# Supplementary Information How to Increase Public Support for Carbon Pricing

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# Contents

A	Sup	plementary Methods	1
	A.1	Main Experiment	1
	A.2	Expert Survey	8
B	Sup	plementary Results	10
С	Inst	ructions and the Interface	18
	C.1	Main Experiment	18
	C.2	Expert Survey	45
Re	ferei	ices	59

## A Supplementary Methods

#### A.1 Main Experiment

#### A.1.1 Data quality

We took great care to ensure the comprehensibility of the experiment for all participants, including those with lower educational backgrounds. To achieve this objective, we divided the experiment into four sections, each accompanied by its instructions. We minimised textual content, employed simplified language, and incorporated visual aids extensively to explain the consequences of each possible decision. Additionally, we presented 12 comprehension questions organised into eight sets. Participants were required to provide accurate responses to all questions before advancing in the experiment. Finally, during the consumption decision with the carbon price, participants were asked to confirm their choice in case they opted to buy both products. The prompt stated:

"Are you sure you want to buy both products? Please note: The additional purchase of **Product BLUE** will reduce your payout and increase CO<sub>2</sub> emissions."

We implemented this prompt because buying two products under the carbon price is most likely due to confusion. The prompt was shown to 11.0% of the participants, and of those 73.6% responded by changing their behaviour. In any case, the participants could confirm their choice and purchase both products if they wished. The English translation of the instructions, together with the experiment interfaces, is available in Supplementary Information C.1.

To screen out the participants who were not fully engaged, we included two attention checks at the beginning of the experiment. Participants who failed at least one check were not allowed to participate in the experiment. In addition, a third attention check was introduced in the final questionnaire. In this case, participants who failed this check (8.6%) were still allowed to complete the experiment.

#### A.1.2 Ranking

In the final phase of the experiment, participants were asked to order five revenue recycling schemes, from the most preferred (1) to the least preferred (5). We combine this ordinal data  $(\geq_o)$  with participants' voting decisions to construct a variable capturing the "ranking"  $(\geq_r)$  of the five schemes and the baseline of "No carbon price."

Given a participant's ordering data, schemes that she/he voted for are placed above, while those she/he voted against are placed below the "No carbon price" baseline. The participant's original ordering is respected within each category. This rule implies that the "No carbon price" baseline would be ranked "the most preferred" ("the least preferred") scheme if a participant voted against (in favour of) all five recycling schemes.



Supplementary Figure 1: 95% (simultaneous) confidence sets for the rank<sup>\*</sup> of policies. *Notes*: The dot indicates the policy's rank<sup>\*</sup> based only on the empirical frequency of participants who rank the policy as the worst, without considering sampling uncertainty.

To further illustrate, suppose a participant voted in favour of schemes  $S_1$ ,  $S_2$ , and  $S_3$ , and against schemes  $S_4$  and  $S_5$ . Suppose also that the participant ordered them  $S_2 \geq_o S_4 \geq_o S_1 \geq_o$  $S_5 \geq_o S_3$  in the questionnaire. Then, we assign a ranking of  $S_2 \geq_r S_1 \geq_r S_3 \geq_r S_0 \geq_r S_4 \geq_r S_5$ to this participant, where  $S_0$  indicates the baseline, "No carbon price."

This approach effectively addresses inconsistencies between participants' rankings and voting behaviour. The method gives more weight to the participants' votes, as these decisions are incentivised. Notably, 23.6% of participants provide rankings that are not fully consistent with the votes they cast. The results based on this ranking data are qualitatively the same if we exclude these inconsistent participants.

**Analysis of the ranking data.** To analyse the ranking data, we leveraged recent advances in the econometric literature that address uncertainties in ranking data in finite samples. Our objective is to rank policies based on the proportion of participants who consider them to be the worst possible option. Consequently, the top-ranked policy (rank\* 1), according to this metric, is the one that the smallest proportion of participants consider to be the worst, while the lowest-ranked policy (rank\* 6) is the one deemed the worst by the highest proportion. The econometric method we use yields a confidence set for each policy that contains the true ranking of the policy with at least 95% probability if the study were repeated many times. For instance, if the confidence set for a policy includes rank\*'s 1 and 2, then this policy is the best or second best with at least 95% confidence sets for five revenue recycling schemes and "No carbon price." The construction of these confidence sets involves pairwise comparisons between policies, correcting for multiple hypothesis testing. The method is developed and described in detail in Bazylik et al. (2021) and Chetverikov et al. (2024).

#### A.1.3 Robustness

The main qualitative results regarding purchase and voting decisions remain after excluding participants who exhibit signs of confusion or inattentiveness. In Supplementary Figure 8, we look at average units purchased (panel a) and support for revenue recycling schemes (panel b) in four subsamples of participants:

- Sample 1 excludes participants who did not believe that their purchases would reduce the number of offsets bought by the experimenter.
- Sample 2 excludes participants who were unable to provide correct answers on the first attempt in three or more out of the 12 comprehension questions.
- Sample 3 excludes participants who failed the second attention check in the final questionnaire.
- Sample 4 applies all the exclusion criteria above.

The patterns are not affected by the level of understanding of the task or the attentiveness.

#### A.1.4 Self-reported political preferences and voting behaviour

This paper leverages an incentivised experimental design to study public support for carbon pricing. As the methodology is novel, we correlate self-reported political views with voting behaviour to assess whether our results are likely to be externally valid.

In Supplementary Table 5, we regress the participants' votes on a set of variables capturing their political preferences. The table shows that liberals are between 10 and 17 percentage points more likely than conservatives to vote in favour of the carbon price (p < 0.05 in all conditions). Similarly, participants who are highly concerned about climate change are between 17 and 25 percentage points more likely to support a carbon price (p < 0.001 in all conditions).

Political preferences also predict preferential support for some versions of the carbon price over others in ways that align with intuitive expectations. For instance, in the State Budget condition, participants who trust the government to spend money wisely or who believe that the government should control the economy are significantly more likely to vote for the carbon price. In contrast, participants who believe that the government should compensate people when it wants them to change behaviour are significantly less likely to support it. In the Redistribute Poor condition, people are significantly more likely to vote for the carbon price if they think the state should redistribute income and wealth. Finally, in the Climate Premium condition, people are significantly more likely to vote in favour of the carbon price if they believe that the government should implement policies whose consequences are easy to understand - one of the aims of the Climate Premium is to make the effect of revenue recycling salient and easy to comprehend. Overall, our findings suggest that self-reported political preferences are strong predictors of voting in the experiment. Hence, our results are likely to be externally valid.

#### A.1.5 Preregistration



#### **CONFIDENTIAL - FOR PEER-REVIEW ONLY**

Public Support for Carbon Pricing (#134346)



Created: 06/02/2023 07:21 AM (PT)

This is an anonymized copy (without author names) of the pre-registration. It was created by the author(s) to use during peer-review. A non-anonymized version (containing author names) should be made available by the authors when the work it supports is made public.

#### 1) Have any data been collected for this study already?

No, no data have been collected for this study yet.

#### 2) What's the main question being asked or hypothesis being tested in this study?

We investigate which forms of redistribution schemes attract stronger support for carbon pricing from an approximately representative sample (in gender, age, region of residence, and income) of the German population.

#### 3) Describe the key dependent variable(s) specifying how they will be measured.

The key dependent variable is the binary voting decision indicating the participant's attitude toward carbon pricing (1: in favor; 0: against).

