

Ideology, Capitalism, and Climate: Explaining Public Views about Climate Change in the United States

Supplementary Information File

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Section A. Social Science Literature on Climate Change Views

1. 14 Review Articles

references 1-14

2. 109 Survey Studies (surveys administered to large representative samples of a known population)

This section includes the 87 studies that analyze potential predictors of climate change views (which we review) and 23 others that report aggregated results.

references 15-123

2.1. 76 Studies in the US

references 15-89

2.2. 11 Studies in the United Kingdom

references 90-100

2.3. 5 Studies in Australia

references 101-105

2.5. 2 Studies in Canada

references 54, 106

2.4. 2 Studies in Sweden

references 107, 108

2.6. 1 Study in New Zealand

reference 109

2.7. 1 Study in Germany

reference 110

2.8. 13 Cross-National Studies

references 111-123

3. 34 Experimental Studies (experiments conducted on relatively small and/or non-representative samples)

references 124-156

Section B. Effects of the Most-Investigated Predictors of Pro-Climate Views in 62 US Studies, 16 Non-US Studies, and 9 Cross-National Studies

Table SI1. Effects of the Most-Investigated Predictors of Pro-Climate Views in 62 US Studies

	Belief in Climate Change			Concern about Climate Change			Support for Climate Policy			Pro-Climate Behavioral Intentions		
	-	ns	+	-	ns	+	-	ns	+	-	ns	+
Environmental values, beliefs, identity			9			6			9			3
Liberal (vs. Conservative) ideology			21		1	12		1	7			
Democratic (vs. Republican) identification		1	27			21			10			1
Women (vs. men)		10	19		3	18		5	7		3	1
Age	14	14	1	7	9	2	3	6	1	1	2	
Income	2	10	4	6	8	2	1	4	4		2	
Education	1	14	15	6	11	2		5	7		1	3
Post-materialist values		1			1				1			
Religiosity	9	3		6	1	1		2				
Whites (vs. non-Whites)	5	9	6	7	7		4	3	2	1	1	
Egalitarianism			3			3						
Individualism	3	1		3								
Self-efficacy						1			1			1
Scientific literacy		1		1	2	2						
Trust in scientists			3		1							

Notes: Unless otherwise indicated, variables are coded from low to high. The notation “ns” stands for “not significant” in the statistical sense.

Table SI2. Effects of the Most-Investigated Predictors of Pro-Climate Views in 16 Non-US Studies

	Belief in Climate Change			Concern about Climate Change			Support for Climate Policy			Pro-Climate Behavioral Intentions		
	–	ns	+	–	ns	+	–	ns	+	–	ns	+
Environmental values, beliefs, identity			6			6			2			1
Leftist (vs. Rightist) ideology			2		1	2			1			
Leftist (vs. Rightist) party identification	1		6		1	7			3			
Women (vs. men)		6	3		5	4		2	1			1
Age	2	6		4	4	1		2	1			1
Income		4			5			2				
Education		3	5		5	5		2	1			
Post-materialist values						2			2			
Religiosity					2	1		1				
Individualism		1			1							
Self-efficacy						1						1
Trust in scientists					1							

Notes: Unless otherwise indicated, variables are coded from low to high. The notation “ns” stands for “not significant” in the statistical sense.

Table SI3. Effects of the Most-Investigated Predictors of Pro-Climate Views in 9 Cross-National Studies

	Belief in Climate Change			Concern about Climate Change			Support for Climate Policy			Pro-Climate Behavioral Intentions		
	–	ns	+	–	ns	+	–	ns	+	–	ns	+
Environmental values, beliefs, identity						1						1
Leftist (vs. Rightist) ideology			1			4			1			2
Leftist (vs. Rightist) party identification						1						
Women (vs. men)			1			4			1			1 1
Age	1			3		1			1			1 1
Income				1								
Education			1			5			1			2
Post-materialist values				1		1						
Religiosity						1	1					
Self-efficacy												1

Notes: Unless otherwise indicated, variables are coded from low to high. The notation “ns” stands for “not significant” in the statistical sense.

