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* Views expressed are those of the author and do not necessarily reflect official positions of De Nederlandsche Bank.

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How Do Rising Temperatures Affect Inflation Expectations?

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Abstract:

Global temperatures are rising rapidly, yet little is known about how climate change affects consumer expectations about the macroeconomy. We address this gap by conducting a series of experiments within a large-scale, population-representative survey of euro area consumers. A 0.5°C rise in global temperatures increases five-year-ahead inflation expectations by 0.65 percentage points. Effects are stronger among consumers with greater awareness of climate change. Additionally, consumers expect adverse effects of global warming on economic growth, employment, and tax burden. Many consumers demonstrate limited willingness to pay for mitigating further temperature increases. Instead, they place primary responsibility for climate action on governments.

JEL Classifications: D12, E31, E52, H31, Q54

Keywords: Climate change, Global Warming, Inflation expectations, Randomized Control Trial (RCT), Consumer Expectations Survey (CES)

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"[...] extreme weather events, and the unfolding climate crisis more broadly, could drive up food prices by more than expected." **Christine Lagarde** – president of the European Central Bank (press conference, 12.12.2024)

"*Present trends are racing our planet down a dead-end 3C temperature rise.*" **Antonio Guterres** – U.N. Secretary-General (Reuters, 13.11.2024)

1. Introduction

Global climate change is accelerating. The record-breaking heat of 2024 and extreme events like Europe's hottest summer, wildfires, and floods across multiple countries underscore the failure to meet the Paris Agreement's 1.5°C target.[1] Climate change and its consequences raise questions about its macroeconomic implications challenging both governments and central banks through possible risks to price and financial stability. Understanding the macroeconomic impact of global warming, including its influence on inflation, has therefore become a critical topic for research and policy.[2]

The public is generally sensitive to climate change, with growing concern and awareness about its repercussions. A representative survey among European consumers, which we will discuss in detail below, reveals that three-quarters of consumers pay attention to the news on climate change, while a similar fraction is concerned about climate change affecting their own financial situation. Despite this high level of consumer awareness regarding climate change, very little is known about how climate change affects consumers' inflation expectations and their broader economic beliefs.

This paper is, to the best of our knowledge, the first to provide causal evidence on how changes in global temperature affect consumers' inflation and other macroeconomic expectations. In addition, we assess the heterogeneous impact of climate change on these expectations. Identifying such an effect is challenging, as expectations are endogenous (e.g., they correlate with time varying unobserved idiosyncratic factors such as optimism, that in turn correlate with climate change beliefs). To address this, we implement an experiment within a population-representative survey, randomly assigning respondents to different scenarios of increasing and decreasing global temperatures over the next five years. We then elicit consumers' inflation expectations, along with other macroeconomic expectations (including economic growth, unemployment, and tax burden) and some household-specific expectations. The random assignment ensures that average differences in expectations across groups

[1] The year 2024 marked the warmest year in over a century and a half. See also recent reporting on "World breaches 1.5°C global warming target for first time in 2024" (Financial Times, January 10th, 2025), reporting on "Deadly 'early summer' heatwave moves across Europe as climate scientists ring alarm bells" (Financial Times, July 3rd, 2025) and Wehner and Kossin (2024).

[2] Central banks around the world increasingly engage in climate change related communication (Campiglio et al. 2025) and recent research finds that the ECB's climate actions generally increase public trust (Eickmeier and Petersen 2024).

are driven solely by the varying intensity of temperature scenarios and are not confounded by differences in observed and unobserved respondent characteristics, which net out on average.

Understanding how climate change influences consumers' inflation expectations and broader macroeconomic beliefs matters, given the far-reaching implications of these expectations for economic behaviour and aggregate outcomes. A growing body of research shows that consumers' expectations are central state variables in modern macroeconomics, shaping consumption, saving, wage-setting, and price dynamics (e.g., Coibion and Gorodnichenko 2026; Weber et al. 2022). Beyond individual decision-making, understanding factors affecting consumers' inflation expectations is important for maintaining price stability (D'Acunto et al. 2024, Forbes et al. 2025).

We begin our analysis by demonstrating a positive association between actual temperature changes in a respondent's region and their inflation expectations. Next, to address concerns about endogeneity, we implement an Randomized Control Trial (RCT) making use of recent advances in survey methodology, as reviewed by Stantcheva (2023) and Haaland et al. (2023). In particular, we implemented a series of special-purpose questions and survey experiments across multiple waves of the European Central Bank Consumer Expectations Survey (CES). The survey provides representative data covering the eleven largest euro area countries. Our experimental design consists of four distinct groups of respondents, each randomly assigned to one of four average global temperature change scenarios (i.e., a concept that is familiar and relatable to most consumers). In our baseline survey experiment, fielded in June 2025, we compare responses in scenarios where global temperature increases by 0.5°C or 1.5°C against a baseline group with only a minimal 0.01°C change (which essentially represents the no temperature change control group). The fourth scenario involves a 0.5°C decline in global temperature. This scenario serves as a consistency check and a reference point for potential asymmetries in response to positive and negative temperature changes. Respondents report their inflation expectations, expectations about GDP growth, stocks and house prices, government debt and taxes, as well as their financial well-being, all subject to the scenario they have been assigned to.[3]

We uncover several novel findings. First, consumers exposed to higher temperature scenarios raise their inflation expectations. A 0.5°C rise in global temperatures induces a 0.65 percentage point increase in the five-year-ahead inflation expectations. Consumers primarily attribute these increases in, for example, food prices to supply-side factors (crop failures, higher production costs and supply chain disruptions) and to a lesser extent to demand and cost-push factors. Moreover, we document that rising

[3] We gain further insights from another survey module in September 2024, using more extreme temperature scenarios (ranging from a 1.5°C decrease to a 3.0°C increase) which allows for the identification of potential non-linearities in the transmission of temperature changes to expectations. Overall, the results from both experiments are qualitatively consistent, strengthening the robustness of our conclusions. Additionally, the time gap between the two surveys (the first conducted after summer 2024 and the second before summer 2025) reduces concerns about seasonal effects influencing our results.

global temperatures also affect other macroeconomic expectations: consumers anticipate worse macroeconomic outcomes, including lower expected growth and asset prices, and higher expected unemployment and fiscal burden. They also link global warming to biodiversity loss and increased immigration. As a robustness check, we find no significant effects of temperature changes on a placebo outcome – the number of Oscar-winning movies.

Second, there is considerable heterogeneity in the estimated effects on inflation expectations, notably with respect to climate knowledge. Consumers who have a better understanding of basic scientific facts on the effects of climate change are likely better positioned to recognise that even a modest increase in global temperatures could exert upward pressure on prices. Thus, they tend to form higher inflation expectations in response to a given temperature increase relative to their less knowledgeable counterparts.

Third, the perceived impact of global temperature change is nonlinear. For example, the downward effects on inflation expectations from a 0.5°C temperature decline tend to be larger in absolute terms than the counterpart positive effects of a 0.5°C temperature increase. One plausible explanation for this difference may be that many consumers believe that at least part of the effects due to global warming may have materialized already and are therefore built into current expectations. While 1.5°C temperature increases have the largest effects, much of the impact on expectations materializes even under the smaller 0.5°C scenario. For the average consumer, a 0.5°C rise is already perceived as significantly damaging across most of the outcomes studied.

Fourth, most consumers are willing to pay a monthly amount to the government to finance measures that will prevent temperature increases. The unconditional average payment accumulates to about €3,060 over five years. While non-negligible, these amounts are considerably lower than what consumers would have been willing to pay to smooth business cycle fluctuations or to bring inflation down to their desired levels (see Georgarakos et al. 2025). Consumers primarily view the government responsible for taking climate actions, and this may also be reflected in their increasing tax expectations in response to higher global temperatures.

Our findings have concrete policy implications. The economic consequences of global temperature changes extend beyond the direct impact through economic damages caused by extreme weather events. Inflation, as well as other economic expectations and attitudes, are also impacted and, in turn, influence consumer behaviour and the broader macroeconomy through these channels.

In addition, these results have implications for monetary policy and the anchoring of inflation expectations. As climate change increases the frequency and severity of extreme weather events, disruptions to agricultural production, supply chains, and energy markets can exert persistent upward pressure on prices. If consumers tend to anticipate higher future inflation as a result, their expectations may become embedded in wage and price-setting behaviour, potentially intensifying inflationary

pressures. Existing research suggests that consumers with better knowledge of the economy and monetary policy tend to trust more the central bank and hold better anchored inflation expectations (Ehrmann et al. 2025). However, our findings suggest that consumers with greater awareness of climate change associate rising global temperatures with higher longer-term inflationary pressures, pointing to some risk of de-anchoring. If climate change systematically raises consumers' long-term inflation expectations, it may weaken expectation anchoring and increase the output costs of disinflation, thereby, posing new challenges for monetary policy and its communication.

Our paper contributes to several strands of literature on the economic impact of climate change. A growing body of research has sought to quantify these effects, with many studies focusing on the aggregate monetary consequences. Recent findings reveal substantial and persistent economic losses due to rising temperatures (e.g., Carleton et al. 2022; Bilal and Känzig 2024; Kotz et al. 2024a). These effects vary across countries due to heterogeneous geographic exposure to climate-related risks (Cruz and Rossi-Hansberg 2024). While earlier work, such as Tol (2009), often overlooked broader costs, recent studies emphasize additional economic impacts, including biodiversity loss, which diminishes current output and limits future growth opportunities (Giglio et al. 2024).

Research on consumer behaviour shows that individuals are generally attentive to and concerned about climate change (Whitmarsh and Capstick 2018; Crispino and Loberto 2024).[4] Dechezleprêtre et al. (2025) find that educational videos explaining policy mechanisms can increase public support for climate policies. Furthermore, growing evidence suggests that beliefs about climate change influence asset prices (Bernstein et al. 2019; Baldauf et al. 2020; Giglio et al. 2021; Fairweather et al. 2024) and may become increasingly important in the future. Stroebel and Wurgler (2021) highlight that economic experts believe climate risks are underpriced in financial markets, while Giglio et al. (2023) show that biodiversity loss risks are similarly underrepresented in equity prices. A small but expanding literature examines how financial analysts perceive climate change risks. Faralli (2024) finds that extreme weather events improve earnings forecast accuracy among equity analysts, suggesting that analysts incorporate climate risks only when they become salient. Chan (2024) reports that only a minority of analysts explicitly address climate risks in their reports. Professional forecasters, meanwhile, associate extreme weather events with lower growth and higher inflation expectations, consistent with a supply shock interpretation (Martinez, 2025).

Recent research highlights that consumers' narratives about the economy can differ substantially from those of experts (Andre et al. 2022, 2024b), yet very few studies have examined how consumers think about the economic effects of climate change. Meinerding et al. (2023) find that higher concerns about climate change among German consumers correlate with lower inflation expectations, potentially reflecting a demand-side view that anticipates reduced aggregate demand. Dietrich et al. (2024)

[4] See Baiardi (2023) for a review of global climate change awareness and concerns.

demonstrate that news about climate-related disasters influences consumers' growth expectations, with perceptions of rare, costly disasters modestly reducing growth outlooks.

We make three main contributions to the existing literature. First, we document how households perceive and process information about (future) climate change. Second, we provide causal evidence on the effect of temperature changes on inflation expectations and broader macroeconomic beliefs, and uncover considerable heterogeneity by climate knowledge. Third, we quantify households' willingness to pay for climate mitigation, linking expectations to policy preferences.

The remainder of this paper is structured as follows. Section 2 presents the data and describes the experimental design that we use for identification. Section 3 presents the empirical analysis on inflation expectations, including robustness tests to ensure the integrity of the experimental design. Section 4 reviews results for other macroeconomic expectations. Section 5 presents results on consumers' willingness to pay for climate change mitigation. Finally, Section 6 concludes and discusses implications of our findings.

2. Data and experiment design

2.1 The Consumer Expectations Survey

We use micro-level data from the ECB's Consumer Expectations Survey (CES). This internet-based survey is fielded every month over a sample of about 19,000 consumers in the eleven largest euro area countries, offering nationally representative data of the underlying populations. The CES was launched in a pilot phase in January 2020 interviewing households every month in the six largest euro area economies (Belgium, France, Germany, Italy, the Netherlands, Spain). Since January 2022, the survey has been expanded to cover five additional countries (Austria, Greece, Finland, Ireland, and Portugal). For details see Christelis et al. (2024), Georgarakos and Kenny (2022) and ECB (2021). The flexible survey design, the very large number of observations, and its online nature make the CES especially suitable for our research purposes. We field two survey experiments and combine them with additional special-purpose and background questions collected in waves from August and December 2024, as well as September 2024 and June 2025.[5]

2.2 Climate change knowledge, beliefs, and the identification challenge

Average global land and ocean temperatures have increased considerably since 1850. The current global temperature is nearly 1.5°C above the 1901-2000 average, and a clear acceleration in global temperatures can be observed over the last four decades. Higher average global temperatures also go

[5] Appendix D provides details and the exact wording of questions and response options. Throughout our analysis, we make use of programs provided by Stepner (2013), Jann (2014), and Correia (2023) for visualisations.

hand in hand with an increasing frequency and severity of extreme weather events, affecting a growing share of households worldwide. Consistent with these trends, climate change has also become an increasingly salient topic in public discourse.[6]

Against this background, we find that consumers display a relatively high, but far from uniform, degree of awareness and knowledge about the causes and consequences of climate change. Figure 1 (Panel A) shows that while climate knowledge is heterogeneous, two-thirds of respondents answer correctly at least five out of seven objective true/false questions on the causes and consequences of climate change, following the framework of Tobler et al. (2012). In line with this, consumers report a considerable degree of awareness of climate change news with the majority reporting to pay some or much attention to such news (Figure 1, Panel B). Concerns about the impact of climate change on own financial situation over the next five years are quite dispersed across respondents (Figure 1, Panel C). A large fraction of consumers (44%) reports that they have already been financially affected by at least one extreme weather event in the past five years.[7]

Consumers also expect climate change to have meaningful macroeconomic consequences. In August 2024, consumers assign, on average, a 22 percent chance that extreme weather events will affect the economic situation of their country over the next five years. Thus, similar to findings for the United States (Dietrich et al. 2024), euro area households anticipate costly extreme weather events to affect their country's economy. These beliefs are consistent with external evidence showing that real global damages from weather-related events have more than doubled over the past two decades, affecting output, productive capital, real estate, and infrastructure (Mauderer and Talbot 2024; Banerjee et al. 2023). From a macroeconomic perspective, climate change can exert upward pressure on inflation, particularly on food prices, through supply disruptions, while longer-run effects are more ambiguous. Crucially, beliefs about future climate change, independent of realised events, may themselves shape consumers' inflation and macroeconomic expectations. This naturally raises the question of how consumers form their inflation and other expectations in response to the economic repercussions of climate change they perceive.

Taken together, these patterns show that climate change is salient and that households differ along several dimensions that are likely to also matter for expectation formation. This implies that simple

[6] See recent work by Robinson et al. (2021); IPCC 2021 (https://www.ipcc.ch/2021/08/09/ar6-wg1-20210809-pr/), and BBC reporting "A year of extreme weather that challenged billions" on December 29th 2025, and the 2024 report on European Climate Risk Assessment (https://www.eea.europa.eu/publications/european-climate-risk-assessment). Figure B1 illustrates the trends in global average temperatures and Figure B2 documents the increasing global coverage of climate change related news (Panel A) and recent cost estimates for European countries (Panel B). See Bilal and Stock (2025) for a recent review of the rapidly growing literature on climate change and its economic costs.

[7] The most common events impacting consumers financially are temperature-related events: droughts (22%), floods (18%), storms (15%), and wildfires (10%). Figure B3 in the appendix illustrates the cross-country heterogeneity. See Appendix A for a more detailed discussion of these descriptive survey results and Table C2 for an overview of consumers' climate change knowledge.

comparisons of inflation (or growth) expectations across groups with different climate beliefs will likely confound climate-related beliefs with (unobserved) household characteristics. In Table 1, we show how this heterogeneity in climate knowledge, attention, and concerns is systematically related to observable socio-demographic characteristics, such as age, education, financial literacy, income, and hand-to-mouth status. Older, more educated, and more financially literate consumers tend to exhibit higher climate knowledge and pay more attention to climate change news, yet they report lower concern about climate change affecting their household's financial situation. In contrast, hand-to-mouth consumers express relatively high concern about both national and household-level economic consequences of climate change, despite having lower levels of climate knowledge and paying less attention to climate news. On the other hand, higher-income households are more knowledgeable and attentive but less personally concerned, while homeowners are comparatively less worried about macroeconomic impacts but more concerned about household-level financial effects.

Beyond observable characteristics, consumers' climate-related beliefs are likely correlated with unobserved, time-varying traits such as general optimism, political attitudes, or trust in science that also directly shape macroeconomic expectations. In addition, unobserved traits most likely also correlate with consumers' awareness about climate change. As a result, estimating the causal effect of climate change on expectations cannot be credibly achieved using observed variation alone.

2.3 Experimental design

To address this empirical challenge, we implement two RCTs in the September 2024 and June 2025 rounds of the CES as part of special purpose modules fielded after the regular surveys.[8] Respondents are randomly divided into four different groups stratified at the country and recruitment type level. Each of the groups is assigned to a different hypothetical scenario for global temperature change. Before this, respondents are informed that "According to historical data, the annual average global temperature in 2023 has increased significantly by about 1 degree Celsius compared to 50 years ago". This information helps putting the total change in temperature in perspective.

Thereafter the June 2025 survey presents one of the following four scenarios, i.e., "Suppose that in the next 5 years, the average global temperature will [decrease considerably by 0.5/increase only slightly by 0.01/increase considerably by 0.5/increase considerably by 1.5] degrees Celsius compared to today". In our empirical analysis, we are particularly interested in the scenarios with a temperature increase of 0.5°C and 1.5°C. The scenario with 0.01°C temperature increase serves as the (almost) no change base category (i.e., it is like a control group in an RCT). Responses to the 0.5°C temperature decline scenario serve as a validity check and can be used to test the symmetry of effects of higher/lower temperature expectations. The choice of 1.5°C temperature change is chosen as this increase has become a focal

[8] See Table C1 in the Appendix for sample summary statistics of socio-demographics.

point in public discussions and the media after the 2015 Paris agreement to limit the global temperature rise to well below 2°C and ideally to 1.5°C above pre-industrial levels. While the 1.5°C change is tied to a specific reference point in that climate agreement, the public may recognize that a 1.5°C increase represents a significant change in temperature. The September 2024 survey includes a 3.0°C increase scenario to present an even more extreme case, allowing us to investigate potential nonlinear effects of temperature change on consumer expectations. This 3.0°C increase scenario in September 2024 was complemented with -1.5°C, +0.01° and +1.5°C scenarios, but it was otherwise identical to the June 2025 experiment. In the remainder of the paper, we primarily discuss the June 2025 findings and refer to the September 2024 results where relevant.

Given the scenario to which they are assigned, respondents are asked to report how this scenario would change their inflation expectations, as well as several other expectations regarding the economy and their own financial well-being over the next five years. Answer categories are "decrease a lot", "decrease a little", "no effect", "increase a little" and "increase a lot". We are particularly interested in the effects of rising temperatures on inflation and growth expectations and for these two concepts respondents are also asked, following their qualitative answer, to provide a quantitative response. As the price of certain categories like food may respond more directly to extreme weather events (Ciccarelli et al. 2024, Kotz et al. 2024b), we also ask in September 2024 for (qualitative) expectations regarding specific components, such as food prices, energy prices, and prices of other goods and services. Moreover, respondents expecting higher food prices are asked a follow-up question where they can indicate the (perceived) reason for higher food prices.

Next to the consequences for consumer prices, respondents indicate the expected consequences for the macroeconomy (economic growth and unemployment), asset prices (stock prices and house prices), public finances (government debt and taxes) as well as their household financial well-being. In addition, we ask for the consequences for biodiversity as a plausibility check and immigration to study the likely effects beyond standard economic expectations. Finally, we ask for the consequences for "the number of Oscar-winning movies" over the next five years which is included as a placebo outcome item as there is no reason to expect a systematic change related to global temperature changes. To minimise any ordering effects influencing our results, we block-randomized the order of the outcome variables, grouping together those that logically relate, such as the three items related to price expectations.

Properly designed scenario questions can help uncovering causal relationships that are hard to identify in observational data. Yet, it is instructive for these scenarios to refer to situations that many respondents can relate to or consider plausible, and can therefore conceptualise their possible implications. For example, is a scenario involving a 1.5°C increase in temperature over the next five years, compared to today, something respondents would consider plausible or at least not entirely unrealistic? To this end, we elicit in the June 2025 survey (prior to the scenario questions) expectations about global temperature changes over the next five years using a probabilistic question format (cf. Manski 2004). Figure 2

displays the implied distribution of respondents expected mean change in global temperatures. Two key patterns emerge. First, the vast majority of respondents (more than 80%) expect an increase in global temperatures, and a sizable one-third of the sample expects a quite significant increase of 1.5°C or more. Moreover, most households expect an average temperature increase on the order of 0.5°C, 1.5°C, 2.5°C, or 3.0°C. This suggests that the scenarios shown to respondents are seen as realistic and that many consumers have likely thought about them and can easily conceptualise their implications. Second, while the vast majority of consumers expects a significant rise in global temperatures over the next five years, there is considerable disagreement among them, as well as substantial idiosyncratic uncertainty about future temperature changes. Thus, the use of scenarios is quite appropriate in this context. Moreover, we ask a number of special-purpose questions to measure respondents' concerns about climate change, their climate knowledge, experiences, expectations, and attention to climate news that we analyse in the next section.

3. Empirical results

3.1 How do regional temperatures and extreme weather events correlate with inflation expectations?

Data from the monthly CES questionnaires show a positive correlation between consumer inflation expectations and regional temperatures in the month these surveys are fielded. Figure 3 shows the correlation between mean expected inflation one- and three-years ahead and monthly deviations of regional (NUTS-1 and 2) temperatures from their long-term average. Clearly, in months with relatively higher temperatures, expected inflation is higher, which demonstrates that temperature and inflation expectations are likely interconnected. This interconnection does not necessarily imply a causal relation. To investigate causation, we have fielded the RCT with different temperature scenarios.

Moreover, we correlate consumers' perceived likelihood of extreme weather events affecting the country's economy and their 1-, 3- and 5-year-ahead inflation expectations regularly collected in the survey.[9] We find a positive correlation across all horizons, suggesting that consumers who expect a higher likelihood of extreme weather events affecting their country's economy also expect higher inflation, especially for the longer-term (5-year-ahead) horizon.

3.2 The impact of global warming on inflation expectations

Our survey elicits qualitative as well as quantitative inflation expectations due to temperature changes. Before discussing regression results, it is worth illustrating two testable features of our experimental design. Recall that we randomly assign respondents to one of four different scenarios with a temperature change of -0.5°C, +0.01°C, +0.5°C or +1.5°C. A first feature is whether responses across the four

[9] See Figure B4 in the Appendix.

scenarios display a monotonic pattern in that progressively higher global temperatures induce a unidirectional change (either increase or decrease) in the underlying expectation. Figure 4 illustrates that the qualitative 5-year-ahead inflation expectations indeed monotonically increase with the different temperature change scenarios (i.e., an increasing fraction of consumers expect prices to increase a lot or a little for higher global temperature change). Given that each respondent answers only one of the four scenarios, this monotonic pattern illustrates that the consumers respond consistently to the different temperature changes presented to them.

A second feature is whether consumers react symmetrically to a 0.5°C temperature decline or increase relative to the base scenario (no change in temperature). This comparison shows whether consumers believe the impact of similar temperature decreases and increases has similar or asymmetric (opposite) effects. We will formally test for monotonicity and symmetry in the regression analysis below.

We estimate ordered logit models (Eq. 1) to assess the effect of different global warming scenarios on inflation expectations and a number of other macroeconomic expectations ($Y_{k,i}$) that take three ordered values: 1 "decrease", 2 "no effect" or 3 "increase" (i.e., "increase (decrease) a lot" and "increase (decrease) a little" responses are grouped as "increase (decrease)") for each macroeconomic expectation (k). Specifically, we use the following model:

$$Y_{k,i}^{*} = \beta T_{m,i} + X_i'\omega + \delta_c + \epsilon_{k,i} \text{ (Eq. 1)}$$

with

$$Y_{k,i} = \begin{cases} 1 \; if \; Y_{k,i}^{*} \leq \tau_1, \\ 2 \; if \; \tau_1 < \; Y_{k,i}^{*} \leq \; \tau_2, \\ 3 \; if \; Y_{k,i}^{*} > \; \tau_2, \end{cases}$$

and $\epsilon_{k,i}$ follows a logistic distribution. $T_{m,i}$ is the treatment with m treatment levels varying randomly across individuals i. X_i' is a vector of socio-economic control variables (age, education, gender, household size, hand-to-mouth, homeownership, financial literacy, income) elicited before the experiment, δ_c is a vector of country and recruitment-type dummies, and τ_1 and τ_2 are the cut-off parameters.

