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Climate experts' views on geoengineering depend on their beliefs about climate change impacts

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Supplementary Information

Climate experts' views on geoengineering depend on their beliefs about climate change impacts

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Supplementary Note 1: Overview of solar radiation management and carbon dioxide removal technologies

Geoengineering methods deliberately intervene in the earth's climate system to counter the impacts of climate change. While our paper focuses on solar radiation management (SRM), a broader definition of geoengineering also includes carbon dioxide removal (CDR).

SRM technologies enhance the earth's albedo and thus reflect part of the solar radiation back into space. With less sun energy reaching the earth's surface, global surface temperatures would fall. The most prominent proposal is Stratospheric Aerosol Injection (SAI). Other ideas involve, for example, cloud brightening, the deployment of space mirrors, or the whitening of rooftops. SAI implies the injections of aerosol particles (usually sulphates) into the lower stratosphere. Low concentrations of sulphate particles is natural to the stratosphere. SAI would increase concentrations to enhance the earth's albedo. The most cited example for a reduction in average global temperatures following the increase of sulphate particles in the stratosphere is the eruption of Mount Pinatubo in 1991. The event caused a temporary increase in stratospheric aerosols and a rapid decrease in surface temperatures of about 0.5 degree Celsius in the following year[1]. To keep a desired level of temperature, SAI would have to be applied continuously as aerosols sediment out of the stratosphere over time (approximately within one year). In contrast to CDR methods, SRM could have a rapid effect on temperature. Pre-industrial temperature levels could be reached within one or two decades[2]. However, SAI (and other SRM technologies) comes with potential risks and side effects. These involve an increase in chemical ozone loss at high latitudes[3,4], changes in regional precipitation patterns[5], as well an immense stress on the climate and ecosystem in case SRM is determined abruptly[6,7]. Moreover, SRM addresses only temperature increase. Other impacts of climate change, such as ocean acidification, would still persist[8,9]. Recent research suggests that there would be no net global benefit of SRM on agriculture as the damages due to scattered sunlight equal the benefits from cooling[10]. Direct costs of stratospheric SRM have been estimated to be in the tens of billions of US dollars per year[11,12], which is just a small fraction of the gross domestic product of the US. The costs of SRM is thus unlikely to be the limiting factor in deployment considerations. SRM methods are relatively cheap according to some estimates and could easily be deployed unilaterally[8,9,13,14].

CDR methods lower the atmospheric CO_2 concentrations by either accelerating the natural removal of CO_2 or by directly extracting CO_2 from the atmosphere with the help of suitable technologies. With current technology, they would have to be deployed at large-scale for at least one century to be able to significantly reduce atmospheric CO_2 concentrations. Nonetheless, global warming would continue for at least a decade after CDR is applied as the climate system is slow to adapt[15]. CDR technologies are thus not suitable for a rapid intervention in the climate system[7].

Supplementary Table 1: Estimations of regional climate change impacts and respondents' expectations

Supplementary Table 1 shows results from an ordered probit model on the respondents' expectations about climate change impacts in their home country. The four possible answer categories range from very negative to positive. We show results for the whole sample as well as for both sub-samples separately. The results show that the estimations from BHM (*percentage change in GDP in 2100*) as well as current GDP per capita both have a significant effect. The higher the predicted change in GDP in 2100 due to climate change (implying a gain from increased temperatures) the more likely are more optimistic expectations about climate change impacts in the home country. The higher the GDP per capita in 2015, the more likely are more optimistic expectations.

Respondent's expectations about climate change impacts in their home country

	(1) Expectations	(2) Expectations	(3) Expectations
	All	UNFCCC	IPCC
Percentage change in GDP in 2100	0.66***	0.71***	0.68*
	(5.16)	(5.09)	(1.80)
GDP per capita	0.18***	0.17***	0.23**
	(4.34)	(3.42)	(2.28)
Percentage change in GDP in 2100 # GDP per capita	-0.11***	-0.14***	-0.08
	(-3.92)	(-4.10)	(-1.16)
Expected global CC impact: negative	0.77***	0.82***	0.68***
	(6.47)	(5.86)	(2.89)
Expected global CC impact: neither nor	2.09***	1.97***	3.24***
	(8.81)	(7.20)	(6.83)
Expected global CC impact: positive	3.78***	3.61***	
	(5.56)	(4.95)	
Natural sciences (d)	-0.22*	-0.29*	-0.12
	(-1.94)	(-1.85)	(-0.57)
Male (d)	0.01	-0.01	0.29
	(0.05)	(-0.09)	(1.09)
CO_2 per capita	-37.59**	-30.59	-60.14*
	(-2.37)	(-1.62)	(-1.72)
Optimistic about GHG reductions	0.12	0.33***	-0.41**
	(1.15)	(2.73)	(-2.16)
Optimistic about INDCs	0.01	-0.03	0.00
	(0.10)	(-0.25)	(0.02)
Log pseudolikelihood	-407.87	-293.15	-103.66
LR-test	0.00	0.00	0.00
Pseudo R^2	0.18	0.20	0.20
Observations	477	341	136

The numbers show estimated coefficients of ordered probit estimations and z-values in parentheses. The models are estimated with maximum likelihood, using heteroscedasticity robust standard errors. The stochastic component in the models is assumed to be normally distributed. The dependent variable has four categories, ranging from very negative (lowest) to positive (highest). Level of significance: * $P < 0.10$, ** $P < 0.05$, *** $P < 0.01$. (d) indicates dummy variables.

Supplementary Table 2: Summary statistics of all variables included in the main regressions

Supplementary Table 2 shows a correlation matrix between the dependent variables (a) and summary statistics of all variables included in the main regressions for the pooled sample (b), as well as for the two subsamples (c). Definitions of all variables included in the main regressions that were constructed from the survey dataset or taken from additional datasets are shown in (d) and (e).

a) Pairwise correlation table of the dependent variables

	Inclusion in climate negotiations	Investment in R&D	Deployment in case of emergency
Inclusion in climate negotiations	1		
Investment in R&D	0.6046	1	
Deployment in case of emergency	0.4223	0.5748	1

The table shows Pearson's correlation coefficients for the dependent variables (4-point Likert scale). All correlations are significant at $P < 0.01$. The "I don't know" responses are not included.

b) Summary statistics of all variables included in the main regressions for the pooled sample

	Pooled			
	Count	**Mean**	**Std. Deviation**	**Min-Max**
Dependent variables				
Including geoengineering in international climate negotiations (d)	686	0.45	0.50	0 – 1
More investment in R&D on geoengineering technologies (d)	662	0.53	0.50	0 – 1
Large-scale deployment of geoengineering in case of a climate emergency (d)	579	0.64	0.48	0 – 1
Control variables				
Percentage loss in GDP in 2100	721	0.48	0.38	0 – 0.96
Percentage gain in GDP in 2100	721	0.35	0.97	0 – 14.13
Percentage change in GDP in 2100	721	-0.14	1.19	-0.96 – 14.13
Vulnerability Index	721	48.41	37.67	0
Expected home country CC impact	637	1.87	0.69	1 – 4
Expect severe home country damages (d)	637	0.30	0.46	0 – 1
GDP per capita	719	2.29	2.27	0.03 – 10.19
CO_2 per capita	722	0.01	0.01	0. 00 – 0.04
IPCC (d)	723	0.30	0.46	0 – 1
Expected global CC impact	713	1.57	0.62	1 – 4
Expect severe global damages (d)	713	0.49	0.50	0 – 1
Optimistic about GHG reductions	645	2.66	0.54	1 – 4
Optimistic about INDCs	594	1.85	0.58	1 – 4
Negotiation scope	674	3.35	0.52	1.2 – 4
Male (d)	722	0.71	0.46	0 – 1
Training: Natural sciences (d)	688	0.37	0.48	0 – 1
Employer organization: National governmental organization (d)	702	0.44	0.50	0 – 1
Age	621	48.11	11.73	22 - 76

Notes: (d) indicates dummy variables.

c) Summary statistics of all variables included in the main regressions for the two subsamples

	UNFCCC				IPCC			
	Count	**Mean**	**Std. Deviation**	**Min-Max**	**Count**	**Mean**	**Std. Deviation**	**Min-Max**
Dependent variables								
Including geoengineering in international climate negotiations (d)	482	0.50	0.50	0 – 1	204	0.31	0.47	0 – 1
More investment in R&D on geoengineering technologies (d)	456	0.64	0.48	0 – 1	206	0.31	0.46	0 – 1
Large-scale deployment of geoengineering in case of a climate emergency (d)	403	0.68	0.47	0 – 1	176	0.52	0.50	0 – 1
Control variables								
Percentage loss in GDP in 2100	508	0.55	0.38	0 – 0.96	213	0.34	0.33	0 – 0.96
Percentage gain in GDP in 2100	508	0.33	1.04	0 – 14.13	213	0.39	0.77	0 – 4.19
Percentage change in GDP in 2100	508	-0.21	1.26	-0.96 – 14.13	213	0.05	0.98	-0.96 – 4.19
Vulnerability Index	496	48.23	12.78	23.88 - 73.97	213	37.74	11.02	23.88 - 69.74
Expected home country CC impact	446	1.82	0.71	0 – 4	191	1.99	0.63	0 – 4
Expect severe home country damages (d)	446	0.35	0.48	0 – 1	191	0.19	0.40	0 – 1
GDP per capita	506	1.75	2.10	0.03 – 10.19	213	3.57	2.15	0.07 – 8.10
CO_2 per capita	509	0.00	0.01	0.00 – 0.04	213	0.01	0.01	0.00 – 0.02
Expected global CC impact	502	1.56	0.64	0 – 4	211	1.60	0.56	0 – 3
Expect severe global damages (d)	502	0.51	0.50	0 – 1	211	0.44	0.50	0 – 1
Optimistic about GHG reductions	458	2.67	0.54	1 – 4	187	2.66	0.56	1 – 4
Optimistic about INDCs	424	1.95	0.58	1 – 4	170	1.60	0.50	1 – 3
Negotiation scope	474	3.40	0.50	1.6 – 4	200	3.24	0.55	1.2 – 4
Male (d)	509	0.67	0.47	0 – 1	213	0.79	0.41	0 – 1
Training: Natural sciences (d)	476	0.30	0.46	0 – 1	212	0.52	0.50	0 – 1
Employer organization: National governmental organization (d)	490	0.58	0.49	0 – 1	212	0.11	0.32	0 – 1
Age	434	45.39	11.41	22 - 76	187	54.44	9.89	27 - 75