Section C. Effects of Most-Investigated Predictors of Climate Change Views

Table SI4. Effects of Most-Investigated Predictors of Belief in Climate Change

Effect	Present in US Study	Present in Non-US Study	Present in Cross-National Study
environmental values, beliefs, or identity has positive effect	32, 34, 64, 66-70, 76	94, 96, 97, 100, 106, 110	
Leftist (vs. Rightist) ideology has positive effect	31, 33, 35, 36, 46-48, 51, 57, 59, 62, 64, 65, 67-72, 78, 79	92, 93	119
Leftist (vs. Rightist) party identification has no effect	48	97	
Leftist (vs. Rightist) party identification has positive effect	18, 25, 30, 31, 33, 34, 40, 42, 43, 46, 52-54, 57, 62, 64-71, 76, 78, 79, 88	54, 91, 92, 94, 101	
gender has no effect	25, 35, 36, 40, 47, 48, 70, 72, 78, 88	54, 94, 96, 97, 100, 110	
women report greater belief in climate change than do men	18, 30, 31, 33, 34, 42, 43, 51, 57, 62, 64-69, 71, 76, 79	92, 93, 101	119
age has negative effect	30, 33, 40, 42, 43, 46, 51, 57, 62, 64, 65, 68-70	94, 96	119
age has no effect	25, 31, 34-36, 47, 48, 66, 67, 71, 72, 76, 78, 88	54, 92, 93, 97, 100, 110	
age has positive effect	79		
income has negative effect	46, 69		
income has no effect	30, 34-36, 47, 48, 66, 67, 70, 79	97, 100, 101, 110	
income has positive effect	33, 64, 65, 68		

Effect	Present in US Study	Present in Non-US Study	Present in Cross-National Study
education has negative effect	32		
education has no effect	31, 33-35, 42, 47, 48, 51, 66, 69-71, 79, 88	54, 97, 110	
education has positive effect	18, 25, 30, 36, 40, 43, 46, 62, 64, 65, 66, 67, 71, 75, 77	92, 93, 94, 96, 100	119
postmaterialist values have no effect	34		
religiosity has negative effect	34, 35, 47, 64-68, 79		
religiosity has no effect	25, 31, 48		
Non-Whites report greater belief in climate change than do Whites	18, 35, 47, 48, 66		
race has no effect	31, 33, 34, 36, 69, 70, 72, 79, 88		
Whites report greater belief in climate change than do Non-Whites	30, 64, 65, 67, 68, 78		
egalitarianism has positive effect	34, 36, 57		
individualism has negative effect	34, 36, 57		
individualism has no effect	48	94	
scientific literacy has no effect	72		
trust in scientists has positive effect	47, 51, 66		

Table SI5. Effects of Most-Investigated Predictors of Concern about Climate Change

Effect	Present in US Study	Present in Non-US Study	Present in Cross-National Study
environmental values, beliefs, or identity has positive effect	21, 34, 56, 64, 67, 68	94, 96, 97, 100, 105, 109	123
Leftist (vs. Rightist) ideology has no effect	83	109	
Leftist (vs. Rightist) ideology has positive effect	23, 38, 45, 56, 62, 64, 65, 67, 68, 81, 86, 89	93, 105	115, 119, 122, 123
Leftist (vs. Rightist) party identification has no effect		97	
Leftist (vs. Rightist) party identification has positive effect	23, 30, 34, 37, 39, 41, 44, 52, 53, 61, 64, 65, 67, 68, 81, 83, 84, 86, 88, 89	91, 93, 94, 96, 100, 104, 105, 109	123
gender has no effect	44, 83, 88	94, 96, 97, 100, 109	
women report greater concern about climate change than do men	21, 23, 30, 34, 38, 39, 41, 45, 56, 61, 62, 64, 65, 67, 68, 81, 86, 89	93, 104, 105, 107	115, 119, 122, 123
age has negative effect	30, 39, 61, 62, 65, 68, 81	94, 96, 104, 105	119, 122, 123
age has no effect	34, 38, 41, 44, 45, 64, 67, 88, 89	97, 100, 107, 109	
age has positive effect	23, 86	93	115
income has negative effect	30, 41, 64, 65, 68, 81		122
income has no effect	21, 23, 34, 61, 67, 83, 86, 89	97, 100, 104, 105, 109	
income has positive effect	38, 45		
education has negative effect	23, 61, 62, 64, 65, 68		