Throughout we report average marginal effects on the likelihood of each of these three outcomes due to different (randomly assigned) global temperature scenarios (0.5°C decline, 0.5°C and 1.5°C increase) relative to the baseline scenario of a 0.01°C of virtually no further temperature change. In addition, we report the outcome of two Wald tests for the null hypothesis of an equal impact of the 0.5°C and 1.5°C scenarios, as well as the null hypothesis that the impact of a 0.5°C decline and a 0.5°C increase are

equal in absolute value (i.e., the effect of a decline or an increase in global temperature on household inflation expectations is symmetric).[10]

Higher global temperatures increase consumer inflation expectations over the next 5 years. Specifically, the 0.5°C increase scenario, relative to the baseline, implies a 15.8 percentage points higher likelihood in the expectation that prices will increase. A 1.5°C global temperature increase has a relatively larger impact (17.7 percentage points). Although, according to the Wald test this differs statistically from the impact of the 0.5°C increase scenario (p-value 0.03), it also confirms that consumers anticipate that the bulk of the estimated impact would materialise under the smaller 0.5°C temperature increase scenario. Compared with the 0.5°C temperature increase scenario, a 0.5°C temperature decline has an opposite but larger (in absolute terms) effect, implying a 19.9 percentage points lower likelihood of expecting prices to increase. This difference between the impact size of a 0.5°C decline and a 0.5°C increase (p-value=0.01) suggests that consumers are more likely to expect an inflation increase when the average global temperature increases. These effects are based on the June 2025 survey, but they are corroborated by the findings from the September 2024 survey that involves more extreme temperature scenarios (3°C increase) and asks about different bundles of goods and services (see below).

To estimate the numerical impact on inflation expectations, we included a follow-up in the qualitative question where respondents are asked to estimate the impact on five-year-ahead expected inflation. We use this continuous measure as the dependent variable in Equation (1) and estimate it, instead, via OLS (see columns 7 and 8 of Table 2). The 0.5°C (1.5°C) increase scenario raises five-year-ahead inflation expectations by 0.65 percentage points (0.85 percentage points). These effects are quite sizeable, considering that the median of the unconditional five-year-ahead inflation expectations in the regular survey stood at 2% in June 2025. Our estimates also suggest a monotonic pattern, where the inflation increase out of the 1.5°C increase scenario significantly exceeds the one from the 0.5°C increase scenario. On the other hand, we fail to reject the null of symmetry.

3.3 Different bundles of goods and the perceived channels

Do consumers differentiate between the impact of temperature change on different bundles of goods? Findings from the September 2024 survey help us to address this question as we had included separate questions on prices of food, prices of energy (including gasoline) and prices of other goods and services in response to global warming scenarios.[11]

We show that higher (lower) global temperature scenarios do lead to higher (lower) expected food prices, energy prices, and prices for other goods and services. Yet, the impact on food prices is relatively

[10] See also Figure B5 in the Appendix.
[11] See Figure B6 and Table C3 in the Appendix.

larger than on the other two categories. Overall, global temperature increases are expected to impact food prices as well as to have broad-based upward price effects.

Increases in prices can have many causes. For food prices, consumers who expect rising prices were further asked to report the (perceived) driving factors. The most commonly reported cause of increasing food prices is environmental factors (crop failures). In general, supply-side factors (crop failures, higher production costs, and supply chain disruptions) dominate over demand factors (consumer demand or firm's desire for profits) and cost-push factors (taxes or tariffs) as determinants of higher food prices. The prevalence of supply-side explanations varies across temperature scenarios, with more consumers citing such factors in the context of a temperature increase rather than decrease.[12]

3.4 Heterogeneous treatment effects: climate knowledge and inflation expectations

Consumers differ in their knowledge about climate change. While we generally find a high level of knowledge, there is substantial variation among euro area consumers in their understanding of climate change (see Figure 1, Panel A). In view of this, we examine the extent to which our estimated treatment effects vary by knowledge about climate change. Specifically, we estimate the baseline ordered logit model (Equation 1), including interactions with a binary indicator of climate change knowledge (respondents who answered more than the median number of questions -five- correctly versus the rest).

Table 3 present the results for the qualitative and quantitative inflation expectation variables. Consumers with higher levels of knowledge are more likely to perceive rising temperatures as having detrimental effects on inflation. For instance, the effects of a 0.5°C temperature increase for consumers with high climate change knowledge are more than 34% larger than for those with low levels of knowledge. The results in Table 3 highlight that the inflation effects documented in our previous analysis remain qualitatively similar in subsamples of respondents with different climate knowledge, but they are clearly stronger for consumers with a relatively high understanding of climate change.

Interestingly, our results show that knowledgeable consumers expect relatively higher inflation with rising temperatures. This highlights that as consumers may build up knowledge along with an increased exposure to increasing temperatures, inflation expectations may increase as well. This highlights a striking contrast; while more knowledge about monetary policy leads to better-anchored inflation expectations (Ehrmann et al. 2025), more knowledge about climate change may make it more difficult to maintain price expectations in line with the price stability target of central banks.

3.5 Experimental integrity and robustness

Our experiment uncovers the causal effect of global temperature change on inflation expectations, while below we will show that it also impacts various other macroeconomic expectations. However, these

[12] See Figure B7 and Table C4 in the Appendix.

effects differ across concepts. For example, we asked respondents about the impact of global temperature change on "the number of Oscar-winning movies". This so-called placebo variable has no reason to be related to global temperature change. Indeed, estimation results show that this is not the case. The coefficients are numerically close to zero and statistically insignificant at the five percent level as shown in Figure B8 in the online appendix. On the other hand, we asked respondents about the impact of temperature change on biodiversity (the variety of animals, plants, and animal life) to see whether they recognise rising temperatures as harmful for the environment. We find that higher global temperatures increase the likelihood to expect a decline in biodiversity compared to the baseline scenario. This plausible link with biodiversity – a concept not necessarily familiar to the average consumer – suggests that people have a relatively good sense of environmental issues and challenges.[13]

In addition to knowledge about climate change, the attention paid by respondents to questions is an important indicator of survey response quality. We take advantage of the survey's para-data and assess the distribution of response times for the one of our main outcome questions across the different temperature scenarios.[14] Time distributions of the qualitative expectation question show a similar shape across all scenarios. The peak is 45 seconds, with the median response time being 48 seconds in June 2025. While some respondents take considerably less time, the majority appear to take ample time answering, with no indication of a fat-tailed distribution that might indicate issues of understanding or respondents leaving the survey screen. These results suggest that respondents are paying attention and taking the time to carefully read and respond to the given global temperature condition.

The causal interpretation of our findings hinges on the random assignment of consumers to the four different global temperature scenarios. This ensures that any (observed or unobserved) factors potentially confounding the relation between consumer expectations and climate change are evenly distributed across the four groups and net out on average. To verify that the randomization was successful, we conduct balance tests across scenario assignments using a wide range of variables that may influence consumer expectations. We find no evidence of a systematic difference between treatment and no-change control groups across countries or along key characteristics such as age, education, gender, income, or financial literacy.[15] In particular, we find no meaningful differences in climate concern, climate attention, or experiences with extreme weather events across the four scenario groups. Overall, we conclude from these tests that the randomisation has worked as intended.

[13] See Table C5 (panel A) in the Appendix for results on Biodiversity. Predicting the exact impact of rising global average temperatures on regional biodiversity might be a topic of ongoing research. However, recent studies on biodiversity and temperature changes already highlight risks of rising temperatures for biodiversity, see Pinsky et al. (2025). In addition, for marine and coastal ecosystems (two-thirds of the planet) the impact of rising temperatures is particularly devastating, see Cooley et al. (2023).
[14] See Figure B9 in the Appendix.
[15] See Table C6 in the Appendix.

The successful randomization ensures that it is sufficient to analyse differences in responses across the four scenarios without accounting for additional control variables. As an additional robustness check, we re-estimate our baseline specification while also controlling for a large set of socio-demographic characteristics. The full set of results are reported in the online appendix and we find that the results remain virtually unchanged, supporting the validity of the identification method and our causal interpretation.

4. The impact of global warming scenarios on other economic expectations

Using the same logit model (Equation 1), we assess the impact of temperature rises on several macroeconomic expectations. Results are summarised in Table 4.[16]

A first notable finding is that expected economic growth is lower in scenarios where global temperatures rise both for qualitative (Figure 5) and quantitative expectations (Figure 6). This suggests that consumers perceive rising temperature as a supply shock, where higher temperatures have a qualitatively different effect on prices (increasing) and output (decreasing). In particular, a 0.5°C temperature increase leads to 5.0 percentage points lower likelihood of economic growth, while a similar reduction in global temperature results in 8.7 percentage points higher likelihood of economic growth. In line with the expectation of lower economic growth, increasing global temperatures are also expected to lead to higher unemployment. Compared to the effect on inflation, consumers expect growth to be relatively less affected by increasing global temperatures indicating that they view the transmission of temperature increases working primarily through prices.

Similarly, consistent with the negative impact of rising global temperatures on economic growth, the impact on stock prices is negative. Instead, we estimate opposing effects for house prices, the results suggest that the impact is the other way around. Higher global temperatures cause more consumers to expect higher house prices, with a nonlinear effect for a temperature increase of 0.5°C and 1.5°C. Specifically, an assumed 0.5°C and 1.5°C increase in global temperatures increase the likelihood by 8.0 and 10.7 percentage points, respectively. While this may seem surprisingly at first, it is consistent with global temperature change raising construction costs (as houses need to incorporate measures to adapt, such as protection from flooding) and reduced housing supply (e.g., wildfires or floods limit the availability of locations where new houses can be safely built). Note that the upward impact of temperature change is also consistent with houses perceived as a sort of safe investment haven when macroeconomic uncertainty increases.

Given the expected impact of rising global temperatures on prices, economic growth, and unemployment, it is not surprising that consumers also anticipate a negative effect on their own financial

[16] See Tables C5 and C7 in the Appendix for additional regression results discussed in this section. The full set of regression results for September 2024 is provided in Table C8.

well-being. Temperature increases by 0.5°C and 1.5°C decrease by 4.3 and 5.2 percentage points respectively the likelihood of an improved financial well-being. While these effects are not negligible, it is notable that they are relatively modest in relation to those estimated for inflation and some other macroeconomic variables. While this might reflect consumers anticipating a slower 'pass-through' from macroeconomic indicators to their own financial situation, it is also possible that they underestimate the consequences of climate change for their personal well-being.

Many consumers also expect global temperature changes will affect public finances. Compared to the baseline scenario, we estimate an additional 15.2 and 18.3 percentage points likelihood of an increase in government debt under the 0.5°C and 1.5°C temperature rise scenarios, respectively. These represent the largest effects among the variables considered (alongside with the impact on taxes). Although we do not ask consumers about the reasons for the expected rise in government debt, it is plausible that they foresee additional government spending on adaptation measures or on addressing damages from extreme weather events including financial support to offset losses and shield households from economic hardship.

Consumers also expect that taxes that they, as well as firms, have to pay will increase in scenarios with rising global temperatures. For instance, in the 0.5°C higher temperature scenario, we estimate an additional 13.7 percentage points higher likelihood of increasing taxes. Thus, the increase in government debt will partially be financed through higher taxation. Taken together, this may suggest that consumers believe that even if governments step in to shield the most affected individuals from the direct effects of climate change, the broader cost will still be borne by the society as a whole in the form of higher taxes. In view of this, it is again surprising that consumers anticipate a relatively modest negative effect of higher global temperatures on their personal financial well-being.

For all the expectation variables, the estimation results indicate larger effects for the 1.5°C increase scenario than for the 0.5°C scenario. With the exception of economic growth and immigration, these differences are statistically significant at the 5 percent level according to the Wald tests. This demonstrates that, in general, consumers anticipate more negative effects as the rise in global temperature becomes more severe.

Turning to the scenario of a 0.5°C decline in global temperature, the estimates indicate an impact in the opposite direction compared to a 0.5°C increase in temperature. Thus, the relationships revealed by the regression estimates remain consistent across scenarios.

There are two important takeaways from this. First, when considered alongside the increase in global temperature observed so far, this suggests that consumers believe that it has already impacted the economy in adverse ways. Second, consumers believe the impact is likely reversible, meaning that a decline in global temperature would undo much of the economic impact caused by the increase.

Last, the perceived impact of global temperature change extends beyond economic effects and has broader political implications. An additional 12.2 and 13.7 percentage points of consumers expect higher immigration when global temperatures rise by 0.5°C and 1.5°C, respectively. Consumers perceive even stronger effects in a scenario where temperatures decrease by 0.5°C, with 20.3 percentage points fewer expecting an increase in immigration compared to the baseline scenario. Thus, it appears that consumers attribute part of ongoing immigration to climate change.

5. Willingness to pay for addressing temperature change and the environment as policy priority

Our experiment reveals that consumers anticipate rising global temperatures to be accompanied by increased inflation and broader negative consequences for the economy, the labour market, and own financial well-being. Clearly, consumers stand to benefit from measures aimed at preventing or mitigating temperature increases. To explore this further, we asked respondents how much they would be willing to pay each month over the next five years to the government for environmental policies designed to prevent temperature increases per (randomly) assigned scenario or to achieve a temperature decline in the lower-temperature scenario. Results are shown in Table 5.

Several findings stand out. First, there is considerable heterogeneity among consumers. About two out of three consumers are willing to contribute some amount per month over the five-year period. The unconditional mean willingness to pay is approximately €51 per month, amounting to about €3,060 over the five years.[17] Second, differences in willingness to pay across temperature scenarios are slightly higher in the 1.5°C scenario, but overall differences, while statistically significant, are relatively small (see Table 5). This suggests that willingness to pay is a more intrinsic characteristic, likely driven by concern about global warming, rather than by the intensity of the presented scenario. At the individual level, we observe that the younger, those who express greater concern about climate change, the higher educated and those with higher financial literacy are also willing to pay more while hand-to-mouth consumers report lower willingness to pay.

One may ask whether this level of willingness to pay is high or low. The average contribution, when including all respondents, corresponds to approximately 1.8% of average net household income. In comparison, Andre et al. (2024a) find that about 69% of consumers would be willing to contribute 1% of their monthly household income to "fight global warming". Bernard et al. (2025), in a survey experiment, find a willingness to pay of about €51 to offset carbon emissions for a flight (US to

[17] We exclude less than 1.5 percent of responses who report a monthly willingness to pay above their monthly household income and winsorize the willingness to pay measures at the 98th percentile to account for outliers. We also document in the Appendix (Figure B10) some heterogeneity across countries with consumers in Ireland and the Netherlands showing on average the highest willingness to pay.

Germany) and document that this can be increased considerably to €67 by activating social norms. Likewise, Guiso and Jappelli (2024) show that targeted communication campaigns about the risks of natural disasters might increase consumers' willingness to pay for specific measures and increase support for public funding. Another metric to assess the magnitude is the so-called "sacrifice ratio": in this case, households would need to give up 2.2% of their consumption expenditures to finance their stated willingness to pay. However, compared to other recent studies, this sacrifice ratio is relatively low. For example, Georgarakos et al. (2025) report a sacrifice ratio of 5% or more for eliminating business cycle fluctuations or achieving desired inflation levels. In conclusion, while the willingness to pay to address global warming is certainly not negligible, it remains on the low side, especially if one considers the broader macroeconomic repercussions of climate change that consumers perceive.

Further insights into the importance consumers attach to preventing rising temperatures can be gained by examining the priority they assign to climate issues and whom they consider responsible for addressing climate change. When asked to identify the most pressing issues facing their country, consumers consistently rank "the environment and climate change" among the top three, closely following concerns such as rising prices and healthcare (see Figure B11, Panel A).

When asked who should take responsibility for addressing climate change, respondents most frequently cite national governments, followed by businesses and industries, with individual citizens mentioned less often (see Figure B12, Panel A). This indicates that while people assign high priority to climate action, they primarily view it as the responsibility of governments, which can implement collective measures and policies. This perspective is further reinforced in the scenario analysis, where tax increases are expected as global temperatures rise. Through this fiscal channel governments may raise collective funds to finance measures to mitigate temperature change. Although consumers primarily assign governments the responsibility for addressing climate change, they identify the ECB and national central banks (alongside governments) as responsible for maintaining price stability (see Figure B12, Panel B). To the extent that climate change can impact inflation expectations and future price dynamics, central banks also have a crucial role to play in addressing climate-related risks.

6. Conclusion

Heat records, droughts, wildfires, and floods in Europe and worldwide signal that global warming has significant consequences for everyday life. Such extreme weather events come with casualties, disrupt society, and cause severe economic damages. According to the findings of various studies and the present paper, consumers are increasingly concerned and aware about the broader repercussions of climate change. About three-quarters of consumers pay attention to climate change news, a number that is relatively close to those following inflation news - a topic relevant to daily expenses and the ease or difficulties households face in making ends meet. Many consumers express concern about climate

change with a very substantial 44 percent of them reporting actual losses due to one or multiple extreme weather events in the past five years.

It is almost inevitable that global warming also influences households' attitudes and economic expectations, their behaviour, and thereby broader macroeconomic developments. Nevertheless, there is very little empirical evidence on this topic. We address this gap by conducting a survey experiment in which consumers assigned to different global temperature change scenarios, indicate how these changes affect their economic expectations.

We find significant effects on inflation expectations as well as on a broad range of macroeconomic expectations, including economic growth, unemployment, asset prices, taxation, and government debt. A large impact is observed for a broad set of prices, with many consumers expecting that rising global temperatures will lead to higher food prices, energy prices, and prices of other goods and services. When asked, respondents most often attribute higher food prices to supply-side factors, such as crop failures, higher production costs and supply chain disruptions, and to a lesser extent to demand and cost-push factors. In the light of global temperature trends and expert expectations, this suggests that global warming will impact the economy not only directly through the economic damages caused by extreme weather events but also indirectly through consumers' expectations and attitudes.

Our findings also clearly indicate that the impact of global warming is nonlinear. Although a global temperature increase of 1.5°C has a greater effect on many consumer expectations under study than a 0.5°C increase, most of the estimated impact already materialises under the smaller 0.5°C temperature increase scenario. In other words, consumers already perceive a smaller increase in global temperature as highly damaging to most of the macroeconomic variables under study. Furthermore, we find that the negative effects on inflation expectations (and other macroeconomic outcomes) from reversing a 0.5°C temperature rise are larger in absolute terms than the corresponding positive effects of an additional 0.5°C increase. This suggests that the effects of global warming on expectations may have already partially materialized, resulting in very substantial changes in expectations in the scenario where global warming could be reversed rather than merely halted.

For central banks in particular, a relevant finding is that higher global temperatures contribute to higher price expectations. One should note that consumers already pay relatively high attention to climate change news and, on average, possess a reasonably good level of knowledge about climate issues. Our findings show that those with greater awareness of climate risks expect a higher increase in inflation for a given temperature rise scenario, which is relevant for anchoring inflation expectations. Strikingly, while more knowledge about monetary policy has been shown to lead to better-anchored inflation expectations (see, Ehrmann et al. 2025), more knowledge about climate change may make it more difficult to maintain price expectations in line with the price stability target of central banks.

Despite widespread concern about climate change and its perceived economic consequences, we find that consumers' willingness to pay to prevent further temperature increases is relatively modest. While a majority of respondents express some willingness to contribute financially, and the unconditional willingness to pay totals approximately €3,060 over a five-year period, these amounts represent only a relatively small share of household income or consumption. One possible explanation is that, although consumers anticipate substantial macroeconomic consequences of global warming, they perceive the direct impact on their own personal financial situation to be more limited. Another explanation is that consumers predominantly assign responsibility for climate mitigation to governments and for price stability to central banks, underscoring the importance of fiscal and monetary policy in addressing climate risks.

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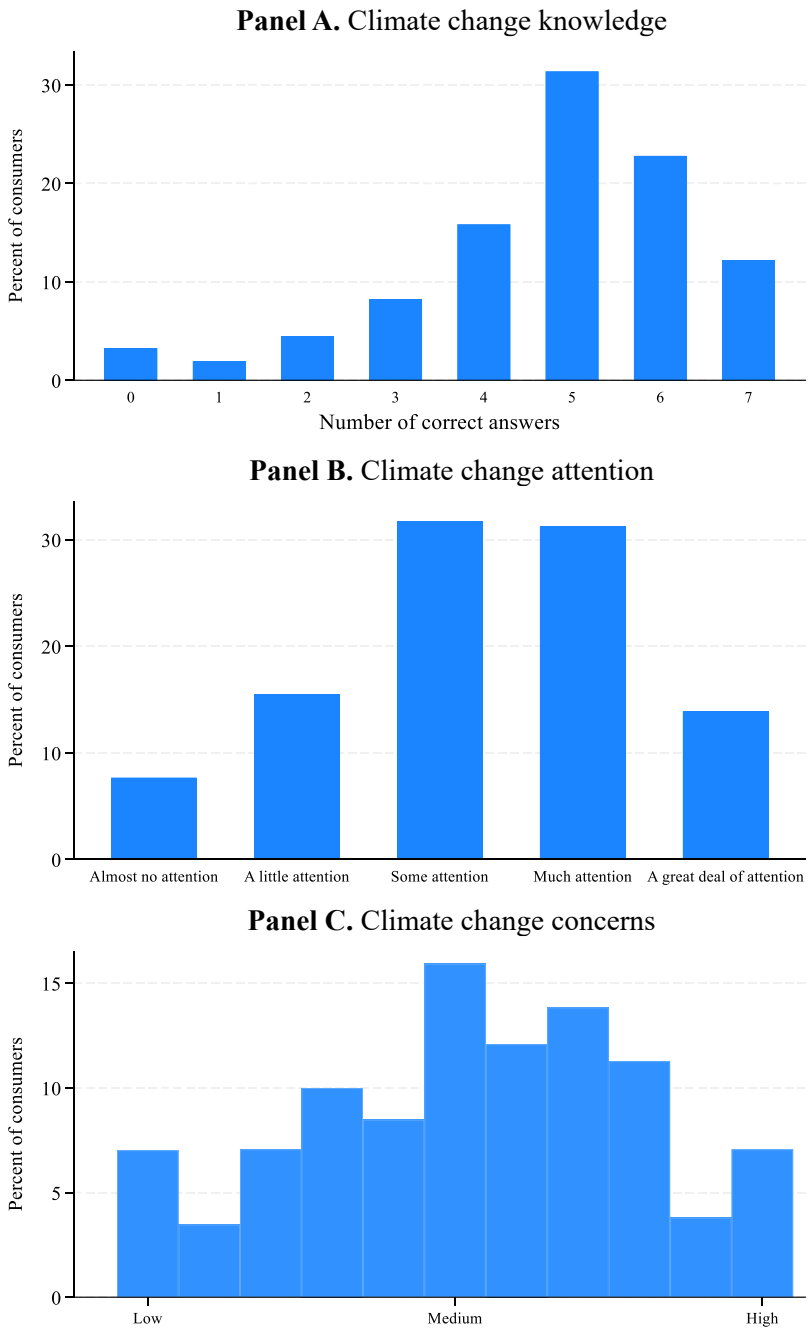
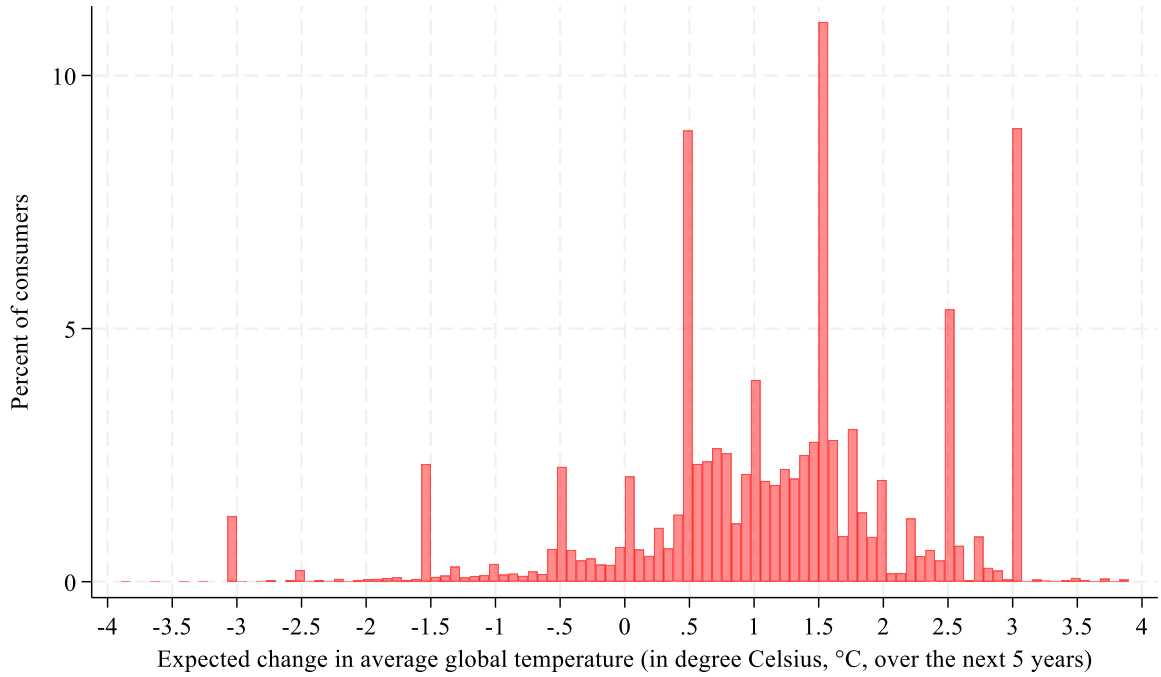
Figures

Figure 1. Consumers' climate change knowledge, attention, and concerns



Note: This figure reports population-weighted distributions of climate change-related knowledge, attention, and concerns among euro area consumers using data from special-purpose modules of the ECB Consumer Expectations Survey (CES). **Panel A** displays the distribution of an objective climate change knowledge index constructed as the total number of correct answers to seven factual multiple-choice questions administered in December 2024; the horizontal axis reports the number of correct answers and the vertical axis the share of consumers (in percent). **Panel B** shows self-reported attention to climate change measured in September 2024 on a five-point Likert scale ranging from "almost no attention" to "a great deal of attention". The bars report the percentage of consumers selecting each category. **Panel C** presents the distribution of consumers' concerns about the impact of climate change on their household's financial situation, measured in September 2024 using an ordered categorical scale from low (0) to high (10) concern; the vertical axis reports the share of consumers (in percent). See Appendix D for the detailed question wording.

