

Supplementary Information for

Conditional Bidirectionality Between Climate Policy Acceptance and Perceived Effectiveness

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Section 1 – Supplementary tables and figures

Table S1: Sample characteristics

Variable		Focal analyses sample*	Full experimental sample**	German adult population
Age ¹	18-29	6.4%	6.5%	15.8%
	30-39	16.7%	17.3%	15.7%
	40-49	16.3%	16.3%	14.4%
	50-59	23.6%	22.8%	18.8%
	60+	36.9%	37.0%	35.2%
Gender ²	male	53.8%	55.6%	48.9%
	female	46.3%	44.4%	51.1%
Education ³	No school diploma	0.5%	0.3%	4.0%
	Lower secondary education	56.9%	55.9%	58.6%
	Upper secondary education	42.7%	43.8%	33.5%
Income ⁴	Below 60% of median income	9.9%	10.4%	20.2%
	60-80% of median income	19.5%	18.8%	15.7%
	80-150% of median income	46.7%	46.7%	44.2%
	150-250% of median income	22.3%	22.5%	13.7%
	Above 250% of median income	1.7%	1.6%	6.3%

* The focal analyses sample includes only participants that were presented with at least one experimental vignette containing an effectiveness level pertaining to climate targets, i.e. large or small contribution to

¹ Statistisches Bundesamt (2022): Bevölkerung: Bundesländer, Stichtag, Geschlecht, Altersjahre. <https://www-genesis.destatis.de/genesis//online?operation=table&code=12411-0005&bypass=true&levelindex=1&levelid=1688386973641#abreadcrumb>. Accessed: 25.04.2023.

² Statistisches Bundesamt (2022): Bevölkerung: Deutschland, Stichtag, Altersjahre. <https://www-genesis.destatis.de/genesis/online?operation=table&code=12411-0013&bypass=true&levelindex=1&levelid=1616060229272#abreadcrumb>. Accessed: 25.04.2023.

³ Statistisches Bundesamt (2019): Deutschland, Jahre, Geschlecht, Altersgruppen, Allgemeine Schulausbildung. <https://www-genesis.destatis.de/genesis//online?operation=table&code=12211-9012&bypass=true&levelindex=0&levelid=1656705102492#abreadcrumb>. Accessed: 25.04.2023. Source data regards only citizens from 20-year-old onwards. Other diploma, currently in school and no answer were omitted.

⁴ Own calculations based on: Sozio-oekonomisches Panel (SOEP) (2019): Version 37, Daten der Jahre 1984-2020 (SOEP-Core v37, EU-Edition). 2022. DOI: 10.5684/soep.core.v37eu. The income categories are based on Niehues (2017): Die Mittelschicht in Deutschland. Vielschichtig und stabil. IW-Trends – Vierteljahreszeitschrift zur empirischen Wirtschaftsforschung. 44 (1): 3–20.

achieving German climate targets, but excludes participants that were presented only with vignettes containing an effectiveness level pertaining to energy security, i.e. large or small contribution to energy security in Germany. $N = 2,579$.

** The full experimental sample includes all participants, both those who were presented with at least one experimental vignette containing an effectiveness level pertaining to climate targets, i.e. large or small contribution to achieving German climate targets, and participants that were presented only with vignettes containing an effectiveness level pertaining to energy security, i.e. large or small contribution to energy security in Germany. $N = 3,257$

Table S2: Cluster robust random effects regression from acceptance on controls with all party identifications

Variable	Beta (SE)	p-value
Individual characteristics		
Age	-0.005 (.002)	.045
Gender	0.049 (.075)	.515
Education	0.033 (.021)	.110
Monthly Income	0.009 (.021)	.670
Party identification (ref: CDU/CSU)		
SPD	0.652 (.117)	***
Die Linke	0.066 (.206)	.749
Bündnis 90/Die Grünen	0.879 (.113)	***
FDP	-0.273 (.192)	.155
AfD	-1.055 (.185)	***
Other party	0.069 (.226)	.760
No party	-0.229 (.131)	.082
Don't know/No answer	0.108 (.198)	.585
Climate concern	0.604 (.042)	***
Constant	2.062 (.287)	***
Observations	4,873	
Number of individuals	2,579	
R ² within	0.000	
R ² between	0.205	
R ² overall	0.161	

Note. Gender (male, 1; female, 2), Voting for Green party (no, 0; yes, 1), *** $p < .001$.

Table S3: Cluster robust random effects regression from acceptance on controls with reduced party identification

Variable	Beta (SE)	p-value
Individual characteristics		
Age	-0.002 (.002)	.515
Gender	0.086 (.076)	.257
Education	0.042 (.021)	.045
Monthly Income	0.004 (.021)	.843
Voting for Green party	0.768 (.091)	***
Climate concern	0.71 (.040)	***
Constant	1.495 (.271)	***
Observations	4,873	
Number of individuals	2,579	
R ² within	0.000	
R ² between	0.180	
R ² overall	0.139	

Note. Gender (male, 1; female, 2), Voting for Green party (no, 0; yes, 1), *** $p < .001$.

Table S4: Intercorrelation matrix, means and SDs of respondent level variables

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Age in years	53.56	15.97					
2. Gender (m = 1, f = 2)	1.46	0.50	.03				
			$p = .122$				
3. Education	4.38	1.94	-.28	-.02			
			***	$p = .303$			
4. Monthly Income	6.44	1.86	-.10	-.11	.29		
			***	***	***		
5. Climate concern	3.54	0.99	-.02	.12	.09	-.02	
			$p = .370$	***	***	$p = .413$	
6. General climate policy support	3.29	1.19	-.10	.06	.18	.05	.55
			***	$p = .002$	***	$p = .019$	***

Note. *** $p < .001$.

Research question 1

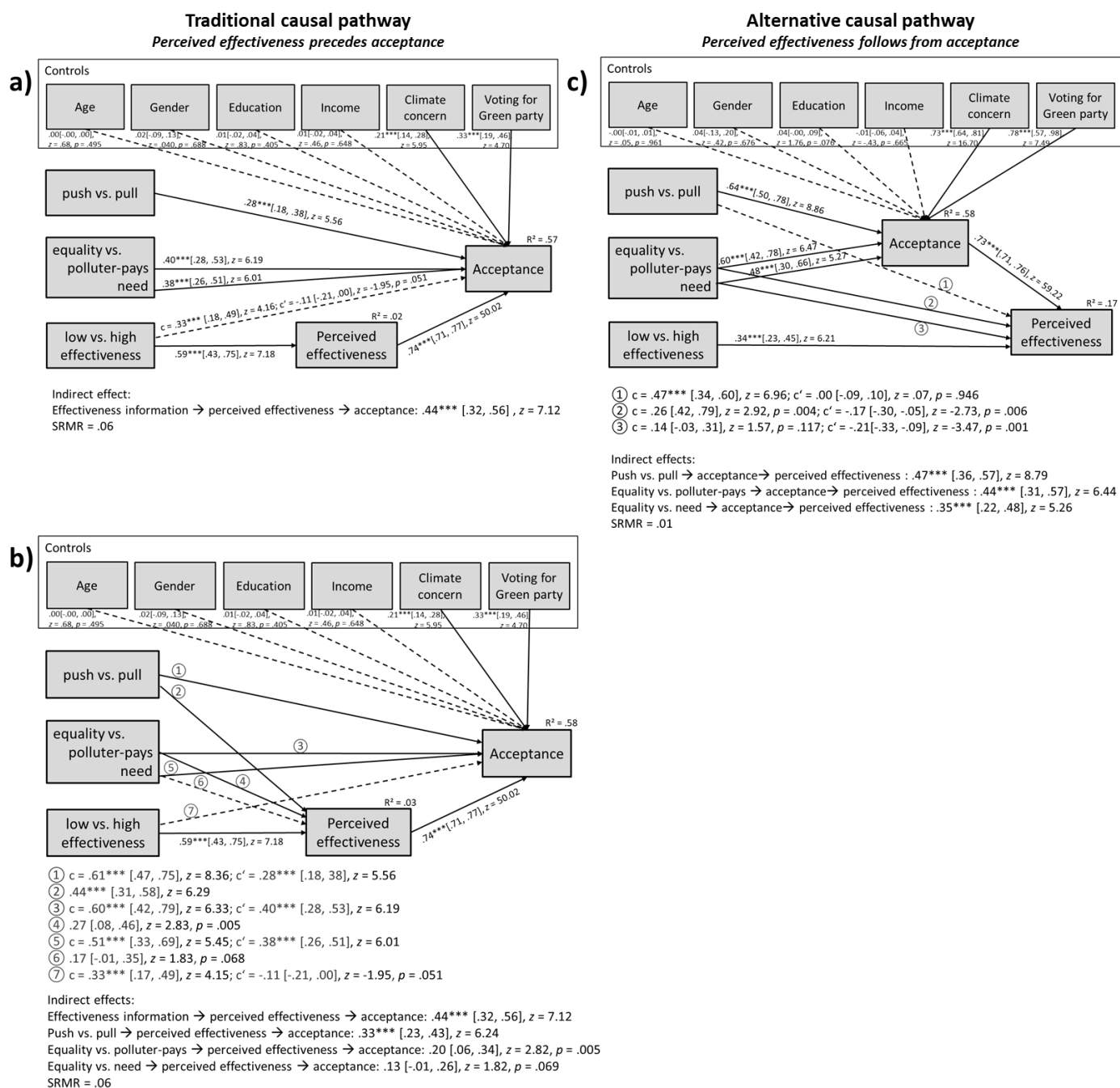


Figure S1: Mediation models of the influence of policy instrument features on acceptance. a) Shows traditional causal pathway model (perceived effectiveness precedes acceptance). b) Also shows traditional causal pathway model (perceived effectiveness precedes acceptance) but with paths from type of policy and fairness principle on effectiveness for increased model symmetry. c) Shows alternative causal pathway model (perceived effectiveness follows from acceptance). Different distributional fairness principles were entered as dummy coded variables indicating the effect of the proportional polluter-pays and need principles compared to the reference category equality. $N = 2,462$. Dotted paths are non-significant at $p < .05$. 95% CI's in parentheses. *** $p < .001$. To reduce the number of variables entered in the path model, party identification was reduced to a dichotomous variable representing voting for green party 0 = no, 1 = yes. Variance explained in acceptance was only marginally worse than with full party identification variable (2% difference; see Tables S3 and S4). When the magnitudes of the indirect effects of type of instrument and distributional principles on perceived effectiveness and acceptance are compared across the traditional (b) and alternative pathway models (c), the latter are more pronounced.