Participants can buy up to 2 units of a virtual product. Buying the product is profitable but the consumption of each unit leads to CO2 emissions. Each participant decides how many units to buy, without and with a carbon price. They are then matched into groups of 50 and vote on whether to implement the decision with the carbon price or the one without it. They make 5 voting decisions as described below.

#### 4) How many and which conditions will participants be assigned to?

All participants will make 5 voting decisions (in random order), which differ in the way the revenue from the carbon price will be redistributed. The 5 redistribution schemes are:

[A] The revenue accrues to the budget of the federal government.

- [B] The revenue from a group of 50 participants is redistributed equally among all the group members.
- [C] The participants receive a fixed monetary transfer independent of the amount of tax revenue coming from the group.
- [D] The revenue from a group is redistributed equally among low-income members of the group.
- [E] The revenue is donated to climate projects supported by the German government.

There will be 2 between-subject conditions, which differ in the size of the lump-sum climate premium in policy [C]: 1.70 euros in condition 1 and 1.40 euros in condition 2.

#### 5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.

We will regress voting decisions on dummies for redistribution schemes, without and with demographic controls such as age, gender, income, etc. The main specification will pool the 2 between-subject conditions in policy [C].

#### 6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.

There will not be any outliers. We will conduct additional analyses to test whether performance in the comprehension questions as well as the second attention check question is related to voting and buying behavior.

# 7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.

We aim at collecting 1100 observations, 550 in each condition. This number was determined based on pilot data with 100 participants and power calculations (allowing us to detect about a 4 percentage point difference in support with 80% power). The pilot data was used solely for the calibration of experimental parameters and will not be included in the analysis.

#### 8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)

We will correlate voting decisions with buying decisions and demographics as well as beliefs and personal characteristics, such as political orientation, climate attitudes, and economic preferences (risk and time), that we elicit in the post-experimental questionnaire.

We will conduct additional analyses to test whether performance in the comprehension questions and the second attention question is related to buying and voting decisions.

Finally, we will conduct a forecasting survey with German-based researchers in the fields of behavioral, environmental, and public economics.

Version of AsPredicted Questions: 2.00

Available at https://aspredicted.org/VKZ\_4QX

#### A.1.6 Carbon offset certificate and invoice



# **Carbon Offset Certificate**

PROUDLY PRESENTED TO LMU München - Experiment FOR OFFSETTING 96 Tonne(s) of CO<sub>2</sub> DATE 07/10/2023

Your carbon offset purchase supports third-party verified greenhouse gas emission reduction projects around the world.



Supplementary Figure 2: Certificate.

#### Carbonfund Invoice for order 76311 Order Date: July 10, 2023 **Billing Address** Andrej Woerner Geschwister-Scholl-Platz 1 80539 München Germany Shipping Address Shipping Method No shipping SKU Product Quantity Price Custom Purchase One-Time Name for Certificate: LMU München - Experiment Custom-Purchase-One-Time 1 \$1,200 Subtotal: \$1,200 Payment method: Credit Card Total: \$1,200 **Customer Details**

#### • Email: andrej.woerner@econ.lmu.de

Diese Zahlung ist das Resultat von Teilnehmerentscheidungen des Experiments "Öffentliche Unterstützung einer CO2-Bepreisung" der LMU München.

Supplementary Figure 3: Invoice.

#### A.2 Expert Survey

We manually assembled a list of economists working in the fields of environmental, public, and behavioural economics, with a particular focus on economists working in Germany, Austria, and Switzerland. More precisely, our research assistants were instructed to:

- find a list of all German, Austrian, and German-speaking Swiss universities (no Fachhochschulen) and of all Economic Research Institutes (restrict attention to "Leibniz Institute"),
- go to the websites of the Economics departments of all German-speaking universities and look for chairs on relevant topics (e.g., Environmental Economics, Energy Economics, Resource Economics, Public Economics, Fiscal Economics, Economics of Taxation, Experimental Economics, Behavioural Economics), and
- 3. include all the members working at these research groups: Professors, Assistant Professors and Postdocs, and Ph.D. students.

The list, assembled in May 2023, includes 1,318 academic economists. We call them "experts." We invited these 1,318 experts to participate in our survey (Supplementary Figure 4), of which 481 started, and 369 completed the survey and are in our data. See Supplementary Table 6 for the demographic characteristics of the experts.

The structure of the survey was identical to the main experiment. After reading a simplified version of the instructions (Supplementary Information C.2), experts were asked to make two purchase decisions and five voting decisions. Importantly, these decisions were hypothetical and had no material consequences. The purpose of the purchasing and voting stages was to make experts familiarise themselves with the environment of the main experiment. Note also that the experts were randomly assigned to a  $\leq$  1.40 or a  $\leq$  1.70 Climate Premium treatment, as in the main experiment.

We elicited the experts' predictions regarding the behaviour, two purchase decisions, and five voting decisions, of the 1,100 participants in the main experiment. The experts could earn  $\notin$  40 if their estimate in a randomly chosen prediction question were at most two percentage points below or above the actual percentage. Seventeen experts were entitled to the bonus, but three were not paid out since they did not provide their contact information.

Dear [expert's name],

Our research group at LMU Munich has conducted a representative study on the German population's approval of different variants of  $CO_2$  pricing.

We are now interested in what experts like you expect the population to think about this issue. We are therefore asking you for your assessment.

It will take about 10 minutes to answer our questions. If your expectations are correct, you could win a prize of 40 euros.

Here is the link to the survey.

[Link to the survey]

Have fun, and thank you very much! We look forward to hearing your opinion.

Best regards,

Klaus M. Schmidt

Supplementary Figure 4: Invitation to the prediction survey sent to the experts.

# **B** Supplementary Results







Supplementary Figure 6: Heterogeneity in policy support. Notes: The bars indicate 95% CI.



Supplementary Figure 7: Irrelevance of the order of presentation.



Supplementary Figure 8: Purchase and voting decisions by the degree of understanding and attentiveness. *Notes*: Sample 1 excludes participants who did not believe that their purchases would reduce the number of offsets bought by the experimenter. Sample 2 excludes participants who were unable to provide correct answers on the first attempt in three or more out of the 12 comprehension questions. Sample 3 excludes participants who failed the second attention check in the final questionnaire. Sample 4 applies all the exclusion criteria above.

			Premium		
	N	All	€1.40	€1.70	
Birth year					
1983-	384	0.349	0.351	0.347	$\chi^2(2) = 2.48$
1963-1982	384	0.349	0.329	0.369	p = 0.29
-1962	332	0.302	0.320	0.284	-
Gender					
Female	553	0.504	0.491	0.516	$\chi^2(1) = 0.62$
Male	545	0.496	0.509	0.484	p = 0.432
Education level					
1	329	0.371	0.380	0.363	$\chi^2(3) = 1.5$
2	336	0.379	0.366	0.392	p = 0.682
3	198	0.223	0.227	0.220	
4	23	0.026	0.027	0.024	
Income below €2,100					
No	536	0.487	0.498	0.476	$\chi^2(1) = 0.44$
Yes	564	0.513	0.502	0.524	p = 0.507
Party					
AfD	183	0.166	0.156	0.176	$\chi^2(5) = 7.98$
CDU/CSU	288	0.262	0.282	0.242	p = 0.157
Die Gruenen	165	0.150	0.136	0.164	
Die Linke	100	0.091	0.076	0.105	
FDP	111	0.101	0.113	0.089	
SPD	253	0.230	0.236	0.224	
Political orientation					
Conservative	50	0.045	0.045	0.045	$\chi^2(4) = 5.32$
Somewhat conservative	132	0.120	0.140	0.100	p = 0.256
Neutral	531	0.483	0.462	0.504	
Somewhat liberal	272	0.247	0.255	0.240	
Liberal	115	0.105	0.098	0.111	
Big city					
No	421	0.383	0.384	0.382	$\chi^2(2) = 0.04$
Yes	654	0.595	0.595	0.595	p = 0.979
N/A	25	0.023	0.022	0.024	
Former East Germany					
No	933	0.848	0.869	0.827	$\chi^2(1) = 3.42$
Yes	167	0.152	0.131	0.173	p = 0.065

Supplementary Table 1: Demographic characteristics (main experiment).