Notes: (d) indicates dummy variables.

d) Definitions of variables constructed from the survey dataset

Including geoengineering in international climate negotiations (d)	Equal to 1 if answer to the question "How important do you think it is to include geoengineering in current international climate change negotiations?" is "very important" or "important", 0 otherwise.
More investment in R&D on geoengineering technologies (d)	Equal to 1 if answer to the question "To what degree do you think that more investments should be directed to R&D for geoengineering technologies such as solar radiation management, aimed at lowering average global surface temperature?" is "high degree" or "moderate degree", 0 otherwise.
Large-scale deployment of geoengineering in case of a climate emergency (d)	Equal to 1 if answer to the question "In the event of an approaching 'climate emergency', (…), would you favour large-scale deployment of geo-engineering?" is "very much" or "moderately", 0 otherwise.
Expect severe home country damages (d)	Equal to 1 if answer to the question "How would you assess the consequences of climate change on future living conditions up to 2100 in your home country?" is "very negative", 0 otherwise.
Expected home country CC impact	Equal to 1 if answer to the question "How would you assess the consequences of climate change on future living conditions up to 2100 in your home country?" is "very negative", 2 if "negative", 3 if "neither nor", 4 if "positive."
Expect severe global damages (d)	Equal to 1 if answer to the question "How would you assess the consequences of climate change on future global living conditions up to 2100?" is "very negative", 0 otherwise.
Expected global CC impact	Equal to 1 if answer to the question "How would you assess the consequences of climate change on future global living conditions up to 2100?" is "very negative", 2 if "negative", 3 if "neither nor", 4 if "positive."
Optimistic about GHG reductions	Mean value of the answers to the question "To what degree do you think the following countries or groups of countries will reduce their greenhouse gas emissions relative to "business as usual" even without any new international climate agreement up to 2050?" for country groups AOSIS; BASIC without China, China, EU, and USA. Answer categories and their values are: "high degree" (4), "moderate degree" (3), "low degree" (2), "no degree" (1).
Optimistic about INDCs	Mean value of the answers to four question concerning INDCs: (a) How confident are you that the INDC, (…), will be consistent in aggregate with the goal of limiting average global warming to under 2°C? (b) In case the INDC pledged in 2015 fall short of the 2°C target, how confident are you that the ensuing monitoring and reporting activities will stimulate increased INDC by the majority of countries? (c) In case the INDC pledged in 2015 fall short of the 2°C target and new INDC commitments are made, how confident are you that the revised and increased INDC will then be consistent in aggregate with the goal of limiting average global warming to under 2°C? (d) In general, how confident are you that the majority of countries will fulfil their INDC? Answer categories and their values are: "very confident" (4), "confident" (3), "moderately confident" (2), "not confident at all" (1).
Negotiation scope	Mean value of the answers to the question "How important do you think it is to include the following issues in current international climate change negotiations?" for issues: (a) comprehensive quantitative targets for a reduction in global GHG emissions; (b) quantitative GHG emission reduction targets for individual economic sectors; (c) R&D and technology transfer; (d) Land-use change and reforestation; (e) adaptation measures. Answer categories and their values are: "very important" (4), "important" (3), "moderately important" (2), "not important at all" (1).
Male (d)	Equal to 1 if respondent is male, 0 if female.
Natural sciences (d)	Equal to 1 if respondent's highest degree of training is in "natural sciences", 0 otherwise.
National governmental organization (d)	Equal to 1 if respondent's type of current employer organization is "national governmental organization", 0 otherwise.
Age	Respondent's age in 2015 in years.

e) Definitions of variables from additional datasets

Name	Description
GDP per capita	Per capita GDP in 2015 in ten thousand current US$ in the country of citizenship (IPCC sample) or delegation country (UNFCCC sample), if not stated otherwise. The data is taken from the World Bank's World Development Indicators. We supplemented missing data for Cook Islands and Palestine with 2014 data from the UN World Statistics Pocketbook. For Papua New Guinea the latest available data is for the year 2014.
CO_2 per capita	Per capita CO_2 emission in 2015 in kilotons in the country of citizenship (IPCC sample) or delegation country (UNFCCC sample), if not stated otherwise. The data is taken from the European Commission. We supplemented missing data for Nauru and Tuvalu with CO_2 per capita for the year 2014 from the World Bank.
Percentage loss in GDP in 2100	Losses in the country of delegation (nationality in IPCC sample) as percentage change in GDP per capita in 2100 due to temperature increase from unmitigated climate change (RCP(8.5) scenario) compared to a scenario without climate change, assuming high baseline growth and fast income convergence (SSP5). Observations with gains from temperature increase are set to zero. The data is taken from Burke et al.[16] and refers to the country of citizenship (IPCC sample) or delegation country (UNFCCC sample), if not stated otherwise.
Percentage gain in GDP in 2100	Gains in the country of delegation (nationality in IPCC sample) as percentage change in GDP per capita in 2100 due to temperature increase from unmitigated climate change (RCP(8.5) scenario) compared to a scenario without climate change, assuming high baseline growth and fast income convergence (SSP5). Observations with losses from temperature increase are set to zero. The data is taken from Burke et al.[16] (BHM) and refers to the country of citizenship (IPCC sample) or delegation country (UNFCCC sample), if not stated otherwise.
Percentage change in GDP in 2100	Percentage change in GDP per capita in 2100 due to temperature increase from unmitigated climate change (RCP(8.5) scenario) compared to a scenario without climate change, assuming high baseline growth and fast income convergence (SSP5), in the country of delegation (nationality in IPCC sample). Negative values indicate losses and positive values indicate gains from increased temperatures. The data is taken from Burke et al.[16] (BHM) and refers to the country of citizenship (IPCC sample) or delegation country (UNFCCC sample), if not stated otherwise.
Vulnerability Index	We use the (inverse) ND-GAIN Index for the year 2015. The index ranges between 0 and 100 with higher values indicating higher vulnerability. The ND-GAIN Index incorporates 74 variables to measure vulnerability and readiness for 192 UN countries. The vulnerability assessment considers the sectors food, water, health, ecosystem services, human habitat and infrastructure. The readiness assessment considers economic, governance and social readiness. A detailed description of the methodology and the data on the ND-GAIN Index can be downloaded from https://gain.nd.edu/our-work/country-index/ (accessed in May 2019). The values refer to the country of citizenship (IPCC sample) or delegation country (UNFCCC sample), if not stated otherwise.

Supplementary Table 3: Comparison of respondents' views on geoengineering with their views on conventional mitigation

Supplementary Table 3 shows the results from Pearson χ^2 tests comparing the distribution of answers for geoengineering with the distribution of answers for all other issues. The results show that the distribution for geoengineering is significantly different from all other issues.

Pearson χ^2 results

	Degrees of Freedom	Pearson χ^2 value	P-value
Global GHG emission targets	4	1800	0.00
Sectorial GHG emission targets	4	432.80	0.00
R&D, technology transfer	4	885.87	0.00
Land-use change and reforestation	4	898.53	0.00
Adaptation	4	1300	0.00

Supplementary Table 4: Inclusion of “I don’t know” answers

Supplementary Table 4 show our main regression results if we categorize the respondents who chose the “I don’t know” option as not supportive of geoengineering. The results are generally very similar to the regressions shown in the main paper. Only small differences arise in the case of deployment of geoengineering (c). The estimated climate change damages by BHM and respondents’ expectations about climate change impacts in the home country still tend to increase the likelihood of support, but the effects are not statistically significant at P < 0.01 or P < 0.05 anymore.

a) Including geoengineering in international climate negotiations

	(1) Supportive	(2) Supportive	(3) Supportive	(4) Supportive
Percentage loss in GDP in 2100	0.19***	0.11		
	(2.72)	(1.35)		
Percentage gain in GDP in 2100	-0.03	-0.02		
	(-0.99)	(-0.71)		
Expect severe home country damages (d)			0.11**	0.06
			(2.12)	(1.25)
GDP per capita		-0.03*		-0.05***
		(-1.90)		(-3.55)
Expect severe global damages (d)	-0.11***	-0.11***	-0.16***	-0.14***
	(-2.82)	(-2.73)	(-3.61)	(-3.24)
CO_2 per capita	1.56	8.88	-2.16	10.92*
	(0.37)	(1.59)	(-0.49)	(1.94)
Optimistic about GHG reductions	-0.02	-0.02	-0.03	-0.02
	(-0.60)	(-0.50)	(-0.71)	(-0.43)
Optimistic about INDCs	0.07**	0.07*	0.08**	0.06*
	(2.00)	(1.82)	(2.04)	(1.69)
Negotiation scope	0.32***	0.31***	0.33***	0.30***
	(7.47)	(7.17)	(7.60)	(6.82)
IPCC (d)	-0.09	-0.07	-0.07	-0.05
	(-1.56)	(-1.33)	(-1.21)	(-0.81)
Male (d)	0.00	0.00	-0.02	-0.01
	(0.02)	(0.07)	(-0.53)	(-0.31)
Natural sciences (d)	-0.08**	-0.09**	-0.09**	-0.10**
	(-2.01)	(-2.12)	(-2.15)	(-2.34)
National governmental organization (d)	0.00	0.00	0.02	0.02
	(0.05)	(0.05)	(0.41)	(0.42)
Age	0.01***	0.01***	0.01***	0.01***
	(2.99)	(3.17)	(3.07)	(3.27)
Log pseudolikelihood	-269.61	-267.00	-247.41	-240.10
LR-test	0.00	0.00	0.00	0.00
Pseudo R^2	0.20	0.20	0.18	0.20
Observations	492	491	447	446

The numbers show binary probit estimations of average marginal effects (discrete effects for dummy variables) and z-values in parentheses. The models are estimated with maximum likelihood, using heteroscedasticity robust standard errors. The stochastic component in the models is assumed to be normally distributed. The dependent variable is a dummy, taking the value 1 if an individual response is categorized as supportive of geoengineering and 0 otherwise. Level of significance: * P < 0.10, ** P < 0.05, *** P < 0.01. (d) indicates dummy variables.