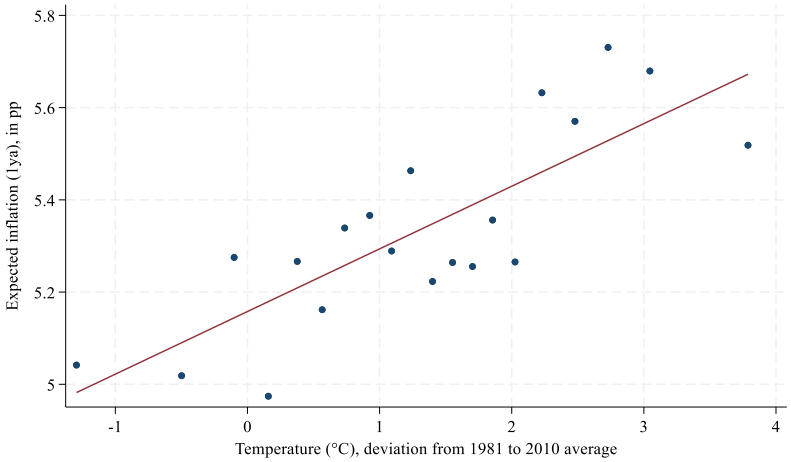
Figure 2. Consumer expectations about average global temperature change until 2030



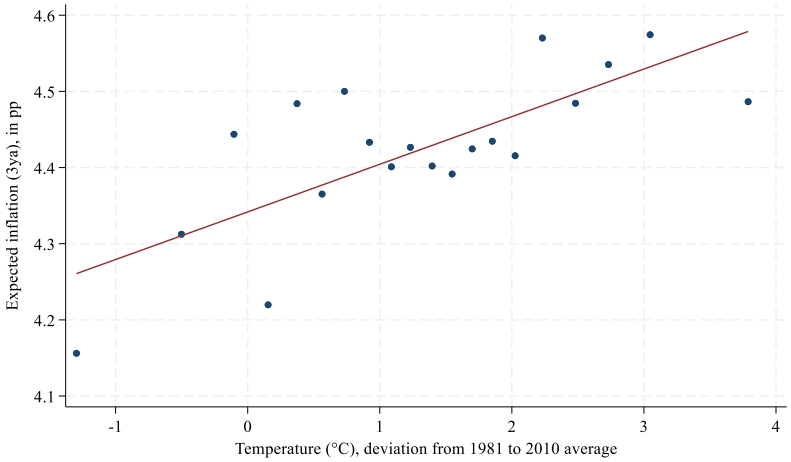
Note: This figure shows the distribution of individual expectations about the change in average global temperature over the next five years (up to 2030), measured in degrees Celsius (°C). Data are from a special-purpose module of the ECB Consumer Expectations Survey (CES) conducted in June 2025 and are population-weighted to be representative of the euro area adult population. Each observation corresponds to a respondent's implied mean expectation, constructed from their reported subjective probability distribution over discrete temperature-change intervals ranging from -2°C (or less) to +2°C (or more). The vertical axis reports the share of consumers (in percent) holding a given expected temperature change.

Figure 3. Regional temperature anomalies and inflation expectations

Panel A. One year ahead inflation expectations

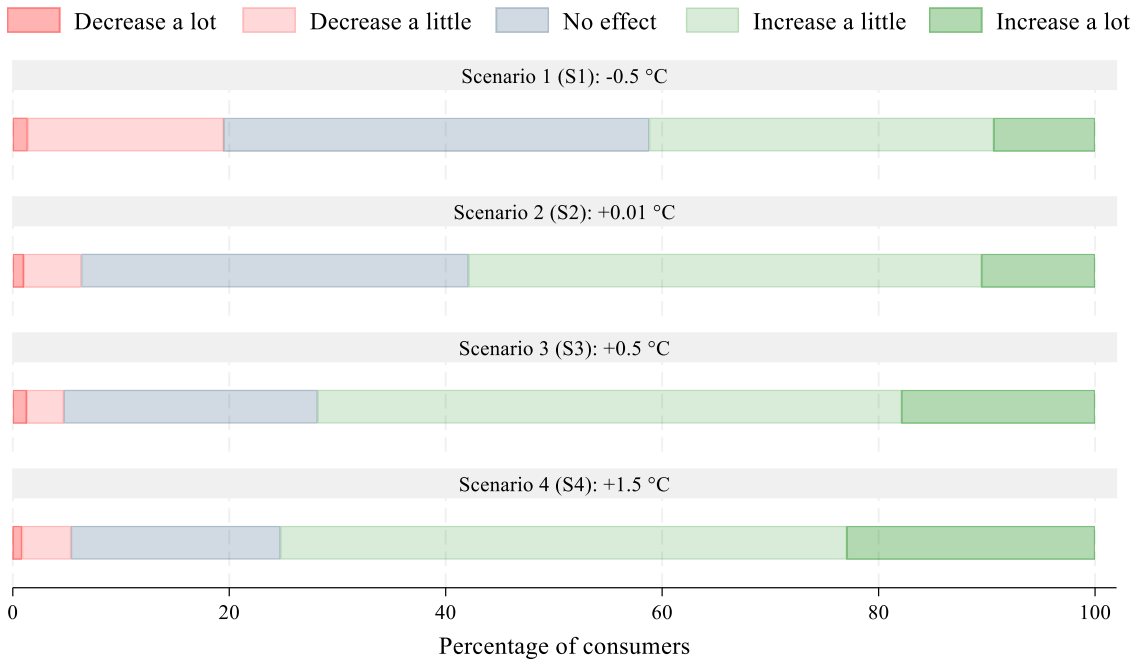


Panel B. Three years ahead inflation expectations



Note: This figure plots the relationship between regional temperature deviations and average consumer inflation expectations as a binscatter plot using data from the ECB Consumer Expectations Survey (CES) collected between April 2020 and November 2025. Observations are matched at the individual level, using the respondents' region of residence at the time when joining the survey defined. Regions are defined at the NUTS-1 (Germany, France, Spain, Italy) and NUTS-2 (Austria, Belgium, Portugal, Greece, Finland, Ireland and the Netherlands) always using the most granular information available collected in the CES. Temperature deviations (horizontal axis) are measured in degrees Celsius (°C) as deviations from the 1981 to 2010 regional average and are obtained from ERA5 data provided by the Copernicus Climate Change Service and aggregated on the respective NUTS level using population-weights. **Panel A** relates temperature deviations to average one-year-ahead inflation expectations, and **Panel B** to average three-year-ahead inflation expectations, both measured in percentage points and winsorised at the most extreme two percentiles to account for outliers. The linear fit in both panels accounts for region and month-of-year fixed effects. From 2022 onwards the CES sample included regions from Ireland, Greece, Austria, Portugal, and Finland.

Figure 4. Effects of rising temperatures on inflation expectations

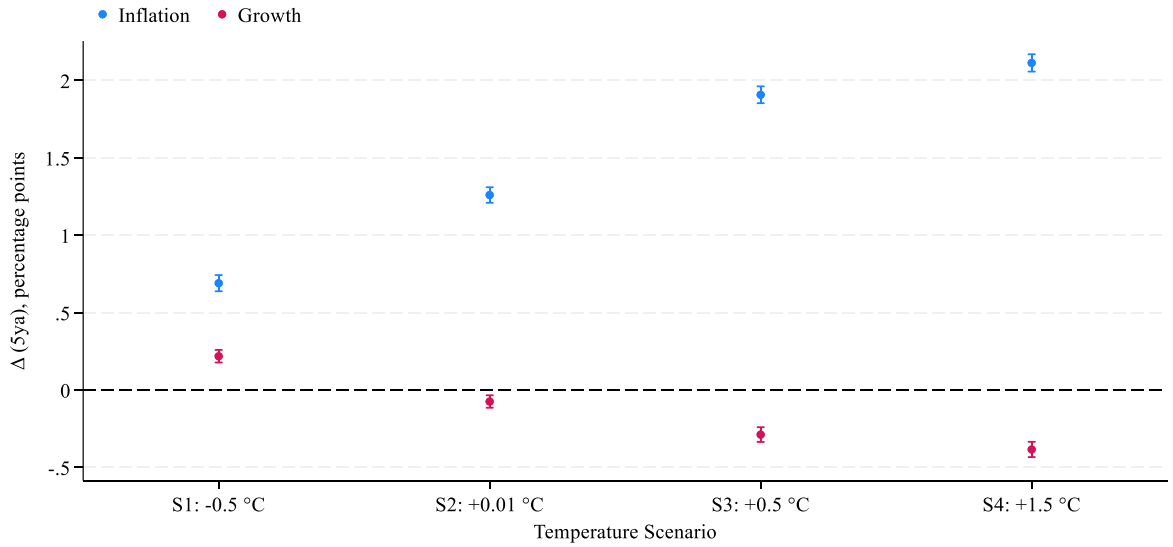


Note: This figure reports population-weighted response shares from a special-purpose module of the ECB Consumer Expectations Survey (CES) conducted in June 2025. Respondents were presented with four hypothetical scenarios describing alternative changes in average global temperature over the next five years: -0.5°C (Scenario 1), +0.01°C (Scenario 2), +0.5°C (Scenario 3), and +1.5°C (Scenario 4). For each scenario, consumers were asked to assess how such a temperature change would affect the prices of goods and services, including food and energy, over the same five-year horizon. Response categories are ordered from "decrease a lot" to "increase a lot." Horizontal stacked bars show the percentage of consumers selecting each response category, summing to 100 percent within each scenario. See Appendix D for the detailed question wording.

Figure 5. Temperature change scenarios and consumers' macroeconomic expectations

Note: This figure reports population-weighted response shares from a special-purpose module of the ECB Consumer Expectations Survey (CES) conducted in June 2025. Respondents were presented with four hypothetical scenarios describing alternative changes in average global temperature over the next five years: -0.5°C (Scenario 1), +0.01°C (Scenario 2), +0.5°C (Scenario 3), and +1.5°C (Scenario 4). For each scenario, consumers were asked to assess the expected effect of the temperature change on a range of economic outcomes: prices of goods and services, their household's financial situation, unemployment, overall economic activity, stock prices, house prices, government debt, taxes paid, and immigration. For each outcome and scenario, responses are recorded on an ordered scale ranging from "decrease a lot" to "increase a lot." Horizontal stacked bars show the percentage of consumers selecting each response category, summing to 100 percent within each scenario and outcome. See Appendix D for the detailed question wording.

Figure 6. Five-year-ahead inflation and growth expectations by temperature change scenario



Note: This figure uses data from a special-purpose module of the ECB Consumer Expectations Survey (CES) conducted in June 2025. Respondents were randomly assigned to one of four hypothetical scenarios describing alternative changes in average global temperature over the next five years: -0.5°C (S1), +0.01°C (S2), +0.5°C (S3), and +1.5°C (S4). For each scenario, respondents reported point forecasts of average inflation and real economic growth over the subsequent five-year horizon. The figure plots the population-weighted mean point forecast for five-year-ahead inflation (blue markers) and five-year-ahead growth (red markers) by scenario, measured in percentage points and whiskers indicate 95 percent confidence intervals.

Tables

Table 1. Heterogeneity in climate change knowledge, beliefs, attention, and concerns

	OLS			Logistic regression, average marginal effects	
Dependent variable	Climate change knowledge (0-7)	Prob. extreme weather event impacting country's economic situation (next 5y) (0-100)	Expected change in average. global temperature (in °C)	Attention to climate change news (0/1)	Climate change concern for own households financial situation (0/1)
	(1)	(2)	(3)	(4)	(5)
Mean (dep. var.)	4.77	22.02	1.14	0.45	0.48
35-49 years	0.110***	-0.291	0.084***	-0.024**	0.009
	(0.033)	(0.469)	(0.025)	(0.010)	(0.010)
50-64 years	0.134***	-1.196**	0.181***	0.012	-0.002
	(0.034)	(0.472)	(0.025)	(0.010)	(0.010)
65+ years	0.207***	-1.229**	0.285***	0.083***	-0.036***
	(0.039)	(0.560)	(0.029)	(0.012)	(0.013)
High school	0.159***	1.534***	0.105***	0.006	-0.004
	(0.042)	(0.550)	(0.033)	(0.012)	(0.013)
College+	0.435***	2.096***	0.122***	0.073***	0.026**
	(0.041)	(0.532)	(0.032)	(0.012)	(0.012)
Women	-0.117***	1.019***	0.244***	-0.018***	0.031***
	(0.022)	(0.320)	(0.017)	(0.007)	(0.007)
Household size	-0.032***	-0.135	-0.028***	0.014***	0.025***
	(0.011)	(0.155)	(0.008)	(0.003)	(0.003)
Hand-to-mouth	-0.338***	1.511***	-0.075***	-0.035***	0.031***
	(0.029)	(0.391)	(0.023)	(0.008)	(0.008)
Homeowner	0.002	-0.675*	-0.096***	0.009	0.019**
	(0.027)	(0.379)	(0.020)	(0.008)	(0.008)
High financial literacy	0.598***	1.862***	0.044*	0.018**	-0.005
	(0.024)	(0.341)	(0.026)	(0.007)	(0.007)
HH income Q2	0.085**	-0.477	0.030	-0.020**	-0.021**
	(0.034)	(0.472)	(0.027)	(0.010)	(0.010)
HH income Q3	0.224***	-0.289	0.042	-0.014	-0.047***
	(0.034)	(0.494)	(0.028)	(0.010)	(0.011)
HH income Q4	0.355***	-1.090**	0.177***	-0.000	-0.111***
	(0.036)	(0.517)	(0.018)	(0.011)	(0.011)
R-squared	0.11	0.02	0.04	0.03	0.03
No. Obs.	20,182	21,106	19,428	21,037	20,565

Note: This table reports associations between respondent characteristics and climate-related knowledge, beliefs, attention, concerns, and policy priorities using different waves of the ECB Consumer Expectations Survey (CES). Column (1) to (3) reports OLS coefficients for a climate change knowledge score defined as the number of correct answers to seven factual questions (column 1; December 2024), the perceived probability that extreme weather events will affect the country's economic situation over the next five years (column 2; August 2024 wave), and the expected change in average global temperature in °C over the next five years (column 3; June 2025 wave). Columns (4) and (5) report average marginal effects from logistic regressions for binary indicators equal to one if the respondent reports paying attention to climate change news (column 4; September 2025 wave), reports being concerned about the impact of climate change on the household's financial situation (column 5; Sep. 2025), The sample mean of each dependent variable is shown above the estimates. The number of observations differs across columns due to a different sample size across survey waves and a small number of item non-response cases. All specifications include country fixed effects (not reported). The omitted categories are: age 18–34, primary education, men, non–hand-to-mouth households, renters (non-homeowners), low financial literacy, and the first household income quartile. Hand-to-mouth is an indicator if the respondent reports being unable to finance an unexpected expense equal to one month of income. High financial literacy is defined following Lusardi and Mitchell (2011) as answering all three standard questions on interest compounding, inflation (nominal versus real values), and risk diversification correctly. Columns (1) to (3) report the adjusted R-squared, columns (4) and (5) the pseudo R-squared. Robust standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 2. Effects of temperature scenarios on consumers' inflation expectations

	Ordered logistic regression, average marginal effects						OLS	
Dependent variable	Change in prices							
Outcome	Decrease	No effect	Increase	Decrease	No effect	Increase	Point forecast	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Temp. Scenario (base: S2: +0.01°C)								
S1: -0.5°C	0.089***	0.110***	-0.199***	0.090***	0.109***	-0.200***	-0.574***	-0.577***
	(0.005)	(0.005)	(0.009)	(0.005)	(0.005)	(0.009)	(0.037)	(0.037)
S3: +0.5°C	-0.042***	-0.116***	0.158***	-0.042***	-0.116***	0.158***	0.646***	0.650***
	(0.003)	(0.007)	(0.009)	(0.003)	(0.007)	(0.009)	(0.038)	(0.037)
S4: +1.5°C	-0.046***	-0.131***	0.177***	-0.046***	-0.130***	0.176***	0.855***	0.852***
	(0.003)	(0.007)	(0.009)	(0.003)	(0.007)	(0.009)	(0.038)	(0.038)
Additional controls	No	No	No	Yes	Yes	Yes	No	Yes
R-squared	0.06	0.06	0.06	0.07	0.07	0.07	0.09	0.11
No. obs.	19,759	19,759	19,759	19,617	19,617	19,617	19,747	19,605
Tests	(p-value)							
Symmetry: |S1|=|S3|	0.00	0.56	0.01	0.00	0.50	0.01	0.26	0.25
Monotonicity: S3 = S4	0.03	0.03	0.03	0.04	0.04	0.04	0.00	0.00

Note: This table reports estimated effects of randomly assigned temperature change scenarios on consumers' inflation expectations using a special-purpose module of the ECB Consumer Expectations Survey (CES) fielded in June 2025. Respondents were randomly assigned to one of four hypothetical scenarios describing alternative changes in average global temperature over the next five years: -0.5°C (S1), +0.01°C (S2, omitted baseline), +0.5°C (S3), and +1.5°C (S4). The outcome is consumers expectations of how the scenario would affect the prices of goods and services (including food and energy) over the next five years. Columns (1) to (6) report average marginal effects from an ordered logit model where the dependent variable is an ordered categorical response for inflation over the next five years (decrease / no effect / increase); the reported marginal effects correspond to changes in the probabilities of each category relative to the baseline scenario S2. Columns (7) to (8) report OLS estimates for a continuous "point forecast" measure of the expected price change (in percentage points), constructed from respondents' quantitative inflation expectations over a 12-months period five years ahead. Coefficients are interpreted as changes in expected inflation relative to S2. All columns include country and sample type dummies (not reported). Specifications that include additional controls add the same covariates as in Table 1. Robust standard errors are reported in parentheses. The "Symmetry" row reports p-values for t-tests of equal absolute effects of S1 and S3 ($|\beta_{S1} = \beta_{S3}|$) within each outcome. The "Monotonicity" row reports p-values for t-tests of equal effects of S3 and S4 ($\beta_{S3} = \beta_{S4}|$). Columns (1) to (6) report the pseudo R-squared and columns (7) and (8) report the adjusted R-squared. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 3. Heterogeneous effects of temperature change scenarios on inflation expectations by climate change knowledge

	Ordered logistic regression, average marginal effects			**OLS**
Dependent variable	**Change in prices**			
Outcome	Decrease	No effect	Increase	Point forecast
	(1)	(2)	(3)	(4)
Temp. Scenario (base: S2: +0.01°C)				
S1: -0.5°C # **low** climate knowledge	0.070***	0.096***	-0.166***	
	(0.006)	(0.008)	(0.014)	
S1: -0.5°C # **high** climate knowledge	0.122***	0.149***	-0.271***	
	(0.010)	(0.011)	(0.019)	
S3: +0.5°C # **low** climate knowledge	-0.037***	-0.103***	0.140***	
	(0.004)	(0.010)	(0.014)	
S3: +0.5°C # **high** climate knowledge	-0.046***	-0.165***	0.211***	
	(0.004)	(0.014)	(0.018)	
S4: +1.5°C # **low** climate knowledge	-0.038***	-0.106***	0.143***	
	(0.004)	(0.010)	(0.014)	
S4: +1.5°C # **high** climate knowledge	-0.053***	-0.202***	0.255***	
	(0.004)	(0.013)	(0.017)	
S1: -0.5°C				-0.494***
				(0.055)
S3: +0.5°C				0.553***
				(0.057)
S4: +1.5°C				0.627***
				(0.057)
S1: -0.5°C # **high** climate knowledge				-0.262***
				(0.091)
S3: +0.5°C # **high** climate knowledge				0.369***
				(0.093)
S4: +1.5°C # **high** climate knowledge				0.702***
				(0.093)
R-squared	0.07	0.07	0.07	0.11
No. obs.	13,164	13,164	13,164	13,157
Tests		(p-value)		
S1: Low vs. High climate knowledge	0.00	0.00	0.00	0.00
S3: Low vs. High climate knowledge	0.11	0.00	0.00	0.00
S4: Low vs. High climate knowledge	0.01	0.00	0.00	0.00

Note: This table reports estimated effects of randomly assigned temperature change scenarios on consumers' inflation expectations, allowing for heterogeneity by prior climate change knowledge. Data are drawn from a special-purpose module of the ECB Consumer Expectations Survey (CES) fielded in June 2025, and an objective climate change knowledge measure collected for the same respondents in December 2024. The need to link respondents across waves implies a smaller matched sample than in Table 2 (see number of observations). Climate change knowledge is measured as the number of correct answers to seven factual questions (range 0 to 7) and is classified as high if the score is strictly above the sample median (five correct answers) and low otherwise. The outcome is respondents' assessment of how the scenario would affect prices of goods and services (including food and energy). Columns (1) to (3) report average marginal effects from an ordered logit model for the probabilities that respondents report that prices over the next five years would decrease, have no effect, or increase. Marginal effects are reported separately for low- and high-knowledge groups and are relative to the baseline scenario S2 within each group. Column (4) reports OLS estimates for a continuous "point forecast" measure of the expected price change (in percentage points) over a 12-months period five years ahead, interacted with the high-knowledge indicator. Coefficients are interpreted relative to S2 for the low-knowledge group, with additional terms capturing differences for the high-knowledge group. All specifications include country fixed effects and sample-type dummies, each interacted with the climate change knowledge score (not reported). Reported p-values test equality of marginal effects (or coefficients in column 4) between low- and high-knowledge groups within each scenario. Robust standard errors are reported in parentheses. Columns (1) to (3) report the pseudo R-squared and column (4) reports the adjusted R-squared. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 4. Effects of temperature change scenarios on other macroeconomic expectations

	Ordered logistic regression, average marginal effects							
Dependent variable	**Financial situation**	**Unemployment**	**Economic activity**	**Stock prices**	**House prices**	**Government debt**	**Taxes**	**Immigration**
Outcome				**Increase**				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Temp. Scenario (base: S2: +0.01°C)								
S1: -0.5°C	0.062***	-0.085***	0.087***	0.057***	-0.060***	-0.140***	-0.111***	-0.203***
	(0.005)	(0.008)	(0.007)	(0.007)	(0.009)	(0.009)	(0.009)	(0.009)
S3: +0.5°C	-0.043***	0.085***	-0.050***	-0.046***	0.080***	0.152***	0.136***	0.122***
	(0.004)	(0.009)	(0.006)	(0.006)	(0.010)	(0.009)	(0.010)	(0.009)
S4: +1.5°C	-0.051***	0.122***	-0.061***	-0.060***	0.107***	0.183***	0.176***	0.138***
	(0.004)	(0.009)	(0.006)	(0.006)	(0.010)	(0.009)	(0.010)	(0.009)
Additional controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.03	0.02	0.02	0.02	0.02	0.05	0.04	0.05
No. Obs.	19,617	19,617	19,617	19,617	19,617	19,617	19,617	19,617
Tests				(p-value)				
Symmetry: |S1|=|S3|	0.01	1.00	0.00	0.32	0.18	0.46	0.12	0.00
Monotonicity: S3 = S4	0.01	0.00	0.07	0.02	0.01	0.00	0.00	0.09

Note: This table reports estimated effects of randomly assigned temperature change scenarios on consumers' expectations about a range of macroeconomic outcomes using a special-purpose module of the ECB Consumer Expectations Survey (CES) fielded in June 2025. Respondents were randomly assigned to one of four hypothetical scenarios describing alternative changes in average global temperature over the next five years: -0.5°C (S1), +0.01°C (S2, omitted baseline), +0.5°C (S3), and +1.5°C (S4). For each outcome, respondents indicated whether they expected the variable to decrease, not be affected, or increase over the next five years. Each column reports the average marginal effect of the temperature scenario (relative to S2) on the probability that the respondent expects an increase in the respective outcome. Estimates are average marginal effects from ordered logit models based on the full ordered response scale. Only the marginal effect for the "increase" category is reported. All specifications include country fixed effects and sample-type dummies (not reported) and the same set of individual controls as in Table 1 (age, education, gender, household size, hand-to-mouth status, homeownership, financial literacy, and household income quartiles). Robust standard errors are reported in parentheses. The "Symmetry" row reports p-values for t-tests of equal absolute effects of S1 and S3 ($|\beta_{S1} = \beta_{S3}|$) within each outcome. The "Monotonicity" row reports p-values for t-tests of equal effects of S3 and S4 ($\beta_{S3} = \beta_{S4}|$). All columns report the pseudo R-squared. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 5. Consumers' willingness to pay under different scenarios