Table S5: Sobel and Monte Carlo significance tests for the indirect effects of the mediation models depicted in Figure 3.

Indirect effect significance tests	Sobel		Monte Carlo	
	<i>z</i>	<i>p</i>	<i>z</i>	<i>p</i>
<i>Traditional causal pathway model</i>				
Effectiveness information → perceived effectiveness → acceptance	7.11	0.000	7.13	0.000
<i>Alternative causal pathway model</i>				
Push vs. pull → acceptance → perceived effectiveness	8.76	0.000	8.77	0.000
Equality vs. polluter-pays → acceptance → perceived effectiveness	6.43	0.000	6.45	0.000
Equality vs. need → acceptance → perceived effectiveness	5.25	0.000	5.26	0.000

Table S6: Sobel and Monte Carlo significance tests for the indirect effects of the mediation models without climate concern and including participants dropped due to fast completion times.

Indirect effect significance tests without controlling for <i>climate concern</i>	Indirect effect (b with 95% CI's in parentheses)	Sobel		Monte Carlo	
		<i>z</i>	<i>p</i>	<i>z</i>	<i>p</i>
<i>Traditional causal pathway model (SRMR: .04)</i>					
Effectiveness information → perceived effectiveness → acceptance	.45 [.33, .57]	7.12	0.000	7.14	0.000
<i>Alternative causal pathway model (SRMR: .01)</i>					
Push vs. pull → acceptance → perceived effectiveness	.44 [.33, .54]	8.06	0.000	8.08	0.000
Equality vs. polluter-pays → acceptance → perceived effectiveness	.44 [.30, .58]	6.25	0.000	6.26	0.000
Equality vs. need → acceptance → perceived effectiveness	.37 [.24, .58]	5.38	0.000	5.39	0.000
Indirect effect significance tests including <i>participants dropped due to fast completion times</i>					
<i>Traditional causal pathway model (SRMR: .06)</i>					
Effectiveness information → perceived effectiveness → acceptance	.43 [.32, .55]	7.24	0.000	7.27	0.000
<i>Alternative causal pathway model (SRMR: .01)</i>					
Push vs. pull → acceptance → perceived effectiveness	.46 [.36, .56]	8.97	0.000	9.00	0.000
Equality vs. polluter-pays → acceptance → perceived effectiveness	.42 [.29, .54]	6.28	0.000	6.30	0.000
Equality vs. need → acceptance → perceived effectiveness	.31 [.19, .44]	4.84	0.000	4.86	0.000

Note. We estimated the identical cluster robust SEM as depicted in Fig. S1 and Table S5 but once without climate concern and once including participants dropped due to fast completion times.

Table S7: Akaike (AIC) and Bayesian information criteria (BIC) for the mediation models in Figures 3 and S1

Mediation models	AIC	BIC
Traditional causal pathway	114876.8	114974.3
Traditional causal pathway with additional paths (near-symmetrical model): type of policy → perceived effectiveness fairness principle → perceived effectiveness paths	114843.8	114959.6
Alternative causal pathway	114447.4	114557.1

Table S8: Shapely decomposition of acceptance R^2 in traditional pathway mediation model with and without perceived effectiveness as mediator

Predictor	Without Mediator			With Mediator		
	Coef.	Std.Err.	Shapley % R^2	Coef.	Std.Err.	Shapley % R^2
Age	-0.002	0.003	0.260	-0.000	0.002	0.050
Gender	0.027	0.082	0.695	0.022	0.054	0.145
Education	0.042*	0.023	1.848	0.012	0.015	0.360
Monthly Income	-0.013	0.022	0.049	0.004	0.015	0.008
Climate concern	0.715***	0.042	56.981	0.200***	0.034	9.331
Voting for Green party	0.760***	0.101	21.535	0.318***	0.068	4.026
Push vs. pull	0.629***	0.069	9.687	0.296***	0.050	1.670
Dummy coded polluter-pays principle	0.568***	0.090	4.132	0.380***	0.064	0.802
Dummy coded need-based principle	0.429***	0.088	2.017	0.356***	0.062	0.477
Effectiveness information high	0.317***	0.074	2.797	-0.096*	0.053	0.453
Perceived effectiveness				0.738***	0.015	82.678
Intercept	-0.053	0.321		-0.584	0.225	
Overall R^2	0.172			0.599		
F-stat. Model	75.894***			530.953***		

Note. Here we ran a cluster robust regression model with Shapley decomposition of R^2 with the STATA command `rego`⁵. Table shows unstandardized betas, standard errors are cluster robust. To ensure comparability with the path models, different distributional fairness principles were entered as dummy coded variables indicating the effect of the proportional polluter-pays and need principles compared to the reference category equality and party identification was reduced to a dichotomous variable representing voting for green party 0 = no, 1 = yes. * $p < .05$, ** $p < .01$, *** $p < .001$.

⁵ Huettner, F., & Sunder, M. (2011). Decomposing R^2 with the Owen value. Working paper 100, Faculty of Economics and Management Science, University of Leipzig.

Table S9: Shapely decomposition of perceived effectiveness R^2 in alternative pathway mediation model with and without acceptance as mediator

Predictor	Without Mediator			With Mediator		
	Coef.	Std.Err.	Shapley % R^2	Coef.	Std.Err.	Shapley % R^2
Age	-0.002	0.003	0.349	-0.001	0.002	0.064
Gender	0.008	0.081	0.644	-0.011	0.054	0.122
Education	0.041*	0.023	1.759	0.011	0.014	0.307
Monthly Income	-0.022	0.022	0.128	-0.014	0.015	0.021
Climate concern	0.698***	0.046	61.799	0.199***	0.034	9.304
Voting for Green party	0.600***	0.097	18.365	0.069	0.065	3.026
Push vs. pull	0.451***	0.065	5.790	0.013	0.047	0.756
Dummy coded polluter-pays principle	0.255***	0.087	1.179	-0.142**	0.062	0.192
Dummy coded need-based principle	0.099	0.085	0.131	-0.201***	0.059	0.106
Effectiveness information high	0.560***	0.074	9.855	0.339***	0.053	1.792
Acceptance				0.698***	0.013	84.311
Intercept	0.720	0.323		0.757	0.228	
Overall R^2	0.158			0.592		
F-stat. Model	60.833***			413.551***		

Note. Here we ran a cluster robust regression model with Shapley decomposition of R^2 with the STATA command `rego`⁵. Table shows unstandardized betas, standard errors are cluster robust. To ensure comparability with the path models, different distributional fairness principles were entered as dummy coded variables indicating the effect of the proportional polluter-pays and need principles compared to the reference category equality and party identification was reduced to a dichotomous variable representing voting for green party 0 = no, 1 = yes. * $p < .05$, ** $p < .01$, *** $p < .001$.

Research question 2

Table S10: Cluster robust random effects regressions from acceptance to experimental conditions, general climate policy support, their interactions and controls.