b) More investment in R&D on geoengineering technologies

	(1) Supportive	(2) Supportive	(3) Supportive	(4) Supportive
Percentage loss in GDP in 2100	0.33***	0.22***		
	(5.06)	(2.76)		
Percentage gain in GDP in 2100	0.00	0.01		
	(0.08)	(0.50)		
Expect severe home country damages (d)			0.24***	0.18***
			(4.82)	(3.49)
GDP per capita		-0.04**		-0.06***
		(-2.51)		(-4.22)
Expect severe global damages (d)	-0.09**	-0.09**	-0.18***	-0.17***
	(-2.32)	(-2.22)	(-4.20)	(-3.84)
CO_2 per capita	0.25	8.83*	-2.37	12.46**
	(0.06)	(1.69)	(-0.57)	(2.25)
Optimistic about GHG reductions	0.05	0.06	0.06	0.08**
	(1.39)	(1.55)	(1.57)	(2.03)
Optimistic about INDCs	0.13***	0.12***	0.15***	0.13***
	(3.39)	(3.15)	(3.71)	(3.25)
IPCC (d)	-0.23***	-0.21***	-0.23***	-0.20***
	(-3.81)	(-3.51)	(-3.81)	(-3.33)
Male (d)	0.03	0.04	0.03	0.04
	(0.72)	(0.82)	(0.53)	(0.82)
Natural sciences (d)	-0.05	-0.06	-0.05	-0.07
	(-1.16)	(-1.40)	(-1.21)	(-1.63)
National governmental organization (d)	0.05	0.06	0.07	0.09*
	(1.11)	(1.27)	(1.51)	(1.85)
Age	0.00*	0.00*	0.00	0.00
	(1.74)	(1.75)	(1.27)	(1.35)
Log pseudolikelihood	-292.11	-288.25	-266.64	-257.53
LR-test	0.00	0.00	0.00	0.00
Pseudo R^2	0.16	0.17	0.16	0.18
Observations	503	502	457	456

The numbers show binary probit estimations of average marginal effects (discrete effects for dummy variables) and z-values in parentheses. The models are estimated with maximum likelihood, using heteroscedasticity robust standard errors. The stochastic component in the models is assumed to be normally distributed. The dependent variable is a dummy, taking the value 1 if an individual response is categorized as supportive of geoengineering and 0 otherwise. Level of significance: * P < 0.10, ** P < 0.05, *** P < 0.01. (d) indicates dummy variables.

c) Large-scale deployment of geoengineering in case of a climate emergency

	(1) Supportive	(2) Supportive	(3) Supportive	(4) Supportive
Percentage loss in GDP in 2100	0.11	0.12		
	(1.59)	(1.41)		
Percentage gain in GDP in 2100	0.04	0.04		
	(1.36)	(1.32)		
Expect severe home country damages (d)			0.09*	0.09*
			(1.75)	(1.72)
GDP per capita		0.00		0.00
		(0.10)		(0.21)
Expect severe global damages (d)	-0.03	-0.03	-0.08*	-0.08*
	(-0.72)	(-0.75)	(-1.74)	(-1.75)
CO_2 per capita	-2.49	-2.78	-2.26	-3.05
	(-0.60)	(-0.51)	(-0.55)	(-0.57)
Optimistic about GHG reductions	0.06	0.06	0.07*	0.07*
	(1.64)	(1.61)	(1.95)	(1.90)
Optimistic about INDCs	0.03	0.03	0.05	0.05
	(0.68)	(0.68)	(1.14)	(1.16)
IPCC (d)	-0.17***	-0.17***	-0.17***	-0.18***
	(-2.65)	(-2.64)	(-2.71)	(-2.71)
Male (d)	0.02	0.02	0.02	0.01
	(0.44)	(0.41)	(0.32)	(0.28)
Natural sciences (d)	-0.09**	-0.09**	-0.11**	-0.11**
	(-1.99)	(-1.97)	(-2.44)	(-2.41)
National governmental organization (d)	-0.03	-0.04	-0.03	-0.03
	(-0.75)	(-0.79)	(-0.61)	(-0.65)
Age	0.00*	0.00*	0.00*	0.00*
	(1.91)	(1.94)	(1.93)	(1.95)
Log pseudolikelihood	-296.30	-295.92	-270.00	-269.72
LR-test	0.00	0.00	0.00	0.00
Pseudo R^2	0.05	0.05	0.06	0.06
Observations	503	502	458	457

The numbers show binary probit estimations of average marginal effects (discrete effects for dummy variables) and z-values in parentheses. The models are estimated with maximum likelihood, using heteroscedasticity robust standard errors. The stochastic component in the models is assumed to be normally distributed. The dependent variable is a dummy, taking the value 1 if an individual response is categorized as supportive of geoengineering and 0 otherwise. Level of significance: * P < 0.10, ** P < 0.05, *** P < 0.01. (d) indicates dummy variables.

Supplementary Table 5: Complete regression table

Supplementary Table 5 reproduces the main regression tables with all control variables and model statistics.

a) Including geoengineering in international climate negotiations

	(1) Supportive	(2) Supportive	(3) Supportive	(4) Supportive
Percentage loss in GDP in 2100	0.19***	0.11		
	(2.72)	(1.35)		
Percentage gain in GDP in 2100	-0.03	-0.02		
	(-0.99)	(-0.71)		
Expect severe home country damages (d)			0.11**	0.06
			(2.12)	(1.25)
GDP per capita		-0.03*		-0.05***
		(-1.90)		(-3.55)
Expect severe global damages (d)	-0.11***	-0.11***	-0.16***	-0.14***
	(-2.82)	(-2.73)	(-3.61)	(-3.24)
CO_2 per capita	1.56	8.88	-2.16	10.92*
	(0.37)	(1.59)	(-0.49)	(1.94)
Optimistic about GHG reductions	-0.02	-0.02	-0.03	-0.02
	(-0.60)	(-0.50)	(-0.71)	(-0.43)
Optimistic about INDCs	0.07**	0.07*	0.08**	0.06*
	(2.00)	(1.82)	(2.04)	(1.69)
Negotiation scope	0.32***	0.31***	0.33***	0.30***
	(7.47)	(7.17)	(7.60)	(6.82)
IPCC (d)	-0.09	-0.07	-0.07	-0.05
	(-1.56)	(-1.33)	(-1.21)	(-0.81)
Male (d)	0.00	0.00	-0.02	-0.01
	(0.02)	(0.07)	(-0.53)	(-0.31)
Natural sciences (d)	-0.08**	-0.09**	-0.09**	-0.10**
	(-2.01)	(-2.12)	(-2.15)	(-2.34)
National governmental organization (d)	0.00	0.00	0.02	0.02
	(0.05)	(0.05)	(0.41)	(0.42)
Age	0.01***	0.01***	0.01***	0.01***
	(2.99)	(3.17)	(3.07)	(3.27)
Log pseudolikelihood	-269.61	-266.00	-247.41	-240.10
LR-test	0.00	0.00	0.00	0.00
Pseudo R^2	0.20	0.20	0.18	0.20
Observations	492	491	447	446

The numbers show binary probit estimations of average marginal effects (discrete effects for dummy variables) and z-values in parentheses. The models are estimated with maximum likelihood, using heteroscedasticity robust standard errors. The stochastic component in the models is assumed to be normally distributed. The dependent variable is a dummy, taking the value 1 if an individual response is categorized as supportive of geoengineering and 0 otherwise. Level of significance: * $P < 0.10$, ** $P < 0.05$, *** $P < 0.01$. (d) indicates dummy variables.

b) More investment in R&D on geoengineering technologies

	(1) Supportive	(2) Supportive	(3) Supportive	(4) Supportive
Percentage loss in GDP in 2100	0.36***	0.23***		
	(5.50)	(2.85)		
Percentage gain in GDP in 2100	-0.00	0.01		
	(-0.15)	(0.33)		
Expect severe home country damages (d)			0.25***	0.18***
			(5.05)	(3.53)
GDP per capita		-0.05***		-0.07***
		(-2.99)		(-4.90)
Expect severe global damages (d)	-0.09**	-0.09**	-0.19***	-0.17***
	(-2.25)	(-2.18)	(-4.17)	(-3.82)
CO_2 per capita	1.21	11.75**	-2.11	15.71***
	(0.30)	(2.16)	(-0.50)	(2.73)
Optimistic about GHG reductions	0.05	0.05	0.06	0.08*
	(1.33)	(1.44)	(1.49)	(1.95)
Optimistic about INDCs	0.13***	0.12***	0.16***	0.13***
	(3.64)	(3.35)	(4.02)	(3.46)
IPCC (d)	-0.21***	-0.19***	-0.22***	-0.18***
	(-3.61)	(-3.24)	(-3.60)	(-3.04)
Male (d)	0.05	0.06	0.04	0.06
	(1.10)	(1.25)	(0.85)	(1.29)
Natural sciences (d)	-0.05	-0.06	-0.05	-0.08*
	(-1.19)	(-1.51)	(-1.17)	(-1.75)
National governmental organization (d)	0.04	0.04	0.06	0.07
	(0.80)	(0.93)	(1.34)	(1.52)
Age	0.00	0.00*	0.00	0.00
	(1.62)	(1.66)	(1.35)	(1.35)
Log pseudolikelihood	-272.37	-267.12	-249.43	-236.98
LR-test	0.00	0.00	0.00	0.00
Pseudo R^2	0.18	0.19	0.17	0.21
Observations	477	476	432	431

The numbers show binary probit estimations of average marginal effects (discrete effects for dummy variables) and z-values in parentheses. The models are estimated with maximum likelihood, using heteroscedasticity robust standard errors. The stochastic component in the models is assumed to be normally distributed. The dependent variable is a dummy, taking the value 1 if an individual response is categorized as supportive of geoengineering and 0 otherwise. Level of significance: * P < 0.10, ** P < 0.05, *** P < 0.01. (d) indicates dummy variables.

