The limits of alarm: How Climate Scenarios Fail to Increase Willingness to Act and Pay for Climate Change Policies *

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Abstract

Does exposure to information on future climate scenarios shape public acceptance and willingness to pay for climate mitigation? This article addresses this question using two vignette experiments embedded in two different surveys in Spain to causally examine how exposure to information about future alternative climate scenarios affects an individual's commitment to climate efforts. The findings show that such exposure has no significant effect on individuals' support for publicly funded climate initiatives or on their willingness to contribute financially. These results suggest that priming the public with varying projections of climate change impacts is unlikely to enhance support for climate change policies, underscoring the need for alternative strategies to foster public support.

Keywords: Climate Change policies | Willingness to act | Willingness to pay | Survey data | Spain

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1 Introduction

Whether through news reports or weather forecasts, we are often confronted with future scenarios depicting how climate change could affect our lives in the future. Yet, relatively little is known about the influence of projecting different climate scenarios on the public's willingness to compromise on potential climate policies.

This article aims to understand whether exposure to forecasts about climate scenarios affects an individual's willingness to increase their commitment to climate change policies. The study of how forecasting affects an individual's attitudes or behaviour has a long pedigree in economics and psychology (Leitner and Leopold-Wildburger, 2011), and it has recently been employed in political science, for instance, focusing on how different visualisations of election forecasts can affect people's vote choice (Witzenberger and Diakopoulos, 2024). Yet, despite being an essential media communication strategy to convince the public, the potential of climate change scenarios to persuade citizens to act has not been fully considered. By studying whether and how future potential scenarios on climate change affect individuals' attitudes, we are making a contribution to the literature on the relationship between exposure to climate forecasts and people's attitudes, as well as to recent debates on the climate change literature about potential strategies to sway the public into acting or accepting new climate change policies.

The effect of exposing people to future scenarios and a potential change in attitudes and behaviour is assumed to act through different channels. Two (interrelated) factors commonly considered are *fear* and *aversion to risk*. By inducing both, we assume that engagement is likely to promote a more favorable stance toward climate change. Yet, previous works inducing varying levels of risk and fear have yielded mixed results (Lowe et al., 2006; Cameron, 2005). For instance, Scharks (2016) showed that fear appeals trigger psychological reactance among right-leaning U.S. respondents, reducing public support for climate policies. Additionally, O'Neill and Nicholson-Cole (2009) found that strong fear appeals can trigger a sense of paralysis, whereas more moderate messages may be more effective in promoting engagement with the issue of climate change. Other studies suggest that risk-based messaging alone may not significantly change climate attitudes. Other important emotions that have been considered are anger and anxiety. Forecasting negative scenarios can trigger both, which may in turn spur an attitudinal change, or the potential antecedent to it–actions like talking or information seeking (Yang et al., 2023).

Overall, according to Lowe et al. (2006) and Leiserowitz (2006), a major barrier to circumventing the negative effect of some emotions is often the absence of clear information. For such interventions to be effective, they may need to be coupled with explicit information on the projected course of climate change and its expected impacts (Midden and Meijnders, 2001).

Similarly, others have argued that predictions into the future may affect people's attitudes through heuristics. Even when forecasts come from a reputable source, individuals may form expectations relying on other available (psychological) sources, which help them in forming an opinion. Among these factors, people's ideology has been identified as important (Scharks, 2016; Kossowska, Szwed and Czarnek, 2023; Yang et al., 2023). Thus, the perceived credibility of a projected future (such as a climate scenario) may hinge upon people's left- or right-wing leaning tendencies, which often correlate with having a different approach to combating climate change.

Against the backdrop of the previous theoretical and empirical discussion, this article examines the effect of future climate scenarios on people's support for climate policies employing two survey experiments, embedded in two different survey waves performed in April 2024 and May-June 2025 in Spain (N=3,000 and 4,000, respectively). These experiments aim to test the effect of exposing individuals to climate change scenarios on their willingness to accept (WTA) or to pay (WTP) for climate change policies. By doing so, we make several contributions.

First, unlike prior studies, which often include abstract scenarios, we conduct an experiment that provides participants with clearly defined climate policies. This level of specificity may enable participants to more easily connect their climate change views to concrete actions. For instance, in Lowe et al. (2006), respondents were asked whether they were "willing to do more for climate change", a broad question that may encourage socially desirable expressions of willingness to act–and, thus, overestimates individuals' disposition to take action. Our experiments query personal support for specific public-funded initiatives that are a matter of current discussion in several Western countries, also in Spain, our case study. These are renewable energy plant construction, subsidies for electric vehicles, and energy-efficient building renovations.

Second, our two survey experiments examine the effect of climate scenarios of varying intensity, with, first, a focus on the temperature and, second, with an interest in the type of natural events that may be more likely in the future. In the first experiment, all participants were presented with a climate scenario, featuring moderate to severe risk appeals, with a graph illustrating (randomly varying) projected global temperature trends until the year 2100. In the second experiment, we kept the temperature increase constant, but survey participants were randomly exposed to different natural events that were likely to occur. The focus on these two different projections is a contribution in itself, and so is the use of visual support. Although infographics have already been employed in other fields (Jalil, Tasoff and Bustamante, 2023) and visual tools in climate change projections that we, for instance, see in the media are common, empirical evidence of their effectiveness remains scarce.

Lastly, our study expands the geographical scope of previous research. While much of the existing literature has focused on the UK (e.g. Lowe et al. (2006); O'Neill and Nicholson-Cole (2009)) and the U.S. (e.g. Scharks (2016)), potentially limiting generalizability, our study is conducted in Spain.

Spain constitutes a hard case for studying the extent and reasons behind public support for climate policies, as it is among the countries with the highest percentage of individuals who believe climate change is caused by humans (see, for instance Leiserowitz et al., 2021). According to our survey data, only 2% of the population rejects the idea that climate change is happening, while 8% believes natural processes mostly or solely cause it. Additionally, skeptics–those who believe climate change can be equally attributed to natural and human phenomena–account for 31%. Believers—climate change due uniquely or mostly to human action—account for the remaining 59%.[1]

Our two experimental designs show that exposing individuals to two future climate scenarios does not change their willingness to accept or to pay for climate change policies, a finding that is stable across different subgroups.

2 Climate change scenarios and climate change policies

We employ an experimental approach (vignette experiment) to test whether the (exogenous) variation in climate change scenarios affects individuals' willingness to support climate change policies. We follow the literature and consider two ways of capturing an individual's support for climate change policies: a) whether respondents are in favour of the State funding climate change policies (willingness to accept, WTA), and b) whether respondents would be in favour of paying more taxes to subsidy the policies (willingness to pay, WP) to avoid the climate scenario described in the question.

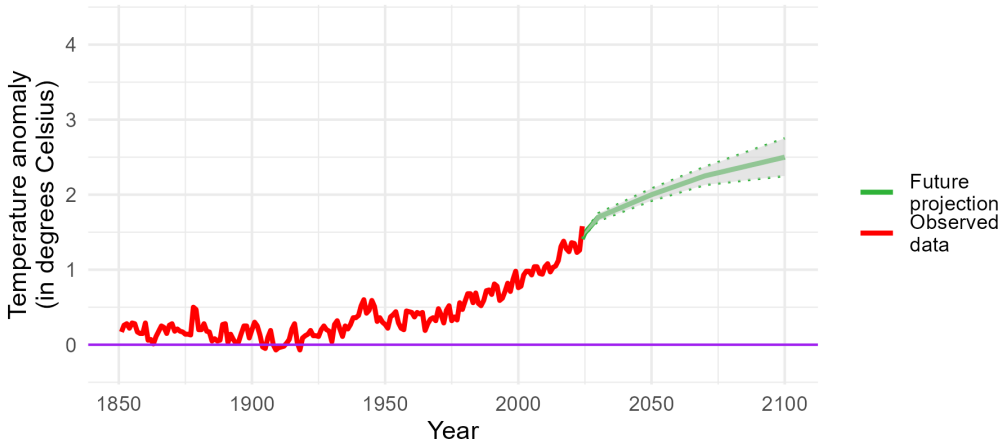
The first survey, conducted in April 2024 (N=3,019), includes three climate policies: subsidies for electric cars, subsidies for the energy rehabilitation of buildings and the construction of renewable energy plants. To prevent individuals from being overexposed to similar questions and to answer them unconscionably, we asked every individual for their support for two of the three policies. Ultimately, each individual saw two policies, and each policy was displayed to 2,000 individuals. [2] Given that the results in the first survey are very similar across the three of them, in the second survey, conducted in May-June 2025 (N=3,997), we only focus on "support for the State financing of renewable energy plants to deal with climate change". Outcomes in both surveys range from 0 (complete opposition) to 10 (full acceptance). Appendix A.1 provides summary statistics as well as further details on the survey and sampling design.

In the first experiment (first survey), respondents were randomly shown one of six climate scenarios, ranging from minimal to catastrophic impacts of climate change, along with accompanying explanatory text. The displayed scenarios are based on projections of temperature increases made by scientists, along with the expected rise in the frequency of natural disasters. Approximately 330 respondents saw

[1] In the appendix, section D, we conduct an observational analysis using survey data to provide some context on the relationship between climate change concern and support for climate policies.

[2] The order of appearance of the two questions was randomly distributed. Selecting uniquely the first displayed question does not alter the results.

Figure 1: Intermediate treatment scenario (first survey)



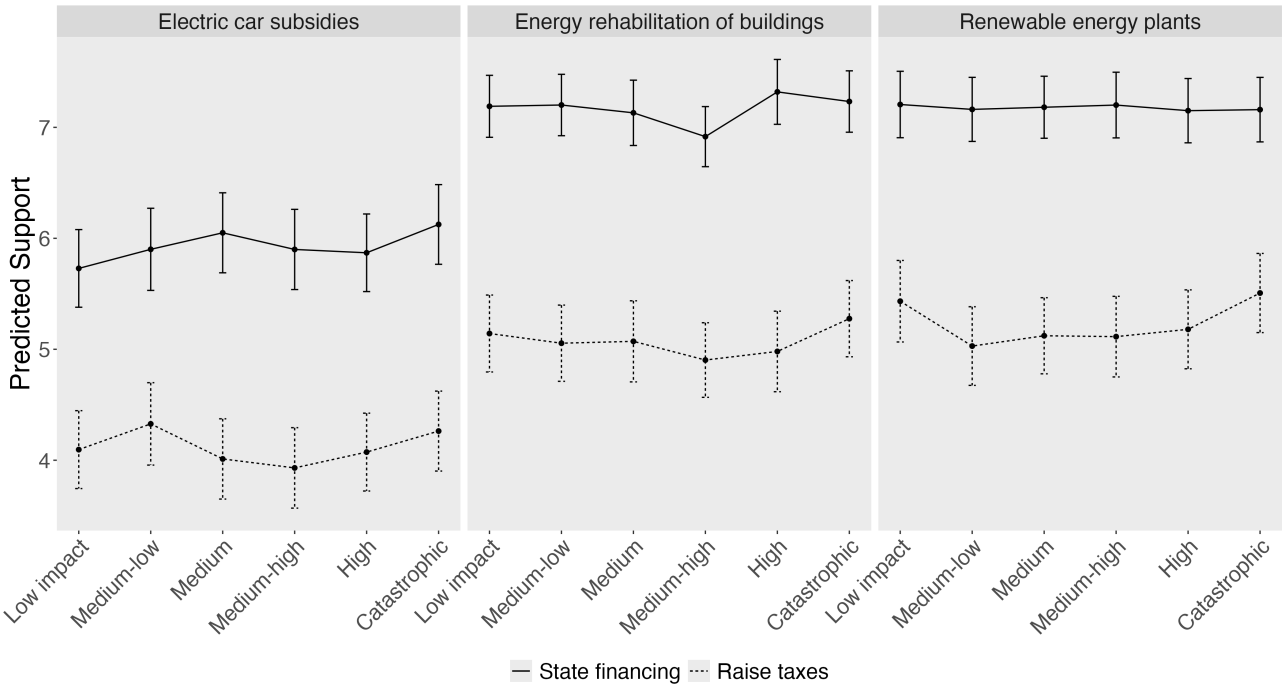
each treatment (six in total). They range from minimal climate impact, where temperatures would stabilise at +1.5°C above pre-industrial levels, to catastrophic scenarios, with temperature increases reaching up to 4°C by 2100. Figure 1 illustrates an intermediate treatment scenario, which features a projected temperature rise of 2.5°C by 2100. The x-axis in the figure displays the Year, and the y-axis displays the Temperature anomaly, in degrees. The red line in the figure depicts the observed data until 2020 and the green line the projected scenarios until 2100. To have more control over the baseline, and given that individuals were already likely exposed to an increase in temperatures (which have been very often present in the news and elsewhere), we consider the low-impact treatment as the point of reference. The following text accompanied the figure: "According to some experts, the planet's average temperature could increase by [random number between 2.3 and 2.7] degrees Celsius by 2100. This could increase extreme weather events by around 50% and significantly affect the economy and people's health". This granularity in temperature projections–ranging from 1.5 degrees Celsius to up to 4–and accompanying contextual information on the occurrence of extreme events allows us to better capture the range of climate scenarios and their potential impacts. Thus, the $+1.5^{o}$ increase scenario was coined with a 15% increase in extreme events; the +2.0 with 25%; the 2.5 with 50%; the +3.0 with 100%; the 3.5 with 150%; and the +4.0 with 200%.[3] Overall, this treatment tests whether such abstract forecasts have an effect on people's WTP or WTA climate change policies.

We use the different treatments in a regression framework, calculate the predicted values and then plot them in Figure 2.[4] The straight line connects the predicted values on the outcome 'the State should finance [each policy] to deal with climate change", while the dotted line shows an individual's attitudes towards raising taxes to finance each policy. Eyeballing the graph, the first element we

[3]Section A.1 in the Appendix displays the specific wording and the vignettes of all scenarios. To enhance the strength and reliability of the treatment conditions, the rise in temperatures displayed in the figure was accompanied by an increase in the share of extreme weather events. Similarly, we did not include a scenario showing a decrease in temperatures in the future, as it would not have been credible.

[4]Models include controls for an individual's age, sex, education and the geographic Nelsen areas. The inclusion or exclusion of these controls does not change the findings.