Variable	Model 1		Model 2		Model 3	
Individual Characteristics	<i>b</i> (SE)	<i>p</i> -value	<i>b</i> (SE)	<i>p</i> -value	<i>b</i> (SE)	<i>p</i> -value
Age	-0.001 (.002)	.541	-0.002 (.002)	.465	-0.002 (.002)	.436
Gender	0.076 (.070)	.280	0.064 (.069)	.355	0.067 (.069)	.334
Education	-0.005 (.019)	.777	-0.003 (.019)	.866	-0.004 (.019)	.835
Monthly Income	-0.006 (.019)	.746	-0.002 (.018)	.909	-0.003 (.018)	.886
Party identification (ref: CDU/CSU)						
SPD	0.300 (.111)	.007	0.303 (.110)	.006	0.307 (.110)	.005
Die Linke	-0.185 (.190)	.330	-0.195 (.186)	.295	-0.180 (.185)	.328
Bündnis 90/Die Grünen	0.35 (.109)	.001	0.335 (.107)	.002	0.335 (.107)	.002
FDP	-0.042 (.180)	.816	-0.078 (.183)	.672	-0.068 (.184)	.712
AfD	-0.579 (.171)	.001	-0.568 (.171)	.001	-0.572 (.170)	.001
Other party	0.012 (.200)	.950	-0.018 (.204)	.930	-0.028 (.203)	.891
No party	-0.285 (.116)	.014	-0.275 (.116)	.017	-0.280 (.116)	.016
Don't know/No answer	-0.053 (.182)	.772	-0.027 (.184)	.883	-0.023 (.183)	.899
Climate concern	0.234 (.044)	***	0.238 (.044)	***	0.234 (.044)	***
General climate policy support (GCPS)	0.900 (.046)	***	0.897 (.046)	***	0.616 (.071)	***
Explanatory Variables						
Type of instrument (ref: Push)						
Pull	—		0.672 (.067)	***	0.669 (.066)	***
Combi	—		0.323 (.063)	***	0.318 (.063)	***
Distribution principle (ref: Equality)						
Polluter-pays	—		0.563 (.062)	***	0.553 (.062)	***
Need-based	—		0.502 (.068)	***	0.500 (.068)	***
Effectiveness information (ref: low)						
high	—		0.317 (.054)	***	0.306 (.053)	***
Interactions						
Pull × GCPS	—	—			0.029 (.065)	.599
Combined × GCPS	—	—			0.062 (.063)	.456
Polluter-pays × GCPS	—	—			0.190 (.060)	.002
Need-based × GCPS	—	—			0.204 (.066)	.002
High effectiveness × GCPS	—	—			0.266 (.052)	***
Constant	3.567 (.282)	***	2.712 (.285)	***	2.745 (.285)	***
Observations	4,873		4,873		4,873	
Number of individuals	2,579		2,579		2,579	
R ² within	0.000		0.080		0.092	
R ² between	0.310		0.321		0.323	
R ² overall	0.243		0.271		0.275	
Wald χ^2	1290.24		1693.34		1774.53	
df	14		19		24	
Prob > χ^2	0.000		0.000		0.000	

Note. Model 1: only respondent-level predictors; Model 2: including experimental manipulation levels; Model 3: including interaction terms. Table shows unstandardized betas, robust standard errors in parentheses. In all models, GCPS was entered as z-scores. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table S11: Interaction results of the cluster robust random effects regressions without climate concern and including participants dropped due to fast completion times.

Interactions	without controlling for climate concern		including participants dropped due to fast completion times	
Pull × GCPS	0.039 (.065)	.550	0.031 (.064)	.622
Combined × GCPS	0.052 (.062)	.404	0.065 (.061)	.282
Polluter-pays × GCPS	0.196 (.060)	.001	0.189 (.060)	.001
Need-based × GCPS	0.205 (.066)	.002	0.214 (.064)	.001
High effectiveness × GCPS	0.271 (.052)	***	0.292 (.051)	***
Observations	4,902		5,103	
Number of individuals	2,595		2,706	
R ² within	0.091		0.088	
R ² between	0.314		0.317	
R ² overall	0.268		0.271	
Wald χ^2	1672.96		1771.85	
Prob > χ^2	0.000		0.000	

Note. Here we ran the same model 3 cluster robust random effects regressions as depicted in Table S10 but once without climate concern and once including participants dropped due to fast completion times. Table shows unstandardized betas, robust standard errors in parentheses. In all models, GCPS was entered as z-scores. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table S12: Simple slope significance tests of the effects of experimental conditions on acceptance for different levels in general climate policy support.

Simple Slopes	Beta	p-values
Distribution principle (ref: Equality)		
Polluter-pays		
At low GCPS (-1.5 SD)	0.268 (.103)	.009
At medium GCPS (0 SD)	0.553 (.062)	***
At high GCPS (+1.5 SD)	0.837 (.115)	***
Need-based		
At low GCPS (-1.5 SD)	0.193 (.113)	.087
At medium GCPS (0 SD)	0.500 (.068)	***
At high GCPS (+1.5 SD)	0.807 (.127)	***
High effectiveness information (ref: low)		
At low GCPS (-1.5 SD)	-0.093 (.087)	.288
At medium GCPS (0 SD)	0.306 (.053)	***
At high GCPS (+1.5 SD)	0.705 (.101)	***

Note. Table shows unstandardized betas, standard errors in parentheses. GCPS was entered as z-scores. *** $p < .001$. $N = 2,579$.

Table S13: Pairwise comparison of simple slopes of the effect of experimental conditions on acceptance for different levels in general climate policy support.

Simple slope differences	z	p-values
Distribution principle (ref: Equality)		
Polluter-pays		
Low GCPS (-1.5 SD) vs. medium GCPS (0 SD)	3.14	.002
Low GCPS (-1.5 SD) vs. high GCPS (0 SD)	3.14	.002
Medium GCPS (-1.5 SD) vs. high GCPS (0 SD)	3.14	.002
Need-based		
Low GCPS (-1.5 SD) vs. medium GCPS (0 SD)	3.09	.002
Low GCPS (-1.5 SD) vs. high GCPS (0 SD)	3.09	.002
Medium GCPS (-1.5 SD) vs. high GCPS (0 SD)	3.09	.002
High effectiveness information regarding energy security (ref: low)		
Low GCPS (-1.5 SD) vs. medium GCPS (0 SD)	5.09	***
Low GCPS (-1.5 SD) vs. high GCPS (0 SD)	5.09	***
Medium GCPS (-1.5 SD) vs. high GCPS (0 SD)	5.09	***

Exploratory analyses

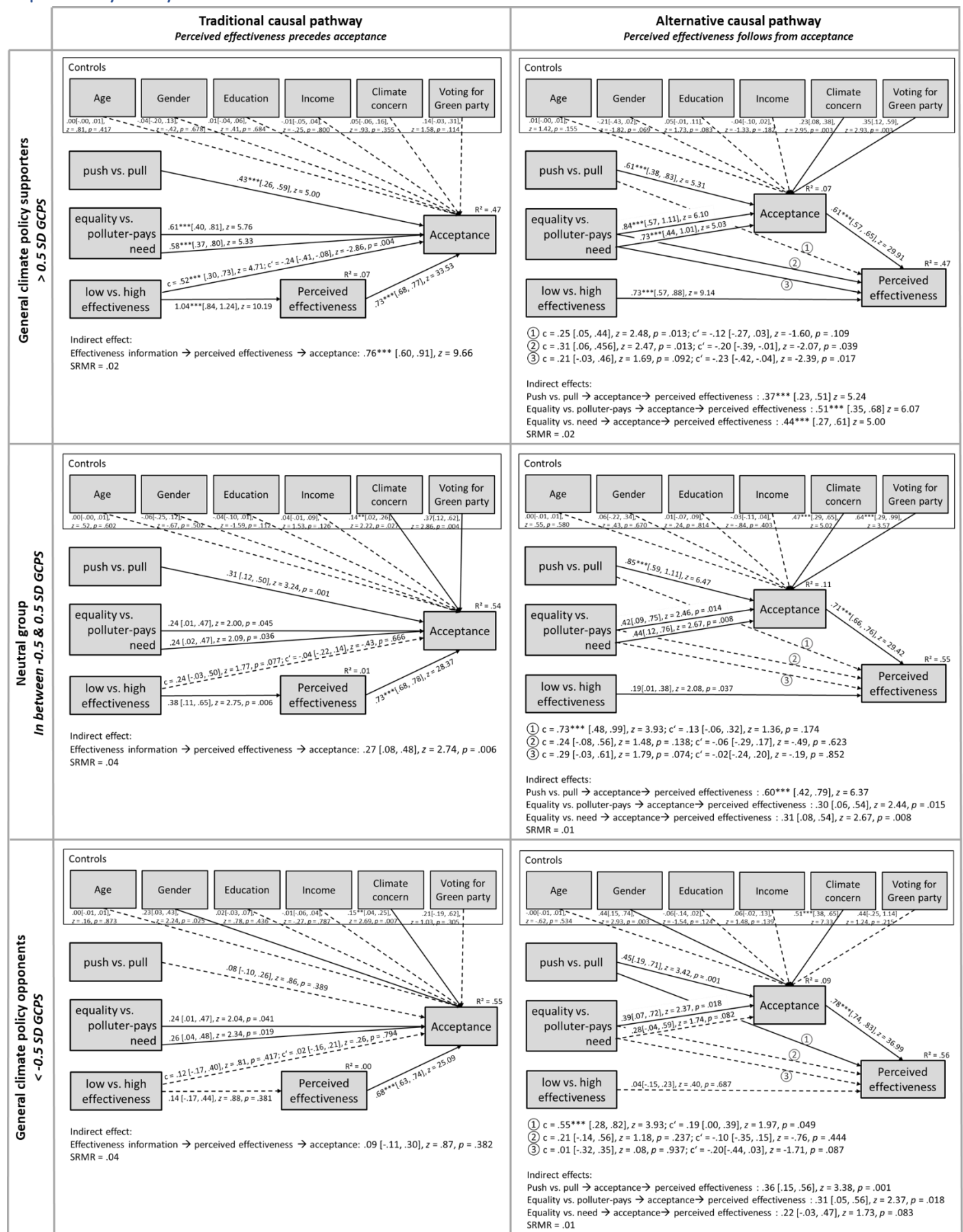


Figure S2: Traditional (effectiveness precedes acceptance; left side models) and alternative causal pathway (effectiveness follows from acceptance; right side models) mediation models for general climate policy supporters (top models), a neutral group (mid models) and opponents (bottom models). $N = 2,448$ for all traditional and alternative causal pathway multi-group mediation models. *** $p < .001$. To reduce the number of variables entered in the path model, party identification was reduced to a dichotomous variable representing voting for green party 0 = no, 1 = yes.

