Information and Climate (In)action*

Justin Melnick†

June 17, 2025

Abstract

This paper presents a formal model studying how expectations of climate change's severity and special interests' messages about climate policy appropriateness shape the trajectory of national and international climate policy implementation. Anti-climate interests learn about the true effects of climate damages but may be tempted to "misreport" their findings, downplaying the true climate threat. I find that misreporting decreases the likelihood of policy implementation through its effects on voter beliefs. Misreporting is most prevalent when the perceived severity of climate risks is intermediate, which is when uncertainties can be exploited most effectively. Consequently, the probability of international climate coordination is most stagnated if expectations about vulnerability are middling, but increases as knowledge of climate severity evolves and misreporting tempers. The model departs from canonical theories of international climate cooperation by treating countries' actions as complementary and by explaining policy suboptimalities as the outcome of domestic political actors exploiting uncertainty.

*I thank Bruce Bueno de Mesquita, Eric Dickson, Sandy Gordon, Zuhad Hai, Peter Rosendorff, Tara Slough, Alastair Smith, Aleksandra Conevska, Kun Heo, Carolina Torreblanca, Stefano Carattini, Zhengyan Li, and audiences at New York University, APSA 2024, and EPG 2025 for helpful comments.

†Ph.D. Candidate, Department of Politics, New York University. Contact: melnickj@nyu.edu and justinmelnick.github.io.

Uncertainty surrounding climate change's effects and intensity is fundamental to the political response to it, as formulating policies to combat climate change requires both politicians and citizens to form beliefs about their vulnerability to climate risks, and to evaluate whether and how such risks justify policy intervention (Balcazar and Kennard 2025; Gazmararian and Tingley 2023; Gazmararian and Milner 2024*a*;*b*). This paper explores how information about the severity of climate change affects beliefs about the appropriateness of policy reform and subsequently the likelihood of climate action. In particular, I consider how changes in these expectations—the evolution of knowledge about climate change's effects (Hai 2024) as well as personal experiences with a warming world (Egan and Mullin 2012)—alter the messaging strategies of anti-climate special interest groups vis-à-vis the public (Kollman 1998; Stokes 2020; Williams et al. 2022) about the necessity of climate reforms. In turn, citizens' beliefs about whether climate policies are appropriate affects assessments of their political leaders and ultimately politicians' decisions to pursue climate policies (Stokes 2016; Mildenberger and Tingley 2019).

Through a formal model of domestic and international climate policymaking, I highlight a trilateral relationship between interest groups, politicians, and voters that shapes the prospects for national and internationally coordinated climate action. This relationship disciplines variation in coordinated climate outcomes as a function of prior expectations about vulnerability to climate change, which shape special interests' optimal messaging strategies. Anti-climate interests like fossil fuel companies can learn about the true effects of climate damages via climate models and forecasting (Oreskes and Conway 2011), and may be tempted to "misreport" their findings, downplaying the true climate threat. Counterintuitively, misreporting is nonmonotonic: I find that misreporting is most prevalent when the perceived severity of climate risks is intermediate, which is when uncertainties can be exploited most effectively. If perceived risks are low, special interests need not invest in the infrastructure to misreport because climate action is unlikely. Conversely, as expectations

about climate vulnerabilities increase, the need to misreport heightens in order to counteract the possibility of climate reforms; prevalence of misreporting increases until it becomes too costly to do so, at which point special interests become more truthful.

Given the trajectory of climate messaging, I study the downstream effects of these messages on the prospects for policy implementation via their effects on voter beliefs. Politicians, with an eye toward reelection, want to ensure that their decision to adopt climate reforms is commensurate with perceived environmental harms, and is recognized as such by voters. I show that a higher incidence of misreporting by special interests disincentivizes politicians from pursuing climate reforms. Greater biases in messaging minimizing the severity of climate change shade politicians toward inaction because special interest messaging forms a lens through which voters assess the appropriateness of politician behavior. Thus, when knowledge of climate change's severity is intermediate, there is a countervailing force on the prospects for climate action because of special interests' incentives to misreport.

Moreover, as a consequence of strategic information dissemination by special interests, I find that the probability of international climate coordination is greatest when knowledge about climate severity is high—and thus misreporting is declining—but diminishes if expectations about vulnerability are middling. By studying countries' incentives to coordinate their climate policies, I identify a novel phenomenon of *informational spillovers*: information distortions in one country undermine climate efforts worldwide. These spillovers are most likely to arise when prior expectations of the climate threat are intermediate and special interests are most empowered to misreport. Qualitatively, these dynamics help to explain the trajectory of climate policymaking as a function of the proliferation of misreporting in countries like the United States, which had previously stagnated global climate action.

This paper contributes to domestic and international theories of climate policymaking. Primarily, it innovates by departing from extant theories of international climate cooperation on several avenues. First, the model endogenizes the effects of domestic politics on interna-

tional climate policy outcomes (cf. Battaglini and Harstad 2020; Melnick and Smith 2025), which allows for the exploration of a novel causal mechanism to explain the underprovision of climate policy. Classical theories of global climate cooperation argue the underprovision of climate policy stems from the national costs of supplying global benefits (Ostrom 1990; Stern 2007; Bernauer 2013; Keohane and Victor 2016; Kennard and Schnakenberg 2023). By contrast, this model locates suboptimality within the domestic political environment, specifically because of the uncertainty that politicians face about the appropriateness of climate reforms given assessments about vulnerability. Increased misreporting exacerbates this deficiency: by skewing voter beliefs against climate action, special interests effectively dissuade politicians from pursuing climate reforms perceived as electorally costly, even if these reforms were *ceteris paribus* necessary. Hence the climate policy observed in equilibrium diverges from the normative optimum.

Additionally, the model contributes by departing from extant models of international climate cooperation (e.g., Harrison and Lagunoff 2017; McAllister and Schnakenberg 2022; Kennard and Schnakenberg 2023) by assuming countries' actions are international strategic complements. Conventional wisdom claims that global climate cooperation efforts are dominated by free-riding concerns, implying that carbon emissions or abatement efforts are strategic substitutes (Barrett 2003). On this view, the marginal value of action is decreasing as more nations abate. Instead, this paper presumes that adopting climate policy is more valuable when other nations do the same, as suggested by the empirical patterns below. Consistent with the empirical evidence, the model uses strategic complementarity as a guiding assumption to help rationalize the coordinated evolution of global climate policymaking and, in so doing, argues that the dearth of climate action that the world observed until the mid-2000s and early 2010s emanated from the spillover effects of anti-climate special interest messaging. This also helps explain variation in climate policies within countries over time despite the fact that the structure of the collective action problem has remained *ceteris*

paribus fixed over time—it continues to be true that policies to curb national emissions are individually costly but contribute to a global benefit.

A common explanation for variation in global climate action posits that the distributional conflicts generated by climate reforms offer political advantages for domestic incumbents. The literature suggests that policy implementation inherently creates domestic winners and losers, meaning environmental reforms need not be scoped by collective action concerns (Aklin and Mildenberger 2020), pointing instead to factors like electoral institutions and electoral incentives (Finnegan 2022; Melnick 2024), special interest influence (Mildenberger 2020; Stokes 2020), and sectoral conflicts (e.g., Aklin and Urpelainen 2013; Cheon and Urpelainen 2013; Hughes and Urpelainen 2015) as shapers of climate policymaking. This paper argues that uncertainty surrounding the climate crisis renders policy responses malleable, as the delineation between winners and losers shifts depending on the policy approach. Uncertainty also makes finding the appropriate policy response to climate change less clear, which can animate distributive conflict—if true climate vulnerabilities were known, more efficient policy bargains could be negotiated by distributing abatement costs more easily or by compensating climate losers (cf. Gazmararian and Tingley 2023; Bolet, Green and González-Eguino 2024)—and may be exacerbated by strategic messaging from special interests. Thus, this theory presents a complementary argument, positioning distributional concerns within the broader context of informational constraints. The emergence of distributional conflict, I argue, can be a consequence of uncertainty surrounding climate change, which requires that we study the effects of information on climate policy.

This paper also sheds light on the role of "outside lobbying" (Kollman 1998) in climate politics. Public messaging—which may promote doubt or denialism to delay climate action (e.g., Oreskes and Conway 2011; Frumhoff, Heede and Oreskes 2015; Supran 2022)—complements special interest lobbying (Kim, Urpelainen and Yang 2016; Brulle 2018; Stokes 2020; Brulle 2021; Cory, Lerner and Osgood 2021; Schnakenberg and Turner 2024) and con-

tributions (Brulle 2014). Carattini, Matter and Roesti (2024) examine patterns of corporate advertisement spending as a measure of public messaging, finding that anti-climate interests spend more during election periods and that this spending is associated with content skeptical of the effects of climate change. This paper isolates how special interests design information targeted at citizens to affect their beliefs about the need for climate action—which in equilibrium affects the implementation of climate policy through politicians' incentives for reelection. The theory's contribution to this literature lies in describing the trajectory of climate-skeptical messaging: I provide a parsimonious explanation for changes in anti-climate groups' communication strategies over time, documenting their relative truthfulness early on, their pivot into messages downplaying the threat or promoting individualization of responsibility (Chater and Loewenstein 2023), and ultimately re-acknowledging the possible damages of climate change (Green et al. 2022; Williams et al. 2022).

The model also speaks to literatures spanning mass climate attitudes and the electoral effects of climate policy implementation. In the model, individuals receive information about the effects of climate change, and such information is relevant to their voting behavior through their updated *beliefs* about climate-related uncertainties (Gazmararian and Milner 2024*a*)—not through a wholesale change in policy preferences. Observational empirical evidence on whether voters reward or punish climate policies at the ballot box is mixed (e.g., Stokes 2016; Urpelainen and Zhang 2022; Bolet, Green and González-Eguino 2024; Colantone et al. 2024; Gazmararian 2025; Voeten 2025), so the model helps to unpack why citizens may believe climate change is an important problem but not necessarily hold politicians accountable for their lack of action.

Trajectories of Special Interest Messaging and Climate Policy

To preface the argument, I descriptively examine variation in special interest messaging behavior as well as the evolution of global climate policies. Upward of 60% of historical global

carbon dioxide and methane emissions can be traced to 90 oil and gas companies (Heede 2014; Ekwurzel et al. 2017), which possess resource reserves that would yield significant profits but intensify climate change (Green et al. 2022). Many of these groups exploited the uncertainty inherent to climate change (Oreskes and Conway 2011; Williams et al. 2022), orchestrating global informational campaigns aimed at distorting public understanding of climate change and dissuading support for large-scale environmental regulations (Antonio and Brulle 2011; Brulle 2014; Chater and Loewenstein 2023). However, as knowledge of climate vulnerabilities evolved over time, these groups began to acknowledge environmental harms, reversing course on anti-climate messaging.