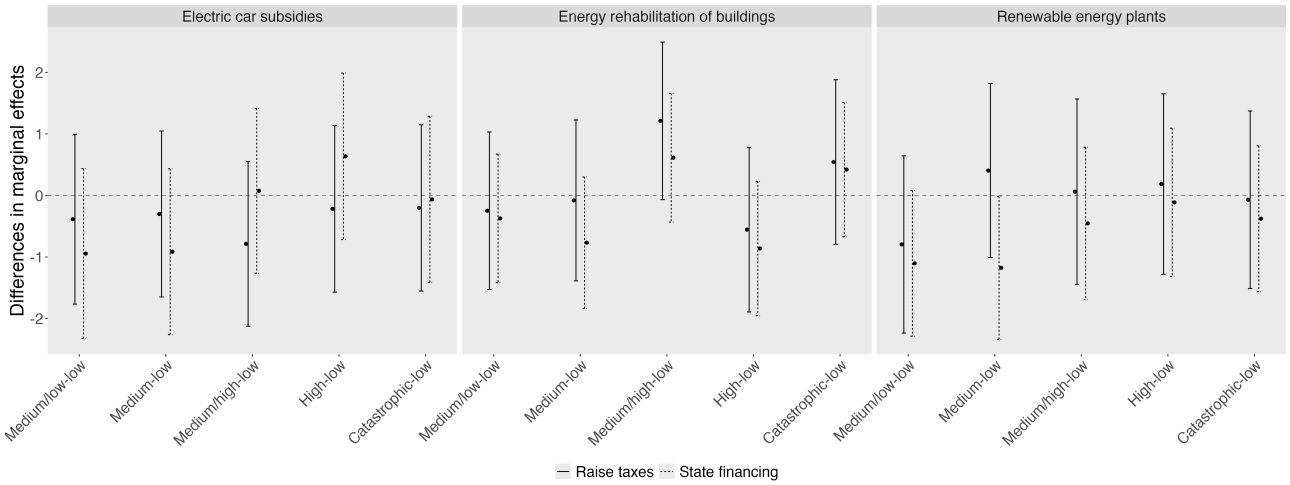
Figure 2: Predicted support for climate change policies at different temperature scenarios (first survey)



observe is that the dotted line is lower than the straight line, thereby showing that the public's support for the State funding of each policy is larger than the individuals' WTP for this same policy. Another possible interpretation is that, while tax increases lack overwhelming support and are rejected by a substantial share of respondents, a notable proportion expresses moderate support (around 5 on a 0–10 scale).

Moving to the effects of our treatment conditions, the evidence shows that exposure to escalating climate change scenarios–from "low impact" to "catastrophic"–does not substantially influence individuals' willingness to support public-funded climate policies (straight line), nor to increase their willingness to pay more taxes to fund this (bottom line). Differences between the treatment conditions are not statistically significant. In other words, across all climate scenarios, the level of public support remains consistent, showing only minor and statistically insignificant fluctuations. One could argue that, given that baseline support for some policies, such as renewable energy plants, is already high, individuals may be unaffected by additional information on potential climate consequences. Respondents might already recognise the importance of renewable energy independently of specific climate impact scenarios. However, this should not happen to the same extent when looking at an individual's WTP. In this case, the graph does reveal a slight U-shaped trend–support is highest in the "low impact" and "catastrophic" scenarios, although the fluctuations are relatively small. Overall, we do not find evidence that (visually) exposing individuals to an increase in temperatures changes their WTA or WTP for climate change policies.

Figure 3: Differences in marginal effects between left-wing and right-wing respondents on support for climate policies when comparing scenarios

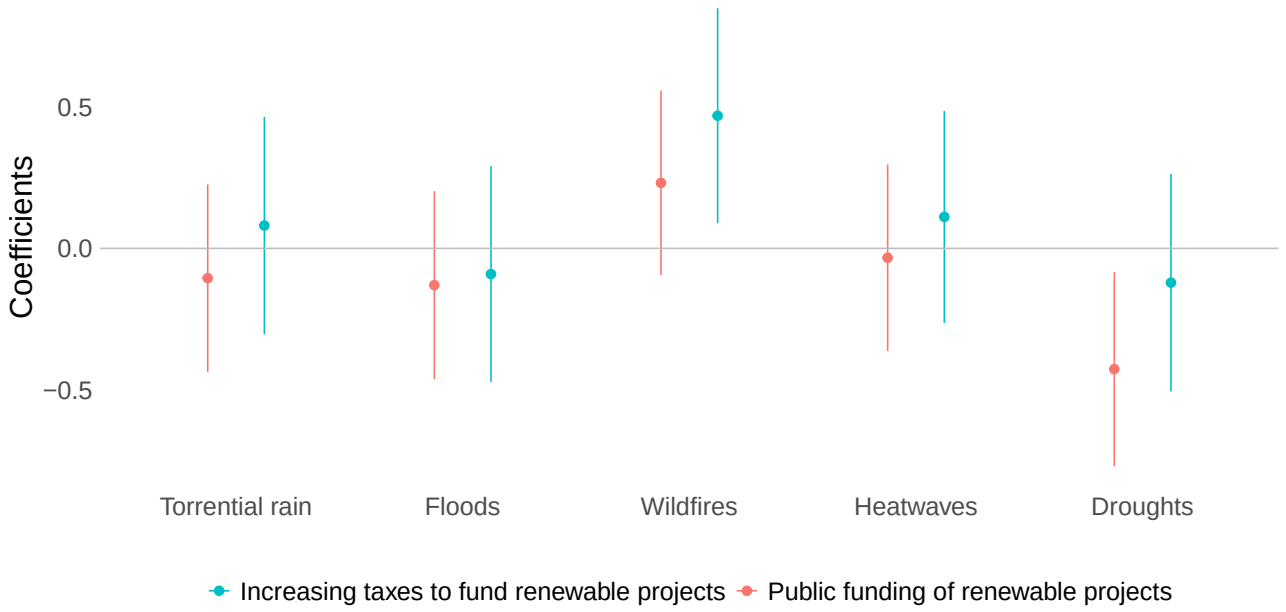


As the next step, we check whether certain treatments have a different impact on different ideological groups. As discussed before, people's left-right position is an important factor in shaping their attitudes towards climate change policies (McCright, Dunlap and Marquart-Pyatt, 2016; Kulin, Johansson Sevä and Dunlap, 2021). Thus, it could be that the increase in temperatures only affects certain ideological groups. To explore potential heterogeneous effects, we ran an interaction between the treatments and an individual's left-right position (left, centre and right). We then calculated the differences in the marginal effects between the left and the right groups. Figure 3 shows such differences. As can be observed, across all climate scenarios, the differences between the left and the right-wing blocs are not statistically significant. In other words, the various ideological groups do not react differently to the treatment scenarios. This is despite the fact that, as displayed in figures C.1 and C.2 in Appendix C, support for policies is consistently higher on the left compared to the right, an evidence that is largely aligned with existent literature.[5]

The second survey experiment (embedded in the second survey) followed a similar approach, but instead of focusing on temperatures and their consequences, it emphasised the type of natural events likely to occur. Thus, individuals still saw the projection graph, but we did not randomise the increase in temperature; we kept it constant at +2.5 degrees Celsius, that is, the medium impact scenario in the first survey. Instead, and besides the control group–no mention–the text randomly emphasised that some natural events were more likely to occur: a) torrential rain, b) floods, c) wildfires, d) heatwaves or e) droughts. We used these different primings to check whether they affected people's support for renewable plans (WTA) and for increasing taxes to fund renewable plants (WTP).

[5]For the sake of simplicity, we focus on the left and the right-wing blocs, as they have the largest difference in support for the policies. Yet, if we compare the three blocs, the results do not change. See Appendix C. We unfortunately do not have enough statistical power to check for potential differences across a five-category left-right indicator (from the extreme left to the extreme right).

Figure 4: Predicted support for climate change policies at different natural events scenarios



The predicted values extracted from the two different regressions are shown in Figure 4. Results confirm previous findings in showing that the effects of the different scenarios are not statistically significant–with the exception of wildfires and droughts, which show effects in an inconsistent and opposite direction. Regardless of whether the projected scenario involves torrential rain, floods, or heatwaves, support for climate change policies shows no significant increase.

Further analysis on respondent's political knowledge (section C.2 in the Appendix), beliefs about the causes of climate change (C.3), and prioritisation of the economy versus the environment (C.4) found no differential effects of the treatments. For instance, respondents with lower political knowledge were less inclined to contribute financially, while those who prioritised the environment over the economy generally provided more pro-climate responses. However, these differences were minor and did not intensify as climate scenarios became more severe.

3 Discussion and Conclusion

Our experimental findings show that presenting different catastrophic future scenarios, even when accompanied by visual figures and clearly defined policy measures, does not significantly increase an individual's willingness to support or to pay for climate policies. The findings indicate that altering visual projections of climate change consequences alone is unlikely to sufficiently motivate public engagement. This aligns well with existing research indicating that distant catastrophic scenarios have limited effectiveness in spurring attitudinal change. In other words, climate change forecasts may be useful for many different dimensions–and a key element for scientists, but presented in isolation, seem

limited in triggering attitudinal change. Instead, willingness to support policies may increase when highlighting the tangible benefits of action, such as health improvements, economic opportunities, or equitable outcomes of climate policies (Romanin, 2024).

Limitations of our study should be noted. The treatment forecasts were framed in overly abstract terms, potentially limiting their effectiveness. In addition, the emphasis on 2100 as a reference point for climate impacts might have diminished the perceived urgency of the issue, as this distant timeline could feel too intangible compared to nearer-term changes, limiting their emotional engagement and motivation to act. In addition, our results apply to the policies we considered, which are fairly representative of different climate policies, although they do not exhaust them. They also apply to the Spanish context, which is similar to other European countries, but also different in some respects, such as the politicisation of the issue of climate change (relatively minor in Spain).

Future research strategies to test the effect of forecasting can highlight local and immediate impacts of climate change, rather than global catastrophes in the long term. Additionally, employing simplified future scenarios (Liu et al., 2025), or interactive approaches such as participatory decision-making tools might engage individuals more deeply than passive exposure to information. These strategies could help bridge the gap between concern about climate change and the willingness to take meaningful action.

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Appendix

A Datasets and experimental treatments

The empirical analysis of the paper is based on two independent surveys. The first survey was conducted between 8-12 April 2024 and collected a representative sample of 3,019 Spanish individuals (valid responses). We applied quotas by gender, age and Nielsen areas.[1]

The second survey was conducted between May 14 and June 30, 2025, to a representative sample of the Spanish population. We collected 3,997 (valid) responses. We also applied quotas by gender, age and Nielsen areas.

Both surveys were conducted online by the survey company Netquest, which has a long tradition of running online surveys. Netquest has a large panel of potential respondents all over Spain. Following the instructions of the researchers, they sent the invitation to respond to the survey. Upon completion of the survey, respondents received an incentive in the form of tokens, which were in the form of points or tokens and could be exchanged for gifts.

In both surveys, Netquest and the members of the research team screened responses to detect anomalies, such as random clicking or responses that took a long time to complete. In its platform, Netquest has an in-built Instructional Manipulation Check (IMC), which filters out respondents who are not paying enough attention to the questions. In addition, we included another IMC in the middle of the survey, which also filtered out respondents who failed the test. In the final dataset, we did not include respondents who did not finish the survey. Finally, regarding the time taken by respondents to answer the survey, the system allowed them to answer part of the survey, close the browser, and resume their participation another day. While these cases are relatively rare, they generate outliers in the distribution of the duration variable. Although, as mentioned, a longer time does not necessarily indicate inattentive behaviour, we re-ran the analysis of the article after excluding respondents who took too long to answer the survey. Results are virtually the same.

Finally, it is important to emphasise that data protection regulations and ethical standards were guaranteed to protect respondents. At the beginning of the survey, respondents were informed that they were participating in a research study and that their responses were anonymous and would be kept on a secure server. Participants were also informed that some of the questions presented hypothetical scenarios. Respondents could leave the survey at any time and could contact the research team to ask questions and/or to be kept informed about the results of the project.

Table A.1 shows the summary statistics of the first survey.

Table A.2 shows the summary statistics of the second survey.

[1] Nielsen is a marketing firm that has developed proprietary marketing geographic areas for marketing purposes. These areas are meant to share different fundamental characteristics. We used nine areas.

Table A.1: Summary statistics (first survey)

	Min	Mean	SD	Max
Age	18.0	45.7	14.6	75.0
		N	%	
Sex	Woman	1507	49.9	
	Man	1512	50.1	
Education	No qualifications	50	1.7	
	Basic education	111	3.7	
	Lower secondary	805	26.7	
	Upper secondary	503	16.7	
	College diploma	191	6.3	
	Bachelor's degree	752	24.9	
	Master's degree	514	17.0	
	PhD	93	3.1	
Nielsen Area	Northeast (Catalonia & Balearics)	357	11.8	
	East (Valencia & Murcia)	454	15.0	
	South (Andalusia)	600	19.9	
	Centre	271	9.0	
	Northwest	273	9.0	
	North-Central	276	9.1	
	Canary Islands	121	4.0	
	Barcelona Metro Area	306	10.1	
	Madrid Metro Area	361	12.0	
Ideology	Left	905	30.0	
	Center	1616	53.5	
	Right	498	16.5	

Table A.2: Summary statistics (second survey)

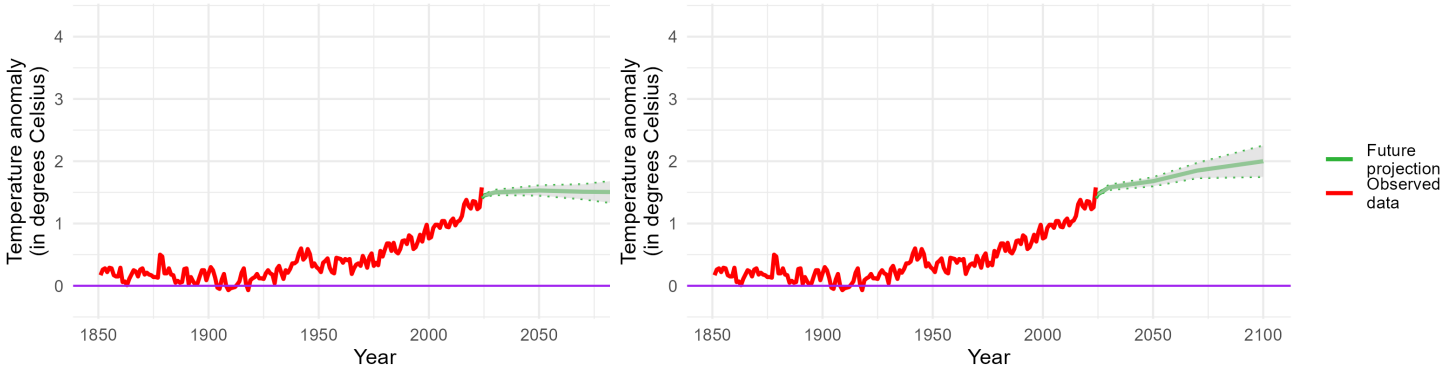
	Min	Mean	SD	Max
Age	16.0	50.9	15.5	95.0
		N	%	
Sex	Woman	1939	48.5	
	Man	2058	51.5	
Education	No studies/primary education	249	6.2	
	Secondary education	905	22.6	
	Higher education	694	17.4	
	University education	252	6.3	
	MA/PhD	1102	27.6	
Nielsen area	Northeast (Catalonia & Balearics)	477	11.9	
	East (Valencia & Murcia)	734	18.4	
	South (Andalusia)	729	18.2	
	Centre	361	9.0	
	Northwest	373	9.3	
	North-Central	367	9.2	
	Canary Islands	132	3.3	
	Barcelona Metro Area	358	9.0	
	Madrid Metro Area	466	11.7	
Ideology	Left	1223	30.6	
	Center	2093	52.4	
	Right	681	17.0	