Table S14: Pairwise comparison of indirect effects in the traditional and alternative pathway models for the three general climate policy support groups (supporters, neutral group and opponents).

Indirect effect differences	$\chi^2(1)$	p -values
Traditional pathway: Effectiveness information → perceived effectiveness → acceptance		
Supporters compared to		
Neutral group	14.09	.000
Opponents	25.48	.000
Neutral group compared to		
Opponents	1.59	.210
Alternative pathway:		
Push vs. pull → acceptance → perceived effectiveness		
Supporters compared to		
Neutral group	3.99	.046
Opponents	0.01	.918
Neutral group compared to		
Opponents	3.09	.079
Equality vs. polluter-pays → acceptance → perceived effectiveness		
Supporters compared to		
Neutral group	2.09	.149
Opponents	1.70	.191
Neutral group compared to		
Opponents	0.00	.949
Equality vs. need → acceptance → perceived effectiveness		
Supporters compared to		
Neutral group	0.82	.365
Opponents	2.10	.147
Neutral group compared to		
Opponents	0.28	.594

Section 2 – Results regarding energy security effectiveness

As mentioned in the main manuscript, we present in the following the factorial survey experiment's results with regards to the effectiveness information levels 3 and 4, i.e. the levels pertaining to the instruments effectiveness in contributing to energy security in Germany. Except the use of these effectiveness levels, the analyses are identical with those reported in the main paper. Except minor exceptions in the explorative analyses (described below), the analyses yield result patterns that are also identical with the results in the main paper when using effectiveness levels 1 and 2, i.e. the levels pertaining to the instruments' effectiveness in contributing to achieving climate targets in the building sector.

Research question 1

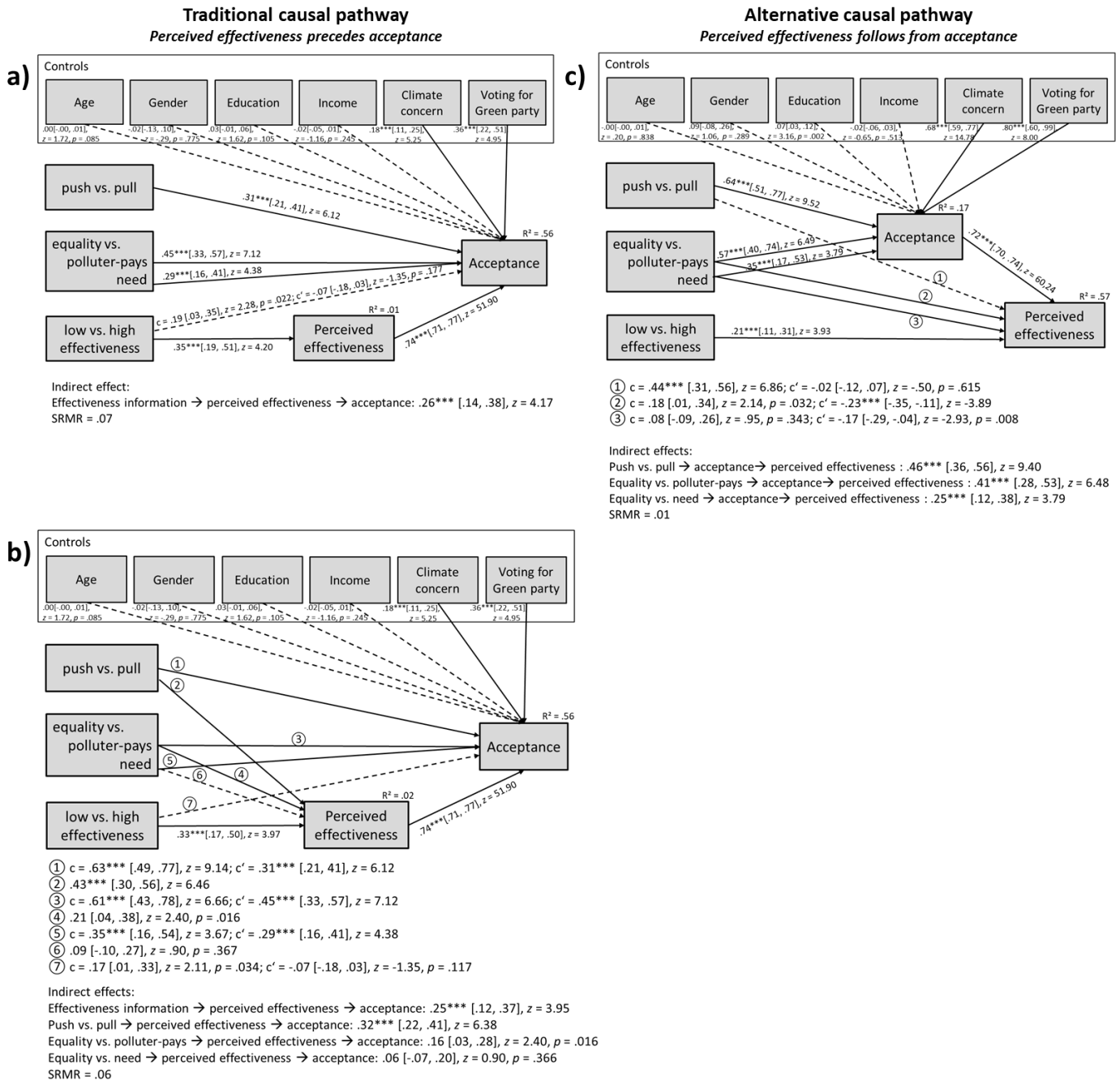


Figure S3: Mediation models of the influence of policy instrument features on acceptance with energy security effectiveness levels. a) Shows traditional causal pathway model (perceived effectiveness precedes acceptance). b) Also shows traditional causal pathway model (perceived effectiveness precedes acceptance) but with paths from type of policy and fairness principle on effectiveness. c) Shows alternative causal pathway model (perceived effectiveness follows from acceptance). Different distributional fairness principles were entered as dummy coded variables indicating the effect of the proportional polluter-pays and need principles compared to the reference category equality. $N = 2,319$. Dotted paths are non-significant at $p < .05$. 95% CI's in parentheses. * $p < .05$, ** $p < .01$, *** $p < .001$. To reduce the number of variables entered in the path model, party identification was reduced to a dichotomous variable representing voting for green party 0 = no, 1 = yes. The pattern of results is identical with the mediation model results with the climate target effectiveness levels. Sobel and Monte Carlo indirect effect significance tests also yield identical results (see Table S15). As in the climate target effectiveness models in the main paper, when the magnitudes of the indirect effects of type of instrument and distributional principles on perceived effectiveness and acceptance are compared across the traditional (b) and alternative pathway models (c), the latter are more pronounced. Also similar to the analyses in the main paper, the ratios of indirect to direct effects (RID) indicate that the remaining competitive direct effects are well compensated for by the larger indirect effects.

Table S15: Sobel and Monte Carlo significance tests for the indirect effects of the mediation models depicted in Figure S3.

Indirect effect significance tests (energy security effectiveness models)	Sobel		Monte Carlo	
	<i>z</i>	<i>p</i>	<i>z</i>	<i>p</i>
<i>Traditional causal pathway model</i>				
Effectiveness information → perceived effectiveness → acceptance	4.19	0.000	4.19	0.000
<i>Alternative causal pathway model</i>				
Push vs. pull → acceptance → perceived effectiveness	9.40	0.000	9.43	0.000
Equality vs. polluter-pays → acceptance → perceived effectiveness	6.45	0.000	6.47	0.000
Equality vs. need → acceptance → perceived effectiveness	3.78	0.000	3.79	0.000

Table S16: Akaike (AIC) and Bayesian information criteria (BIC) for the mediation models in Figure S3

Energy security mediation models	AIC	BIC
Traditional causal pathway	114480.8	114578.3
Traditional causal pathway with additional paths (near-symmetrical model): type of policy → perceived effectiveness fairness principle → perceived effectiveness paths	114451.6	114567.4
Alternative causal pathway	114028.2	114137.9

