



Naming and shaming as a strategy for enforcing the Paris Agreement: The role of political institutions and public concern

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Edited by Sander L. van der Linden, University of Cambridge, Cambridge, United Kingdom; received April 7, 2023; accepted August 23, 2023 by Editorial Board Member Kathleen H. Jamieson

Enforcement is a challenge for effective international cooperation. In human rights and environmental law, along with many other domains of international cooperation, “naming and shaming” is often used as an enforcement mechanism in the absence of stronger alternatives. Naming and shaming hinges on the ability to identify countries whose efforts are inadequate and effectively shame them toward better behavior. Research on this approach has struggled to identify factors that explain when it influences state behavior in ways that lead to more cooperation. Via survey of a large (N = 910) novel sample of experienced diplomats involved in the design of the Paris Agreement, we find support for the proposition that naming and shaming is most accepted and effective in influencing the behavior of countries that have high-quality political institutions, strong internal concern about climate change, and ambitious and credible international climate commitments. Naming and shaming appears less effective in other countries, so further enforcement mechanisms will be needed for truly global cooperation. We also find that the climate diplomacy experts favor a process of naming and shaming that relies on official intergovernmental actors, in contrast with studies suggesting that NGOs, media, and other private actors are more effective at naming and shaming. We suggest that these tensions—the inability for naming and shaming to work effectively within the countries least motivated for climate action and the preference for namers and shamers that seem least likely to be effective—will become central policy debates around making cooperation on climate change more enforceable.

Paris Agreement | climate change | transparency | institutions | enforcement

From the very beginning of international diplomacy on climate change, more than three decades ago, the question of enforcement has loomed large. Deep cuts in emissions, then and now, were expected to be costly, creating incentives for governments to welcome the benefits from international cooperation while avoiding the costs (1). While this fear of free riding has led to many studies pointing to the need for strong enforcement mechanisms, in the real world very little strong enforcement exists. The UN-sponsored global diplomatic conferences that led to the UN Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol, and the Paris Agreement require consensus decision-making and have studiously rejected strong enforcement, such as by linking climate change policy to the benefits of open trade (2). Nor have national governments, on their own, done much linking of actions on climate change to strong enforcement, although that may soon change in some regions such as the European Union (3).

By default, efforts to forge cooperation on climate change have had to rely on alternative and possibly much weaker mechanisms for enforcement: naming and shaming. For the international lawyers who designed the UNFCCC and the other climate treaties, naming and shaming was familiar because it is used in many other domains of international law, notably agreements on human rights (4). Over time, reliance upon naming and shaming as a central element of climate change cooperation has plausibly grown, especially with the creation of the Paris Agreement in 2015 that requires every national government to issue its own policy pledge (a “nationally determined contribution,” or NDC) and includes an “Enhanced Transparency Framework” (ETF), outlining procedures by which countries must disclose their progress toward their NDCs. In the eyes of many diplomats and analysts, these national pledges along with requirements to provide information through the ETF could facilitate comparisons across countries, thus naming countries that are dragging their feet and shaming them into more compliant behavior (5–7). While the ETF was not designed to do more than provide information, the information collectively provides material that could be used by various actors, from governments to non-governmental organizations (NGOs) and the media, to amplify their own naming and shaming campaigns.

Significance

An empirical analysis on the prospects of naming and shaming, the central mechanism for enforcement of most international treaties, in the context of climate change relies on a novel sample of climate policy elites who are well-positioned to assess whether naming and shaming could influence behavior of their home countries. We specifically assess the Enhanced Transparency Framework (ETF), the formal transparency procedures created under the Paris Agreement on Climate Change of 2015 that could facilitate naming and shaming, and the circumstances under which the ETF could be utilized and effective.

Author contributions: A.D., M.L., and D.G.V. designed research; A.D. and M.L. performed research; M.L. analyzed data; and A.D., M.L., E.K.C., and D.G.V. wrote the paper.

The authors declare no competing interest.

This article is a PNAS Direct Submission. S.L.v.d.L. is a guest editor invited by the Editorial Board.

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This article contains supporting information online at <https://www.pnas.org/lookup/suppl/doi:10.1073/pnas.2305075120/-DCSupplemental>.

Published September 25, 2023.

Research on naming and shaming in the context of climate change offers many potential advances to scholars who study enforcement of international law along with big conceptual and empirical challenges. Unlike human rights accords, where the obligations tend to concentrate on autocratic and less developed countries—because those countries' economic and political institutions tend to correlate with the incidence of human rights abuses—the Paris framework creates obligations on all countries. Thus, empirical research on climate change offers the opportunity to observe under which circumstances naming and shaming can work across a much more diverse array of national situations. And because it is expected that highly developed countries that have been most responsible for warming emissions would undertake the most stringent national obligations to control those emissions, climate change offers an opportunity to observe nearly the inverse of norm enforcement in human rights—the use of naming and shaming where the biggest shifts in behavior are needed in the most developed and democratic nations.

Research in this domain faces several challenges, most notably the assessment of how information provided by processes such as the ETF could influence national climate policies and how such impacts vary with different national circumstances. This conceptual and empirical challenge arises not just because pathways between causes and effects are complex but also because most of the naming and shaming initiated by the ETF is still to be done—in the future. Conventional empirical research is not yet possible due to the lack of any historical record to study. Instead, empirical assessments require a different approach—such as probing insights from people who were “in the room” when naming and shaming debates occurred and transparency requirements were established.

In this study, we confront that challenge by surveying a highly informed population: seasoned climate policy experts who are deeply steeped in the work of international climate change cooperation. Because these experts come from nearly all countries around the globe (*SI Appendix, Fig. S2*), they are well-positioned to reveal how different national perspectives and conditions might lead to different assessments of the importance, efficacy, and the actors that actually perform naming and shaming.