Notes: Education level: 1 (No secondary school certificate or Basic secondary school certificate), 2 (Intermediate secondary school certificate or Other), 3 (Higher education entrance qualification), 4 (Bachelor's/Master's degree or Doctorate/Ph.D.). A city is classified as big city if it has more than 100,000 inhabitants, based on the data from the Federal Office of Statistics (Statistisches Bundesamt, 2023).

Task	State Budget	Climate Projects	Redistribute Poor	Redistribute All	Climate Premium
1	216	220	220	224	220
2	225	216	220	218	221
3	220	220	218	220	222
4	220	223	218	218	221
5	219	221	224	220	216

Supplementary Table 2: Order of five revenue recycling schemes in the voting phase.

		State	Climate	Redistribute	Redistribute	Climate
	N	Budget	Project	Poor	All	Premium
Birth year						
1983-	384	0.474	0.648	0.607	0.721	0.758
1963-1982	384	0.427	0.565	0.594	0.638	0.698
-1962	332	0.524	0.672	0.690	0.708	0.738
Gender						
Female	553	0.477	0.653	0.656	0.689	0.740
Male	545	0.468	0.600	0.596	0.686	0.721
Education level						
1	329	0.480	0.623	0.669	0.672	0.720
2	336	0.414	0.607	0.631	0.702	0.741
3	198	0.485	0.667	0.611	0.692	0.747
4	237	0.536	0.624	0.578	0.688	0.717
Income below €2,100						
No	536	0.470	0.646	0.545	0.688	0.733
Yes	564	0.475	0.608	0.706	0.688	0.729
Party						
CDU/CSU	288	0.455	0.618	0.597	0.649	0.729
SPD	253	0.577	0.684	0.696	0.743	0.814
Die Grünen	165	0.667	0.848	0.812	0.830	0.885
FDP	111	0.333	0.495	0.432	0.631	0.586
Die Linke	100	0.440	0.690	0.650	0.690	0.690
AfD	183	0.284	0.404	0.519	0.579	0.590
Political orientation						
Conservative	182	0.335	0.462	0.527	0.582	0.588
Neutral	531	0.469	0.629	0.621	0.693	0.744
Liberal	387	0.543	0.700	0.682	0.731	0.780
Climate concern						
Low	234	0.269	0.372	0.449	0.504	0.513
High	866	0.528	0.695	0.676	0.738	0.790
Big city						
No	421	0.470	0.610	0.653	0.701	0.751
Yes	654	0.472	0.639	0.612	0.683	0.717
N/A	25	0.520	0.560	0.600	0.600	0.760
Former East Germany						
No	933	0.473	0.628	0.628	0.685	0.734
Yes	167	0.473	0.617	0.623	0.707	0.713

Supplementary Table 3: Policy support by demographic groups.

*Notes*: Education level: 1 (*No secondary school certificate* or *Basic secondary school certificate*), 2 (*Intermediate secondary school certificate* or *Other*), 3 (*Higher education entrance qualification*), 4 (*Bachelor's/Master's degree* or *Doctorate/Ph.D.*). A city is classified as *big city* if it has more than 100,000 inhabitants, based on the data from the Federal Office of Statistics (Statistisches Bundesamt, 2023).

	(1)	(2)	(3)	(4)
State Budget	0.473***			
C	(0.015)			
Climate Projects	0.626***	$0.154^{***}$	$0.154^{***}$	$0.154^{***}$
, i i i i i i i i i i i i i i i i i i i	(0.015)	(0.016)	(0.016)	(0.016)
Redistribute Poor	0.627***	0.155***	0.155***	0.155***
	(0.015)	(0.016)	(0.016)	(0.016)
Redistribute All	0.688***	0.215***	0.215***	0.215***
	(0.014)	(0.016)	(0.016)	(0.016)
Climate Premium	0.731***	0.258***	0.258***	0.258***
	(0.013)	(0.016)	(0.016)	(0.016)
Birth year: 1963-1982		-0.053**	$-0.052^{**}$	-0.054**
		(0.027)	(0.025)	(0.025)
Birth year: -1962		0.030	0.003	-0.001
		(0.028)	(0.027)	(0.027)
Female		0.026	0.010	0.009
		(0.022)	(0.021)	(0.021)
Education level: 2		-0.004	0.0005	-0.002
		(0.029)	(0.028)	(0.028)
Education level: 3		0.019	0.010	0.003
		(0.035)	(0.033)	(0.033)
Education level: 4		0.015	-0.028	-0.042
		(0.036)	(0.033)	(0.034)
Income below € 2,100		0.024	0.033	$0.042^{*}$
		(0.024)	(0.023)	(0.022)
Former East Germany		-0.003	0.017	0.017
		(0.031)	(0.029)	(0.029)
Big city		-0.003	-0.001	-0.0003
		(0.008)	(0.008)	(0.008)
Political orientation: Neutral			$0.106^{***}$	0.095***
			(0.031)	(0.030)
Political orientation: Liberal			0.126***	$0.103^{***}$
			(0.032)	(0.032)
Trust in government: High			$0.124^{***}$	$0.114^{***}$
			(0.024)	(0.023)
Climate concern: High			0.229***	$0.201^{***}$
			(0.028)	(0.028)
Time preferences				$0.028^{***}$
				(0.005)
Risk preferences				$-0.009^{*}$
				(0.005)
Constant		$0.454^{***}$	0.168***	0.070
		(0.038)	(0.045)	(0.055)
Observations	5.500	5.500	5.500	5.500
$R^2$	0.641	0.040	0.107	0.120

Supplementary Table 4: Voting decisions and demographic characteristics.

*Notes*: Linear probability model. The dependent variable is a dummy indicating support for the revenue recycling scheme. Model (1) does not include the constant. State Budget – Climate Premium are dummy variables corresponding to each condition. List of control variables: age bracket (baseline: born after 1983), gender (baseline: male), education, income (baseline: above  $\in 2,100$ ), political orientation (baseline: conservative), trust in government (baseline: low), climate concern (baseline: low), time/risk preferences (11 levels), former East Germany, and big city. Standard errors clustered at the individual level are reported in parentheses. \*: p < 0.1; \*\*: p < 0.05; \*\*\*: p < 0.01.

