

Pledging, Populism, and the Paris Agreement: The Paradox of a Management-Based Approach to Global Governance

CARY COGLIANESE[†]

The adoption of the Paris Agreement in late 2015 marked a historic breakthrough in legal efforts to stave off the ravages of the planet's changing climate.¹ Nations had struggled for more than two decades to forge a strong global agreement on reductions in greenhouse gas emissions.² With the Paris Agreement, the nations of the world finally pledged together to reduce emissions in an effort to limit the increase in global mean temperature to below two degrees Celsius over pre-industrial levels—and, even more ambitiously, to try to aim

© 2019 Cary Coglianese

[†] Edward B. Shils Professor of Law, Professor of Political Science, and Director of the Penn Program on Regulation, University of Pennsylvania Law School. The author gratefully acknowledges insightful comments from participants at the 2018 University of Maryland symposium on the Paris Agreement as well as outstanding editorial patience and support from Karen Sealy, Vanessa Zehnder, and their colleagues on the staff of this journal. He appreciates helpful research assistance from Lavi Ben Dor, Gabriela Femenia, Isabella Fierro, Timothy von Dulm, and Dan Walters, as well as thoughtful comments on an earlier draft from Lavi Ben Dor, Susan Biniaz, and Jean Galbraith.

1. Paris Agreement to the United Nations Framework Convention on Climate Change, Dec. 12, 2015, T.I.A.S. No. 16-1104 [hereinafter Paris Agreement].

2. The United Nations Framework Convention on Climate Change, adopted in 1992, reflects the first major effort to move toward global agreement on climate change, by offering a framework for future negotiations. United Nations Framework Convention on Climate Change, May 9, 1992, S. Treaty Doc No. 102-38, 1771 U.N.T.S. 107 (1992) [hereinafter UNFCCC]. The Kyoto Protocol, adopted in 1997, committed a few dozen nations to reductions in greenhouse gas emissions, but it was widely viewed as a failure and never received ratification by the United States. Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 10, 1997, 2303 U.N.T.S. 162 (1998) [hereinafter Kyoto Protocol].

to keep any increase to below 1.5 degrees Celsius.³ With support from leaders from the world's major economies, every nation in the world has now signed onto an agreement that not only acknowledges the "urgent threat" created by greenhouse gas emissions, but also puts in place a structure for nations to move forward to respond to that threat.⁴

Despite the significant breakthrough that the Paris Agreement represented, the forging of this accord could very well prove to be the highwater mark in global cooperation over climate change for some time to come. Indeed, it took little time before the Agreement's effectiveness would be cast into considerable doubt. In June 2017, President Donald J. Trump announced his intention to withdraw the United States from the Agreement, and his administration is taking steps to roll back domestic regulations aimed at achieving U.S. commitments made under the accord.⁵ Without the continued leadership of the United States, and with the rise of various populist movements around the world, other countries' commitment to the goals of the global Agreement appears at risk of wavering as well.⁶

3. Paris Agreement, *supra* note 1, at art. 2.1. A total of 195 countries have signed the Paris Agreement, the same number of states currently recognized by the United Nations. See *Status of Treaties: 7.d Paris Agreement*, U.N. TREATY COLLECTION, https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=en (last visited Mar. 4, 2019). See also *Growth in United Nations Membership, 1945-Present*, U.N., <http://www.un.org/en/sections/member-states/growth-united-nations-membership-1945-present/index.html> (last visited Mar. 4, 2019); *Non-Member States*, U.N., <http://www.un.org/en/sections/member-states/non-member-states/> (last visited Mar. 4, 2019). The Agreement has been ratified by 185 countries and entered into force in November 2016. *Paris Agreement – Status of Ratification*, U.N. CLIMATE CHANGE, <https://unfccc.int/process/the-paris-agreement/status-of-ratification> (last visited May 5, 2019).

4. Paris Agreement, *supra* note 1.

5. Remarks Announcing United States Withdrawal from the United Nations Framework Convention on Climate Change Paris Agreement, 2017 DAILY COMP. PRES. DOC. 373 (June 1, 2017), <https://www.whitehouse.gov/briefings-statements/statement-president-trump-paris-climate-accord/>. See also, e.g., Coral Davenport & Lisa Friedman, *How Trump Is Ensuring That Greenhouse Gas Emissions Will Rise*, N.Y. TIMES (Nov. 26, 2018), <https://www.nytimes.com/2018/11/26/climate/trump-greenhouse-gas-emissions.html> (noting that "Trump has made the dismantling of policies to curb greenhouse pollution a centerpiece of his deregulatory agenda").

6. See, e.g., David A. Graham, *Can Anyone Fill the U.S. Leadership Vacuum on Climate Change?*, THE ATLANTIC (June 25, 2018), <https://www.theatlantic.com/international/archive/2018/06/can-anyone-fill-the-us-leadership-vacuum-on-climate-change/563594/> (quoting former Obama Administration climate negotiator Todd Stern as saying that "[i]f the U.S. is not in there, the likelihood that you're going to get other countries doing their best is just reduced"); Brady Dennis et al., *'1,000 Little Steps': Global Climate Talks End in Progress but Fail to Address the Galloping Pace of Climate Change*, WASH. POST (Dec. 15, 2018), https://www.washingtonpost.com/energy-environment/2018/12/15/negotiators-strike-deal-global-climate-talks-questions-linger-over-whether-it-measures-up/?utm_term=.76a874073e42 (discussing the implications of wavering commitments for the climate talks held in

The complications that have confronted the early implementation of the Paris Agreement reveal more than just the persistent challenges associated with international cooperation. They also reflect structural limitations inherent in the Agreement's approach to climate governance. Its basic scheme—sometimes described by analysts as “pledge and review”⁷—depends on each nation declaring its own climate mitigation goals and developing plans to achieve those goals through domestic policy interventions.⁸ The Agreement itself does not impose any substantive requirement that countries reduce their greenhouse gas emissions. Instead, it imposes an obligation that countries announce their own “nationally determined contributions” to the global effort to reduce emissions.⁹ It does not make nations' self-determined emission-reduction goals legally binding. Instead, it relies on a hope that, with transparent reporting of each country's goals and its progress toward meeting them, countries will be confronted with political and diplomatic pressure to reduce emissions.¹⁰

Although the Paris Agreement was historic in its formation, it was far from novel in its structure. Its reliance on self-determined goals and plans, without any binding legal obligation to meet those goals and plans, has a direct parallel in domestic law to the regulatory strategy known as “management-based regulation.”¹¹ Management-based

Poland in late 2018); Ernesto Londoño & Lisa Friedman, *Brazil Backs Out of Hosting 2019 Climate Change Meeting*, N.Y. TIMES (Nov. 28, 2018), <https://www.nytimes.com/2018/11/28/world/americas/brazil-climate-meeting.html>; Jonathan Watts & Ben Doherty, *US and Russia Ally with Saudi Arabia to Water Down Climate Pledge*, THE GUARDIAN (Dec. 9, 2018), <https://www.theguardian.com/environment/2018/dec/09/us-russia-ally-saudi-arabia-water-down-climate-pledges-un>.

7. See, e.g., Gabriel Weil, *Incentive Compatible Climate Change Mitigation: Moving Beyond the Pledge and Review Model*, 42 WM. & MARY ENVTL. L. & POL. REV. 923 (2018); William A. Pizer, *Practical Global Climate Policy*, in ARCHITECTURES FOR AGREEMENT: ADDRESSING GLOBAL CLIMATE CHANGE IN THE POST-KYOTO WORLD 280 (Joseph E. Aldy & Robert N. Stavins eds., 2007). The idea of a bottom-up, pledge-and-review approach to international climate cooperation dates back at least to the 1990s. See Katarina Buhr et al., *Climate Change Politics Through a Global Pledge-and-Review Regime: Positions Among Negotiators and Stakeholders*, 6 SUSTAINABILITY 794, 795 (2014) (noting that this approach “was discussed already in the 1990s . . . in drafting the UNFCCC, and seriously revitalized with the 2009 Copenhagen Accord”).

8. Paris Agreement, *supra* note 1, art. 4.2.

9. *Id.*

10. Fatima Maria Ahmad et. al., *The Paris Agreement Presents a Flexible Approach for US Climate Policy*, 11 CARBON & CLIMATE L. REV. 283, 284 (2017) (noting that a nationally determined contribution “is not a legally binding obligation, nor is a country bound to particular policies by which to achieve its target” and that, “[r]ather than rely on punitive legal enforcement measures, the Paris Agreement provides a framework that creates a continuous cycle to take advantage of peer and public pressure to motivate countries. . .”).

11. See generally Cary Coglianese & David Lazer, *Management-Based Regulation: Prescribing Private Management to Achieve Public Goals*, 37 L. & SOC'Y REV. 691 (2003). The

regulation is characterized by its requirement that regulated entities develop their own objectives for achieving regulatory goals and create their own plans for achieving those objectives.¹² Its approach to regulation has been used by governments around the world to address a wide variety of domestic policy concerns, such as food safety, occupational health and safety, environmental protection, domestic security, and the reduction of catastrophic industrial risk.¹³ As a result, the findings from research on these and other uses of regulation at the domestic level provide a window into what can realistically be expected from the Paris Agreement.¹⁴

The main conclusion to draw from domestic regulation is that a management-based approach to governance presents a paradox.¹⁵ Under many circumstances, management-based regulation will prove to

Paris Agreement's approach is also generally consistent with what Abram Chayes and Antonia Handler Chayes have called a "managerial model" of international treaty design. ABRAM CHAYES & ANTONIA HANDLER CHAYES, *THE NEW SOVEREIGNTY: COMPLIANCE WITH INTERNATIONAL REGULATORY AGREEMENTS* 3 (1995) (discussing management-oriented features of transnational regimes, such as transparency, monitoring, and assessment, which can promote compliance with international legal obligations). Of course, Chayes and Chayes focus on the use of management tools as strategies for promoting compliance with international norms, whereas the Paris Agreement in an important sense goes a step further by making management the international norm itself (not just a means for promoting compliance with other norms) and by leaving the creation of substantive norms to each country and its policy management process.

12. *Id.*

13. Cary Coglianese, *Management-Based Regulation: Implications for Public Policy*, in *RISK AND REG. POL'Y: IMPROVING THE GOVERNANCE OF RISK* 159, 163-65, 176-77 (Gregory Bounds & Nikolai Malyshev eds., 2010); *Designing Safety Regulations for High-Hazard Industries*, NAT'L ACAD. SCIS., ENG'G, & MED. 126-37 (2018), <https://www.nap.edu/catalog/24907/designing-safety-regulations-for-high-hazard-industries>.

14. Most of the literature on regulation assumes that both government regulators and regulated entities behave rationally, responding to the incentives and disincentives in their environment. States are also often assumed to act rationally on the international stage, meaning that they too respond to incentives and disincentives. Recognizing that the political leaders who operate states confront different incentives and a different decision-making environment than do the managers who run businesses, it nevertheless holds that what researchers have learned about behavior at the level of the firm can provide some insights about behavior at the level of the state. At the end of the day, just as businesses are run by people, so are governments. *Cf.* Jean Galbraith, *Treaty Options: Towards a Behavioral Understanding of Treaty Design*, 53 *VIRG. J. INTL. L.* 309 (2013) ("[S]tate ratification decisions are made by people, and ... these people are in turn usually answerable to other people" which means that "there are multiple plausible pathways by which state decisionmaking could reflect" individual decision-making.).

15. I am not the only one to highlight paradoxical aspects of the Paris Agreement. In the lead-up to the final negotiations in Paris, for example, Stéphane Dion and Eloi Laurent describe a different "Paris Paradox," one that involves "an unprecedented universal climate agreement that will not solve our climate crisis." Stéphane Dion & Eloi Laurent, *Climate Action Beyond the Paris Accord 2* (OFCE, Working Paper No. 2015-22, 2015), <https://www.ofce.sciences-po.fr/pdf/travail/WP2015-22.pdf>.

be the best strategy available—perhaps even the only realistic strategy available¹⁶—and yet, due to its inherent structural limitations, a management-based strategy will also often only provide weak assurances of forward momentum.¹⁷ Such appears to be the case with the Paris Agreement. A strategy that allows each country to develop its own goals almost certainly reflects the best that could be achieved to secure a global agreement of any kind on climate change.¹⁸ In that limited sense, the Paris Agreement can clearly be said to be better than doing nothing—and, thus, its importance should not be dismissed—but the Agreement still leaves most of the impetus for climate progress in the hands of national leaders. Even before President Trump’s announcement of a U.S. retreat from the international accord, little reason existed to expect the Paris Agreement to deliver major behavioral change over the long term. Not only does the Agreement leave it to each member state itself to select its own climate goals, but the Agreement also relies largely on shaming on the international stage as its main incentive for compliance, a weak mechanism that will matter little to leaders facing provincial populism at home.¹⁹

In Part I of this Article, I explain what management-based regulation entails and show in greater detail how the Paris Agreement adopted a management-based governance strategy. In Part II, I draw on social science research on domestic applications of management-based regulation to show both the appropriate role for and the key limitations of a management-based governance strategy—and I explain what these research findings indicate for the Paris Agreement. In Part

16. Susan Biniarz, former Deputy Legal Advisor at the U.S. State Department and an instrumental participant in the negotiations that led to the Paris Agreement, has described the Agreement’s “nationally determined” approach as being much like Winston Churchill’s assessment of democracy: “the worst form of Government except for all those other forms that have been tried from time to time.” Susan Biniarz, Remarks at the Yale Environmental Dialogue (Feb 8, 2019) (quoting Winston Churchill, Speech before the House of Commons, 444 Parl. Deb., H.C. (5th ser.) (1947) 207 (U.K.)).