The existing literatures related to naming and shaming are large and sprawling. Broadly, they have explored two questions: first, whether naming and shaming “works” as a mechanism for enforcement of cooperation and, second, what specific circumstances influence the effectiveness of naming and shaming (4, 8–11).

Regarding the first question, there are the extensive literatures in psychology and behavioral economics which have theorized and shown that transparency and observability of decisions can increase prosocial and norm-adhering behavior of individuals (12–22) and, to a lesser extent, groups (23). Other studies have addressed the role of transparency for climate-related norms and attitudes in particular (24–30). It is unclear, however, whether these results are applicable to international relations, where information may come from different sources, relate to different behaviors, and influence different decision makers in different ways. In *SI Appendix*, we provide an overview figure to summarize the spaghetti-like linkages of actors, behaviors, institutions, and impacts (*SI Appendix, Fig. S1*), which are derived from two studies that have attempted to synthesize the state of the field (8, 9).

In the eyes of many scholars, institutions can be designed to promote the gathering of information about nations (and other actors) and compare their behaviors against accepted norms (31–33). Through such processes, the content of international legal obligations can be clarified and kept in line with what national governments can achieve at home, while also clarifying which national behaviors are out of line (32). Some emphasize how

transparency, which is the basis for country comparisons and naming and shaming, can make international cooperative institutions such as treaties and secretariats, more legitimate and, in turn, more effective at promoting cooperation (2, 32, 34, 35). Many studies that analyze this mode of enforcing international obligations also normatively promote its use (36–39).

Much of this research, which has concentrated on human rights and relies heavily on ad hoc empirical research such as case studies, finds that institutions such as tribunals that are designed to compare behavior with norms are effective. A few efforts to mobilize evidence systematically—working with larger numbers of cases in qualitative comparisons, or even with larger quantitative data sets—have found mixed results. Some suggest naming and shaming works or at least seems to influence behavior in directions consistent with more cooperation (25, 36, 37, 40–43) while others are more skeptical, suggesting that some behaviors improve and others deteriorate (44–47).

A central tenor of the research by scholars focused on the efficacy of naming and shaming is that it is both a mechanism for enforcement but also a means by which behavioral norms are created and adjusted (35). Many political scientists and international relations scholars have pointed to the power of such norms in shaping state behavior (4, 48). But on the issue of climate change, compared to human rights, there is much more debate around whether a global norm around the need to act is appropriate at all, given that just few developed countries are responsible for most historical emissions. A common norm may be emerging: A key shift in the Paris Agreement relative to its predecessor, the Kyoto Protocol, is that all countries—not just the high-emitting developed ones—must contribute, though each may decide for itself how much, and that they must all steadily ratchet those contributions upward. Yet even now, much of the fighting over implementation revolves around how differentiated the common responsibility should be (49).

Regarding the second question—under what circumstances naming and shaming works—an eclectic array of studies has taken up the challenge to look inside countries at how, depending on the national situation, transparency and comparison with others can influence policy choices (50). These studies have tended to focus on four clusters of explanatory variables, which we will use later to inform our estimation models (see Table 1 below).

The first cluster captures domestic institutions such as democratic or autocratic governance institutions. Many studies have focused on what is often called the “quality” of national institutions such as the independence and authority of courts and the openness of domestic politics and institutions to information and pressure from civil society and organized interest groups (51–53). In practice, there have been many different ways to measure the quality of these institutions—some focused on particular types of actors (e.g., the judiciary, media, or NGOs) and other focused more generally on measures of democratic governance and consolidation, such as Polity. Several studies argue that autocracies and consolidated democracies vary widely in the openness and responsiveness of their domestic politics to international and civil society pressures and have given particular attention to fledgling democracies since they often have a hard time signaling and assuring commitment to democratic principles such as adherence to human rights norms (52–54). Some studies have explored the opposite—how the use of mechanisms to enforce compliance with international norms can generate backlashes within countries that erode public support and make it easier for governments to deviate from international norms (30, 55).

The second cluster captures countries' concern or interest in the subject at hand. Many studies assume, implicitly or explicitly, that the efficacy of naming and shaming hinges, in part, on

Table 1. Theoretical explanators for expert perceptions of transparency in climate policy

Conceptual categories	Variables used to proxy these attributes	Source
Domestic institutions	Institutional quality (p) Polity (p) NGOs per capita (a)	World Economic Forum Polity IV project UNFCCC
Public concern about climate change (CC) and quality of national policy pledges	CC concern (a) Self-assessed ambition (p) Self-assessed credibility (a)	World risk poll Our survey Our survey
International institutional setting	International organization memberships (a) ETF: large change (a) OECD membership (p)	Correlates of war project Our survey OECD
Goeconomic position	GDP per capita (p) CO ₂ per capita (p)	World Bank European Commission
Attributes of the respondents	Domain of expertise (p)	Our survey

Notes: Variables marked by (p) were also explanatory variables in the model of our previous paper. Variables marked by (a) were added to the model of this paper. Self-assessed credibility was the main dependent variable in the previous paper and serves as explanatory variable here. Detailed descriptions, definitions and descriptive statistics are reported in [SI Appendix, Tables S8 and S9](#).

whether the national polity has a strong interest in advancing the topic that is the subject of international cooperation, such as human rights, environmental protection, or arms control (25–27, 56). The existing research looking at climate change has often framed public concern mainly in the context of whether a polity is responsive to international framing of the problem or international criticism of national behavior (24–27); one study has looked closely at the ideological attributes of polity members (25). We, as with one other study, focus squarely on how public concern about the underlying problem at hand is associated with the potential efficacy of naming and shaming (26).