c) Large-scale deployment of geoengineering in case of a climate emergency

	(1) Supportive	(2) Supportive	(3) Supportive	(4) Supportive
Percentage loss in GDP in 2100	0.19**	0.18*		
	(2.55)	(1.89)		
Percentage gain in GDP in 2100	0.04	0.04		
	(1.23)	(1.28)		
Expect severe home country damages (d)			0.11**	0.10*
			(2.06)	(1.65)
GDP per capita		-0.01		-0.01
		(-0.37)		(-0.74)
Expect severe global damages (d)	-0.04	-0.04	-0.09*	-0.09*
	(-0.86)	(-0.91)	(-1.83)	(-1.76)
CO_2 per capita	-2.15	-0.53	-3.58	-0.69
	(-0.49)	(-0.09)	(-0.83)	(-0.12)
Optimistic about GHG reductions	0.08*	0.08*	0.09**	0.09**
	(1.91)	(1.89)	(2.07)	(2.07)
Optimistic about INDCs	0.04	0.04	0.07	0.06
	(0.90)	(0.86)	(1.50)	(1.37)
IPCC (d)	-0.18***	-0.18***	-0.19***	-0.19***
	(-2.81)	(-2.74)	(-2.84)	(-2.72)
Male (d)	0.06	0.07	0.05	0.05
	(1.20)	(1.20)	(0.87)	(0.92)
Natural sciences (d)	-0.10**	-0.10**	-0.12**	-0.12**
	(-1.98)	(-1.98)	(-2.40)	(-2.43)
National governmental organization (d)	-0.06	-0.06	-0.05	-0.05
	(-1.11)	(-1.13)	(-0.88)	(-0.89)
Age	0.00**	0.00**	0.00**	0.01**
	(2.39)	(2.44)	(2.33)	(2.41)
Log pseudolikelihood	-259.47	-258.83	-234.98	-234.37
LR-test	0.00	0.00	0.00	0.00
Pseudo R^2	0.07	0.08	0.08	0.08
Observations	426	425	385	384

The numbers show binary probit estimations of average marginal effects (discrete effects for dummy variables) and z-values in parentheses. The models are estimated with maximum likelihood, using heteroscedasticity robust standard errors. The stochastic component in the models is assumed to be normally distributed. The dependent variable is a dummy, taking the value 1 if an individual response is categorized as supportive of geoengineering and 0 otherwise. Level of significance: * P < 0.10, ** P < 0.05, *** P < 0.01. (d) indicates dummy variables.

Supplementary Table 6: Dependent variable index

Supplementary Table 2a) shows that the three variables that we use as dependent variables are positively correlated. We therefore generate an index, which simply equals the respondent's average answer to the three questions on geoengineering (Cronbach's $\alpha = 0.78$). Supplementary Table 6 presents OLS regression results on this index variable, using the same independent variables as in our main models. The results are in line with those from the main models. This holds also true if we run tobit models, taking into account the censored nature of our index, or if we transform the index into a binary variable and use binary probit regressions.

Dependent variable index

	(1) Supportive	(2) Supportive	(3) Supportive	(4) Supportive
Percentage loss in GDP in 2100	0.66***	0.51***		
	(5.57)	(3.38)		
Percentage gain in GDP in 2100	0.04	0.06		
	(1.10)	(1.53)		
Expect severe home country damages (d)			0.30***	0.21**
			(3.25)	(2.32)
GDP per capita		-0.06*		-0.11***
		(-1.93)		(-4.86)
Expect severe global damages (d)	-0.24***	-0.23***	-0.35***	-0.31***
	(-3.48)	(-3.35)	(-4.64)	(-4.20)
CO_2 per capita	5.43	18.03*	-3.21	25.65***
	(0.76)	(1.87)	(-0.37)	(2.68)
Optimistic about GHG reductions	0.02	0.03	0.02	0.05
	(0.41)	(0.53)	(0.28)	(0.73)
Optimistic about INDCs	0.20***	0.18***	0.22***	0.18***
	(2.89)	(2.72)	(3.04)	(2.66)
Negotiation scope	0.54***	0.53***	0.56***	0.50***
	(7.95)	(7.71)	(7.70)	(6.98)
IPCC (d)	-0.26***	-0.24**	-0.28***	-0.23**
	(-2.63)	(-2.42)	(-2.72)	(-2.32)
Male (d)	0.13	0.14*	0.09	0.11
	(1.55)	(1.66)	(1.01)	(1.29)
Natural sciences (d)	-0.18**	-0.19***	-0.20**	-0.22***
	(-2.56)	(-2.67)	(-2.58)	(-2.90)
National governmental organization (d)	0.04	0.05	0.08	0.09
	(0.55)	(0.69)	(0.97)	(1.21)
Age	0.01**	0.01**	0.01**	0.01***
	(2.27)	(2.38)	(2.44)	(2.66)
F-test	0.00	0.00	0.00	0.00
Pseudo R^2	0.31	0.31	0.27	0.31
Observations	492	491	447	446

The numbers show estimated coefficients of OLS models and t-values in parentheses, using heteroscedasticity robust standard errors. The stochastic component in the models is assumed to be normally distributed. The dependent variable ranges between 1 and 4. Level of significance: * $P < 0.10$, ** $P < 0.05$, *** $P < 0.01$. (d) indicates dummy variables.

Supplementary Table 7: Ordered probit models

Supplementary Tables 7 presents results from ordered probit models, which keep the ordinal structure of the dependent variable, unlike the binary probit models presented in the main paper. They show that our main results do not change.

a) Including geoengineering in international climate negotiations

	(1) Supportive	(2) Supportive	(3) Supportive	(4) Supportive
Percentage loss in GDP in 2100	0.73***	0.52**		
	(3.95)	(2.29)		
Percentage gain in GDP in 2100	0.00	0.02		
	(0.01)	(0.35)		
Expect severe home country damages (d)			0.25*	0.12
			(1.85)	(0.91)
GDP per capita		-0.09*		-0.16***
		(-1.78)		(-4.25)
Expect severe global damages (d)	-0.32***	-0.30***	-0.39***	-0.34***
	(-3.01)	(-2.88)	(-3.35)	(-2.92)
CO_2 per capita	5.93	24.02	-8.41	32.89**
	(0.53)	(1.57)	(-0.68)	(2.18)
Optimistic about GHG reductions	0.02	0.03	-0.01	0.03
	(0.20)	(0.33)	(-0.10)	(0.34)
Optimistic about INDCs	0.20**	0.18**	0.22**	0.18*
	(2.18)	(1.98)	(2.30)	(1.87)
Negotiation scope	1.03***	1.01***	1.08***	1.01***
	(7.83)	(7.62)	(7.96)	(7.43)
IPCC (d)	-0.20	-0.17	-0.17	-0.11
	(-1.35)	(-1.18)	(-1.09)	(-0.70)
Controls included	*Yes*	*Yes*	*Yes*	*Yes*
Log pseudolikelihood	-578.874	-574.98	-532.51	-521.41
LR-test	0.00	0.00	0.00	0.00
Pseudo R^2	0.13	0.14	0.12	0.14
Observations	492	491	447	446

The numbers show estimated coefficients of ordered probit estimations and z-values in parentheses. The models are estimated with maximum likelihood, using heteroscedasticity robust standard errors. The stochastic component in the models is assumed to be normally distributed. The dependent variable has four categories, ranging from not important to very important (highest to lowest). Level of significance: * P < 0.10, ** P < 0.05, *** P < 0.01. (d) indicates dummy variables. Variables included as controls but not shown: gender, age, training, and employer organization.

b) More investment in R&D on geoengineering technologies

	(1) Supportive	(2) Supportive	(3) Supportive	(4) Supportive
Percentage loss in GDP in 2100	1.15***	0.82***		
	(6.31)	(3.70)		
Percentage gain in GDP in 2100	0.06	0.10*		
	(1.03)	(1.68)		
Expect severe home country damages (d)			0.62***	0.46***
			(4.66)	(3.36)
GDP per capita		-0.14***		-0.20***
		(-2.91)		(-5.06)
Expect severe global damages (d)	-0.24**	-0.23**	-0.47***	-0.43***
	(-2.30)	(-2.20)	(-4.02)	(-3.67)
CO_2 per capita	9.87	37.76***	-0.63	48.87***
	(0.98)	(2.62)	(-0.06)	(3.25)
Optimistic about GHG reductions	0.09	0.10	0.09	0.14
	(0.90)	(1.01)	(0.83)	(1.27)
Optimistic about INDCs	0.39***	0.36***	0.42***	0.36***
	(3.78)	(3.57)	(3.92)	(3.40)
IPCC (d)	-0.51***	-0.46***	-0.56***	-0.49***
	(-3.40)	(-3.03)	(-3.62)	(-3.13)
Controls included	*Yes*	*Yes*	*Yes*	*Yes*
Log pseudolikelihood	-592.74	-586.69	-547.19	-531.79
LR-test	0.00	0.00	0.00	0.00
Pseudo R^2	0.10	0.11	0.08	0.11
Observations	477	476	432	431

The numbers show estimated coefficients of ordered probit estimations and z-values in parentheses. The models are estimated with maximum likelihood, using heteroscedasticity robust standard errors. The stochastic component in the models is assumed to be normally distributed. The dependent variable has four categories, ranging from no degree to high degree (highest to lowest). Level of significance: * P < 0.10, ** P < 0.05, *** P < 0.01. (d) indicates dummy variables. Variables included as controls but not shown: gender, age, training, and employer organization.

c) Large-scale deployment of geoengineering in case of a climate emergency

	(1) Supportive	(2) Supportive	(3) Supportive	(4) Supportive
Percentage loss in GDP in 2100	0.60***	0.54**		
	(3.21)	(2.27)		
Percentage gain in GDP in 2100	0.15**	0.15***		
	(2.56)	(2.62)		
Expect severe home country damages (d)			0.32**	0.27*
			(2.25)	(1.85)
GDP per capita		-0.02		-0.04
		(-0.45)		(-1.19)
Expect severe global damages (d)	-0.03	-0.03	-0.17	-0.16
	(-0.31)	(-0.32)	(-1.37)	(-1.28)
CO_2 per capita	-7.83	-3.59	-10.93	-0.67
	(-0.67)	(-0.25)	(-0.92)	(-0.05)
Optimistic about GHG reductions	0.11	0.11	0.14	0.15
	(1.16)	(1.16)	(1.31)	(1.36)
Optimistic about INDCs	0.23**	0.23**	0.28**	0.26**
	(2.13)	(2.09)	(2.44)	(2.27)
IPCC (d)	-0.26*	-0.25*	-0.26*	-0.24
	(-1.72)	(-1.67)	(-1.69)	(-1.57)
Controls included	*Yes*	*Yes*	*Yes*	*Yes*
Log pseudolikelihood	-517.99	-517.15	-468.96	-467.67
LR-test	0.00	0.00	0.00	0.00
Pseudo R^2	0.05	0.05	0.05	0.05
Observations	426	425	385	384

The numbers show estimated coefficients of ordered probit estimations and z-values in parentheses. The models are estimated with maximum likelihood, using heteroscedasticity robust standard errors. The stochastic component in the models is assumed to be normally distributed. The dependent variable has four categories, ranging from not at all to very much (highest to lowest).. Level of significance: * $P < 0.10$, ** $P < 0.05$, *** $P < 0.01$. (d) indicates dummy variables. Variables included as controls but not shown: gender, age, training, and employer organization.