Research question 2

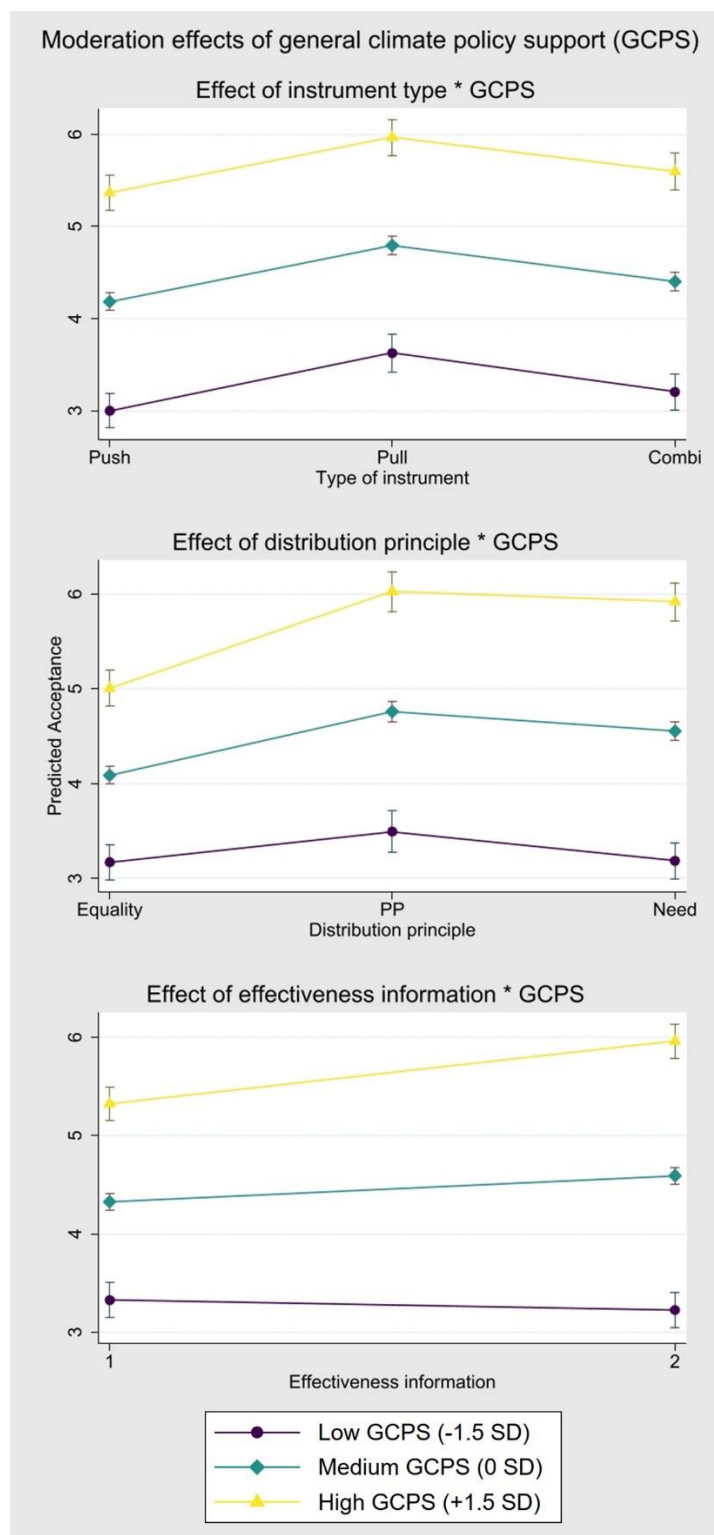


Figure S4: Predicted acceptance for climate policy instruments as a function of policy features (effectiveness information regarding energy security) and general climate policy support (GCPS). Marginal means are plotted for low (-1.5 SD), medium (0 SD), and high (1.5 SD) GCPS. Error bars represent 95% CIs. GCPS only moderates the effects of distributional principle and effectiveness information on acceptance but not of type of instrument. This pattern of results is identical with the moderation results in the main paper regarding climate target effectiveness.

Table S17: Cluster robust random effects regressions from acceptance to experimental conditions (effectiveness information regarding energy security), general climate policy support, their interactions and controls.

Variable	Model 1		Model 2		Model 3	
Individual Characteristics	<i>b</i> (SE)	<i>p</i> -value	<i>b</i> (SE)	<i>p</i> -value	<i>b</i> (SE)	<i>p</i> -value
Age	-0.001 (.002)	.491	-0.002 (.002)	.424	-0.002 (.002)	.426
Gender	0.076 (.070)	.574	0.020 (.068)	.766	0.014 (.068)	.839
Education	-0.005 (.019)	.056	0.035 (.019)	.067	0.035 (.019)	.065
Monthly Income	-0.006 (.019)	.553	-0.010 (.019)	.604	-0.010 (.019)	.598
Party identification (ref: CDU/CSU)						
SPD	0.385 (.111)	***	0.394 (.110)	***	0.408 (.110)	***
Die Linke	-0.107 (.183)	.561	-0.102 (.178)	.568	-0.094 (.178)	.595
Bündnis 90/Die Grünen	0.519 (.108)	***	0.528 (.107)	***	0.528 (.107)	***
FDP	-0.145 (.160)	.366	-0.146 (.161)	.362	-0.156 (.160)	.330
AfD	-0.625 (.161)	***	-0.674 (.163)	***	-0.648 (.163)	***
Other party	0.160 (.194)	.409	0.155 (.195)	.426	0.166 (.193)	.392
No party	-0.076 (.123)	.538	-0.052 (.122)	.672	-0.048 (.122)	.694
Don't know/No answer	-0.022 (.194)	.910	-0.005 (.193)	.978	-0.010 (.194)	.960
Climate concern	0.257 (.044)	***	0.247 (.044)	***	0.252 (.044)	***
General climate policy support (GCPS)	0.787 (.045)	***	0.792 (.045)	***	0.490 (.064)	***
Explanatory Variables						
Type of instrument (ref: Push)						
Pull	—		0.601 (.064)	***	0.611 (.064)	***
Combi	—		0.224 (.065)	.001	0.217 (.064)	.001
Distribution principle (ref: Equality)						
Polluter-pays	—		0.688 (.068)	***	0.671 (.067)	***
Need-based	—		0.474 (.064)	***	0.466 (.064)	***
Effectiveness information (ref: low)						
high	—		0.276 (.057)	***	0.266 (.056)	***
Interactions						
Pull × GCPS	—	—	—	—	-0.011 (.062)	.865
Combined × GCPS	—	—	—	—	0.008 (.060)	.894
Polluter-pays × GCPS	—	—	—	—	0.231 (.067)	***
Need-based × GCPS	—	—	—	—	0.298 (.062)	***
High effectiveness × GCPS	—	—	—	—	0.245 (.053)	***
Constant	3.328 (.273)	***	2.602 (.274)	***	2.605 (.273)	***
Observations	4,898		4,898		4,898	
Number of individuals	2,856		2,856		2,856	
R ² within	0.000		0.076		0.092	
R ² between	0.281		0.305		0.307	
R ² overall	0.246		0.274		0.280	
Wald χ^2	1329.60		1745.76		1774.84	
df	14		19		24	
Prob > χ^2	0.000		0.000		0.000	

Note. Model 1: only respondent-level predictors; Model 2: including experimental manipulation levels; Model 3: including interaction terms. Table shows unstandardized betas, robust standard errors in parentheses. In all models, GCPS was entered as z-scores. *** $p < .001$.

Table S18: Simple slope significance tests of the effects of experimental conditions (effectiveness information regarding energy security) on acceptance for different levels in general climate policy support.

Simple slopes	Beta	p-values
Distribution principle (ref: Equality)		
Polluter-pays		
At low GCPS (-1.5 SD)	0.324 (.117)	.005
At medium GCPS (0 SD)	0.671 (.067)	***
At high GCPS (+1.5 SD)	1.018 (.123)	***
Need-based		
At low GCPS (-1.5 SD)	0.016 (.107)	.880
At medium GCPS (0 SD)	0.464 (.064)	***
At high GCPS (+1.5 SD)	0.911 (.119)	***
High effectiveness information regarding energy security (ref: low)		
At low GCPS (-1.5 SD)	-0.102 (.096)	.289
At medium GCPS (0 SD)	0.266 (.056)	***
At high GCPS (+1.5 SD)	0.633 (.099)	***

Note. Table shows unstandardized betas, standard errors in parentheses. GCPS was entered as z-scores. *** $p < .001$. $N = 2.856$.

Table S19: Pairwise comparison of simple slopes of the effect of experimental conditions (effectiveness information regarding energy security) on acceptance for different levels in general climate policy support.

Simple slope differences	z	p-values
Distribution principle (ref: Equality)		
Polluter-pays		
Low GCPS (-1.5 SD) vs. medium GCPS (0 SD)	3.50	***
Low GCPS (-1.5 SD) vs. high GCPS (0 SD)	3.50	***
Medium GCPS (-1.5 SD) vs. high GCPS (0 SD)	3.50	***
Need-based		
Low GCPS (-1.5 SD) vs. medium GCPS (0 SD)	4.78	***
Low GCPS (-1.5 SD) vs. high GCPS (0 SD)	4.78	***
Medium GCPS (-1.5 SD) vs. high GCPS (0 SD)	4.78	***
High effectiveness information regarding energy security (ref: low)		
Low GCPS (-1.5 SD) vs. medium GCPS (0 SD)	4.61	***
Low GCPS (-1.5 SD) vs. high GCPS (0 SD)	4.61	***
Medium GCPS (-1.5 SD) vs. high GCPS (0 SD)	4.61	***