The third cluster contains the design of the international information or transparency requirements. Some have focused on the information itself, suggesting that ranked performance indices are effective (8, 42) while formal monitoring systems that produce narrative reports may be less so (9, 57, 58). An age-old implication in research on international norms is that embeddedness within international institutions also has an influence on the effects of naming and shaming because countries (and their polities) that are members of important international institutions generally favor being members in good standing (59), though a few empirical studies on human rights treaties question that influence (60, 61). Many studies, especially those around human rights and the environment, emphasize the actors who do the shaming, highlighting NGOs as the key namers and shamers within and across countries, often using the press as a means of conveying information (37, 40, 43, 56). NGOs are adept at forming transnational networks and use information obtained in one country to run pressure campaigns, including lawsuits, in other nations that can spotlight and change the behavior of deviant countries (38).

The fourth and final cluster is about countries' goeconomic position such as income and dependence on other countries for trade and investment. Such matters have long been central to the study of whether and how economic sanctions affect their targets (59). But in the naming and shaming literature—perhaps because environmental and human rights regimes make so little use of sanctions—the question of economic status hasn't received much sustained attention. One human rights study found that economic dependence does make naming and shaming more effective (40), while another found the reverse (56). No study of cross-border pressure would be complete without considering further the possibility that pressure is mediated by income and cross-border dependence.

These four clusters of possible explanatory variables illustrate the complexity of causation and the challenge of measuring them

precisely. It is an additional reason to employ methods that involve judgement by experts that have deep familiarity with their domain and can offer assessments of the potential of naming and shaming, especially in their home country which they know best.

Study Design

To evaluate how variations in national attributes might affect the response to naming and shaming in the climate change regime, we surveyed a large (N = 910) sample of highly seasoned climate policy experts. We look to experts because, in this regime, there is not yet an established empirical record for the operation of ETF-related naming and shaming. At this point, the best evidence arguably comes from people who represent governments in the negotiations and who were “in the room” when the ETF was created (62–64).

In an earlier paper, we reported in detail about this novel sample and built statistical models that characterize these experts' assessments of the ambition and credibility of the Paris pledges (NDCs) (54). Eligible experts for our elite survey were either delegation members at a Conference of the Parties (COP) session of the (UNFCCC) verified by the official list of registrations or authors and reviewers of the Fifth Assessment report by the Intergovernmental Panel on Climate Change (IPCC). The respondents were recruited between September 2020 and January 2021 by providing a personalized link to an online questionnaire platform via email. The survey covered different aspects of international climate policy and was designed to be answered in about 20 min. In total, 910 experts answered at least one question relevant as outcome variable to the current analysis (response rate 51% based on verified invitations) with between 747 and 881 nonmissing observations for any given question. Missing values for explanatory variables led to additional reductions in the number of observations in the empirical estimation models reported below. ([SI Appendix, Table S9](#) reports the number of observations for each variable; [SI Appendix, section 7](#) shows that the results are robust with respect to the treatment of missing values.)

The respondents are very experienced (average number of COPs as party member is 3.5) and highly diverse in terms of geopolitical background (more than 150 countries covered). (See [SI Appendix, Table S1](#) for detailed sample characteristics.) While the whole sample shares the attribute of expertise they offer, wide variation exists in the types of expertise and the types of countries and institutional settings where they are expert. We use this variation as a source of explanation.

Following and complementing the two broad strands of the existing literature on whether and under what circumstances naming and shaming works in international cooperation, we seek to answer two questions:

- a) How variations in national attributes affect attitudes about whether naming and shaming should be used. In this study, we focus on whether the ETF should be used to assess and compare countries' mitigation efforts.
- b) How variations in national attributes might influence the efficacy of naming and shaming. In this study, we focus on respondent assessments of how much ETF-related naming and shaming will affect the mitigation efforts of the country the experts know best: their home country.

These are the two core dependent variables that we examine in our analyses. We measure each with survey questions that map directly or indirectly to concepts drawn from the existing theoretical literature. For the first question, the concept is whether countries' efforts should be compared and whether transparency requirements like the ETF are, and should be, designed for that purpose—a measure of the existence and strength of behavioral norms around the need to act to cut emissions and ways to trigger that action. While the first strand of literature presented above emphasizes such norms as intrinsic to effective naming and shaming, in practice the normative question on the legitimacy of naming and shaming arises more in the climate context than in the human rights context due to different responsibilities and capabilities. The second question looks, in line with both the first and second literature strand, at whether naming and shaming is expected to work and how internal political and international institutional circumstances might influence the expected effectiveness. (For more details on the dependent variables, including survey questions, see *SI Appendix, section 2 and Tables S8 and S9*).

We also explore a third question:

- c) If the ETF is used for naming and shaming, which actors should be responsible for it?

In human rights, the key actors include courts, NGOs, and the media. In many cases, special tribunals also play roles. In environmental cooperation, this question of who should perform this role has attracted much less systematic attention, although earlier studies have often pointed to some of the same actors that play big roles in human rights—along with scientists (4, 65). We also include intergovernmental institutions that were established specifically to address the climate problem, and thus go beyond the possible namers and shamers examined so far. Climate policy elites may have preferences for how different international institutional designs can empower different actors who are the conduits for naming and shaming. Those preferences shape one of the most important policy questions implicated in this study: the function, design, and implementation of international transparency requirements like the ETF.

Our goal is multivariate explanation of these dependent variables, using a core conceptual model summarized in Table 1. The model includes all the main variables from our earlier paper that sought to explain variations in ambition and credibility (54). Those variables include factors such as income, emissions, membership in economic clubs, and region. They also include a measurement of the type of expert surveyed since many earlier studies show that expertise is highly specific to domain (66).