A.1 Treatment scenarios (first survey)

- Scenario 1 (Low Impact): According to some experts, the average temperature of the planet could increase by 1.3-1.7 degrees Celsius by 2100. This could increase extreme weather events by about 15% and have some effect on the economy and people's health.
- Scenario 2 (Medium-low Impact): According to some experts, the average temperature of the planet could increase by 1.8-2.2 degrees Celsius by 2100. This could increase extreme weather events by about 25% and have effects on the economy and people's health.
- Scenario 3 (Medium Impact): According to some experts, the average temperature of the planet could increase by 2.3-2.7 degrees Celsius by 2100. This could increase extreme weather events by around 50% and have significant effects on the economy and people's health.
- Scenario 4 (Medium-high impact): According to some experts, the average temperature of the planet could increase by 2.8-3.2 degrees Celsius by 2100. This could increase extreme weather events by around 100% and have very significant effects on the economy and people's health.
- Scenario 5 (High impact): According to some experts, the average temperature of the planet could increase by 3.3-3.7 degrees Celsius by 2100. This could increase extreme weather events by around 150% and have very significant and irreversible effects on the economy and people's health.
- Scenario 6 (Catastrophic impact): According to some experts, the planet's average temperature could increase by 3.8 and 4.2 degrees Celsius by 2100. This could increase extreme weather events by around 200% and have irreversible catastrophic effects on the economy and people's health.

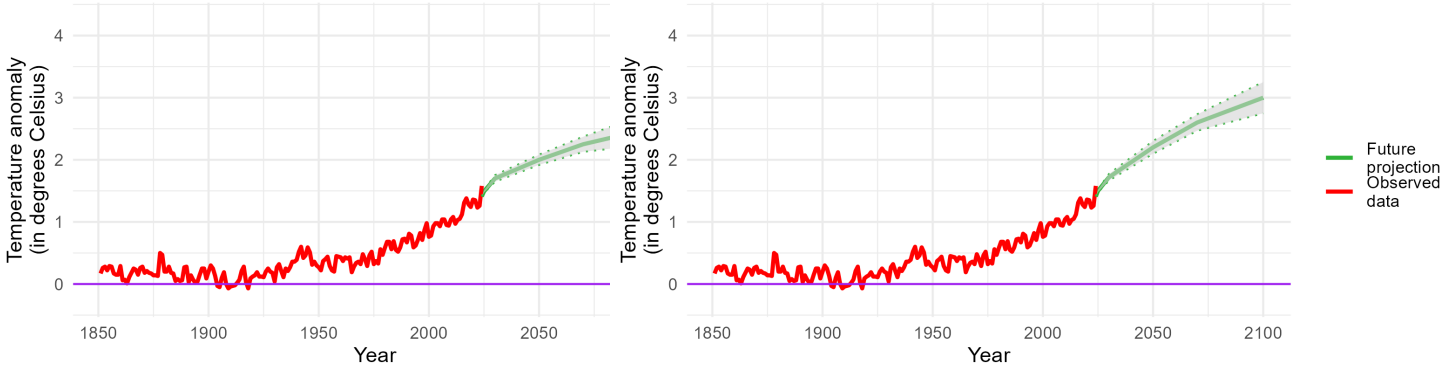
We visually show the scenarios in Figure A.1 below.

Figure A.1: Experimental conditions



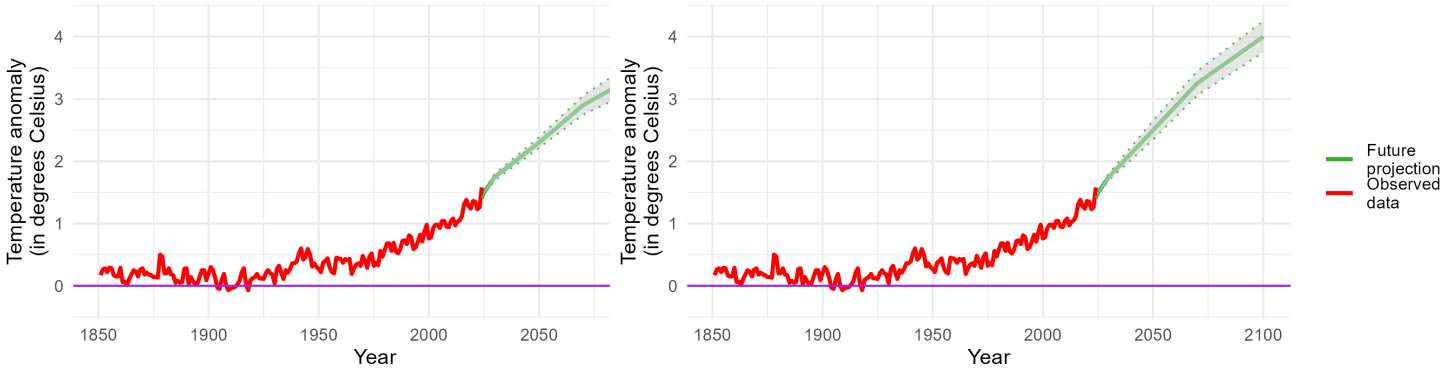
(a) Low impact

(b) Medium-low impact



(c) Medium impact

(d) Medium-high



(e) High impact

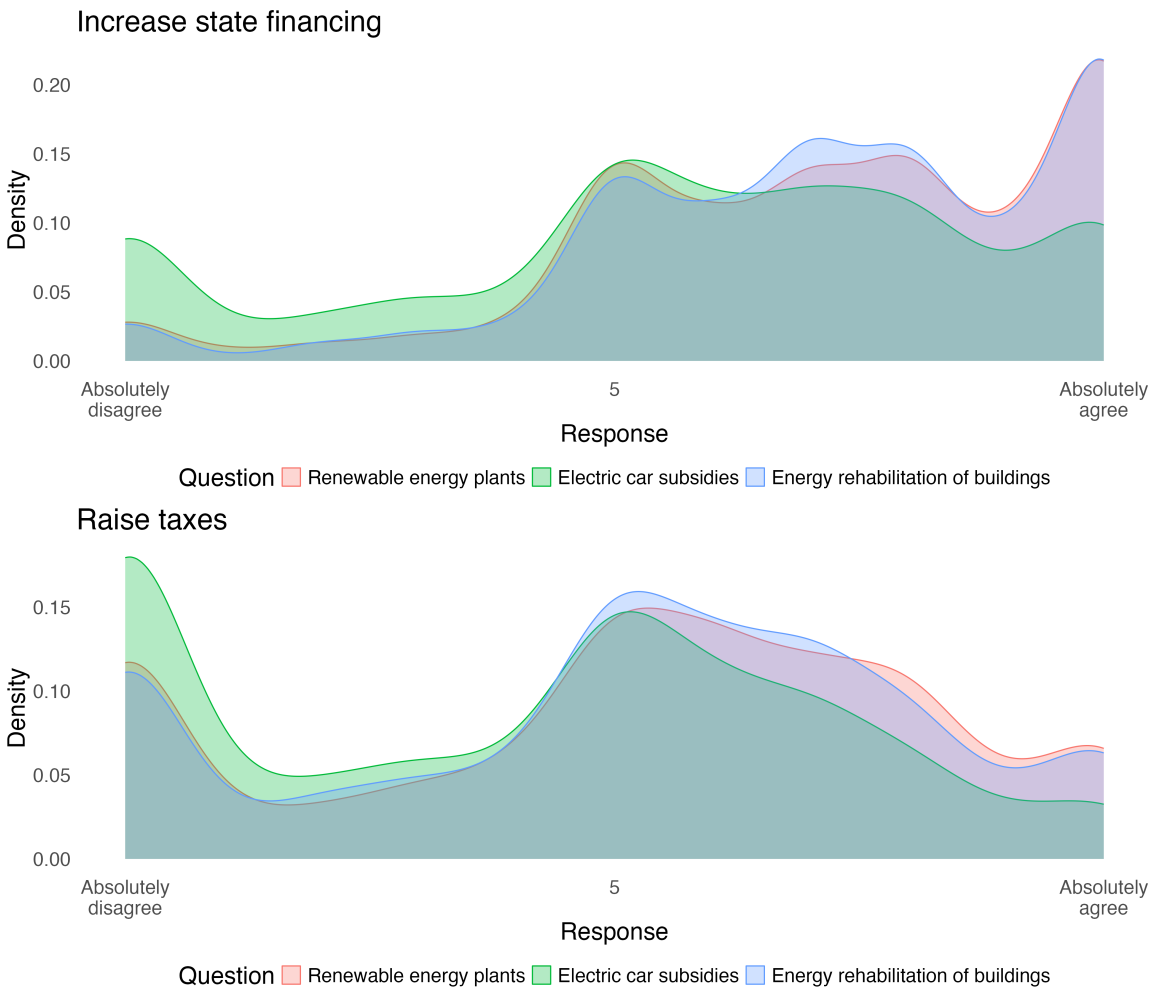
(f) Catastrophic impact

A.2 Dependent variables (first survey)

- Renewable energy plants
  - Taking into account scientific forecasts. To what extent do you agree that the State should finance the construction of renewable energy plants to deal with climate change (on a scale of 0 to 10, where 0 means completely disagree and 10 means completely agree)?
  - To implement this policy and have the State finance the construction of renewable energy plants, it would be necessary to raise taxes on people like you. On a scale of 0 to 10, to what extent would you be willing to pay more taxes to promote this policy and avoid the climate scenario described?
- Electric car subsidies
  - Taking into account scientific forecasts. To what extent do you agree that the State should provide subsidies for the purchase of electric cars to deal with climate change (on a scale of 0 to 10, where 0 means not at all agree and 10 means totally agree)?
  - To implement this policy and have the State provide subsidies for the purchase of electric cars, it would be necessary to raise taxes on people like you. On a scale of 0 to 10, to what extent would you be willing to pay more taxes to promote this policy and avoid the climate scenario described?
- Energy rehabilitation of buildings
  - Taking into account scientific forecasts. To what extent do you agree that the State should provide aid for the energy rehabilitation of buildings to deal with climate change (on a scale of 0 to 10, where 0 means not at all agree and 10 means totally agree)?
  - To carry out this policy and for the State to provide aid for the energy rehabilitation of buildings, it would be necessary to raise taxes on people like you. On a scale of 0 to 10, to what extent would you be willing to pay more taxes to promote this policy and avoid the climate scenario described?

Figure A.2 presents the distribution of the dependent variables examined in the article, regardless of the treatment condition assigned to respondents. The top graph shows the questions asking respondents whether they agreed with public institutions increasing the public finance allocated to the policy. The bottom panel shows the distribution of the questions asking respondents whether they agreed on raising taxes to finance the climate policy.

Figure A.2: Distribution of answers of the dependent variables



A.3 Treatment scenarios (second survey)

- Control group: Respondents were not exposed to any treatment condition.
- Torrential rain: According to some experts, the planet's average temperature could rise by 2.5 degrees Celsius by the year 2100. As a result, a significant increase in episodes of torrential rainfall and urban flooding is expected, similar to those that recently affected cities like Valencia or Albacete. These types of events could double in frequency, causing major material damage, disruptions to basic services, and temporary evacuations of the population.
- Floods: According to some experts, the planet's average temperature could increase by 2.5 degrees Celsius by the year 2100. This change could lead to a rise in the frequency of flash floods or sudden river overflows, like those that have caused serious damage in various parts of the Mediterranean. These events can result in significant material losses, disrupt mobility, and put entire communities at risk.
- Wildfires: According to some experts, the planet's average temperature could rise by 2.5 degrees Celsius by the year 2100. This warming could result in more frequent and intense wildfires, like those recently experienced in Galicia or inland Castelló. These fires can threaten populated areas, destroy vast forested regions, and impact both health and air quality.
- Heatwaves: According to some experts, the planet's average temperature could increase by 2.5 degrees Celsius by the year 2100. This rise could double the number of extreme heatwaves, with sustained temperatures above 40C for several days, like those recorded in southern Spain. These conditions pose a serious health risk, especially for the elderly and young children.
- Droughts: According to some experts, the planet's average temperature could rise by 2.5 degrees Celsius by the year 2100. This could lead to more frequent periods of prolonged drought, severely impacting agriculture and water availability, as has already been observed in areas of the Segura and Ebro river basins. These droughts could threaten food production and increase agricultural costs.