	Average Marginal Effects					
Dependent variable	Any willingness to pay (binary)		Willingness to pay (share of household income)		Willingness to pay (in €)	
	Probit		**Tobit (lower limit: 0, upper limit: 1)**		**Tobit (lower limit: 0)**	
	(1)	(2)	(3)	(4)	(5)	(6)
Mean (dep. var.)	0.66		0.02		50.55	
Temp. Scenario (base: S2: +0.01°C)						
S1: -0.5°C	0.009	0.008	0.001	0.000	2.592	0.733
	(0.009)	(0.013)	(0.001)	(0.001)	(1.637)	(1.813)
S3: +0.5°C	0.018*	0.001	0.001*	0.000	3.439**	0.213
	(0.009)	(0.013)	(0.001)	(0.001)	(1.607)	(1.792)
S4: +1.5°C	0.020**	-0.002	0.003***	0.002	5.591***	2.231
	(0.009)	(0.013)	(0.001)	(0.001)	(1.670)	(1.878)
High trust in people	0.131***	0.127***	0.010***	0.007***	21.445***	14.839***
	(0.007)	(0.009)	(0.001)	(0.001)	(1.325)	(1.363)
High climate change knowledge		0.091***		0.003***		8.037***
		(0.010)		(0.001)		(1.388)
High climate change concerns		0.130***		0.007***		14.041***
		(0.009)		(0.001)		(1.399)
35-49 years	-0.097***	-0.081***	-0.012***	-0.008***	-23.958***	-12.417***
	(0.009)	(0.013)	(0.001)	(0.001)	(2.322)	(2.207)
50-64 years	-0.134***	-0.117***	-0.016***	-0.011***	-30.885***	-15.964***
	(0.010)	(0.013)	(0.001)	(0.001)	(2.453)	(2.216)
65+ years	-0.125***	-0.085***	-0.016***	-0.009***	-29.325***	-11.195***
	(0.012)	(0.016)	(0.001)	(0.002)	(2.879)	(2.644)
Secondary	-0.019	-0.023	-0.004***	-0.001	-5.131**	-1.715
	(0.013)	(0.017)	(0.001)	(0.001)	(2.005)	(2.096)
Tertiary	0.032***	0.006	-0.000	0.001	4.131**	5.848***
	(0.012)	(0.016)	(0.001)	(0.001)	(1.988)	(2.083)
Women	0.017**	0.011	-0.001	-0.002***	-2.610**	-4.905***
	(0.007)	(0.009)	(0.001)	(0.001)	(1.197)	(1.339)
Household size	0.003	0.007	-0.001**	0.000	-1.857***	1.018*
	(0.003)	(0.004)	(0.000)	(0.000)	(0.674)	(0.590)
Hand-to-mouth	-0.055***	-0.021*	-0.004***	-0.001	-11.849***	-4.862***
	(0.008)	(0.012)	(0.001)	(0.001)	(1.288)	(1.517)
Homeowner	0.030***	0.042***	0.004***	0.003***	9.785***	6.788***
	(0.008)	(0.011)	(0.001)	(0.001)	(1.366)	(1.481)
High financial literacy	-0.020***	-0.047***	-0.004***	-0.002***	-7.866***	-4.358***
	(0.007)	(0.010)	(0.001)	(0.001)	(1.337)	(1.401)
HH income Q2	0.017*	0.012			7.467***	1.559
	(0.010)	(0.013)			(1.697)	(1.774)
HH income Q3	0.005	0.006			7.359***	1.465
	(0.011)	(0.014)			(1.811)	(1.888)
HH income Q4	0.050***	0.057***			13.423***	7.876***
	(0.011)	(0.015)			(1.836)	(2.131)
R-squared	0.05	0.07	-0.10	-0.08	0.01	0.01
No. obs.	19,458	10,537	19,247	10,437	19,247	10,437
Tests			(p-value)			
Symmetry: |S1|=|S3|	0.32	0.60	0.41	0.80	0.60	0.76
Monotonicity: S3 = S4	0.86	0.82	0.06	0.20	0.20	0.26

Note: This table reports estimated effects of randomly assigned temperature change scenarios on consumers' willingness to pay (WTP) for climate-related measures using a special-purpose module of the ECB Consumer Expectations Survey (CES) fielded in June 2025. Respondents were randomly assigned to one of four scenarios describing alternative changes in average global temperature over the next five years: -0.5°C (S1), +0.01°C (S2, omitted baseline), +0.5°C (S3), and +1.5°C (S4). Columns (1) and (2) report average marginal effects from probit models where the dependent variable is an indicator equal to one if the respondent reports any positive willingness to pay. Columns (3) and (4) report average marginal effects from Tobit models for willingness to pay expressed as a share of household income. Columns (5) and (6) report average marginal effects from Tobit models for willingness to pay expressed in euros. The sample mean of each dependent variable is reported at the top of the table. Columns (2), (4), and (6) include additional covariates capturing interpersonal trust and climate-related attitudes measured in earlier CES waves: an indicator for high trust in people, an indicator for high climate change knowledge (objective knowledge score above the median number of correct answers, five), and an indicator for high climate change concerns (concern score above the median of five on a 0–10 scale). Because these measures are drawn from September 2024 and December 2024 CES waves and merged to the June 2025 module, the effective sample size is smaller in columns (2), (4), and (6). In columns (3) to (6), observations are excluded when reported willingness to pay exceeds reported monthly income (less than 1.5% of the sample). The euro-denominated WTP measure in columns (5) and (6) is winsorised at the 98th percentile. Robust standard errors are reported in parentheses. The "Symmetry" row reports p-values for t-tests of equal absolute effects of S1 and S3 ($|\beta_{S1} = \beta_{S3}|$) within each outcome. The "Monotonicity" row reports p-values for t-tests of equal effects of S3 and S4 ($\beta_{S3} = \beta_{S4}|$). All columns report the pseudo R-squared. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Online Appendix

Appendix A: Additional background information collected on consumers climate change knowledge, awareness and beliefs

In this section, we summarise additional details on the background information that we collected in the CES on climate change. These background patterns motivate the experimental design in Section 2.3. To assess consumers' awareness of climate change, we first ask respondents how much attention they pay to climate change news themselves. Figure 1 (Panel B) shows that about 6 in 10 consumers pay some or much attention and 14 percent pays a great deal of attention to climate change news. This indicates substantial attention to climate change news among households, in line with evidence by Andre et al. (2024a), who also show considerable willingness to act among consumers.

Moreover, we ask seven true/false statements to measure climate change knowledge (all including an "I do not know" option). These questions follow the dimensions set out in Tobler et al. (2012), i.e., physical knowledge about CO2 and the greenhouse effect; knowledge concerning climate change and causes; knowledge concerning expected consequences of climate change; and action-related knowledge. Appendix D contains the precise wording of the questions and Table C2 reports the results for each individual question.[18] Figure 1 (Panel A) reports the distribution of the total number of correct responses to the climate knowledge questions. While there is considerable heterogeneity in climate knowledge, two-thirds of respondents answered at least five knowledge questions correctly.

The above suggest that the majority of consumers is aware about climate change. At the same time, consumers show some concern, though most are not overly concerned, about the impact of climate change on the financial situation of their household over the next five years (Figure 1, panel C). The distribution of responses on a scale from 0 (not concerned at all) to 10 (extremely concerned) shows some skewness to the right, with about half of the consumers falling within the categories from 5 to 8, and one in ten in the highest two categories (9-10). Using additional data collected in the CES on policy preferences, we show a strong association between concerns about climate change affecting the household financial situation and the perceived importance of climate change as one of the major issues facing their country. Figure B11 illustrates how climate-related concerns and perceived risks translate into policy priorities. While rising prices and healthcare are the most frequently cited policy issues (Panel A), climate change ranks prominently, alongside healthcare and immigration, indicating that it is already a first-order concern for a substantial share of consumers. Panels B and C, in turn, show a strong positive association between climate-related risks and perceived policy importance. Consumers who report higher concern about climate change affecting their household's financial situation, or who

[18] Questions 1, 3, 4, 6 and 7 follow a more extensive item list by Tobler et al. (2012). See Table C2.

assign a higher likelihood to extreme weather events affecting their own finances, are substantially more likely to rank climate change among the most important policy issues facing their country.

Concerns and awareness of climate change may be linked to whether individuals have personally experienced its consequences. One key indicator of this is whether extreme weather events or natural disasters have affected a household's financial situation in the past five years. Figure B3 shows that a significant share of consumers per country has faced financial losses due to extreme weather. The most common events impacting consumers financially are droughts (22%), floods (18%), storms (15%), and wildfires (10%). Across all eleven countries, 44 percent of consumers have been financially affected in the past five years by one or more extreme weather events.

However, there are notable cross-country differences. Greek respondents most frequently report a financial impact, particularly from floods, droughts, and wildfires, each of which has affected more than a third of households. In addition to Greece, households in Portugal, France, and Spain have also been disproportionately affected. These cross-country variations are supported by official data on the economic damage caused by extreme weather events (European Environment Agency 2024). While the survey does not assess whether respondents attribute these events to climate change, it is noteworthy that temperature-related events, such as droughts and wildfires, frequently result in financial losses.

To further investigate the heterogeneity among consumers in their knowledge and attitudes, we run multivariate regression linking these variables to socio-demographic characteristics of respondents. Table 1 present the results and reveals a clear age gradient. The elderly have more knowledge about the causes and consequences of climate change and pay more attention to climate change news. At the same time, they are less often concerned about climate change affecting the economic situation of their country or their own household. Respondents with higher levels of education or financial literacy have more knowledge, pay more attention to climate change news, and expect climate change to have consequences for the economic situation of their country. This translates into a higher proportion believing that climate change is one of the most important policy issues facing their country.

This contrasts with hand-to-mouth consumers who are also concerned about climate change affecting the economic situation of their country and their household financial situation, yet more often consider other policy issues to be more urgent. Additionally, hand-to-mouth consumers have lower levels of climate knowledge and pay less attention to climate change news in the media. Thus, despite their concerns about the negative consequences of climate change for the national economy and their household financial situation, they less often report climate change as a major policy priority. This may be linked to hand-to-mouth consumers having more immediate concerns that they prioritize as policy issues for their country.

The pattern is different for consumers in the highest household income quartiles. Compared to consumers with less household income, they are more knowledgeable on climate change, less worried

about the consequences for the national economy or their household's financial situation, yet more often judge climate change as an issue of major policy importance. Finally, homeowners are less worried about the impact of climate change on the national economy but more worried about their household financial situation.

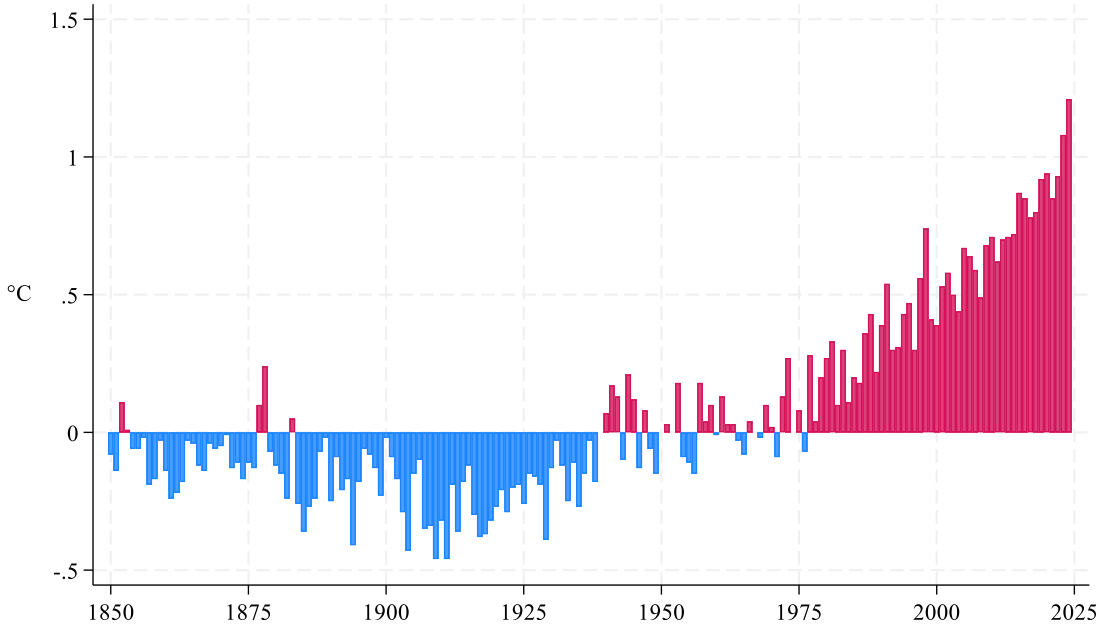
Does experience affect consumer beliefs about climate change? Commentators on recent extreme weather events have suggested that those might shape how consumers think more generally about the impact of climate change.[19] Earlier research by Choi et al. (2020) indicates that warmer-than-normal local temperatures coincide with more information acquisition by households about climate change. Our results provide additional empirical evidence that supports this argument (see Table C9). Specifically, we find that experiencing any extreme weather event over the past five years is associated with higher attention to climate change, elevated concerns regarding the implications of climate change for a household's financial situation and a higher probability of future detrimental extreme weather events. We also separate the association between "hot" (wildfire, heatwave, or drought) and "wet" (flooding or extreme rainfall, storm, coastal erosion) events. Generally, heat-related events exhibit a more substantial impact on consumers. In particular, such events increase expectations about changes in global average temperatures, which suggests some extrapolation by consumers based on their personal experiences and local conditions.

Finally, Table C10 also reveals substantial heterogeneity in these policy preferences. Higher-educated, more financially literate, and higher-income consumers are more likely to prioritise climate change as a key policy issue, consistent with their higher levels of climate knowledge and attention. In contrast, hand-to-mouth consumers, despite expressing relatively high concern about the economic consequences of climate change for their household, are less likely to rank climate change as the most urgent policy priority, often placing greater weight on more immediate economic issues. Importantly, combining Figure B11 with Table C10 points to a non-trivial tension across socio-economic groups. While higher-educated, more financially literate, and higher-income consumers are both more knowledgeable about climate change and more likely to prioritise it as a policy issue, hand-to-mouth consumers, despite expressing relatively high concern about the economic consequences of climate change for their household, are significantly less likely to rank climate change as the most urgent policy priority. This pattern suggests that immediate economic constraints may crowd out longer-term policy concerns consumers hold, even when perceived climate risks are substantial. These findings underscore that climate-related beliefs affect not only expectations about macroeconomic outcomes, but also the political and policy environment in which climate and macroeconomic policies are formulated.

[19] See, for instance, "Does catastrophe affect how we think about climate change?" (Cass Sunstein, Financial Times July 20th, 2025).

Appendix B: Additional Figures

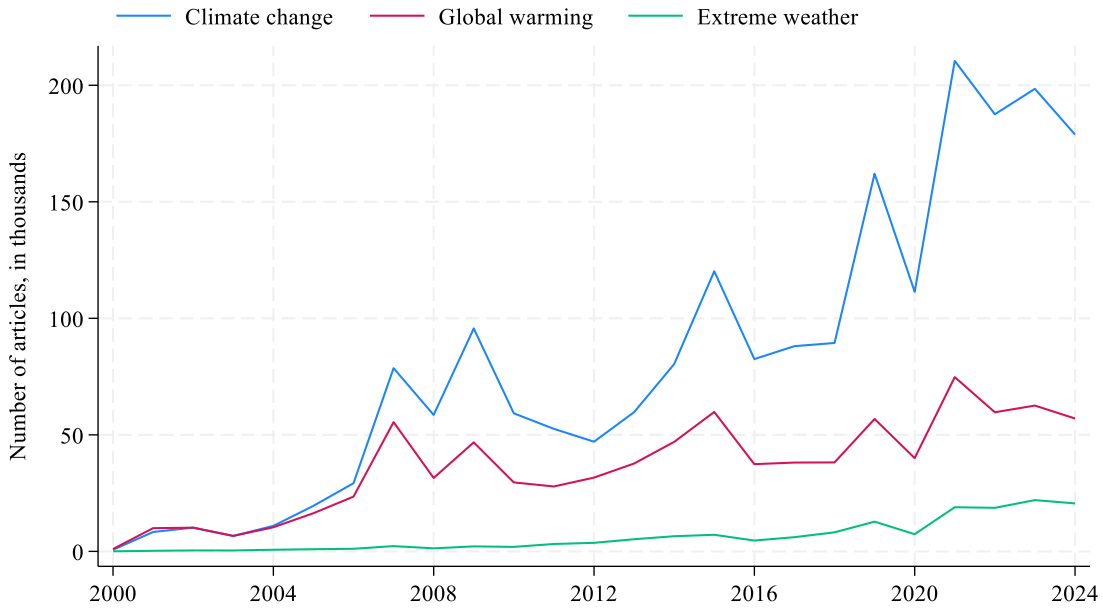
Figure B1. Global land and ocean average temperature anomalies, 1850–2024



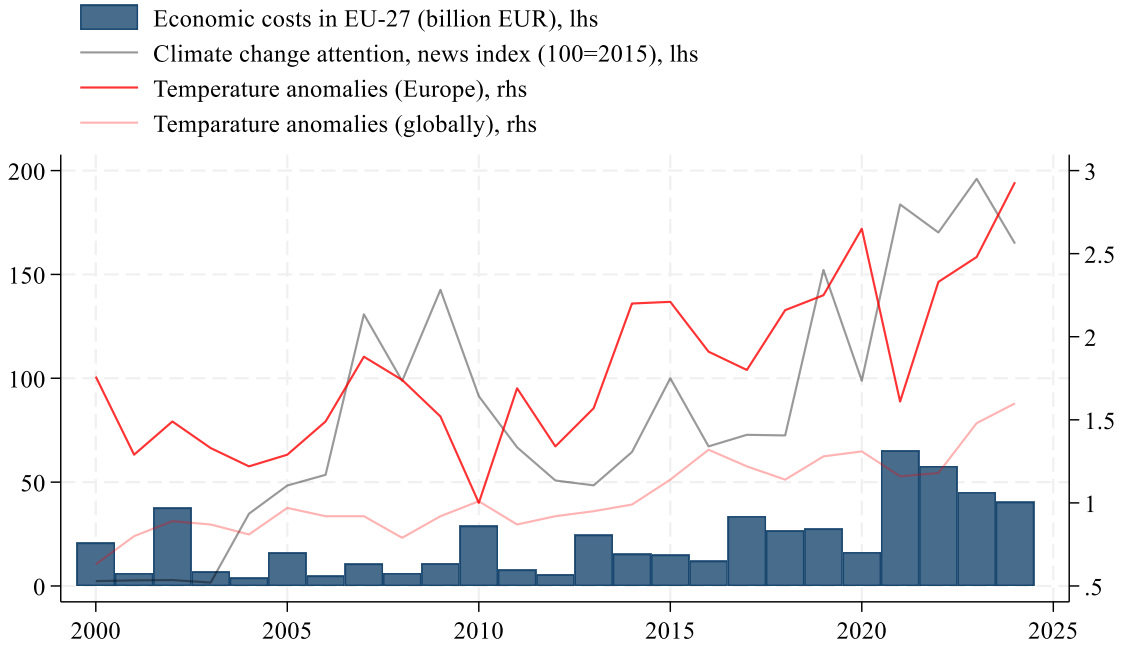
Note: This figure plots annual anomalies in average global land-and-ocean surface temperature from 1850 to 2024, measured in degrees Celsius (°C) relative to the 1901–2000 average. Temperature anomalies are taken from NOAA National Centers for Environmental information, Climate at a Glance: Global Time Series, published June 2025, retrieved on 25th of July, 2025 from https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/global/time-series. The figure shows anomalies for average global land and ocean temperatures from 1850 to 2024. The global and hemispheric temperature anomalies are calculated with respect to the 1901-2000 average.

Figure B2. News coverage of different climate topics

Panel A. Global news coverage about different climate change topics

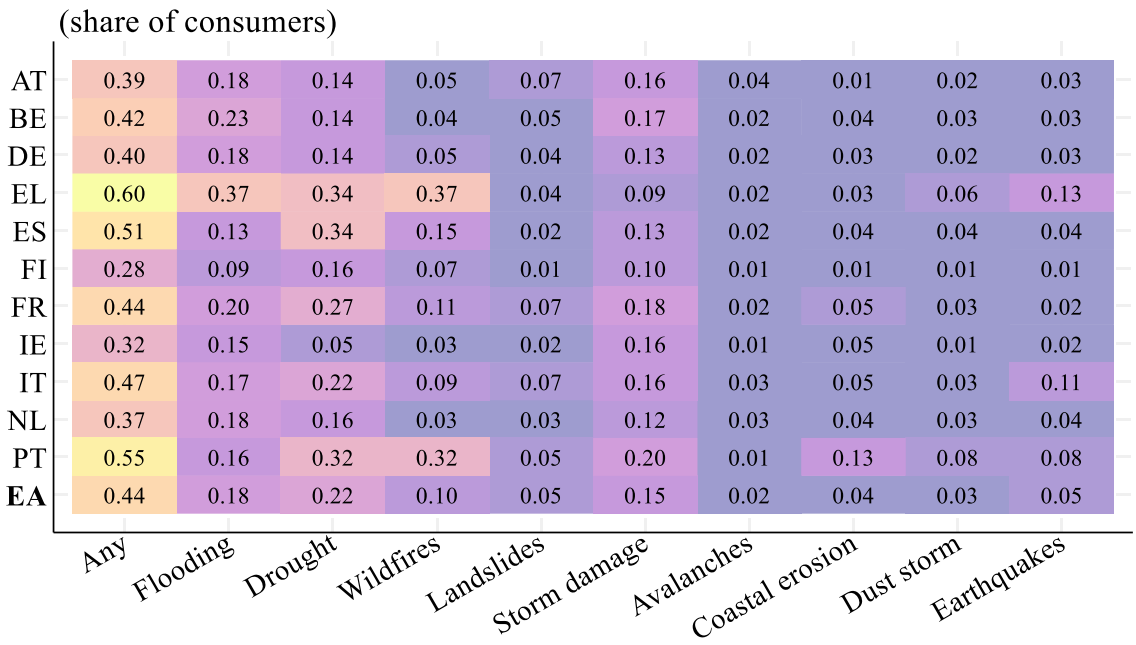


Panel B. Economic costs, climate change attention and temperature anomalies



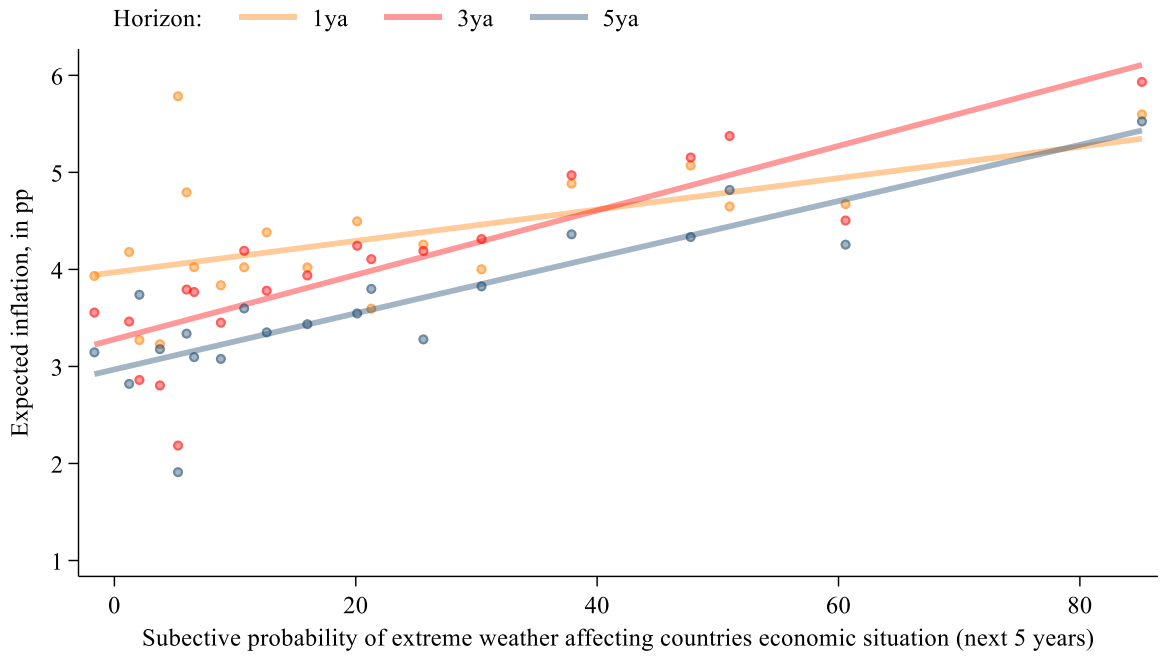
Note: This figure combines measures of media coverage on climate-related topics with temperature anomalies and the economic costs of climate-related disasters over time. Data are based on Factiva (Dow Jones) news data, the European Environment Agency (EEA), and Copernicus/ERA5; the latest year shown is 2024 (data retrieved 25 July 2025). **Panel A** plots annual counts of worldwide news articles (in thousands) related to three climate topics. Article counts are obtained from Factiva using open-text keyword searches across all available sources, restricting to articles classified by Factiva under the topic category "climate change." The search terms are: (i) climate change; (ii) global warming OR (temperature AND climate change) OR (warming AND climate change); and (iii) extreme weather. Each series reports the annual number of matching articles. **Panel B** shows (i) annual economic losses from climate-related disasters in the EU-27 (left-hand axis; billion euros), (ii) a news-based climate attention index (left-hand axis; index with 2015 = 100) constructed from Factiva article counts for the terms climate change and global warming, and (iii) annual average near-surface temperature anomalies for Europe and for the globe (right-hand axis; °C). EU-27 disaster losses are from the EEA and include storms, floods, heatwaves (including droughts), and wildfires; geophysical events are excluded by the EEA. Temperature anomalies are computed from Copernicus/ERA5 and expressed relative to the 1850–1900 (pre-industrial) average.