We supplement that core conceptual model with factors specifically implicated in the study of naming and shaming in

international law. First, we include assessments of the quality of the national institutions from three perspectives: the degree of democratic governance (i.e., Polity) (67); the quality of national governing institutions such as courts, regulators, and elections (68); and the number of UNFCCC accredited environmental NGOs active in civil society (69, 70). Second, our measures include the assessment of each country's internal level of concern about climate change and how those concerns may have been translated into policy pledges to control emissions (71). [Following the earlier paper (54), we look at both the ambition and the credibility of those policy pledges]. Inclusion of these variables reflects the intuition in the literature that where a country stands on naming and shaming depends on where it sits with regard to the robustness of its national commitments to cooperate. Third, we account for attributions of the international institutional environment—including memberships in international organizations (72), a variable used in many studies of international institutions, and membership in the Organisation for Economic Co-operation and Development (OECD), the club of advanced industrial democracies that often engages in activities akin to naming and shaming and whose membership may influence governments to align with norms of international economic cooperation. This category additionally captures respondent views on whether the ETF was a major shift in the institutional capabilities of the Paris Agreement compared to the past. [The architects of the Paris Agreement intended the ETF to play the central role of naming and shaming (5, 6), but international institutional histories are filled with examples of architectural dreams never realized in practice. Thus, we ask about the ETF because it was intended to play such a pivotal role.] Fourth is the geoeconomic position of a country, which is measured by gross domestic product (GDP) per capita (73) and, in the context of climate change, CO₂ per capita (74).

Results

Fig. 1 shows the descriptive results for our two core dependent variables, binned by national political system (Polity), institutional quality, and domestic climate change concern. Overall, we find that—with 77%—a relatively high share of all respondents agrees with using naming and shaming, that is, using the ETF for comparing countries' mitigation efforts. The results further indicate that 57% of all respondents expect naming and shaming to substantially affect the climate policy performance of their home country. For both questions, Polity, institutional quality, and public concern about climate change appear to have explanatory power, but to investigate that further, we turn to multivariate estimation models.

Our main analyses are based on binary probit models with the dependent variables being dummies constructed from five-step Likert-type scales. For the question of whether the ETF should be used to compare climate efforts, the scale ranged from “(1) Don't agree at all” to “(5) Agree completely” including a “Don't know” option. For the question of whether the ETF makes higher climate efforts in the home country more likely, the scale ranged from “(1) Not more likely at all” to “(5) Much more likely” including a “Don't know” option. The dependent variables “Use ETF” and “ETF effective” are constructed as dummy variables that take the value one if the respondent answered with either 4 or 5 on the respective Likert-type scale and zero otherwise.

The marginal or discrete probability effects at means are reported in Table 2. Continuous variables were standardized (z-scores) to facilitate comparison of effect sizes (see *SI Appendix, section 6* for more detailed analyses of effect sizes and Goodness-of-Fit). Columns