	(1)	(2)	(3)	(4)	(5)
	State	Climate	Redistribute	Redistribute	Climate
	Budget	Projects	Poor	All	Premium
Political orientation: Neutral	0.117***	0.164***	$0.077^{*}$	0.105**	0.142***
	(0.041)	(0.042)	(0.045)	(0.044)	(0.043)
Political orientation: Liberal	0.132***	0.166***	$0.100^{**}$	$0.110^{**}$	$0.141^{***}$
	(0.045)	(0.045)	(0.047)	(0.046)	(0.045)
Govt should control the economy: Agree	$0.115^{***}$	$0.066^{*}$	0.019	-0.017	-0.006
	(0.038)	(0.035)	(0.036)	(0.035)	(0.032)
Govt should redistribute: Agree	0.053	0.022	0.097***	0.046	0.059**
-	(0.034)	(0.033)	(0.033)	(0.032)	(0.029)
Same problem: Agree	0.029	0.032	0.046	0.007	-0.039
	(0.045)	(0.045)	(0.045)	(0.043)	(0.042)
Simple measures: Agree	0.028	0.050	0.024	0.029	0.060**
	(0.033)	(0.032)	(0.033)	(0.032)	(0.030)
Compensate cost: Agree	$-0.094^{***}$	-0.024	$-0.060^{*}$	-0.042	-0.021
	(0.031)	(0.030)	(0.031)	(0.030)	(0.028)
Trust in government: High	0.236***	0.148***	0.054	0.097***	0.077**
	(0.037)	(0.034)	(0.037)	(0.034)	(0.031)
Climate concern: High	0.183***	0.253***	0.175***	0.189***	0.250***
-	(0.037)	(0.039)	(0.041)	(0.040)	(0.039)
Constant	0.140***	0.195***	0.354***	0.420***	0.391***
	(0.052)	(0.054)	(0.058)	(0.057)	(0.056)
Observations	1,006	1,006	1,006	1,006	1,006
$R^2$	0.125	0.114	0.062	0.061	0.099

Supplementary Table 5: Self-reported political preferences and voting behaviour.

*Notes*: Linear probability model. The dependent variable is a dummy indicating support for the revenue recycling scheme. Variables are constructed from the responses to the questions as follows.

- Political orientation. [Q.4.3.3] "Where would you classify yourself if 1 stands for 'socially conservative' and 5 for 'socially liberal'?" (Conservative: 1, 2; Neutral: 3; Liberal: 4, 5)
- Govt should control the economy. [Q.4.3.1] "Where would you rank yourself if 1 stands for 'The government should stay out of the economy and trust the market' and 5 stands for 'The government should control the economy'?" (Disagree: 1, 2; Neutral: 3, Agree: 4, 5)
- Govt should redistribute. [Q.4.3.2] "Where would you rank yourself if 1 stands for 'The state should stay out of the redistribution of income and wealth' and 5 stands for 'The state should redistribute income and wealth'?" (Disagree: 1, 2; Neutral: 3, Agree: 4, 5)
- Same problem. [Q.4.3.5 (1)] "If the government levies a tax to solve a problem, the revenue from that tax should be used to solve the same problem. For example, the revenue from tobacco taxes should be used to fund the health care system." (Disagree: 1, 2; Neutral: 3, Agree: 4, 5)
- Simple measures. [Q.4.3.5 (2)] "The impact of new policies on people's finances should be easy to understand. The government should introduce simple measures, even if more complicated ones are more effective." (Disagree: 1, 2; Neutral: 3, Agree: 4, 5)
- Compensate cost. [Q.4.3.5 (3)] "If the government wants people to change their behaviour, it should compensate them for the cost of change." (Disagree: 1, 2; Neutral: 3, Agree: 4, 5)
- Trust in government. [Q.4.3.5 (5)] "I have confidence in the German government to use taxpayers' money wisely." (Disagree: 1, 2; Neutral: 3, Agree: 4, 5)
- Climate concern. [Q.4.4.2] "Climate change is a significant problem." (Disagree: 1, 2; Neutral: 3, Agree: 4, 5)

The baseline category is "Conservative" for Political orientation and "Disagree or neutral" for other variables. We excluded 94 participants who failed the attention check (embedded in [Q.4.3.5] "We now check your attention. Please answer 'Disagree'."). Robust standard errors are reported in parentheses. \*: p < 0.1; \*\*: p < 0.05; \*\*\*: p < 0.01.

			Pren	nium	
	N	All	€1.40	€1.70	
Age					
18-29	85	0.230	0.156	0.300	$\chi^2(5) = 11.45$
30-39	160	0.434	0.475	0.395	p = 0.043
40-49	72	0.195	0.223	0.168	
50-59	37	0.100	0.101	0.100	
60-69	12	0.033	0.034	0.032	
70+	3	0.008	0.011	0.005	
Gender					
Female	116	0.317	0.337	0.298	$\chi^2(1) = 0.48$
Male	250	0.683	0.663	0.702	p = 0.488
Position					
Graduate Student	148	0.401	0.346	0.453	$\chi^2(5) = 6.8$
Postdoc, Assistant Professor	95	0.257	0.313	0.205	p = 0.236
Associate Professor	21	0.057	0.056	0.058	
Full Professor	86	0.233	0.235	0.232	
Non-academic Researcher	8	0.022	0.022	0.021	
Other	11	0.030	0.028	0.032	

Supplementary Table 6: Demographic characteristics (expert survey).

# C Instructions and the Interface

## C.1 Main Experiment

# Consent

A Please read the following instructions carefully.

#### Voluntariness

Your participation in the experiment is voluntary. You can revoke your participation at any time. If you end the experiment prematurely by closing the browser window, the data you entered will be deleted. Please note, however, that you will not receive any payment.

#### Procedure

The experiment will take approximately **25 minutes**.

During the course of the experiment, you will have to make some decisions. Each of these decision situations will be described in detail beforehand.

You must perform the experiment on a computer, laptop, or cell phone without interruption. During the whole experiment, we ask you not to communicate with other people, not to start other programs on the computer, and not to use your cell phone for other purposes.

Please note that there are attention checks built into the experiment. If you do not answer them correctly, you will be excluded from the experiment prematurely.

#### Confidentiality

All data collected will be analyzed anonymously. Your name will not be linked to any decisions made in this experiment.

#### **Payouts**

For completed participation in this experiment, you will receive a monetary payout consisting of a fixed and variable amount.

Please note that you will not know your payout amount immediately at the end of the experiment. You will be informed about your payout amount separately in the coming days.

#### **Declaration of consent**

By clicking "I agree" below, you confirm that you are at least 18 years old, have read the consent form, and agree to participate in this experiment under the rules and regulations listed.

<b>[Consent]</b> Do you agree to participate in this experiment?	
□ I agree	

□ I do not agree

# Questionnaire

Please first complete the following questionnaire. All answers will be completely anonymised and cannot be associated with you after the experiment has been completed.

**[Q.0.1]** What is your year of birth? [Text box]

**[Q.0.2]** What is your gender?

□ Female □ Male □ Diverse	[1] [2] [3]
[Q.0.3] What is your highest educational qualification?	
No secondary school certificate	[1]
Basic secondary school certificate	[2]
Intermediate secondary school certificate	[3]

- □ (Specialized) Higher education entrance qualification [4]
   □ Bachelor's/Master's degree [5]
   □ Doctorate/Ph.D. [6]
- $\Box \text{ Other: [Text box]}$ [7]
- **[Q.0.4]** What is your occupation? [Text box]

[Q.0.5] We are now checking your attention. Please answer "Fully agree".