A notable example is ExxonMobil: Figure 1 displays a timeline of events pertaining to Exxon's disclosure[1] of climate-related information (see Appendix C for further details on sources in the figure). Exxon's messaging strategy has shifted several times. In the late 1970s and early 1980s, Exxon's scientists truthfully communicated the possibility of a climate crisis based on the combustion of fossil fuels and the release of greenhouse gases. However, this changed in the late 1990s and early 2000s, when Exxon exploited the uncertainty inherent to climate change, orchestrating a public campaign to convince citizens that climate change did not warrant broad policy action. While climate reforms would run counter to Exxon's interests, the company nevertheless shifted its messaging again in 2014 when it publicly acknowledged its role in fostering climate risks. Since then, ExxonMobil has advocated for policy solutions like carbon pricing that both recognize the climate threat and take steps toward solving the problem; this pattern of accepting climate science and policies, even lobbying in favor of climate reforms, has been documented within extant literature (Kennard 2020; Green et al. 2022). To be clear, companies like ExxonMobil continue to

[1]Exxon's corporate-branded documents are not the only means through which it communicated with the public. The company also projected its desired message through organizations like the American Enterprise Institute, the Competitive Enterprise Institute, and the Cato Institute that oppose mandatory action on global warming and other environmental standards (Union of Concerned Scientists 2007).

disclose information minimizing the climate threat (Supran and Oreskes 2021), but there is a noticeable shift in their rhetoric toward acknowledgment relative to the denialism of the early 2000s (Antonio and Brulle 2011).

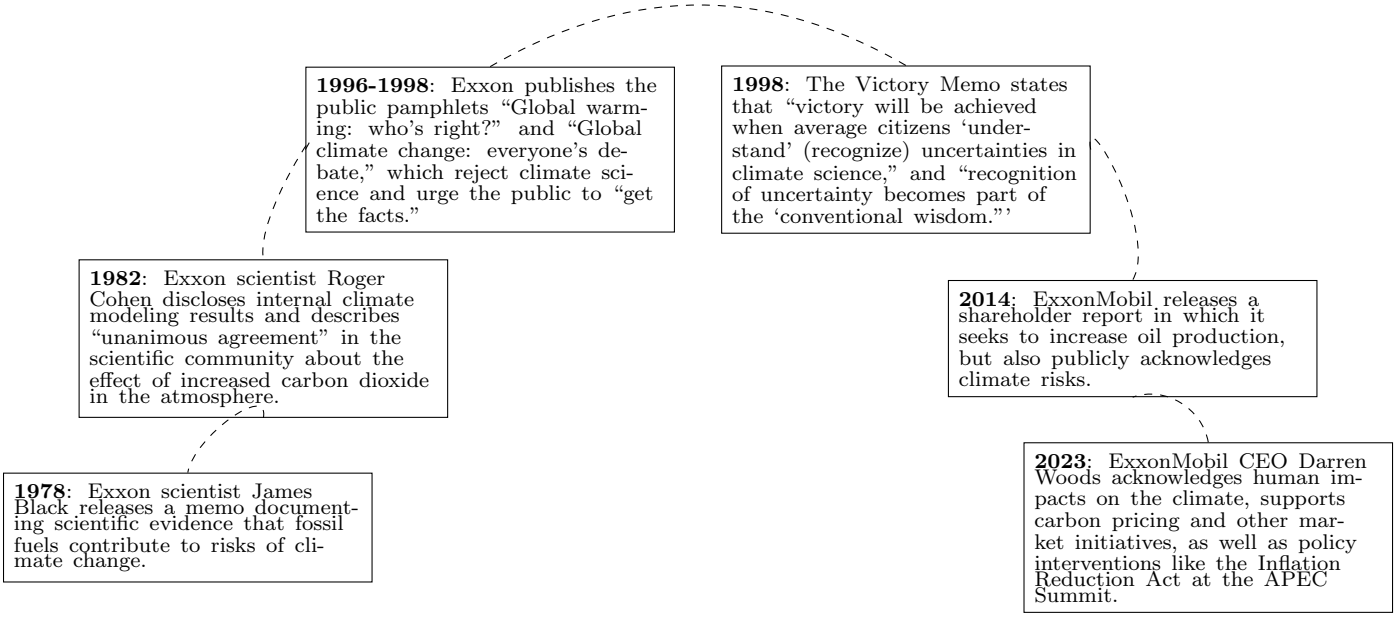

Figure 1: Variation in Exxon's Climate Messaging

Exxon's behavior is not unique: other companies pursued similar messaging campaigns to dissuade their publics against climate action. Shell and BP, as well as many other firms through the lobbying group Global Climate Coalition, produced documents that privately recognized the well-established scientific basis of increasing greenhouse gas emissions on global climate, but later disseminated information to the public that contradicted these findings. For example, BP's carbon footprint calculator, launched in 2004, sought to individualize responsibility for climate change and minimize the impact of potential climate regulations on fossil fuel companies. These firms too have transitioned toward more "pro-climate" messaging in recent years and have been more forthcoming about climate risks (Green et al. 2022).

As group messaging shifted, so too did the global appetite for climate action. Figure 2

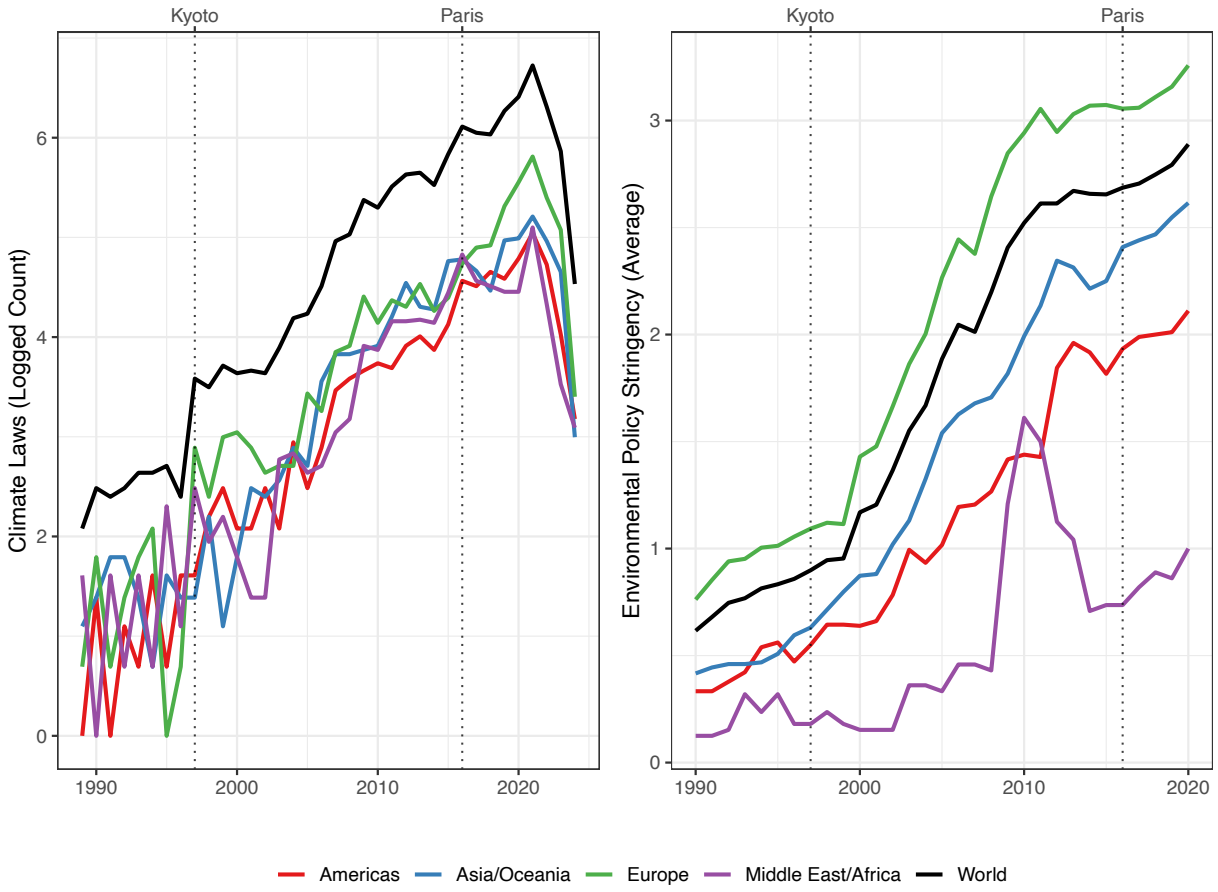

Figure 2: Climate Policymaking Trajectories

documents that, within the timeframe that Exxon and other groups began to shift their messaging toward more truthful acknowledgments of the climate threat, countries began to implement more climate laws and policies of increasing ambition.[2] These trends suggest that countries' actions and policy stringency efforts are positively correlated (with pairwise

[2]Data on climate laws comes from from the Climate Change Laws of the World project (Nachmany et al. 2017), which covers 196 countries plus the European Union. I examine between 1990 and 2023. To be included as a law, a document must have full legal force or set out a current set of government policy objectives motivated by climate change. Data on environmental policy stringency comes from the OECD (Botta and Koźluk 2014; Kruse et al. 2022) for 40 countries between 1990 and 2020. The index ranges from 0 to 6, which greater values meaning greater stringency. Stringency is defined as the ability to explicitly or implicitly place a price on pollution through market-based (taxes, trading schemes, feed-in tariffs, and deposit and refund schemes) and non-market policies (command-and-control standards and subsidies).

positive correlations estimated in Appendix B), contrary to extant theoretical frameworks that stress free-riding deficiencies based on strategic substitution effects that predict a negative correlation in countries' policymaking behavior (cf. Kennard and Schnakenberg 2023). These patterns beget a need for greater theoretical innovation to explain the stagnation and then growth of climate policies across the globe: one explanation consistent with this data is a complementarity across countries in their national climate measures, and the theory employs this assumption along with variation in knowledge of climate change's severity to explain this empirical pattern.

Model

The model depicts the politics of climate policymaking at home and abroad between two countries, $i = 1, 2$ (also referred to as i and j), which each contain a politician P ("she"), a special interest group S ("it"), and a representative or median voter V ("he").[3] There are two policy-relevant states of the world $\omega \in \{0, 1\}$. In simplified terms, ω represents the severity of climate change's effects or the vulnerabilities to climate-related damages. Each state of the world carries a "correct" policy response that is commensurate with anticipated environmental harms: state $\omega = 1$ indicates a scenario in which greater climate policy reforms are appropriate because of greater vulnerability to climate change's effects, while the case of $\omega = 0$ represents an instance in which the status quo or more modest climate reforms are sufficient. As will be detailed below, players have policy preferences that depend on this underlying state. The true value of ω is unobserved, but players share a common prior $P(\omega = 1) = \pi \in (0, 1)$, capturing the expected impacts of climate change.[4]

[3]The language of voters and elections is used to ease exposition, but the model need not be scoped to democratic countries. In nondemocratic states, the voter may be an elite or other individual whose political support is pivotal for the leader's survival in office (Bueno de Mesquita et al. 2003).