Figure B3. Consumers financially affected by extreme weather events in the past 5 years



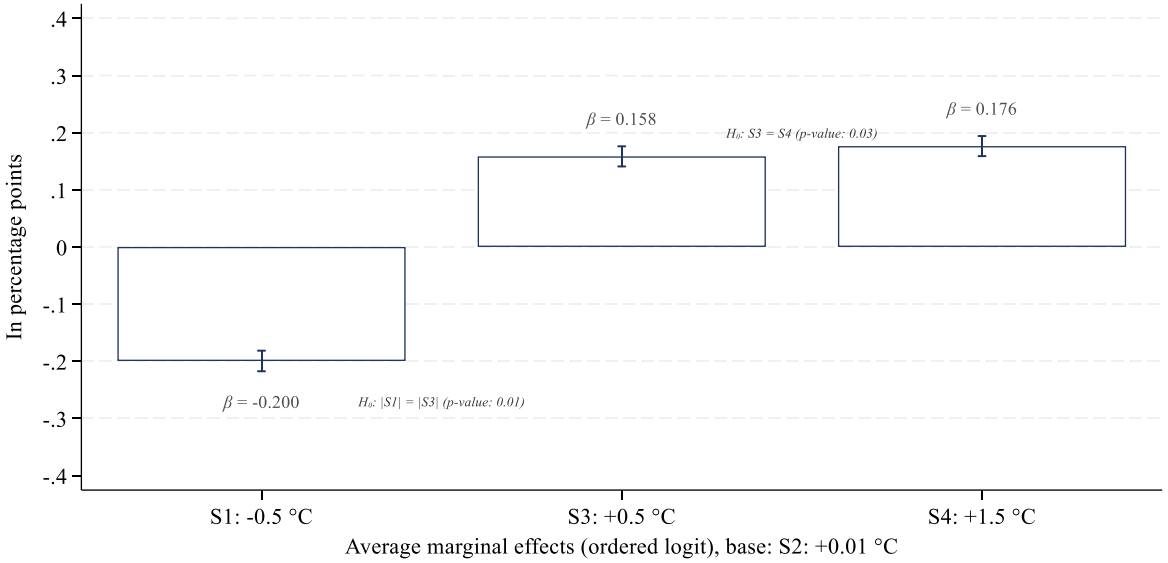
Note: This figure uses population-weighted data from the ECB Consumer Expectations Survey (CES) collected in August 2024. For each country (rows, euro area aggregate shown as "EA"), the heatmap reports the share of consumers who state that their household's financial situation was affected by at least one extreme weather event during the past five years. Respondents could select multiple event types. Thus, category shares are not mutually exclusive and do not sum to 100. The first column ("Any") reports the share affected by at least one listed event type, while subsequent columns report event-specific shares for flooding (including heavy rainfall), drought, wildfires, landslides, storm damage, avalanches, coastal erosion, dust storms, and earthquakes. An "other" category is omitted for brevity and accounts for less than 5 percent in each country.

Figure B4. Perceived extreme-weather risks and consumers' inflation expectations



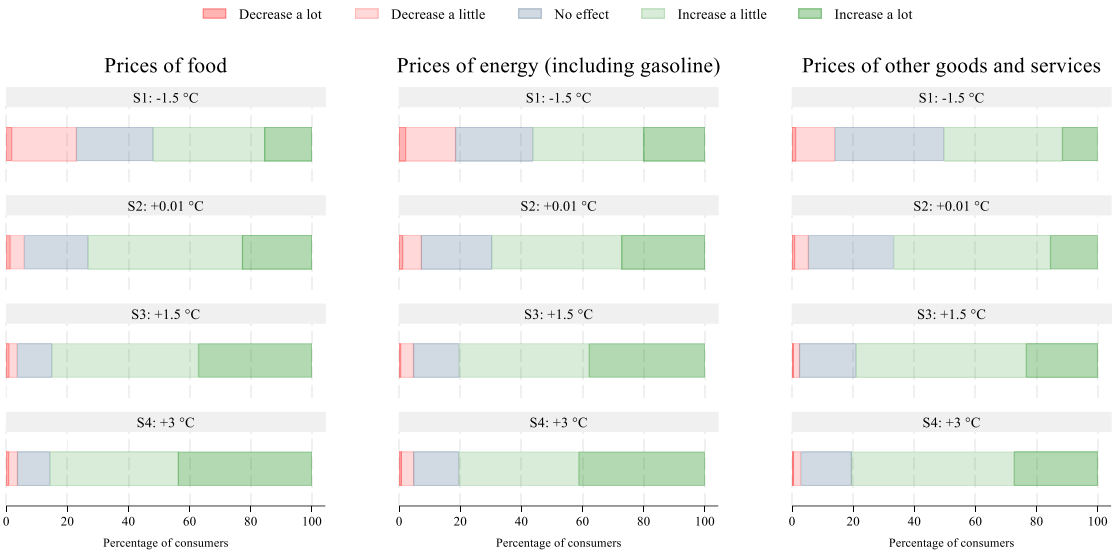
Note: This figure uses data from the ECB Consumer Expectations Survey (CES) collected in August 2024. The horizontal axis measures respondents' subjective probability (0–100 scale) that extreme weather events will affect their country's economic situation over the next five years. The vertical axis reports respondents' expected inflation (in percentage points), shown separately for one-year-ahead (1ya), three-year-ahead (3ya), and five-year-ahead (5ya) horizons. Points depict binned averages of inflation expectations by the perceived probability measure (binscatter). Solid lines show fitted linear relationships from least-squares regressions that include country fixed effects. Inflation expectations are winsorised at the 2nd and 98th percentiles within each country-by-wave cell.

Figure B5. Average marginal effects of temperature change scenarios on inflation expectations



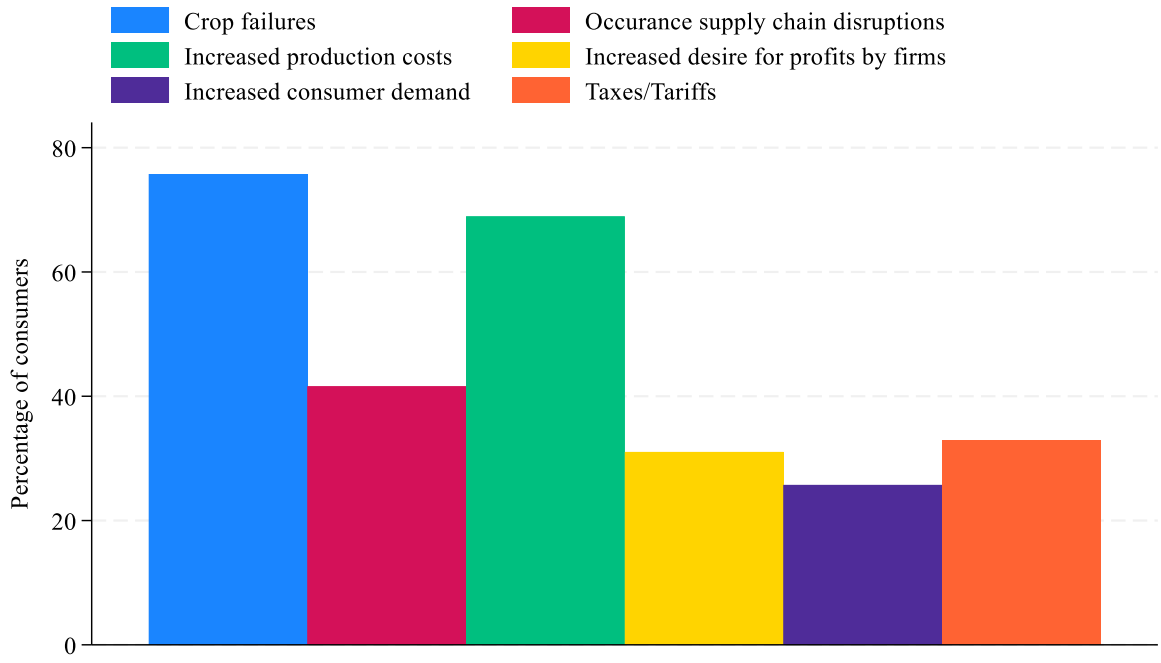
Note: This figure reports average marginal effects from an ordered logit model estimated on data from a special-purpose module of the ECB Consumer Expectations Survey (CES) fielded in June 2025. Respondents were randomly assigned to one of four hypothetical scenarios describing alternative changes in average global temperature over the next five years: -0.5°C (S1), +0.01°C (S2, omitted baseline), +0.5°C (S3), and +1.5°C (S4). The dependent variable is respondents' qualitative assessment of how the scenario would affect prices of goods and services (including food and energy) over the same horizon on an ordered scale (decrease / no effect / increase). Bars display the average marginal effect (in percentage points) of each scenario relative to S2 on the probability that respondents expect prices to increase; whiskers indicate 95 percent confidence intervals. Reported p-values correspond to tests of symmetry and monotonicity (see Table 2 notes).

Figure B6. Expected effect on inflation, by components



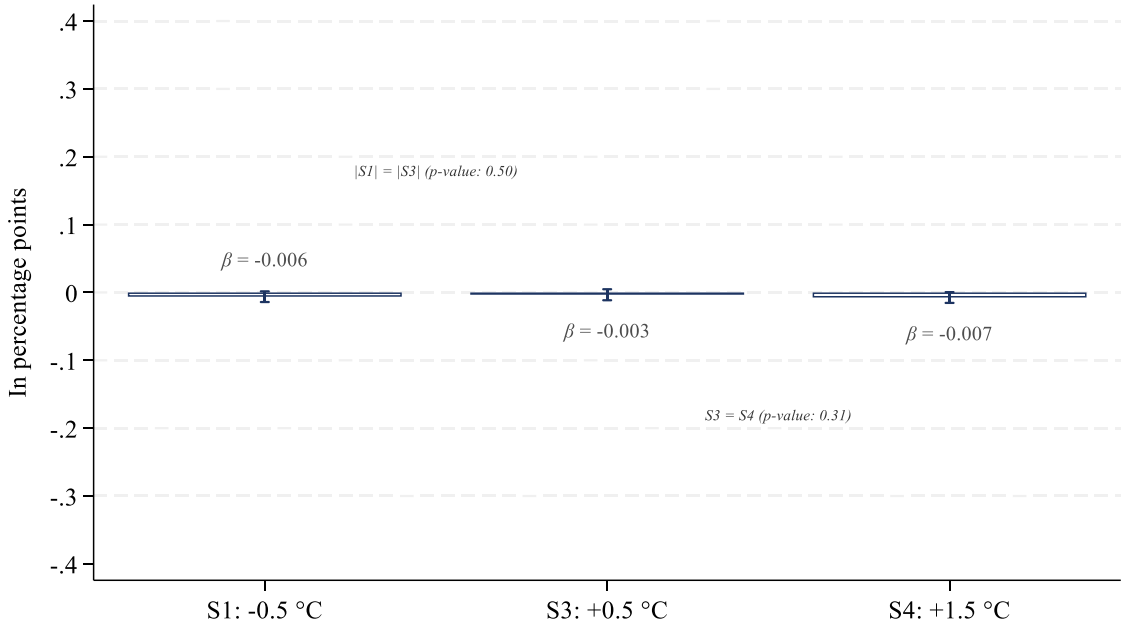
Note: This figure reports population-weighted response shares from a special-purpose module of the ECB Consumer Expectations Survey (CES) conducted in September 2024. Respondents were presented with four hypothetical scenarios describing alternative changes in average global temperature over the next five years: -1.5°C (S1), +0.01°C (S2), +1.5°C (S3), and +3°C (S4). For each scenario, consumers assessed how the temperature change would affect prices over the same horizon, separately for (i) food, (ii) energy (including gasoline), and (iii) other goods and services. Responses are recorded on an ordered five-point scale ranging from "decrease a lot" to "increase a lot." Within each component and scenario, horizontal stacked bars show the percentage of consumers selecting each response category, summing to 100 percent.

Figure B7. Perceived channels through which climate change affects prices



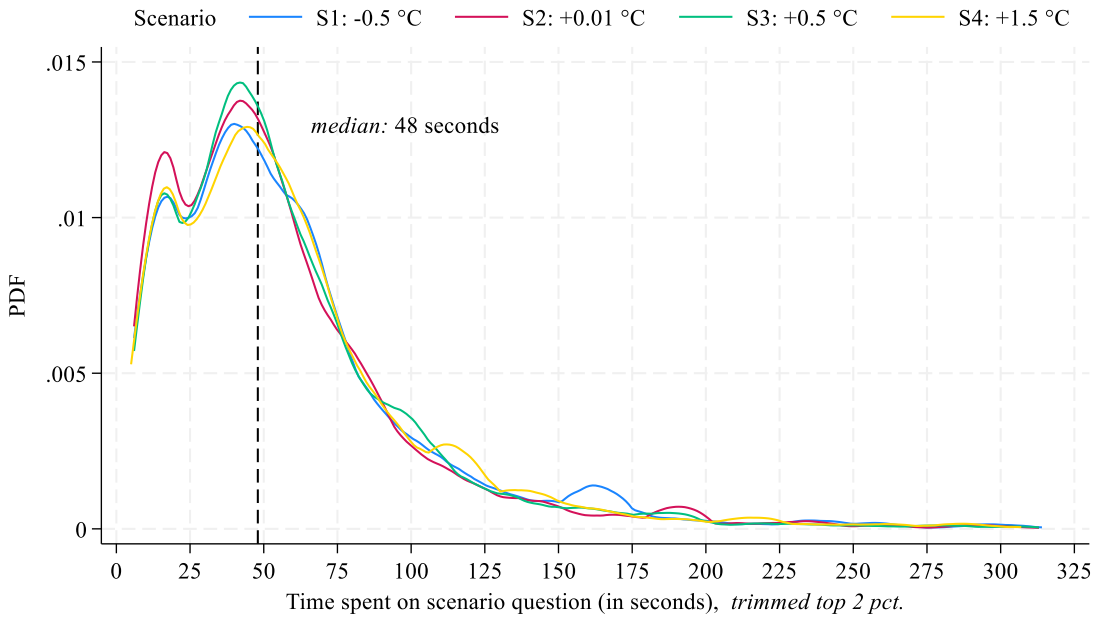
Note: This figure reports population-weighted response shares from a special-purpose module of the ECB Consumer Expectations Survey (CES) conducted in September 2024. Respondents were asked which channels they consider important drivers of price increases linked to climate change. Bars show the percentage of consumers selecting each channel: crop failures, increased production costs, supply-chain disruptions, increased firms' desire for profits, increased consumer demand, and taxes/tariffs. Respondents could select multiple channels, so percentages do not sum to 100.

Figure B8. Placebo outcome: effects of temperature change scenarios on a neutral item



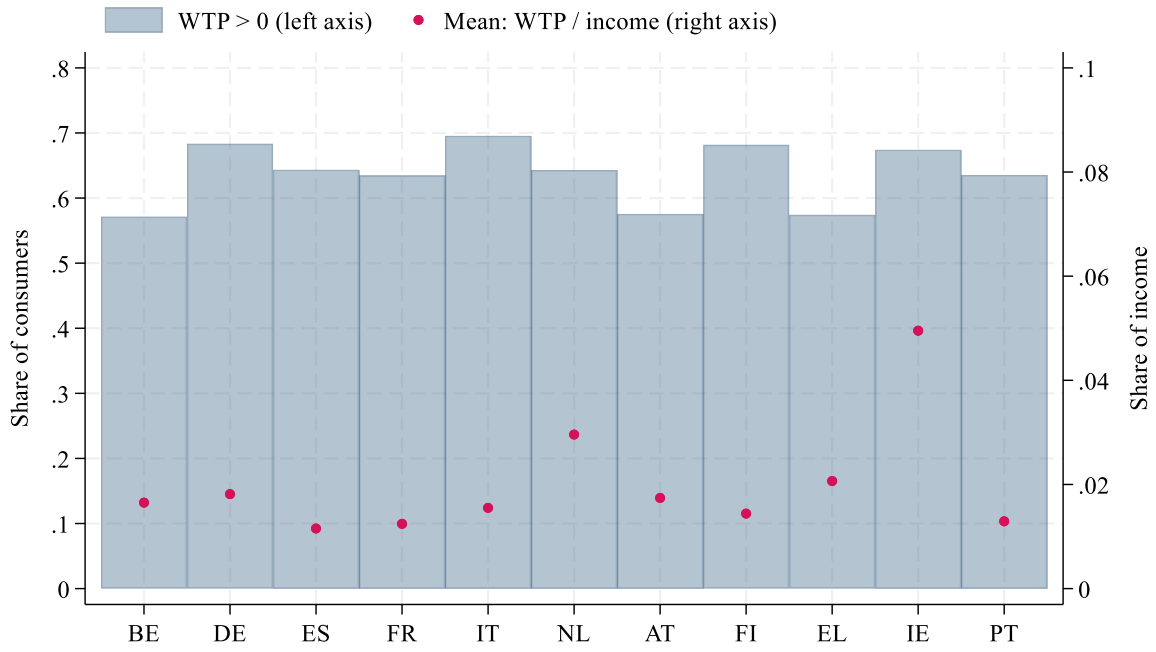
Note: This figure reports regression estimates from a special-purpose module of the ECB Consumer Expectations Survey (CES) conducted in June 2025. Respondents were randomly assigned to one of four hypothetical scenarios describing alternative changes in average global temperature over the next five years: -0.5°C (S1), +0.01°C (S2, omitted baseline), +0.5°C (S3), and +1.5°C (S4). The dependent variable is a placebo survey item elicited after the scenario assignment, deliberately designed to be unrelated to the temperature information. Bars show estimated average marginal effects (in percentage points) of each scenario relative to S2 from an ordered logit specification and whiskers indicate 95 percent confidence intervals. Reported p-values correspond to tests of symmetry and monotonicity (see Table 2 notes).

Figure B9. Response time distribution for temperature-scenario questions



Note: This figure uses data from a special-purpose module of the ECB Consumer Expectations Survey (CES) conducted in June 2025. It plots kernel density estimates of the time respondents spent answering the temperature-scenario question, separately by randomly assigned scenario: -0.5°C (S1), +0.01°C (S2), +0.5°C (S3), and +1.5°C (S4). Response times are measured in seconds; the top 2 percent of response times are trimmed. The vertical dashed line indicates the sample median response time (48 seconds).

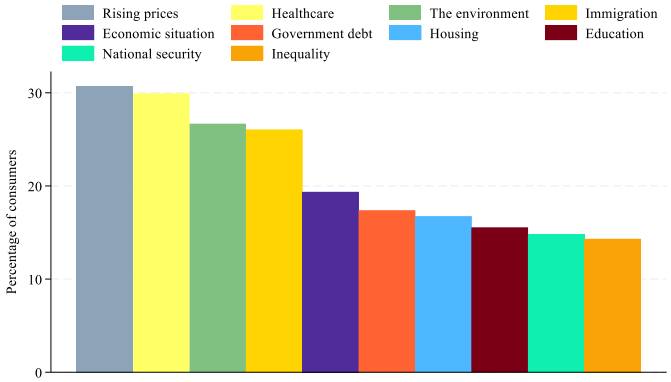
Figure B10. Willingness to pay for climate-related measures across countries



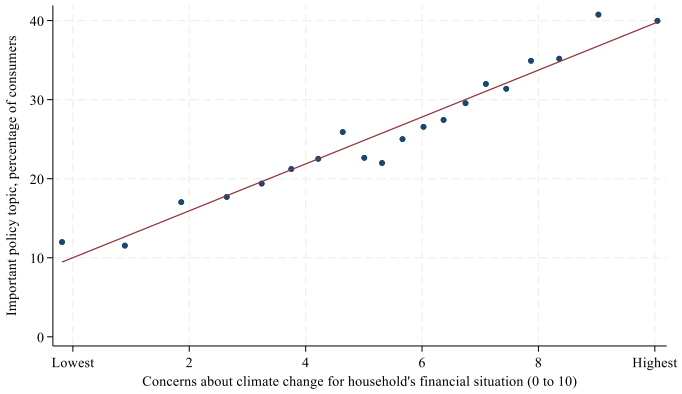
Note: This figure uses data from a special-purpose module of the ECB Consumer Expectations Survey (CES) conducted in June 2025. For each country, the bars (left axis) show the share of consumers who report a positive willingness to pay (WTP > 0). The dots (right axis) show the country-specific average willingness to pay expressed as a share of the household's current monthly net income (WTP/income), computed among all respondents (unconditional). Observations are excluded when reported willingness to pay exceeds reported monthly net household income (less than 2% of respondents) and winsorised at the top 98th percentile. All statistics are population-weighted.

Figure B11. Perceived policy priorities and climate-related concerns and beliefs

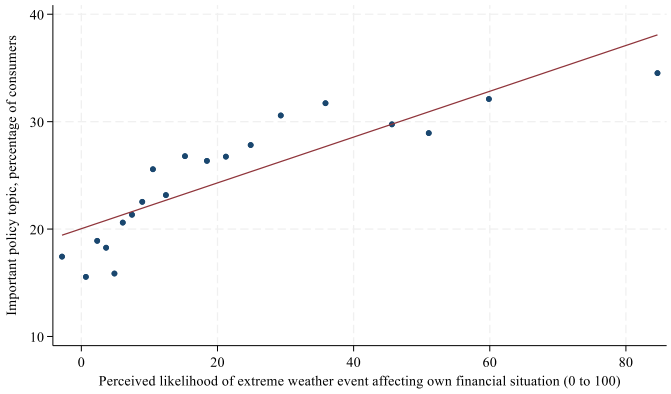
Panel A. Perceived policy priorities



Panel B. The environment and climate change as policy priority and climate change concerns



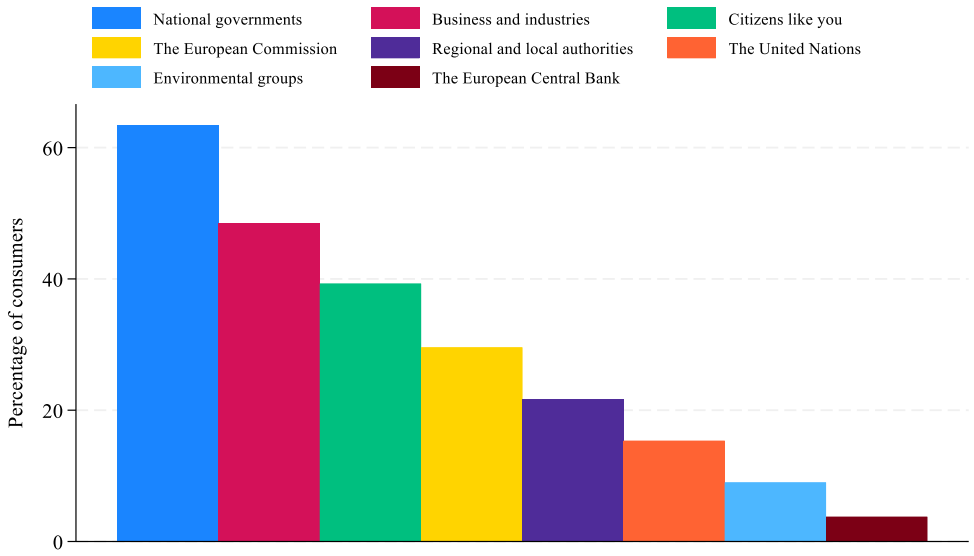
Panel C. The environment and climate change as policy priority and perceived likelihood of extreme weather event



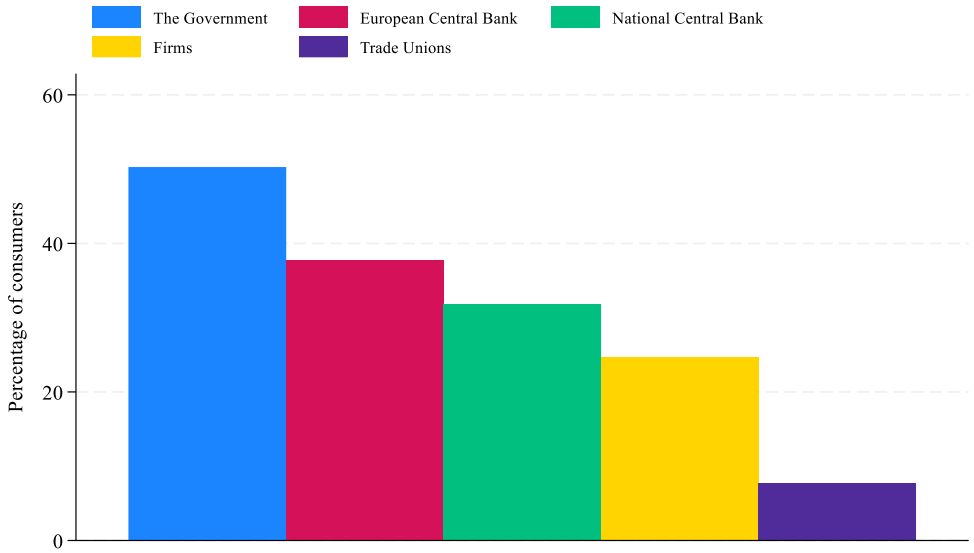
Note: This figure uses population-weighted data from the ECB Consumer Expectations Survey (CES) collected in August 2024 and September 2024. **Panel A** shows the share of consumers (in percent) who report that each topic is among the three most important policy priorities for their country. Respondents could select up to three topics (multiple responses allowed), so percentages do not sum to 100. **Panel B** plots the relationship between climate change concern and the probability that respondents report the environment as a policy priority. The horizontal axis shows self-reported concern about the impact of climate change on the household's financial situation measured on a 0 to 10 scale (from lowest to highest). The vertical axis is the share of consumers (in percent) indicating the environment among their top three policy priorities. Points are binned averages (binscatter) of the outcome by the concern measure. **Panel C** presents the analogous binscatter using, on the horizontal axis, the perceived likelihood (0 to 100 scale) that an extreme weather event will affect the respondent's household's financial situation over the next five years. In Panels B and C, the solid line is the fitted linear relationship from a least-squares regression that controls for country fixed effects, sample-type dummies, and the same socio-demographic covariates as in Table 1.

