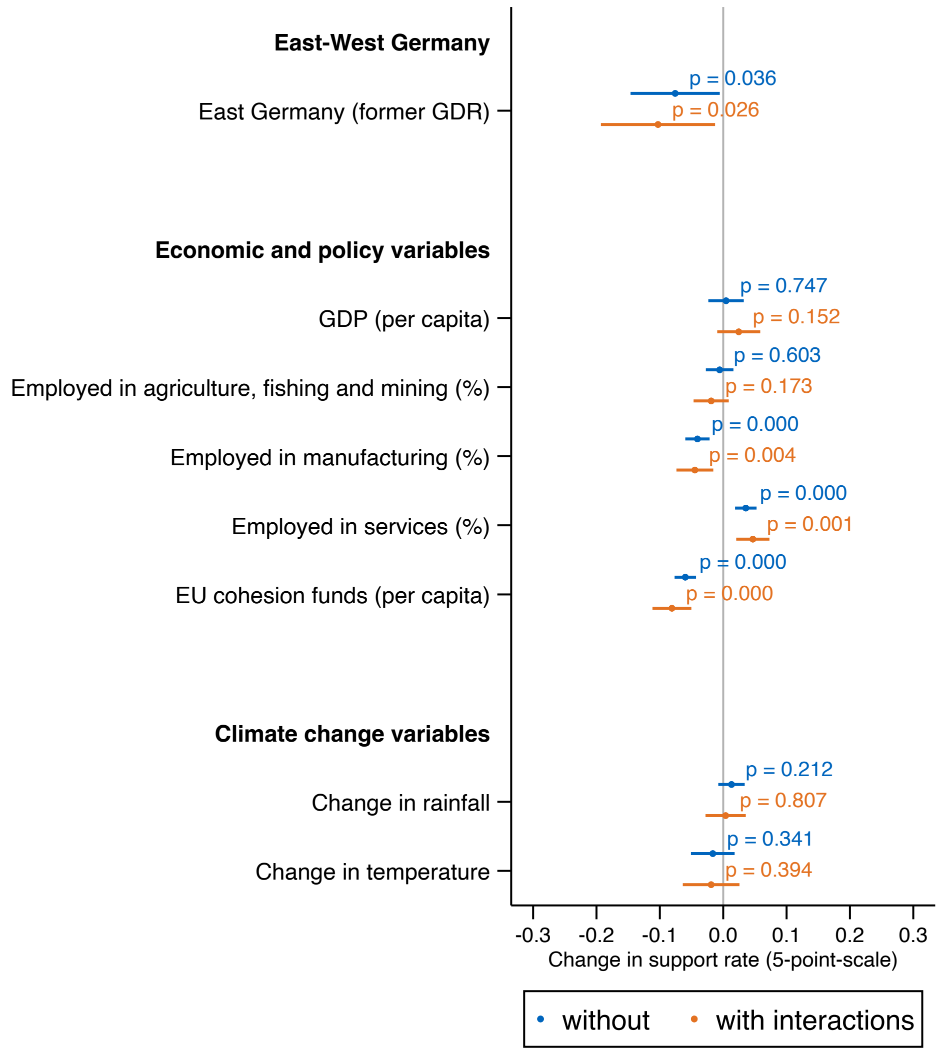
Notes: The figure plots coefficients based on an OLS regression. The dependent variable is measured on a 5 point-scale ranging from 1 to 5 (completely oppose to completely support with neutral option). Each coefficient has been estimated separately using standardized explanatory variables (z-score). They can therefore be interpreted as the difference in support rate associated with a one standard deviation change in the explanatory variable. Specifications include the following control variables: gender, age (median), income (median), education level (tertiary). Specifications for the CPH treatment control for different levels of carbon prices. Error bars indicate 95% confidence intervals obtained from standard errors clustered at the regional level (38 subnational regions). The percentage of total employment in agriculture, fishing and mining is missing in five regions. Observations in each regression: PML = 7,205 (6,489 where 5 regions are missing), CPL = 7,092 (6,389 where 5 regions are missing).