□ Do not agree at all	[1]
□ Strongly disagree	[2]
Neither disagree nor agree	[3]
Somewhat agree	[4]
□ Fully agree	[5]

[Q.0.6] What is your monthly disposable income, i.e. the amount in euros that you can dispose of each month, after deduction of taxes and social security contributions, to finance all your expenses? [Text box]

[Q.0.7] What kind of device are you using to participate in this study?

Laptop or desktop computer	[1]
□ Tablet	[2]
□ Mobile phone	[3]

# Welcome

#### [1/5]

This is a study by researchers at Ludwig Maximilian University of Munich.



#### [2/5]

The study takes approximately **25 minutes**.

You will receive a payout for completed participation in this study.

#### [3/5]

#### A Please read the instructions carefully.

We will ask you questions that will test your understanding and attention. If you answer them incorrectly, unfortunately, you will not be able to participate in the study and will not receive any bonus payment.

You can only proceed if you answer all the questions in the quiz correctly. If you want to return to the instructions, please click on the  $\leftarrow$  button.

## [4/5]

The experiment consists of 4 parts.

- In **Part 1** and **Part 2**, you make purchase decisions. One of the two parts is selected and determines your bonus payout.
- In Part 3, you make several decisions that affect which of the top two parts is selected.
- In **Part 4**, you fill out a questionnaire.

#### [5/5]

The Ethics Committee of LMU Munich has approved this study. You can contact the Ethics Committee via ethics-committee@econ.lmu.de.
 In order to obtain approval, we have pledged not to provide misleading or untrue information.
 Everything you read in the instructions is TRUE.

#### Quiz

**[CQ.0]** According to the ethics protocol under which we are conducting this study, all information you read must be truthful and not misleading.

□ True	[1]
□ False	[2]

# Part 1

#### [1/8]

In Part 1, you can buy two **"virtual" products**: **Product ORANGE** and **Product BLUE**.



#### [2/8]

When you buy a product, you will receive the following payout.

• The value of **Product ORANGE** is 7 euros.



• The value of **Product BLUE** is 5 euros.



• Each product costs 3 euros.

[3/8]

If you buy **Product ORANGE** and **Product BLUE**, you will receive a total of 6 euros.



If you buy only **Product ORANGE**, you will receive 4 euros.



You can not buy **Product BLUE** alone.

If you do not buy any product, you will receive 0 euros.



#### [4/8]

When you buy products, you **emit CO**<sub>2</sub>.

Emissions are equal to **60kg of CO**<sub>2</sub> for each product you purchase.



60kg is approximately equal to the amount of  $CO_2$  produced by a **300 km** car trip. Scientists agree that  $CO_2$  emissions are the most important cause of climate change.

#### [5/8]

If you buy both **Product ORANGE** and **Product BLUE**, you will receive a total of 6 euros and you emit 120kg of CO<sub>2</sub>.



If you buy only **Product ORANGE**, you will receive 4 euros and you emit 60kg of CO<sub>2</sub>.



If you do not buy either product, you will receive 0 euros and you will not emit any CO<sub>2</sub>.



#### [6/8]

**A** Your purchase decision has a real impact on CO<sub>2</sub> emissions.

Here we explain why this is so. There is an organisation called Carbonfund.org that carries out projects that permanently reduce  $CO_2$  in the earth's atmosphere. For a fixed amount, Carbonfund.org reduces the  $CO_2$  content of the atmosphere by one ton.

The experimental laboratory of the LMU Munich (MELESSA) has pledged, via Carbonfund.org, to remove 120kg of  $CO_2$  from the atmosphere for each participant in this experiment. However, this amount decreases by 60kg with each product purchased. So, if you buy both products, 120kg less  $CO_2$  will be neutralised, i.e. there will be permanently 120kg more  $CO_2$  in the atmosphere than if you do not buy any product.

#### [7/8]

You will receive a link to the receipt proving our purchase of  $CO_2$  certificates via Carbonfund.org approximately 2 weeks after the end of the study.

So you can be sure that the transfer to Carbonfund.org is really done.

#### [8/8]

In summary, you will select one of the following three options in this part.



Before proceeding, you must complete a quiz.

#### Quiz

<b>[CQ.1.1] 1.</b> What happens when you buy both products?	
$\square$ You receive a total of 6 euros and emit 120kg of CO <sub>2</sub> .	[1]
$\square$ You receive a total of 4 euros and emit 60kg of CO <sub>2</sub> .	[2]
$\square$ You receive 0 euros and emit no CO <sub>2</sub> .	[3]
[CQ.1.2] 2. What happens if you buy only Product ORANGE?	
$\square$ You receive a total of 6 euros and emit 120kg of CO <sub>2</sub> .	[1]
$\square$ You receive a total of 4 euros and emit 60kg of CO <sub>2</sub> .	[2]
$\square$ You receive 0 euros and emit no CO <sub>2</sub> .	[3]
<b>[CQ.1.3] 3.</b> What happens if you do not buy a product?	
$\square$ You receive a total of 6 euros and emit 120kg of CO <sub>2</sub> .	[1]
$\square$ You receive a total of 4 euros and emit 60kg of CO <sub>2</sub> .	[2]
$\square$ You receive 0 euros and emit no CO <sub>2</sub> .	[3]
<b>[CQ.1.4] 4.</b> Your decisions affect the level of CO <sub>2</sub> in the atmosphere.	
□ True	[1]
□ False	[2]

# Your decision for Part 1

Please select an option.

□ Option 1: You buy both **Product ORANGE** and **Product BLUE** 



□ Option 2: You buy only **Product ORANGE** 



□ Option 3: You do not buy a product



## Part 2

#### [1/4]

In Part 2, you can again buy two products, **Product ORANGE** and **Product BLUE**. Their values are the same as in Part 1, and you emit 60kg of CO<sub>2</sub> for each product you buy.

• **Product ORANGE** has a value of 7 euros, and emits 60kg CO<sub>2</sub>.



• **Product BLUE** has a value of 5 euros, and emits 60kg CO<sub>2</sub>.



#### [2/4]

In Part 2, the price for each product is 6 euros.



#### [3/4]

If you buy **Product ORANGE** and **Product BLUE**, you will receive a total of 0 euros.



If you buy only **Product ORANGE**, you will receive 1 euro.



You can not buy **Product BLUE** alone.

If you do not buy any product, you will receive 0 euros.

## [4/4]

In summary, you will select one of the following three options in this part.



Before proceeding, you must complete a quiz.

#### Quiz

[CQ.2] The price in Part 2 is ...

□ lower than in Part 1.	[1]
$\Box$ the same as in Part 1.	[2]
$\Box$ higher than in Part 1.	[3]

# Your decision for Part 2

Please select an option.

□ Option 1: You buy both **Product ORANGE** and **Product BLUE** 



□ Option 2: You buy only **Product ORANGE** 



 $\Box$  Option 3: You do not buy a product



[Following message pops up if a participant chose Option 1.]



# Part 3

## [1/7]

In this experiment, you are part of a **group of 50 consumers**. You will remain part of this group for the entire study.

Each member of the group has or will answer exactly the same questions as you.



## [2/7]

Your group members are drawn from a **representative sample of the German population** in terms of gender, age, region, education, and income.

This means, for example, that since 51% of the German population is female, a randomly selected member of your group has a 51% probability of being female.

## [3/7]

You now take part in 5 votes. At the end of the study, the computer randomly draws a number between 1 and 5. This number decides which of the 5 votes is payout-relevant.