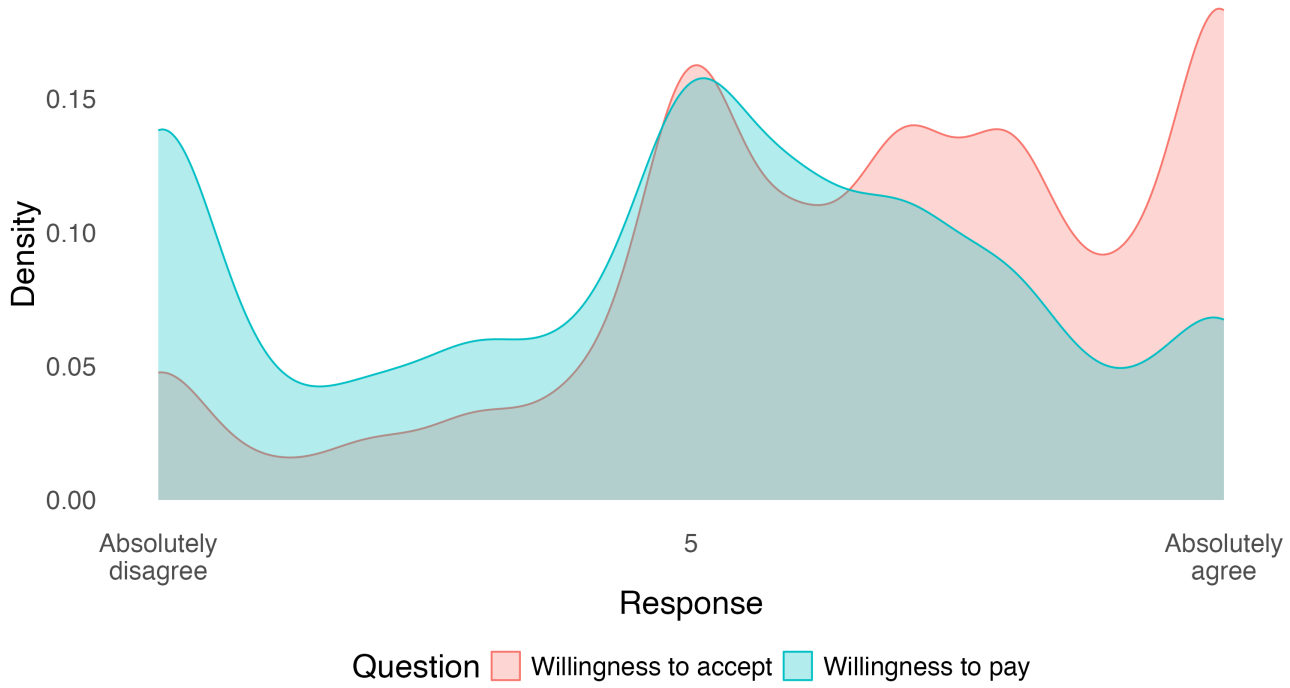
A.4 Dependent variables (second survey)

- To what extent do you agree that the State should fund the construction of renewable energy plants to address climate change, on a scale from 0 to 10, where 0 means not at all in agreement and 10 means completely in agreement?
- To implement this policy and for the State to fund the construction of renewable energy plants, it would be necessary to increase taxes for people like you. On a scale from 0 to 10, to what

extent would you be willing to pay higher taxes to support this policy and help prevent the described climate scenario?

Figure A.3 shows the distribution of answers to the previous two questions (our dependent variables of the second survey).

Figure A.3: Distribution of answers of the dependent variables



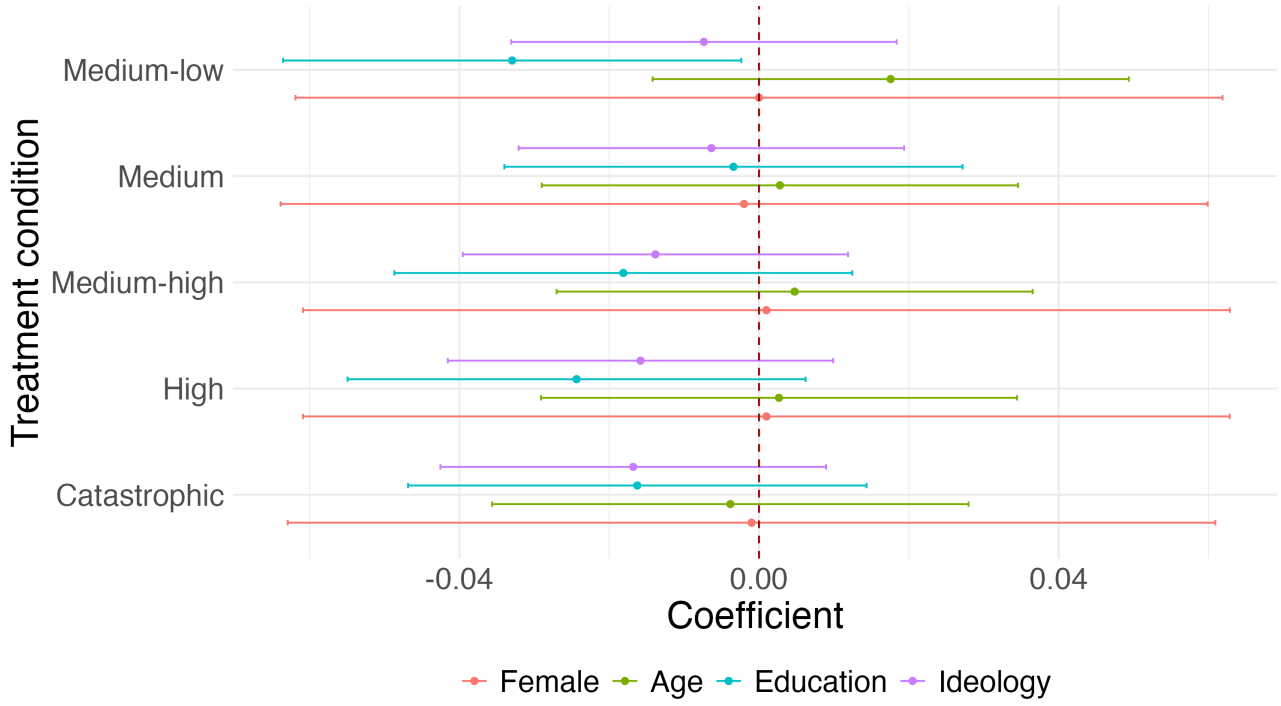
B Balance checks

The effect of the treatment conditions hinges upon the assumption that the scenarios randomly shown to respondents are not correlated with respondents' characteristics (which in turn may be correlated with the outcome). Although the different primings were randomly placed, by chance, some respondents might have been more likely to be exposed to certain treatments than others–and, if this was the case, it would subsequently affect our findings.

To rule this out, we regress a battery of a respondent's characteristics on the treatment condition. We then plot the coefficients to see if some (or any) of them are significantly related to the probability of having received a certain treatment condition.

Figure B.1 plots such coefficients for the first survey. As can be seen, with only a very minor exception, sex, age, education or ideology are not significantly associated with having been exposed to a certain treatment condition.

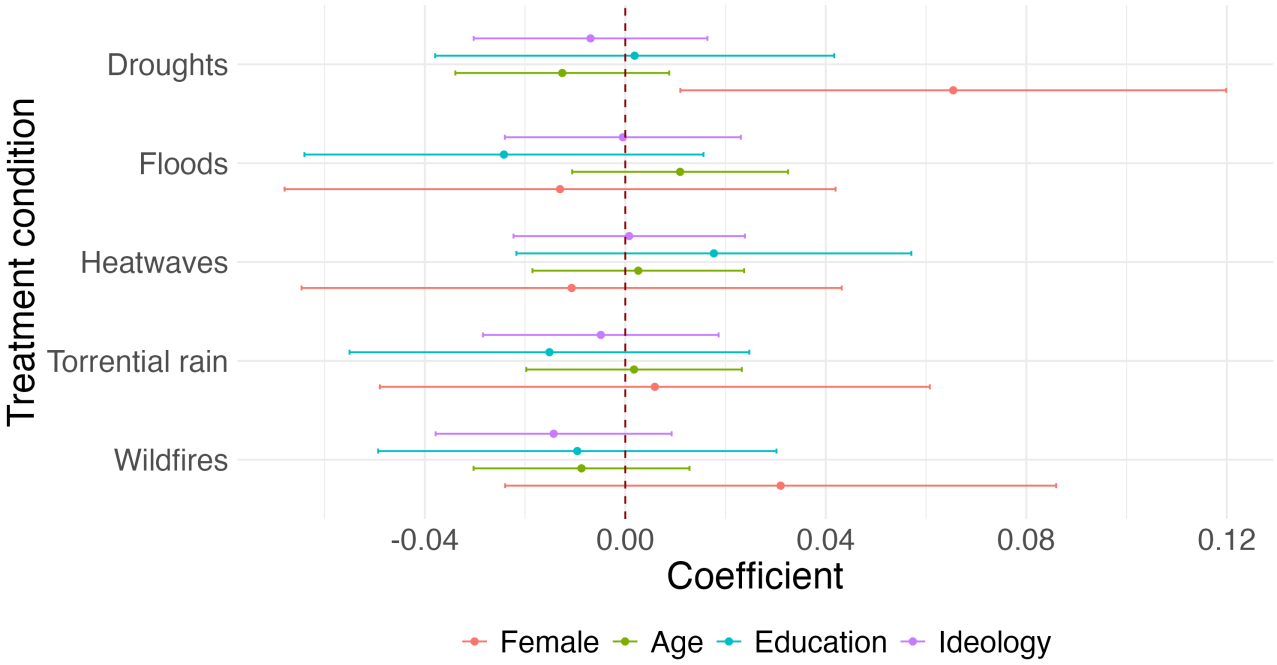
Figure B.1: Balance tests for the treatment conditions (first survey)



Note: Coefficients extracted from a linear probability model on each scenario. The reference category is 'low impact' on all of them. 95% confidence intervals.

Figure B.2 replicates the exercise, but this time using the second survey. As before, and with the exception of gender on the droughts condition (positive), the coefficients are statistically non-significant, thereby showing that randomisation was effective.

Figure B.2: Balance tests for the treatment conditions (second survey)



Note: Coefficients extracted from a linear probability model on each scenario. The reference category is the control group (no mention of a natural disaster). 95% confidence intervals.

C Additional empirical evidence

C.1 Policy and tax increase support by ideology

To provide a succinct and clear way of showing the lack of heterogeneous effects between our treatments and our outcomes, we prioritised in the text the differences in marginal effects between the left and the right. As mentioned in the manuscript, differences in marginal effects are not significant, thereby showing that the left, compared to the right (and vice versa), does not react differently to the treatment conditions. Calculating the differences between left-wing and right-wing individuals was a conscious choice, underpinned by previous research showing that the two groups (or ideology in general) have distinct preferences for climate change policies.

Next, and for the sake of transparency, we present the results of all the different groups. In the first survey, 30% of the sample is considered left-wing, 53.5% centrist and 16.5% right-wing.

The graphs below show the predicted support for each policy as a function of the treatment and an individual's left-right block. Estimates are the result of an interaction between the two previous indicators.