Supplementary Table 8: Alternative measure of region-specific climate change impacts

In this section, we present regression results where we substitute the data from the BHM study with the ND-GAIN index (*Vulnerability Index*) in 2015. This index is published annually by the University of Notre Dame's Global Adaptation Initiative and includes a range of indicators for six life-supporting sectors as well as a country's adaptation capacity. Supplementary Table 8 presents the results, showing that higher vulnerability of respondents' home country increases their support of geoengineering (except of deployment for which we do not find a significant effect (c)). The effects of the other control variables do not change.

a) Including geoengineering in international climate negotiations

	(1) Supportive	(2) Supportive	(3) Supportive	(4) Supportive
Vulnerability Index	0.01***	0.01***		
	(5.00)	(3.08)		
Expect severe home country damages (d)			0.11**	0.06
			(2.18)	(1.27)
GDP per capita		-0.01		-0.05***
		(-0.52)		(-3.55)
Expect severe global damages (d)	-0.12***	-0.11***	-0.16***	-0.14***
	(-2.96)	(-2.87)	(-3.63)	(-3.25)
CO_2 per capita	10.19**	11.28**	-2.16	10.92*
	(2.02)	(2.04)	(-0.49)	(1.94)
Optimistic about GHG reductions	-0.02	-0.02	-0.03	-0.02
	(-0.64)	(-0.62)	(-0.71)	(-0.43)
Optimistic about INDCs	0.06	0.06	0.08**	0.06*
	(1.61)	(1.60)	(2.04)	(1.69)
Negotiation scope	0.30***	0.30***	0.33***	0.30***
	(7.14)	(7.09)	(7.60)	(6.82)
IPCC (d)	-0.06	-0.06	-0.07	-0.05
	(-1.11)	(-1.09)	(-1.21)	(-0.81)
Controls included	*Yes*	*Yes*	*Yes*	*Yes*
Log pseudolikelihood	-260.86	-260.74	-247.41	-240.10
LR-test	0.00	0.00	0.00	0.00
Pseudo R^2	0.21	0.21	0.18	0.20
Observations	484	484	447	446

The numbers show binary probit estimations of average marginal effects (discrete effects for dummy variables) and z-values in parentheses. The models are estimated with maximum likelihood, using heteroscedasticity robust standard errors. The stochastic component in the models is assumed to be normally distributed. The dependent variable is a dummy, taking the value 1 if an individual response is categorized as supportive of geoengineering and 0 otherwise. Level of significance: * P < 0.10, ** P < 0.05, *** P < 0.01. (d) indicates dummy variables. Variables included as controls but not shown: gender, age, training, and employer organization.

b) More investment in R&D on geoengineering technologies

	(1) Supportive	(2) Supportive	(3) Supportive	(4) Supportive
Vulnerability Index	0.01***	0.01*		
	(5.95)	(1.91)		
Expect severe home country damages (d)			0.25***	0.18***
			(5.12)	(3.59)
GDP per capita		-0.05**		-0.07***
		(-2.39)		(-4.90)
Expect severe global damages (d)	-0.10**	-0.09**	-0.19***	-0.17***
	(-2.43)	(-2.21)	(-4.20)	(-3.84)
CO_2 per capita	8.60*	14.18***	-2.11	15.71***
	(1.72)	(2.61)	(-0.50)	(2.73)
Optimistic about GHG reductions	0.05	0.05	0.06	0.08*
	(1.24)	(1.30)	(1.49)	(1.95)
Optimistic about INDCs	0.12***	0.11***	0.16***	0.13***
	(3.18)	(3.06)	(4.02)	(3.46)
IPCC (d)	-0.19***	-0.18***	-0.21***	-0.18***
	(-3.34)	(-3.30)	(-3.70)	(-3.14)
Controls included	*Yes*	*Yes*	*Yes*	*Yes*
Log pseudolikelihood	-269.77	-266.88	-249.43	-236.98
LR-test	0.00	0.00	0.00	0.00
Pseudo R^2	0.17	0.18	0.17	0.21
Observations	470	470	432	431

The numbers show binary probit estimations of average marginal effects (discrete effects for dummy variables) and z-values in parentheses. The models are estimated with maximum likelihood, using heteroscedasticity robust standard errors. The stochastic component in the models is assumed to be normally distributed. The dependent variable is a dummy, taking the value 1 if an individual response is categorized as supportive of geoengineering and 0 otherwise. Level of significance: * $P < 0.10$, ** $P < 0.05$, *** $P < 0.01$. (d) indicates dummy variables. Variables included as controls but not shown: gender, age, training, and employer organization.

c) Large-scale deployment of geoengineering in case of a climate emergency

	(1) Supportive	(2) Supportive	(3) Supportive	(4) Supportive
Vulnerability Index	0.00	0.00		
	(1.56)	(0.24)		
Expect severe home country damages (d)			0.11**	0.10
			(2.04)	(1.63)
GDP per capita		-0.02		-0.01
		(-0.91)		(-0.74)
Expect severe global damages (d)	-0.05	-0.05	-0.09*	-0.09*
	(-1.08)	(-1.01)	(-1.83)	(-1.76)
CO_2 per capita	-0.75	1.55	-3.58	-0.69
	(-0.15)	(0.28)	(-0.83)	(-0.12)
Optimistic about GHG reductions	0.08*	0.07*	0.09**	0.09**
	(1.86)	(1.83)	(2.07)	(2.07)
Optimistic about INDCs	0.03	0.03	0.07	0.06
	(0.63)	(0.59)	(1.50)	(1.37)
IPCC (d)	-0.19***	-0.19***	-0.18***	-0.18***
	(-3.12)	(-3.10)	(-2.94)	(-2.82)
Controls included	*Yes*	*Yes*	*Yes*	*Yes*
Log pseudolikelihood	-257.35	-256.94	-234.98	-234.37
LR-test	0.00	0.00	0.00	0.00
Pseudo R^2	0.07	0.07	0.08	0.08
Observations	419	419	385	384

The numbers show binary probit estimations of average marginal effects (discrete effects for dummy variables) and z-values in parentheses. The models are estimated with maximum likelihood, using heteroscedasticity robust standard errors. The stochastic component in the models is assumed to be normally distributed. The dependent variable is a dummy, taking the value 1 if an individual response is categorized as supportive of geoengineering and 0 otherwise. Level of significance: * P < 0.10, ** P < 0.05, *** P < 0.01. (d) indicates dummy variables. Variables included as controls but not shown: gender, age, training, and employer organization.

Supplementary Table 9: Regression results for IPCC and UNFCCC separately

Supplementary Table 9 shows estimation results from our main model but run for the two subsamples separately ((a), (c), (e) for the UNFCCC subsample and (b), (d), (f) for the IPCC subsample). Due to the low number of observations in the IPCC subsample some variables lose their statistical significance compared to the pooled sample. However, the directions of the effects are consistent with the results for the UNFCCC sample and the pooled sample.

a) Including geoengineering in international climate negotiations (UNFCCC sample)

	(1) Supportive	(2) Supportive	(3) Supportive	(4) Supportive
	UNFCCC	UNFCCC	UNFCCC	UNFCCC
Percentage loss in GDP in 2100	0.19**	0.10		
	(2.41)	(1.06)		
Percentage gain in GDP in 2100	-0.02	-0.01		
	(-0.71)	(-0.36)		
Expect severe home country damages (d)			0.14**	0.10
			(2.37)	(1.63)
GDP per capita		-0.04**		-0.05***
		(-2.01)		(-3.05)
Expect severe global damages (d)	-0.13***	-0.13***	-0.19***	-0.17***
	(-2.92)	(-2.92)	(-3.64)	(-3.43)
CO_2 per capita	2.76	11.17*	-0.54	12.42**
	(0.58)	(1.84)	(-0.11)	(2.02)
Optimistic about GHG reductions	-0.01	-0.00	0.00	0.02
	(-0.21)	(-0.06)	(0.08)	(0.34)
Optimistic about INDCs	0.09**	0.09**	0.10**	0.09**
	(2.25)	(2.11)	(2.33)	(2.09)
Negotiation scope	0.40***	0.38***	0.41***	0.37***
	(8.74)	(8.19)	(8.72)	(7.46)
Controls included	*Yes*	*Yes*	*Yes*	*Yes*
Log pseudolikelihood	-184.42	-180.36	-168.43	-162.52
LR-test	0.00	0.00	0.00	0.00
Pseudo R^2	0.24	0.25	0.23	0.25
Observations	349	348	317	316

The numbers show binary probit estimations of average marginal effects (discrete effects for dummy variables) and z-values in parentheses. The models are estimated with maximum likelihood, using heteroscedasticity robust standard errors. The stochastic component in the models is assumed to be normally distributed. The dependent variable is a dummy, taking the value 1 if an individual response is categorized as supportive of geoengineering and 0 otherwise. Level of significance: * P < 0.10, ** P < 0.05, *** P < 0.01. (d) indicates dummy variables. Variables included as controls but not shown: gender, age, training, and employer organization.

b) Including geoengineering in international climate negotiations (IPCC sample)