17. See Cary Coglianese, *The Managerial Turn in Environmental Policy*, 17 N.Y.U. ENVTL. L. J. 54, 70 (2008) (noting that “the very challenges that make management-based strategies attractive . . . also present challenges in overseeing the management government encourages or requires”).

18. See Jean Galbraith, *The Legal Structure of the Paris Agreement*, REG. REV. (Dec. 21, 2015), <https://www.theregreview.org/2015/12/21/galbraith-legal-structure-paris-agreement/> (explaining that “the international legal obligations imposed by the Paris Agreement [needed to] be ones that, in the view of U.S. executive branch lawyers, the United States [could] join through sole Presidential action without needing the approval of the Senate or Congress” and that “[p]rocess-based commitments are more likely to meet this standard than are substance-based commitments”).

19. See Jennifer Jacquet & Dale Jamieson, *Soft but Significant Power in the Paris Agreement*, 6 NATURE CLIMATE CHANGE 643 (2016) (discussing the importance of shaming as the principal mechanism for ensuring compliance with the Paris Agreement).

III, I suggest that the Paris Agreement's reliance on a management-based strategy will likely prove to be even less effectual than domestic application of management-based regulation because compliance with the Paris Agreement depends on weak reputational incentives. Although the Paris Agreement attempts to bring international pressure to bear on national leaders, its success depends ultimately, even if paradoxically, on domestic politics. The rising tide of populism that has characterized domestic politics in major countries around the world in recent years appears likely, unless turned back, to undermine severely the implementation of the Paris Agreement.

I. THE PARIS AGREEMENT'S MANAGEMENT-BASED APPROACH

To appreciate the management-based nature of the Paris Agreement and the implications that follow from that nature, it helps to begin by situating management-based regulation within the larger legal toolkit available to policymakers. That toolkit is certainly a vast one, as evidenced by the proliferation of complex, detailed laws governing economic activity today. Yet despite the profusion of laws at both the international and domestic level, any law or regulation can be understood as fitting into one of four main types—only one of which is management-based regulation.²⁰ It is important to understand all four types to see what makes management-based regulation distinctive and to comprehend its limitations. This Part thus begins by defining management-based regulation by reference to the other tools in the regulatory toolkit; then it uses examples from domestic policy to illustrate what management-based regulation entails; and finally, it explains why the Paris Agreement is a management-based regulation applied at the level of international law.

A. Situating Management-Based Regulation in the Regulatory Toolkit

The classification of legal tools into four main types stems from differences in two key characteristics. The first characteristic lies in the *kind* of obligation the law imposes: means or ends.²¹ Some laws oblige individuals or organizations to engage in (or avoid) particular

20. The four-fold typology of regulatory instruments presented here derives initially from Cary Coglianese, *Management-Based Regulation: Implications for Public Policy*, OECD Paper No. GOV/PGC/REG (2008) 5 (Mar. 25, 2008), <https://www.oecd.org/gov/regulatory-policy/41628947.pdf>. See also Coglianese, *supra* note 13. The typology has been adopted by and elaborated more recently in NAT'L ACAD. SCIS., ENG'G, & MED. NAT'L ACAD. SCIS., ENG'G, & MED., *supra* note 13, at 22–32.

21. NAT'L ACAD. SCIS., ENG'G, & MED., *supra* note 13, at 25.

means or actions—such as installing pollution control equipment—while other rules obligate their targets to achieve (or avoid) particular ends or end-states—such as ensuring that air pollution emissions do not exceed specified levels. Rules that compel action or the adoption of particular means have been referred to by many names, including prescriptive or command-and-control rules, but it would be more accurate to say simply that they are *means-based*.²² By contrast, regulations that impose an output or outcome obligation can be considered *ends-based*, although they often travel under the banner of other names, such as performance standards or outcome-based regulation.²³

The second key characteristic centers on the *connection* between a rule’s obligation and the ultimate problem the policymaker seeks to solve.²⁴ Some rules focus on that ultimate problem—taking what can be considered a macro orientation to the overall objective. Other rules focus on a subsidiary objective or they target a micro step along the causal chain that leads to the ultimate problem or its avoidance. For example, a safety regulator with the ultimate goal of avoiding workplace injuries can impose a *micro* rule that requires the use of protective equipment or a *macro* rule that imposes liability on employers for any workplace injuries that occur.

Taken individually, any legal obligation can be classified into one of four types depending on whether the obligation is defined in terms of *means* or *ends*, as well as whether it is *macro* or *micro* in its orientation to the ultimate problem. Table 1 shows how these four distinct types are organized based on these two characteristics.²⁵

Table 1: Regulatory Types Based on Key Characteristics

	<i>Means</i>	<i>Ends</i>
<i>Micro</i>	<p>Micro-Means (“Technology Standards”)</p>	<p>Micro-Ends (“Performance Standards”)</p>
<i>Macro</i>	<p>Macro-Means (“Management-Based Regulation”)</p>	<p>Macro-Ends (“Ex post liability”)</p>

22. Coglianese, *supra* note 13, at 162–63.

23. NAT’L ACAD. SCIS., ENG’G, & MED., *supra* note 13, at 27, 30.

24. *Id.* at 25–26.

25. It is possible, of course, for a regulator to adopt more than one type of legal obligation or rule at the same time in combination. This bundling is common. *See id.* at 23, 89.

For example, the imposition of liability for harms caused by pollution emissions, as seen in traditional nuisance law, is an example of a *macro-ends regulation* because the focus is placed on the problem—namely, harms created by pollution—and the legal obligation to pay damages is triggered by the occurrence of that problem.²⁶ By contrast, a specified limit on emissions from a smokestack would be an example of a *micro-ends regulation* because the emissions are not themselves the ultimate problem (especially if no one is around to breathe them), but they are instead a key step on the causal chain toward creating negative health effects or other harms the policymaker seeks to reduce.

A requirement that a factory install pollution control equipment is also micro in its orientation, because the equipment requirement focuses on one step on a causal chain in an industrial process that leads to emissions, which in turn leads to the ultimate health effects or other harms the policymaker seeks to reduce. Such an obligation to install equipment, however, is a type of means-based regulation because it mandates the adoption of a particular type of means. Specifically, it is a *micro-means regulation*.

But a regulation can require specific means while still being macro in its orientation. This is the case with what has come to be known as management-based regulation—a common name for *macro-means regulation*.²⁷ Under macro-means regulation, the legal obligation focuses on the ultimate problem; it does so by requiring the regulated entity to identify that problem, analyze how the entity's activity might be contributing to it, and develop objectives and strategies for addressing it. Such policies are generally characterized as “management-based” because the required means are all managerial in orientation, directing firms' managers to conduct analyses, set goals, create plans, and engage in efforts to implement those strategies, and often also to assess and revise them on a regular basis.

B. Domestic Applications of Management-Based Regulation

Two specific applications illustrate the design of management-based regulation. The first example comes from food safety regulation, where regulators around the world have required food processors

26. For general background on nuisance law, see Restatement (Second) of Torts § 821A (1979).

27. See NAT'L ACAD. SCIS., ENG'G, & MED., *supra* note 13, at 30 (macro-means regulation); Coglianesi & Lazer, *supra* note 11 (management-based regulation). This regulatory design has less commonly been called “enforced self-regulation.” John Braithwaite, *Enforced Self-Regulation: A New Strategy for Corporate Crime Control*, 80 MICH. L. REV. 1466 (1982).

to follow a management model known as HACCP, which stands for “hazard analysis and critical control points.”²⁸ HACCP adopts a systematic risk management approach to foodborne illnesses caused by contamination of food with microscopic pathogens, a serious problem that afflicts millions of people each year.²⁹ HACCP regulations mandate management efforts to focus on this problem, requiring food processing facilities and restaurants to identify possible points of contamination and develop internal plans and procedures for preventing such contamination from occurring.³⁰ Although specific HACCP regulations can vary, in general they require food processors and restaurants to complete seven management actions: (1) conduct a hazards analysis of their facility to identify where contamination can occur; (2) identify critical control points (CCPs) in their food production or preparation processes; (3) set goals or restrictions for each CCP, such as temperatures or sampling limits; (4) monitor each CCP against those stated goals; (5) pursue corrective actions for any CCP that fails to meet stated goals; (6) perform regular reassessment of CCPs and food safety goals, adjusting them as needed to maintain continuous improvement; and (7) maintain records documenting the above actions.³¹

A second example of macro-means or management-based regulation comes from environmental law. More than a dozen states have adopted pollution prevention planning laws.³² These laws treat the excessive use of toxic chemicals in industrial activities as a problem, and they seek to focus industrial facility managers’ attention on reducing that use. Unlike micro-means regulation, these laws do not mandate exactly how facilities should reduce their use of toxics and, in contrast with ends-based regulation, they do not even mandate any reductions

28. See SARA MORTIMORE & CAROL WALLACE, *HACCP: A PRACTICAL APPROACH* 1 (3d ed. 2013).

29. See *CDC Estimates of Foodborne Illness in the United States*, CTRS. FOR DISEASE CONTROL & PREVENTION (Feb. 2011), http://www.cdc.gov/foodborneburden/pdfs/factsheet_a_findings_updated4-13.pdf.

30. See, e.g., Pathogen Reduction: Hazard Analysis and Critical Control Point (HACCP) Systems, 61 Fed. Reg. 38,806 (July 25, 1996) (to be codified at 9 C.F.R. pts. 304, 308, 310, 320, 327, 381, 416, & 417).

31. For discussions of HACCP’s general approach, see Coglianese & Lazer, *supra* note 11, at 697–98; Caroline Smith DeWaal, *Delivering on HACCP’s Promise to Improve Food Safety: A Comparison of Three HACCP Regulations*, 52 FOOD DRUG L.J. 331 (1997); Peter J. May, *Regulatory Regimes and Accountability*, 1 REG. & GOVERNANCE 8, 14–17 (2007).

32. See Lori S. Benneer, *Evaluating Management-Based Regulation: A Valuable Tool in the Regulatory Tool Box?*, in *LEVERAGING THE PRIVATE SECTOR: MANAGEMENT-BASED STRATEGIES FOR IMPROVING ENVIRONMENTAL PERFORMANCE* 51, 52 (Cary Coglianese & Jennifer Nash eds., 2006).

in toxics usage.³³ Rather, they impose mandatory management actions that are intended to force facility managers to think about their use of toxics and to find ways to reduce them.

The specifics of these laws can vary, but they typically share the same basic elements as found in the Massachusetts Toxic Use Reduction Act (TURA)—the first such state law of this kind.³⁴ Under TURA, regulated firms must engage in an internal analysis of their current use of toxic chemicals, develop goals for reducing those toxics, establish internal plans for meeting their reduction goals, and submit to the government annual reports and other documentation on their facilities' use and release of toxic chemicals.³⁵ Although some state laws mandate that facilities actually follow through on their plans, most follow Massachusetts's TURA and merely require goal-setting and internal planning—not the implementation of plans or the attainment of goals.³⁶

With these examples in mind, it should be clear that management-based or macro-means regulation compels managers of regulated entities to focus attention on an underlying regulatory problem and then requires them to analyze how their operations are contributing to that problem, to set goals for reducing or mitigating the problem, and to establish plans for attaining those goals. This type of regulation requires that firms adopt a systematic process of management that usually tracks what has come to be known widely as a “plan-do-check-act” process, a management method used often in the business world to promote quality improvements in products or processes.³⁷ The plan-do-check-act process calls for managers to engage in an ongoing cycle of planning, operating, monitoring, and re-evaluating—all with the aim of achieving continuous improvement.³⁸ By requiring regulated entities to follow such a systematic management method, management-based regulations such as HACCP and TURA aim to prompt companies to commit to addressing problems and to following documented processes intended to keep them on a path toward ever-increasing improvements.

33. See Coglianese & Lazer, *supra* note 11, at 709.

34. See Cary Coglianese & Evan Mendelson, *Meta-Regulation and Self-Regulation*, in *THE OXFORD HANDBOOK OF REG.* 146 (Martin Cave et al., eds., 2010).

35. See MASS. GEN. LAWS ch. 211, §§ 1–23 (2002).

36. See Coglianese & Mendelson, *supra* note 34.

37. See Coglianese, *supra* note 17, at 55–60.

38. See Cary Coglianese & Shana Starobin, *Management-Based Regulation*, in *POLICY INSTRUMENTS IN ENVIRONMENTAL LAW* (Kenneth R. Richards and Josephine van Zeven, eds., forthcoming).

C. *The Paris Agreement as Management-Based Global Governance*

The management-based approach to domestic regulation effectively describes the core requirements that lie at the heart of the Paris Agreement.³⁹ Unlike the structured ends-based requirements embedded in the 1997 Kyoto Protocol,⁴⁰ which contained a schedule of designated reductions in greenhouse gas emissions from developed countries,⁴¹ the Paris Agreement imposes no such requirements for attaining any particular emissions reductions.⁴² Nor does it require that countries adopt or abandon any specific sources of energy. It is true, of course, that countries that signed the Paris Agreement agree to the importance of the overarching goal of limiting the increase of the global mean temperature to two degrees Celsius,⁴³ but that target is not a binding obligation on any individual country. Instead, the signatory nations are each required to establish their own climate goals and submit their own mitigation plans.⁴⁴ These nationally determined contributions constitute the individual countries' goals, with the Agreement calling on countries to then "pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions."⁴⁵

The Agreement directs countries to follow transparency guidelines for documenting their stated contributions and their progress in reducing greenhouse gas emissions.⁴⁶ Countries are to report "regularly" on their progress, with these reports subject to a "technical expert review" that is supposed to help "identify areas of improvement" for each country.⁴⁷ Starting in 2023 and every fifth year thereafter,

39. See, e.g., *Nationally Determined Contributions (NDCs)*, U.N. CLIMATE CHANGE, <https://unfccc.int/process/the-paris-agreement/nationally-determined-contributions/ndc-registry> (noting that "[n]ationally determined contributions (NDCs) are at the heart of the Paris Agreement").