Figure C.1: Agreement of public-financing by scenario and ideology

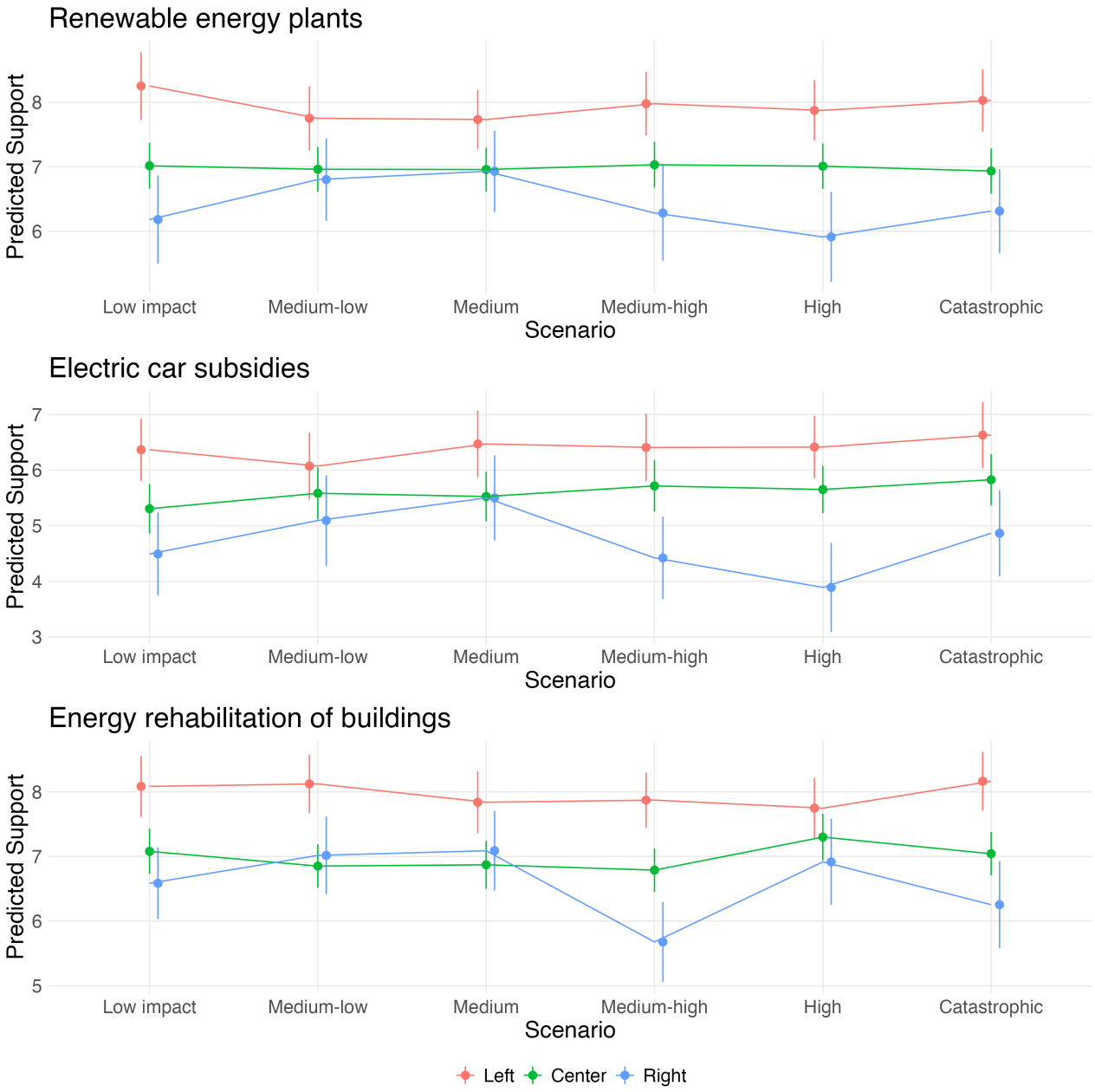
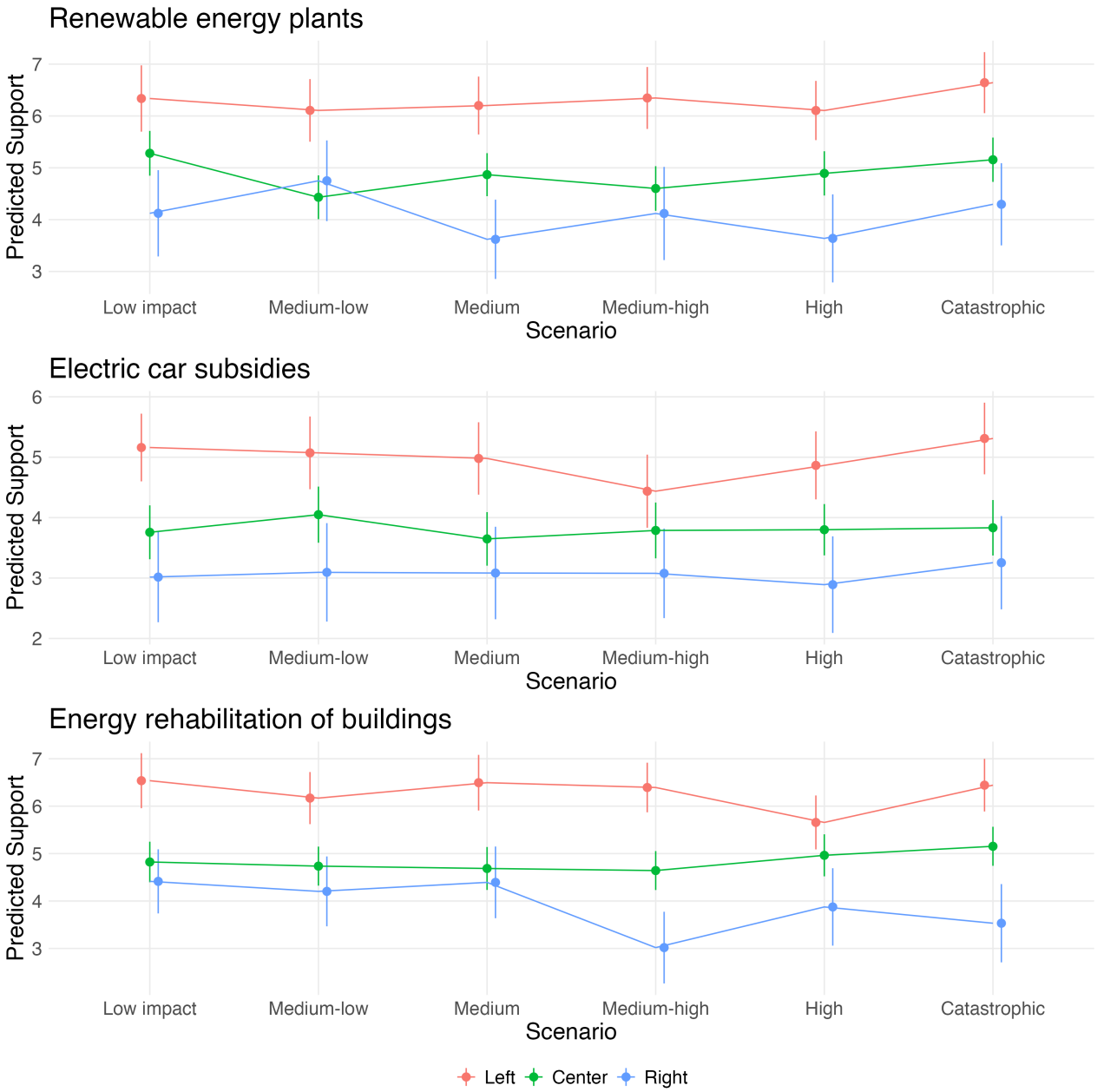
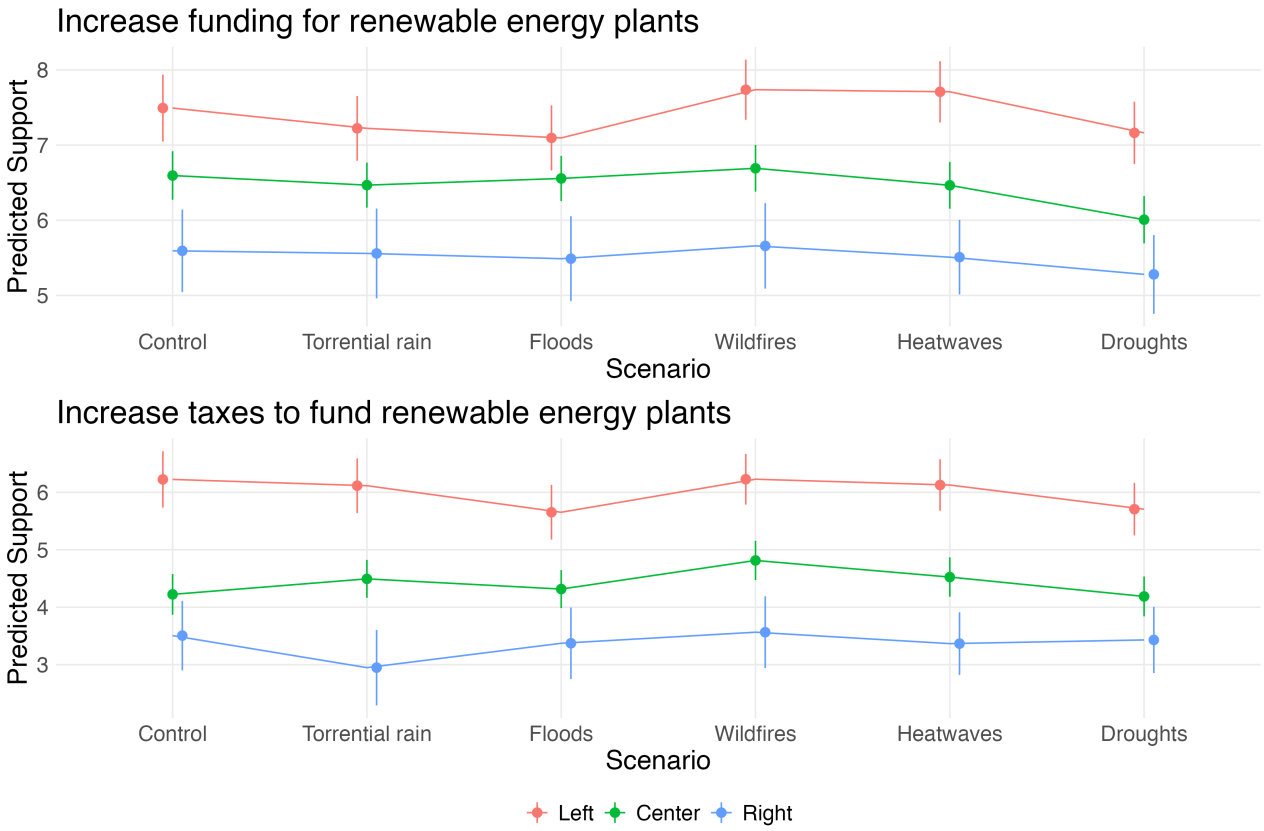


Figure C.2: Willingness to pay for climate policies, by scenario and ideology



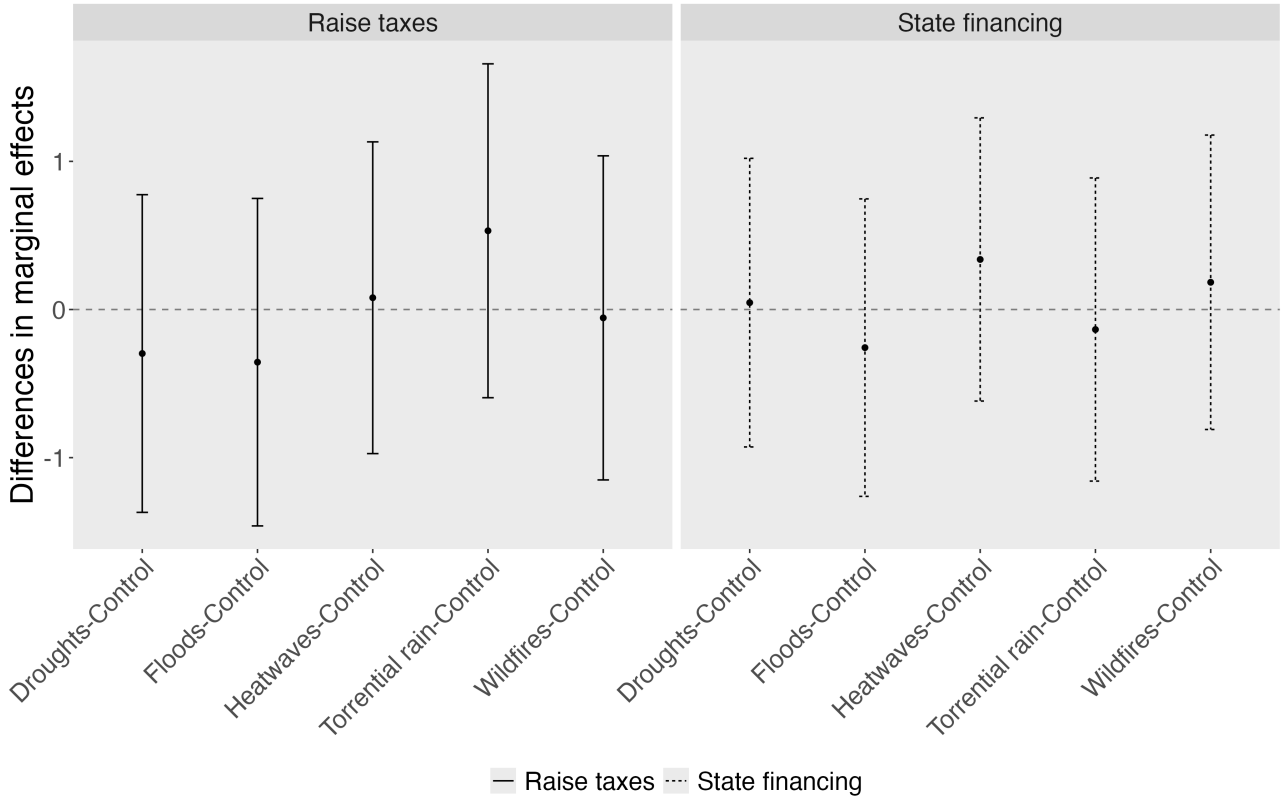
We repeated the same exercise for the treatments included in the second survey–30.6% left-wing, 52.4% centre and 17.0% right-wing. Figure C.3 shows the predicted support for increasing public funding to support renewable energy plants or for increasing taxes across treatment conditions and the individuals' self-placement on the left-right scale.

Figure C.3: Predicted support for increasing funding or taxes to support renewable energy plants across treatment conditions and an individual's self-placement on the left-right scale



Finally, we report in the article (Figure 3) that there are no differences between left-wing and right-wing respondents across treatment scenarios. In other words, left-wing individuals did not react differently to certain treatments than right-wing individuals. We next show that this is also the case in the experiment in the second survey. Figure C.4 illustrates the differences in marginal effects between individuals self-located on the left, versus the right, when they were exposed to the different treatments. As can be seen, differences are not statistically significant, thereby confirming the findings of the first experiment.

Figure C.4: Differences in marginal effects between left-wing and right-wing respondents on support for climate policies when comparing scenarios



C.2 Policy and tax increase support by political knowledge

Another potential relevant aspect of how to interpret the results reported in the manuscript is that the treatment could have had an effect only on the subset of the population with lower political knowledge. Thus, respondents with high levels of political knowledge could have already formed an opinion on climate change policies, giving little room for the treatment to trigger any effect (floor effect). Conversely, those with low political knowledge could have been more likely to change their opinion. Political knowledge may be an important moderator in processing the effects of treatments.

The first survey included three questions aiming at capturing a respondent's political knowledge. The questions asked respondents the number of autonomous communities in Spain, the name of the Spanish Minister for the Ecological Transition, and to identify a country that does not belong to the European Union. Except for the first one (numeric input), the rest offered five options–and one of them was the correct one. To create the political knowledge indicator, we identified individuals who gave a wrong answer to all of them or one correct answer ('low'), those who knew the answer to two ('Medium') and those who answered all of them correctly ('High'). We then interacted this indicator with the treatments and plot the predicted values of the joint effect. Results, which can be seen in the graphs below, show that almost all the treatments had no differential effect on respondents with different levels of political knowledge. In some cases, such as high political knowledge individuals in one

catastrophic scenario or low-political knowledge individuals in the torrential rain scenario, significant effects are detected, but results are not consistent and do not show a clear pattern.