Effect	Present in US Study	Present in Non-US Study	Present in Cross-National Study
education has no effect	21, 30, 34, 38, 39, 41, 45, 67, 86, 88, 89	97, 104, 105, 107, 109	
education has positive effect	44,81	93, 94, 96, 100, 105	115, 116, 119, 122, 123
postmaterialist values have negative effect			123
postmaterialist values have no effect	34		
postmaterialist values have positive effect		104, 105	115
religiosity has negative effect	34, 41, 64, 67, 68, 81		
religiosity has no effect	83	104, 109	123
religiosity has positive effect	65	93	115
Non-Whites report greater concern about climate change than do Whites	30, 56, 64, 65, 67, 68, 88		
race has no effect	34, 41, 61, 81, 83, 86, 89		
egalitarianism has positive effect	34, 56, 83		
individualism has negative effect	34, 49, 83		
individualism has no effect		94	
self-efficacy has positive effect	21	109	
scientific literacy has negative effect	49		
scientific literacy has no effect	86, 89		
scientific literacy has positive effect	38, 45		
trust in scientists has no effect	61	109	

Table SI6. Effects of Most-Investigated Predictors of Support for Climate Policy

Effect	Present in US Study	Present in Non-US Study	Present in Cross-National Study
environmental values, beliefs, or identity has positive effect	27, 56, 64, 69, 70, 73, 74, 82, 87	92, 105	
Leftist (vs. Rightist) ideology has no effect	82		
Leftist (vs. Rightist) ideology has positive effect	16, 27, 64, 69, 70, 78	104	119
Leftist (vs. Rightist) party identification has positive effect	15, 16, 28, 52, 53, 64, 69, 70, 78, 87	92, 104, 105	
gender has no effect	15, 73, 74, 78, 82	104, 105	119
women report greater support for climate policy than do men	16, 27, 56, 64, 69, 70, 87	92	
age has negative effect	15, 64, 69		119
age has no effect	16, 70, 73, 74, 78, 82	104, 105	
age has positive effect	27	92	
income has negative effect	16		
income has no effect	15, 69, 73, 87	104, 105	
income has positive effect	27, 64, 70, 82		
education has no effect	15, 27, 69, 78, 82	92, 104	
education has positive effect	16, 56, 64, 70, 73, 74, 87	105	119
postmaterialist values have positive effect	27	104, 105	

Effect	Present in US Study	Present in Non-US Study	Present in Cross-National Study
religiosity has no effect	16, 64	104	
Non-Whites report greater support for climate policy than do Whites	16, 27, 56, 64		
race has no effect	69, 70, 82		
Whites report greater support for climate policy than do Non-Whites	15, 78		
self-efficacy has positive effect	87		

Table SI7. Effects of Most-Investigated Predictors of Pro-Climate Behavioral Intentions

Effect	Present in US Study	Present in Non-US Study	Present in Cross-National Study
environmental values, beliefs, or identity has positive effect	22, 73, 74	106	112
Leftist (vs. Rightist) ideology has positive effect			112, 119
Leftist (vs. Rightist) party identification has no effect	73		
gender has no effect	22, 73, 80	106	112
women report stronger intentions to perform pro-climate behaviors than do men	74		119
age has negative effect	80		
age has no effect	73, 74	106	119
age has positive effect			112
income has no effect	22, 73		
education has no effect	22		
education has positive effect	73, 74, 80		112, 119
Non-Whites report stronger intentions to perform pro-climate behaviors than do Whites	22		
race has no effect	80		
self-efficacy has positive effect	22	106	112

Section D. The Influence of Political Orientation on Climate Change Views

The 69 studies in Table SI8 represent nearly the entire population of studies that included either political ideology or party identification (or both) as a predictor of climate change views.