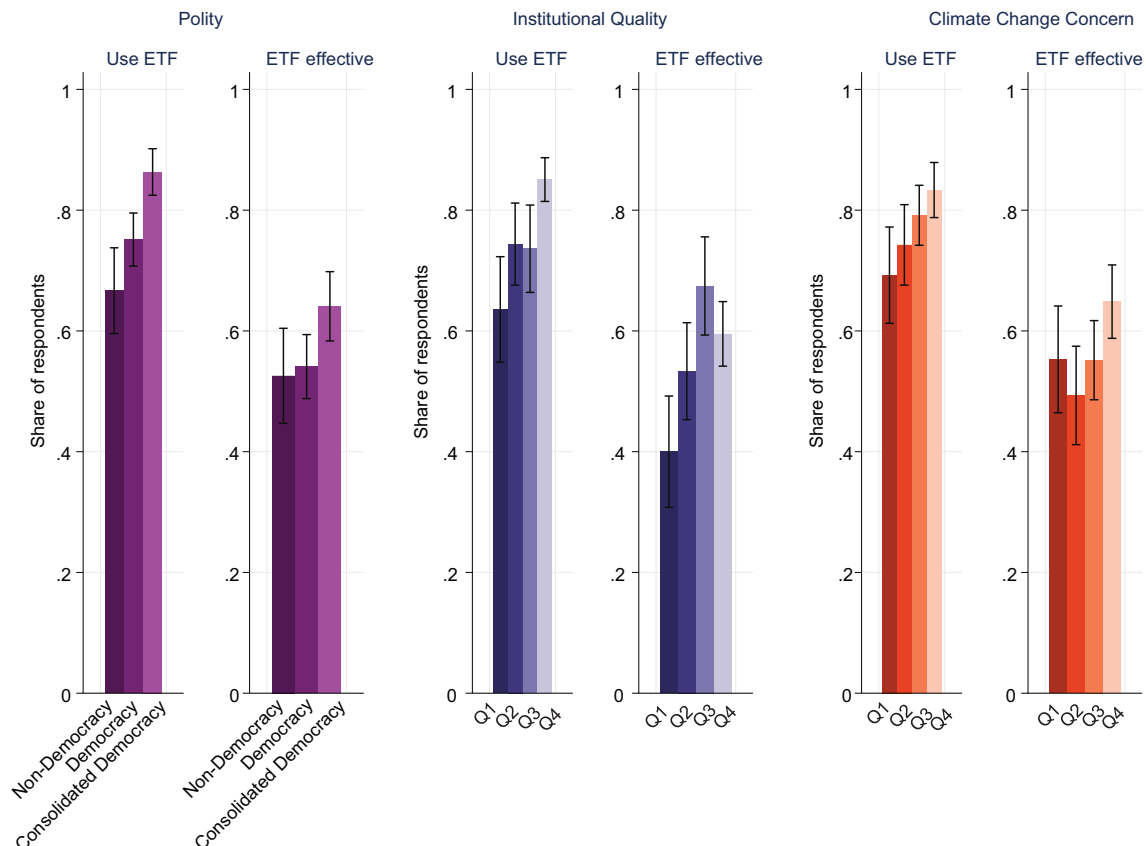


Fig. 1. Assessment of “naming and shaming” from two perspectives. Whether the ETF (the procedures in the Paris Agreement most explicitly designed like naming and shaming mechanisms in other international agreements) should be used for comparison across countries (*Left panel in each pair*) and the effectiveness of the ETF on the climate policy performance of the home country (*Right panel in each pair*) binned by Polity (*Left pair of panels*), institutional quality (*Middle pair*), and concern about climate change (*Right pair*). Q1 = Observations with lowest 25% of all values, Q2 = 26 to 50%, Q3 = 51 to 75%, Q4 = 76 to 100%. Bars indicate share of respondents who answered respective question with (4) or (5) on the Likert-type scale. Number of observations (from left to right): $n = 171$, $n = 374$, $n = 307$, $n = 156$, $n = 342$, $n = 270$, $n = 118$, $n = 160$, $n = 144$, $n = 375$, $n = 110$, $n = 150$, $n = 129$, $n = 326$, $n = 130$, $n = 167$, $n = 259$, $n = 258$, $n = 123$, $n = 146$, $n = 223$, and $n = 239$. Whiskers indicate 95% CI for the mean.

(1) to (3) include the results on the usage of ETF-related naming and shaming, and columns (4) to (6) include the effectiveness of ETF-related naming and shaming on the climate policy performance of the home country. In order to address multicollinearity issues, especially regarding OECD membership, GDP per capita, CO₂ per capita, and institutional settings, we show several specifications with different combinations of these variables as well as specifications where we include most of the variables jointly, allowing us to identify the predominant correlations (see *SI Appendix, Fig. S3* for pairwise correlation of explanatory variables).

The estimation results in columns (1) to (3) confirm that respondents from countries with higher democracy scores are more likely to be in favor of using the ETF for the comparison of countries’ mitigation efforts ($P = 0.010$ or $P = 0.012$). Respondents who see the ETF as a large change compared to previous transparency requirements ($P = 0.002$ or $P = 0.001$) and respondents who consider their home country’s NDC pledge to be ambitious ($P = 0.076$, $P = 0.072$, or $P = 0.086$) are also more likely to support ETF-related naming and shaming.

The results on the effectiveness of ETF-related naming and shaming in columns (4) to (6) highlight the importance of domestic institutions and public concern. Respondents from countries with a higher institutional quality are more likely to expect that ETF-related naming and shaming will have a substantial influence on the climate policy of their home country ($P = 0.042$ or $P = 0.003$). A higher effectiveness is also found for countries with a high level of public concern about climate change ($P = 0.001$,

$P = 0.015$, or $P = 0.002$) as well as for countries with an ambitious NDC pledge ($P = 0.075$, $P = 0.081$, or $P = 0.222$) and a credible NDC pledge ($P < 0.001$ in all specifications). As before, experts who see the ETF as a large change compared to past transparency requirements expect higher effectiveness ($P = 0.001$, $P < 0.001$, or $P = 0.002$). Controlling for institutions, democracy, and the other factors, European experts expect a smaller effectiveness of ETF-related naming and shaming, but these correlations depend on the particular specification.

We performed the same analyses for two additional more broadly defined dependent variables: Whether experts think the ETF will be effective for countries overall (rather than for their home country only) and whether the experts think state-to-state peer pressure, that is naming and shaming more generally, is effective as a mechanism to enforce climate mitigation efforts. The results are presented in *SI Appendix, Tables S48 and S52*. These results show that two factors are associated with a high expected overall effectiveness of the ETF: membership in international organizations and whether respondents perceive the ETF as a large increase in the transparency requirements compared to the past. Respondents’ perceptions of the ETF’s transparency requirements are also correlated with high expected effectiveness of state-to-state peer pressure in general. By contrast, the effects of the national attributes, such as institutional quality, public concern, and quality of climate pledges, have minimal or nonsignificant association with perceived overall efficacy of the ETF. This shows that the factors explaining optimism about effectiveness of the ETF at home are

Table 2. Regression results on the use of the ETF for naming and shaming (1 to 3) and effectiveness of the ETF in the home country (4 to 6)