Figure C.5: Agreement of public-financing by scenario and political knowledge

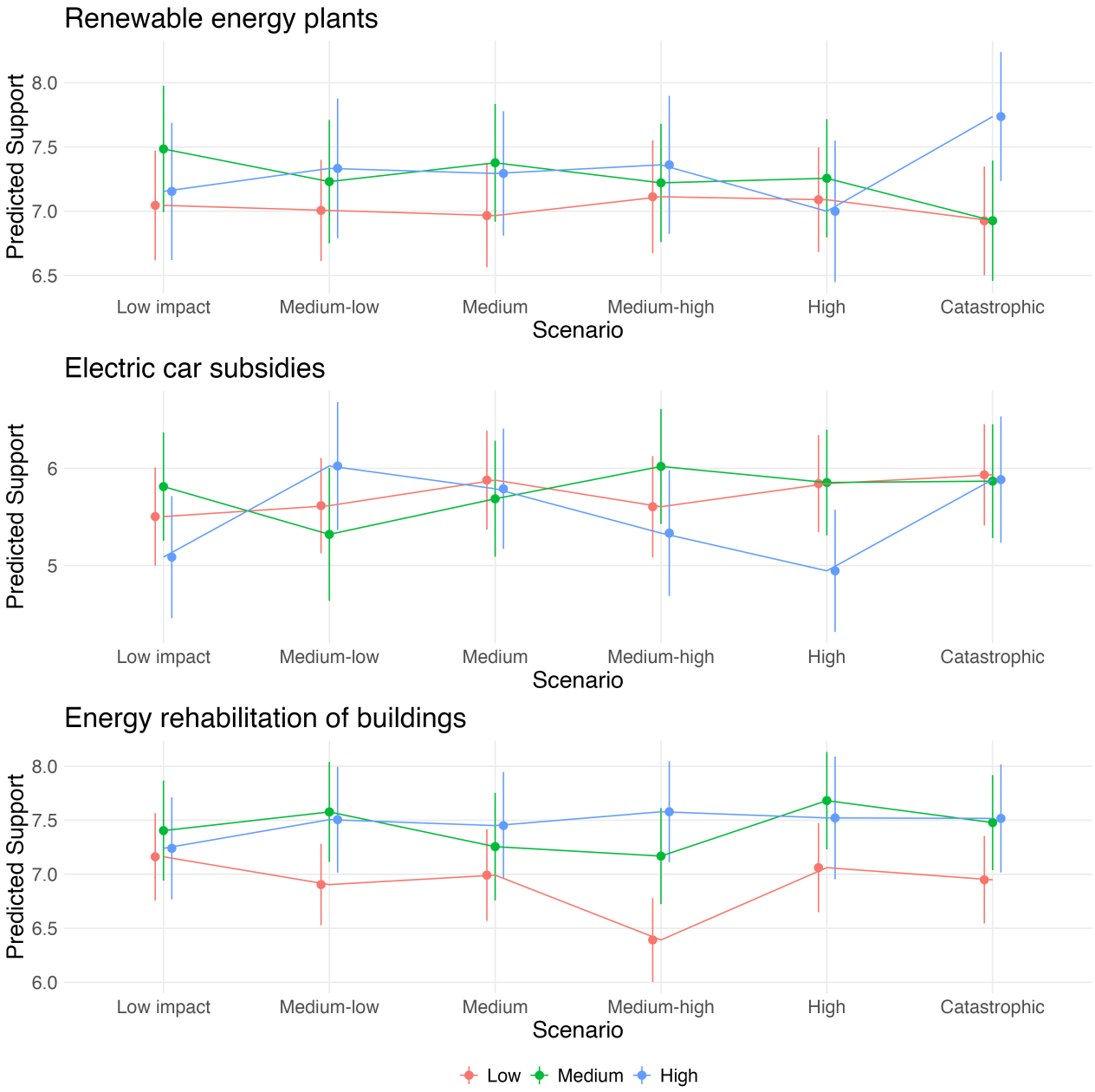
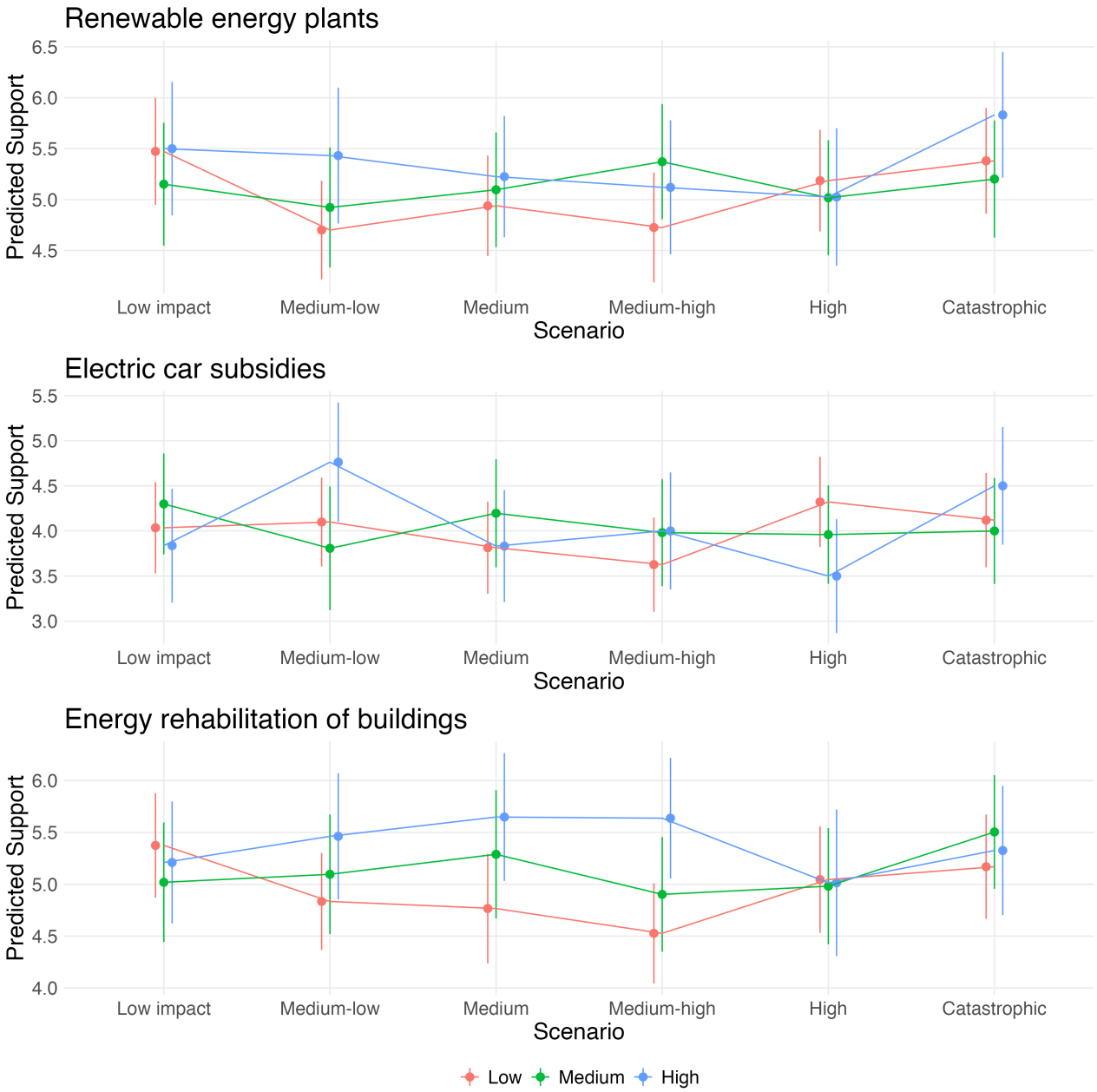
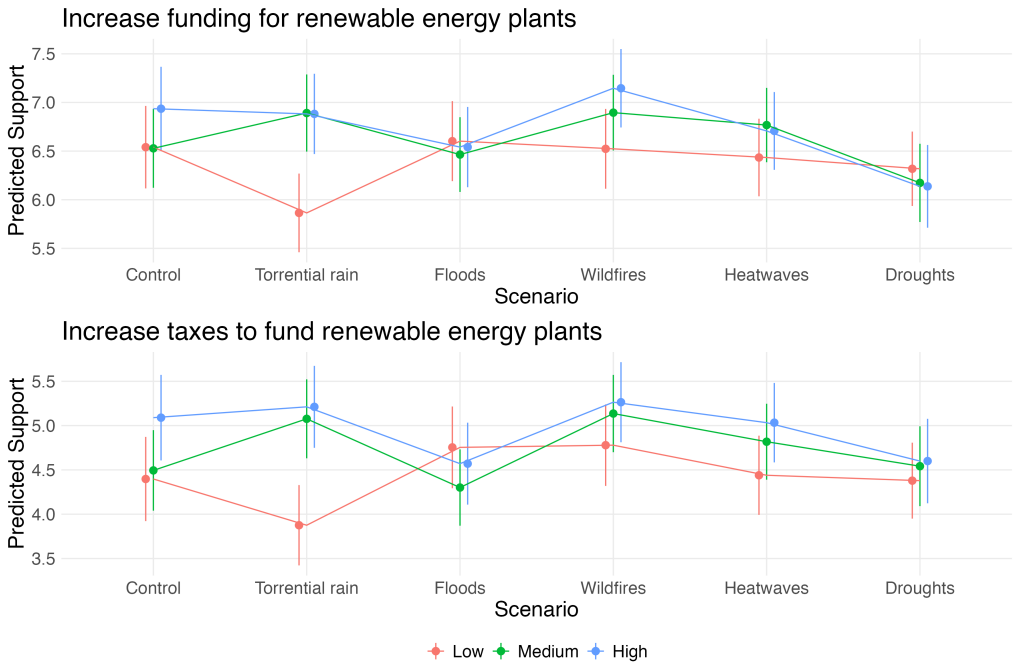


Figure C.6: Willingness to pay for climate policies, by scenario and political knowledge



Similarly, using data from the second survey, we show in Figure C.7 the predicted support for increasing funding or taxes to support renewable energy plants across treatment conditions and an individual's self-placement on the left-right scale. It is important to clarify that in this second survey, the political knowledge questions were different. We asked respondents to identify the autonomous community with a special fiscal status, the year when the Spanish Constitution was approved and a country that did not belong to NATO. Using these three questions, we created a political knowledge question as in the first survey. As can be seen, results show no differential pattern across treatment conditions and individuals' level of political knowledge.

Figure C.7: Predicted support for increasing funding or taxes to support renewable energy plants across treatment conditions and political knowledge



C.3 Policy and tax increase support by climate change origin

In a comparative perspective, as mentioned in the manuscript, the percentage of climate sceptics in Spain is low. Yet, it is still substantively interesting to explore whether the treatments only affected individuals who believe in the anthropogenic nature of climate change (and not among those who are climate sceptics). Both surveys included an ordinal question asking respondents whether they believed climate change was only due to natural processes or due to human action. Using this six-category question, we created an indicator that distinguishes between climate denialists (individuals who believe climate change is mainly due to natural processes), climate believers (who believe in the anthropogenic nature of climate change), and climate sceptics (who have a position in between the two). Using this indicator, we interacted it with the different treatments.

Results are shown in the graphs below. They once again corroborate the story that priming individuals with future climate-related scenarios does not increase their support for climate change policies.