40. Kyoto Protocol, *supra* note 2.

41. See Weil, *supra* note 7, at 925.

42. Ahmad et al., *supra* note 10 at 283.

43. Paris Agreement, *supra* note 1, at art. 2.1(a).

44. The agreement has some other requirements too, such as Article 9's unspecified requirement that developed nations "provide financial resources" to developing nations, but the core of the Agreement centers on each country's setting of its own goals and plans. *Id.* at art. 9.1.

45. *Id.* at art. 4.2.

46. *Id.* at arts. 4.8, 4.12–13, 13. At the 24th Conference of the Parties in Poland in 2018, countries adopted a specific and broadly uniform set of guidelines to use in reporting goals and progress. See *Outcomes of the U.N. Climate Change Conference in Katowice*, CTR. FOR CLIMATE & ENERGY SOLUTIONS (Dec. 2018), <https://www.c2es.org/site/assets/uploads/2018/12/cop-24-katowice-summary.pdf>.

47. Paris Agreement, *supra* note 1, at arts. 13.7, 13.11–12.

countries will participate in a “global stocktake” process that will aim to foster continuous improvement, as countries are encouraged to “updat[e]” and “enhanc[e]” their nationally determined contributions.⁴⁸

If the word “facilities” were substituted for “countries” or “parties” in the Paris Agreement, its provisions would sound like a classic case of management-based regulation at the level of domestic law.⁴⁹ Indeed, legal and policy analysts have widely characterized the Paris Agreement as adopting a “bottom-up” approach⁵⁰—a term that could be applied equally well to management-based regulation, which has itself been sometimes been described as “mandated self-regulation”⁵¹ or as “regulating from the inside.”⁵² As with management-based regulation, the Paris Agreement calls on each country to identify its sources of the causes of the climate problem, set goals for ameliorating that problem, and adopt plans to attain those nationally determined goals.⁵³ Just as domestic forms of management-based regulation require that industrial facilities undertake a series of comprehensive management steps, the Paris Agreement requires that countries engage in a systematic “management” process with respect to greenhouse gas emissions: they must set goals, establish plans, monitor and document progress, and periodically update their self-regulatory commitments.⁵⁴ As with TURA and other domestic forms of management-based regulation, the Paris Agreement does not impose any legal consequences on a country that fails to establish ambitious goals in the first instance nor on one that fails to meet whatever goals or plans the country does establish for itself.⁵⁵ The obligation is simply to follow what is, at a national policy level, a management process.

48. *Id.* at art. 14.

49. See Cary Coglianese, *When Management-Based Regulation Goes Global*, REG. REV. (Dec. 23, 2015), <https://www.theregreview.org/2015/12/23/coglianese-when-management-based-regulation-goes-global/>. See also CHAYES & CHAYES, *supra* note 11.

50. See, e.g., Daniel Bodansky, *The Paris Climate Change Agreement: A New Hope?*, 110 AM. J. INTL. L. 288 (2016); Meinhard Doelle, *The Paris Agreement: Historic Breakthrough or High Stakes Experiment?*, 6 CLIMATE L. 1 (2016).

51. See EUGENE BARDACH & ROBERT KAGAN, *GOING BY THE BOOK: THE PROBLEM OF REGULATORY UNREASONABLENESS* (1982).

52. See Cary Coglianese, *Policies to Promote Systematic Environmental Management*, in *REGULATING FROM THE INSIDE: CAN ENVIRONMENTAL MANAGEMENT SYSTEMS ACHIEVE POLICY GOALS?* 181 (Cary Coglianese & Jennifer Nash eds. 2001).

53. See Ahmad et al., *supra* note 10, at 284.

54. *Id.*

55. See Robert Falkner, *The Paris Agreement and the New Logic of International Climate Politics*, 92 INTL. AFF. 1107, 1117–18 (2016).

II. THE ROLE AND LIMITS OF MANAGEMENT-BASED GOVERNANCE

Resting the fate of the planet on a legal regime that requires countries to engage in a policy management process but never compels them to achieve any reductions in greenhouse gases, may seem unsettling, if not even somewhat absurd. But a rationale for management-based regulation exists, and both theory and evidence suggest that it can prove effective in addressing domestic regulatory problems (at least under certain conditions).⁵⁶ To gauge better what the Paris Agreement can realistically be expected to achieve at the international level, it can help to consider evidence about management-based regulation in domestic settings and how the theory and evidence gained elsewhere might apply to the problem of global climate change.

A. Conditions for Taking a Management-Based Approach

One reason for using management-based regulation is to address problems that stem from poor or inadequate management. For example, some industrial and transportation accidents occur because insufficient coordination of connected behaviors and technologies can lead to breakdowns in systems operations, producing catastrophic results.⁵⁷ For example, when the BP Deepwater Horizon drilling rig exploded in the Gulf of Mexico in April 2010, leading to the most extensive oil spill in U.S. history, the presidential commission that investigated the accident pointed to “systematic failures in risk management.”⁵⁸

The well blew out because a number of separate risk factors, oversights, and outright mistakes combined to overwhelm the safeguards meant to prevent just such an event from happening. But most of the mistakes and oversights at Macondo can be traced back to a single overarching failure—a failure of management.⁵⁹

Management failures like these become regulatory problems when the harms from such failures spill over to third parties—that is, when they create negative externalities.⁶⁰ In these cases, managers of risky

56. For a discussion of the evidence on management-based regulation’s effectiveness, see Coglianese & Starobin, *supra* note 38.

57. See generally CHARLES PERROW, *NORMAL ACCIDENTS: LIVING WITH HIGH-RISK TECHNOLOGIES* (1999).

58. *National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, Report to the President, Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling*, GPO, vii (Jan. 2011), <https://www.govinfo.gov/content/pkg/GPO-OILCOMMISSION/pdf/GPO-OILCOMMISSION.pdf>.

59. *Id.* at 90.

60. For a discussion of negative externalities, see THOMAS A. LAMBERT, *HOW TO REGU-*

industrial or transportation companies lack adequate incentives to invest in the socially optimal level of management rigor or diligence. In other words, for the same reasons that firms sometimes lack incentives to make socially optimal investments in safety or pollution control *equipment*, they can also lack the proper incentives to invest adequately in *management practices*.⁶¹

But recognizing that poor management can lead to problems does not necessarily imply that management-based regulation is the answer. After all, other regulatory strategies may work just as effectively, if not better. For example, policymakers can impose ex post liability (macroends regulation) on businesses for harms created by accidents, thus providing an incentive for more diligent management. Or if diligent management would lead businesses to install certain safety devices at their facilities, regulators could directly mandate the installation of those devices. Any decision to select management-based regulation should be made on the basis of a comparison with other regulatory alternatives, namely the other designs discussed in Part I.A. The relative advantages and disadvantages of different regulatory designs should be assessed in each particular regulatory context, as they will likely depend on the nature of the problem to be solved, the incentives and capacities of the regulated entities, and the regulator's capabilities.

Still, it is possible to suggest some generalizations.⁶² We should not, for example, overstate the role that ex post liability can play. After all, such liability already exists as a background norm in domestic tort law, but the emergence of modern regulations around the world reveals the insufficiency of such liability on its own. When it comes to the prevention of low-probability, high-consequence events, ex post liability usually cannot create sufficient incentives because the consequences of liability can be softened through insurance or bankruptcy and because firms' managers have cognitive biases (as we all do) that lead to systematic underappreciation of risk.⁶³ Moreover, ex post liability is only triggered when a catastrophe occurs, while the public reasonably expects policies to impose ex ante obligations in the hope of preventing catastrophes from occurring in the first place.

LATE: A GUIDE FOR POLICYMAKERS 23-29 (2017).

61. For a discussion of market failures that justify regulation, see generally W. KIP VISCUSI ET AL., *ECONOMICS OF REGULATION AND ANTITRUST* 2-3 (2d ed. 1995).

62. See Coglianese & Lazer, *supra* note 11.

63. For an excellent overview of cognitive biases and their implications for managers, see generally ROBERT MEYER & HOWARD KUNREUTHER, *THE OSTRICH PARADOX: WHY WE UNDERPREPARE FOR DISASTERS* (2017).

Micro-means regulations have thus been widely adopted because, at least when used for well-understood problems that have common one-size-fits-all solutions, they can offer considerable certainty in their effectiveness and they tend to be easier for regulators to monitor for compliance.⁶⁴ For example, presumably any mission-critical equipment in an industrial operation will need a backup source of energy in case of a power outage, so it makes sense to mandate that firms install backup generators. Similarly, because any building needs a fire alarm to alert occupants to leave in the event of a fire, building codes require the installation of smoke detectors and similar alarm systems. An advantage of micro-means regulation is that it can be relatively easy for regulatory inspectors to ensure that such mandated, one-size-fits-all means have been installed.

Of course, one size does not always fit all. In such circumstances, a micro-ends or performance-based regulation will make sense because it gives regulated entities flexibility to find their own lowest-cost way to achieve the required outcome.⁶⁵ For example, car manufacturers have many different ways to construct their cars to protect occupants in the event of a crash, and, as a result, automobile safety regulations obligate manufacturers to meet a performance test conducted under laboratory conditions with crash test dummies connected to pressure sensors.⁶⁶ Such a performance-based approach to regulation has been widely hailed for its ability to accommodate different products or operations as well as to allow room for innovation over time.⁶⁷ But micro-ends regulation will only work well when desired regulatory outcomes can be reliably observed and monitored.⁶⁸

Yet, just as one size does not always fit all, it will not always be the case that outcomes can be measured easily enough to justify the use of a micro-ends regulatory design. If outcomes cannot be reliably monitored *and* one size does not fit all, then what is a regulator to do? That is a time when the regulator can turn to macro-means or management-based regulation, because this approach only imposes requirements for documented management steps, giving regulated entities'

64. See NAT'L ACAD. SCIS., ENG'G, & MED., *supra* note 13, at 31.

65. *Id.*

66. 58 Fed. Reg. 46551 (Sept. 2, 1993). See generally Cary Coglianese, *The Limits of Performance-Based Regulation*, 50 U. MICH. J. L. REFORM 525, 533 (2017).

67. See *id.* at 525-28.

68. See Cary Coglianese, Jennifer Nash & Todd Olmstead, *Performance-Based Regulation: Prospects and Limitations in Health, Safety, and Environmental Protection*, 55 ADMIN. L. REV. 705 (2003).

flexibility over the direct, substantive actions they choose to take.⁶⁹ The conditions for using management-based regulation can thus be summarized as: (1) a high degree of heterogeneity in regulated targets and their operations, and (2) considerable difficulty in reliably monitoring desired end states.⁷⁰

Turning to the problem of global climate change, then, it is clear that greenhouse gas emissions and deforestation impose negative externalities that can justify regulation of some kind.⁷¹ The question becomes what kind of regulatory design would work best. Management-based regulation fits the problem of climate change well because the two conditions for its use are easily met in this context.⁷²

The first condition for management-based regulation—heterogeneity among regulated entities—applies quite strongly in the context of climate change. No one-size-fits-all solution could be mandated because of the extensive diversity that exists across countries' current energy sources, natural resource uses, and economic conditions. Not only are there broad differences between developed and developing economies, but, as the Paris Agreement itself recognizes, “different national circumstances” exist even within these categories.⁷³ The Agreement calls for each country's nationally determined contribution to be customized to fit its particular circumstances.⁷⁴

As to the second condition, reliable monitoring of greenhouse gas emissions is far from a straightforward task, both nationally and on a global scale. Emissions stem from many millions of different industrial and transportation-related sources, and the concentration of greenhouse gasses in the stratosphere can be affected by other factors such

69. Coglianesse & Lazer, *supra* note 11, at 705-06.

70. *Id.*; Coglianesse, *supra* note 13, at 167-68.

71. Global climate change is a commons or public good problem, a special case of an externality or harm to third parties. Reductions in globally mixed pollutants are nonexcludable and nonrivalrous, which means that each polluter (and each country) has an incentive to free ride on others' mitigation efforts.

72. This is not to say that other factors, such as practicality and political economy, did not also reinforce, if not even drive, the adoption of a management-based approach for the Paris Agreement, as a positive matter. Here I am focusing on prescriptive conditions from the standpoint of the theory of regulatory instrument choice.

73. See Paris Agreement, *supra* note 1, at preamble & arts. 2.2, 4.3, 4.4, 4.19. The Agreement also refers in multiple parts to nations' “common but differentiated responsibilities.” *Id.* at preamble & arts. 2.2, 4.3, 4.19.

74. *Id.* at art. 4.3 (stating that a country's nationally determined contribution should “reflect its highest possible ambition, reflecting its common but differentiated responsibilities and respective capabilities, in the light of different national circumstances”).

as deforestation.⁷⁵ Each country faces its own challenges in accurately measuring emissions and other climate-related activities within its borders.⁷⁶ A global regime needs accurate techniques to verify each country's self-reports. Not long ago, a National Academy of Sciences study committee found such verification methods to be "not sufficiently accurate."⁷⁷ More recently, satellite and aircraft monitoring techniques have emerged that hold promise, especially for tracking carbon emissions.⁷⁸ But reliably tracking and verifying countries' outputs is still far from simple and assured. It is thus not surprising that the Paris Agreement itself repeatedly emphasizes the need for transparency,⁷⁹ nor that a subsequent global climate agreement forged in Katowice, Poland in 2018 devoted a noteworthy level of attention to issues of monitoring and verification.⁸⁰

75. IPCC, CLIMATE CHANGE 2014: SYNTHESIS REPORT, CONTRIBUTION OF WORKING GROUPS I, II AND III TO THE FIFTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 4-6, 28 (2014). For further discussion of deforestation and climate change, see, e.g., Richard A. Houghton, *Tropical Deforestation as a Source of Greenhouse Gas Emissions*, in TROPICAL DEFORESTATION AND CLIMATE CHANGE (Paul Moutinho & Stephan Schwartzman, eds. 2005).