Figure S4: Regional correlates of public support for ambitious climate policies: excluded pre-beliefs



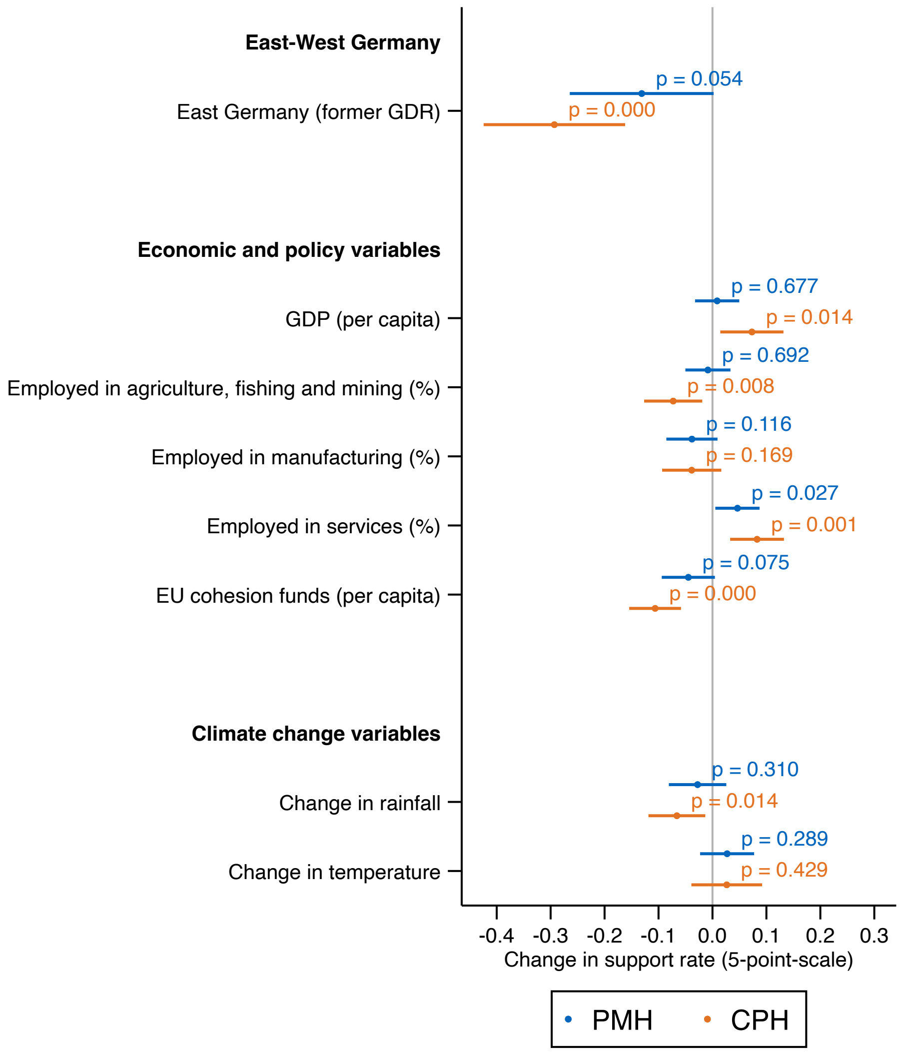
Notes: The figure plots coefficients based on an OLS regression. The dependent variable is measured on a 5 point-scale ranging from 1 to 5 (completely oppose to completely support with neutral option). Each coefficient has been estimated separately using standardized explanatory variables (z-score). They can therefore be interpreted as the difference in support rate associated with a one standard deviation change in the explanatory variable. Specifications include the following control variables: gender, age (median), income (median), education level (tertiary). Specifications for the CPH treatment control for different levels of carbon prices. Error bars indicate 95% confidence intervals obtained from standard errors clustered at the regional level (38 subnational regions). The percentage of total employment in agriculture, fishing and mining is missing in five regions. Observations in each regression: PMH = 7,205 (6,489 where 5 regions are missing), CPH = 7,092 (6,389 where 5 regions are missing).

Figure S5: Regional correlates of public support for ambitious climate policies: pooled OLS