Figure C.8: Agreement of public-financing by scenario and climate change origin

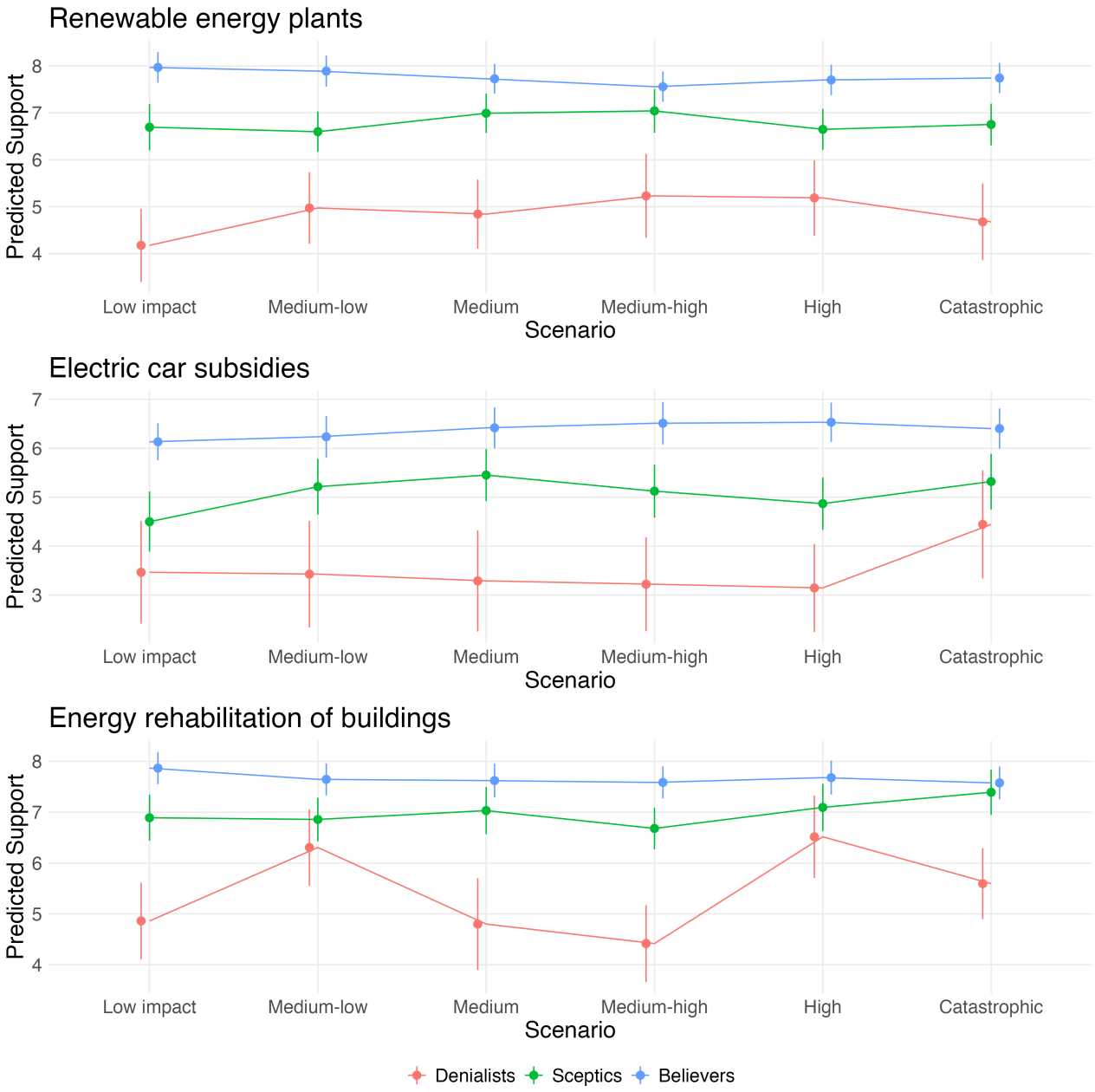
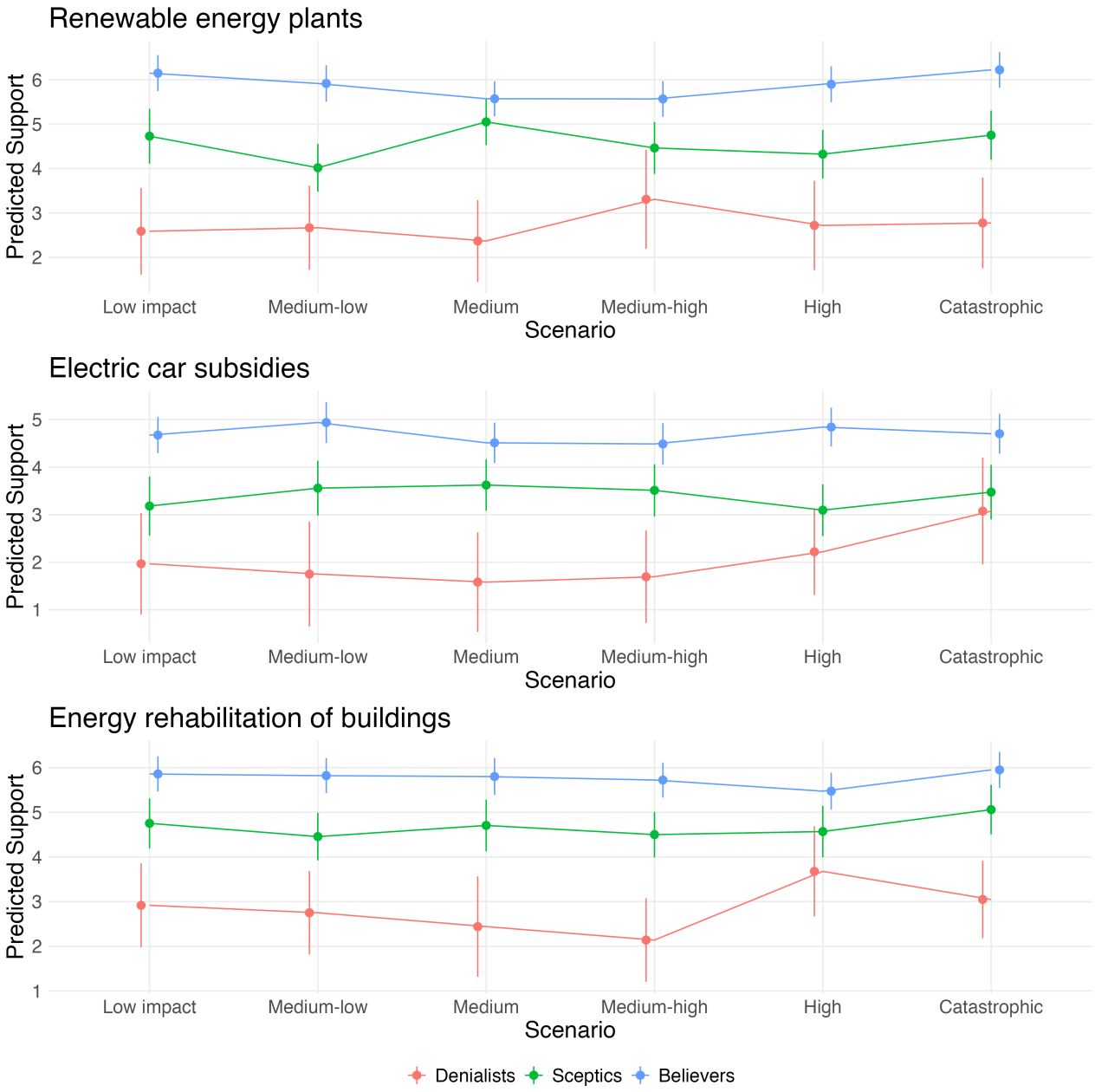
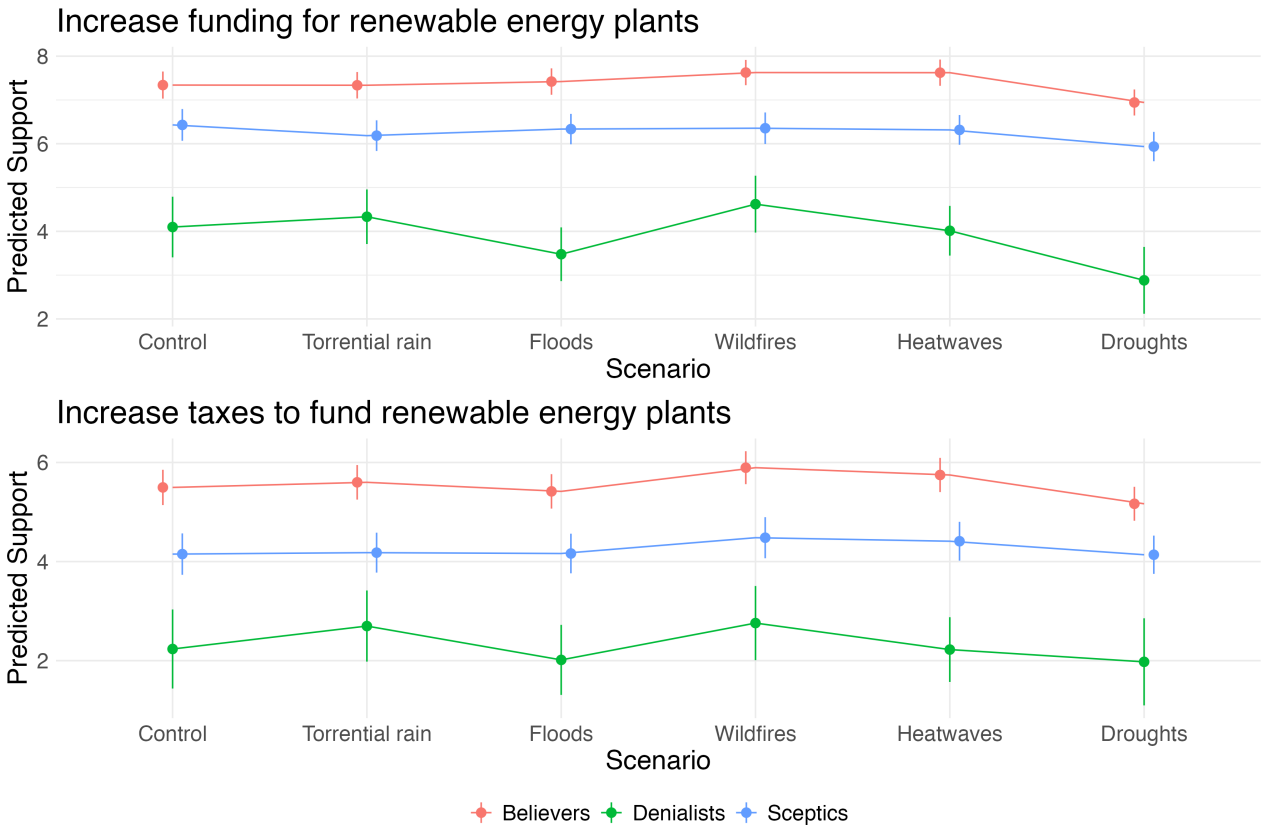


Figure C.9: Willingness to pay for climate policies, by scenario and climate change origin



We repeat the same exercise with the second survey–and hence the experiment embedded in this second survey. Figure C.10 shows the predicted support for increasing funding or taxes to support renewable energy plants across treatment conditions and an individual's self-placement on the left-right scale. There is once again no systematic heterogeneous pattern across treatment conditions and the respondent's self-placement on the left-right dimension.

Figure C.10: Predicted support for increasing funding or taxes to support renewable energy plants across treatment conditions and an individual's self-placement on the left-right scale



C.4 Policy and tax increase support by scenario and economy vs environment priority

Finally, we checked whether priming individuals with future climate-related scenarios triggers a larger effect among individuals who prioritise the economy versus the environment. It could be argued that individuals prioritising the environment are already convinced that action is needed, and hence the treatments are less likely to trigger an effect. In contrast, individuals who prioritise the economy might be more sensitive to future shocks created by the treatments. Both surveys included a question asking respondents whether they supported prioritising environmental protection even at the expense of the economy, or economic and job growth even if it came at the expense of the environment. We then ran a model with an interaction between this indicator and the treatments. Results are shown in the graphs below. They do not reveal any heterogeneous effects or, in other words, we do not see that the treatments had a larger effect on individuals who gave a higher priority to the economy (versus the environment).

Figure C.11: Agreement of public-financing by scenario and economy vs environment priority

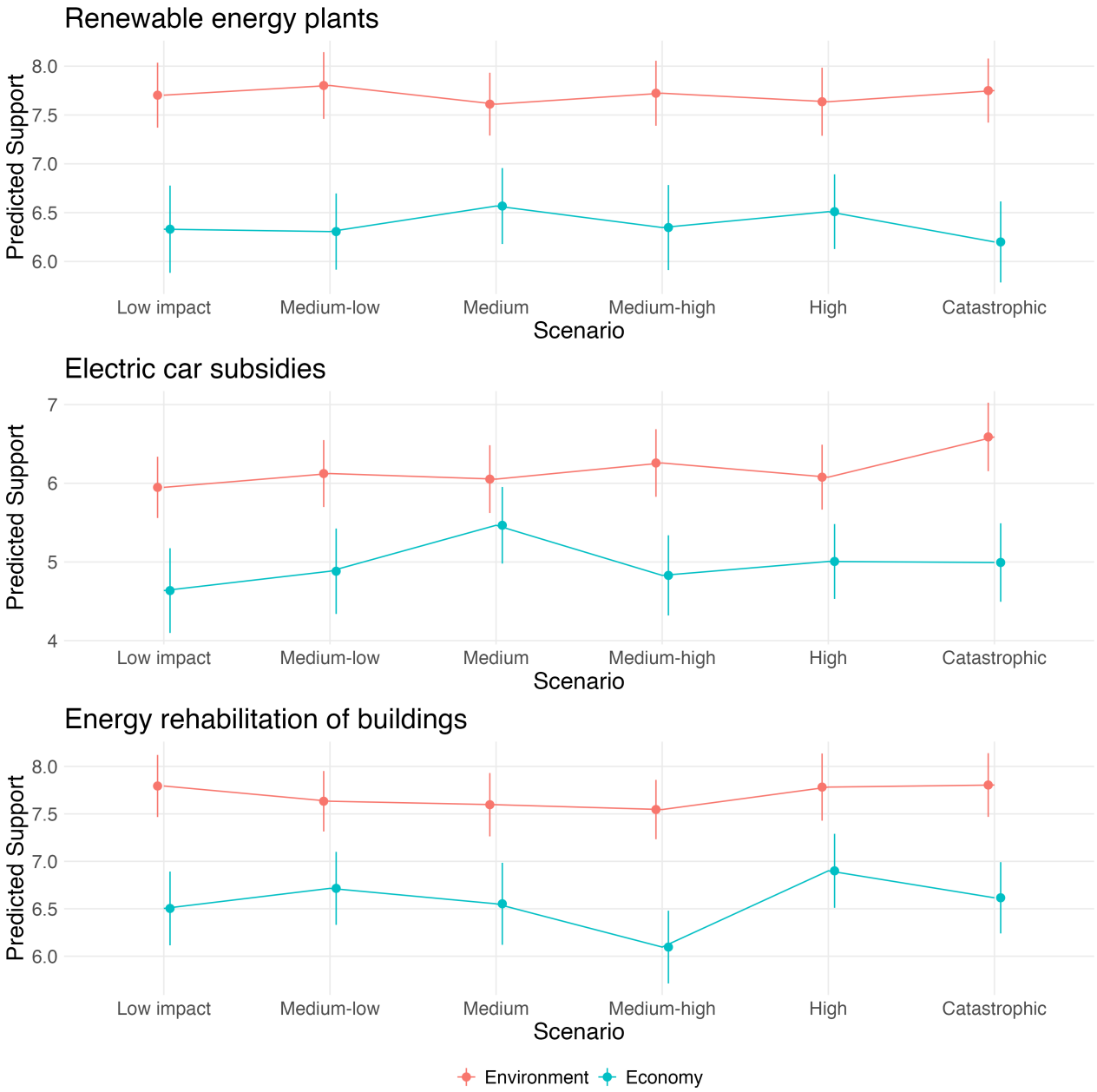
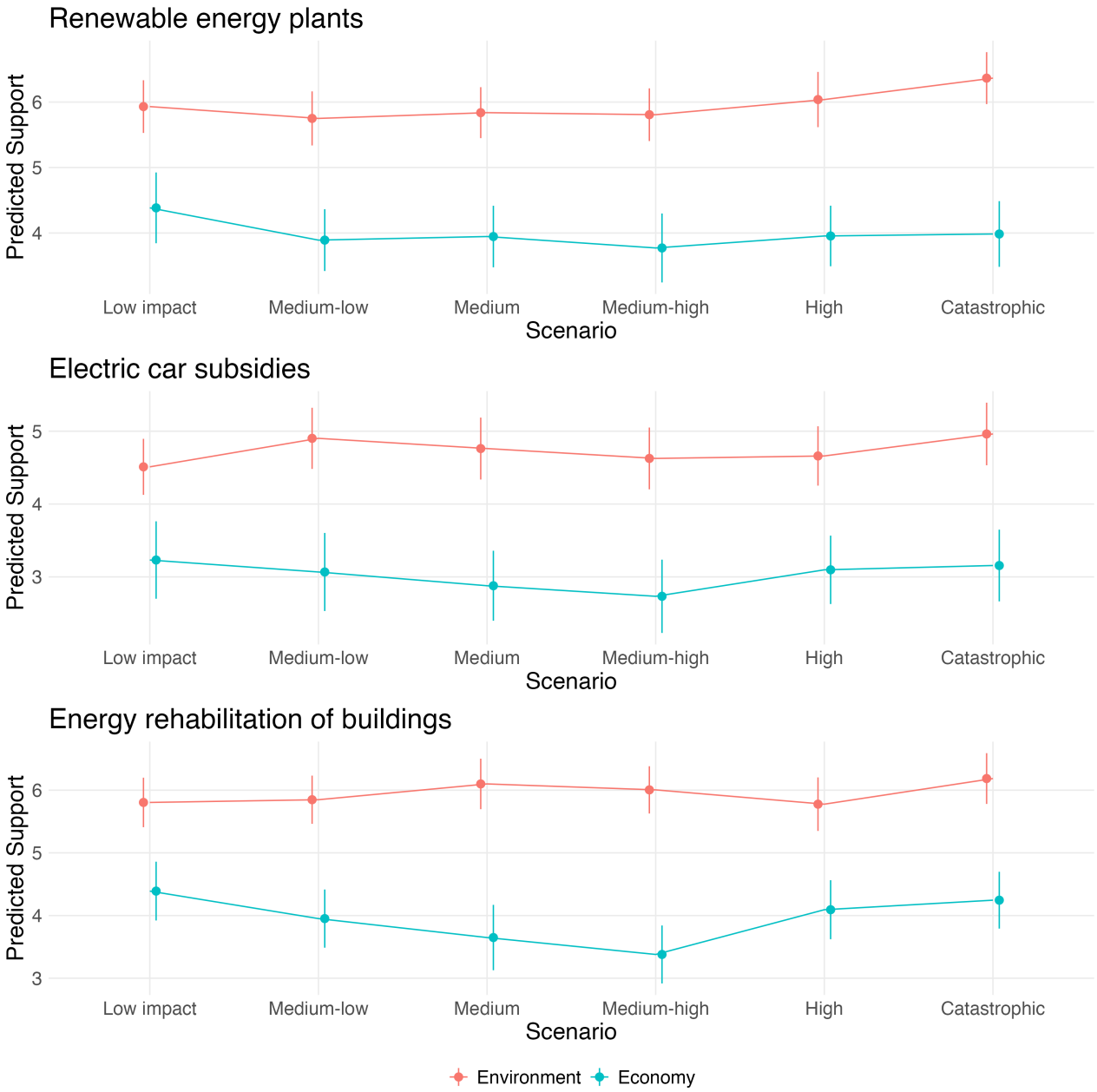
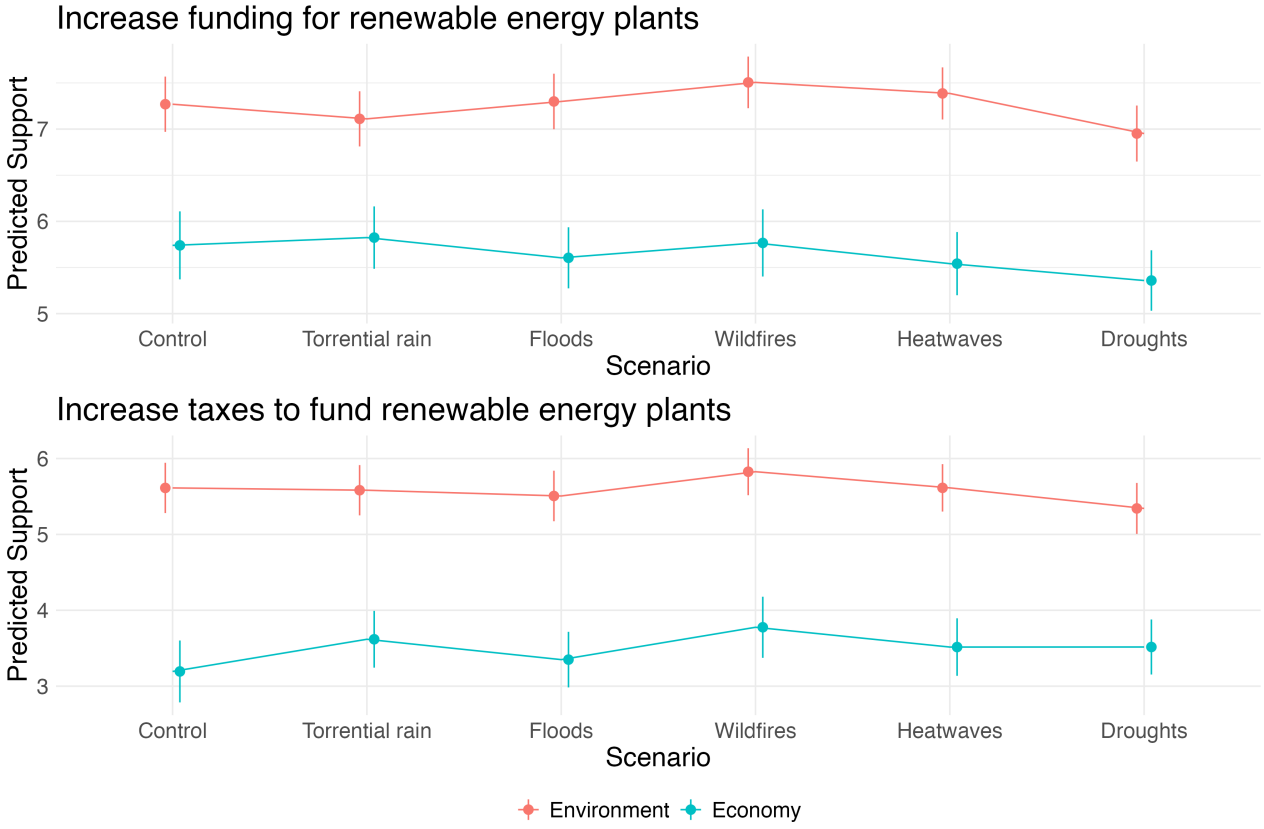