	DV: Use ETF for naming and shaming			DV: ETF effective in home country		
	(1)	(2)	(3)	(4)	(5)	(6)
<u>Domestic institutions</u>						
Institutional quality (s)	0.0655* [−0.00,0.13]		0.0722 [−0.02,0.16]	0.0919** [0.00,0.18]		0.1719*** [0.06,0.29]
Polity (s)	0.0593** [0.01,0.10]		0.0596** [0.01,0.11]	−0.0206 [−0.08,0.04]		−0.0302 [−0.10,0.04]
NGOs per capita (s)		0.0453 [−0.06,0.15]	0.0388 [−0.06,0.14]		0.0844 [−0.03,0.20]	−0.0301 [−0.14,0.08]
<u>Climate change concern</u>						
CC concern (s)	0.0279 [−0.03,0.08]	0.0428* [−0.00,0.09]	0.0317 [−0.02,0.09]	0.1202*** [0.05,0.19]	0.0797** [0.02,0.14]	0.1183*** [0.04,0.19]
Ambition (our survey) (d)	0.0750* [−0.01,0.16]	0.0790* [−0.01,0.17]	0.0750* [−0.01,0.16]	0.0965* [−0.01,0.20]	0.0967* [−0.01,0.21]	0.0691 [−0.04,0.18]
Credibility (our survey) (d)	−0.0038 [−0.09,0.08]	−0.0079 [−0.09,0.08]	0.0029 [−0.08,0.09]	0.2218*** [0.11,0.33]	0.2435*** [0.14,0.35]	0.2261*** [0.12,0.34]
<u>International institutional setting</u>						
International organization memberships (s)		0.0111 [−0.05,0.07]	−0.0045 [−0.07,0.06]		0.0604 [−0.02,0.15]	0.0524 [−0.04,0.14]
ETF: large change (d)	0.1240*** [0.05,0.20]	0.1237*** [0.05,0.20]	0.1270*** [0.05,0.20]	0.1624*** [0.06,0.26]	0.1754*** [0.08,0.27]	0.1584*** [0.06,0.26]
OECD rest of world (d)	0.0167 [−0.10,0.13]	0.0501 [−0.09,0.19]	0.0547 [−0.07,0.18]	0.1475** [0.00,0.29]	0.1739* [−0.01,0.36]	0.2895*** [0.13,0.45]
Non-OECD rest of world (d)	0.0525 [−0.12,0.22]	0.0543 [−0.14,0.25]	0.0784 [−0.09,0.24]	0.2937*** [0.08,0.51]	0.0662 [−0.21,0.34]	0.3462*** [0.13,0.56]
<u>Geoeconomic position</u>						
GDP per capita (s)		0.0733 [−0.05,0.20]			−0.1210 [−0.30,0.05]	
CO2 per capita (s)		−0.0338 [−0.14,0.07]	−0.0276 [−0.11,0.05]		−0.0084 [−0.15,0.13]	−0.1503*** [−0.26,−0.04]
<u>Attributes of the respondents</u>						
Scientist (d)	0.0552 [−0.04,0.15]	0.0454 [−0.05,0.14]	0.0586 [−0.04,0.15]	0.0322 [−0.09,0.16]	0.0490 [−0.08,0.18]	0.0384 [−0.09,0.17]
National/Government (d)	0.0343 [−0.05,0.12]	0.0408 [−0.04,0.12]	0.0407 [−0.04,0.13]	−0.0598 [−0.17,0.06]	−0.0256 [−0.14,0.09]	−0.0487 [−0.16,0.07]
Observations	425	437	423	414	425	412

Notes: Numbers indicate marginal effects at means (discrete effects for dummy variables) derived from binary Probit regressions, with 95% CIs in square brackets. For columns (1) to (3), the dependent variable is a dummy variable that takes the value 1 if a respondent agrees or strongly agrees with cross-country comparison of mitigation efforts made possible by the ETF, and the value 0 otherwise. Based on the question: "It has been suggested that the ETF could be used to better compare mitigation efforts across countries. In general, how much do you agree that countries' mitigation efforts should be compared?" For columns (4) to (6), the dependent variable is a dummy variable that takes the value of 1 if a respondent considers the home country to be more or much more likely to comply with its NDC and increase its mitigation efforts because of the Paris mechanisms, and the value 0 otherwise. Based on the question: "The Paris Agreement establishes in Articles 13, 14, and 15 the combination of three mechanisms: the ETF, the global stocktake, and the implementation and compliance mechanism. In your opinion, is your home country more likely to comply with its NDC and increase its mitigation efforts because of this combination of mechanisms (compared to an agreement without any of these mechanisms)?" Explanatory dummy variables are indicated with (d), standardized (mean = 0, SD = 1) continuous variables with (s). OECD Europe is the reference for the OECD variables; all other types of organizations for National/Government. Detailed analyses on effect sizes and Goodness-of-Fit are reported in *SI Appendix, section 6*. Additional explanations and robustness checks for number of observations in *SI Appendix, section 7*. Boldface indicates statistical significance. Significance levels are indicated by: * $P < 0.10$, ** $P < 0.05$, *** $P < 0.01$.

different from those explaining optimism overall. In the assessment of overall effectiveness, participation in and perceptions of international institutions play an important role, whereas in the assessment of effectiveness at home, national circumstances play an important role.

Finally, we turn to an important issue of policy design: who should perform the cross-national comparisons that are central to naming and shaming. In Fig. 2 we report results for five clusters

of actors that are widely discussed—the UNFCCC secretariat, the IPCC, leading governments, NGOs, and the media. The results indicate a high degree of acceptance for the UNFCCC secretariat and the IPCC, while respondents state considerable skepticism regarding the other actors. For this assessment, there are only small differences in the views of respondents with respect to polity, institutional quality, and public concern about climate change (*SI Appendix, Fig. S30*).