76. In 2016, the U.S. Environmental Protection Agency (EPA) reported that it had previously underestimated methane emissions in the United States. See Chris Mooney, *The U.S. Has Been Emitting a Lot More Methane Than We Thought, Says EPA*, WASH. POST (Apr. 15, 2016), <https://www.washingtonpost.com/news/energy-environment/wp/2016/04/15/epa-issues-large-upward-revision-to-u-s-methane-emissions>. Subsequent research continues to suggest that previous estimates of methane emissions have been too low. See Ramón A. Alvarez et al., *Assessment of Methane Emissions from the U.S. Oil and Gas Supply Chain*, 361 SCI. 186 (2018); Xinrong Ren et al., *Methane Emissions from the Baltimore-Washington Area Based on Airborne Observations: Comparison to Emissions Inventories*, 123 J. GEO. RES. ATMOS. 8869 (2018).

77. *Verifying Greenhouse Gas Emissions: Methods to Support International Climate Agreements*, NAT'L ACAD. OF SCIS., ENG'G, & MED. 1 (2010).

78. NASA has developed a U.S. satellite monitoring system for carbon emissions. *Orbiting Carbon Observatory 2*, NASA, https://www.nasa.gov/mission_pages/oco2/index.html (last visited Mar. 4, 2019). Recently, its funding has been targeted by the Trump Administration. See Paul Voosen, *Trump White House Quietly Cancels NASA Research Verifying Greenhouse Gas Cuts*, SCI. MAG. (May 9, 2018), <http://www.sciencemag.org/news/2018/05/trump-white-house-quietly-cancels-nasa-research-verifying-greenhouse-gas-cuts>. But the technology could be useful in verifying emissions from individual industrial facilities. See Ray Nassar et al., *Quantifying CO₂ Emissions from Individual Power Plants from Space*, 44 GEOPHYSICAL RES. LETTERS 10,045 (2017). Additional private efforts have reportedly shown an ability to verify methane emissions by combining satellite and airplane monitoring. See *Shale Gas, GHG SAT.* (Aug. 3, 2017), <https://www.ghgsat.com/case-studies/case-study-shale-gas>.

79. See Paris Agreement, *supra* note 1, art. 4.8, 4.13, 6.2, 13.1.

80. See, e.g., Katowice Climate Change Conference, *The Katowice Texts: Proposal by the President*, Annex I & II (Dec. 14, 2018) https://unfccc.int/sites/default/files/resource/Katowice%20text%2C%202014%20Dec2018_1015AM.pdf (detailing methods intended to "facilitate clarity, transparency and understanding of nationally determined contributions").

B. The Effectiveness of Management-Based Governance

The existence of the two conditions for management-based regulation—heterogeneity and difficulty in monitoring performance—helps to explain why the countries opted for a management-based approach in the Paris Agreement.⁸¹ However, the mere fact that global climate change satisfies the theoretical conditions underpinning management-based regulation does not provide any guarantee that this legal approach will in fact prove successful. After all, the two conditions that theory suggests will make management-based regulation appropriate amount to little more than the very conditions under which both traditional means- and ends-based regulatory strategies will fail.⁸² Is there any reason to think that management-based regulation can succeed under these conditions?

Perhaps surprisingly, sound empirical evidence indicates that management-based regulation can deliver meaningful substantive results. This evidence comes from the application of management-based regulation to address the two types of domestic regulatory problems discussed in the previous Part: foodborne illnesses and the use of toxic chemicals.

With respect to foodborne illnesses, following the imposition of HACCP requirements on meat processing plants, the U.S. Department of Agriculture found that the incidence of salmonella on sampled meat products declined between 10-60%, depending on the type of meat.⁸³ Overall, the Centers for Disease Control reported a 23% decline in foodborne illnesses in the initial years following the imposition of these management-based food safety requirements.⁸⁴ Although such data suggests a positive effect from the imposition of HACCP's management-based regulatory approach, by themselves they cannot rule out the possibility that such declines would have occurred anyway. To have confidence that HACCP led to a reduction in foodborne illnesses, researchers must compare the observed decline in foodborne illnesses with an estimate of the counterfactual—that is, the rate of such illnesses in the absence of the regulation. A statistical strategy known as differences-in-differences estimation provides the basis for estimating

81. Of course, for the purpose of forging a widespread agreement, the management-based approach also has much to offer in terms of political feasibility because it lacks substantive legal obligations and affords each country flexibility in choosing its own performance goals and energy mix, providing for greater maneuverability. See Falkner, *supra* note 55; see also Biniarz, *supra* note 16.

82. Coglianese, *supra* note 13, at 169.

83. See Coglianese & Lazer, *supra* note 11, at 724.

84. *Id.*

how much any decline in foodborne illnesses can be attributed to a HACCP regulation.⁸⁵ Economists Travis Minor and Matt Parrett used this strategy to study the impact of the U.S. Food and Drug Administration's (FDA) HACCP regulation of fruit juice manufacturers.⁸⁶ They compared the change in foodborne illnesses associated with juices after the introduction of HACCP to the change over the same time period in foodborne illnesses associated with all other types of food products, which were not subject to HACCP, finding that the FDA's HACCP regulation was associated with an annual reduction of about 500 juice-related foodborne illnesses.⁸⁷ This was a substantial reduction given that the total annual foodborne illnesses from juices ranged from about 600 to 1,800 in the period prior to the adoption of the HACCP regulation.⁸⁸

Similarly, states' experiences with management-based pollution prevention regulations shows that management-based regulation can produce positive results. Legal scholars Michael Dorf and Charles Sabel have argued that "[s]ubstantial evidence in the aggregate and at the firm level suggests that this apparatus works" in reducing toxic pollution.⁸⁹ Policy analyst Thomas Beierle has claimed that the Massachusetts Toxic Use Reduction Act specifically has "been quite effective in reducing toxic releases and waste," because that state "outpaced the nation as a whole in reducing on-site [toxic] releases."⁹⁰ However, Beierle does not note that all New England states—even those without management-based toxic chemical laws—experienced declines in toxic pollution that outpaced the rest of the nation.⁹¹ More sophisticated analysis is thus needed to have confidence that management-based regulation made a difference. Economist Lori Benneer has provided just such analysis in her longitudinal study of toxic pollution at

85. For a more detailed discussion of the difference-in-differences estimation strategy, see Lori Snyder Benneer & Cary Coglianese, *Measuring Progress: Program Evaluation of Environmental Policies*, 47 ENV'T. 22 (2005).

86. Travis Minor & Matt Parrett, *The Economic Impact of the Food and Drug Administration's Final Juice HACCP Rule*, 68 FOOD POL'Y 206 (2017).

87. *Id.* at 210–11 ("We find evidence that the FDA's Final Juice Rule reduced the number of foodborne illnesses associated with juice-bearing products by between 462 and 508 annually.").

88. *Id.* at 208 & fig.1.

89. Michael C. Dorf & Charles F. Sabel, *A Constitution of Democratic Experimentalism*, 98 COLUM. L. REV. 267, 382 (1998).

90. Thomas C. Beierle, *Environmental Information Disclosure: Three Cases of Policy and Politics* 30 (Resources for the Future, Discussion Paper No. 03-16, 2003), <https://ageconsearch.umn.edu/bitstream/10527/1/dp030016.pdf>.

91. Cary Coglianese & Jennifer Nash, *The Massachusetts Toxics Use Reduction Act: Design and Implementation of a Management-Based Environmental Regulation* (2004) (unpublished manuscript).

more than 31,000 industrial facilities throughout the United States in the 1990s.⁹² Using the same kind of differences-in-differences analysis that Minor and Parrett performed on HACCP, Benneer has determined that facilities in states with management-based pollution prevention laws achieved on average 28-30% greater declines in their reported levels of toxic emissions.⁹³

These improvements are striking, especially given that neither HACCP nor pollution prevention planning laws actually require a reduction in the targeted problems. How can regulations that merely require businesses to engage in a management activity nevertheless lead to significant substantive results? Three complementary reasons can be offered to explain why management-based regulation can work.

First, management-based regulation may succeed because, as noted earlier, some problems might simply stem from lack of proper management.⁹⁴ The poor coordination of people and processes that make up a complex industrial operation will lead to accidents or contamination when people get in each other's way or fail to sequence their actions properly.⁹⁵ Making firms engage in management activities can help improve their internal coordination and promote safer outcomes.

Second, management-based regulation may work because of how it interacts with other regulatory tools, such as macro-ends liability.⁹⁶ If businesses know they will be liable if they find problems with their operations but fail to fix them, then once firms are forced to find these problems through management-based regulation they will be inclined to correct them, even if doing so is costly.⁹⁷

92. Lori Snyder Benneer, *Are Management-Based Regulations Effective? Evidence from State Pollution Prevention Programs*, 26 J. POL'Y ANALYSIS & MGMT. 327, 328 (2007).

93. *Id.* at 345.

94. See Coglianese, *supra* note 13, at 172-73. See also *supra* notes 57-59 and accompanying text.

95. See NAT'L ACAD. SCIS., ENG'G, & MED., *supra* note 13, at 93-94 (noting that management-based regulation has been used to respond to "safety problems [that] are more difficult to disaggregate into contributing factors" and where "risks arise from the interaction of many facility- and operations-specific factors").

96. See Coglianese, *supra* note 13, at 173.

97. On the other hand, the threat of liability might affect how diligently firms engage in required management actions. As a committee of the National Academies of Sciences, Engineering, and Medicine has noted, "the background threat of liability in the event of a catastrophe may motivate a firm to plan more carefully, but the possibility of a firm's internal plans being used against it in a subsequent action for liability could have the opposite effect of causing the firm to plan less ambitiously." NAT'L ACAD. SCIS., ENG'G, & MED., *supra* note 13, at 138-39.

Finally, firms may well reap their own private rewards by taking the actions that they take in response to a management-based regulation.⁹⁸ The required management activity can *directly* deliver private benefits if its resulting improvements in internal coordination not only make industrial operations safer or cleaner but also make them more efficient or productive. Required management efforts can also *indirectly* lead a business to discover some non-management actions, such as the installation of safety devices or changes to internal work practices, that deliver both public and private benefits. Of course, one might ask why any company that would reap its own rewards would not have already undertaken activity to bring about such rewards. In some cases, it will simply be too costly for businesses to find these private rewards absent any management-based regulations; they will not know these opportunities are there until they look for them, and they do not look for them because the search process has its own costs.⁹⁹ But once a management-based regulation requires businesses to engage in a systematic analysis of their operations and create a plan of action, they will have been forced to incur the costs of searching for and finding these otherwise privately rewarding opportunities.¹⁰⁰

In the context of global climate change, it may be hard to see the first two explanations for management-based regulation—that is, the imperatives of operational management and the threat of ex post liability—applying to nation-states.¹⁰¹ But the third reason—that is, the finding of joint gains from taking the required management steps—would surely apply to climate change. That third reason would apply to the Paris Agreement if, by requiring countries to make and then

98. This is the circumstance that Lori Benneer has called a “strong complementarity” between management efforts and private gains. Benneer, *supra* note 32, at 59 (noting that management-based environmental regulations can work when there is “a strong positive relationship between increasing pollution-prevention [management] effort and increasing cost-savings or benefits from pollution reductions”).

99. See Coglianesse, *supra* note 13, at 172 (“Since finding cost savings and competitive advantages from socially responsible behavior is costly, rational firms will only expend the necessary search costs when the expected net benefits exceed the search costs.”).

100. See *id.* (discussing how, “when a management-based regulation mandates firms to engage in planning and analysis, firms must engage in search costs [which] become sunk costs to the firm, and any cost-saving or profit-enhancing actions firms identify along the way of complying with management-based regulation will be adopted...”).

101. As to the first reason, nation-states do have complex industries operating within their jurisdictions, to be sure, but the state is not itself the kind of entity like a complex industrial operation that could benefit from careful management. Furthermore, the problem of climate change does not stem from inadequate management but from the misalignment of incentives inherent in any public good scenario. As to the second reason, nation-states are not subject to a threat of background liability or regulatory compliance risk that would work synergistically with a management-based treaty addressing climate change.

update nationally determined commitments, the Agreement forces countries to invest in search processes that both yield reductions in greenhouse gas emissions as well as reap other gains for each country.¹⁰² Such emissions reductions will usually generate substantial co-benefits, that is, reductions in locally harmful effects of pollution at the same time that they reduce global climate risks.¹⁰³ Raising fuel economy standards for automobiles, for example, may be sufficiently justified merely due to the domestic cost savings from fuel consumption and reductions in local pollutants, even though such tightened standards will also produce global benefits from the reductions in greenhouse gas emissions. In this way, adopting measures to reduce greenhouse gas emissions could thus help save the planet at the same time that they potentially save thousands or millions of lives in each country simply by cleaning the local air.¹⁰⁴ The Paris Agreement's management-based approach may help motivate national leaders to find and adopt a range of policies that deliver sufficiently positive net domestic benefits and that also deliver the added bonus of reducing greenhouse gas emissions.¹⁰⁵

102. Article 2, for example, situates the Agreement's climate objectives "in the context of sustainable development and efforts to eradicate poverty." Paris Agreement, *supra* note 1, at art. 2.1. In addition, Article 9's provision related to funding suggests that, for developing countries, some "other gains" contemplated under the Agreement would have stemmed from financial assistance provided by developed countries to assist with the former countries' mitigation and adaptation efforts. *Id.* at art. 9. But Article 9 does not provide any specific amount of, or formula for, financial support that developed countries are supposed to provide. The Agreement has been described as "deliberately vague" and ineffectual on the matter of developed countries' financial assistance. Andrea N. Kienast, *Consensus Behind Action: The Fate of the Paris Agreement in the United States of America*, 9 CARBON & CLIMATE L. REV. 314, 325-26 (2015). Overall, the Agreement "does little to ensure adequate financing in the future." Margaretha Wewerinke-Singh & Curtis Doebbler, *The Paris Agreement: Some Critical Reflections on Process and Substance*, 39 U.N.S.W.L.J. 1486, 1507-08 (2016).