Figure C.12: Willingness to pay for climate policies, by scenario and economy vs environment priority



Finally, we repeated the same exercise on the second survey (and the experiment embedded in it). Figure C.13 shows the results. As expected, respondents prioritising the environment, compared to those prioritising the economy, are more likely to support increasing the funds for renewable energy projects or increasing taxes to fund such projects. However, there is no differential effect across treatment conditions.

Figure C.13: Predicted support for increasing funding or taxes to support renewable energy plants across treatment conditions and an individual's self-placement on the left-right scale



D Observational analysis

We conduct a comparative observational analysis to shed light on the relationship between perceptions of climate change severity and individuals' willingness to support climate policies. Our experimental designs are built upon the assumption that the different scenarios increase people's concern about climate change and, in turn, support for climate change policies also changes.

To test if this relationship exists, we resort to data from the 2016 European Social Survey[2], which included a specific module on attitudes towards climate change. Our main independent variable features *climate change concern*, and ranges from (1) not at all worried to (5) extremely worried. In turn, we use two outcomes. The first identifies a respondent's willingness to act to do things to reduce energy use (self-assessment). It ranges from Never (1) to Always (6). The second indicator captures an individual's support for subsidising renewable energies such as wind and solar power, ranging from (1) strongly in favour to (5) strongly against.

Figure D.1 plots the relationship between an individual's concern about climate change and his/her self-assessed frequency of doing things to reduce energy use. As can be seen, the relationship is positive, both in all ESS countries and in Spain.[3] In other words, individuals who are more concerned about climate change are more likely to say they do things to reduce energy use.

Figure D.2 plots the relationship between climate change concern and an individual's support for subsidising renewable energy to reduce climate change. As before, the relationship is positive.

We next estimate the association between climate change attitudes and the two dependent variables of interest in a regression framework. For better interpretation, we rescale the variables to range from 0 (strongly opposed) to 1 (strongly supportive). Using the two dependent variables mentioned above, we run four Ordinary Least Squares (OLS) regression models with climate change concern as the main independent variable: two of them for the entire sample of ESS countries and two additional models on the Spanish data only. In the first two models, we add country-fixed effects. In all models, we add a series of control variables–gender, age, education level, and income.

The regression models in Table D.1 consistently indicate a positive and significant relationship between climate change concern and the two dependent variables. Model 1 shows there is a positive and significant relationship between climate change concern and a respondent's self-assessed frequency of acting to reduce energy and his/her support for renewable energy subsidies. For instance, moving from mildly (0.25) to strongly (0.75) worried about climate change is associated with an 11.25 percentage point increase in the probability of energy-saving behaviour. Models 3 and 4, restricted to the Spanish data only, show the same relationship, and with a magnitude very similar in size.

[2]Available https://ess.sikt.no/en/study/f8e11f55-0c14-4ab3-abde-96d3f14d3c76

[3]The countries included in the ESS round 8 are Austria, Belgium, Czechia, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Israel, Italy, Lithuania, Netherlands, Norway, Poland, Portugal, Russian Federation, Slovenia, Spain, Sweden, Switzerland, United Kingdom.

Figure D.1: Relationship between climate change concern and acting to reduce energy use

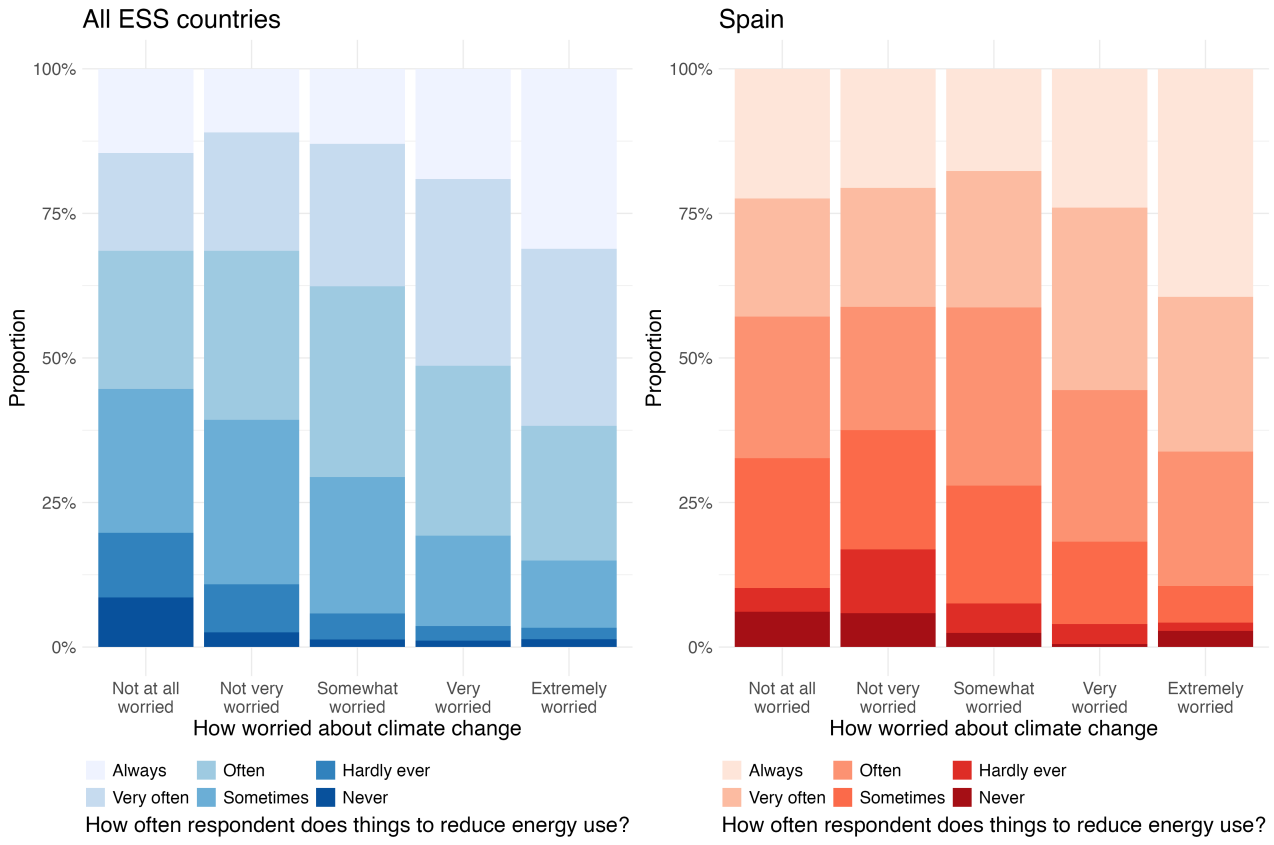
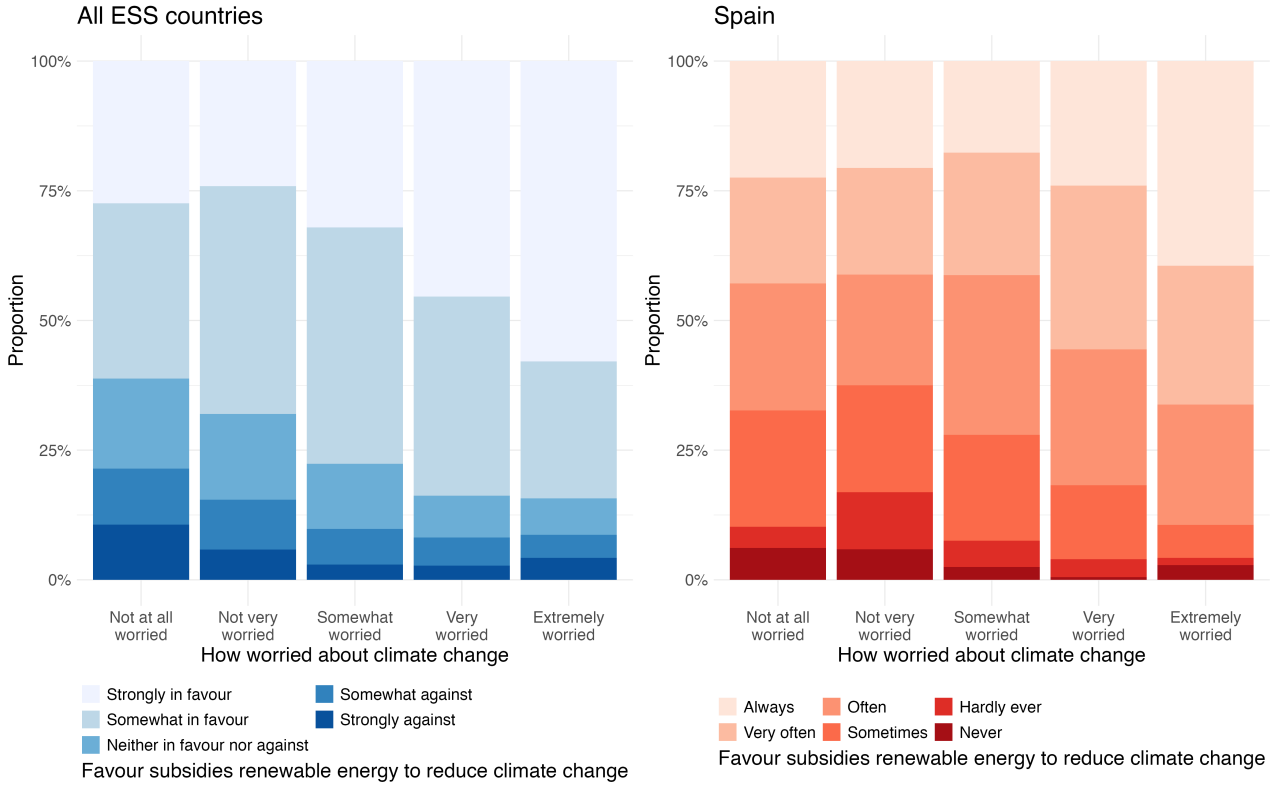


Figure D.2: Relationship between climate change concern and favouring subsidies on renewable energy to reduce climate change



Overall, these models point to the idea that the individual-level association between concern for climate change and support for climate change policies, which underpins our experimental design, is broadly similar in Spain compared to other European countries.

Table D.1: The relationship between Climate Change Concern, the self-assessed frequency to act to reduce energy and support for renewable energy subsidies

Dependent Variables:	Freq energy reduction	subsidies	Freq energy reduction	subsidies
Model:	(1)	(2)	(3)	(4)
Variables				
Climate Change worry	0.225***	0.195***	0.250***	0.173***
	(0.011)	(0.019)	(0.033)	(0.030)
Fixed-effects				
Country	Yes	Yes	Spain only	Spain only
Fit statistics				
Observations	41,177	41,177	1,797	1,797
R^2	0.07011	0.08482	0.05465	0.04033
Within R^2	0.03974	0.03215	0.05465	0.04033

*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

SEs in parentheses. All models include the control variables of the survey respondents' gender, age, education level, and income.