Figure B12. Perceived institutional responsibilities for addressing climate change and maintaining price stability

Panel A. Institutions responsible for addressing climate change



Panel B. Institutions responsible for maintaining price stability



Note: This figure reports population-weighted response shares from the ECB Consumer Expectations Survey (CES). **Panel A** shows data from a special-purpose module fielded in December 2024 and shows the share of consumers (in percent) who assign responsibility for addressing climate change to each listed institution (national governments, business and industry, citizens, the European Commission, regional and local authorities, the United Nations, environmental groups, and the European Central Bank). **Panel B** shows data from the August 2024 CES wave and shows the share of consumers (in percent) who assign responsibility for maintaining price stability to each listed institution (the government, the European Central Bank, the national central bank, firms, and trade unions). In both panels, respondents could select multiple institutions. Thus, percentages do not sum to 100.

Appendix C: Additional Tables

Table C1. Sample summary statistics June 2025

Variable	Type	Mean	N
Age	categorical		
18-34 years		0.246	19,698
35-49 years		0.239	19,698
50-64 years		0.268	19,698
65+ years		0.247	19,698
Gender			
Women	binary	0.516	19,698
Education	categorical		19,698
Primary		0.118	19,698
Secondary		0.317	19,698
Tertiary		0.565	19,698
Household size	binary	2.485	19,698
Hand-to-mouth	binary	0.277	19,698
Homeowner	binary	0.670	19,698
Household net income (in thousand €)	continuous	39.521	19,698
High financial literacy (Big-3 correct)	binary	0.558	19,556
Countries	categorical		
Belgium		0.035	19,698
Germany		0.260	19,698
Spain		0.149	19,698
France		0.194	19,698
Italy		0.185	19,698
The Netherlands		0.054	19,698
Austria		0.028	19,698
Finland		0.017	19,698
Greece		0.032	19,698
Ireland		0.015	19,698
Portugal		0.031	19,698

Note: This table reports population-weighted summary statistics for respondents participating in the special-purpose module of the ECB Consumer Expectations Survey (CES) conducted in June 2025. Means are reported for categorical variables as the share of respondents in each category and for continuous variables as arithmetic averages. Age is grouped into four categories (18–34, 35–49, 50–64, and 65+). Education is classified into primary, secondary, and tertiary. Hand-to-mouth is an indicator equal to one if the respondent reports being unable to finance an unexpected expense equal to one month of household income. High financial literacy is defined following Lusardi and Mitchell (2011) as answering all three standard financial literacy questions correctly. Household net income is reported in thousands of euros. The table also reports the country composition of the sample; country shares sum to one. The number of observations varies across variables only where indicated due to item non-response.

Table C2. Climate change knowledge

		Response options (correct answer in green)		
Dimension	**Wording of each item**	**False**	**True**	**Don't know**
		(% of consumers, correct in green)		
Climate change and causes	*(1) The ozone hole is the main cause of the greenhouse effect.*	**43.11**	41.59	15.30
	(2) Higher concentration of carbon dioxide (CO_2) in the atmosphere leads to higher temperatures	8.14	**79.93**	11.93
	(3) The increase of greenhouse gases is mainly caused by human activities.	11.40	**80.80**	7.81
	(4) The annual average global temperature in 2023 has increased by about 1 degree Celsius compared to 50 years ago.	15.74	**71.17**	13.09
Expected consequences of climate change	*(5) For the next few decades, the majority of climate scientists expect the climate to change evenly all over the world.*	**44.12**	41.70	14.18
	(6) For the next few decades, the majority of climate scientists expect a warmer climate to increase the melting of polar ice, which will lead to an overall rise of the sea level.	6.15	**87.22**	6.63
Action-related knowledge	*(7) The production of 1 kg of beef produces more greenhouse gases than the production of 1 kg of wheat*	10.53	**71.15**	18.31

Note: This table reports population-weighted response distributions for seven objective climate change knowledge items included in a special-purpose module of the ECB Consumer Expectations Survey (CES) conducted in December 2024. For each item, the table shows the percentage of consumers selecting "True," "False," or "Don't know". The correct answer is indicated in the table (highlighted in green). Items are grouped into three dimensions: (i) climate change and its causes, (ii) expected consequences of climate change, and (iii) action-related knowledge. Subitems (1), (3), (5), (6), and (7) are adapted from Tobler et al. (2012).

Table C3. Effects of temperature change scenarios on expected price changes by category

Panel A. Prices of food

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -1.5°C°C	0.110***	0.114***	-0.224***	0.112***	0.113***	-0.225***
	(0.005)	(0.005)	(0.009)	(0.005)	(0.005)	(0.009)
S3: +1.5°C	-0.040***	-0.074***	0.113***	-0.040***	-0.073***	0.113***
	(0.003)	(0.005)	(0.008)	(0.003)	(0.005)	(0.007)
S4: +3°C	-0.042***	-0.080***	0.122***	-0.042***	-0.079***	0.122***
	(0.003)	(0.005)	(0.007)	(0.003)	(0.005)	(0.007)
Controls	No	No	No	Yes	Yes	Yes
No. Obs.	21,153	21,153	21,153	20,990	20,990	20,990
Tests				(p-value)		
Symmetry: |S1|=|S3|	0.00	0.00	0.00	0.00	0.00	0.00
Monotonicity: S3 = S4	0.23	0.23	0.23	0.19	0.19	0.19

Panel B. Prices of energy (including gasoline)

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -1.5°C	0.072***	0.089***	-0.161***	0.074***	0.089***	-0.163***
	(0.005)	(0.005)	(0.009)	(0.005)	(0.005)	(0.009)
S3: +1.5°C	-0.033***	-0.064***	0.098***	-0.033***	-0.063***	0.097***
	(0.003)	(0.005)	(0.008)	(0.003)	(0.005)	(0.008)
S4: +3°C	-0.032***	-0.062***	0.094***	-0.032***	-0.061***	0.094***
	(0.003)	(0.005)	(0.008)	(0.003)	(0.005)	(0.008)
Controls	No	No	No	Yes	Yes	Yes
No. Obs.	21,153	21,153	21,153	20,992	20,992	20,992
Tests				(p-value)		
Symmetry: |S1|=|S3|	0.00	0.01	0.00	0.00	0.00	0.00
Monotonicity: S3 = S4	0.65	0.65	0.65	0.71	0.71	0.71

Panel C. Price of other goods and services

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -1.5°C	0.060***	0.118***	-0.178***	0.061***	0.118***	-0.179***
	(0.004)	(0.006)	(0.009)	(0.004)	(0.006)	(0.009)
S3: +1.5°C	-0.027***	-0.088***	0.114***	-0.027***	-0.087***	0.114***
	(0.002)	(0.006)	(0.008)	(0.002)	(0.006)	(0.008)
S4: +3°C	-0.029***	-0.097***	0.126***	-0.029***	-0.097***	0.126***
	(0.002)	(0.006)	(0.008)	(0.002)	(0.006)	(0.008)
Additional controls	No	No	No	Yes	Yes	Yes
No. Obs.	21,149	21,149	21,149	20,988	20,988	20,988
Tests				(p-value)		
Symmetry: |S1|=|S3|	0.00	0.00	0.00	0.00	0.00	0.00
Monotonicity: S3 = S4	0.12	0.12	0.12	0.10	0.10	0.10

Note: This table reports estimated effects of randomly assigned temperature change scenarios on consumers' expectations about price developments for specific consumption categories using data from the ECB Consumer Expectations Survey (CES) collected in September 2024. Respondents were randomly assigned to one of four hypothetical scenarios describing alternative changes in average global temperature over the next five years: -1.5°C (S1), +0.01°C (S2, omitted baseline), +1.5°C (S3), and +3°C (S4). For each scenario, respondents assessed whether prices over the next five years would decrease, remain the same, or increase. Panels A to C report results for prices of food, prices of energy (including gasoline), and prices of other goods and services, respectively. Columns (1) to (3) in each panel report average marginal effects from ordered logit models without additional controls, while columns (4) to (6) report the corresponding average marginal effects from specifications that include controls. Marginal effects are reported for each outcome category (decrease, same, increase) and are interpreted relative to the baseline scenario S2. All specifications include country fixed effects and additional controls are the same set of socio-demographic covariates as in Table 1. The "Symmetry" and "Monotonicity" rows report p-values corresponding to tests described in the notes of Table 2. Robust standard errors are reported in parentheses, ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table C4. Expected reasons for price increases in food and goods and services

	Logistic regression, average marginal effects					
	Crop failure	Supply chain disruptions	Production costs	Desire for profits by firms	Demand of consumers	Taxes or tariffs
	(1)	(2)	(3)	(4)	(5)	(6)
Mean (dep. var.)	0.76	0.42	0.69	0.31	0.26	0.33
Temp. Scenario (base: S2: +0.01°C)						
S1: -1.5°C	-0.059***	-0.021*	-0.036***	-0.000	0.010	-0.015
	(0.011)	(0.012)	(0.011)	(0.012)	(0.011)	(0.012)
S3: +1.5°C	0.015*	0.022**	0.025**	-0.007	-0.005	-0.010
	(0.009)	(0.011)	(0.010)	(0.010)	(0.010)	(0.010)
S4: +3°C	0.033***	0.028***	0.032***	-0.027***	0.027***	-0.013
	(0.009)	(0.011)	(0.010)	(0.010)	(0.010)	(0.010)
No. Obs.	15,486	15,486	15,486	15,486	15,486	15,486
Tests				(p-value)		
Symmetry: |S1|=|S3|	0.01	0.98	0.54	0.52	0.77	0.69
Monotonicity: S3 = S4	0.04	0.53	0.44	0.04	0.00	0.81

Note: This table reports estimated effects of randomly assigned temperature change scenarios on consumers' beliefs about the channels driving price increases, using data from the ECB Consumer Expectations Survey (CES) collected in September 2024. Respondents were randomly assigned to one of four hypothetical scenarios describing alternative changes in average global temperature over the next five years: -1.5°C (S1), +0.01°C (S2, omitted baseline), +1.5°C (S3), and +3°C (S4). Each column reports average marginal effects from a logistic regression where the dependent variable is an indicator equal to one if the respondent selects the respective channel as an important reason for price increases in food and goods and services. The mean of each dependent variable is reported at the top of the table. All specifications include country fixed effects and sample-type dummies (not reported) as well as the same set of individual controls as in Table 1. The "Symmetry" and "Monotonicity" rows report p-values corresponding to tests described in the notes of Table 2. Robust standard errors are reported in parentheses, ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table C5. Effects of temperature scenarios on consumer expectations (June 2025)

Panel A. Biodiversity (the variety of animals, plants and animal life)

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -0.5°C	-0.262***	0.016***	0.246***	-0.263***	0.017***	0.246***
	(0.008)	(0.003)	(0.008)	(0.008)	(0.003)	(0.008)
S3: +0.5°C	0.121***	-0.048***	-0.073***	0.124***	-0.049***	-0.075***
	(0.009)	(0.004)	(0.006)	(0.009)	(0.004)	(0.006)
S4: +1.5°C	0.141***	-0.057***	-0.084***	0.141***	-0.057***	-0.084***
	(0.009)	(0.004)	(0.006)	(0.009)	(0.004)	(0.005)
Controls	No	No	No	Yes	Yes	Yes
No. Obs.	19,759	19,759	19,759	19,617	19,617	19,617
Tests				(p-value)		
cut(1) = cut(2)	0.00	0.00	0.00	0.00	0.00	0.00
Symmetry: |S1|=|S3|	0.00	0.00	0.00	0.00	0.00	0.00
Monotonicity: S3 = S4	0.04	0.04	0.04	0.06	0.06	0.06

Panel B. Your household's financial wellbeing

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -0.5°C	-0.086***	0.024***	0.062***	-0.086***	0.024***	0.062***
	(0.007)	(0.002)	(0.005)	(0.007)	(0.002)	(0.005)
S3: +0.5°C	0.097***	-0.054***	-0.043***	0.097***	-0.054***	-0.043***
	(0.009)	(0.005)	(0.004)	(0.009)	(0.005)	(0.004)
S4: +1.5°C	0.124***	-0.073***	-0.052***	0.123***	-0.072***	-0.051***
	(0.009)	(0.006)	(0.004)	(0.009)	(0.006)	(0.004)
Controls	No	No	No	Yes	Yes	Yes
No. Obs.	19,759	19,759	19,759	19,617	19,617	19,617
Tests				(p-value)		
cut(1) = cut(2)	0.00	0.00	0.00	0.00	0.00	0.00
Symmetry: |S1|=|S3|	0.43	0.00	0.01	0.39	0.00	0.01
Monotonicity: S3 = S4	0.01	0.01	0.01	0.01	0.01	0.01

Panel C. Unemployment

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -0.5°C	0.043***	0.043***	-0.086***	0.043***	0.043***	-0.085***
	(0.004)	(0.004)	(0.008)	(0.004)	(0.004)	(0.008)
S3: +0.5°C	-0.027***	-0.059***	0.086***	-0.027***	-0.059***	0.085***
	(0.003)	(0.006)	(0.009)	(0.003)	(0.006)	(0.009)
S4: +1.5°C	-0.035***	-0.086***	0.121***	-0.036***	-0.087***	0.122***
	(0.003)	(0.007)	(0.009)	(0.003)	(0.007)	(0.009)
Controls	No	No	No	Yes	Yes	Yes
No. Obs.	19,759	19,759	19,759	19,617	19,617	19,617
Tests				(p-value)		
cut(1) = cut(2)	0.00	0.00	0.00	0.00	0.00	0.00
Symmetry: |S1|=|S3|	0.01	0.07	0.99	0.01	0.07	1.00
Monotonicity: S3 = S4	0.00	0.00	0.00	0.00	0.00	0.00

Panel D. Economic Growth

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -0.5°C	-0.077***	-0.010***	0.087***	-0.077***	-0.010***	0.087***
	(0.006)	(0.002)	(0.007)	(0.006)	(0.002)	(0.007)
S3: +0.5°C	0.063***	-0.013***	-0.050***	0.063***	-0.013***	-0.050***
	(0.008)	(0.002)	(0.006)	(0.008)	(0.002)	(0.006)
S4: +1.5°C	0.080***	-0.019***	-0.061***	0.080***	-0.018***	-0.061***
	(0.008)	(0.002)	(0.006)	(0.008)	(0.002)	(0.006)
Controls	No	No	No	Yes	Yes	Yes
No. Obs.	19,759	19,759	19,759	19,617	19,617	19,617
Tests				(p-value)		
cut(1) = cut(2)	0.00	0.00	0.00	0.00	0.00	0.00
Symmetry: |S1|=|S3|	0.25	0.26	0.00	0.25	0.23	0.00
Monotonicity: S3 = S4	0.07	0.07	0.07	0.07	0.07	0.07

(Table C5 cont.)

Panel E. Stock prices and other financial assets

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -0.5°C	-0.043***	-0.014***	0.056***	-0.043***	-0.014***	0.057***
	(0.005)	(0.002)	(0.007)	(0.005)	(0.002)	(0.007)
S3: +0.5°C	0.049***	-0.003**	-0.046***	0.050***	-0.003**	-0.046***
	(0.007)	(0.001)	(0.006)	(0.007)	(0.001)	(0.006)
S4: +1.5°C	0.068***	-0.008***	-0.060***	0.068***	-0.008***	-0.060***
	(0.007)	(0.002)	(0.006)	(0.007)	(0.002)	(0.006)
Controls	No	No	No	Yes	Yes	Yes
No. Obs.	19,759	19,759	19,759	19,617	19,617	19,617
Tests	(p-value)					
cut(1) = cut(2)	0.00	0.00	0.00	0.00	0.00	0.00
Symmetry: |S1|=|S3|	0.54	0.00	0.35	0.55	0.00	0.32
Monotonicity: S3 = S4	0.02	0.02	0.02	0.02	0.02	0.02

Panel F. House prices

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -0.5°C	0.021***	0.038***	-0.060***	0.021***	0.038***	-0.060***
	(0.003)	(0.006)	(0.009)	(0.003)	(0.006)	(0.009)
S3: +0.5°C	-0.021***	-0.058***	0.080***	-0.022***	-0.059***	0.080***
	(0.003)	(0.007)	(0.010)	(0.003)	(0.007)	(0.010)
S4: +1.5°C	-0.028***	-0.080***	0.107***	-0.028***	-0.080***	0.107***
	(0.002)	(0.007)	(0.010)	(0.003)	(0.007)	(0.010)
Controls	No	No	No	Yes	Yes	Yes
No. Obs.	19,759	19,759	19,759	19,617	19,617	19,617
Tests	(p-value)					
cut(1) = cut(2)	0.00	0.00	0.00	0.00	0.00	0.00
Symmetry: |S1|=|S3|	0.96	0.07	0.20	0.93	0.06	0.18
Monotonicity: S3 = S4	0.01	0.01	0.01	0.01	0.01	0.01

Panel G. Government debt

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -0.5°C	0.057***	0.084***	-0.141***	0.057***	0.083***	-0.140***
	(0.004)	(0.005)	(0.009)	(0.004)	(0.005)	(0.009)
S3: +0.5°C	-0.035***	-0.117***	0.152***	-0.035***	-0.117***	0.152***
	(0.002)	(0.007)	(0.009)	(0.002)	(0.007)	(0.009)
S4: +1.5°C	-0.041***	-0.142***	0.183***	-0.041***	-0.143***	0.183***
	(0.002)	(0.008)	(0.009)	(0.002)	(0.008)	(0.009)
Controls	No	No	No	Yes	Yes	Yes
No. Obs.	19,759	19,759	19,759	19,617	19,617	19,617
Tests	(p-value)					
cut(1) = cut(2)	0.00	0.00	0.00	0.00	0.00	0.00
Symmetry: |S1|=|S3|	0.00	0.00	0.45	0.00	0.00	0.46
Monotonicity: S3 = S4	0.00	0.00	0.00	0.00	0.00	0.00

Panel H. Taxes paid by consumers and firms (incl. VAT)

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -0.5°C	0.039***	0.074***	-0.112***	0.038***	0.073***	-0.111***
	(0.003)	(0.006)	(0.009)	(0.003)	(0.006)	(0.009)
S3: +0.5°C	-0.029***	-0.107***	0.137***	-0.029***	-0.107***	0.136***
	(0.002)	(0.008)	(0.010)	(0.002)	(0.008)	(0.010)
S4: +1.5°C	-0.036***	-0.141***	0.176***	-0.036***	-0.140***	0.176***
	(0.002)	(0.008)	(0.010)	(0.002)	(0.008)	(0.010)
Controls	No	No	No	Yes	Yes	Yes
No. Obs.	19,759	19,759	19,759	19,617	19,617	19,617
Tests	(p-value)					
cut(1) = cut(2)	0.00	0.00	0.00	0.00	0.00	0.00
Symmetry: |S1|=|S3|	0.04	0.00	0.13	0.05	0.00	0.12
Monotonicity: S3 = S4	0.00	0.00	0.00	0.00	0.00	0.00

(Table C5 cont.)