103. For a discussion of co-benefits (or ancillary benefits), see Dallas Burtraw & Michael A. Toman, "Ancillary Benefits" of Greenhouse Gas Mitigation Policies, MICHAEL A. TOMAN, ED., CLIMATE CHANGE ECONOMICS AND POLICY: AN RFF ANTHOLOGY 80 (2001).

104. See *COP24 Special Report: Health and Climate Change*, WORLD HEALTH ORG., 1, <https://apps.who.int/iris/bitstream/handle/10665/276405/9789241514972-eng.pdf> (last visited May 5, 2019).

105. Recent debate over whether to count foreign benefits in benefit-cost analysis of domestic environmental regulation makes plain that environmental and energy policies can yield local benefits at the same time that they reduce greenhouse gas emissions. See, e.g., Ted Gayer & W. Kip Viscusi, *Determining the Proper Scope of Climate Change Benefits in U.S. Regulatory Analyses: Domestic Versus Global Approaches*, 10 REV. ENVTL. ECON. & POL'Y 1, 2 (2016) (raising concerns about the empirical and legal validity of reliance on the foreign effects of domestic regulations when estimating their benefits and costs); Peter Howard & Jason Schwartz, *Think Global: International Reciprocity as Justification for a Global Social Cost of Carbon*, 42 COLUM. J. ENVTL. L. 203 (2017) (offering a defense of the use of foreign benefits in benefit-cost analyses of domestic regulations).

C. The Limits of Management-Based Governance

The available evidence showing the efficacy of domestic applications of management-based regulation would appear to give the world reason to expect that the Paris Agreement can achieve reductions in greenhouse gas emissions on the global stage.¹⁰⁶ However, these expectations should not be set too high. A management-based approach to climate governance might well prompt progress in greenhouse gas reductions, but this does not mean it will yield significant or globally optimal reductions in emissions. With respect to the goal of limiting the rise of the global mean temperature to no more than two degrees Celsius, the initial nationally determined contributions offered under the framework of the Paris Agreement appear not to be up to the task—and even these limited commitments might never be achieved.¹⁰⁷

Some might hope that subsequent rounds of commitments will yield more substantial pledges over time. Yet research on domestic applications of management-based regulation suggests that such hope would be misplaced. Researchers have come across a number of potentially serious concerns about the limits of management-based regulation, and perhaps the most well-documented one is that the positive effects from this form of regulation can be short-lived.¹⁰⁸ In her study of state pollution prevention planning regulations, for example, Lori Bennear tested for the effect of planning requirements on facilities over time and found that the statistically significant reductions she observed in the data occurred only for up to four years after the imposition of a planning law.¹⁰⁹ By the fifth year, the results failed to pass the normal test for statistical significance—meaning that states with these planning laws no longer yielded any improvements relative to states without these laws.¹¹⁰

Management-based regulation of domestic policy problems may only prompt initial improvements because it leads private-sector managers to find and pick the low-hanging fruit—solutions that are easy and quick fixes.¹¹¹ These managers may initially find and implement a variety of win-win opportunities, where both the private organization and the broader public and environment reap rewards. With the low-

106. See *supra* notes 83-84, 86-88, 92-93 and accompanying text.

107. See Allen A. Fawcett et al., *Can Paris Pledges Avert Severe Climate Change?*, 350 *SCI.* 1168, 1168 (2015).

108. See Coglianese, *supra* note 13, at 173.

109. Bennear, *supra* note 92, at 340.

110. *Id.* at 341.

111. Coglianese & Nash, *supra* note 91, at 95-96.

hanging fruit picked, further reductions in the underlying problem become increasingly costly and thus may no longer provide businesses with win-win gains.¹¹²

With the passage of time, businesses may continue to complete the required management steps but they may do so with less rigor and with dampened commitment to addressing the ultimate problem that the regulation aims to solve.¹¹³ For example, one study of two Australian companies subject to management-based workplace safety rules described the “the predominant response of both workers and middle management” as simply a matter of “going the through the motions without any conviction that this would achieve anything of substance.”¹¹⁴ Others have observed that compliance with management-based regulation can amount to little more than “pencil-whipping” as required management documentation becomes routinized without business managers showing any real ambition to make meaningful improvements in actual practices.¹¹⁵

Regulators can try to counteract these tendencies if they can define with meaningful precision what counts as high-quality management efforts or if they deploy sophisticated inspectors who can help motivate continuous improvements. But if management-based regulation is used in circumstances where outputs are difficult to monitor and no clear one-size-fits-all action can be observed, as is presumably the case by definition, then this form of regulation faces inherent difficulties in preventing regulated entities from shirking.¹¹⁶ Laggard firms may evade detection by merely going through the motions in undertaking the required management activities.¹¹⁷

The limitations of management-based regulation in the domestic context also apply to its usage in the context of global climate change.¹¹⁸ Indeed, they may be even more worrisome when applied to

112. Economists and other analysts widely assume that there are increasing marginal costs to environmental control, meaning that it becomes progressively costly to reduce pollution to ever-lower levels. STEPHEN BREYER, *REGULATION AND ITS REFORM* 264 (1982). In the context of climate change, it has also been recognized that “there are a number of opportunities to reduce emissions at little or no cost” but that these “are mostly one-time measures that are not indefinitely exploitable.” Thomas C. Schelling, *What Makes Greenhouse Sense?*, 81 *FOREIGN AFF.* 2, 4 (2002).

113. Coglianesi & Nash, *supra* note 91, at 95-96.

114. Neil Gunningham & Darren Sinclair, *Organizational Trust and the Limits of Management-Based Regulation*, 43 *L. & SOC’Y. REV.* 865, 890 (2009).

115. *NAT’L ACAD. SCIS., ENG’G, & MED.*, *supra* note 13, at 111.

116. *Cf.* Coglianesi, *supra* note 17, at 70.

117. *See supra* notes 113-15 and accompanying text.

118. *See* James K. Hammitt, *Is “Practical Global Climate Policy” Sufficient?*, in

global governance. At least in countries with strong domestic governing institutions, policymakers can back up any requirements for specified management action with the threat of imposing sanctions on firms; this cannot be said to the same extent for international regulatory schemes like the Paris Agreement.¹¹⁹ Moreover, even though the Agreement has not yet required very much of countries beyond their initial pledges, signs of wavering commitments are already appearing. Only the European Union and twenty-five countries have signed onto a separate pledge to increase the ambitiousness of their climate goals whenever they next update their nationally determined contributions.¹²⁰ In addition to President Trump's announcement of his intention to withdraw the United States from the Paris Agreement, Brazil has reneged on its plan to host the next Conference of the Parties meeting in 2019, and the new Brazilian president has threatened to withdraw from the Agreement.¹²¹ The United States, Kuwait, Russia, and Saudi Arabia blocked a provision in the 2018 Katowice Climate Package—the most recent post-Paris round of international climate negotiations—that would have welcomed a report of the Intergovernmental Panel on Climate Change that forecasted a 1.5 degree Celsius global mean temperature increase over the course of little more than a decade.¹²² All of these signs of wavering commitment have emerged even

ARCHITECTURES FOR AGREEMENT: ADDRESSING GLOBAL CLIMATE CHANGE IN THE POST-KYOTO WORLD 324 (Joseph E. Aldy & Robert N. Stavins eds., 2007) (noting “difficulties in evaluating the efficacy of measures undertaken” as part of a country's promised contribution as well as “the difficulty in even determining the extent to which promised measure were seriously attempted”).

119. Even international agreements that do not rely on a bottom-up, management-based approach like the Paris Agreement can have weak or nonexistent incentives for compliance. For example, the United States signed the Kyoto Protocol, but never ratified it; Canada ratified it but later withdrew entirely from the agreement without any apparent consequence of note; and supposedly binding targets imposed on Russia under the Protocol were later renegotiated. See generally Ian Austen, *Canada Announces Exit from Kyoto Climate Treaty*, N.Y. TIMES (Dec. 12, 2011), at A15; Mustafa H. Babiker et al., *The Evolution of a Climate Regime: Kyoto to Marrakech and Beyond*, 5 ENVTL. SCI. & POL'Y 195 (2002).

120. See *Statement on Stepping up Climate Ambition*, HIGH AMBITION COALITION, 1 (Dec. 12, 2018), https://ec.europa.eu/clima/sites/clima/files/news/20181211_statement_en.pdf. The absence of other countries on this pledge may seem striking given that the Paris Agreement expressly contemplates that nationally determined contributions will become progressively more ambitious with each update. Paris Agreement, *supra* note 1, at art. 4.3.

121. See Bruce Douglas, *Brazil's President-Elect Questions Paris Climate Deal Again*, BLOOMBERG (Dec. 12, 2018), <https://www.bloomberg.com/news/articles/2018-12-12/brazil-s-president-elect-questions-paris-climate-accord-again>; see also Ernesto Londono & Lisa Friedman, *Brazil Backs Out of Hosting the 2019 Climate Change Meeting*, N.Y. TIMES (Nov. 28, 2018), <https://www.nytimes.com/2018/11/28/world/americas/brazil-climate-meeting.html>.

122. See Kate Sullivan, *US Teamed Up with Russia, Saudi Arabia and Kuwait to Weaken Language Supporting Landmark Climate Report*, CNN (Dec. 10, 2018), <https://www.cnn.com/2018/12/09/politics/us-climate-change-report/index.html>. For the report itself, see GLOBAL WARMING OF 1.5°C, IPCC, <https://www.ipcc.ch/sr15/> (last visited May 4, 2019).

notwithstanding the very minimal obligations the Paris Agreement has imposed to date.¹²³ One can only imagine what this portends for sustaining serious widespread commitment in the years to come after the low-hanging fruit has been picked.

III. WEAK PRESSURES AND STRONG POPULISM

The inherent challenges in management-based governance will only add to another reality confronting the Paris Agreement: its weak incentives. The Agreement is devoid of any meaningful mechanism to encourage countries to pursue ambitious climate action, relying instead on weak reputational pressures—sometimes captured by the phrase “naming and shaming”—to sustain engagement over time.¹²⁴ The basic idea is that the global regime will prompt national climate action through a type of peer pressure that generates normative expectations for compliance and continued improvement.¹²⁵ The Paris Agreement’s provisions calling for transparency, periodic stocktakes, and ongoing reviews stem from an assumption that countries themselves can hold each other accountable, with transnational nongovernmental organizations providing additional pressures for compliance.¹²⁶

The Paris Agreement is certainly not alone among international agreements in relying on transparency mechanisms designed to support global peer pressure. International law lacks the type of sanctions that stand behind domestic laws, which means that it often must depend on peer pressure as a principal incentive for compliance.¹²⁷ Such incentives do shape state behavior, especially when transnational norms are firmly reinforced by powerful nations on the international stage.¹²⁸ Yet the Paris Agreement’s management-based global regime

123. See *infra* Part II.C.

124. See Falkner, *supra* note 55; Jacquet & Jamieson, *supra* note 19, at 645.

125. Ahmad et al., *supra* note 10, at 284.

126. See, e.g., Falkner, *supra* note 55, at 1121–22 (describing transparency as “the central tool for driving up ambition within the [global climate] regime”); Ahmad et al., *supra* note 10, at 284 (“Rather than rely on punitive legal enforcement measures, the Paris Agreement provides a framework that creates a continuous cycle to take advantage of peer and public pressure to motivate countries to raise their ambition over time through several linked processes.”).

127. See, e.g., CHAYES & CHAYES, *supra* note 11, at 3, 32–33 (noting that “sanctioning authority is rarely granted by treaty, rarely used when granted, and likely to be ineffective when used” but nevertheless there are reasons to assume that nations have a “propensity to comply” with international norms).

128. See generally Robert O. Keohane et al., *The Effectiveness of International Environmental Institutions*, in INSTITUTIONS FOR THE EARTH: SOURCES OF EFFECTIVE INTERNATIONAL ENVIRONMENTAL PROTECTION 3 (Peter M. Haas et al. eds., 1993); Beth Simmons & Judith Kelley, *Politics by Number: Indicators as Social Pressure in International Relations*, 59 AMER. J. POL. SCI. 55 (2015).

complicates efforts at fostering robust global peer pressure. The Agreement provides no clear benchmark for any country to strive to achieve; each country's goal is left for that country to determine for itself.¹²⁹ For this reason, the Paris Agreement is different than treaties that merely rely on peer pressure to induce compliance. Other treaties contain a commonly accepted international norm against which compliance can at least be assessed. By contrast, the Paris Agreement's management-based approach offers no clear, commonly accepted norm with respect to the amount of emissions reductions that any nation should achieve, nor even whether countries necessarily have an obligation to achieve those commitments.¹³⁰

The Paris Agreement in this sense proves even weaker in its pressures for environmental change than the typical international agreement—and that means that, even more than usual with international law, domestic rather than transnational political factors will matter for motivating climate action. In finding the political will to impose climate taxes or commit to adopting costly energy regulations, national leaders cannot be expected to respond to reputational sanctions from other nations or transnational nongovernmental organizations nearly as much as to the interests and values of key elites, interest groups, and voting segments in their national polity.¹³¹ The Agreement's management-based nature all but assures that domestic pressures will dominate. Paradoxically, the success of the global climate law will rest ultimately with domestic politics.