[4]While individual knowledge about climate change may vary globally (Lee et al. 2015; Kennard 2025), the prior represents a common baseline from which all actors have expectations about climate change's effects, which may stem from common informational sources like the IPCC (Hai 2024).

The game begins with the special interest group in each country committing to the design of information about the state of the world ω. This takes the form of a signal distribution, or experiment $\mathcal{E}_i(s_i, \omega) = P(s_i|\omega)$. The signal s_i is akin to a report about climate change's severity, which takes on two values $s_i \in \{0, 1\}$. Since I focus on the case of an anti-climate interest group like ExxonMobil, S seeks to convince their domestic public that $\omega = 0$, implying that the correct policy response is to take minimal climate action. Given the preferences of the interest group, as well as the dichotomous nature of the state of the world, the choice of an experiment can be expressed as

$$\mathcal{E}_i(s_i = 0, \omega = 0) = 1. \;\; \mathcal{E}_i(s_i = 1, \omega = 0) = 0.$$
$$\mathcal{E}_i(s_i = 0, \omega = 1) = \beta_i. \;\; \mathcal{E}_i(s_i = 1, \omega = 1) = 1 - \beta_i.$$

Whenever the true state is $\omega = 0$, the group will always send the signal $s_i = 0$: it would never be in the group's interest to communicate that climate change poses a threat that demands action when the correct policy aligns with its preferences for inaction. However, if $\omega = 1$, there is some probability $\beta_i \in [0, 1]$ that the special interest in country i reports signal $s_i = 0$. I will therefore refer to β_i as the level or intensity of "misreporting" about the true effects of climate change in country i. Higher values of β_i mean that the special interest is more likely to send the message that climate change warrants minimal action, even though the true state of the world is that climate change poses severe harms. The signal structure implies that the choice of β_i is isomorphic to the choice of the experiment $\mathcal{E}_i(s_i, \omega)$. S chooses β_i optimally in order to maximize the chances that the politician enacts policy congruent with $\omega = 0$; the group receives a payoff of 1 in this eventuality and zero otherwise. Spending resources to develop the capacity to misreport is costly, and comes at a cost $c(\beta_i)$ where $c(\cdot)$ is an increasing and convex cost function where $c(0) = 0$ and $c'(0) = 0$.

This information structure rests on some important assumptions, namely symmetric un-

certainty and commitment, reminiscent of Kamenica and Gentzkow (2011).[5] Think of it as follows: the group allocates resources to develop a climate model with the goal of determining ω, and commits to a disclosure rule dictating the probability of reporting unfavorable climate change evidence in the event that such evidence is found.[6] The parameter β_i represents the likelihood of reporting severe climate effects, and its value reflects the group's commitment to disclose information contrary to its interests. Symmetric uncertainty ensures no signaling in choosing β_i. Substantively, β_i could be the group's ability to suppress whistleblowing on climate vulnerability, as there may be a risk that climate scientists rebuke the special interest group and bring such evidence to the public. Then the costs of misreporting represent expenses for fabricating reports, controlling public messaging, or managing downstream reputational risks and whistleblower suppression; ExxonMobil spent upward of $30 million in order to prevent knowledge of climate damages from surfacing.[7]

After the special interest group has committed to its experiment, the game proceeds into the *climate policy subgame*, which is a variation on Canes-Wrone, Herron and Shotts (2001). Given each β_i, the politicians in each country must take a policy action on climate change, $a_i \in \{0, 1\}$. The action $a_i = 1$ represents broad climate reform or more intensive policies that might regulate the production of fossil fuels, and $a_i = 0$ captures the status quo or minimal policy measures.[8] The politician's action as well as the special interest's signal are observable to the voter who decides whether to retain or replace the politician, $r_i \in \{0, 1\}$ based on her policy and the special interest's report.

[5]See Little (2023) for discussion of limitations of the commitment assumption. In this context it allows for the analysis of the impact of the special interest's message on politician behavior, which is necessary if we think that a special interest has preferences over policy outcomes.

[6]This is analogous to choosing a level of certainty required to "reject the null hypothesis of no climate change" if it discovers that $\omega = 1$. The parameter β_i represents the significance level at which S fails to reject the null hypothesis, so $1 - \beta_i$ is the probability of issuing a report acknowledging that the effects of climate change are more severe.

[7]https://www.theguardian.com/environment/2015/jul/08/exxon-climate-change-1981-climate-denier-funding

[8]Modeling implementation costs would only bias results toward $a_i = 0$.

While climate change's effects remain uncertain, the politician has an informational advantage over the voter because she observes a signal about the state, indicating the relative success of potential climate reforms. The precision of this signal varies across politicians; the politician has a private type $\theta_i \in \{0, 1\}$ indicating her "competence." The voter's prior about the politician's competence is $P(\theta_i = 1) = \tau_i \in (0, 1)$. Politicians' types are not known internationally, but I assume that the priors τ_i and τ_j are sufficiently high.[9] The signal is formulated as $x_i^\theta = \omega + \nu_i^\theta$ where $\nu_i^\theta \sim G(\cdot)$, has zero mean and admits a log-concave probability density function $g(\cdot)$ with the monotone likelihood ratio property such that $\lim_{x\to-\infty} g(x) = \lim_{x\to\infty} g(x) = 0$ (one example would be the normal distribution, $\nu_i^\theta \sim N(0, \frac{1}{\alpha_\theta})$). I focus on the limiting case where a competent politician has more precise signal of the state than the incompetent politician, in particular that $var(\nu_i^1) = 0 < var(\nu_i^0)$.[10] Let $G(t; \omega) = P(x_i^0 \leq t|\omega)$, be the cumulative distribution of the incompetent type's signal given the value of ω.

The politician and the voter share the same intrinsic policy preferences: each want policy to match the state of the world, or $a_i = \omega$, meaning that broad climate reforms are adopted only when it is appropriate to do so. However, since domestic climate policies also reverberate internationally, politicians care about the behavior of other nations; politician i also wants politician j to choose $a_j = \omega$. Everyone needs to "get policy right," which comports with the simplest form of "consensus decisionmaking" (Barrett 2016) pioneered at the United Nations in international climate negotiations. This assumption is how I parameterize strategic complementarities across nations, as it means that both politicians are pivotal in implementing a joint outcome. If politicians both match their policy actions to the state of the world, they enjoy a policy payoff normalized to 1. Each politician also cares about

[9]The assumption serves to rule out pandering from the competent politician, and consequently an equilibrium in which politicians pool on climate action. See Assumption A.1 and Lemma A.8.

[10]This is without loss of generality, all that is required is that a competent type's signal of ω is more precise than the incompetent type's signal.

remaining in office, and receives a payoff normalized to 1 if the voter reelects her.

Upon announcement of global climate policies, the representative voters in each country observe the triple (a_i, s_i, a_j) and retain or replace their leaders based on their assessments of competence $\mu_i(a_i, s_i, a_j) = P(\theta_i = 1|a_i, s_i, a_j)$.[11] The voter receives a payoff of 1 if he reelects a competent politician and a payoff of zero if he reelects an incompetent politician. If he removes the incumbent, replacing her with a challenger, his payoff is a random draw $\varepsilon_i \sim F(\cdot)$ where $F(\cdot)$ is a known distribution function. This payoff could represent the expected competence of an electoral challenger, and thus the possibility that climate policy will be executed competently in the future, or the value of the incumbent politician on all other electorally salient dimensions that are independent of climate policy. The shape and support of the distribution $F(\cdot)$ modulate how much the voter cares about climate policy relative to other issues, capturing salience as well as structural electoral factors such as partisan asymmetry or incumbency advantages.

For players in country i (country j's are analogous), payoffs are formalized as follows:

$$u_S = 1 - a_i - c(\beta_i).$$
$$u_P = a_i a_j \omega + (1 - a_i)(1 - a_j)(1 - \omega) + r_i.$$
$$u_V = r_i \theta_i + (1 - r_i)\varepsilon_i.$$

The timing of the game is summarized as follows:

0. Nature randomly draws the state ω.

1. Interest groups commit to experiments $\mathcal{E}_i(s_i, \omega)$, choosing $(\beta_i, \beta_j) \in [0, 1]^2$.

2. Politicians observe signals x_i^θ and choose climate policies, $(a_i, a_j) \in \{0, 1\}^2$.

[11] Allowing voter i to also condition his retention rule on interest group j's signal makes the model more tedious and does not qualitatively alter results.

3. Interest groups' signals $(s_i, s_j) \in \{0,1\}^2$ and the shocks $(\varepsilon_i, \varepsilon_j) \in \mathbb{R}^2$ are realized. Voters form posterior beliefs $(\mu_i(a_i, s_i, a_j),\ \mu_j(a_j, s_j, a_i) \in [0,1]^2)$ and choose to retain or replace their politicians, $(r_i, r_j) \in \{0,1\}^2$.

I examine weak Perfect Bayesian equilibria. A strategy for the special interest group i is a choice of β_i that is a best response to the choice β_j by interest group j given equilibrium behavior in the climate policy subgame. In the subgame, a strategy for politician i is a mapping from her type θ_i and private signal x_i^θ into an action, given beliefs about what she expects politician j to do. The voter's strategy is a reelection rule that is sequentially rational given politician i's policy action, politician j's policy action, interest group i's signal about the state of the world, and the realization of the shock ε_i. Voter i's beliefs about politician i's competence are formed by Bayes's Rule wherever possible.

Comments on the Model

The model setup makes several simplifying assumptions that warrant further discussion mapping theoretical components to relevant empirical elements of the politics of climate change.

Interpretation of the state and actions. There is a connection between "appropriate" policy responses and the state of the world, which immediately generates distributional conflict between the special interest, which has state-independent preferences, and the politician and voter, who have state-dependent preferences over policy. This conflict arises directly because of the fact that there is uncertainty about what types of policies should be implemented. The state ω and actions a_i, a_j are assumed to be binary, but provide sufficient richness to capture this fundamental tension in climate politics (Colgan, Green and Hale 2021). By way of interpretation, policy $a_i = 0$, which is the preferred choice of the special interest group regardless of the state of the world, might typify minimal climate reforms

or even upholding the status quo, or other consumer-facing policies that still allow for the combustion of fossil fuels. Policies that invoke the "individualization of responsibility" fall under this umbrella. Policy $a_i = 1$ would encompass more comprehensive climate policy reform or policies that are more likely to affect production of fossil fuels. One could imagine a model with a continuous state of the world and continuous action space, allowing for more fine-grained interpretations of policy outcomes, but this adds mathematical complexity without providing additional substantive insights.