	(1) Supportive	(2) Supportive	(3) Supportive	(4) Supportive
	IPCC	IPCC	IPCC	IPCC
Percentage loss in GDP in 2100	0.19	0.13		
	(1.36)	(0.77)		
Percentage gain in GDP in 2100	-0.00	0.00		
	(-0.03)	(0.05)		
Expect severe home country damages (d)			-0.00	-0.06
			(-0.05)	(-0.62)
GDP per capita		-0.02		-0.05*
		(-0.54)		(-1.65)
Expect severe global damages (d)	-0.07	-0.07	-0.10	-0.07
	(-1.02)	(-0.95)	(-1.29)	(-0.96)
CO_2 per capita	1.71	6.74	-2.05	10.17
	(0.24)	(0.58)	(-0.28)	(0.97)
Optimistic about GHG reductions	-0.05	-0.05	-0.08	-0.07
	(-0.85)	(-0.85)	(-1.22)	(-1.01)
Optimistic about INDCs	0.05	0.04	0.04	0.01
	(0.62)	(0.55)	(0.54)	(0.16)
Negotiation scope	0.15*	0.15*	0.19**	0.18**
	(1.94)	(1.93)	(2.29)	(2.20)
Controls included	*Yes*	*Yes*	*Yes*	*Yes*
Log pseudolikelihood	-77.119	-76.95	-70.47	-69.05
LR-test	0.10	0.05	0.14	0.08
Pseudo R^2	0.12	0.12	0.10	0.12
Observations	143	143	130	130

The numbers show binary probit estimations of average marginal effects (discrete effects for dummy variables) and z-values in parentheses. The models are estimated with maximum likelihood, using heteroscedasticity robust standard errors. The stochastic component in the models is assumed to be normally distributed. The dependent variable is a dummy, taking the value 1 if an individual response is categorized as supportive of geoengineering and 0 otherwise. Level of significance: * P < 0.10, ** P < 0.05, *** P < 0.01. (d) indicates dummy variables. Variables included as controls but not shown: gender, age, training, and employer organization.

c) More investment in R&D on geoengineering technologies (UNFCCC sample)

	(1) Supportive	(2) Supportive	(3) Supportive	(4) Supportive
	UNFCCC	UNFCCC	UNFCCC	UNFCCC
Percentage loss in GDP in 2100	0.35***	0.20**		
	(4.59)	(2.16)		
Percentage gain in GDP in 2100	-0.01	0.01		
	(-0.21)	(0.37)		
Expect severe home country damages (d)			0.27***	0.19***
			(4.61)	(3.18)
GDP per capita		-0.06***		-0.07***
		(-3.07)		(-4.70)
Expect severe global damages (d)	-0.10**	-0.11**	-0.21***	-0.21***
	(-2.11)	(-2.22)	(-3.93)	(-3.81)
CO_2 per capita	0.70	11.99**	-3.16	14.68**
	(0.15)	(2.07)	(-0.60)	(2.41)
Optimistic about GHG reductions	0.03	0.04	0.08	0.10**
	(0.76)	(0.93)	(1.64)	(2.07)
Optimistic about INDCs	0.18***	0.17***	0.21***	0.18***
	(4.28)	(4.09)	(4.49)	(4.10)
Controls included	*Yes*	*Yes*	*Yes*	*Yes*
Log pseudolikelihood	-193.81	-188.51	-176.34	-165.87
LR-test	0.00	0.00	0.00	0.00
Pseudo R^2	0.14	0.16	0.14	0.19
Observations	335	334	303	302

The numbers show binary probit estimations of average marginal effects (discrete effects for dummy variables) and z-values in parentheses. The models are estimated with maximum likelihood, using heteroscedasticity robust standard errors. The stochastic component in the models is assumed to be normally distributed. The dependent variable is a dummy, taking the value 1 if an individual response is categorized as supportive of geoengineering and 0 otherwise. Level of significance: * P < 0.10, ** P < 0.05, *** P < 0.01. (d) indicates dummy variables. Variables included as controls but not shown: gender, age, training, and employer organization.

d) More investment in R&D on geoengineering technologies (IPCC sample)

	(1) Supportive	(2) Supportive	(3) Supportive	(4) Supportive
	IPCC	IPCC	IPCC	IPCC
Percentage loss in GDP in 2100	0.45***	0.34**		
	(3.46)	(2.10)		
Percentage gain in GDP in 2100	0.07	0.07		
	(1.02)	(1.03)		
Expect severe home country damages (d)			0.21**	0.14*
			(2.38)	(1.68)
GDP per capita		-0.04		-0.07**
		(-1.13)		(-2.13)
Expect severe global damages (d)	-0.07	-0.06	-0.14*	-0.10
	(-1.02)	(-0.83)	(-1.88)	(-1.36)
CO_2 per capita	5.13	14.55	1.73	20.63*
	(0.76)	(1.35)	(0.24)	(1.79)
Optimistic about GHG reductions	0.08	0.08	0.03	0.04
	(1.14)	(1.11)	(0.39)	(0.61)
Optimistic about INDCs	0.01	0.01	0.04	0.01
	(0.18)	(0.09)	(0.52)	(0.07)
Controls included	*Yes*	*Yes*	*Yes*	*Yes*
Log pseudolikelihood	-72.98	-72.30	-68.63	-65.73
LR-test	0.04	0.03	0.32	0.17
Pseudo R^2	0.13	0.13	0.08	0.12
Observations	142	142	129	129

The numbers show binary probit estimations of average marginal effects (discrete effects for dummy variables) and z-values in parentheses. The models are estimated with maximum likelihood, using heteroscedasticity robust standard errors. The stochastic component in the models is assumed to be normally distributed. The dependent variable is a dummy, taking the value 1 if an individual response is categorized as supportive of geoengineering and 0 otherwise. Level of significance: * P < 0.10, ** P < 0.05, *** P < 0.01. (d) indicates dummy variables. Variables included as controls but not shown: gender, age, training, and employer organization.

e) Large-scale deployment of geoengineering in case of a climate emergency (UNFCCC sample)

	(1) Supportive	(2) Supportive	(3) Supportive	(4) Supportive
	UNFCCC	UNFCCC	UNFCCC	UNFCCC
Percentage loss in GDP in 2100	0.27***	0.20**		
	(3.45)	(2.03)		
Percentage gain in GDP in 2100	0.07**	0.09**		
	(2.00)	(2.18)		
Expect severe home country damages (d)			0.15**	0.12*
			(2.37)	(1.72)
GDP per capita		-0.03		-0.03
		(-1.47)		(-1.43)
Expect severe global damages (d)	-0.01	-0.02	-0.08	-0.08
	(-0.27)	(-0.42)	(-1.32)	(-1.27)
CO_2 per capita	-6.11	-0.05	-7.91*	-1.97
	(-1.31)	(-0.01)	(-1.66)	(-0.32)
Optimistic about GHG reductions	0.10**	0.10**	0.14***	0.14***
	(2.39)	(2.38)	(2.85)	(2.84)
Optimistic about INDCs	0.05	0.05	0.07	0.06
	(1.10)	(0.99)	(1.44)	(1.27)
Controls included	*Yes*	*Yes*	*Yes*	*Yes*
Log pseudolikelihood	-171.65	-170.00	-156.88	-155.63
LR-test	0.00	0.00	0.00	0.00
Pseudo R^2	0.08	0.09	0.08	0.08
Observations	302	301	271	270

The numbers show binary probit estimations of average marginal effects (discrete effects for dummy variables) and z-values in parentheses. The models are estimated with maximum likelihood, using heteroscedasticity robust standard errors. The stochastic component in the models is assumed to be normally distributed. The dependent variable is a dummy, taking the value 1 if an individual response is categorized as supportive of geoengineering and 0 otherwise. Level of significance: * P < 0.10, ** P < 0.05, *** P < 0.01. (d) indicates dummy variables. Variables included as controls but not shown: gender, age, training, and employer organization.

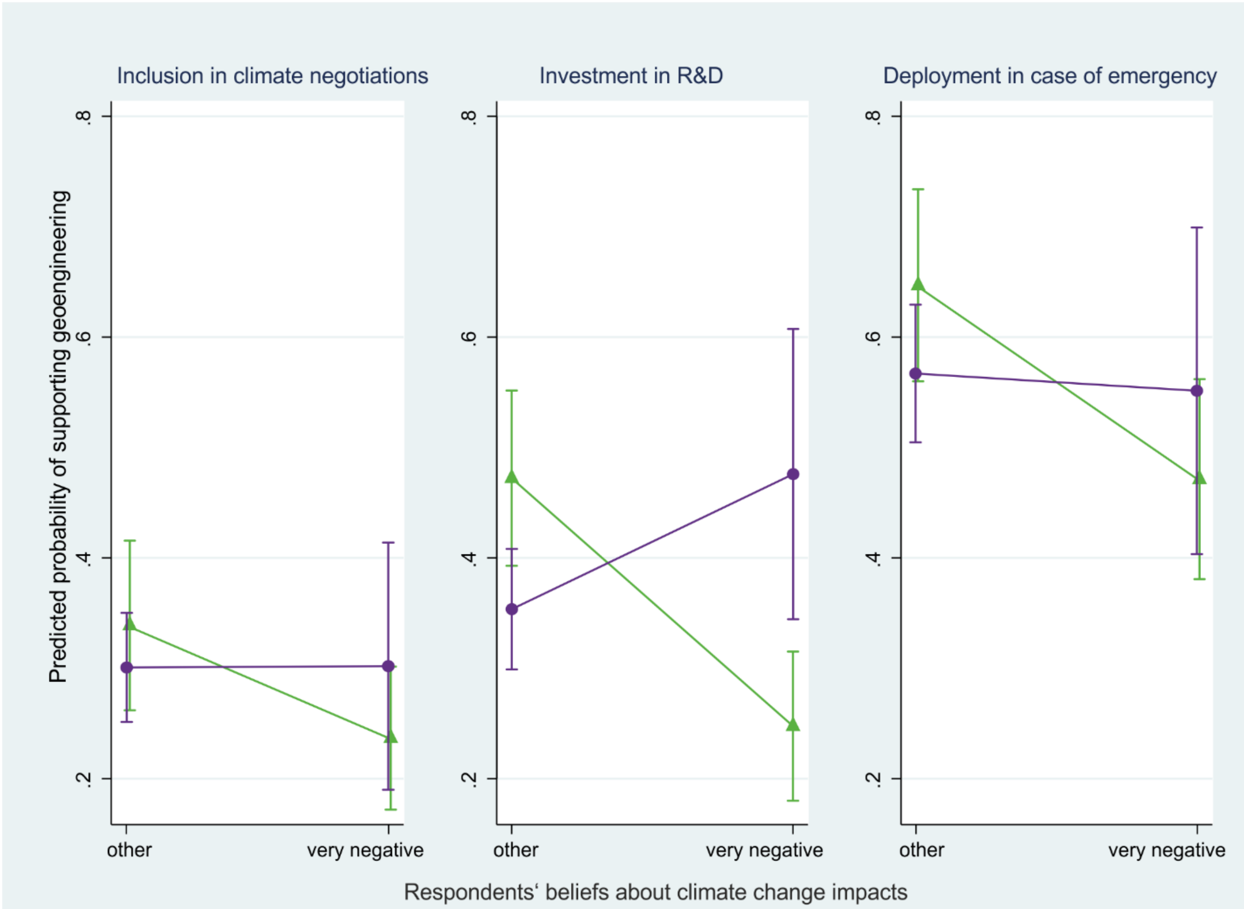
f) Large-scale deployment of geoengineering in case of a climate emergency (IPCC sample)