Given the primacy of domestic politics, I draw attention in this final Part of this Article to three areas of research related to policy and politics at the domestic level that offer a window into significant challenges confronting the Paris Agreement. First, I discuss research on domestic voluntary environmental programs because these programs, like the Paris Agreement, rely mainly on reputational incentives. Second, broader sociological research offers suggestions about what to expect from the Paris Agreement's reliance on shaming as a compliance incentive. Finally, I explain why the fervent populism that has

129. Paris Agreement, *supra* note 1, at art. 4.2.

130. Ahmad et al., *supra* note 10, at 284.

131. See Jessica F. Green, *Blurred Lines: Public-Private Interactions in Carbon Regulations*, 43 INTL. INTERACTIONS 103 (2017) (noting the important role played by nongovernmental organizations); Robert O. Keohane & Michael Oppenheimer, *Paris: Beyond the Climate Dead End Through Pledge and Review?*, 4 POL. & GOVERNANCE 142, 148 (2016) (noting that “domestic politics is crucial in determining whether multilateral institutions can be effective”). It should be noted that the transparency that the Paris Agreement seeks to promote will likely make as much of a difference for domestic actors who are able to put pressure on their own government's leaders than for facilitating a global system of naming and shaming.

emerged around the world in recent years will likely prove one of the major stumbling blocks to climate progress under the Paris Agreement. The growing influence of populist appeals to nationalism in many countries will make it harder than ever to secure fidelity to the global climate accord because the accord expressly leaves it up to each individual country to establish their goals and determine the pace and methods of achieving them.

A. Incentives for Voluntary Environmental Action

At the level of domestic environmental policy, governments around the world have tried to encourage private companies to make voluntary commitments to improve their environmental performance. They have established numerous programs that seek “to change private sector behavior not by requiring compliance with mandatory regulations, but by offering often modest incentives, such as access to information and positive public recognition.”¹³² As these programs rely on a similar peer-pressure incentive model as the Paris Agreement, experience with these programs can be instructive in discerning what it is reasonable to expect from an international agreement that essentially calls on nation states to undertake voluntary environmental action.

Among its many voluntary environmental programs, the U.S. Environmental Protection Agency’s (EPA) National Environmental Performance Track was considered to be the agency’s flagship voluntary program.¹³³ In operation from 2000 to 2009, Performance Track encouraged—but did not require—industrial facilities to set environmental improvement goals and adopt management systems to achieve those goals. Facilities that volunteered to join this program received little more than some limited recognition from the EPA as environmental leaders. EPA envisioned peer pressure as among the motivating factors that would encourage top-performing firms to set and achieve ambitious goals, as well as for more average companies to be motivated to keep pace with the top performers.¹³⁴

Even though Performance Track applied domestically, the design of the program bears some similarity to the Paris Agreement. Membership in Performance Track hinged on facilities setting their own

132. Cary Coglianese & Jennifer Nash, *Motivating without Mandates? The Role of Voluntary Programs in Environmental Governance*, in *DECISION MAKING IN ENVIRONMENTAL LAW* 237, 237–52 (Lee Paddock et al. eds., 2016).

133. Cary Coglianese & Jennifer Nash, *Performance Track’s Postmortem: Lessons from the Rise and Fall of EPA’s “Flagship” Voluntary Program*, 38 *HARV. ENVTL. L. REV.* 1, 63–64 (2014).

134. *Id.* at 12–15.

environmental goals and then developing and implementing internal plans to help them attain and document their progress—essentially a management-based design. With respect to the Paris Agreement, the voluntary commitments that a country makes under the Agreement can and often will call for the imposition of mandatory rules imposed on that country’s industrial firms, but the choice of the goals and the policy plan to achieve those goals is left up to each nation’s domestic government, much as it was with each industrial facility in the case of Performance Track.

What clues might a domestic voluntary management-based program offer for a global climate accord that also depends on voluntary commitments? In a multi-year empirical study of Performance Track, Jennifer Nash and I sought to understand why some facilities joined the program and others did not.¹³⁵ We found little evidence that the program led to any substantial changes in facilities’ environmental performance.¹³⁶ Indeed, contrary to what the program’s name might imply, the facilities that participated in the program—which were only a “tiny fraction” of all regulated facilities¹³⁷—were not necessarily distinguished by their superior environmental performance.¹³⁸ The EPA’s own Inspector General reported that “most members do not make the environmental progress anticipated when they set commitments.”¹³⁹ Although facilities recognized by the program were supposed to have a strong compliance record, the Inspector General also found that about 27% of the facilities in the program had violated environmental regulations.¹⁴⁰ Performance Track had even recognized a number of “facilities with more compliance problems or more toxic releases than their sector [peer facilities’] averages.”¹⁴¹ Rather than consistently attracting the best environmental leaders, what distinguished the facilities that joined Performance Track turned out to be more their managers’ eagerness to be recognized as leaders than any

135. *Id.*

136. *Id.* at 56 (“EPA drew into its program those facilities that sought out government recognition and emphasized the importance of maintaining good public relations. These were the more extroverted facilities, not necessarily the top environmental performers.”)

137. *Id.* at 83; *see also id.* at 63 (noting that “Performance Track attracted less than 0.1% of its membership pool”).

138. *Id.* at 81–82.

139. OFF. OF INSPECTOR GEN., U.S. ENVTL. PROTECTION AG., PERFORMANCE TRACK COULD IMPROVE PROGRAM DESIGN AND MANAGEMENT TO ENSURE VALUE 15 (Rep. No. 2007-P-00013, 2007), <https://www.epa.gov/sites/production/files/2015-11/documents/20070329-2007-p-00013.pdf>.

140. *Id.* at 17.

141. *Id.* at 26.

superior environmental performance by their facilities.¹⁴² Participating facilities tended to be ones with managers who valued the reputational benefits that came from EPA declaring them a top environmental performer.

The EPA has had similar experiences with its other voluntary environmental programs; few, if any, have yielded any indication of significant environmental improvements.¹⁴³ On occasion these programs have been shown to prompt businesses to reduce their pollution, but at most they tend to yield only relatively modest and short-lived improvements.¹⁴⁴ Much of the same can be said of a popular set of nongovernmental environmental management standards—ISO 14001—which are also not mandatory and do not require any specific levels of environmental performance.¹⁴⁵ Among the studies that have tried to measure the environmental effects of the ISO 14001 standards, the research conducted by Aseem Prakash and Matthew Potoski stands out for its robustness, but even Prakash and Potoski find only “modest” effects from these standards.¹⁴⁶ Compared to facilities without a certified ISO environmental management system, facilities with an ISO-certified environmental management stayed in compliance with binding government regulations on average only one week longer each year, and certified facilities appear to have ranked only about three percentiles cleaner in terms of their toxic discharges.¹⁴⁷

The modest impacts of domestic voluntary environmental programs suggest limitations that are likely in store for the Paris Agreement—with full recognition, of course, of the differences between domestic and international settings. It is true that, with respect to the Paris Agreement, if national leaders find themselves sufficiently motivated to reduce their countries’ greenhouse gas emissions, they can

142. See Coglianese & Nash, *supra* note 133, at 11, 82.

143. See, e.g., Chris Carrigan & Cary Coglianese, *The Politics of Regulation: From Institutionalism to New Governance*, 14 ANN. REV. POL. SCI. 107, 116-18 (2011).

144. See Coglianese & Nash, *supra* note 132, at 238 (concluding that “the impacts of voluntary programs are mixed, with at best some evidence of small, positive results from a few programs”); Richard D. Morgenstern & William A. Pizer, *The Effectiveness of Voluntary Environmental Programs*, RFF POL’Y COMMENTARY (Mar. 3, 2008), <http://www.rff.org/blog/2008/effectiveness-voluntary-environmental-programs> (noting that “[a]mong the cases that we studied, the evidence showed that some initial gains may not persist” with “the most profitable gains ... taken early and the most cooperative firms join[ing] first, with the result that the program may lose momentum over time”).

145. See, e.g., Cary Coglianese & Jennifer Nash, *Bolstering Private-Sector Environmental Management*, 17 ISSUES SCI. & TECH. 69-74 (2001).

146. ASEEM PRAKASH & MATTHEW POTOSKI, *THE VOLUNTARY ENVIRONMENTALISTS: GREEN CLUBS, ISO 14001, AND VOLUNTARY ENVIRONMENTAL REGULATIONS* 166 (2006).

147. *Id.*

always choose to achieve those goals in their countries by using traditional regulatory tools backed up by meaningful incentives for private firms to reduce their emissions. The question is simply whether national leaders will be so motivated. It is telling that with the voluntary program that was given highest profile by EPA—Performance Track—no more than a tiny fraction of polluting facilities stepped forward to participate in the program and deliver meaningful improvements in their environmental performance.¹⁴⁸ The experience with domestic voluntary environmental programs suggests that only small fraction of national leaders are likely to step forward to make sustained, costly policy commitments, especially when they face internal opposition from their nations’ business leaders and other elites.

B. Shame and the Social Side of Sanctions

Voluntary environmental programs offer *positive* reputational incentives in the form of recognition of participating businesses as environmental leaders. But *negative* reputational incentives are also available to motivate behavior. What can social science research say about the Paris Agreement’s reliance on negative reputational incentives—that is, shaming—to motivate countries to undertake and sustain ambitious climate action?

The Paris Agreement is by no means the first legal regime to rely on shaming as a mechanism for motivating behavioral change.¹⁴⁹ At the domestic level, many regulations compel private businesses to disclose information in the hope of increasing the risk of shaming.¹⁵⁰ Examples include requirements that factories disclose the amount of toxic pollution they release into the environment,¹⁵¹ and mandates that food manufacturers disclose the calories contained in their food products.¹⁵² These information disclosure requirements—which have sometimes been explicitly described as “regulation by shaming”¹⁵³—rely at least

148. See Coglianesi & Nash, *supra* note 133, at 63 (noting that Performance Track attracted less than 0.1% of environmentally permitted facilities in the United States).

149. Abram Chayes and Antonia Handler Chayes explicitly use the term “shaming” to describe a common strategy for inducing compliance with international norms. CHAYES & CHAYES, *supra* note 11, at 110-11.

150. See Paul R. Kleindorfer & Eric W. Orts, *Informational Regulation of Environmental Risks*, 18 RISK ANALYSIS 155 (1998); Cass R. Sunstein, *Informational Regulation and Informational Standing: Akins and Beyond*, 147 U. PA. L. REV. 613 (1999).

151. See, e.g., Emergency Planning and Community Right-to-Know Act of 1986, § 313, 42 U.S.C. § 11023.

152. See, e.g., Nutrition Labeling of Food, 21 C.F.R. § 101.9.

153. See, e.g., Mary Graham, *Regulation by Shaming*, ATLANTIC (Apr. 1, 2000), <https://www.theatlantic.com/magazine/archive/2000/04/regulation-by-shaming/378126/>.

in part on the hope that companies will improve their products or industrial processes in order to avoid negative repercussions from customers or other key actors.¹⁵⁴

Some observers have hailed such disclosure laws as highly effective,¹⁵⁵ while others have questioned whether they truly make much of a difference at all.¹⁵⁶ Too often, though, the debate over information disclosure lacks systematic evidence. The most rigorous research available paints at best a mixed picture.¹⁵⁷ Information disclosure can induce behavioral change—but regulation by shaming has not proven a major impetus for substantial, costly changes. When laws compel immediately accessible, understandable information that helps consumers in their decision-making, they may well activate market pressures to induce at least some modest behavioral changes—but the evidence suggests that these effects are far from a sure thing.¹⁵⁸ Overall, the risk of negative reputational harm from information disclosure—regulation by shaming—hardly seems compelling enough to provide a shining example of what shaming will accomplish for the Paris Agreement.

Furthermore, when designers of a legal regime think they have created a structure that will lead to shaming, they need to consider that the system could turn out, at least for some individuals or entities, to work in a fashion opposite of what is intended. Shaming does not always work as planned because behavior that leads some people to experience shame can provide others with a badge of honor.¹⁵⁹

154. Kleindorfer & Orts, *supra* note 150; Cary Coglianese & Christopher Carrigan, *Nudges as Regulatory Tools* (2018) (unpublished manuscript).

155. See, e.g., RICHARD H. THALER & CASS R. SUNSTEIN, *NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH, AND HAPPINESS* 189 (2008) (characterizing toxic information disclosure regulation as “the most unambiguous success” in U.S. environmental law); Archon Fung & Dara O’Rourke, *Reinventing Environmental Regulation from the Grassroots Up: Explaining and Expanding the Success of the Toxics Release Inventory*, 25 ENVTL. MGT. 115, 116 (2000) (claiming that toxic information disclosure regulation “has proven to be one of the most successful programs to reduce toxics in EPA history”); Eric W. Orts, *Defending Disclosure*, REG. REV. (June 18, 2015), <https://www.theregreview.org/2015/06/18/orts-defending-disclosure/> (noting “many situations where mandatory disclosure just might—and very often *does*—seem to work”) (emphasis in original).

156. See, e.g., OMRI BEN-SHAHAR & CARL SCHNEIDER, *MORE THAN YOU WANTED TO KNOW: THE FAILURE OF MANDATED DISCLOSURE* (2014).