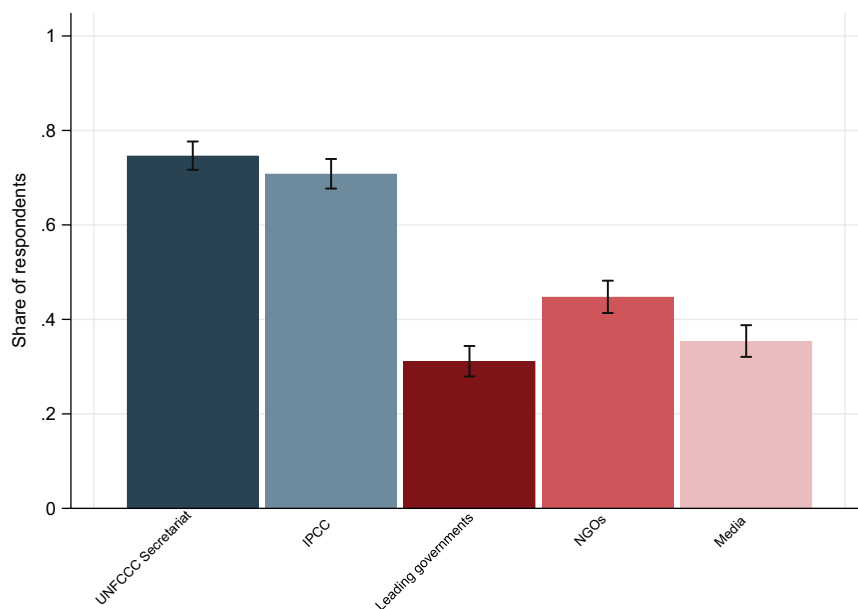


Fig. 2. Assessment of actors to “name and shame.” For the survey question “If a comparison of countries’ mitigation efforts is made, how much do you agree with the following organizations providing such a comparison? the UNFCCC secretariat, the IPCC, leading governments, NGOs, the media.” Number of observations (from left to right): $n = 809$, $n = 809$, $n = 793$, $n = 813$, and $n = 782$. Bars indicate share of respondents who answered each question with (4) or (5) on the Likert-type scale ranging from (1)-Don’t agree at all to (5)-Agree completely. Whiskers indicate 95% CI for the mean.

Discussion

To date, it has been difficult to assess which factors explain the willingness of countries to accept the inclusion of naming and shaming procedures in the design of international agreements and the prospects for using naming and shaming to enforce compliance and allow more effective international cooperation. The challenges in the existing literature have been measurement of key variables, the difficulty of working with large sample sizes rather than case studies, the omission of seemingly important variables such as underlying concern and willingness to act on the cooperation problem at hand, and the heavy focus on the singular domain of human rights.

This study expands and complements the existing literature by relying on a large sample of policy elites in a survey designed to elicit measurement of key explanatory variables and by its attention to a different domain—international environmental cooperation, specifically the topic of climate change. Elite studies, of course, face challenges in any survey analysis, such as ensuring that concepts expressed in survey questions are properly understood by subjects and that the sample and the assessments are unbiased. Negotiators’ assessments might be biased for a variety of reasons, such as their backgrounds or professional activities, clouding their judgment of the acceptance and impact of tightened transparency or other rules. Previous research with climate policy elites has shown, for instance, that the longer they participate in negotiations, the more likely they are to view the negotiation outcomes positively (64). Therefore, we have controlled for the individual characteristics of the respondents in the empirical estimates and verified that the identified correlations are not driven simply by differences in delegation teams. Nevertheless, our results should be interpreted with the necessary caution and supported with additional studies based ideally on complementary elicitation methods.

Mindful of those perennial limitations, our study provides three major results with implications for policy and future research.

First, what explains support for the use of naming and shaming? In nearly all our models national institutions are significant, and

the signs of the coefficient are reliably positive. Experts from countries with better administrative and democratic institutions are more likely to welcome the comparison of countries’ mitigation efforts and, to an even greater degree, see the comparisons as effective in influencing national policy. The effects are not just statistically significant but sizable: Estimated probabilities indicate that the likelihood of being in favor of using ETF-related naming shaming is about 30 percentage points higher for respondents from consolidated democracies compared to respondents from autocracies. For respondents from countries with scores in the upper quartile of the institutional quality index, the likelihood of seeing ETF-related naming and shaming as effective is about 15 percentage points higher compared to respondents from countries with scores in the lower quartile (see *SI Appendix, Tables S10–S12 and Figs. S4–S6* for more details on effect sizes). These correlations may reflect that naming and shaming is aligned with how many national political processes operate—for example, through challenges to state policy through courts and administrative procedures. Of interest is that the significance and signs of the Polity variable are uneven, especially when experts assess the efficacy of naming and shaming. This points to one research agenda for the future, which is to sharpen both the theory and the empirical assessment of which kinds of institutional attributes matter most for naming and shaming to work.

Second, this study looks to two variables related to a country’s perception and willingness to address the climate problem. The first of these variables refers to public concern about climate change; the second refers to the quality of the country’s commitments under the Paris Agreement to lower its emissions. So far, neither of these variables—or even the concepts they reflect—have received much attention in the naming and shaming literature. With regard to underlying public concern about the problem at hand, we expected, and found, that experts from countries in which there is greater public concern about climate change see more value in naming and shaming and expect a higher influence on national behavior. Experts in our survey reveal similar attitudes when it comes to the quality of national pledges—the ambition of those pledges and their credibility. To our knowledge, such

details around the kinds of motivations and commitments that a nation makes to international institutions have never been assessed as a possible explanatory factor for national attitudes about enforcement mechanisms such as naming and shaming. In most of our models both of these variables are positive and significant.

These variables—levels of public concern, along with the quality of national commitments—suggest an avenue of scholarship that explores how domestic politics affect national positions on enforcement of international commitments. Countries may favor (and see as effective) enforcement mechanisms when they think they are able to sustain political support for action at home, when their national commitments are ambitious and credible and—returning to our first result—when they have the institutional means to translate public support and spotlight into action. With this, naming and shaming appears to be accepted and effective in places where it would seem to be least needed—the countries most highly motivated and organized to act on climate change. Yet, even these countries may need strong incentives to stay true to their goals in difficult times. In Europe, for example, the surge in energy prices and interruptions in Russian gas supply have created incentives, at least in the moment of crisis, to retain higher-emission energy technologies such as coal. Local political support for action on climate change, along with international visibility, plausibly help explain why European policy makers have kept this recarbonization contained. Moreover, many of the most recent “theories of change” that explain how deep cooperation on climate change can emerge rely heavily on building clubs of highly motivated, ambitious governments and firms to get the process started (75). Those clubs may be able to rely, in large part, on naming and shaming as an enforcement mechanism.