One of the 50 group members is **randomly selected** and her or his vote alone decides the outcome of the payout-relevant vote.



**Important**: **This group member could be you!** Therefore, in all votes you should vote for the option you think is better.

Before proceeding, you will have to complete a quiz.

#### Quiz

[CQ.3.1] 1. Which statement is true about your group members?

- Your group members come from a representative sample of the German population in terms of gender, age, region, education, and income.
- Your group members are not representative of the German population in terms of gender, age, region, education, and income.

[CQ.3.2] 2. Which of the following statements is true about your choices in this part?

- It is certain that my decisions in this part will determine the outcome of the payout-relevant vote.
- There is a small chance that my decisions in this part will determine the outcome of the payout-relevant vote.
- There is no chance that my decisions in this part will determine the outcome of the payout-relevant vote.

#### [4/7]

In Part 1, the price for each product was **3 euros**. In Part 2, the price for each product was **6 euros**.

The price in Part 2 was higher than in Part 1 because in Part 2, in addition to the product price of 3 euros, a  $CO_2$  price of **3 euros** had to be paid per product (this corresponds to a  $CO_2$  price of 50 euros per ton of  $CO_2$ ).



#### The CO<sub>2</sub> price was introduced to reduce the total amount of emissions.

#### [5/7]

The money generated by the CO<sub>2</sub> price in this group goes into a common pot.





▲ The money in the common pot goes to the German state budget. All taxes paid to the federal government go into the German state budget.

[This screen is for "Redistribute all" condition]



A The money in the common pot will be divided equally among all 50 group members.

You will receive this payment approximately 2 weeks after the end of the study.

[6/7]

[This screen is for "Climate premium" condition]



▲ To compensate for the CO<sub>2</sub> price, each group member receives an additional Climate Premium of 1.4/1.7 euros.

You will receive this payment immediately after completing the survey. The payment is fixed and independent of the amount of money in the common pot (but the pot helps with funding).

[6/7]



A The money in the common pot is divided equally among group members who reported having a monthly disposable income of less than 2,100 euros.

In a previous study, 50% of participants had a monthly disposable income of less than 2,100 euros.

You reported a monthly disposable income of  $[\leq 2100]/[> 2100]$  euros, so you will/will not receive a portion of the money.

You will receive this payment about 2 weeks after the end of the study.

[6/7]

[This screen is for "Climate project" condition]



▲ The money in the common pot is transferred to an organisation supported by the *National Climate Protection Initiative*, through which the German government has been funding climate protection projects in Germany since 2008.

The *National Climate Protection Initiative* covers "a broad spectrum of climate protection activities: From the development of long-term strategies to concrete assistance and investment support measures."

#### Quiz

[CQ.3.3] What happens to the money in the common pot?

It remains with the researchers.	[1]
[State budget] It goes to the German state budget.	[2]
[Redistribute all] It is divided equally among all group members.	[2]
[Climate premium] Each participant receives a fixed additional payout of 1.4/1.7	7 euros
as a climate premium.	[2]
[Redistribute poor] It will be divided equally among the group members who has	ave de-
clared having a monthly disposable income of less than 2,100 euros.	[2]
[Climate project] It is transferred to an organisation supported by the National G	Climate
Protection Initiative.	[2]

## [7/7]

You can now vote on which decisions in the study are payout-relevant.

You can vote for one of the following two options.

- The decisions without a CO<sub>2</sub> price are payout-relevant (Part 1).
- The decisions with a CO<sub>2</sub> price are payout-relevant (Part 2).



[This illustration is for "State budget" condition]

# Your decision for Vote 1

Please select an option.

I vote against the introduction of $CO_2$	I vote for the introduction of CO <sub>2</sub> pric-
pricing (Part 1).	ing (Part 2).

Please explain in a few complete sentences why you decide against or in favour of the introduction of  $CO_2$  pricing. [Text box]



[This illustration is for "State budget" condition]

# Votes 2 to 5

#### For each of the following scenarios, you vote again on the introduction of a CO<sub>2</sub> price.

As before, the money generated by the  $CO_2$  price in this group goes into a **common pot** in all subsequent scenarios.



The scenarios differ from each other because **the money in the common pot is used dif**ferently.

Remember: There is a small chance that your vote will decide which part of the experiment is implemented for you and your group.

[Similar sets of instructions, quiz, and decision screen follow.]

## Part 4

This is the last part of the study. Please answer the questions on the next pages.

# Questionnaire [1/5]

[Q.4.1.1] 1.1. The following scenarios differ in how the revenues from  $CO_2$  pricing are distributed. Please now rank the five possible scenarios in order of how desirable you consider them to be. Please place your preferred distribution on the 1 and your least preferred on the 5. [Order randomised]

- The money in the common pot is divided equally among group members who have declared having a monthly disposable income of less than 2,100 euros.
- To compensate for the CO<sub>2</sub> price, each group member will receive an additional payment of 1.4/1.7 euros.
- The money in the pot goes to the German state budget.
- The money in the common pot will be transferred to an organisation supported by the *National Climate Protection Initiative*, through which the German government has been funding climate protection projects in Germany since 2008.
- The money in the common pot is divided equally among all group members.

**[Q.4.1.2] 1.2.** In Part 3, you voted several times against or in favour of a  $CO_2$  price of 3 euros for each product purchased. Please refer to Vote 1 in Part 3, in which the money generated by the  $CO_2$  price ... [description of the redistribution scheme]. Imagine if the  $CO_2$  price had been different. Would you agree to  $CO_2$  pricing for the following six scenarios?

	Yes	No
CO <sub>2</sub> price of 0.5 euros		
CO <sub>2</sub> price of 1.5 euros		
CO <sub>2</sub> price of 2.5 euros		
CO <sub>2</sub> price of 3.5 euros		
CO <sub>2</sub> price of 4.5 euros		
CO <sub>2</sub> price of 5.5 euros		

**<sup>[</sup>Q.4.1.3] 1.3.** Please indicate how strongly you agree with the following statement: Instead of a tax, the purchase of product BLUE should be banned altogether.

Strongly disagree	[1]
□ Disagree	[2]
□ Neutral	[3]
□ Agree	[4]
□ Strongly agree	[5]

# Questionnaire [2/5]

The following seven questions are about your expectations regarding the behaviour of the other group members. You will be rewarded for the accuracy of your answers. For this, one of the following seven questions will be randomly selected and you will receive an additional 10.00 euros if you have given the correct answer.

[Q.4.2.1] 2.1. Please refer to Part 1, where there was no  $CO_2$  pricing and the price for each product purchased was therefore 3 euros. How many of the other 49 group members do you think chose each of the three options?

Move the sliders below to express your guess. Note that the sum of the three answers must add up to 49.



[Q.4.2.2] 2.2. Please refer to Part 2, where there was a  $CO_2$  price of 3 euros for each product purchased and the price for each purchased product was therefore 6 euros. How many of the other 49 group members do you think chose each of the three options?

Move the sliders below to express your guess. Note that the sum of the three answers must add up to 49.



## **[Q.4.2.3] 2.3.** In Part 3, how many of the other 49 group members voted in favour of introducing a CO<sub>2</sub> price in each case? [Order randomised]

	0	10	20	29	39	49
The money in the pot goes to the German state budget.	0—					
As compensation for the CO <sub>2</sub> price, each group member receives an additional payment of $\in 1.40/1.70$ .	0—					
The money in the common pot is transferred to an organization supported by the National Climate Protection Initiative, with which the German government has been funding climate protection projects in Germany since 2008.	0—					
The money in the common pot is divided equally among all group members.	0—					
The money in the common pot is divided equally among group members who have reported having a monthly disposable income of less than $\in 2,100$ .	0—					

# Questionnaire [3/5]

We would like to know even more about you now.