157. See, e.g., JAMES HAMILTON, *REGULATION THROUGH REVELATION* (2005) (“The separate and exact impacts that the provision of information has on toxic emissions are, to date, unknown.”).

158. See Daniel Ho, *Fudging the Nudge: Information Disclosure and Restaurant Grading*, 122 YALE L. J. 574, 577 (2012); Ginger Zhe Jin & Phillip Leslie, *The Effect of Information on Product Quality: Evidence from Restaurant Hygiene Grade Cards*, 118 Q. J. ECON. 409, 410 (2003).

159. See, e.g., Asa Fitch, *Iranian President Promises to ‘Break’ New U.S. Sanctions*, WALL ST. J. (Nov. 5, 2018) <https://www.wsj.com/articles/iranian-president-promises-to-break-new-us->

Most criminologists recognize that “shame and shaming are complex issues.”¹⁶⁰ Not everyone subjected to disapproval will feel shame nor necessarily be motivated by the dissatisfaction to modify their behavior.¹⁶¹ For example, it would be reasonable to expect that, when compliance with the law is reinforced by the threat of criminal sanctions, these sanctions will themselves induce shame. After all, for most people the experience of being found guilty of having committed a crime—to be labeled a “criminal”—would be one of the most shameful experiences imaginable. But this is not true for everyone. Some individuals experience little or no shame; they find being arrested little more than a minor hassle.¹⁶²

Empirical research suggests that individuals’ social ties help determine how they will react to signs of disapproval. The threat of criminal sanction, for instance, is perceived as more severe when it will disrupt existing relationships and prompt disapproval from within an individual’s social network.¹⁶³ People are most susceptible to shaming by those within their networks; the more they are removed from relationships with those who express disapproval, or the more they can easily leave those relationships, the less prone they will be to feeling shame and wanting to align their behavior with the preferences of those who have expressed their disapproval.¹⁶⁴

When it comes to predicting what the Paris Agreement’s reliance on shaming might be able to achieve, the research would suggest that national leaders will be much less prone to experiencing shame in response to disapproval from other nations than from members of their own publics. Such an implication is reinforced by political economy research on two-level games. National leaders playing on an international stage (i.e., one game level) must also remain mindful of how their actions will be received back home (i.e., a second game level).¹⁶⁵

sanctions-1541413178 (describing Iranian President Rouhani’s pride in breaking U.S. sanctions).

160. Charles R. Tittle et al., *A Test of Micro-Level Application of Shaming Theory*, 50 *SOC. PROBS.* 592, 612 (2003).

161. One study reports a seemingly paradoxical response to media coverage of wrongdoing by investment banks: they fare better, not worse, in business deals. Thomas J. Roulet, *Sins for Some, Virtues for Others: Media Coverage of Investment Banks’ Misconduct and Adherence to Professional Norms During the Financial Crisis*, *HUM. REL.* (forthcoming 2018) (noting that “investment banks actually seem to benefit from engaging in disapproved norms”).

162. See Sheldon Ekland-Olson et al., *The Paradoxical Impact of Criminal Sanctions: Some Microstructural Findings*, 18 *L. & SOC’Y REV.* 159, 162 (1984).

163. See *id.*

164. See Sally Engle Merry, *Rethinking Gossip and Scandal*, in *TOWARD A GENERAL THEORY OF SOCIAL CONTROL* 288 (Donald Black ed., vol. 2 1984).

165. See Robert D. Putnam, *Diplomacy and Domestic Politics: The Logic of Two-Level*

In the United States, this means that a first-term President who is a Republican will be more responsive to disapproval from voters in Republican primaries than to disapproval from other countries' representatives. As U.S. voters are highly polarized over climate change, with Republican voters markedly less concerned than Democratic voters,¹⁶⁶ it should be little wonder that every major Republican presidential candidate in the 2016 primary elections criticized climate regulation.¹⁶⁷ Nor should it be surprising that, within six months of taking his oath of office, President Trump declared his intention to withdraw from the Paris Agreement.¹⁶⁸

The widely-respected criminologist John Braithwaite has situated shaming at the center of both legal compliance and social change, but even he recognizes that some types of shaming—in particular, stigmatizing ones—can backfire and actually increase deviant behavior.¹⁶⁹ In addition, there may sometimes be a rather fine line between deviance and defiance. Defiance that may seem to be deviant in some contexts may turn out instead not to be so deviant in others. In the United States, for example, “[d]efiance of authority runs deep in American history and culture, perhaps even deeper than the pressure for financial success.”¹⁷⁰ Defiance may actually be deemed acceptable behavior in some social circumstances.

Games, 42 INTL. ORG. 427, 434 (1988).

166. Abundant polling data show the wide divergence in partisan views about climate change, with only a modest fraction of Republicans expressing concern, compared with large proportions of Democrats. See, e.g., Frank Newport, *Public Opinion and Trump's Decision on the Paris Agreement*, GALLUP (June 2, 2017), <https://news.gallup.com/opinion/polling-matters/211682/public-opinion-trump-decision-paris-agreement.aspx?version=print> (“On almost every environment and climate change and global warming issue we have tested, there are major partisan gaps.”). Not only does political ideology affect general concern about climate change, but it also seems to drive action. See Dora L. Costa & Matthew E. Kahn, *Energy Conservation “Nudges” and Environmentalist Ideology: Evidence from a Randomized Residential Electricity Field Experiment*, 11 J. EUR. ECON. ASS'N 680, 680 (2013) (“We show that the popular electricity conservation ‘nudge’ of providing feedback to households on own and peers’ home electricity usage in a home electricity report is two to four times more effective with political liberals than with conservatives.”).

167. See Emma Foehringer Merchant, *How the 2016 Presidential Candidates View Climate Change*, NEW REPUB. (Nov. 29, 2015), <https://newrepublic.com/article/124381/2016-presidential-candidates-view-climate-change>.

168. For a discussion of Republican antipathy toward the Paris Agreement, see Andrew Prokop, *Don't Just Blame Trump for Quitting the Paris Deal—Blame the Republican Party*, VOX (June 1, 2017), <https://www.vox.com/2017/6/1/15726726/trump-paris-climate-agreement-republicans>.

169. JOHN BRAITHWAITE, *CRIME, SHAME AND REINTEGRATION* 4 (1989) (pointing out that “shaming can be counterproductive if it is disintegrative rather than reintegrative”).

170. Lawrence W. Sherman, *Defiance, Deterrence and Irrelevance: A Theory of the Criminal Sanction*, 30 J. RES. IN CRIME & DELINQUENCY 445, 462 (1993).

What criminologist Larry Sherman has written about defiance more generally might well fit the current President's defiance of the international community and his domestic critics.¹⁷¹

When poorly bonded offenders deny the shame they feel and respond with rage, the unfair stigmatizing sanction will increase their future rates of offending. This unacknowledged shame leads to an emotion of angry pride at defying the punishment. That pride predisposes the defiant offender to repeat the sanctioned conduct, symbolically labeling the sanctioner or sanctions—and not the offenders own acts—as truly shameful and morally deserving of punishment.¹⁷²

In other words, defying an authority seen as illegitimate can be viewed as a matter of pride, not a source of shame. This finding is consistent with an extensive body of research on procedural justice that shows that, when legal controls are not viewed as legitimate, they elicit less respect.¹⁷³

The Paris Agreement's reliance on shaming from the larger international community offers little to constrain a powerful country like the United States when its leaders do not have domestic political reasons to take climate change seriously. It should hardly be surprising that a Republican President has acted antagonistically toward the Paris Agreement. The typical Republican voter tends to view international institutions run by foreign elites as illegitimate.¹⁷⁴ The fact that the

171. President Trump seems at times to relish defiance, both provoking criticism and also turning it back on his critics. He frequently complains of unfair treatment by those who question him. *See, e.g.*, Peter Baker, *Victor or Victim? Trump's Changing Response to Mueller Report*, N.Y. TIMES (April 25, 2019), at A15 (noting how President Trump often “lapses into anger and resentment, convinced that he has been unfairly treated and determined to strike back”). For example, the release of a redacted version of a report prepared by Special Counsel Robert Mueller provided evidence of multiple acts of obstruction of justice by President Trump, but rather than responding with shame, Trump lashed out with rage on Twitter and charged that the Special Counsel report had been written by “Angry Democrats and Trump Haters”—that the Special Counsel's staff members, in other words, were the ones who engaged in the truly shameful conduct. *Id.*

172. Sherman, *supra* note 170, at 461.

173. *See, e.g.*, Judd B. Kessler & Stephen Leider, *Procedural Fairness and the Cost of Control*, 32 J. L. ECON. & ORG. 685 (2016); TOM R. TYLER, WHY PEOPLE OBEY THE LAW: PROCEDURAL JUSTICE, LEGITIMACY, AND COMPLIANCE 5 (1990).

174. Jacob Poushter, *Favorable Views of the UN Prevail in Europe, Asia and the U.S.*, PEW RESEARCH (Sept. 20, 2016), <https://www.pewresearch.org/fact-tank/2016/09/20/favorable-views-of-the-un-prevail-in-europe-asia-and-u-s/> (reporting a “partisan divide” on favorable attitudes toward the United Nations starting around 2004, as “views of the UN among Republicans had plummeted below 50% and have not recovered”).

Paris Agreement was a major achievement of a Democratic President, and addressed an issue to which the typical Republican voter expresses general indifference,¹⁷⁵ has made it more appealing for Republican leaders to act defiantly toward the Paris Agreement, even or especially in the face of disapproval from international actors. Much of the same will be true in other countries when domestic political incentives support defiance. An international treaty that lives by disapproval, through shaming, can also die by disapproval, through defiance.

C. Populism and the Paris Agreement's Achilles Heel

It would be premature, of course, to suggest that the Paris Agreement is already lying at its death bed. Global action to mitigate climate change still enjoys considerable support around the world as evidenced by continued transnational efforts to implement the Paris Agreement framework.¹⁷⁶ Even in the United States, opposition to the Agreement by the Trump Administration has not dampened broad public support for climate action; indeed, it probably has emboldened it, at least among Democrats.¹⁷⁷ Business leaders in the United States have continued to support climate action;¹⁷⁸ states and localities have pursued their own climate policy initiatives;¹⁷⁹ and a substantial segment of the

175. According to a public opinion survey conducted in November 2016, 86 percent of Democrats favored U.S. participation in the Paris Agreement, while only about forty-seven percent of Trump supporters did. Jennifer Marlon et al., *Majorities of Americans in Every State Support Participation in the Paris Agreement*, YALE PROGRAM ON CLIMATE CHANGE COMMUNICATION (May 8, 2017), https://climatecommunication.yale.edu/publications/paris_agreement_by_state/. A few months before President Trump announced his intention to withdraw the United States from the Paris Agreement, ninety percent of Democrats reported that they worried about climate change “a great deal/fair amount,” while only 36 percent of Republicans did. Megan Brenan & Lydia Saad, *Global Warming Concern Steady Despite Some Partisan Shifts* (Mar. 28, 2018), <https://news.gallup.com/poll/231530/global-warming-concern-steady-despite-partisan-shifts.aspx>.

176. See Umair Irfan, *Countries Have Forged a Climate Deal in Poland—Despite Trump*, VOX (Dec. 16, 2018), <https://www.vox.com/energy-and-environment/2018/12/14/18139402/cop24-climate-change-katowice-poland> (describing the COP24 climate change negotiations between 200 nations).

177. Brenan & Saad, *supra* note 175 (“With Trump reversing many of his predecessors’ policies aimed at curbing global warming, Democrats are feeling a greater sense of urgency about the issue, while Republicans have either remained as skeptical as they had been in the past or have become more so.”).

178. See, e.g., Bradley Olson & Timothy Puko, *Conservative Group Will Push for a Carbon Tax, a Contrast to GOP Resistance*, WALL ST. J. (June 19, 2018), <https://www.wsj.com/articles/new-conservative-political-group-to-push-for-u-s-carbon-tax-1529444820>; George P. Shultz & Lawrence H. Summers, *This is the One Climate Solution That’s Best for the Environment – and for Business*, WASH. POST (June 19, 2017), https://www.washingtonpost.com/opinions/this-is-the-one-climate-solution-thats-best-for-the-environment—and-for-business/2017/06/19/9736b72c-542f-11e7-a204-ad706461fa4f_story.html.

179. See, e.g., Michael Greshko, *Map Shows Growing U.S. ‘Climate Rebellion’ Against Trump*, NAT’L GEOGRAPHIC (June 8, 2017), <https://news.nationalgeographic.com/2017/06/>

population still sees climate change as a serious problem in need of action.¹⁸⁰ Furthermore, the federal government's posture toward climate change could readily pivot again, should Americans elect a Democratic President in 2020. Overall, climate policy optimists can view the disparate but strong pockets of support at all levels of government around the world as building blocks for meaningful future progress within the management-based structure of the Paris Agreement.¹⁸¹

Optimism should not, though, lead anyone to overlook what may be the most serious threat to future global climate action: populism. The emergence of a strong wave of populist and nationalistic fervor has roughly coincided with the period during which nations crafted, adopted, and launched the Paris Agreement.¹⁸² During this period, populism has manifested itself in, among other developments, the Brexit movement in the United Kingdom, the election of Donald Trump in the United States, the Yellow Vest movement in France, and the election of a nationalist leader in Brazil.¹⁸³ Each of these move-

states-cities-usa-climate-policy-environment/. The America's Pledge initiative launched by Michael Bloomberg and Jerry Brown claims that efforts by states and localities, as well as voluntary actions by private businesses, have already brought the United States about halfway to its pledged reductions of greenhouse gas emissions under the Paris Agreement. *Fulfilling America's Pledge*, BLOOMBERG, 9 (2018), <https://www.bbhub.io/dotorg/sites/28/2018/09/Fulfilling-Americas-Pledge-2018.pdf>.