Third, our study suggests that naming and shaming is less likely to be accepted and to be effective in less ambitious and capable countries. Indeed, a relatively high share (43%) of the seasoned climate experts in our sample don't think that naming and shaming will work in their countries. That naming and shaming often will not be allowed to operate against some important governments points to the need for research on other mechanisms. Future research and policy action should explore the options for addressing this challenge. Trade sanctions and other strong enforcement mechanisms could play a role. However, those strategies may backfire—creating incentives for countries to withdraw from formal cooperation on climate change. Climate policy funding for less ambitious and capable countries could be earmarked for capacity building that improves how local institutions craft national commitments and engage with industry and other actors needed to implement those commitments—as was done successfully in the Montreal Protocol on the ozone layer and other international agreements (32, 75). Similarly, under Article 6 of the Paris Agreement, the commitments of highly ambitious countries might be linked, in part, to investments that boost ambition and capabilities in countries that are lagging behind. These ideas have long been part of climate policy discussions but, unlike in the ozone case, not as well targeted to improving the quality of national institutions and commitments (75, 76).

Another challenge concerns institutional design of the naming and shaming process. Our survey reveals most support for country comparisons done by international institutions (e.g., the IPCC) or the climate change secretariat that administers the UNFCCC process. It shows much less support for allowing leading governments or independent actors like NGOs and the media to do the comparisons. These views on who should do the naming and shaming, unlike the others, do not depend on political institutions and public perception of the problem. Meanwhile, extensive research by scholars (with a few exceptions) argues that independent actors such as NGOs and the media are essential for effective

naming and shaming (36, 38, 40, 76). While the ranking of potential naming-and-shaming actors that we identified already hints at what determines an actor's suitability, this should be explored in more detail in future research. A possible implication could be that some kind of hybrid approach may be needed. The ETF has a role to play because it is formally part of the Paris Agreement and widely seen, by diplomats in the middle of the process, as a means of naming and shaming. At the same time, the countries that are most committed to cooperation on climate might want to create parallel mechanisms that can operate without the conservative constraints of the intergovernmental process and tap information from actors such as media and NGOs.

Our study also underscores the need for research on how naming and shaming affects the behavior of the actors whose behavior has the largest effects on emissions: industrial firms and state-owned enterprises (77). Such research can build on ideas that have been developed by studying “private politics”—the analysis of how naming-and-shaming campaigns can lead to prosocial behavior by targeted firms and their industry peers (78–85) or visible claims of prosocial behavior (86). Some of this research focuses on the political, social, and financial pressure of the shammers that target firms, such as shareholders and NGOs (80, 82, 84); other studies emphasize effects on firm behavior that are mediated by the media (81, 86). These approaches overlap with but are distinct from the variables that the present study suggests are most important as explanators of effective naming and shaming: national political and administrative systems and the level of policy ambition. The existing body of research on direct campaigns and other forms of private politics has focused almost exclusively on private firms in the United States and Europe, whereas total global emissions come mostly from firms and state enterprises in other political systems and geographies. Combining a focus on national government attributes (as in the present study) and firm-level attributes (as in the private politics literature) can also help address a key finding from studies of private politics: even in the United States and Europe—democratic countries with some most ambitious climate commitments—research has found that naming and shaming campaigns targeting firms are least effective on the worst performers (78, 79, 85). In such settings, naming and shaming mediated by the state—with policy responses that affect all firms—may help explain the impact of naming and shaming on overall corporate behavior and emissions.

The overall implication of these findings is that effective climate cooperation will require looking beyond the formal procedures created under the Paris Agreement or other international agreements. What is needed are mechanisms that can operate effectively inside the countries that are less ambitious to help strengthen institutions and mobilize domestic public opinion on climate change. There is a long history of such activities in other areas of international cooperation: development assistance organizations, NGOs active in target countries, in some cases even industrial organizations that can find ways to align national behavior with international norms (75). And where such mechanisms aren't successful at boosting ambition, cooperation, and enforcement, ambitious countries may instead turn more toward external and punitive mechanisms, like carbon border adjustments and other “sticks” that can impose penalties along with subsidies (“carrots”) to reward local firms that invest in new technologies and business practices. There is considerable and growing evidence that the real world of climate policy action is evolving in that direction.

Materials and Methods

The research was evaluated and approved by the Ethics Committee of the University of Kassel, Germany. All participants in our study gave informed consent before

participation. Participants (Country delegates from UNFCCC COPs from 2010 to 2019 and authors or reviewers of the Fifth IPCC Assessment Report) were recruited via e-mail and received a personalized link to an online questionnaire that covered different aspects of international climate policy with a focus on the implementation of the Paris Agreement. A total of 910 experts answered at least one question relevant as outcome variable to the current analysis. Individual-level data from the online questionnaire was enhanced with open-source data (e.g., from the World Bank) on the country-level. *SI Appendix, sections 2 and 3* describe the data collection and sample characteristics in detail. *SI Appendix, sections 4–10* include extensions and robustness checks of the analyses presented in the main text. *SI Appendix, section 11* reports on additional outcome variables.

Data, Materials, and Software Availability. Anonymized data from online survey among climate policy experts uploaded as Stata dataset (.dta) in Harvard Dataverse (<https://doi.org/10.7910/DVN/FEECVR>) (87).

ACKNOWLEDGMENTS. We thank our partners and the advisory board of the COMPLIANCE project for valuable comments and suggestions during

the workshops. Thanks to Jean Paul Brice Affana, Emilie Hafner-Burton, and Brad LeVeck for preliminary conversations about survey design and to James Fowler and Granger Morgan, eons ago, for sparking interest in what could be learned from expert surveys. A.D. and M.L. acknowledge funding from the German Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung) in the Funding Priority "Economics of Climate Change" (COMPLIANCE: 01LA1806B). D.G.V. and E.K.C. are funded by the Electric Power Research Institute, UC San Diego and from private philanthropy to the Scripps Institution of Oceanography.

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