Each of these studies includes a statistical analysis of individual-level survey data drawn from large representative samples. Not included in Table SI8 are (a) survey analyses that fail to include a direct measure of political orientation, (b) analyses of aggregated survey data, and (c) experiments that use convenience samples. Those few studies that use experiments embedded in surveys administered to large representative samples are included in Table SI8. In all but one [59] of these 69 studies, scholars used single-item self-reported indicators of political ideology or party identification.

In 67 of the 69 studies in Table SI8, political orientation has a statistically significant effect whereby Left-identifying citizens report stronger pro-climate views than do Right-identifying citizens. Those two studies that failed to find that political orientation predicts climate change views deserve additional attention. One [82] examine predictors of climate policy support, but they only use data from 216 residents in Michigan and Virginia, and another [97] analyzes survey data from a sample that was representative of Hampshire county (England) residents.

In three other studies, only one of two political orientation indicators have a statistically significant effect in the expected direction. One study [48] finds that ideology but not party influences perceived scientific consensus on global warming, while another [109] finds that party but not ideology influences concern for the future impacts of global warming. A third study [83] finds that party but not ideology influences perceived global warming risks; however, they also include in their model a predictor (“naysayers”) which is a close proxy for political ideology.

Table S18. The Statistically Significant Influence of Political Orientation on Climate Change Views in 69 Studies

Study [reference #]	Country Sample	Climate Change Views	Political Orientation Indicator Included
Aldy, Kotchen, & Leiserowitz 2012 [15]	US	support for national clean energy standard	party
Barker & Bearce 2013 [16]	US	support for government action to curb gw	ideology, party
Borick & Rabe 2010 [18]	US	beliefs in existence and human cause of gw	party
Brewer 2011 [20]	US	beliefs about reality and seriousness of gw	party
Brooks et al. 2014 [23]	US	personal concern about cc	ideology, party
Broomell, Budescu, & Por 2015 [112]	24 countries	intention to act to deal with cc	ideology
Budescu, Por, & Broomell 2012 [25]	US	perceived likely impacts of cc	party
Carter & Clements 2015 [91]	UK	belief in cc and concern about cc	party
Clements 2012 [92]	Britain	belief in cc and cc skepticism	ideology, party
Clements 2012 [93]	Britain	perceived impacts of cc	ideology, party
Dietz et al. 2007 [27]	US	support for cc policy	ideology
Dunlap & McCright 2008 [30]	US	beliefs about cc and concern about cc	party
Egan & Mullin 2012 [31]	US	beliefs about reality of gw	ideology, party
Evans & Feng 2013 [32]	US	skepticism of scientists studying cc	ideology, party
Feldman et al. 2012 [34]	US	acceptance of gw	party
Feldman et al. 2014 [35]	US	gw belief certainty	ideology
Goebbert et al. 2012 [36]	US	perceived changes in local temperatures, droughts, and flooding	ideology
Guber 2012 [37]	US	personal worry about gw	party
Hamilton 2008 [38]	US	concern about effects of gw	ideology
Hamilton 2011 [39]	US	perceived threat of gw	party