The special interest and assumptions on information. I model the strategic dissemination of information by a single interest group that opposes climate action. The appendix includes an extension in which the special interest group has a bias in favor of environmental action (e.g., the Sierra Club), in which all results bias toward climate action rather than inaction. Concentrating on a single group allows for a more concrete understanding of the incentive structure for misreporting, and focusing on an anti-climate group captures the empirical regularity of anti-climate lobbying and its role in stalling climate policy, especially in the United States (Dunlap and McCright 2011; Brulle 2014; Dunlap and McCright 2015), although one could interpret s_i as the "net messaging" a voter receives from multiple groups.

To isolate and focus on the "outside lobbying" mechanism (Kollman 1998) in which special interests indirectly influence policy through voter beliefs, I assume that the politician does not observe s_i when implementing climate policy. Results would not be qualitatively different if the politician could condition her strategy on s_i and the appendix describes an extension for this alternate setup.

The politician's incentives and the basis of the selection problem. The politician and the voter have aligned incentives on policy as each wants actions to match the state. The voter thus rewards politicians whom are viewed as competent, or were more likely to

have done the right thing. The politician's competence lends itself to several interpretations. We may think that some politicians are more likely to implement successful climate reforms given information that they have at their disposal about the true threat of climate change. This may arise due to variation in bureaucratic capacity or variation in the quality of scientific knowledge. In addition, competence may signify a heightened ability to implement policy congruent with the voter's willingness to pay for climate policy, given their prior belief about the need for such policy measures.

Motivated reasoning and partisanship. The literature documents that individuals can display motivated reasoning when learning about climate change or that their inferences may be colored by partisan affiliation (e.g., Saunders 2017; Druckman and McGrath 2019; Bayes et al. 2020; Bago, Rand and Pennycook 2023). These cognitive factors are not directly modeled, as is standard. Given an individual's prior, motivated reasoning may be observationally equivalent to more classical versions of updating (Little 2025), and partisan affiliation or biases could be accommodated through the distribution $F(\cdot)$, the valence shock. All that is required for results to hold is for the politician's reelection probability to be increasing in the voter's belief that she is competent.

Analysis: Domestic Politics

Before moving to the international model, I solve the game for the case of a single country. I alter the politician's utility function slightly to accommodate this, $u_P = a_i\omega + (1-a_i)(1-\omega) + r_i$; I suppress dependence on country i to reduce notational clutter. This section establishes two main results about the relationship between information and climate policymaking. Result 1 demonstrates that as special interests are more likely to misreport to the domestic public, politicians are less incentivized to take climate action. Result 2 shows that the

optimal level of misreporting is nonmonotonic in climate change's expected severity (or the *ex ante* expectation that climate reform is appropriate). Before turning to results, I state the game's equilibrium. Proofs of all formal results are in Appendix A.

Proposition 1 *In a perfect Bayesian equilibrium:*

1. *Given equilibrium behavior in the climate policy subgame, the special interest chooses an optimal misreporting level* $\beta^* \in [0, 1]$.

2. *A unique cutoff* $\tilde{x}^*$ *exists such that a politician of type* θ *chooses policy* $a = 1$ *given signal* x^θ *with probability* $\sigma^*(\theta, x^\theta) \in [0, 1]$,

$$\sigma^*(1, x^1) = x^1 = \omega.$$
$$\sigma^*(0, x^0) = 1 - G(\tilde{x}^*; \omega).$$

3. *Upon observing policy* a *and signal* s*, the voter forms posterior belief about politician competence* $\mu^*(a, s; \tilde{x}^*)$ *and reelects the politician with probability* $F(\mu^*(a, s; \tilde{x}^*))$.

Proceeding by backward induction, I introduce the intuitions of the equilibrium. First consider the *climate policy subgame,* the interaction between the voter and the politician in which β is an exogenous parameter. When evaluating the politician's competence, the voter draws inferences based on both the politician's actions and the information provided by the special interest group regarding the state of the world. Since both the politician and the voter prefer policy to align with the true state of the world, the politician's actions reveal information about both her type and her beliefs regarding the urgency of climate policy. Following any policy choice a and signal s, the voter reelects the politician if and only if $\mu(a, s) \geq \varepsilon$, so the probability of retention from the politician's perspective is $F(\mu(a, s))$.

Now considering the behavior of the politician, it is clear that the competent politician always prefers to choose $a = \omega$: policywise she wants to match her action to the state and

has perfect information about the need for climate policy. By contrast, the incompetent type does not precisely know the state of the world, so she must form beliefs about the true severity of climate change. Given the value of her private signal $x^0 = x$, the incompetent politician's posterior belief about the state is $\eta(x) = P(\omega = 1|x) = \frac{\pi g(x;1)}{\pi g(x;1)+(1-\pi)g(x;0)}$ where $g(\cdot;\omega)$ is the density of the incompetent politician's signal in state ω. These beliefs affect her personal assessment about potential environmental damages, as well as which messages she believes the voter could observe from the special interest. Write $\Delta(s) = F(\mu(1,s)) - F(\mu(0,s))$ as the difference in the politician's reelection odds between taking climate action and not, holding the interest group's signal fixed. The incompetent politician chooses $a = 1$ if and only if

$$\eta(x)+(1-\beta)\eta(x)F(\mu(1,1))+(1-\eta(x)+\beta\eta(x))F(\mu(1,0)) \geq (1-\eta(x))+(1-\beta)\eta(x)F(\mu(0,1))+(1-\eta(x)+\beta\eta(x))F(\mu(0,0)),$$

so the cutoff $\tilde{x}^*$ solves

$$\underbrace{2\eta(\tilde{x}^*) - 1}_{\text{net belief } a=1 \text{ correct}} + \underbrace{(1-\beta)\eta(\tilde{x}^*)\Delta(1;\tilde{x}^*)}_{\text{net electoral return if } s=1} + \underbrace{(1-\eta(\tilde{x}^*)+\beta\eta(\tilde{x}^*))\Delta(0;\tilde{x}^*)}_{\text{net electoral return if } s=0} = 0.$$

The incompetent politician weighs her posterior belief that $\omega = 1$ with the difference in reelection odds that each policy choice induces. If she is sufficiently confident that broad climate reform is the correct policy, then she chooses $a = 1$. Otherwise, she selects policy $a = 0$. Since the incompetent type's information is imperfect, she can sometimes make the "wrong" policy choice. The signal that makes the incompetent politician indifferent between choosing $a = 1$ and $a = 0$ is $\tilde{x}^*$, thereby identifying the equilibrium cutoff. Increasing $\tilde{x}^*$ would require the incompetent type to be more certain that $\omega = 1$ in order to take action, thereby decreasing the range of signals that would result in climate reform; decreasing $\tilde{x}^*$ would galvanize the incompetent politician toward climate action, meaning she needs lower quality information to choose $a = 1$.

The special interest's signal, s, plays a crucial role in shaping the equilibrium dynamics of the policymaking process. Since the special interest communicates the appropriateness

of climate policy, its message functions as a lens through which the voter interprets the politician's behavior. Consequently, it affects the voter's assessment of the politician's competence, and in particular, the voter is more likely to update favorably when the politician's action and the special interest's message coincide. To see why, consider the history following $(a, s) = (0, 1)$. Since the interest group is biased toward maintaining the status quo—new climate regulations like those targeting fossil fuels are detrimental to its interests—any signal $s = 1$ must be fully informative about ω, so the voter knows $\omega = 1$ for sure. Thus, if the politician failed to take action in this eventuality, she must be incompetent. To avoid this most severe electoral sanction, the incompetent politician internalizes the possible messages the voter could observe and tailors her policy to appear consistent.

Equilibrium Climate Action and Misreporting

We are interested in how the politician's equilibrium strategy changes with the special interest's level of misreporting β. Since both the politician's competence θ and her signal about the state of the world x are unobserved, it is useful to work with the *ex ante* probability of climate action, or the total probability that a politician chooses $a = 1$, written as

$$A(\tilde{x}^*) = \underbrace{\tau\pi}_{\substack{\text{competent type} \\ \text{takes action if } \omega=1}} + \underbrace{(1-\tau)\pi(1-G(\tilde{x}^*;1))}_{\text{incompetent type takes action if } \omega=1} + \underbrace{(1-\tau)(1-\pi)(1-G(\tilde{x}^*;0))}_{\text{incompetent type takes action if } \omega=0}.$$

Increasing the level of misreporting decreases the probability of climate action from the incompetent type. Formally, the cutoff $\tilde{x}^*$ is increasing in β, $\frac{d\tilde{x}^*}{d\beta} > 0$. As β increases, the interest group is more likely to send the signal $s = 0$ regardless of the state. While voters rationally downweight the probability of such a false negative, the signal still affects voter beliefs and subsequently the incompetent politician's willingness to take climate action. Increasing the level of misreporting incentivizes climate inaction because, as mentioned above, the voter becomes more likely to believe the politician is competent when observing consis-

tency between her actions and the interest group's signal. Since the voter's inference about the appropriateness of climate policy is produced jointly by the group's strategic motivations from the action of the politician, he becomes more scrutinizing of climate action in a world where misreporting is rampant. Subsequently, the incompetent politician optimally decreases the probability of climate action.