180. In March 2018, the Gallup polling organization reported that "[s]ixty-two percent of Americans currently say the government is doing too little to protect the environment, the highest [such figure] in twelve years." Frank Newport, *Americans Want Government to Do More on Environment*, GALLUP (Mar. 29, 2018), <https://news.gallup.com/poll/232007/americans-want-government-more-environment.aspx>. A full seventy percent of survey respondents between the ages of 18 to 34 reported worrying "a great deal" or a "fair amount" about climate change. R.J. Reinhart, *Global Warming Age Gap: Younger Americans Most Worried*, GALLUP (May 11, 2018), <https://news.gallup.com/poll/234314/global-warming-age-gap-younger-americans-worried.aspx?version=print>.

181. See Richard B. Stewart et al., *Building Blocks: A Strategy for Near-Term Action Within the New Global Climate Framework*, 144 CLIM. CHANGE. 1 (2017). Of course, too much optimism might prove counterproductive, if it lessens public pressure for more effective national and international interventions. See Cary Coglianese & Shana Starobin, *Let's Be Real About State and Local Climate Action*, REG. REV. (Feb. 20, 2018), <https://www.theregreview.org/2018/02/20/coglianese-starobin-state-local-climate-action>; Cary Coglianese & Jocelyn D'Ambrosio, *Policymaking Under Pressure: The Perils of Incremental Responses to Climate Change*, 40 CONN. L. REV. 1411, 1415 (2008).

182. Political analyst Ian Bremmer expresses a common view that traces current populist antipathy toward globalism to the fallout of the financial crisis of 2007-2009, with major manifestations of this new tide of populism occurring in just the last several years. IAN BREMMER, US VS. THEM: THE FAILURE OF GLOBALISM 12-13 (2018).

183. See, e.g., Andy Langenkamp, *Predictions of Populism's Demise Were Premature*, THE HILL (Apr. 20, 2019), <https://thehill.com/opinion/international/439755-reports-of-populisms-demise-were-premature>. Beyond President Trump's intended withdrawal from the Paris Agreement, populist movements around the world hold implications for global climate action. See, e.g., Jean Chemnick, *How Brexit Could Impact the U.K.'s Climate Goals*, SCIENTIFIC

ments has a distinct narrative, but the recent wave of populism around the world does reveal that many members of the public question prevailing domestic institutions (including science), and they take an especially dim view of global institutions.¹⁸⁴ As political scientists Pippa Norris and Ronald Inglehart have observed, populism today “concerns the need to defend ‘Us’ (‘our tribe’) through restrictions on ‘Them’ (‘the other’).”¹⁸⁵ It prioritizes “the protection of national sovereignty, secure borders, a strong military, and trade protectionism (‘America First’), rather than membership of the European Union, diplomatic alliances, human rights, international engagement, and multilateral cooperation within the G7, NATO, and United Nations.”¹⁸⁶

Under such political circumstances, perhaps the Paris Agreement’s management-based approach might actually seem at first glance to make it less susceptible to populist attack. After all, its bottom-up orientation expressly seeks to accommodate, if not even reinforce, the primacy of national sovereignty in decision-making about energy and the environment. An international agreement in which each country makes its own goals and tracks its own progress should surely allow for greater expression of views from “us” than from “them.” The Paris Agreement’s flexibility, and the voluntary nature of any substantive action that countries commit to take under it, might very well be seen as a source of resilience, keeping more countries from announcing plans to leave the climate accord.

Only the future will tell, and it is certainly possible that most countries will stay on board with the Paris process—at least as a formal matter. But such an outcome is by no means guaranteed. The Paris

AMER. (Mar. 28, 2019); Nives Dolsak & Aseem Prakash, *Can the Climate Movement Survive Populism? Lessons from ‘Yellow Vest’ Protests*, THE HILL (Dec. 6, 2018), <https://thehill.com/opinion/energy-environment/419953-can-the-climate-movement-survive-populism-lessons-from-yellow-vest> (noting how the climate movement is facing populist backlash in France); Lisa Viscidi & Nate Graham, *Brazil Was a Global Leader on Climate Change. Now It’s a Threat.*, FOREIGN POL’Y (Jan. 4, 2019), <https://foreignpolicy.com/2019/01/04/brazil-was-a-global-leader-on-climate-change-now-its-a-threat/> (explaining how the new Brazilian president once “threatened to withdraw Brazil from the Paris agreement” and “withdrew [the country’s] offer to host the [next international] climate conference”).

184. For helpful discussions, see Eric A. Posner, *Liberal Internationalism and the Populist Backlash*, 49 ARIZ. ST. L. J. 795 (2017); BENJAMIN MOFFIT, THE GLOBAL RISE OF POPULISM: PERFORMANCE, POLITICAL STYLE, AND REPRESENTATION 45 (2016); Mark B. Brown, *Climate Science, Populism, and the Democracy of Rejection*, in CULTURE, POLITICS AND CLIMATE CHANGE: HOW INFORMATION SHAPES OUR COMMON FUTURE 129 (Deserai A. Crow & Maxwell T. Boykoff eds., 2014).

185. PIPPA NORRIS & RONALD INGLEHART, CULTURAL BACKLASH: TRUMP, BREXIT, AND AUTHORITARIAN POPULISM 8 (2019).

186. *Id.*

Agreement's flexibility and voluntary nature have so far not kept populist elected leaders in countries such as the United States and Brazil from lambasting it.¹⁸⁷ In his withdrawal announcement in 2017, President Trump mischaracterized, perhaps deliberately, the degree to which the Agreement constrains U.S. sovereignty.¹⁸⁸ For political leaders, what matters in an era of populism will not be the flexibility that the Paris Agreement actually provides, but rather what the Agreement represents to some segments of the public: a symbol of a distant, global elite that is out of touch with the lives of ordinary citizens.

If that symbolism takes root firmly, and climate action comes to be seen as a luxury for the well-to-do, the Paris Agreement could risk becoming meaningless. The Agreement's essential energy could become easily depleted even if countries remain in it—and that is because of its management-based flexibility. Even among parties to the Agreement, the degree of ambition in their climate commitments and actions could wane significantly. The Paris Agreement's management-based design will make it relatively easy for countries to slow down their progress without having to take the visible step of formally withdrawing from the Agreement. The very feature of the Agreement that proved instrumental in securing the agreement of all the countries of the world—its flexible management-based design—may ultimately just make it easier for countries to shirk their commitments and stall on making emissions reductions.

To be sure, the relative risks created by the Agreement's management-based nature should not be overstated. A top-down climate change accord with binding emissions restrictions backed up by sanctions would hardly be immune from populist backlash. In 2011, Canada withdrew from the top-down Kyoto Protocol even though it had previously ratified the Protocol—and it made its withdrawal without incurring any serious repercussions.¹⁸⁹

187. See Putnam, *supra* note 165.

188. In his withdrawal statement in June 2017, for example, President Trump criticized the “draconian financial and economic burdens the agreement imposes on our country” and the “onerous energy restrictions it has placed on the United States,” even though the Agreement places no substantive legal obligations on the United States or any other country. Remarks, *supra* note 5. He earned a round of applause for stating that “our withdrawal from the agreement represents a reassertion of America’s sovereignty.” *Id.* See also *id.* (“And exiting the agreement protects the United States from future intrusions on the United States’ sovereignty and massive future legal liability.”). See generally Ahmad et al., *supra* note 10, at 283-84; Nina Hachigian, *Trump Doesn’t Actually Care About U.S. Sovereignty*, FOREIGN POL’Y (June 2, 2017), <https://foreignpolicy.com/2017/06/02/trump-doesnt-actually-care-about-u-s-sovereignty/>.

189. *Canada Pulls Out of Kyoto Protocol*, THE GUARDIAN (Dec. 13, 2011),

Yet even though a management-based agreement is not alone in its vulnerability to populism, its design does create some greater degree of vulnerability. When domestic political incentives dictate, populist leaders can and probably will still withdraw from management-based agreements just as they can any other kind of international agreement—but they can also just slow-walk their countries' progress while still staying within the four corners of the Agreement. In other words, the management-based nature of the Paris Agreement gives a populist leader greater flexibility to find politically rewarding or acceptable ways to undercut progress toward emissions reductions.¹⁹⁰

In the end, the degree to which the Paris Agreement will foster climate progress will likely depend on how deeply populism embeds itself and how widely it spreads. It is possible that the harms that continue to be inflicted on the world's people from the ravages of climate change—such as increased coastal flooding, more sustained droughts, and expansive forest fires—may tragically help to counteract complacency and turn back populist resistance to climate action.¹⁹¹ The occurrence of such natural disasters could potentially make the costs of greenhouse gas emissions more tangible to members of the public, which would make it easier to mobilize social and political support for stronger climate measures.¹⁹²

Still, difficulties in mobilizing around climate change will remain. Due to the somewhat abstract nature of “climate” as a concept, climate change will probably always be a difficult issue around which to

<https://www.theguardian.com/environment/2011/dec/13/canada-pulls-out-kyoto-protocol>.

190. It has been suggested that a management-based Paris Agreement may turn out to be more resilient in the face of a withdrawal of a major emitting nation like the United States than was the top-down Kyoto Protocol, simply because the former has earned the commitment of a larger number of nations, making the loss of any one nation (even a large one) not as consequential. Dino Grandoni, *The Energy 202: Paris and Kyoto Have a Lot More in Common Than You Might Think*, WASH. POST (June 14, 2017), <https://www.washingtonpost.com/news/powerpost/paloma/the-energy-202/2017/06/14/the-energy-202-paris-and-kyoto-have-a-lot-more-in-common-than-you-might-think/59400252e9b69b2fb981dd02/>. Ultimately, this too is an empirical question. But it is also plausible that the Paris Agreement will take on the appearance of greater resilience, simply because one formal withdrawal does not precipitate other formal withdrawals, while masking potentially greater vulnerability. One country's withdrawal could prompt widespread backsliding which would be more worrisome if it is less visible than formal withdrawals, leading under a management-based agreement to the appearance of greater commitment by the parties than exists in reality.

191. Ove Hoegh-Guldberg et al., *Impacts of 1.5°C Global Warming on Natural and Human Systems Supplementary Material*, in GLOBAL WARMING OF 1.5°C 175, 178-79, 181, 220 (Valerie Masson-Delmotte et al. eds. 2018).

192. See Cary Coglianesi & Mark Nevitt, *The U.S. Already Has a Carbon Tax*, WASH. POST (Jan. 23, 2019), at A21.

mobilize the public.¹⁹³ That will continue to make it harder for climate action to compete against populist movements founded in fear, anger, and deep-seated cultural beliefs. As long as populism remains vibrant around the world, and as long as global efforts remain anathema to a sizable portion of domestic publics, many elected officials will find it in their interest to resist taking meaningful steps to mitigate climate change.

Countering popular nationalist movements will also be hampered by the persistence of the economic and social conditions that have fostered the emergence of these movements, such as growing inequality, disruptive technologies in the economy, and the easy access to social media for airing grievances.¹⁹⁴ The factors contributing to the rise of contemporary populism cannot be ignored, especially because they are likely to remain for some time to come. For any domestic political action to be effective in addressing global climate change, environmentalists and other political actors will need to broaden the scope of their efforts, finding direct ways to resist nationalistic populism at the same time as they continue to push for climate action.¹⁹⁵

CONCLUSION

Populist movements around the world pose a real threat to progress in addressing global climate change. In allowing countries to set their own goals and pace in meeting them, the Paris Agreement's management-based structure could very well make climate progress even more vulnerable to weakening in the face of populism.¹⁹⁶ The Agreement might even prove to be one of global governance's last gasps, at least for some time to come. If such an outcome is to be forestalled, and if the Paris Agreement is to stand a chance of providing even a modest impetus for reducing greenhouse gas emissions, its success will almost certainly depend on domestic political forces that will need to push back against the current wave of nationalistic populism. What

193. See, e.g., Cary Coglianese, *Social Movements, Law, and Society: The Institutionalization of the Environmental Movement*, 150 U. PA. L. REV. 85, 88 (2001) (noting that climate change is a "less palpable" problem and that "major advances in environmental regulation . . . require salient focal points and crises to prompt legislative action").

194. BREMMER, *supra* note 182, at 14-26.

195. For a related discussion, see Sidney A. Shapiro & Robert R.M. Verchick, *Inequality, Social Resilience and the Green Economy*, 86 U. MISS.-KAN. CITY L. REV. 1 (2018), as well as a series of essays on *Social Justice in a Green Economy* prompted by the Shapiro and Verchick article and appearing in THE REGULATORY REVIEW, *Social Justice In A Green Economy*, REG. REV. (Sept. 24, 2018), <https://www.theregreview.org/2018/09/24/social-justice-green-economy/>.

196. See *infra* Part III.C.

will be needed is an anti-populist populism to provide national political leaders with incentives to undertake robust climate mitigation efforts and to continue to cooperate on a global stage.

It is a paradox of the Paris Agreement's management-based approach that the success of this signature international climate law hinges, in the end, on domestic politics—to a degree greater than other international agreements. Domestic politics is, after all, hard-wired into the Paris Agreement's bottom-up, management-based structure.¹⁹⁷ The incentives for making ambitious national commitments, and following through on them, thus depend first and foremost on political leaders' domestic audiences.¹⁹⁸ Only if the political costs to climate *inaction* become palpable will national leaders be likely to undertake the hard, risky steps that climate *action* requires—today and in the years to come. In the end, domestic politics is where global cooperation over climate change will rise or fall.

197. See *supra* notes 8-9, 44 and accompanying text.

198. See Keohane & Oppenheimer, *supra* note 131.