Study [reference #]	Country Sample	Climate Change Views	Political Orientation Indicator Included
Hamilton 2012 [40]	US	belief in reality and effects of gw	party
Hamilton, Cutler, & Shaefer 2012 [45]	US	knowledge and concern about polar-region warming	ideology
Hamilton & Keim 2009 [41]	US	perceived effects of gw	party
Hamilton & Saito 2015 [42]	US	belief about reality, human cause, and scientific agreement about cc	party
Hamilton & Stampone 2013 [43]	US	belief in gw	party
Hamilton & Stampone 2014 [44]	US	perceived effects of gw	party
Hindman 2009 [46]	US	belief in reality and human cause of gw	ideology, party
Hmielowski et al. 2014 [47]	US	gw belief certainty	ideology
Kahan et al. 2011 [48]	US	perceived scientific consensus on gw	ideology, party
Krosnick et al. 1998 [53]	US	beliefs about the reality of gw	party
Krosnick et al. 2000 [52]	US	belief in reality of gw	party
Krosnick et al. 2006 [51]	US	belief in reality of gw	ideology
Kvaløy et al. 2012 [115]	47 countries	perceived seriousness of gw	ideology
Lapachelle et al. 2012 [54]	US & Canada	belief in cc	party
Leiserowitz 2006 [56]	US	gw risk perception and policy preferences	ideology
Leiserowitz et al. 2012 [57]	US	trust in climate scientists	ideology, party
Leviston & Walker 2012 [101]	Australia	belief about reality and human cause of cc	party
Lewandowsky, Gignac, & Oberauer 2013 [59]	US	rejection of climate science	ideology
Malka et al. 2009 [61]	US	concern about gw	party
Marquart-Pyatt et al. 2014 [62]	US	belief in gw and concern about gw	ideology, party

Study [reference #]	Country Sample	Climate Change Views	Political Orientation Indicator Included
McCright 2009 [64]	US	belief in gw and concern about gw	ideology, party
McCright 2010 [65]	US	belief in gw and concern about gw	ideology, party
McCright 2015 [66]	US	skepticism of existence and human cause of cc	party
McCright & Dunlap 2011a [67]	US	denial of reality, human cause, and seriousness of gw	ideology, party
McCright & Dunlap 2011b [68]	US	belief in gw and concern about gw	ideology, party
McCright, Dunlap, & Xiao 2013 [69]	US	belief in gw and support for government action on gw	ideology, party
McCright, Dunlap, & Xiao 2014a [70]	US	belief in gw and support for government action on gw	ideology, party
McCright, Dunlap, & Xiao 2014b [71]	US	perception that warmer winter is caused by gw	ideology, party
McCright, Dunlap, & Marquart-Pyatt 2015 [119]	14 EU countries	belief in cc, perceived seriousness of cc, willingness to pay to fight cc, support for EU greenhouse gas emissions reductions policies	ideology
Milfont 2012 [109]	New Zealand	concern about future gw/cc impacts	<i>ideology</i> , party
Nisbet, Cooper, & Ellithorpe 2015 [72]	US	belief in cc	ideology
O'Connor et al. 2002 [73]	US	support for cc policy	party
Poortinga et al. 2011 [94]	Britain	skepticism about anthropogenic cc	party
Schuldt, Konrath, & Schwarz 2011 [76]	US	belief in gw/cc	party
Schuldt, Roh, & Schwarz 2015 [78]	US	belief in gw/cc and support for climate mitigation policy	ideology, party
Scruggs & Benegal 2012 [79]	US	belief in gw	ideology, party
Shao et al. 2014 [81]	US	perceived risk of cc	ideology, party
Shwom et al. 2010 [82]	US	cc policy support	<i>ideology</i>
Smith & Leiserowitz 2012 [83]	US	cc risk perception	<i>ideology</i> , party

Study [reference #]	Country Sample	Climate Change Views	Political Orientation Indicator Included
Tjernström & Tietenberg 2008 [122]	26 countries	perceived dangerousness of cc	ideology
Tranter 2011 [104]	Australia	perceived gw threat and support for participating in Kyoto process	ideology, party
Tranter 2013 [105]	Australia	perceived gw risk, perceived gw dangerousness, carbon tax support	ideology, party
Tranter & Booth 2015 [123]	14 countries	perceived dangerousness of cc	ideology, party
Villar & Krosnick 2011 [84]	US	perceived seriousness of gw	party
Whitmarsh 2008 [97]	Britain	belief in cc and perceived cc threat	<i>party</i>
Whitmarsh 2011 [100]	Britain	cc skepticism	party
Wood & Vedlitz 2007 [86]	US	concern for gw right now and in the future	ideology, party
Zhao 2009 [88]	US	perceived scientific agreement and concern about gw	party
Zia & Todd 2010 [89]	US	concern about gw	ideology, party

Notes: All effects of the included political orientation indicators are statistically significant in the expected direction except for the five italicized entries.