**[Q.4.3.1] 3.1.** Where would you rank yourself if 1 stands for "The government should stay out of the economy and trust the market" and 5 stands for "The government should control the economy"?

**[Q.4.3.2] 3.2.** Where would you rank yourself if 1 stands for "The state should stay out of the redistribution of income and wealth" and 5 stands for "The state should redistribute income and wealth"?

**[Q.4.3.3] 3.3.** Where would you classify yourself if 1 stands for "socially conservative" and 5 for "socially liberal"?

**[Q.4.3.4] 3.4.** Which of the following parties is closest to your political views? [Order randomised]

- □ AfD
- Bündnis 90/Die Grünen
- □ CDU/CSU
- □ Die Linke
- □ FDP
- □ SPD

**[Q.4.3.5] 3.5.** Please indicate how strongly you agree with the following statements. [1: Strongly disagree; 3: Neutral; 5: Strongly agree]

- If the government levies a tax to solve a problem, the revenue from that tax should be used to solve the same problem. For example, the revenue from tobacco taxes should be used to fund the health care system.
- The impact of new policies on people's finances should be easy to understand. The government should introduce simple measures, even if more complicated ones are more effective.
- If the government wants people to change their behaviour, it should compensate them for the cost of change.
- We now check your attention. Please answer "Disagree".
- I have confidence in the German government to use taxpayers' money wisely.

**[Q.4.3.6] 3.6.** Please tell us in general terms how much you are willing or unwilling to take risks. Please use a scale from 0 to 10, where 0 means 'not at all willing to take risks' and 10 means 'very willing to take risks'. You can also use any number between 0 and 10 to indicate where you see yourself on the scale by using (the numbers) 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10.

**[Q.4.3.7] 3.7.** How much would you be willing to give up something that benefits you today in order to benefit more in the future? Again, please use a scale from 0 to 10. 0 means 'not at all willing to do this' and 10 means 'very willing to do this'. You can also use any number between 0 and 10 to indicate where you see yourself on the scale by using (the numbers) 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10.

# Questionnaire [4/5]

**[Q.4.4.1] 4.1.** Please indicate how strongly you agree with the following statements. [1: Strongly disagree; 3: Neutral; 5: Strongly agree]

- I am convinced that climate change exists.
- I am convinced that climate change is mainly caused by humans.
- I am concerned about climate change.
- The emission of CO<sub>2</sub> should be regulated.

**[Q.4.4.2] 4.2.** Climate change is a significant problem. [1: Strongly disagree; 3: Neutral; 5: Strongly agree]

**[Q.4.4.3] 4.3.** How likely is it that humanity will stop climate change by the end of the century? [1: Very unlikely; 4: Very likely]

**[Q.4.4.4] 4.4.** To what extent do you think climate change is already affecting or will negatively affect your life? [1: Not at all; 2: A little; 3: Moderately; 4: Quite a lot; 5: Very much]

**[Q.4.4.5] 4.5.** Germany should bear a large part of the cost of combating climate change. [1: Strongly disagree; 3: Neutral; 5: Strongly agree]

**[Q.4.4.6] 4.6.** Germany should provide substantial financial assistance to the countries most affected by the consequences of climate change. [1: Strongly disagree; 3: Neutral; 5: Strongly agree]

[Q.4.4.7] 4.7. How many countries in the world have produced more CO<sub>2</sub> emissions in their entire history than Germany? Countries have polluted more than Germany.

**[Q.4.4.8] 4.8.** How many countries in the world are more vulnerable to climate change than Germany? Countries are more vulnerable to climate change.

**[Q.4.4.9] 4.9.** You now have the choice between several options, which differ in an additional payout for you and an additional  $CO_2$  compensation by Carbonfund.org. The option you choose will be implemented by us. Please indicate which of the following options you prefer:

$\square$ 0.50 euros for you and 0kg additional CO <sub>2</sub> compensation	[1]
$\square$ 0.40 euros for you and 8kg additional CO <sub>2</sub> compensation	[2]
$\square$ 0.30 euros for you and 14kg additional CO <sub>2</sub> compensation	[3]
$\square$ 0.20 euros for you and 18kg additional CO <sub>2</sub> compensation	[4]
$\square$ 0.10 euros for you and 20kg additional CO <sub>2</sub> compensation	[5]
$\square$ 0.00 euros for you and 21kg additional CO <sub>2</sub> compensation	[6]

# Questionnaire [5/5]

**[Q.4.5.1] 5.1.** Do you trust those responsible for this study that they will indeed buy  $CO_2$  certificates as described in the instructions?

□ Yes	[1]
□ No	[2]

[Q.4.5.2] 5.2. Do you have feedback on this survey? [Text box]

#### C.2 Expert Survey

# Welcome to this study!

#### Voluntariness

Your participation in the experiment is voluntary. You can revoke your participation at any time.

#### Procedure

The study will take approximately **10 minutes**.

#### Confidentiality

All data collected will be analyzed anonymously.

#### **Payouts**

You may receive a monetary payment for completing your participation in this study.

# Declaration of consent By clicking "I agree" below, you confirm that you are at least 18 years old, have read the consent form, and agree to participate in this experiment under the rules and regulations listed. [Consent] Do you agree to participate in this experiment? I agree [1] I do not agree [0]

# Welcome

## [1/2]

Thank you for your participation! In this study, we kindly request your assessment of the level of approval within the German population for various forms of CO<sub>2</sub> pricing.

We collected this approval through an online experiment in June 2023 with 1,100 participants. The participants were recruited through the online platform *Bilendi* and are representative of the adult German population in terms of

- age,
- gender,
- region,
- income, and
- education.

Both the experiment and this study were preregistered.

## [2/2]

You will now be taken quickly through the original experiment. This experiment consisted of 4 parts.

In Parts 1 to 3, you will make the same decisions as the experiment participants. Unlike the experiment, your decisions in Parts 1 to 3 are hypothetical.

In Part 4, we will ask you for incentivised assessments of the decision-making behaviour of the experiment participants.

# Part 1

## [1/5]

In Part 1, you can buy two **"virtual" products**: **Product ORANGE** and **Product BLUE**.



#### [2/5]

When you buy a product, you will receive the following payout.

• The value of **Product ORANGE** is 7 euros.



• The value of **Product BLUE** is 5 euros.



• Each product costs 3 euros.

[3/5]

If you buy **Product ORANGE** and **Product BLUE**, you will receive a total of 6 euros.



If you buy only **Product ORANGE**, you will receive 4 euros.



You can not buy **Product BLUE** alone.

If you do not buy any product, you will receive 0 euros.



#### [4/5]

When you buy products, you **emit CO**<sub>2</sub>.

Emissions are equal to **60kg of CO**<sub>2</sub> for each product you purchase.



60kg is approximately equal to the amount of  $CO_2$  produced by a **300 km** car trip. Scientists agree that  $CO_2$  emissions are the most important cause of climate change.