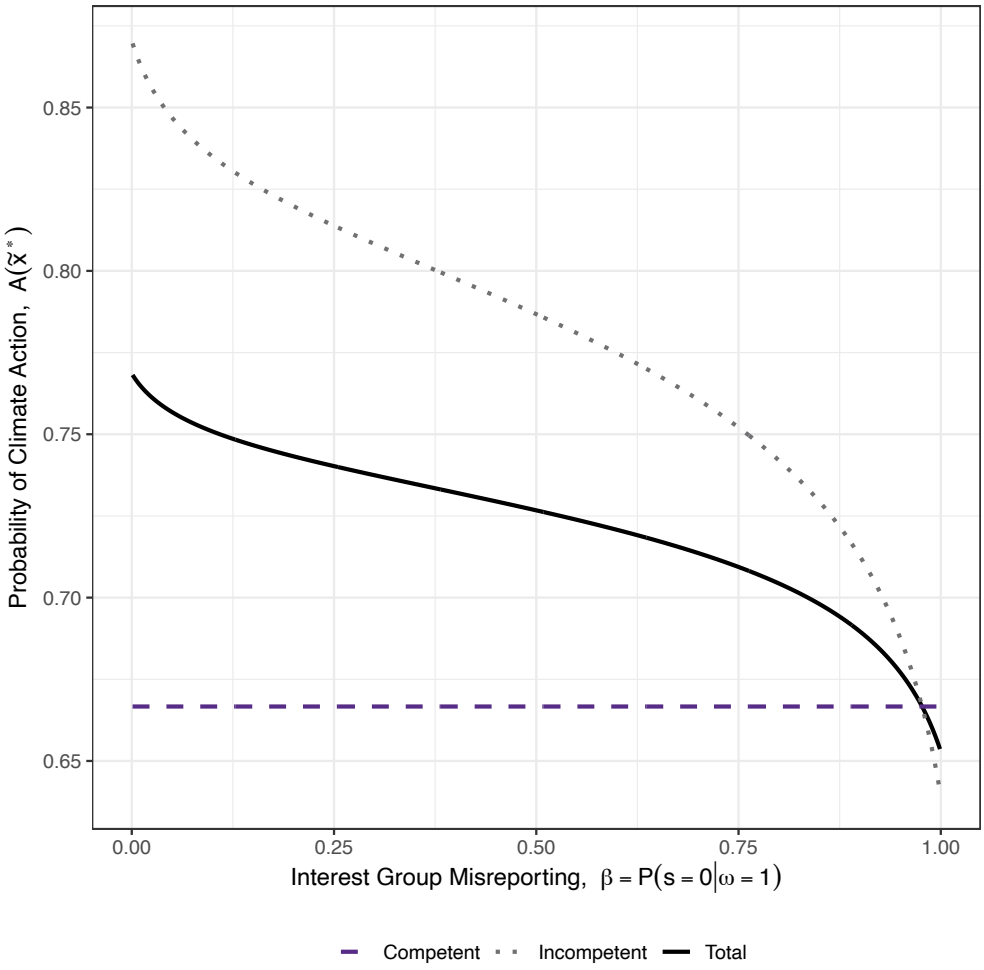

Figure 3: Probability of Climate Action Decreases in Misreporting
$\pi = \frac{2}{3}$, $\tau = \frac{1}{2}$, $\varepsilon \sim N(0,1)$, $\nu^0 \sim N(0,1)$

Misreporting affects the incompetent politician's incentives for climate action through her internalization of the voter's belief about her competence, which affects the politician's utility through her reelection concerns. Specifically, the politician's reelection odds are tied

to the voter's posterior beliefs about her competence, which are also affected by special interest messaging. As mentioned, the special interest's message acts as a lens through which the voter assesses the politician's climate policy; as that lens becomes more biased, the incompetent politician shades climate policy in favor of inaction to maintain the veneer of competence and subsequently increase her reelection chances. Suboptimality in climate policy provision arises from the incompetent politician's concerns over her electoral fortunes in the face of biased messaging.

While the competent type is unaffected by the special interest's misreporting, the probability of climate action decreases because of the informational effects on the incompetent politician's behavior. This is seen in Figure 3: the competent type's probability of choosing $a = 1$ is constant in β (purple dashed line), while the incompetent type's willingness to pursue climate reforms is decreasing in the level of misreporting (grey dotted line). As a result, the total expected level of climate action goes down (black solid line):

$$\frac{dA(\tilde{x}^*)}{d\beta} = -(1-\tau)\pi g(\tilde{x}^*;1)\frac{d\tilde{x}^*}{d\beta} - (1-\tau)(1-\pi)g(\tilde{x}^*;0)\frac{d\tilde{x}^*}{d\beta} < 0.$$

Result 1 *The probability of climate action is decreasing in special interest misreporting β.*

In a context of extensive misreporting, politicians are less inclined to pursue climate reforms due to the electoral consequences of implementing such policies. Since the voter becomes less likely to view climate reforms as correct, the incompetent politician diminishes her pursuits of reform. Conversely, in a scenario where interest groups truthfully disclose the impacts of climate change, we would expect to observe more reform.

Optimal Misreporting

Zooming out of the climate policy subgame, I determine how the special interest optimally designs information about the state of the world. Given the equilibrium behavior, the interest

group seeks to minimize the probability of climate action plus any costs associated with committing to misreporting. As made clear above, since the proliferation of misreported information about the state always slows down climate action by the incompetent politician, the special interest's ideal strategy would be to set $\beta = 1$, always sending $s = 0$. However, information design is costly for the special interest. The group's objective function is

$$\max_{\beta \in [0,1]} \; 1 - A(\tilde{x}^*) - c(\beta).$$

The special interest trades off the marginal benefits of spreading misreported information, which unambiguously leads to a decreased probability of climate action if an incompetent politician is in office per Result 1, and the marginal costs of developing the infrastructure to misreport. This tradeoff is characterized by the corresponding first-order condition:

$$\underbrace{(1-\tau)\frac{d\tilde{x}^*}{d\beta}\Big(\pi g(\tilde{x}^*;1) + (1-\pi)g(\tilde{x}^*;0)\Big)}_{\text{marginal benefit of incompetent type taking inaction}} = \underbrace{c'(\beta)}_{\text{marginal costs of misreporting}}.$$

To think about evolution in the special interest's message over time, I examine the relationship between β^* and the underlying severity of climate change π. The prior π captures the accruing expectations that climate change is environmentally harmful over time, so the comparative static can trace out temporal changes in special interest behavior. When π is low, the correct policy is more likely to be aligned with the preferences of interest group: bold climate reforms are not necessary on average. But when π increases, there are greater incentives to misreport because the more likely policy goes against the preferences of the special interest.

Figure 4 illustrates that the optimal β^* is nonmonotonic in π, taking an inverse-U shape. That is, if the expected risks of climate change are minimal or highly likely, then the special interest designs a relatively truthful signal. Intuitively, if climate change poses a minimal

threat such that action is almost never appropriate, then the interest group does not need to expend resources to achieve its preferred outcome; it is likely that the politician would choose $a = 0$ in the absence of a signal to obfuscate inference. Conversely, if π is very high, then the interest group's signal $s = 0$ would not be credible, as the voter leans heavily on the prior. In this case, it becomes prohibitively costly for the interest group to misreport both because of the material costs $c(\beta)$ but also because these messages would be rationally discounted by the voter.

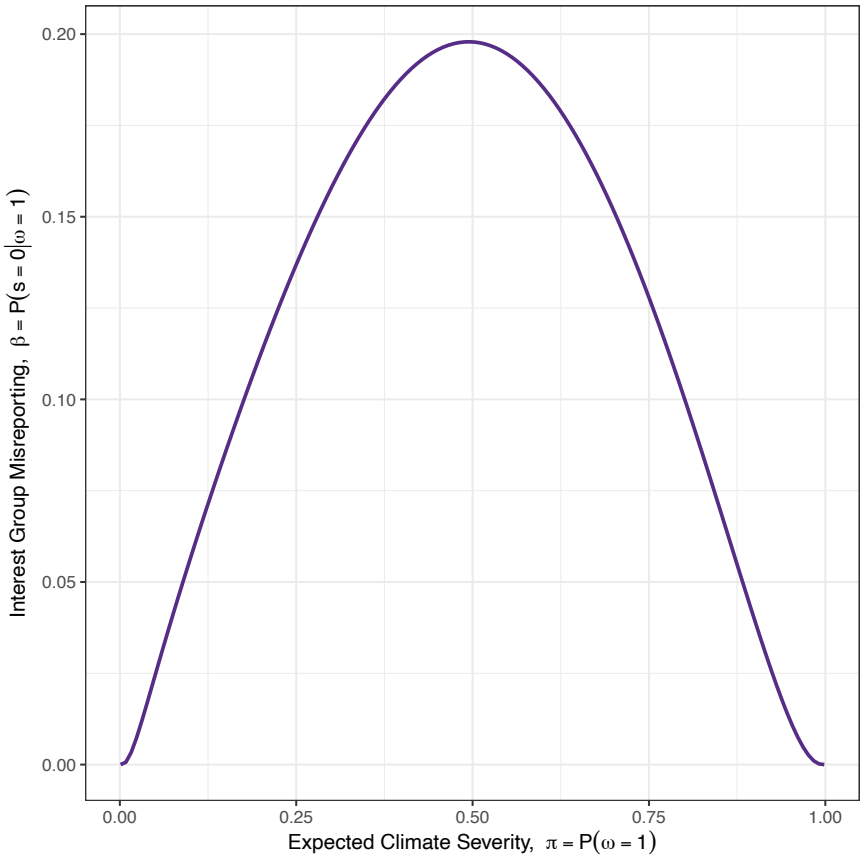

Figure 4: Nonmonotonicity of Optimal Misreporting in Expected Climate Severity
$\pi = \frac{2}{3}$, $\tau = \frac{1}{2}$, $\varepsilon \sim N(0,1)$, $\nu^0 \sim N(0,1)$, $c(\beta) = \frac{1}{4}\beta^2$

However, if climate risks are middling, meaning that the incompetent politician and the voter are the most unsure about whether climate policy is appropriate, then the interest group is most likely to misreport. This generates the most uncertainty about whether climate

policy is the correct reform to pursue. Here, a signal $s = 0$ carries most weight as it sways the public toward inaction, thereby discouraging the politician from pursuing climate reforms. This nonmonotonicity comports with the trajectory of information disseminated by companies such as Exxon, reminiscent of the timeline in Figure 1: when climate change's risks were poorly understood in the 1980s or there was little *ex ante* threat, Exxon's scientists toed the scientific consensus. Into the 1990s, their strategy changed toward convincing the public that climate change was not an issue that warranted a large policy response, corresponding to a time where knowledge about climate change's risks began to increase. This informational campaign began to wind down by the 2010s, a time where expected damages were increasing further, with Exxon acknowledging the severity of the climate problem.

Result 2 *The interest group's optimal information structure is nonmonotonic in the ex ante severity of climate change π: misreporting is most likely when π is intermediate.*

This result underscores the cross-cutting nature of uncertainty in climate policymaking: when politicians and voters do not precisely know their vulnerabilities to climate change, they must make assessments about what types of policy responses are appropriate to address the problem. Furthermore, as is expected by the distributional nature of climate policy (Colgan, Green and Hale 2021), there may be special interest groups with an interest in delaying action, but can disseminate information to the public about the severity of the climate threat. When the *ex ante* uncertainty about climate vulnerabilities is intermediate, then special interest groups proliferate information that downplays the risks of climate change and is likely to stymie political action by exploiting climate change's uncertainties. This presents a countervailing force on politicians who would be more likely to take action as π increases as their prior expectations now heighten the need for climate reforms.

Analysis: International Cooperation

This section analyzes the full model which considers the interplay between domestic politics and international climate cooperation. I consider how the informational effects described in the previous section interact with international efforts to coordinate climate policies. Results 3 and 4 establish the core of the theory: across borders, climate policies are strategic *complements* in equilibrium, which follows from the politicians' payoffs because both nations want to match their policy to the perceived climate threat. Hence, any domestic factors that suppress policymaking in one nation can spill over and affect decisionmaking internationally. Result 5 explores heterogeneity in international policy outcomes as a function of domestic misreporting. The equilibrium of the game is stated in Proposition 2 and resembles that of the domestic politics analysis.