	(1) Supportive	(2) Supportive	(3) Supportive	(4) Supportive
	IPCC	IPCC	IPCC	IPCC
Percentage loss in GDP in 2100	-0.13	-0.02		
	(-0.74)	(-0.09)		
Percentage gain in GDP in 2100	-0.07	-0.08		
	(-0.76)	(-0.87)		
Expect severe home country damages (d)			-0.01	0.01
			(-0.13)	(0.10)
GDP per capita		0.04		0.02
		(0.86)		(0.69)
Expect severe global damages (d)	-0.13	-0.15*	-0.15	-0.16*
	(-1.52)	(-1.66)	(-1.64)	(-1.74)
CO_2 per capita	9.20	0.50	9.69	4.11
	(1.06)	(0.04)	(1.10)	(0.33)
Optimistic about GHG reductions	-0.00	-0.00	0.01	0.00
	(-0.02)	(-0.03)	(0.09)	(0.01)
Optimistic about INDCs	0.02	0.03	0.06	0.08
	(0.24)	(0.32)	(0.60)	(0.77)
Controls included	*Yes*	*Yes*	*Yes*	*Yes*
Log pseudolikelihood	-80.07	-79.66	-72.91	-72.67
LR-test	0.36	0.45	0.23	0.29
Pseudo R^2	0.07	0.07	0.08	0.08
Observations	124	124	114	114

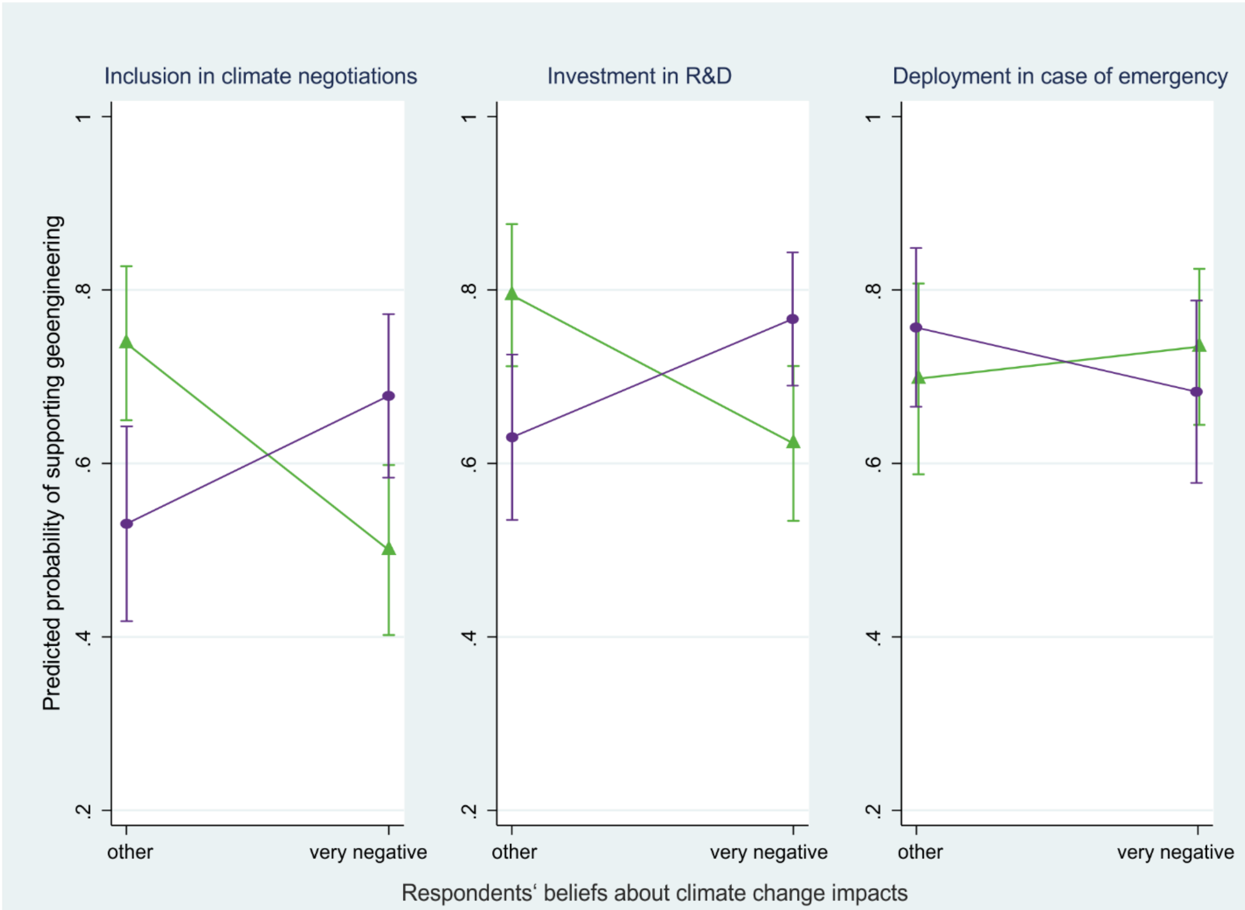
The numbers show binary probit estimations of average marginal effects (discrete effects for dummy variables) and z-values in parentheses. The models are estimated with maximum likelihood, using heteroscedasticity robust standard errors. The stochastic component in the models is assumed to be normally distributed. The dependent variable is a dummy, taking the value 1 if an individual response is categorized as supportive of geoengineering and 0 otherwise. Level of significance: * P < 0.10, ** P < 0.05, *** P < 0.01. (d) indicates dummy variables. Variables included as controls but not shown: gender, age, training, and employer organization.

Supplementary Figure 1: Inclusion of governance effectiveness index

To test whether the difference in the global and home country perspective is due to extrapolation from generally more difficult governance at the global level and easier governance at the national level, we used the Government Effectiveness Indicator from the Worldwide Governance Indicators Project for the year 2015[17]. This indicator ranges between ± 2.5, with higher values indicating stronger governance performance. We split our sample in respondents from countries with more effective governments (indicator values > 0) and respondents from countries with less effective governments (indicator values ≤ 0). We then reproduced the analysis from the main text. Supplementary Figure 1 (a) shows the predicted probability of supporting geoengineering depending on respondents' beliefs about climate change impacts for more effectively governed home countries. Supplementary Figure 1 (b) shows the same analysis for respondents from less effectively governed countries. The green lines (rectangular markers) show the difference between respondents who expect very negative global consequences of climate change and other respondents. The purple lines (circular markers) show the difference between respondents who expect very negative consequences of climate change for their home country and other respondents. The vertical lines show the 95% confidence interval. If extrapolation were driving our results, we would expect the difference in the global and home country perspective to be larger for respondents from countries with more effective governance. However, such a clear pattern does not manifest.



a) Predicted probability of supporting geoengineering depending on respondents' beliefs about climate change impacts for more effectively governed countries



b) Predicted probability of supporting geoengineering depending on respondents' beliefs about climate change impacts for less effectively governed countries

Supplementary Table 10: Using citizenship instead of country of delegation for home country of UNFCCC respondents

The region-specific variables in the main part refer to the country of citizenship for the IPCC sample and the delegation country for the UNFCCC sample. In this section, we present regression results where we use citizenship for home country in both samples. The results are given in Supplementary Table 10 and are very similar to those reported in the main paper.

a) Including geoengineering in international climate negotiations

	(1) Supportive	(2) Supportive	(3) Supportive	(4) Supportive
Percentage loss in GDP in 2100	0.19***	0.11		
	(2.64)	(1.20)		
Percentage gain in GDP in 2100	-0.03	-0.02		
	(-0.81)	(-0.52)		
Expect severe home country damages (d)			0.08	0.03
			(1.52)	(0.59)
GDP per capita		-0.04**		-0.05***
		(-2.13)		(-3.64)
Expect severe global damages (d)	-0.11***	-0.10***	-0.15***	-0.13***
	(-2.81)	(-2.66)	(-3.41)	(-2.92)
CO_2 per capita	-3.82	5.15	-10.14*	5.86
	(-0.73)	(0.78)	(-1.94)	(0.84)
Optimistic about GHG reductions	-0.02	-0.01	-0.02	-0.01
	(-0.44)	(-0.32)	(-0.59)	(-0.31)
Optimistic about INDCs	0.06*	0.05	0.06	0.05
	(1.66)	(1.44)	(1.63)	(1.27)
Negotiation scope	0.30***	0.29***	0.32***	0.29***
	(7.04)	(6.76)	(7.22)	(6.53)
IPCC (d)	-0.07	-0.06	-0.05	-0.04
	(-1.35)	(-1.17)	(-0.93)	(-0.70)
Male (d)	0.00	0.00	-0.02	-0.01
	(0.04)	(0.08)	(-0.51)	(-0.33)
Natural sciences (d)	-0.08**	-0.09**	-0.09**	-0.09**
	(-2.00)	(-2.13)	(-1.98)	(-2.20)
National governmental organization (d)	-0.00	-0.00	0.02	0.01
	(-0.05)	(-0.05)	(0.37)	(0.34)
Age	0.01***	0.01***	0.01***	0.01***
	(2.88)	(3.01)	(3.08)	(3.17)
Log pseudolikelihood	-267.32	-263.18	-245.42	-237.47
LR-test	0.00	0.00	0.00	0.00
Pseudo R^2	0.20	0.21	0.19	0.21
Observations	493	492	447	446

The numbers show binary probit estimations of average marginal effects (discrete effects for dummy variables) and z-values in parentheses. The models are estimated with maximum likelihood, using heteroscedasticity robust standard errors. The stochastic component in the models is assumed to be normally distributed. The dependent variable is a dummy, taking the value 1 if an individual response is categorized as supportive of geoengineering and 0 otherwise. Level of significance: * P < 0.10, ** P < 0.05, *** P < 0.01. (d) indicates dummy variables.