Exploratory analyses

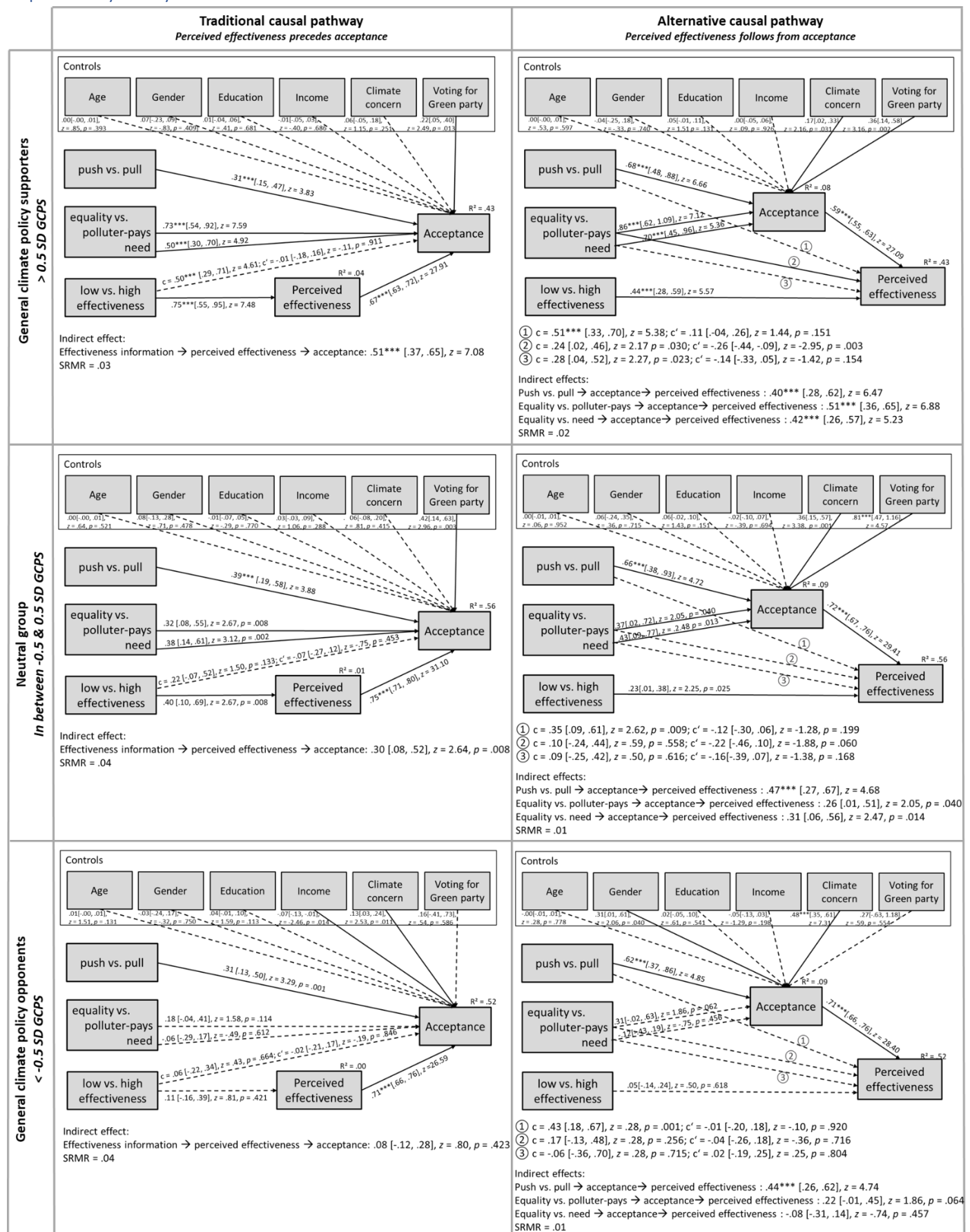


Figure S5: Traditional (effectiveness precedes acceptance; left side models) and alternative causal pathway (effectiveness follows from acceptance; right side models) mediation models for general climate policy supporters (top models), a neutral group, i.e. the undecided (mid models), and opponents (bottom models) with energy security effectiveness levels. $N = 2,303$ for both traditional and alternative causal pathway multi-group mediation models. *** $p < .001$. To reduce the number of variables entered in the path model, party identification was reduced to a dichotomous variable representing voting for green party 0 = no, 1 = yes. All focal results, namely the indirect effects are identical with the explorative analysis in the main paper with climate target effectiveness levels but one exception: in these models the indirect effect of equality vs. polluter-pays on effectiveness via support was not significant for opponents. All other indirect effects corroborate the results from the climate effectiveness information treatment models: All groups exhibit the alternative pathway to some degree while only supporters and the undecided show the traditional pathway where effectiveness information increases support via perceived effectiveness. Further differences with the explorative analyses in the main paper are that, while again most of the alternative pathway indirect effect comparisons (see Table S20) are non-significant the differences of the indirect effect sizes are significant when looking at the influence of distribution design on support for general climate policy supporters (top left side panel), there is no remaining competitive direct effect of effectiveness information on acceptance when the mediator is taken into account.

Table S20: Pairwise comparison of indirect effects in the traditional and alternative pathway models for the three general climate policy support groups (supporters, neutral group and opponents).

Indirect effect differences	$\chi^2(1)$	p -values
Traditional pathway: Effectiveness information → perceived effectiveness → acceptance		
Supporters compared to		
Neutral group	2.41	.121
Opponents	11.85	.000
Neutral group compared to		
Opponents	2.07	.150
Alternative pathway:		
Push vs. pull → acceptance → perceived effectiveness		
Supporters compared to		
Neutral group	0.34	.557
Opponents	0.10	.754
Neutral group compared to		
Opponents	0.06	.800
Equality vs. polluter-pays → acceptance → perceived effectiveness		
Supporters compared to		
Neutral group	2.75	.097
Opponents	4.34	.037
Neutral group compared to		
Opponents	0.06	.799
Equality vs. need → acceptance → perceived effectiveness		
Supporters compared to		
Neutral group	0.51	.475
Opponents	13.04	.000
Neutral group compared to		
Opponents	5.43	.020

Section 3 - Survey materials

Background information provided in the survey

Original German

Laut Klimaschutzgesetz soll Deutschland bis 2045 klimaneutral **[Infobutton]**⁶ werden. Außerdem soll Energieversorgungssicherheit **[Infobutton]**⁷ gewährleistet werden. Ein Mittel, um beide Ziele zu erreichen, ist die Verringerung des Verbrauchs von Kohle, Heizöl und Gas. Unter anderem ist für den Verbrauch von Kohle, Heizöl und Gas entscheidend, welche Heizungsarten in privaten Gebäuden verbaut sind. Um den Wechsel von klimaschädlichen Kohle-, Heizöl- und Gasheizungen auf klimafreundliche Modelle zu unterstützen und somit den Verbrauch dieser Energieträger zu senken, sind neben dem kürzlich von der Bundesregierung beschlossenen Gesetz auch alternative Maßnahmen denkbar.

Im Folgenden werden Ihnen kurze Beschreibungen zu drei alternativen politischen Maßnahmen gezeigt. Diese Maßnahmen betreffen **privates Wohneigentum** und haben alle das Ziel, dort den Wechsel auf klimafreundliche Heizungen anzuregen.

Die Maßnahmen unterscheiden sich in folgenden Punkten:

- a) **Maßnahmenart** – Umbauförderung **[Infobutton]**⁸ beim Wechsel von klimaschädlichen auf klimafreundliche Heizungen ODER Verteuerung der Nutzung klimaschädlicher Heizungen ODER eine Kombination von Förderung und Verteuerung
- b) **Verteilung der finanziellen Auswirkung der Maßnahmen in der Gesellschaft**
- c) **Wirksamkeit** hinsichtlich der Verringerung des Verbrauchs von Kohle, Heizöl und Gas.

Bitte lesen Sie die Beschreibungen sorgfältig durch und versuchen Sie, sich so gut wie möglich die verschiedenen Maßnahmen vor Augen zu führen. Jede Maßnahme mit ihren Rahmenbedingungen und deren Wirksamkeit steht dabei für sich.

Wir möchten Ihnen zu jeder dieser Maßnahmen dieselben Fragen stellen und von Ihnen gerne wissen, wie Sie diese Maßnahmen einschätzen. **Bitte beantworten Sie die Fragen aus Ihrer aktuellen persönlichen Situation heraus.** Sollten Sie aufgrund Ihrer Einschätzungen einer Maßnahme Ihre Bewertungen der vorherigen ändern wollen, ist dies durch Klick auf den Zurück-Button möglich.

Auf der nächsten Seite finden Sie ein Beispiel für die Beschreibung einer möglichen Maßnahme.

Aufgrund der besseren Lesbarkeit wird im Folgenden die männliche Form verwendet, zum Beispiel bei Vermieterinnen und Vermietern. Gemeint sind jedoch immer alle Geschlechter.

Beispiel

Stellen Sie sich bitte die folgende Maßnahme vor:

⁶ Participants could click to receive a pop-up with further information: "Klimaneutral bedeutet, dass der netto-Treibhausgas-Ausstoß auf null reduziert werden muss. Das heißt, dass alle ab 2045 noch durch Menschen verursachten Treibhausgase wieder aus der Atmosphäre entfernt werden müssen und somit der Treibhausgas-Ausstoß, nach Abzug der durch natürliche und künstliche Speicher gebundenen Treibhausgase, gleich null ist."

⁷ Participants could click to receive a pop-up with further information drawn from Ren & Sovacool (2014) "Energieversorgungssicherheit meint die ununterbrochene Verfügbarkeit von Energie zu einem erschwinglichen Preis. Sie ist sozial und wirtschaftlich unentbehrlich und somit ein wichtiges Politikziel."

⁸ Participants could click to receive a pop-up with further information: "Die Umbauförderung bedeutet, dass die Kosten für den Umbau der Heizung (Material und Arbeitskraft) zu einem bestimmten Teil vom Staat erstattet werden."