Proposition 2 *In a perfect Bayesian equilibrium:*

1. *Given equilibrium behavior in the climate policy subgame, the special interests choose optimal misreporting levels* $(\beta_i^*, \beta_j^*) \in [0,1]^2$.

2. *A unique pair of cutoffs* $(\tilde{x}_i^*, \tilde{x}_j^*)$ *exists such that a politician of type* θ *in country* i *chooses policy* $a_i = 1$ *given signal* x_i^θ *with probability* $\sigma^*(\theta_i, x_i^\theta) \in [0,1]$,

$$\sigma^*(1, x_i^1) = x_i^1 = \omega.$$
$$\sigma^*(0, x_i^0) = 1 - G(\tilde{x}_i^*; \omega).$$

3. *Upon observing policies* a_i *and* a_j *and signal* s_i*, the voter in country* i *forms posterior belief about politician competence* $\mu_i^*(a_i, s_i, a_j; \tilde{x}_i^*, \tilde{x}_j^*)$ *and reelects the politician with probability* $F(\mu_i^*(a_i, s_i, a_j; \tilde{x}_i^*, \tilde{x}_j^*))$.

As before, the climate policy subgame proceeds wherein voter i reelects politician i if and only if $\mu_i(a_i, s_i, a_j) \geq \varepsilon_i$, occurring with probability $F(\mu_i(a_i, s_i, a_j))$. To consider the difference in electoral returns for politician i fixing the signal s_i and politician j's action a_j, write $\Delta_i(s_i, a_j) = F(\mu_i(1, s_i, a_j)) - F(\mu_i(0, s_i, a_j))$.

At the international level, politician i must form an assessment of politician j's likelihood of taking climate action, or the belief that politician j views climate change as sufficiently severe. Because signals are all centered around the same ω, they are correlated across countries. Climate change presents a common values uncertainty problem. This means that, from politician i's perspective who has signal $x_i^\theta = x_i$, $x_j^\theta | x_i \sim \eta(x_i)G(\cdot;1)+(1-\eta(x_i))G(\cdot;0)$. Politician i uses her updated beliefs about the state $\eta(x_i)$ to infer what politician j knows about the global climate threat (or lack thereof).

As in the single country case, competent politicians always follow their signals: since the international climate response requires both politicians to match their actions to the state of the world, it is optimal in policy terms to do the right thing. However, incompetent politicians, who do not know the true vulnerability to climate change, must consider two factors. First, as in the domestic politics analysis, an incompetent politician must consider how her actions play domestically in terms of informing the voter about her type. Second, her climate policy must be a best response to the other nation's climate policymaking. Let $y_j = P(a_j = 1|x_i)$ be the probability that politician j takes climate action from the perspective of the incompetent politician i who has received signal $x_i^0 = x_i$. She then pursues climate action herself, $a_i = 1$, if and only if

$$\underbrace{2y_j - 1}_{\substack{\text{net belief } a_i=1 \text{ correct} \\ \text{+ coordination}}} + \underbrace{\eta(x_i)(1-\beta_i)\Big(y_j\Delta_i(1,1) + (1-y_j)\Delta_i(1,0)\Big)}_{\text{net electoral gain if } s_i=1} + \underbrace{(1-\eta(x_i)+\eta(x_i)\beta_i)\Big(y_j\Delta_i(0,1) + (1-y_j)\Delta_i(0,0)\Big)}_{\text{net electoral gain if } s_i=0} \geq 0,$$

which resembles the condition characterizing $\tilde{x}^*$ in the domestic politics analysis, but also endogenizes the behavior of politician j. Hence, in equilibrium, an incompetent politician will pursue climate reform if and only if her signal about its appropriateness is sufficiently high, which means she also has to be convinced that politician j will do the same. Since the

incompetent politician j faces an analogous problem, the equilibrium to the international coordination game is characterized by a pair of cutoffs $(\tilde{x}_i^*, \tilde{x}_j^*)$, the solution to a system of two equations, which delineate the quality of information about the state of the world that an incompetent politician in each country would require to take climate action.

Informational Spillovers and International Climate Cooperation

The model highlights two relevant sources of information that affect international climate policymaking. First, the signal x_i^θ provides information about whether politician j is sufficiently likely to take action because signals are correlated. Hence, varying the cutoff rule $\tilde{x}_j^*$, or the ease with which an incompetent politician j pursues climate reform, also affects how politician i will respond. The next result formalizes that politicians' actions are strategic complements internationally: if politician i knows that politician j uses a more stringent threshold, making it less likely that j takes climate action, then politician i updates negatively on the appropriateness of climate reform and is less likely to take action as well. This follows directly from the fact that politicians need to coordinate their behavior around the true state of the world.

Result 3 *Actions are strategic complements: if politician j is less likely to take climate action then so is politician i, $\tilde{x}_i^*$ is increasing in $\tilde{x}_j^*$.*

The second source of information stems from the special interest group in each country, affecting how voters assess the appropriateness of the international climate policy outcome. Since countries want to coordinate their policy responses at the international level, changes in the domestic environment of one country will affect international climate action. Consider the effects of increased misreporting about the severity of climate change within country i. Since misreporting stagnates climate action in country i (Result 1),[12] and country i's

[12]The appendix reproves Result 1 for the international cooperation model, see Corollary A.5.

actions matter for country j (Result 3), such misreporting affects country j as well. Indeed, misreporting anywhere affects climate action everywhere, creating an *informational spillover*.

Result 4 *Increasing misreporting β_i increases incompetent politician j's cutoff $\tilde{x}_j^*$.*

These spillover effects arise because of the equilibrium forces that incentivize global climate coordination. Misreporting in country i has no *direct* effect on policymaking in country j, but spillovers occur because of the *strategic* effects that interlock each politician's willingness to undertake climate policy. Clearly, this willingness is a function of countries' domestic politics: the cutoffs $\tilde{x}_i^*$ and $\tilde{x}_j^*$ depend on one another and, as Result 3 illustrates, amplify each other. Formally, this can be written as

$$\frac{d\tilde{x}_j^*}{d\beta_i} = \underbrace{\frac{\partial \tilde{x}_j^*}{\partial \beta_i}}_{\substack{=0 \\ \text{no direct effect}}} + \underbrace{\frac{\partial \tilde{x}_j^*}{\partial \tilde{x}_i^*}}_{\substack{>0 \\ \text{Result 3}}} \underbrace{\frac{d\tilde{x}_i^*}{d\beta_i}}_{\substack{>0 \\ \text{Result 1}}} > 0.$$

Along with strategic complementarities, increasing misreporting in either country can stagnate climate action globally: the domestic suboptimalities created by misreporting reverberate across borders. The consequences of informational spillovers on global climate action are immediate. From the above analysis, we know that both countries are less likely to pursue climate action when misreporting increases: $\frac{dA_i(\tilde{x}_i^*)}{d\beta_i} < 0$ and $\frac{dA_j(\tilde{x}_j^*)}{d\beta_i} < 0$. At the international level, we can define three outcomes: (1) *coordinated climate action,* the probability that both nations pursue climate reform, $A_i(\tilde{x}_i^*)A_j(\tilde{x}_j^*)$; (2) *unilateral climate action,* the probability that one only nation pursues climate reform, $(1 - A_i(\tilde{x}_i^*))A_j(\tilde{x}_j^*) + A_i(\tilde{x}_i^*)(1 - A_j(\tilde{x}_j^*))$; and (3) *coordinated climate inaction,* the probability that neither nation pursues climate reform, $(1 - A_i(\tilde{x}_i^*))(1 - A_i(\tilde{x}_j^*))$. Note that all three of these quantities are likely to be nonzero in equilibrium, which provides a more general characterization of the likelihood of global climate action than extant theories. In particular, unilateral climate action is possible in equilibrium: incomplete information about the true severity of climate change ω means

that transnational best responses account for the possibility of "miscoordination" because a politician could "get it wrong."

Result 5 *Increasing misreporting in country i β_i:*

- *Decreases coordinated climate action.*
- *Increases unilateral climate action if $A_i(\tilde{x}_i^*) > \frac{1}{2}$ and $A_j(\tilde{x}_j^*) > \frac{1}{2}$.*
- *Increases coordinated climate inaction.*

Given strategic complementarities, the first and third findings of Result 5 follow intuitively. Figure 5, the international analog of Figure 3, illustrates this result: the solid purple line shows decreased coordinated climate action and the dashed grey line shows increased coordinated climate inaction as a function of how special interest i reports about the severity of climate change. Additionally, the result provides the theoretical mapping to the stylized facts about international climate action. Figure 2 highlights increased climate law adoption over time and the complementary returns to adoption across countries. Result 5 shows that countries are more likely to take climate action, and jointly so, when misreporting decreases. As established in Result 2, the trajectory of misreporting has shifted over time to become more truthful about the effects of climate change, thereby spurring domestic action and subsequent international informational spillovers. This logic is confirmed through Figure 5 in which coordinated climate action is highest when misreporting is low, corresponding to the surge in climate law adoption seen in Figure 2.