b) More investment in R&D on geoengineering technologies

	(1) Supportive	(2) Supportive	(3) Supportive	(4) Supportive
Percentage loss in GDP in 2100	0.36***	0.21**		
	(5.25)	(2.58)		
Percentage gain in GDP in 2100	-0.00	0.01		
	(-0.05)	(0.48)		
Expect severe home country damages (d)			0.21***	0.14***
			(3.90)	(2.62)
GDP per capita		-0.06***		-0.08***
		(-3.47)		(-5.23)
Expect severe global damages (d)	-0.09**	-0.08**	-0.18***	-0.15***
	(-2.17)	(-2.03)	(-3.91)	(-3.38)
CO_2 per capita	-3.93	9.55	-11.20**	12.96*
	(-0.80)	(1.52)	(-2.22)	(1.88)
Optimistic about GHG reductions	0.06	0.06*	0.07	0.09**
	(1.54)	(1.69)	(1.64)	(2.12)
Optimistic about INDCs	0.12***	0.10***	0.14***	0.11***
	(3.14)	(2.78)	(3.43)	(2.86)
IPCC (d)	-0.20***	-0.19***	-0.20***	-0.18***
	(-3.58)	(-3.30)	(-3.26)	(-3.08)
Male (d)	0.05	0.06	0.05	0.06
	(1.14)	(1.31)	(0.93)	(1.29)
Natural sciences (d)	-0.05	-0.07	-0.05	-0.07*
	(-1.23)	(-1.60)	(-1.00)	(-1.70)
National governmental organization (d)	0.03	0.03	0.06	0.06
	(0.62)	(0.74)	(1.33)	(1.40)
Age	0.00	0.00	0.00	0.00
	(1.40)	(1.34)	(1.34)	(1.12)
Log pseudolikelihood	-267.60	-260.77	-247.08	-232.68
LR-test	0.00	0.00	0.00	0.00
Pseudo R^2	0.19	0.21	0.17	0.22
Observations	478	477	432	431

The numbers show binary probit estimations of average marginal effects (discrete effects for dummy variables) and z-values in parentheses. The models are estimated with maximum likelihood, using heteroscedasticity robust standard errors. The stochastic component in the models is assumed to be normally distributed. The dependent variable is a dummy, taking the value 1 if an individual response is categorized as supportive of geoengineering and 0 otherwise. Level of significance: * P < 0.10, ** P < 0.05, *** P < 0.01. (d) indicates dummy variables.

c) Large-scale deployment of geoengineering in case of a climate emergency

	(1) Supportive	(2) Supportive	(3) Supportive	(4) Supportive
Percentage loss in GDP in 2100	0.22***	0.19*		
	(2.76)	(1.93)		
Percentage gain in GDP in 2100	0.03	0.03		
	(0.98)	(1.07)		
Expect severe home country damages (d)			0.10*	0.07
			(1.72)	(1.20)
GDP per capita		-0.01		-0.02
		(-0.64)		(-1.29)
Expect severe global damages (d)	-0.04	-0.04	-0.09*	-0.08
	(-0.92)	(-0.95)	(-1.78)	(-1.63)
CO_2 per capita	-1.82	1.18	-5.81	0.34
	(-0.34)	(0.17)	(-1.09)	(0.05)
Optimistic about GHG reductions	0.08*	0.08*	0.09**	0.09**
	(1.94)	(1.91)	(2.07)	(2.09)
Optimistic about INDCs	0.03	0.03	0.06	0.05
	(0.80)	(0.73)	(1.34)	(1.14)
IPCC (d)	-0.19***	-0.19***	-0.19***	-0.19***
	(-2.97)	(-2.91)	(-2.86)	(-2.81)
Male (d)	0.07	0.07	0.05	0.06
	(1.33)	(1.35)	(0.97)	(1.08)
Natural sciences (d)	-0.10**	-0.10**	-0.12**	-0.12**
	(-2.02)	(-2.03)	(-2.30)	(-2.37)
National governmental organization (d)	-0.07	-0.07	-0.05	-0.05
	(-1.34)	(-1.35)	(-0.95)	(-1.00)
Age	0.00**	0.00**	0.00**	0.01**
	(2.32)	(2.36)	(2.33)	(2.38)
Log pseudolikelihood	-258.64	-257.84	-234.73	-233.54
LR-test	0.00	0.00	0.00	0.00
Pseudo R^2	0.08	0.08	0.08	0.09
Observations	427	426	385	384

The numbers show binary probit estimations of average marginal effects (discrete effects for dummy variables) and z-values in parentheses. The models are estimated with maximum likelihood, using heteroscedasticity robust standard errors. The stochastic component in the models is assumed to be normally distributed. The dependent variable is a dummy, taking the value 1 if an individual response is categorized as supportive of geoengineering and 0 otherwise. Level of significance: * P < 0.10, ** P < 0.05, *** P < 0.01. (d) indicates dummy variables.

Supplementary Methods

This section reproduces the survey questions used in the empirical analyses.

This survey asks about your personal assessment of a number of issues in international climate policy. Your assessment may refer to your home country as well as to five countries or groups of countries that may play an important role in current international climate negotiations (in alphabetical order): Alliance of Small Island States (AOSIS), BASIC without China (Brazil, South Africa, India), China, the European Union (EU), and the United States (USA). What will happen to your answers? The information is used for scientific analysis only. No names or data on single persons or firms will be published or made accessible to third parties.

I have read the above information and desire to participate in this study.

- ❍ Yes
- ❍ No

Consequences of climate change

This part asks about your opinion of the consequences of climate change up to 2100. Please consider economic development with no new international climate agreement.

How would you assess the consequences of climate change on future global living conditions up to 2100?

- ❍ Very negative
- ❍ Negative
- ❍ Neither negative nor positive
- ❍ Positive
- ❍ I don't know

How would you assess the consequences of climate change on future living conditions up to 2100 in your home country?

- ❍ Very negative
- ❍ Negative
- ❍ Neither negative nor positive
- ❍ Positive
- ❍ I don't know

Importance of international efforts in combating climate change

This part refers to your personal assessments of the importance of international efforts in combating climate change and other global challenges such as securing world nutrition and eradicating poverty, combating epidemics, stabilizing the international finance system, and combating terrorism.

To what degree do you think the following countries or groups of countries will reduce their greenhouse gas (GHG) emissions relative to “business as usual” even without any new international climate agreement up to 2050?

	High degree	Moderate degree	Low degree	No degree	I don't know
AOSIS	❍	❍	❍	❍	❍
BASIC without China	❍	❍	❍	❍	❍
China	❍	❍	❍	❍	❍
EU	❍	❍	❍	❍	❍
USA	❍	❍	❍	❍	❍

Issues in current international climate negotiations

This part considers your personal assessment of the following issues in current international climate negotiations: Comprehensive quantitative targets for a reduction in global GHG emissions, quantitative GHG emission reduction targets for individual economic sectors, R&D and technology transfer, geo-engineering, land-use change and reforestation, and adaptation measures.

How important do you think it is to include the following issues in current international climate change negotiations?

	Very important	Important	Moderately important	Not important	I don't know
Comprehensive quantitative targets for a reduction in global GHG emissions	❍	❍	❍	❍	❍
Quantitative GHG emission reduction targets for individual economic sectors	❍	❍	❍	❍	❍
R&D and technology transfer	❍	❍	❍	❍	❍
Geo-engineering	❍	❍	❍	❍	❍
Land-use change and reforestation	❍	❍	❍	❍	❍
Adaptation measures	❍	❍	❍	❍	❍

To what degree do you think that more investments should be directed to R&D for geo-engineering technologies such as solar radiation management, aimed at lowering average global surface temperature?

❍ High degree
❍ Moderate degree
❍ Low degree
❍ No degree
❍ I don't know

In the event of an approaching ‘climate emergency’, i.e. should it become apparent at some point in the future that it is too late to avoid a catastrophic event (induced by climate change) by means of conventional mitigation techniques, would you favour large-scale deployment of geo-engineering?

❍ Very much
❍ Moderately
❍ Indifferent
❍ Not at all
❍ I don't know

Views on the negotiations

How confident are you that the Intended Nationally Determined Contributions (INDC), the commitments envisioned at COP 20 in Lima and to be disclosed by each country in 2015, will be consistent in aggregate with the goal of limiting average global warming to under 2°C?

- ❍ Very confident
- ❍ Confident
- ❍ Moderately confident
- ❍ Not confident at all
- ❍ I don't know

In case the INDC pledged in 2015 fall short of the 2°C target, how confident are you that the ensuing monitoring and reporting activities will stimulate increased INDC by the majority of countries?

- ❍ Very confident
- ❍ Confident
- ❍ Moderately confident
- ❍ Not confident at all
- ❍ I don't know

In case the INDC pledged in 2015 fall short of the 2°C target and new INDC commitments are made, how confident are you that the revised and increased INDC will then be consistent in aggregate with the goal of limiting average global warming to under 2°C?

- ❍ Very confident
- ❍ Confident
- ❍ Moderately confident
- ❍ Not confident at all
- ❍ I don't know

In general, how confident are you that the majority of countries will fulfil their INDC?

- ❍ Very confident
- ❍ Confident
- ❍ Moderately confident
- ❍ Not confident at all
- ❍ I don't know

Personal questions

Finally, we would like to ask some questions about you. Your answers to these questions are extremely important to make sure that our empirical analysis is reliable. Please note that your answers to these questions will remain completely private. You will not be identified in any way. Your answers will remain strictly confidential and will be analysed anonymously, that is, your name and address will not be linked to the data. Your answers will only be examined in summary form together with the answers of other participants.

Please indicate your sex:

- ❍ Female
- ❍ Male

Please indicate your year of birth: ___________________________________

Please indicate your nationality: _____________________________________

Please indicate the field in which you obtained your highest degree or training:

- ❍ Natural sciences
- ❍ Political Sciences
- ❍ Economics and business administration
- ❍ Law
- ❍ Engineering
- ❍ Other (please indicate): _______________________________

Please indicate the type of organization you currently work for:

- ❍ International governmental organization
- ❍ National governmental organization
- ❍ University or research institution
- ❍ Private company
- ❍ Environmental non-governmental organization (NGO)
- ❍ Non-environmental NGO
- ❍ Others (please indicate): _____________________________

Supplementary References

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