Jährlicher Preisaufschlag [Infobutton]⁹ auf die Heizkostenrechnung bei Kohle-, Öl- und Gas- Heizungen in privatem Wohneigentum in Höhe von 15 Prozent des Rechnungsbetrages (bei Vermietung hat der Vermieter den Aufschlag zu tragen, kann aber die Hälfte des Aufschlags an die Mieter weitergegeben).

Die prozentuale Höhe des Aufschlags ist **für alle Haushalte gleich**, unabhängig von deren Einkommen und Verbrauch von Wärmeenergie (Heizung und Warmwasser).

Laut aktuellen wissenschaftlichen Studien kann mit dieser Maßnahme der Verbrauch von Kohle, Heizöl und Gas im privaten Gebäudebereich **stark gesenkt** werden. Somit würde die Maßnahme **einen großen Beitrag** zur Erreichung der Klimaziele im Gebäudebereich leisten.

Übersicht der Maßnahmenmerkmale:

Maßnahmenart:	Preisaufschlag
Verteilung:	Prozentuale Höhe für alle Haushalte gleich
Wirksamkeit:	Großer Beitrag zur Erreichung der Klimaziele im Gebäudebereich

English translation

According to the Climate Protection Act, Germany is to become climate-neutral [Infobutton]¹⁰ by 2045. Energy security [Infobutton]¹¹ is also to be guaranteed. One way to achieve both goals is to reduce the consumption of coal, heating oil and gas. Among other things, the types of heating installed in private buildings are decisive for the consumption of coal, heating oil and gas. In order to support the switch from climate-damaging coal, heating oil and gas heating systems to climate-friendly models and thus reduce the consumption of these energy sources, alternative measures are also conceivable in addition to the law recently passed by the German government.

Below you will find brief descriptions of three alternative policy measures. These measures relate to private residential property and all aim to encourage a switch to climate-friendly heating systems.

The measures differ in the following points:

- a) **Type of instrument** - conversion subsidies [Infobutton]¹² for switching from climate-damaging to climate-friendly heating systems OR making the use of climate-damaging heating systems more expensive OR a combination of subsidies and more expensive heating systems
- b) **Distribution** of the financial impact of the measures in society
- c) **Effectiveness** in terms of reducing the consumption of coal, heating oil and gas.

⁹ Participants could click to receive a pop-up with further information: "Der Aufschlag wird auf die Heizkostenrechnung angewendet. Hierdurch erhöhen sich die Kosten für die Nutzung klimaschädlicher Heizungstechnik."

¹⁰ Participants could click to receive a pop-up with further information: "Climate-neutral means that net greenhouse gas emissions must be reduced to zero. This means that all greenhouse gases still caused by humans from 2045 onwards must be removed from the atmosphere and greenhouse gas emissions, after deduction of greenhouse gases bound by natural and artificial reservoirs, must therefore be zero."

¹¹ Participants could click to receive a pop-up with further information drawn from Ren & Sovacool (2014): "Security of energy supply means the uninterrupted availability of energy at an affordable price. It is socially and economically indispensable and therefore an important policy objective."

¹² Participants could click to receive a pop-up with further information: "The conversion subsidy means that the costs of converting the heating system (materials and labor) are reimbursed to a certain extent by the state."

Please read the descriptions carefully and try to visualize the various measures as well as possible. Each measure with its framework conditions and its effectiveness stands on its own.

We would like to ask you the same questions about each of these measures and would like to know what you think of them. Please answer the questions based on your current personal situation. If you would like to change your assessment of the previous measures based on your assessment of one measure, you can do so by clicking on the Back button.

On the next page you will find an example of a description of a possible measure.

For better readability, the masculine form is used below, for example for landlords and landlords. However, all genders are always meant.

Example

Please imagine the following instrument:

Annual surcharge [**infobutton**]¹³ on the heating bill for coal, oil and gas heating systems in private residential property amounting to 15 percent of the bill amount (in the case of rentals, the landlord has to pay the surcharge, but can pass half of the surcharge on to the tenants).

The percentage of the surcharge is the same for all households, regardless of their income and consumption of heating energy (heating and hot water).

According to current scientific studies, this measure can significantly reduce the consumption of coal, heating oil and gas in the private building sector. The measure would therefore make a large contribution to achieving the climate targets in the building sector.

Overview of the measure features:

Type of instrument:	Price surcharge
Distribution:	Percentage level the same for all households
Effectiveness:	Large contribution to achieving climate targets in the buildings sector

Wording of the factorial survey experiment levels

Original German

Type of instrument:

Push

Jährlicher Preisaufschlag auf die Heizkostenrechnung bei Kohle-, Öl- und Gas- Heizungen in privatem Wohneigentum in Höhe von durchschnittlich [this word is excluded if distribution principle equality] 15 Prozent des Rechnungsbetrages (bei Vermietung hat der Vermieter den Aufschlag zu tragen, kann aber die Hälfte des Aufschlags an die Mieter weitergegeben).

Pull

¹³ Participants could click to receive a pop-up with further information: "The surcharge is applied to the heating bill. This increases the costs for the use of climate-damaging heating technology."

Finanzielle Förderung des Umbaus [Infobutton] von Kohle-, Öl- und Gas- Heizungen auf klimafreundlichere Modelle im privaten Wohneigentum in Höhe von durchschnittlich [this word is excluded if distribution principle equality] 50 Prozent der Umbaukosten (bei Vermietung kann infolge des Umbaus die Kaltmiete um max. 50 Cent/m² erhöht werden).

Combination

Kombination von jährlichem Preisaufschlag auf die Heizkostenrechnung bei Kohle-, Öl- und Gas- Heizungen in privatem Wohneigentum in Höhe von durchschnittlich [this word is excluded if distribution principle equality] 15 Prozent des Rechnungsbetrages (bei Vermietung hat der Vermieter den Aufschlag zu tragen, kann aber die Hälfte des Aufschlags an die Mieter weitergegeben) gemeinsam mit einer finanziellen Umbauförderung [Infobutton] in Höhe von durchschnittlich [this word is excluded if distribution principle equality] 50 Prozent der Umbaukosten (bei Vermietung kann infolge eines Umbaus die Kaltmiete um max. 50 Cent/m² erhöht werden).

Distribution:

Equality

[if Push] Die prozentuale Höhe des Preisaufschlags ist für alle Haushalte gleich, unabhängig von deren Einkommen und Verbrauch von Wärmeenergie (Heizung und Warmwasser).

[if Pull] Die prozentuale Höhe der Förderung ist für alle Haushalte gleich, unabhängig von deren Einkommen und Verbrauch von Wärmeenergie (Heizung und Warmwasser).

[if Combi] Die prozentualen Höhen des Aufschlags sowie der Förderung sind für alle Haushalte gleich, unabhängig von deren Einkommen und Verbrauch von Wärmeenergie (Heizung und Warmwasser).

Polluter-pays

[if Push] Die prozentuale Höhe des Aufschlags richtet sich nach dem Pro-Kopf-Verbrauch von Wärmeenergie (Heizung und Warmwasser) im Haushalt. Je niedriger der Verbrauch ist, desto niedriger fällt der Aufschlag aus. Somit wären Haushalte mit einem niedrigeren Pro-Kopf-Verbrauch gegenüber Haushalten mit höherem Verbrauch im Vorteil.

[if Pull] Die prozentuale Höhe der Förderung richtet sich nach dem Pro-Kopf-Verbrauch von Wärmeenergie (Heizung und Warmwasser) im Haushalt. Je niedriger der Verbrauch ist, desto höher fällt die Förderung aus. Somit wären Haushalte mit einem niedrigeren Pro-Kopf-Verbrauch gegenüber Haushalten mit höherem Verbrauch im Vorteil.

[if Combination] Die prozentualen Höhen des Aufschlags sowie der Förderung richten sich nach dem Pro-Kopf-Verbrauch von Wärmeenergie (Heizung und Warmwasser) im Haushalt. Je niedriger der Verbrauch ist, desto niedriger fällt der Preisaufschlag und desto höher fällt die Förderung aus. Somit wären Haushalte mit einem niedrigeren Pro-Kopf-Verbrauch gegenüber Haushalten mit höherem Verbrauch im Vorteil.

Need-based

[if Push] Die prozentuale Höhe des Aufschlags richtet sich nach dem Haushaltseinkommen. Je niedriger das Einkommen ist, desto niedriger fällt der Aufschlag aus. Somit wären Haushalte mit einem niedrigeren Einkommen gegenüber Haushalten mit höherem Einkommen im Vorteil.

[if Pull] Die prozentuale Höhe der Förderung richtet sich nach dem Haushaltseinkommen. Je niedriger das Einkommen ist, desto höher fällt die Förderung aus. Somit wären Haushalte mit einem niedrigeren Einkommen gegenüber Haushalten mit höherem Einkommen im Vorteil.

[if Combination] Die prozentualen Höhen des Aufschlags sowie der Förderung richten sich nach dem Haushaltseinkommen. Je niedriger das Einkommen ist, desto niedriger fällt der Preisaufschlag und desto höher fällt die Förderung aus. Somit wären Haushalte mit einem niedrigeren Einkommen gegenüber Haushalten mit höherem Einkommen im Vorteil.