The effects of misreporting on unilateral climate action (dotted purple line in Figure 5) are more subtle because we are looking at the effect of increased misreporting in country i while conditioning on the eventuality that countries mismatch their climate policies. Differ-

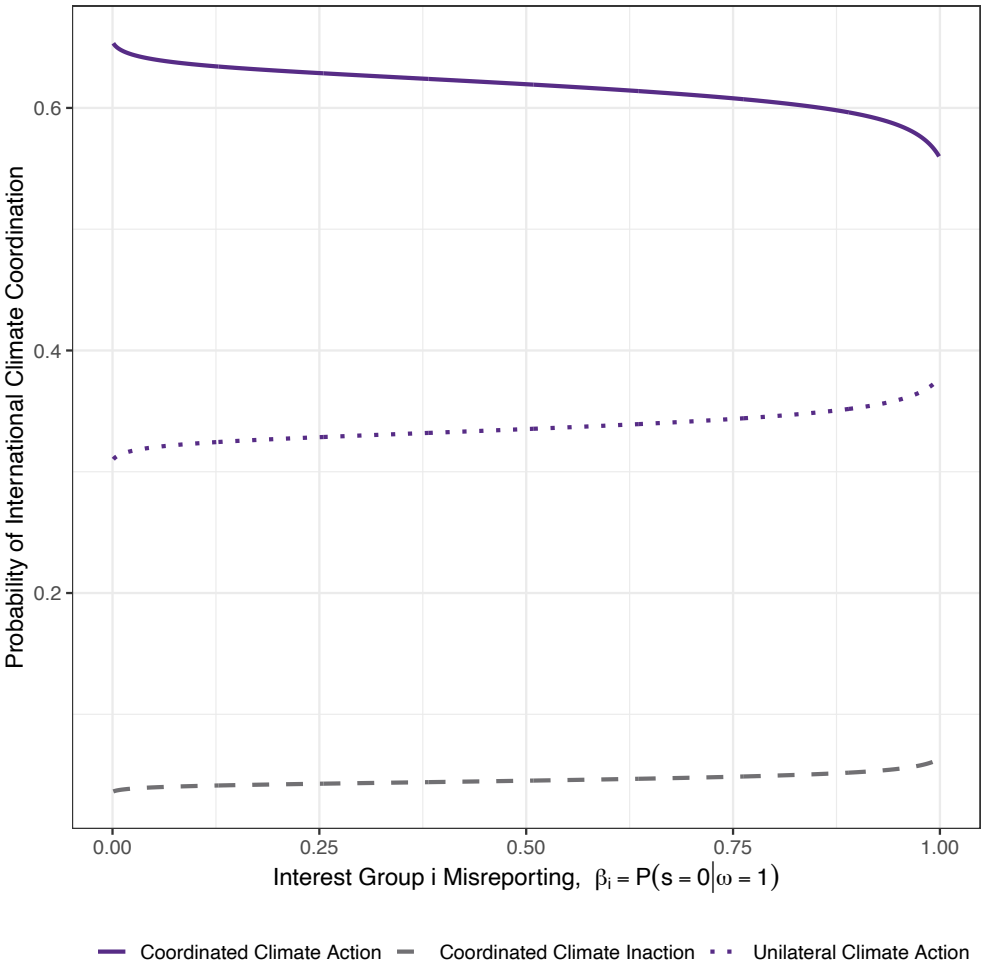

Figure 5: Misreporting and International Climate Coordination Outcomes
$\pi = \frac{2}{3}$, $\tau_i = \frac{1}{2}$, $\tau_j = \frac{3}{5}$, $\beta_j = \frac{1}{2}$, $\varepsilon_i, \varepsilon_j \sim N(0,1)$, $\nu_i^0, \nu_j^0 \sim N(0,1)$

entiating the definition of unilateral climate action with respect to β_i yields

$$\frac{dA_i(\tilde{x}_i^*)}{d\beta_i}(1 - 2A_j(\tilde{x}_j^*)) + \frac{dA_j(\tilde{x}_j^*)}{d\beta_i}(1 - 2A_i(\tilde{x}_i^*)).$$

The sign of this derivative is ambiguous, and depends on the baseline levels of $A_i(\tilde{x}_i^*)$ and $A_j(\tilde{x}_j^*)$. While possible, unilateral climate action is rarer because coordination incentives factor heavily into politicians' decision to pursue climate reforms. Increasing misreporting invokes informational spillovers, which reinforce coordination incentives, thereby making it

difficult to know the direction of the effects of misreporting on unilateral climate action.

Optimal International Misreporting

To finalize analysis of the model, consider how special interests i and j design information in their nation to best prevent climate action. Like in the single country case, each group seeks to minimize the probability that their country pursues climate reforms, maximizing

$$u_S^i = 1 - A_i\Big(\tilde{x}_i^*(\beta_i, \beta_j)\Big) - c(\beta_i).$$
$$u_S^j = 1 - A_j\Big(\tilde{x}_j^*(\beta_j, \beta_i)\Big) - c(\beta_j).$$

As reflected in the objective function, special interest group i's primary motivation is to shape information to discourage domestic support for climate policies, but cross-national strategic interactions between interest groups are embedded within the problem. This occurs because the cutoffs $\tilde{x}_i^*$ and $\tilde{x}_j^*$ are functions of both β_i and β_j; each politician is playing a mutual best response to their international counterpart given their domestic informational environments. Consequently, each group must optimally design its misreporting strategy, β_i, while considering the strategy of group j, β_j, and vice versa.

In equilibrium, each group weighs the marginal value of inducing the incompetent politician into stymieing climate action with the marginal costs of designing misreported information. While the formal analysis is more technical, the substantive themes of misreporting's effects are preserved in the international cooperation model: Result 6 confirms that misreporting is, as in the domestic politics analysis, nonmonotonic in expected climate severity.

Result 6 *Interest groups' optimal information structure is nonmonotonic in the ex ante severity of climate change π: misreporting is most likely when π is intermediate.*

Suboptimal Climate Action and Misreporting

In canonical models of international climate cooperation, the free rider problem claims that relative to a social optimum—because countries must undertake personally costly actions for global benefits and policies are assumed to be strategic substitutes—there is an underprovision of climate policy (Kennard and Schnakenberg 2023). In this model, I study an alternative version of global climate cooperation, and so I define the globally optimal provision of climate policy via "appropriateness," or the probability that each politician takes action commensurate with the state of the world, $R_i(\tilde{x}_i^*) = P(a_i = \omega)$. Define this optimality benchmark for each country i as

$$R_i(\tilde{x}_i^*) = \underbrace{\tau_i}_{\substack{\text{competent type} \\ \text{always correct}}} + \underbrace{(1-\tau_i)\pi(1-G(\tilde{x}_i^*;1))}_{\text{incompetent type correct if } \omega=1} + \underbrace{(1-\tau_i)(1-\pi)G(\tilde{x}_i^*;0)}_{\text{incompetent type correct if } \omega=0}.$$

Two points are immediate. First, as shown in the equilibrium analysis, the competent type always takes the correct policy action. Any "mistakes" ($a_i \neq \omega$) come from incompetent politicians. Second, being correct always entails a nonzero probability of climate inaction, the appropriate policy whenever $\omega = 0$, and the benchmark accounts for this eventuality.

In traditional theoretical analyses of climate action, the extent of the collective action problem is measured as the distance from the social optimum to the equilibrium level of policy. Analogously, I measure the distance between the optimal provision of climate policy and the equilibrium probability of climate action,

$$\Big|R_i(\tilde{x}_i^*) - A_i(\tilde{x}_i^*)\Big| = \Big|\tau_i(1-\pi) + 2(1-\tau_i)(1-\pi)\Big(G(\tilde{x}_i^*;0) - \frac{1}{2}\Big)\Big|.$$

The first term represents the competent politician's restraint from reform when she knows that $\omega = 0$. The second term represents the net difference of mistakes made by the incompetent politician. Hence, what appears to be suboptimal provision of climate reforms is driven

by two factors: competent types knowing when it is appropriate to pursue climate action and when it is not, and incompetent types making mistakes.

Now consider the effects of misreporting on optimal policy provision. Result 7 finds that, in a world of greater misreporting, suboptimality is exacerbated: the distance between the probability of pursuing the correct policy and the probability of climate action gets larger.

Result 7 *Suboptimal climate policy is increasing in the levels of misreporting β_i and β_j.*

Misreporting generates suboptimality in climate policy via two reinforcing channels. Domestically, the incompetent politician wishes to appear competent in order to win reelection; greater misreporting shades her policy agenda toward inaction, even if all else equal pursuing climate action is the correct policy. The second force is international, and follows directly from the effects of informational spillovers. Misreporting, either at home or abroad, dissuades both nations from taking climate action. The suboptimal provision of climate policy is thus exacerbated by international coordination incentives that politicians face.

Discussion

The fundamental prediction of collective action theories is that countries will underprovide climate policy relative to a normatively desirable optimum. Suboptimality arises because providing global benefits are personally costly. My theory generates an alternative benchmark that accounts for the role of information and the appropriateness of climate policy. With such a benchmark, I demonstrate that the probability of doing the right thing and the probability of taking climate action diverge in a world where misreporting is high. This result underscores the failure of politicians to take climate action (even if it is warranted) in a noisy informational environment as they compete with special interests to favorably shape voters' assessments of their competence.

Similar to UNFCCC negotiations, the model requires unanimity or "consensus" to implement international climate policy, thereby incentivizing coordinated climate action across borders. Nevertheless, unilateral climate action can occur in equilibrium, and, moreover, such action can be electorally beneficial. Climate action can have *domestic* benefits because politicians may be signaling competence to their voters. This dynamic underscores a key insight: international cooperation, while desirable, is not strictly necessary to achieve climate policy gains. Politicians may prioritize demonstrating their competence to voters over the benefits of international coordination, further challenging conventional accounts of climate action as purely reliant on global cooperation (cf. Aklin and Mildenberger 2020).

Conclusion

This paper posits a unified model of domestic and international climate policymaking that explains several key empirical facts about the political economy of climate change. I point to changes in the domestic informational environment to document variation in climate policy, its intensity and complementarities across borders, as well as the evolution in messaging strategies pursued by special interests about the severity of the climate threat over time. The theoretical analysis demonstrates that when special interests are able to proliferate "misreported" information about climate change's risks to the public, downplaying environmental harms, imperfectly informed politicians cut back on their provision of climate reforms in order to salvage their electoral prospects. In a world of international cooperation, misreporting spills over across borders in a negative feedback loop, stagnating global climate action. The contemporary growth in climate policy adoption can therefore be explained by the transition away from denialism and toward relative truthfulness on behalf of special interests that have found it too costly to continue to misreport as the *ex ante* uncertainty around climate change's severity has decreased over time.

References

Aklin, Michaël and Johannes Urpelainen. 2013. "Political Competition, Path Dependence, and the Strategy of Sustainable Energy Transitions." *American Journal of Political Science* 57(3):643–658.

Aklin, Michaël and Matto Mildenberger. 2020. "Prisoners of the Wrong Dilemma: Why Distributive Conflict, Not Collective Action, Characterizes the Politics of Climate Change." *Global Environmental Politics* 20(4):4–27.

Antonio, Robert J. and Robert J. Brulle. 2011. "The Unbearable Lightness of Politics: Climate Change Denial and Political Polarization." *The Sociological Quarterly* 52(2):195–202.

Bago, Bence, David G Rand and Gordon Pennycook. 2023. "Reasoning about climate change." *PNAS Nexus* 2(5):pgad100.

Balcazar, Carlos Felipe and Amanda Kennard. 2025. "Climate Change and Political Mobilization: Theory and Evidence from India." *https://drive.google.com/file/d/14yiR15XTWylc8-xE3RosKL03i2_Ta989/view* .

Barrett, Scott. 2003. *Environment and Statecraft: The Strategy of Environmental Treaty-Making*. Oxford: Oxford University Press.

Barrett, Scott. 2016. "Coordination vs. voluntarism and enforcement in sustaining international environmental cooperation." *Proceedings of the National Academy of Sciences* 113(51):14515–14522.

Battaglini, Marco and Bård Harstad. 2020. "The Political Economy of Weak Treaties." *Journal of Political Economy* 128(2):544–590.

Bayes, Robin, James N. Druckman, Avery Goods and Daniel C. Molden. 2020. "When and how different motives can drive motivated political reasoning." *Political Psychology* 41(5):1031–1052.