#### [5/5]

#### **A** Your purchase decision has a real impact on CO<sub>2</sub> emissions.

Here we explain why this is so. There is an organisation called Carbonfund.org that carries out projects that permanently reduce  $CO_2$  in the earth's atmosphere. For a fixed amount, Carbonfund.org reduces the  $CO_2$  content of the atmosphere by one ton.

The experimental laboratory of the LMU Munich (MELESSA) has pledged, via Carbonfund.org, to remove 120kg of  $CO_2$  from the atmosphere for each participant in this experiment. However, this amount decreases by 60kg with each product purchased. So, if you buy both products, 120kg less  $CO_2$  will be neutralised, i.e. there will be permanently 120kg more  $CO_2$  in the atmosphere than if you do not buy any product.

# Your decision for Part 1

Please select an option.

□ Option 1: You buy both **Product ORANGE** and **Product BLUE** 



□ Option 2: You buy only **Product ORANGE** 



□ Option 3: You do not buy a product



## Part 2

#### [1/3]

In Part 2, you can again buy two products, **Product ORANGE** and **Product BLUE**. Their values are the same as in Part 1, and you emit 60kg of CO<sub>2</sub> for each product you buy.

• **Product ORANGE** has a value of 7 euros, and emits 60kg CO<sub>2</sub>.



• **Product BLUE** has a value of 5 euros, and emits 60kg CO<sub>2</sub>.



#### [2/3]

In Part 2, the price for each product is 6 euros.



#### [3/3]

If you buy **Product ORANGE** and **Product BLUE**, you will receive a total of 0 euros.



If you buy only **Product ORANGE**, you will receive 1 euro.



You can not buy **Product BLUE** alone.

If you do not buy any product, you will receive 0 euros.

# Your decision for Part 2

Please select an option.

□ Option 1: You buy both **Product ORANGE** and **Product BLUE** 



□ Option 2: You buy only **Product ORANGE** 



 $\Box$  Option 3: You do not buy a product



[Following message pops up if a participant chose Option 1.]



# Part 3

#### [1/4]

In this experiment, you are part of a **group of 50 consumers**. You will remain part of this group for the entire study.

Each member of the group has or will answer exactly the same questions as you.

You now take part in 5 votes. At the end of the study, the computer randomly draws a number between 1 and 5. This number decides which of the 5 votes is payout-relevant.

One of the 50 group members is **randomly selected** and her or his vote alone decides the outcome of the payout-relevant vote.



#### [2/4]

In Part 1, the price for each product was **3 euros**. In Part 2, the price for each product was **6 euros**.

The price in Part 2 was higher than in Part 1 because in Part 2, in addition to the product price of 3 euros, a  $CO_2$  price of **3 euros** had to be paid per product (this corresponds to a  $CO_2$  price of 50 euros per ton of  $CO_2$ ).

$$\begin{array}{|c|c|} \hline Product \\ 3 \\ \hline \end{array} + \begin{array}{|c|} CO_2 \\ 3 \\ \hline \end{array} = \begin{array}{|c|} \hline \hline 6 \\ \hline \end{array}$$

The CO<sub>2</sub> price was introduced to reduce the total amount of emissions.

#### [3/4]

#### For the following five scenarios, you will vote on the introduction of CO<sub>2</sub> pricing.

You can vote for one of the following two options in each case.

- The decisions without a CO<sub>2</sub> price are payout-relevant (Part 1).
- The decisions with a CO<sub>2</sub> price are payout-relevant (Part 2).

# [4/4]

The money generated by the CO<sub>2</sub> price in this group goes into a **common pot**.



The scenarios differ in how **the money in the common pot** is used.

# Your decision for Vote 1

Please select an option.



[This illustration is for "State budget" condition. Decision pages for Votes 2 to 5 follow.]

**[Q.3.ranking]** The following scenarios differ in how the revenues from CO<sub>2</sub> pricing are distributed. Please now rank the five possible scenarios in order of how desirable you consider them to be. Please place your preferred distribution on the 1 and your least preferred on the 5. [Order randomised]

- The money in the common pot is divided equally among group members who have declared having a monthly disposable income of less than 2,100 euros.
- To compensate for the CO<sub>2</sub> price, each group member will receive an additional payment of 1.4/1.7 euros.
- The money in the pot goes to the German state budget.
- The money in the common pot will be transferred to an organisation supported by the *National Climate Protection Initiative*, through which the German government has been funding climate protection projects in Germany since 2008.
- The money in the common pot is divided equally among all group members.

## Part 4

#### [1/2]

This is the last part of the study.

In the following seven questions, we will ask about your expectations regarding the behaviour of the 1,100 experiment participants.

You will be compensated for the accuracy of your answers. One of the following seven questions will be randomly selected, and you will receive  $\in$  40 if your answer deviates by a maximum of 2 percentage points from the correct answer.

**[Q.4.1.1] 1.1.** Please refer to Part 1, where there was no  $CO_2$  pricing and the price for each product purchased was therefore 3 euros. What percentage of the experiment participants chose each of the three options?

Move the sliders below to express your guess. Note that the sum of the three answers must add up to 100.



**[Q.4.1.2] 1.2.** Please refer to Part 2, where there was a  $CO_2$  price of 3 euros for each product purchased and the price for each purchased product was therefore 6 euros. What percentage of the experiment participants chose each of the three options?

Move the sliders below to express your guess. Note that the sum of the three answers must add up to 100.

Buy both <b>Product ORANGE</b> and <b>Product BLUE</b>	0 O-	10	20	30	40	50	60	70	80	90	100
Buy <b>Product ORANGE</b> only	0-										
Do not buy product	0-										
Total:											0

# **[Q.4.1.3] 1.3.** What percentage of the experiment participants chose to introduce CO<sub>2</sub> pricing in Part 3?

The money in the pot goes to the German state budget.	0 ()-	10	20	30	40	50	60	70	80	90	100
As compensation for the $CO_2$ price, each group member receives an additional payment of $\in 1.40/1.70$ .	0-										_
The money in the common pot is transferred to an organisation supported by the National Climate Protection Initiative, with which the German government has been funding climate protection projects in Germany since 2008.	0-										
The money in the common pot is divided equally among all group members.	0										_
The money in the common pot is divided equally among group members who have reported having a monthly disposable income of less than $\in$ 2,100.	0-										

#### [2/2]

Thank you for your participation. This is the final section of the survey. We would appreciate it if you could share some information about yourself. This information will only be used to distinguish patterns in the responses of different expert types.

[Q.4.2.1] 2.1. How old are you?

□ 18-29 years old	[1]
□ 30-39 years old	[2]
□ 40-49 years old	[3]
□ 50-59 years old	[4]
□ 60-69 years old	[5]
$\Box$ 70+ years old	[6]
<b>[Q.4.2.2] 2.2.</b> What is your gender?	
□ Female	[1]
$\square$ Male	[2]
□ Diverse	[3]
[Q.4.2.3] 2.3. What position do you hold?	
Graduate Student (Master, PhD)	[1]
Junior Faculty (Post-Doc, Assistant Professor)	[2]
□ Associate Professor	[3]

□ Full Professor

[4]

[5]

[7]

- □ Non-academic Researcher
- $\Box$  Other: [Text box]

**[Q.4.2.4] 2.4.** If you have any comments, please enter them below. We would like to hear your feedback. [Text box]

Through the following link, you can provide your email address. This will allow us to contact you if you have won  $\notin$  40 in the previous assessment questions. Please enter the following code: XXXXXXXX

Link: https://melessa.limequery.com/XXXXXXXX

# References

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