Panel I. Immigration

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -0.5°C	0.099***	0.104***	-0.203***	0.099***	0.104***	-0.203***
	(0.005)	(0.005)	(0.009)	(0.005)	(0.005)	(0.009)
S3: +0.5°C	-0.033***	-0.089***	0.122***	-0.033***	-0.088***	0.122***
	(0.003)	(0.007)	(0.009)	(0.003)	(0.007)	(0.009)
S4: +1.5°C	-0.037***	-0.101***	0.137***	-0.037***	-0.101***	0.138***
	(0.003)	(0.007)	(0.009)	(0.003)	(0.007)	(0.009)
Controls	No	No	No	Yes	Yes	Yes
No. Obs.	19,759	19,759	19,759	19,617	19,617	19,617
Tests				(p-value)		
cut(1) = cut(2)	0.00	0.00	0.00	0.00	0.00	0.00
Symmetry: |S1|=|S3|	0.00	0.14	0.00	0.00	0.14	0.00
Monotonicity: S3 = S4	0.10	0.10	0.10	0.10	0.09	0.09

Note: This table reports estimated effects of randomly assigned temperature change scenarios on a set of additional expectations elicited in a special-purpose module of the ECB Consumer Expectations Survey (CES) conducted in June 2025. Respondents were randomly assigned to one of four hypothetical scenarios describing alternative changes in average global temperature over the next five years: -0.5°C (S1), +0.01°C (S2, omitted baseline), +0.5°C (S3), and +1.5°C (S4). For each outcome, respondents indicated whether they expected the variable to decrease, have no effect ("same"), or increase over the next five years. Within each panel, columns (1) to (3) report average marginal effects from an ordered logit model without additional controls, and columns (4) to (6) report the corresponding marginal effects from a specification that includes additional controls. Marginal effects are reported for each outcome category (decrease, same, increase) and are interpreted relative to the baseline scenario S2. All specifications include country fixed effects (not reported). Additional controls add the same set of socio-demographic covariates as in Table. Reported "cut(1) = cut(2)" p-values test equality of adjacent threshold parameters in the ordered logit model within each panel. The "Symmetry" and "Monotonicity" rows report p-values corresponding to tests described in the notes of Table 2. Robust standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table C6. Balance tests for scenario assignment (June 2025)

	Global average temperature change scenario				
Factor	**-0.5°C**	**+0.01°C**	**+0.5°C**	**+1.5°C**	**p-value**
N	4951	4946	4934	4935	
High climate concern	1410 (49.9%)	1382 (49.6%)	1460 (51.1%)	1399 (49.4%)	0.56
High climate attention	1311 (45.4%)	1271 (44.6%)	1329 (45.5%)	1317 (45.6%)	0.87
High climate knowledge	1226 (36.9%)	1177 (36.1%)	1135 (34.8%)	1209 (36.5%)	0.32
Age					
18-34 years	960 (19.4%)	949 (19.2%)	941 (19.1%)	932 (18.9%)	0.89
35-49 years	1543 (31.2%)	1586 (32.1%)	1560 (31.6%)	1532 (31.0%)	
50-64 years	1623 (32.8%)	1568 (31.7%)	1609 (32.6%)	1654 (33.5%)	
65+ years	825 (16.7%)	843 (17.0%)	824 (16.7%)	817 (16.6%)	
Gender					
Men	2701 (54.6%)	2701 (54.6%)	2742 (55.6%)	2745 (55.6%)	0.56
Women	2250 (45.4%)	2245 (45.4%)	2192 (44.4%)	2190 (44.4%)	
Education					
Primary	491 (9.9%)	509 (10.3%)	484 (9.8%)	477 (9.7%)	0.41
Secondary	1479 (29.9%)	1490 (30.1%)	1550 (31.4%)	1560 (31.6%)	
Tertiary	2981 (60.2%)	2947 (59.6%)	2900 (58.8%)	2898 (58.7%)	
Household size, median (IQR)	2 (2, 4)	2 (2, 4)	2 (2, 4)	2 (2, 4)	0.45
Hand-to-mouth	1273 (25.7%)	1287 (26.0%)	1274 (25.8%)	1274 (25.8%)	0.99
Homeowner	3483 (70.3%)	3500 (70.8%)	3489 (70.7%)	3483 (70.6%)	0.97
High financial literacy	2850 (58.0%)	2795 (56.9%)	2783 (56.9%)	2873 (58.6%)	0.21
HH Income (thousands), median (IQR)	36 (24, 51.6)	36 (23.16, 50.4)	36 (23.76, 50.4)	36 (22.8, 51.6)	0.38
Country					
BE	221 (4.5%)	251 (5.1%)	251 (5.1%)	248 (5.0%)	0.36
DE	802 (16.2%)	761 (15.4%)	771 (15.6%)	758 (15.4%)	
ES	791 (16.0%)	764 (15.4%)	799 (16.2%)	769 (15.6%)	
FR	801 (16.2%)	768 (15.5%)	804 (16.3%)	768 (15.6%)	
IT	852 (17.2%)	863 (17.4%)	833 (16.9%)	851 (17.2%)	
NL	210 (4.2%)	244 (4.9%)	272 (5.5%)	255 (5.2%)	
AT	247 (5.0%)	263 (5.3%)	234 (4.7%)	244 (4.9%)	
FI	254 (5.1%)	250 (5.1%)	231 (4.7%)	283 (5.7%)	
EL	287 (5.8%)	258 (5.2%)	261 (5.3%)	248 (5.0%)	
IE	226 (4.6%)	261 (5.3%)	217 (4.4%)	257 (5.2%)	
PT	260 (5.3%)	263 (5.3%)	261 (5.3%)	254 (5.1%)	
Experience extreme weather					
Flood	431 (15.8%)	431 (16.1%)	470 (17.4%)	483 (18.0%)	0.096
Drought	630 (23.0%)	592 (22.1%)	657 (24.4%)	630 (23.4%)	0.27
Wildfire	288 (10.5%)	274 (10.2%)	288 (10.7%)	290 (10.8%)	0.93
Landslide	132 (4.8%)	101 (3.8%)	124 (4.6%)	124 (4.6%)	0.25
Storm	375 (13.7%)	391 (14.6%)	431 (16.0%)	378 (14.1%)	0.087
Avalanches	66 (2.4%)	62 (2.3%)	69 (2.6%)	58 (2.2%)	0.80
Coastal erosion	123 (4.5%)	114 (4.3%)	103 (3.8%)	121 (4.5%)	0.57
Dust storms	76 (2.8%)	80 (3.0%)	74 (2.7%)	94 (3.5%)	0.35
Earthquakes	132 (4.8%)	140 (5.2%)	135 (5.0%)	125 (4.6%)	0.78
Other	62 (2.3%)	63 (2.4%)	52 (1.9%)	43 (1.6%)	0.18

Note: This table reports balance tests for the random assignment of respondents to global average temperature change scenarios in the June 2025 special-purpose module of the ECB Consumer Expectations Survey (CES). Columns report summary statistics by assigned scenario (-0.5°C, +0.01°C, +0.5°C, and +1.5°C). For binary and categorical variables, entries report counts and shares in parentheses; for continuous variables, medians and interquartile ranges (IQRs) are reported. The final column reports p-values from tests of equality across scenarios. Continuous variables are compared using Wilcoxon rank-sum tests (two-group comparisons) or Kruskal–Wallis tests (more than two groups). Categorical and binary variables are compared using Pearson chi-squared tests. Climate concern is classified as high if the reported concern exceeds the sample median (greater than 5 on a 0–10 scale). Climate attention is classified as high if respondents report paying "much" or "a great deal" of attention to climate change. Climate knowledge is classified as high if the respondent answers more than the median number of objective climate knowledge questions correctly (more than 5). Information on past extreme weather event experiences refers to events affecting the respondent's household during the preceding five years and was collected in the August 2024 CES wave.

Table C7. Effects of temperature scenarios on consumers economic activity expectations

	Ordered Logistic Regression, average marginal effects						OLS	
Outcome	Decrease	No effect	Increase	Decrease	No effect	Increase	Point forecast	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Temp. Scenario (base: S2: +0.01°C)								
S1: -0.5°C	-0.077***	-0.010***	0.087***	-0.077***	-0.010***	0.087***	0.295***	0.292***
	(0.006)	(0.002)	(0.007)	(0.006)	(0.002)	(0.007)	(0.029)	(0.029)
S3: +0.5°C	0.063***	-0.013***	-0.050***	0.063***	-0.013***	-0.050***	-0.213***	-0.216***
	(0.008)	(0.002)	(0.006)	(0.008)	(0.002)	(0.006)	(0.032)	(0.032)
S4: +1.5°C	0.080***	-0.019***	-0.061***	0.080***	-0.018***	-0.061***	-0.312***	-0.313***
	(0.008)	(0.002)	(0.006)	(0.008)	(0.002)	(0.006)	(0.032)	(0.032)
Additional controls	No	No	No	Yes	Yes	Yes	No	Yes
No. obs.	19,759	19,759	19,759	19,617	19,617	19,617	19,752	19,610
Tests	(p-value)							
Symmetry: |S1|=|S3|	0.25	0.26	0.00	0.25	0.23	0.00	0.12	0.15
Monotonicity: S3 = S4	0.07	0.07	0.07	0.07	0.07	0.07	0.00	0.01

Note: This table reports estimated effects of randomly assigned temperature change scenarios on consumers' expectations about overall economic activity using data from a special-purpose module of the ECB Consumer Expectations Survey (CES) conducted in June 2025. Respondents were randomly assigned to one of four hypothetical scenarios describing alternative changes in average global temperature over the next five years: -0.5°C (S1), +0.01°C (S2, omitted baseline), +0.5°C (S3), and +1.5°C (S4). The qualitative outcome records whether respondents expect economic activity to decrease, have no effect, or increase over the next five years. Columns (1) to (6) report average marginal effects from an ordered logit model for the probabilities of each qualitative outcome relative to the baseline scenario S2. Columns (7) and (8) report OLS estimates for a continuous point-forecast measure of expected economic growth over the same horizon (in percentage points), elicited directly from respondents. Coefficients are interpreted as changes relative to S2. All specifications include country fixed effects and sample-type dummies (not reported) and additional controls are same set of individual covariates as in Table 1. The "Symmetry" and "Monotonicity" rows report p-values corresponding to tests described in the notes of Table 2. Robust standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table C8. Effects of temperature scenarios on consumer expectations (September 2024)

Panel A. Prices of food

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -1.5°C°C	0.110***	0.114***	-0.224***	0.112***	0.113***	-0.225***
	(0.005)	(0.005)	(0.009)	(0.005)	(0.005)	(0.009)
S3: +1.5°C	-0.040***	-0.074***	0.113***	-0.040***	-0.073***	0.113***
	(0.003)	(0.005)	(0.008)	(0.003)	(0.005)	(0.007)
S4: +3°C	-0.042***	-0.080***	0.122***	-0.042***	-0.079***	0.122***
	(0.003)	(0.005)	(0.007)	(0.003)	(0.005)	(0.007)
Controls	No	No	No	Yes	Yes	Yes
No. Obs.	21,153	21,153	21,153	20,990	20,990	20,990
Tests			(p-value)			
cut(1) = cut(2)	0.00	0.00	0.00	0.00	0.00	0.00
Symmetry: |S1|=|S3|	0.00	0.00	0.00	0.00	0.00	0.00
Monotonicity: S3 = S4	0.23	0.23	0.23	0.19	0.19	0.19

Panel B. Prices of energy (including gasoline)

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -1.5°C	0.072***	0.089***	-0.161***	0.074***	0.089***	-0.163***
	(0.005)	(0.005)	(0.009)	(0.005)	(0.005)	(0.009)
S3: +1.5°C	-0.033***	-0.064***	0.098***	-0.033***	-0.063***	0.097***
	(0.003)	(0.005)	(0.008)	(0.003)	(0.005)	(0.008)
S4: +3°C	-0.032***	-0.062***	0.094***	-0.032***	-0.061***	0.094***
	(0.003)	(0.005)	(0.008)	(0.003)	(0.005)	(0.008)
Controls	No	No	No	Yes	Yes	Yes
No. Obs.	21,153	21,153	21,153	20,992	20,992	20,992
Tests			(p-value)			
cut(1) = cut(2)	0.00	0.00	0.00	0.00	0.00	0.00
Symmetry: |S1|=|S3|	0.00	0.01	0.00	0.00	0.00	0.00
Monotonicity: S3 = S4	0.65	0.65	0.65	0.71	0.71	0.71

Panel C. Price of other goods and services

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -1.5°C	0.060***	0.118***	-0.178***	0.061***	0.118***	-0.179***
	(0.004)	(0.006)	(0.009)	(0.004)	(0.006)	(0.009)
S3: +1.5°C	-0.027***	-0.088***	0.114***	-0.027***	-0.087***	0.114***
	(0.002)	(0.006)	(0.008)	(0.002)	(0.006)	(0.008)
S4: +3°C	-0.029***	-0.097***	0.126***	-0.029***	-0.097***	0.126***
	(0.002)	(0.006)	(0.008)	(0.002)	(0.006)	(0.008)
Controls	No	No	No	Yes	Yes	Yes
No. Obs.	21,149	21,149	21,149	20,988	20,988	20,988
Tests			(p-value)			
cut(1) = cut(2)	0.00	0.00	0.00	0.00	0.00	0.00
Symmetry: |S1|=|S3|	0.00	0.00	0.00	0.00	0.00	0.00
Monotonicity: S3 = S4	0.12	0.12	0.12	0.10	0.10	0.10

Panel D. Number of Oscar winning movies (*placebo*)

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -1.5°C	-0.001	-0.001	0.002	-0.001	-0.000	0.001
	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)	(0.004)
S3: +1.5°C	0.002	0.001	-0.003	0.002	0.001	-0.003
	(0.003)	(0.002)	(0.005)	(0.003)	(0.002)	(0.005)
S4: +3°C	0.005	0.002	-0.007	0.004	0.002	-0.006
	(0.003)	(0.001)	(0.004)	(0.003)	(0.002)	(0.004)
Controls	No	No	No	Yes	Yes	Yes
No. Obs.	21,152	21,152	21,152	20,991	20,991	20,991
Tests			(p-value)			
cut(1) = cut(2)	0.00	0.00	0.00	0.00	0.00	0.00
Symmetry: |S1|=|S3|	0.89	0.91	0.90	0.82	0.85	0.83
Monotonicity: S3 = S4	0.36	0.36	0.36	0.51	0.51	0.51

(Table C8 cont.)

Panel E. Biodiversity (the variety of animals, plants and animal life)

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -1.5°C	-0.197***	0.004***	0.193***	-0.198***	0.005***	0.193***
	(0.008)	(0.001)	(0.008)	(0.008)	(0.001)	(0.008)
S3: +1.5°C	0.059***	-0.013***	-0.047***	0.062***	-0.013***	-0.049***
	(0.009)	(0.002)	(0.007)	(0.009)	(0.002)	(0.007)
S4: +3°C	0.083***	-0.019***	-0.064***	0.082***	-0.018***	-0.063***
	(0.009)	(0.002)	(0.007)	(0.009)	(0.002)	(0.007)
Controls	No	No	No	Yes	Yes	Yes
No. Obs.	21,153	21,153	21,153	20,992	20,992	20,992
Tests				(p-value)		
cut(1) = cut(2)	0.00	0.00	0.00	0.00	0.00	0.00
Symmetry: |S1|=|S3|	0.00	0.00	0.00	0.00	0.00	0.00
Monotonicity: S3 = S4	0.01	0.01	0.01	0.03	0.03	0.03

Panel F. Your household's financial wellbeing

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -1.5°C	-0.077***	0.014***	0.063***	-0.077***	0.014***	0.063***
	(0.007)	(0.002)	(0.006)	(0.007)	(0.002)	(0.006)
S3: +1.5°C	0.091***	-0.039***	-0.052***	0.092***	-0.039***	-0.054***
	(0.009)	(0.004)	(0.005)	(0.009)	(0.004)	(0.005)
S4: +3°C	0.120***	-0.054***	-0.066***	0.120***	-0.053***	-0.067***
	(0.009)	(0.004)	(0.005)	(0.009)	(0.004)	(0.005)
Controls	No	No	No	Yes	Yes	Yes
No. Obs.	21,150	21,150	21,150	20,989	20,989	20,989
Tests				(p-value)		
cut(1) = cut(2)	0.00	0.00	0.00	0.00	0.00	0.00
Symmetry: |S1|=|S3|	0.30	0.00	0.26	0.24	0.00	0.32
Monotonicity: S3 = S4	0.00	0.00	0.00	0.00	0.00	0.00

Panel G. Unemployment

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -1.5°C	0.043***	0.045***	-0.088***	0.044***	0.045***	-0.089***
	(0.004)	(0.004)	(0.008)	(0.004)	(0.004)	(0.008)
S3: +1.5°C	-0.030***	-0.057***	0.087***	-0.030***	-0.057***	0.086***
	(0.003)	(0.006)	(0.009)	(0.003)	(0.006)	(0.009)
S4: +3°C	-0.039***	-0.081***	0.120***	-0.038***	-0.081***	0.119***
	(0.003)	(0.006)	(0.009)	(0.003)	(0.007)	(0.009)
Controls	No	No	No	Yes	Yes	Yes
No. Obs.	21,151	21,151	21,151	20,990	20,990	20,990
Tests				(p-value)		
cut(1) = cut(2)	0.00	0.00	0.00	0.00	0.00	0.00
Symmetry: |S1|=|S3|	0.03	0.15	0.96	0.02	0.19	0.87
Monotonicity: S3 = S4	0.00	0.00	0.00	0.00	0.00	0.00

Panel H. Economic Growth

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -1.5°C	-0.107***	0.005***	0.102***	-0.106***	0.005***	0.101***
	(0.007)	(0.001)	(0.007)	(0.007)	(0.001)	(0.007)
S3: +1.5°C	0.104***	-0.032***	-0.072***	0.106***	-0.033***	-0.074***
	(0.009)	(0.003)	(0.006)	(0.009)	(0.003)	(0.006)
S4: +3°C	0.137***	-0.046***	-0.091***	0.136***	-0.045***	-0.091***
	(0.009)	(0.003)	(0.006)	(0.009)	(0.003)	(0.006)
Controls	No	No	No	Yes	Yes	Yes
No. Obs.	21,152	21,152	21,152	20,991	20,991	20,991
Tests				(p-value)		
cut(1) = cut(2)	0.00	0.00	0.00	0.00	0.00	0.00
Symmetry: |S1|=|S3|	0.85	0.00	0.01	0.97	0.00	0.01
Monotonicity: S3 = S4	0.00	0.00	0.00	0.00	0.00	0.00

(Table C8 cont.)

Panel I. Stock prices and other financial assets

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -1.5°C	-0.055***	-0.008***	0.063***	-0.054***	-0.008***	0.062***
	(0.006)	(0.001)	(0.007)	(0.006)	(0.001)	(0.007)
S3: +1.5°C	0.065***	-0.010***	-0.055***	0.067***	-0.010***	-0.057***
	(0.007)	(0.002)	(0.006)	(0.007)	(0.002)	(0.006)
S4: +3°C	0.090***	-0.017***	-0.072***	0.088***	-0.017***	-0.072***
	(0.008)	(0.002)	(0.006)	(0.008)	(0.002)	(0.006)
Controls	No	No	No	Yes	Yes	Yes
No. Obs.	21,151	21,151	21,151	20,990	20,990	20,990
Tests			(p-value)			
cut(1) = cut(2)	0.00	0.00	0.00	0.00	0.00	0.00
Symmetry: |S1|=|S3|	0.35	0.42	0.51	0.26	0.28	0.64
Monotonicity: S3 = S4	0.01	0.01	0.01	0.01	0.02	0.01

Panel J. House prices

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -1.5°C	0.019***	0.025***	-0.044***	0.019***	0.025***	-0.044***
	(0.004)	(0.005)	(0.008)	(0.004)	(0.005)	(0.008)
S3: +1.5°C	-0.018***	-0.031***	0.050***	-0.019***	-0.031***	0.050***
	(0.003)	(0.006)	(0.009)	(0.003)	(0.006)	(0.009)
S4: +3°C	-0.019***	-0.032***	0.051***	-0.019***	-0.032***	0.051***
	(0.003)	(0.006)	(0.009)	(0.003)	(0.006)	(0.009)
Controls	No	No	No	Yes	Yes	Yes
No. Obs.	21,150	21,150	21,150	20,989	20,989	20,989
Tests			(p-value)			
cut(1) = cut(2)	0.00	0.00	0.00	0.00	0.00	0.00
Symmetry: |S1|=|S3|	0.95	0.48	0.69	0.92	0.49	0.71
Monotonicity: S3 = S4	0.94	0.94	0.94	0.91	0.91	0.91

Panel K. Government debt

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -1.5°C	0.057***	0.086***	-0.143***	0.058***	0.086***	-0.144***
	(0.004)	(0.005)	(0.009)	(0.004)	(0.005)	(0.009)
S3: +1.5°C	-0.036***	-0.101***	0.137***	-0.036***	-0.102***	0.138***
	(0.002)	(0.007)	(0.009)	(0.002)	(0.007)	(0.009)
S4: +3°C	-0.040***	-0.118***	0.158***	-0.040***	-0.117***	0.158***
	(0.002)	(0.007)	(0.009)	(0.002)	(0.007)	(0.009)
Controls	No	No	No	Yes	Yes	Yes
No. Obs.	21,153	21,153	21,153	20,992	20,992	20,992
Tests			(p-value)			
cut(1) = cut(2)	0.00	0.00	0.00	0.00	0.00	0.00
Symmetry: |S1|=|S3|	0.00	0.15	0.68	0.00	0.13	0.72
Monotonicity: S3 = S4	0.02	0.02	0.02	0.03	0.03	0.03

Panel L. Taxes paid by consumers and firms (incl. VAT)

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -1.5°C	0.053***	0.104***	-0.158***	0.054***	0.104***	-0.158***
	(0.003)	(0.006)	(0.009)	(0.003)	(0.006)	(0.009)
S3: +1.5°C	-0.022***	-0.072***	0.094***	-0.022***	-0.074***	0.096***
	(0.002)	(0.007)	(0.009)	(0.002)	(0.007)	(0.009)
S4: +3°C	-0.024***	-0.081***	0.105***	-0.024***	-0.082***	0.106***
	(0.002)	(0.007)	(0.009)	(0.002)	(0.007)	(0.009)
Controls	No	No	No	Yes	Yes	Yes
No. Obs.	21,151	21,151	21,151	20,990	20,990	20,990
Tests			(p-value)			
cut(1) = cut(2)	0.00	0.00	0.00	0.00	0.00	0.00
Symmetry: |S1|=|S3|	0.00	0.00	0.00	0.00	0.01	0.00
Monotonicity: S3 = S4	0.23	0.23	0.23	0.27	0.27	0.27

(Table C8 cont.)

Panel M. Immigration

	Ordered logistic regression, average marginal effects					
Level of dep. var.	Decrease	Same	Increase	Decrease	Same	Increase
	(1)	(2)	(3)	(4)	(5)	(6)
Temp. Scenario (base: S2: +0.01°C)						
S1: -1.5°C	0.099***	0.129***	-0.228***	0.100***	0.130***	-0.230***
	(0.004)	(0.005)	(0.009)	(0.005)	(0.005)	(0.009)
S3: +1.5°C	-0.024***	-0.065***	0.089***	-0.024***	-0.065***	0.089***
	(0.002)	(0.007)	(0.009)	(0.002)	(0.007)	(0.009)
S4: +3°C	-0.028***	-0.080***	0.108***	-0.028***	-0.080***	0.109***
	(0.002)	(0.007)	(0.009)	(0.002)	(0.007)	(0.009)
Controls	No	No	No	Yes	Yes	Yes
No. Obs.	21,153	21,153	21,153	20,992	20,992	20,992
Tests				(p-value)		
cut(1) = cut(2)	0.00	0.00	0.00	0.00	0.00	0.00
Symmetry: |S1|=|S3|	0.00	0.00	0.00	0.00	0.00	0.00
Monotonicity: S3 = S4	0.02	0.02	0.02	0.02	0.02	0.02

Note: This table reports estimated effects of randomly assigned temperature change scenarios on a broad set of consumer expectations using data from the ECB Consumer Expectations Survey (CES) collected in September 2024. Respondents were randomly assigned to one of four hypothetical scenarios describing alternative changes in average global temperature over the next five years: -1.5°C (S1), +0.01°C (S2, omitted baseline), +1.5°C (S3), and +3°C (S4). For each outcome, respondents indicated whether they expected the variable to decrease, remain the same, or increase over the next five years. Within each panel, columns (1) to (3) report average marginal effects from ordered logit models without additional controls, while columns (4) to (6) report the corresponding marginal effects from specifications that include controls. Marginal effects are reported for each outcome category (decrease, same, increase) and are interpreted relative to the baseline scenario S2. All specifications include country fixed effects (not reported). Additional controls add the same set of socio-demographic covariates as in Table 1. Reported "cut(1) = cut(2)" p-values test equality of adjacent threshold parameters in the ordered logit model within each panel. The "Symmetry" and "Monotonicity" rows report p-values corresponding to tests described in the notes of Table 2. Robust standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table C9. Effects of past extreme weather event experiences on climate change knowledge, beliefs and expectations

	OLS											
Dependent variable	**Climate change knowledge (0-7)**		**Attention to climate change news (0/1)**		**Climate change concern for own households financial situation (0/1)**		**Expected change in average. global temperature (in °C)**		**Prob. extreme weather event impacting household financial situation (next 5y) (0-100)**		**Prob. extreme weather event impacting country's economic situation (next 5y) (0-100)**	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Sample mean of dependent variable	0.35		0.46		0.49		1.14		16.05		22.02	
Any extreme weather event (past 5y)	-0.011		0.088***		0.156***		-0.090***		6.187***		5.291***	
	(0.008)		(0.008)		(0.008)		(0.023)		(0.286)		(0.332)	
Wildfire, heatwave or drought		0.048***		0.095***		0.143***		0.080***		4.582***		5.378***
		(0.009)		(0.010)		(0.009)		(0.029)		(0.367)		(0.413)
Flooding, storm or coastal erosion		-0.021**		0.043***		0.097***		-0.034		4.420***		4.157***
		(0.009)		(0.009)		(0.009)		(0.029)		(0.346)		(0.392)
35-49 years	0.006	0.005	-0.026**	-0.030***	0.009	0.002	0.073**	0.075**	0.534	0.263	0.020	-0.209
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.036)	(0.036)	(0.404)	(0.403)	(0.468)	(0.464)
50-64 years	-0.012	-0.012	0.020*	0.016	0.011	0.003	0.147***	0.154***	-0.359	-0.736*	-0.664	-0.937**
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.035)	(0.035)	(0.403)	(0.401)	(0.472)	(0.467)
65+ years	-0.016	-0.015	0.102***	0.098***	-0.021	-0.029**	0.234***	0.243***	-0.943**	-1.289***	-0.609	-0.831
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.041)	(0.041)	(0.471)	(0.469)	(0.560)	(0.555)
High school	0.034***	0.033**	0.010	0.009	-0.013	-0.012	0.090**	0.083*	0.864*	0.862*	1.504***	1.478***
	(0.013)	(0.013)	(0.014)	(0.014)	(0.014)	(0.014)	(0.045)	(0.045)	(0.487)	(0.484)	(0.549)	(0.544)
College+	0.131***	0.129***	0.073***	0.071***	0.022	0.019	0.100**	0.093**	1.168**	1.092**	2.062***	1.967***
	(0.013)	(0.013)	(0.013)	(0.013)	(0.014)	(0.014)	(0.043)	(0.043)	(0.468)	(0.465)	(0.530)	(0.525)
Women	-0.062***	-0.061***	-0.013*	-0.014*	0.033***	0.031***	0.216***	0.220***	0.454*	0.348	1.307***	1.247***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.023)	(0.023)	(0.273)	(0.273)	(0.319)	(0.317)
Household size	-0.009**	-0.010***	0.015***	0.016***	0.018***	0.019***	-0.028**	-0.031***	-0.026	0.046	-0.265*	-0.232
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.012)	(0.012)	(0.134)	(0.134)	(0.155)	(0.154)
Hand-to-mouth	-0.101***	-0.101***	-0.044***	-0.039***	0.008	0.017*	-0.155***	-0.162***	2.191***	2.333***	1.048***	1.121***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.032)	(0.032)	(0.350)	(0.349)	(0.392)	(0.389)
Homeowner	-0.007	-0.007	-0.007	-0.004	0.010	0.015	-0.066**	-0.070**	0.164	0.280	-0.899**	-0.817**
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.028)	(0.028)	(0.325)	(0.323)	(0.377)	(0.375)
High financial literacy	0.145***	0.145***	0.026***	0.023***	-0.001	-0.007	0.173***	0.177***	0.771***	0.498*	2.070***	1.847***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.025)	(0.025)	(0.296)	(0.294)	(0.340)	(0.337)
HH income Q2	-0.002	-0.001	-0.015	-0.015	-0.013	-0.014	0.036	0.041	-0.159	-0.296	-0.486	-0.595
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.036)	(0.036)	(0.422)	(0.420)	(0.471)	(0.467)
HH income Q3	0.026**	0.028**	-0.006	-0.008	-0.025**	-0.029**	0.026	0.036	-0.804*	-1.029**	-0.184	-0.345
	(0.011)	(0.011)	(0.012)	(0.012)	(0.012)	(0.012)	(0.037)	(0.037)	(0.425)	(0.424)	(0.493)	(0.489)
HH income Q4	0.072***	0.076***	0.015	0.013	-0.071***	-0.075***	0.006	0.022	-1.405***	-1.667***	-0.965*	-1.107**
	(0.013)	(0.013)	(0.012)	(0.012)	(0.013)	(0.012)	(0.038)	(0.038)	(0.451)	(0.449)	(0.520)	(0.516)
No. obs.	14,343	14,343	16,830	16,830	16,452	16,452	10,638	10,638	21,060	21,060	21,070	21,070