Bernauer, Thomas. 2013. "Climate Change Politics." *Annual Review of Political Science* 16:421–448.

Bolet, Diane, Fergus Green and Mikel González-Eguino. 2024. "How to Get Coal Country to Vote for Climate Policy: The Effect of a "Just Transition Agreement" on Spanish Election Results." *American Political Science Review* 118(3):1344 – 1359.

Botta, Enrico and Tomasz Koźluk. 2014. Measuring Environmental Policy Stringency in OECD Countries: A Composite Index Approach. OECD Economics Department Working Paper 1177 OECD Publishing.

Brulle, Robert J. 2014. "Institutionalizing delay: foundation funding and the creation of U.S. climate change counter-movement organizations." *Climatic Change* 122(4):681–694.

Brulle, Robert J. 2018. "The climate lobby: a sectoral analysis of lobbying spending on climate change in the USA, 2000 to 2016." *Climatic Change* 149(3):289–303.

Brulle, Robert J. 2021. "Networks of Opposition: A Structural Analysis of U.S. Climate Change Countermovement Coalitions 1989–2015." *Sociological Inquiry* 91(3):603–624.

Bueno de Mesquita, Bruce, Alastair Smith, Randolph M. Siverson and James D. Morrow. 2003. *The Logic of Political Survival*. Cambridge: The MIT Press.

Canes-Wrone, Brandice, Michael C. Herron and Kenneth W. Shotts. 2001. "Leadership and Pandering: A Theory of Executive Policymaking." *American Journal of Political Science* 45(3):532–550.

Carattini, Stefano, Ulrich Matter and Matthias Roesti. 2024. "Lobbying in Disguise.".

Chater, Nick and George Loewenstein. 2023. "The i-frame and the s-frame: How focusing on individual-level solutions has led behavioral public policy astray." *Behavioral and Brain Sciences* 46:e147.

Cheon, Andrew and Johannes Urpelainen. 2013. "How do Competing Interest Groups Influence Environmental Policy? The Case of Renewable Electricity in Industrialized Democracies, 1989–2007." *Political Studies* 61(4):874–897.

Colantone, Italo, Livio Di Lonardo, Yotam Margalit and Marco Percoco. 2024. "The Political Consequences of Green Policies: Evidence from Italy." *American Political Science Review* 118(1):108–126.

Colgan, Jeff D., Jessica F. Green and Thomas N. Hale. 2021. "Asset Revaluation and the Existential Politics of Climate Change." *International Organization* 75(2):586–610.

Cory, Jared, Michael Lerner and Iain Osgood. 2021. "Supply Chain Linkages and the Extended Carbon Coalition." *American Journal of Political Science* 65(1):69–87.

Druckman, James N. and Mary C. McGrath. 2019. "The evidence for motivated reasoning in climate change preference formation." *Nature Climate Change* 9(2):111–119.

Dunlap, Riley and A.M. McCright. 2011. Organized Climate Change Denial. In *The Oxford Handbook of Climate Change and Society*, ed. John S. Dryzek, Richard B. Norgaard and David Schlosberg. pp. 144–160.

Dunlap, Riley E. and Aaron M. McCright. 2015. Challenging Climate Change: The Denial Countermovement. In *Climate Change and Society: Sociological Perspectives*, ed. Riley E. Dunlap and Robert J. Brulle. New York: Oxford University Press.

Egan, Patrick J. and Megan Mullin. 2012. "Turning Personal Experience into Political Atti-

tudes: The Effect of Local Weather on Americans' Perceptions about Global Warming." *The Journal of Politics* 74(3):796–809.

Ekwurzel, B., J. Boneham, M. W. Dalton, R. Heede, R. J. Mera, M. R. Allen and P. C. Frumhoff. 2017. "The rise in global atmospheric CO2, surface temperature, and sea level from emissions traced to major carbon producers." *Climatic Change* 144(4):579–590.

Finnegan, Jared J. 2022. "Institutions, Climate Change, and the Foundations of Long-Term Policymaking." *Comparative Political Studies* 55(7):1198–1235.

Frumhoff, Peter C., Richard Heede and Naomi Oreskes. 2015. "The climate responsibilities of industrial carbon producers." *Climatic Change* 132(2):157–171.

Gazmararian, Alexander F. 2025. "Sources of Partisan Change: Evidence from the Shale Gas Shock in American Coal Country." *Journal of Politics* .

Gazmararian, Alexander F. and Dustin Tingley. 2023. *Uncertain Futures: How to Unlock the Climate Impasse*. New York: Cambridge University Press.

Gazmararian, Alexander F. and Helen V. Milner. 2024*a*. "Personal Experience and Self-Interest: Diverging Responses to Global Warming." *https://osf.io/preprints/osf/g4js9* .

Gazmararian, Alexander F. and Helen V. Milner. 2024*b*. "Political Cleavages and Changing Exposure to Global Warming." *Comparative Political Studies* .

Green, Jessica, Jennifer Hadden, Thomas Hale and Paasha Mahdavi. 2022. "Transition, hedge, or resist? Understanding political and economic behavior toward decarbonization in the oil and gas industry." *Review of International Political Economy* 29(6):2036–2063.

Hai, Zuhad. 2024. "The Global Politics of Scientific Consensus: Evidence from the Intergovernmental Panel on Climate Change." *International Organization* .

Harrison, Rodrigo and Roger Lagunoff. 2017. "Dynamic Mechanism Design for a Global Commons." *International Economic Review* 58(3):751–782.

Heede, Richard. 2014. "Tracing anthropogenic carbon dioxide and methane emissions to fossil fuel and cement producers, 1854–2010." *Climatic Change* 122(1):229–241.

Hughes, Llewelyn and Johannes Urpelainen. 2015. "Interests, institutions, and climate policy: Explaining the choice of policy instruments for the energy sector." *Environmental Science & Policy* 54:52–63.

Kamenica, Emir and Matthew Gentzkow. 2011. "Bayesian Persuasion." *American Economic Review* 101(6):2590–2615.

Kennard, Amanda. 2020. "The Enemy of My Enemy: When Firms Support Climate Change Regulation." *International Organization* 74(2):187–221.

Kennard, Amanda. 2025. "The Impacts of Globalization on Political Knowledge: Evidence from Climate Awareness in Africa.".

Kennard, Amanda and Keith E. Schnakenberg. 2023. "Comment: Global Climate Policy and Collective Action." *Global Environmental Politics* 23(1):133–144.

Keohane, Robert O. and David G. Victor. 2016. "Cooperation and discord in global climate policy." *Nature Climate Change* 6:570–575.

Kim, Sung Eun, Johannes Urpelainen and Joonseok Yang. 2016. "Electric utilities and American climate policy: lobbying by expected winners and losers." *Journal of Public Policy* 36(2):251–275.

Kollman, Ken. 1998. *Outside Lobbying: Public Opinion and Interest Group Strategies*. Princeton: Princeton University Press.

Kruse, Tobias, Antoine Dechezleprêtre, Rudy Saffar and Léo Robert. 2022. Measuring environmental policy stringency in OECD countries: An update of the OECD composite EPS indicator. Technical Report 1703 OECD.

Lee, Tien Ming, Ezra M. Markowitz, Peter D. Howe, Chia-Ying Ko and Anthony A. Leiserowitz. 2015. "Predictors of public climate change awareness and risk perception around the world." *Nature Climate Change* 5(11):1014–1020.

Little, Andrew T. 2023. "Bayesian explanations for persuasion." *Journal of Theoretical Politics* 35(3):147–181.

Little, Andrew T. 2025. "How to Distinguish Motivated Reasoning from Bayesian Updating." *Political Behavior* .

McAllister, Jordan H. and Keith E. Schnakenberg. 2022. "Designing the Optimal International Climate Agreement with Variability in Commitments." *International Organization* 76(2):469–486.

Melnick, Justin. 2024. "Domestic Politics in the European Union's Emissions Trading System: Evidence from Free Allowance Allocation." *Journal of Political Institutions and Political Economy* 5(4):627–657.

Melnick, Justin and Alastair Smith. 2025. "Shaming Paris: A Political Economy of Climate Commitments." *International Organization* Forthcoming.

Mildenberger, Matto. 2020. *Carbon Captured: How Business and Labor Control Climate Politics*. Cambridge: The MIT Press.

Mildenberger, Matto and Dustin Tingley. 2019. "Beliefs about Climate Beliefs: The Importance of Second-Order Opinions for Climate Politics." *British Journal of Political Science* 49(4):1279–1307.

Nachmany, Michal, Sam Fankhauser, Joana Setzer and Alina Averchenkova. 2017. Global trends in climate change legislation and litigation. Technical report Grantham Institute.

of Concerned Scientists, Union. 2007. ExxonMobil's Disinformation Campaign. Technical report Union of Concerned Scientists.

Oreskes, Naomi and Erik M. Conway. 2011. *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Climate Change*. New York: Bloomsbury Publishing.

Ostrom, Elinor. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Dallas, TX: Cambridge University Press.

Saunders, Kyle L. 2017. "The impact of elite frames and motivated reasoning on beliefs in a global warming conspiracy: The promise and limits of trust." *Research & Politics* 4(3):2053168017717602.

Schnakenberg, Keith E. and Ian R. Turner. 2024. "Formal Theories of Special Interest Influence." *Annual Review of Political Science* 27.

Stern, Nicholas. 2007. *The Economics of Climate Change: The Stern Review*. Cambridge: Cambridge University Press.

Stokes, Leah C. 2016. "Electoral Backlash against Climate Policy: A Natural Experiment on Retrospective Voting and Local Resistance to Public Policy." *American Journal of Political Science* 60(4):958–974.

Stokes, Leah C. 2020. *Short Circuiting Policy: Interest Groups and the Battle Over Clean Energy and Climate Policy in the American States*. New York: Oxford University Press.

Supran, Geoffrey. 2022. "Three shades of green(washing): Content analysis of social media discourse by European oil, car, and airline companies.".

Supran, Geoffrey and Naomi Oreskes. 2021. "Rhetoric and frame analysis of ExxonMobil's climate change communications." *One Earth* 4(5):696–719.

Urpelainen, Johannes and Alice Tianbo Zhang. 2022. "Electoral Backlash or Positive Reinforcement? Wind Power and Congressional Elections in the United States." *The Journal of Politics* 84(3):1306–1321.

Voeten, Erik. 2025. "The Energy Transition and Support for the Radical Right: Evidence from the Netherlands." *Comparative Political Studies* 58(2):394–428.

Williams, Emily L., Sydney A. Bartone, Emma K. Swanson and Leah C. Stokes. 2022. "The American electric utility industry's role in promoting climate denial, doubt, and delay." *Environmental Research Letters* 17(9):094026.