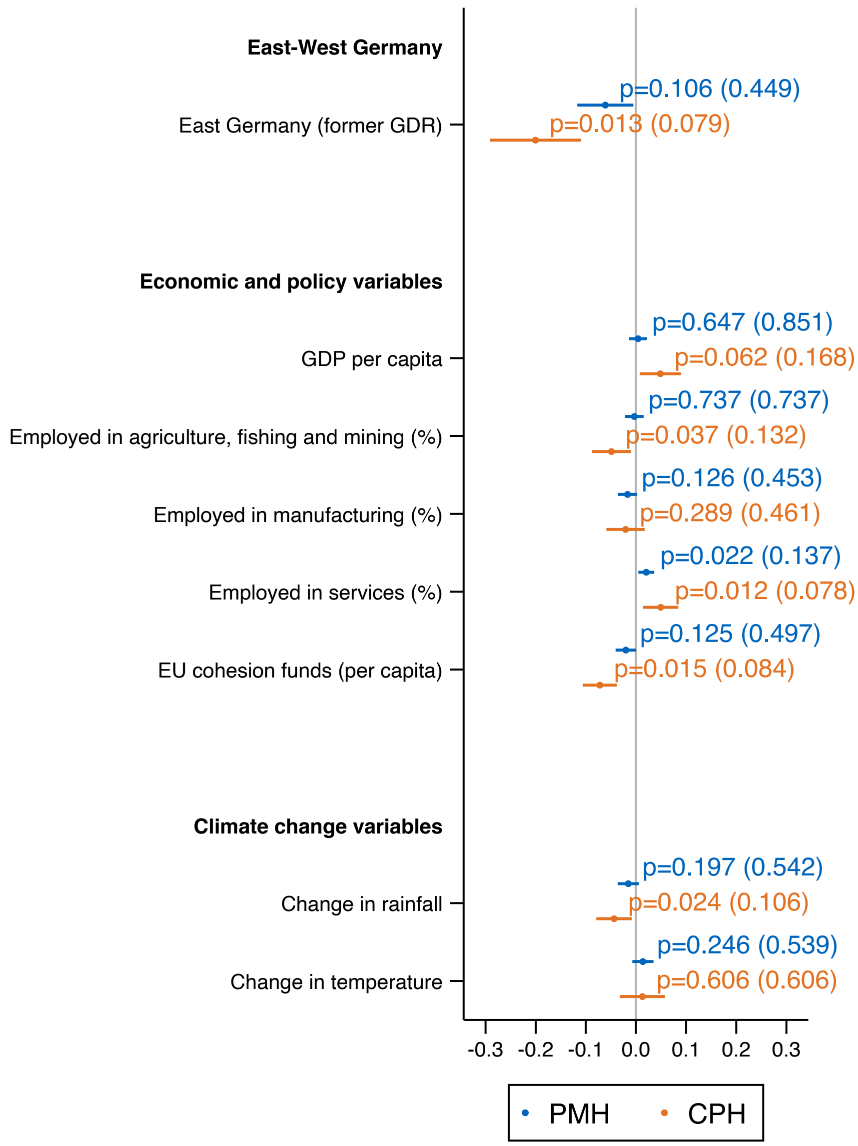
Notes: The figure plots coefficients based on an OLS regression. The dependent variable is measured on a 5 point-scale ranging from 1 to 5 (completely oppose to completely support with neutral option). Each coefficient has been estimated separately using standardized explanatory variables (z-score). They can therefore be interpreted as the difference in support rate associated with a one standard deviation change in the explanatory variable. Specifications include the following control variables: gender, age (median), income (median), education level (tertiary). Specifications for the CPH treatment control for different levels of carbon prices. Error bars indicate 95% confidence intervals obtained from standard errors clustered at the regional level (38 subnational regions). The percentage of total employment in agriculture, fishing and mining is missing in five regions. Observations in each regression: 14,297.

Figure S 6: Regional correlates of public support for ambitious climate policies: Ologit regression



Notes: The figure plots coefficients based on an Ologit regression. The dependent variable is measured on a 5 point-scale ranging from 1 to 5 (completely oppose to completely support with neutral option). Each coefficient has been estimated separately using standardized explanatory variables (z-score). They can therefore be interpreted as the difference in support rate associated with a one standard deviation change in the explanatory variable. Specifications include the following control variables: gender, age (median), income (median), education level (tertiary). Specifications for the CPH treatment control for different levels of carbon prices. Error bars indicate 95% confidence intervals obtained from standard errors clustered at the regional level (38 subnational regions). The percentage of total employment in agriculture, fishing and mining is missing in five regions. Observations in each regression: PMH = 7,256 (6,533 where 5 regions are missing), CPH = 7,192 (6,479 where 5 regions are missing).

Figure S7: Regional correlates of public support for ambitious climate policies: Multiple hypothesis testing



Notes: The figure plots coefficients based on an OLS regression with p-values adjusted for multiple hypothesis testing. The figure displays conventional p-values and adjusted p-values (in square brackets). The dependent variable is measured on a 5 point-scale ranging from 1 to 5 (completely oppose to completely support with neutral option). Each coefficient has been estimated separately using standardized explanatory variables (z-score). They can therefore be interpreted as the difference in support rate associated with a one standard deviation change in the explanatory variable. Specifications include the following control variables: gender, age (median), income (median), education level (tertiary). Specifications for the CPH treatment control for different levels of carbon prices. Error bars indicate 95% confidence intervals obtained from standard errors clustered at the regional level (38 subnational regions). The percentage of total employment in agriculture, fishing and mining is missing in five regions. Observations in each regression: PMH = 7,256 (6,533 where 5 regions are missing), CPH = 7,192 (6,479 where 5 regions are missing).

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ISSN: **2701-3456**
Editors: Tim Büthe, Hanna Hottenrott
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