Section E. Studies Predicting Climate Change Views by Long-Term Temperature/Climate Trends or Deviations

Study [reference #]	Weather/Climate Measure	Climate Change View Measure	Weather/Climate Effect?
Zahran et al. 2006 [87]	57-year temperature trend; proximity to coast; natural hazards	11-item CC policy support scale	small + effect of annual temperature trend
Brody et al. 2008 [21]	57-year temperature trend; proximity to coast; weather, natural hazards	CC risk perception (GW & CC have personal impact)	no effect of annual temperature trend
Hamilton & Keim 2009 [41]	38-year winter temperature trend	perceived local effects from CC	+ effect of winter temperature trend
Egan & Mullin 2012 [31]	deviation of normal daily local temperature—averaged over week prior to date of survey interview—from average local temperature for survey date calculated for 1971-2000	beliefs about GW (solid evidence earth is getting warmer)	small + effect of temperature deviation in ordered probit; no effect of temperature deviation in OLS or ordered probit when temperature deviation is normalized for local temperature volatility
Goebbert et al. 2012 [36]	deviation of local temperatures in the past few years (prior 3-year average) from the prior 30-year average	perceptions of changes in weather, flooding and droughts	no effect on perceived change in local temperatures
Scruggs & Benegal 2012 [79]	deviation of normal daily local temperature—averaged over week prior to date of survey interview—from average local temperature for survey date calculated for 1971-2000	is there solid evidence the Earth is warming?	small + effect of deviation from normal temperature
Hamilton & Stampone 2013 [43]	average local temperature anomaly for the day of the interview and the prior day relative to the 1981-2010 average	personal belief in CC happening now	small + effect for prior (not current) day of survey anomaly; interaction term of “temp2 X Independent” has + effect

Study [reference #]	Weather/Climate Measure	Climate Change View Measure	Weather/Climate Effect?
Hamilton & Stampone 2014 [44]	average local temperature anomaly for the day of the interview and the prior day relative to the 1981-2010 average	belief that Arctic warming will affect weather where you live	nonlinear effect of temperature; interaction term “temp2 X temp2” has + effect
Howe et al. 2013 [113]	deviation of recent average temperature (prior 12-month average for the 12 months leading up to the survey date) from the 1961-1990 average temperature	perceived local warming	+ effect of 12-month mean temperature anomaly
Deryugina 2013 [26]	# of days with abnormal temperatures for counties (using a 1949-2000 baseline)	when will effects of GW be likely to happen	no effects for short-term abnormalities; a smattering of + and – effects for longer-term abnormalities but only among conservatives
Shao et al. 2014 [81]	standard deviation of the mean temperature/precipitation for the month prior to the survey by the monthly mean temperature/precipitation from 1981-2010	GW is having an impact; is GW serious problem	+ effect of summer temperature trend; a few inconsistent and conflicting results for other seasonal indicators
McCright, Dunlap, & Xiao 2014 [71]	winter 2012 temperature anomaly from 30 year mean	perceived winter warming; GW as main cause	+ effect of winter 2012 temperature anomaly
Marquart-Pyatt et al. 2014 [62]	8 climate extreme measures: annual, 4 seasons and 3 climate seasons; seven time averages (50,40,30,20,10,5, & 3 year) & 3 anomaly measures: ratio of previous year and 3 most recent years to previous decade & last 3 years to previous 3 decades	GW timing has begun; seriousness of GW is underestimated	sprinkling of effects; - effect of 50 year average hurricane CEI on GW seriousness; + effects of 5 & 10 year average Annual CEI on GW timing for Democrats; + effect of 10 year warm season CEI on GW timing for Democrats; + effect of 50 year warm season CEI on GW seriousness for Republicans

Section F. References for Entire Supplementary Information

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