Effectiveness:

High effectiveness regarding climate targets

Laut aktuellen wissenschaftlichen Studien kann mit dieser Maßnahme der Verbrauch von Kohle, Heizöl und Gas im privaten Gebäudebereich stark gesenkt werden. Somit würde die Maßnahme einen großen Beitrag zur Erreichung der Klimaziele im Gebäudebereich leisten.

Low effectiveness regarding climate targets

Laut aktuellen wissenschaftlichen Studien kann mit dieser Maßnahme der Verbrauch von Kohle, Heizöl und Gas im privaten Gebäudebereich etwas gesenkt werden. Somit würde die Maßnahme einen kleinen Beitrag zur Erreichung der Klimaziele im Gebäudebereich leisten.

High effectiveness regarding energy security

Laut aktuellen wissenschaftlichen Studien kann mit dieser Maßnahme der Verbrauch von Kohle, Heizöl und Gas im privaten Gebäudebereich stark gesenkt werden. Somit würde die Maßnahme einen großen Beitrag zur Energieversorgungssicherheit [Infobutton] in Deutschland leisten.

Low effectiveness regarding energy security

Laut aktuellen wissenschaftlichen Studien kann mit dieser Maßnahme der Verbrauch von Kohle, Heizöl und Gas im privaten Gebäudebereich etwas gesenkt werden. Somit würde die Maßnahme einen kleinen Beitrag zur Energieversorgungssicherheit [Infobutton] in Deutschland leisten.

English translation

Type of instrument:

Push

Annual surcharge on the heating bill for coal, oil and gas heating systems in private residential property amounting to an average of [excluded if distribution principle equality] 15 percent of the invoice amount (in the case of rentals, the landlord must bear the surcharge, but can pass half of the surcharge on to the tenants).

Pull

Financial subsidy for the conversion of coal, oil and gas heating systems to more climate-friendly models in private residential property amounting to an average of [excluded if distribution principle equality] 50 percent of the conversion costs (in the case of rentals, the basic rent can be increased by a maximum of 50 cents/m² as a result of the conversion).

Combination

Combination of an annual surcharge on the heating bill for coal, oil and gas heating systems in private residential property amounting to an average of [excluded if distribution principle equality] 15 percent of the invoice amount (in the case of rentals, the landlord must bear the surcharge, but can pass half of the surcharge on to the tenants) together with a financial conversion subsidy amounting to an average of

[excluded if distribution principle equality] 50 percent of the conversion costs (in the case of rentals, the basic rent can be increased by a maximum of 50 cents/m² as a result of a conversion).

Distribution:

Equality

[if Push] The percentage surcharge is the same for all households, regardless of their income and consumption of heating energy (heating and hot water).

[if Pull] The percentage of the subsidy is the same for all households, regardless of their income and consumption of thermal energy (heating and hot water).

[if Combi] The percentages of the surcharge and the subsidy are the same for all households, regardless of their income and consumption of thermal energy (heating and hot water).

Polluter-pays

[if Push] The percentage of the surcharge depends on the per capita consumption of thermal energy (heating and hot water) in the household. The lower the consumption, the lower the surcharge. Households with a lower per capita consumption would therefore have an advantage over households with a higher consumption.

[if Pull] The percentage of the subsidy depends on the per capita consumption of thermal energy (heating and hot water) in the household. The lower the consumption, the higher the subsidy. Households with a lower per capita consumption would therefore have an advantage over households with a higher consumption.

[if Combination] The percentage levels of the surcharge and the subsidy are based on the per capita consumption of thermal energy (heating and hot water) in the household. The lower the consumption, the lower the surcharge and the higher the subsidy. Households with a lower per capita consumption would therefore have an advantage over households with a higher consumption.

Need-based

[if Push] The percentage of the surcharge depends on the household income. The lower the income, the lower the surcharge. This would give households with a lower income an advantage over households with a higher income.

[if Pull] The percentage of the subsidy depends on the household income. The lower the income, the higher the subsidy. This means that households with a lower income would have an advantage over households with a higher income.

[if Combination] The percentage levels of the surcharge and the subsidy depend on the household income. The lower the income, the lower the surcharge and the higher the subsidy. This would give households with a lower income an advantage over households with a higher income.

Effectiveness:

High effectiveness regarding climate targets

According to current scientific studies, this measure can significantly reduce the consumption of coal, heating oil and gas in the private building sector. The measure would therefore make a large contribution to achieving the climate targets in the building sector.

Low effectiveness regarding climate targets

According to current scientific studies, this measure can slightly reduce the consumption of coal, heating oil and gas in the private building sector. The measure would therefore make a small contribution to achieving the climate targets in the building sector.

High effectiveness regarding energy security

According to current scientific studies, this measure can significantly reduce the consumption of coal, heating oil and gas in the private building sector. The measure would therefore make a large contribution to the energy security in Germany.

Low effectiveness regarding energy security

According to current scientific studies, this measure can significantly reduce the consumption of coal, heating oil and gas in the private building sector. The measure would therefore make a small contribution to the energy security in Germany.

Experimental setup of factors and levels in the three runs per participant

Each participant was randomly assigned to one of the following sets.

Table S21: List of sets, vignettes and corresponding factorial levels used in the experiment

Set	Vig.	Type of instrument	Distribution principle	Communicated effectiveness	<i>n's</i> ¹⁴
1	1	Combi	Need	Energy security (low)	138
1	2	Pull	Polluter-pays	Climate targets (low)	
1	3	Pull	Equality	Energy security (high)	
2	1	Push	Polluter-pays	Climate targets (high)	137
2	2	Pull	Polluter-pays	Energy security (low)	
2	3	Pull	Need	Climate targets (high)	
3	1	Pull	Need	Energy security (high)	132
3	2	Push	Need	Energy security (low)	
3	3	Push	Polluter-pays	Energy security (high)	
4	1	Pull	Need	Energy security (high)	133
4	2	Pull	Equality	Climate targets (high)	
4	3	Push	Need	Climate targets (high)	
5	1	Push	Need	Climate targets (low)	135
5	2	Combi	Need	Climate targets (high)	
5	3	Pull	Need	Energy security (low)	
6	1	Combi	Polluter-pays	Climate targets (low)	138

¹⁴ Sum is equal to the full experimental sample (see Table S1).

6	2	Pull	Equality	Climate targets (low)	
6	3	Combi	Equality	Energy security (high)	
7	1	Push	Need	Energy security (high)	133
7	2	Pull	Polluter-pays	Climate targets (low)	
7	3	Push	Polluter-pays	Climate targets (high)	
8	1	Pull	Equality	Energy security (high)	135
8	2	Push	Equality	Climate targets (low)	
8	3	Combi	Equality	Climate targets (high)	
9	1	Combi	Need	Energy security (low)	136
9	2	Push	Polluter-pays	Energy security (low)	
9	3	Push	Need	Climate targets (low)	
10	1	Pull	Equality	Climate targets (high)	136
10	2	Pull	Need	Energy security (low)	
10	3	Push	Equality	Energy security (high)	
11	1	Push	Equality	Climate targets (low)	136
11	2	Pull	Need	Climate targets (low)	
11	3	Push	Need	Energy security (low)	
12	1	Pull	Polluter-pays	Energy security (high)	144
12	2	Combi	Equality	Energy security (high)	
12	3	Push	Need	Energy security (high)	
13	1	Pull	Polluter-pays	Climate targets (high)	132
13	2	Push	Equality	Climate targets (high)	
13	3	Pull	Equality	Climate targets (low)	
14	1	Push	Polluter-pays	Climate targets (low)	131
14	2	Combi	Equality	Climate targets (low)	
14	3	Push	Equality	Energy security (low)	
15	1	Pull	Need	Climate targets (low)	140
15	2	Pull	Polluter-pays	Energy security (high)	
15	3	Combi	Equality	Climate targets (low)	
16	1	Combi	Polluter-pays	Climate targets (high)	131
16	2	Combi	Equality	Climate targets (low)	

16	3	Combi	Need	Energy security (high)	
17	1	Combi	Polluter-pays	Energy security (high)	130
17	2	Pull	Polluter-pays	Energy security (low)	
17	3	Push	Equality	Energy security (low)	
18	1	Pull	Equality	Energy security (low)	132
18	2	Push	Polluter-pays	Energy security (low)	
18	3	Combi	Need	Energy security (low)	
19	1	Push	Polluter-pays	Climate targets (low)	135
19	2	Push	Equality	Energy security (high)	
19	3	Combi	Polluter-pays	Energy security (high)	
20	1	Pull	Need	Climate targets (high)	141
20	2	Combi	Need	Energy security (high)	
20	3	Combi	Equality	Energy security (low)	
21	1	Combi	Need	Climate targets (low)	131
21	2	Push	Equality	Climate targets (high)	
21	3	Combi	Polluter-pays	Climate targets (high)	
22	1	Combi	Need	Climate targets (high)	143
22	2	Pull	Polluter-pays	Climate targets (high)	
22	3	Combi	Equality	Energy security (low)	
23	1	Push	Polluter-pays	Energy security (low)	140
23	2	Pull	Equality	Energy security (low)	
23	3	Combi	Polluter-pays	Energy security (high)	
24	1	Push	Need	Climate targets (high)	138
24	2	Combi	Equality	Climate targets (high)	
24	3	Combi	Polluter-pays	Climate targets (low)	