Note: This table reports OLS estimates of the association between consumers' past experiences with extreme weather events and a range of climate-related outcomes using data from the ECB Consumer Expectations Survey (CES). The dependent variables include: an objective climate change knowledge score (number of correct answers, 0–7), attention to climate change news (binary), concern about the impact of climate change on the household's financial situation (binary), expected change in average global temperature over the next five years (in °C), the perceived probability (0 to 100) that an extreme weather event will affect the household's financial situation over the next five years, the perceived probability (0 to 100) that an extreme weather event will affect the country's economic situation over the next five years, and an indicator for reporting the environment as a policy priority. The sample mean of each dependent variable is reported in the first row. For each outcome, two specifications are shown. The first specification includes an indicator equal to one if the respondent reports having experienced any extreme weather event affecting their household's financial situation during the past five years, as elicited in the August 2024 CES wave. The second specification replaces this indicator with mutually exclusive indicators for (i) heat-related events (wildfires, heatwaves, or droughts) and (ii) precipitation- or storm-related events (flooding, storms, or coastal erosion), with the omitted category consisting of respondents who experienced other extreme events or none. All regressions include country fixed effects and the same set of socio-demographic controls as in Table 1. Robust standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table C10. Heterogeneity in perceived importance of the environment and climate change as a policy priority

	Logistic regression, average marginal effects
Dependent variable	The environment as a perceived policy priority (0/1)
Mean (dep. var.)	0.27
35-49 years	-0.015*
	(0.009)
50-64 years	-0.006
	(0.009)
65+ years	0.009
	(0.011)
High school	0.022**
	(0.010)
College+	0.059***
	(0.010)
Women	0.022***
	(0.006)
Household size	-0.012***
	(0.003)
Hand-to-mouth	-0.063***
	(0.007)
Homeowner	0.000
	(0.007)
High financial literacy	0.046***
	(0.006)
HH income Q2	-0.005
	(0.009)
HH income Q3	0.007
	(0.009)
HH income Q4	0.030***
	(0.010)
R-squared	0.04
No. Obs.	21,135

Note: This table reports associations between respondent characteristics and perceiving the environment and climate change as a top 3 policy priorities using August 2024 data of the ECB Consumer Expectations Survey (CES). The table shows average marginal effects from logistic regressions for binary indicators equal to one if the respondent reports that the environment is a policy priority. The sample mean of the dependent variable is shown above the estimates. All columns include country and sample type dummies (not reported). Specifications that include additional controls add the same covariates as in Table 1. R-squared refers to the pseudo R-squared. Robust standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Appendix D: Special purpose survey questions

August 2024

Variable: X4211

Filtering**: All respondents**

Label: Probability of extreme weather event

Question wording:

Over the next 5 years, what do you think is the **percentage chance** of an extreme weather event that will worsen …

Instruction: *Please provide your best guess.*

Question type: [numeric box]

Suffix	Question Wording	Value field / box **Range: 0-100**
1	**the financial well-being of your household**?	___%
2	**your country's economic situation**?	___%

Coding: Show a box. Range: 0-100

Scripting instruction**:**

- Add a percentage sign next to the numerical box
- Please randomise the order items 1 and 2 are shown include a version variable X4211version: X4211version=1 for the display order 1, 2; and X4211version=2 for the display order 2, 1
- If the respondent clicks next without answering, show the question again, but add a "don't know" option. Show the skipped notification.

-999	Don't know

Translation instruction: replace "the country you currently live in" by the actual country name (Belgian for BE FR/NL, French for FR, German for DE, Italian for IT, Dutch for NL, Spanish for ES, similar for the new countries).

Skipped notification: Please provide a number to answer this question. There is no right or wrong answer.

Hard check: respondent cannot proceed without answering

Variable: X5211

Label: Perceived important political topics – current

Filtering: **All respondents**

Question wording:

What do you think are the most important issues facing the country you currently live in at present?

Instruction: *Please select up to three responses.*

1	Healthcare
2	General economic situation
3	Unemployment
4	Rising prices in general and cost of living
5	Income differences across the population
6	The environment and climate change
7	Government debt
8	The educational system
9	Pensions
10	Immigration
11	Crime
12	Corruption in public services or the government
13	Housing
14	Taxation
15	Terrorism
16	National security and international conflict
17	Energy supply
18	Other issues, not mentioned above

Question type: [multiple response]

Coding:

1	Yes
0	No

Scripting instruction 1: Max 3 answers allowed.

Scripting instruction 2: Randomise items 1 to 17 appear. Item 18 should always be ordered last.

Translation instruction: replace “the country you currently live in” by the actual country name (Belgian for BE FR/NL, French for FR, German for DE, Italian for IT, Dutch for NL, Spanish for ES, similar for the new countries).

Error message: Show if more than 3 answers selected: Please select a maximum of 3 responses.

Skipped notification: Please provide an answer to this question. There is no right or wrong answer.

Hard check: respondent cannot proceed without answering

Variable: X4310

Label: Environment – past experiences

Filtering: **All respondents**

Question wording:

Which of the following extreme weather events or natural disasters (if any) in the country you currently live in have affected **your household's financial situation over the past 5 years**?

Instruction: *Please select all that apply.*

1	Flooding (incl. heavy rain)
2	Droughts or heatwaves
3	Wildfires
4	Landslides / mudslides
5	Storm damage (incl. strong winds and tornadoes)
6	Avalanches
7	Coastal erosion / storm surges
8	Dust storms
9	Earthquakes (incl. volcanic eruptions)
10	Other
11	None of the above

Question type: [multiple response]

Coding:

0	No
1	Yes

Scripting instruction:

- Include question as a tick all that apply list

- Randomise the order items 1-9 appear. Items 10 and 11 should be fixed in order with item 11 shown separately (exclusive)

Skipped notification: Please provide an answer to this question. All your answers will be treated confidentially.

Hard check: respondent cannot proceed without answering

Variable: X8310

Label: Change in prices in general – responsibility

Filtering: **All respondents**

Question wording:

Who do you think is mainly responsible for maintaining price stability in the country you currently live in?

Instruction: *Please select all that apply.*

1	The government/national politicians
2	The <National Central Bank>
3	The European Central Bank
4	Trade unions
5	Firms/shop owners/vendors
6	Don't know

Question type: [multiple response]

Coding:

0	No
1	Yes

Scripting instruction:

- Tick all that apply list
- Randomise items 1 to 5. Items 6 should be fixed in order and displayed as last items. Item 6 should be exclusive.

Info button text:

- <National Central Bank> : The national central bank of the country you currently live in and that is a member of the European System of Central Banks.

A0020	Text insert for option 7 <National Central Bank>

BE	If language=11 : Nationale Bank van België / if language =12 : Banque Nationale de Belgique / if language =70 : National Bank of Belgium
FR	Banque de France
DE	Deutsche Bundesbank
IT	Banca d'Italia
NL	De Nederlandsche Bank
ES	Banco de España
AT	Oesterreichische Nationalbank
FI	Suomen Pankki
EL	if language =100 : Trapeza tis Ellados / if language =70 : Bank of Greece
IE	Central Bank of Ireland
PT	Banco de Portugal

Translation instruction: replace "the country you currently live in" by the actual country name (Belgium for BE FR/NL, France for FR, Germany for DE, Italy for IT, Netherlands for NL, Spain for ES, similarly for five new countries).

Skipped notification: Please provide an answer to this question. All your answers will be treated confidentially.

Hard check: respondent cannot proceed without answering

September 2024

Variable: AN1010

Label: Climate change attention

Filtering: **All respondents**

Question wording:

Some people are interested in following news and developments related to climate change while others are less interested in this topic. That is some people might follow the news and search for information about climate change regularly while others don't.

Thinking about yourself, how much attention do you pay to climate change news?

Question type: [single response]

Coding:

1	Almost no attention
2	A little attention
3	Some attention
4	Much attention
5	A great deal of attention

Scripting instruction:

- Randomise the order of the response options in two versions. Include a variable version AN1010version indicating either version 1, shows: "Almost no attention" to "A great deal of attention"; version 2: "A great deal of attention" to "Almost no attention".

Skipped notification: Please provide an answer to this question. There is no right or wrong answer

Hard check: Respondent cannot proceed without answering.

Variable: AN1020

Label: Climate change concerns – household financial situation

Filtering: **All respondents**

Question wording:

How concerned are you about the impact of climate change on the **financial situation of your household**, over the next five years?

Question type: [single response]

Coding:

0	0 – Not concerned at all
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10 – Extremely concerned
-999	Do not know

Skipped notification: Please provide an answer to this question. There is no right or wrong answer

Hard check: Respondent cannot proceed without answering.

Variable: AN1030

Label: Climate change responsibility

Filtering: **All respondents**

Question wording:

In your opinion, who is primarily responsible for addressing climate change and its consequences in Europe?

Instruction: *Please select up to three that are the most responsible.*

Question type: [multiple response]

1	The United Nations
2	The European Commission
3	The European Central Bank
4	National governments
5	Regional and local authorities
6	Business and industries
7	Citizens like you
8	Environmental groups
9	Other

10	None of the above

Coding:

0	No
1	Yes

Scripting instruction:

- Up to three items should be possible to select.
- Block-randomize the order of options shown.
    - Include a variable version AN1030version indicating either version 1, shows: 1,2,3,4,5,6,7,8; or version 2, shows: 4,5,6,1,2,3,7,8; or version 3 shows: 7,8, 4,5,6,1,2,3.
    - option 10 should be exclusive, that is when option 10 is selected all other options should be unselected.
- If the respondent clicks next without answering, show the question again, but add a "don't know" option. Show the skipped notification.

-666	Prefer not to answer
-999	Don't know

Error message: Show if more than 3 answers selected: Please select a maximum of 3 responses.

Skipped notification: Please provide an answer to this question. There is no right or wrong answer.

Hard check: respondent cannot proceed without answering

Variable: AN1000

Label: Insert for AN1110

Filtering: **All respondents**

Coding: [Single value]

Group	Dynamic Insert in AN1110: **Z**
1	**decrease** considerably by **1.5**
2	**increase** only slightly by **0.01**
3	**increase** considerably by **1.5**
4	**increase** considerably by **3**

Random assignment of groups, with equal groups for **country** (DE, FR, IT, ES, NL, BE, FL, EL, IE, PT, AT) x recruitment **method** (CATI/CAWI).

Variable: AN1110

Label: Temperature change – Scenario question

Filtering: **All respondents**

Question wording:

According to historical data, the annual average global temperature in 2023 has increased significantly by about 1 degree Celsius compared to 50 years ago.

Suppose that **in the next 5 years**, the average **global temperature** will Z degrees Celsius compared to today.

How do you think this will affect, if at all, each of the following **in the country you currently live in** over the next 5 years?

Question type: [grid question]

1	Prices of food
2	Prices of energy (including gasoline)
3	Prices of other goods and services
4	Number of Oscar winning movies
5	Biodiversity (the variety of animals, plants and animal life)
6	Your household financial wellbeing
7	Unemployment
8	Economic growth
9	Stock prices and other financial asset values
10	House prices
11	Government debt
12	Taxes paid by consumers and firms (incl. VAT)
13	Immigration

Coding:

1	Decrease a lot
2	Decrease a little
3	No effect
4	Increase a little
5	Increase a lot

Translation instruction: replace “the country you currently live in” by the actual country name (Belgium for BE FR/NL, France for FR, Germany for DE, Italy for IT, Netherlands for NL, Spain for ES, similarly for five new countries).

Scripting instruction:

- Unfolding grid with labelled response options
- Block-randomize the order of items grouped together (do not include a variable indicating order), randomize the groups not the order of items within each group.
    - Items are grouped as follows:
        - Group 1: 1,2,3
        - Group 2: 4,5,6
        - Group 3: 7,8,9,10
        - Group 4: 11,12,13

Skipped notification: Please provide an answer to this question. There is no right or wrong answer.

Hard check: respondent cannot proceed without answering

Variable: AN1120

Label: Reason for food price increases

Filtering: If AN1110_1 = 4 or AN1110_1 = 5

Question wording:

You said before that food prices will increase in the next 5 years because of the change in global temperature.

Which of the following do you think will be responsible for this increase in food prices?

Instruction: *Please select all that apply.*

Question type: [multiple response]

1	Increased crop failures
2	Increased occurrence of supply chain disruptions
3	Increased production costs
4	Increased desire for profits by firms
5	Increased demand of consumers for certain goods
6	Increased taxes or tariffs
7	Other

Coding:

0	No
1	Yes

Scripting instruction:

- Randomise the order items 1 to 6 are displayed (do not include a version variable)
- option 7 should be always ordered last
- Don't know options should be recorded per item (i.e. not per extra variable)
- If the respondent clicks next without answering, show the question again, but add a "don't know" option. Show the skipped notification.

-666	Prefer not to answer
-999	Don't know

Skipped notification: Please provide an answer to this question. There is no right or wrong answer.

Hard check: respondent cannot proceed without answering

December 2024

Variable: AO1010

Label: Climate change knowledge

Filtering: **All respondents**

Question wording:

Now we would like to ask you some questions concerning the environment.

Which of the statements below regarding **climate change** do you think are true or false?

Instruction: *A don't know option is available in case you do not know the answer.*

1	The ozone hole is the main cause of the greenhouse effect.
2	Higher concentration of carbon dioxide (CO_2) in the atmosphere leads to higher temperatures
3	The increase of greenhouse gases is mainly caused by human activities.
4	For the next few decades, the majority of climate scientists expect the climate to change evenly all over the world.
5	The annual average global temperature in 2023 has increased by about 1 degree Celsius compared to 50 years ago.
6	For the next few decades, the majority of climate scientists expect a warmer climate to increase the melting of polar ice, which will lead to an overall rise of the sea level.

7	The production of 1 kg of beef produces more greenhouse gases than the production of 1 kg of wheat

Question type: [grid question]

Coding:

1	True
0	False
3	Don't know

Scripting instruction:

- Randomize order of statements 1 to 7

Skipped notification: Please provide an answer to this question. All your answers will be treated confidentially.

Hard check: respondent cannot proceed without answering

June 2025

Variable: AS2010

Label: Expectation for future temperatures – probabilistic

Filtering: **All Respondents**

Question wording:

Now, we would like you to think about how much average global temperatures (in degree Celsius, °C) might change **over the next 5 years** compared to today.

Below you see possible ways in which the average global temperatures could change **until 2030**. Please distribute 100 points among them, to indicate how likely you think it is that each temperature change will happen. The sum of the points you allocate should total 100.

Instruction: *You can allocate points by typing a number in each box. (Note that your answers should add up to 100 – if the total exceeds 100, you should first decrease the points again in one option before you can add points in another).*

Question type: [numeric grid]

1	Average global temperatures will **increase** by 2 °C or more
2	Average global temperatures will **increase** by 1 °C or more but less than 2 °C
3	Average global temperatures will **increase** by 0 °C or more but less than 1 °C
4	Average global temperatures will **decrease** by more than 0 °C but less than 1 °C

5	Average global temperatures will **decrease** by 1 °C or more but less than 2 °C
6	Average global temperatures will **decrease** by 2 °C or more

Coding:

Numeric box with range 0-100

Scripting instruction:

- Show the grid items (text) to the left and the associated numeric entry box on the right-hand side.
- Randomise order of items 1 to 8 in two ways: version 1 show 1 to 6, version 2 show 6 to 1 (reverse order). Include a version variable AS2010_version.
- Display a final column at the bottom with "**Total** (the points should sum to 100)" and a running total to the right of it.
- Cells in the table should not be pre-filled, hard check on entering a value in at least one cell of the table, soft check for values summing to 100.

Skipped notification: This question takes a little more effort, but please be assured there is no right or wrong answer. Please try to distribute 100 points among the rows in the table.

Hard check: respondent cannot proceed without answering (show if no fields answered); respondent can proceed of at least one field answered.

Error message: The points do not sum to 100. Please check your answer, or click "Next" if you are happy with your answer.

Soft check: Error notification shown once, if respondent clicks 'next' again, move to next question

Variable: AS2100

Label: Insert for AS2110 and AS2120

Filtering: All respondents

Coding: [Single value]

Group	Dynamic insert in AS2110, AS2120 and AS2130: **Z**
1	**decrease** considerably by **0.5**
2	**increase** only slightly by **0.01**
3	**increase** considerably by **0.5**
4	**increase** considerably by **1.5**

Random assignment of groups, with equal groups for **country** (DE, FR, IT, ES, NL, BE, FL, EL, IE, PT, AT) x recruitment **method** (CATI/CAWI).

Variable: AS2110

Label: Temperature change – Scenario question

Filtering: **All respondents**

Question wording:

According to historical data, the annual average global temperature in 2023 has increased significantly by about 1 degree Celsius compared to 50 years ago.

Suppose that **in the next 5 years**, the average **global temperature** will {Z} degrees Celsius compared to today.

How do you think this will affect, if at all, each of the following **in the country you currently live in** over the next 5 years?

Question type: [grid question]

1	Prices of goods and services (including food and energy)
2	Number of Oscar winning movies
3	Biodiversity (the variety of animals, plants and animal life)
4	Your household financial wellbeing
5	Unemployment
6	Economic activity
7	Stock prices and other financial asset values
8	House prices
9	Government debt
10	Taxes paid by consumers and firms (incl. VAT)
11	Immigration

Coding:

1	Decrease a lot
2	Decrease a little
3	No effect
4	Increase a little
5	Increase a lot

Translation instruction: replace “the country you currently live in” by the actual country name (Belgium for BE FR/NL, France for FR, Germany for DE, Italy for IT, Netherlands for NL, Spain for ES, similarly for five new countries).

Scripting instruction:

- Unfolding grid with labelled response options
- Block-randomize the order of items grouped together (do not include a variable indicating order), randomize the groups not the order of items within each group. No version variable to be included.
    - Items are grouped as follows:
        - Group 1: 1
        - Group 2: 2,3,4
        - Group 3: 5,6,7,8
        - Group 4: 9,10,11

Skipped notification: Please provide an answer to this question. There is no right or wrong answer.

Hard check: respondent cannot proceed without answering

Variable: AS2120

Label: Temperature change – Prices – Quantitative response

Filtering: **If AS2110_1 = 1 OR AS2110_1 = 2 OR AS2110_1 = 4 OR AS2110_1 = 5**

Question wording:

You said that you expect the **prices of goods and services** to [SCRIPTER: if AS2110_1 = 4 or 5, show: **increase;** if AS2110_1 = 1 or 2, show: **decrease**] over the next 5 years in the country you currently live in as a result of [SCRIPTER: if AS2100 = 1, show: a considerable decrease of 0.5 degrees Celsius; if AS2100 = 2 show: a slight increase by 0.01 degrees Celsius; if AS2100 = 3 show: a considerable increase by 0.5 degrees Celsius; if AS2100 = 4 show: a considerable increase by 1.5 degrees Celsius] in average global temperatures.

By about what percentage do you think the **prices of goods and services** will [SCRIPTER: if AS2110_1 = 4 or 5, show: **increase;** if AS2110_1 = 1 or 2, show: **decrease**] between June 2029 and June 2030 because of this change in temperatures?

Question type: [Single response]

Coding:

1	Will [SCRIPTER: if AS2110_1 = 4 or 5, show: **increase;** if AS2110_1 = 1 or 2, show: **decrease**] by 3% or more
2	Will [SCRIPTER: if AS2110_1 = 4 or 5, show: **increase;** if AS2110_1 = 1 or 2, show: **decrease**] by 2% or more but less than 3%
3	Will [SCRIPTER: if AS2110_1 = 4 or 5, show: **increase;** if AS2110_1 = 1 or 2, show: **decrease**] by 1% or more but less than 2%

4	Will [SCRIPTER: if AS2110_1 = 4 or 5, show: **increase;** if AS2110_1 = 1 or 2, show: **decrease**] by 0.5% or more but less than 1%
5	Will [SCRIPTER: if AS2110_1 = 4 or 5, show: **increase;** if AS2110_1 = 1 or 2, show: **decrease**] by less than 0.5%

Translation instruction: replace "the country you currently live in" by the actual country name (Belgium for BE FR/NL, France for FR, Germany for DE, Italy for IT, Netherlands for NL, Spain for ES, similarly for five new countries).

Scripting instruction:

- Randomise the order of the items with two versions, version 1: item 1 to 5, version 2 (reverse): item 5 to 1. Include a version variable AS2120_version.
- If the respondent clicks next without answering, show the question again, but add a "don't know" option. Show the skipped notification.

-999	Don't know

Skipped notification: Please provide an answer to this question. There is no right or wrong answer.

Hard check: respondent cannot proceed without answering

Variable: AS2130

Label: Temperature change – Economic growth – Quantitative response

Filtering: **If AS2110_6 = 1 OR AS2110_6 = 2 OR AS2110_6 = 4 OR AS2110_6 = 5**

Question wording:

You said that you expect **economic activity** to [SCRIPTER: if AS2110_6 = 4 or 5, show: **increase;** if AS2110_6 = 1 or 2, show: **decrease**] over the next 5 years in the country you currently live in as a result of [SCRIPTER: if AS2100 = 1, show: a considerable decrease of 0.5 degrees Celsius; if AS2100 = 2 show: a slight increase by 0.01 degrees Celsius; if AS2100 = 3 show: a considerable increase by 0.5 degrees Celsius; if AS2100 = 4 show: a considerable increase by 1.5 degrees Celsius] in average global temperatures.

By about what percentage do you think **economic activity** will [SCRIPTER: if AS2110_6 = 4 or 5, show: **increase;** if AS2110_6 = 1 or 2, show: **decrease**] between June 2029 and June 2030 because of this change in temperatures?

Question type: [Single response]

Coding:

1	Will [SCRIPTER: if AS2110_6 = 4 or 5, show: **increase;** if AS2110_6 = 1 or 2, show: **decrease**] by 3% or more

2	Will [SCRIPTER: if AS2110_6 = 4 or 5, show: **increase;** if AS2110_6 = 1 or 2, show: **decrease**] by 2% or more but less than 3%
3	Will [SCRIPTER: if AS2110_6 = 4 or 5, show: **increase;** if AS2110_6 = 1 or 2, show: **decrease**] by 1% or more but less than 2%
4	Will [SCRIPTER: if AS2110_6 = 4 or 5, show: **increase;** if AS2110_6 = 1 or 2, show: **decrease**] by 0.5% or more but less than 1%
5	Will [SCRIPTER: if AS2110_6 = 4 or 5, show: **increase;** if AS2110_6 = 1 or 2, show: **decrease**] by less than 0.5%

Scripting instruction:

- Randomise the order of the items with two versions, version 1: item 1 to 5, version 2 (reverse): item 5 to 1. Include a version variable AS2130_version.
- If the respondent clicks next without answering, show the question again, but add a "don't know" option. Show the skipped notification.

-999	Don't know

Translation instruction: replace "the country you currently live in" by the actual country name (Belgium for BE FR/NL, France for FR, Germany for DE, Italy for IT, Netherlands for NL, Spain for ES, similarly for five new countries).

Skipped notification: Please provide an answer to this question. There is no right or wrong answer.

Hard check: respondent cannot proceed without answering

Variable: AS2140

Label: Temperature change – Willingness to pay

Filtering: **All respondents**

Question wording:

Governments have to undertake significant investments in environmental projects over the next 5 years in order to [SCRIPTER: if AS2100 = 1, show: achieve a considerable decrease of 0.5 degrees Celsius; if AS2100 = 2 show: achieve only a slight increase of 0.01 degrees Celsius; if AS2100 = 3 show: prevent a considerable increase of 0.5 degrees Celsius; if AS2100 = 4 show: prevent a considerable increase of 1.5 degrees Celsius] compared to today.

How much of your own money **would you be willing to pay every month** to the government for this purpose **over the next 5 years**?

Question type: [numeric entry]

Coding:

Numeric box with **valid range: 0 – 100000000**

___ €

-666	Prefer not to answer
-999	Don’t know

Skipped notification: Please provide an answer to this question. All your answers will be treated confidentially.

DeNederlandscheBank

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