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Parallels in Public and Private Environmental Governance

Sarah E. Light
The Wharton School, University of Pennsylvania, lightsa@wharton.upenn.edu

Eric W. Orts
The Wharton School, University of Pennsylvania, ortse@wharton.upenn.edu

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PARALLELS IN PUBLIC AND PRIVATE ENVIRONMENTAL GOVERNANCE

*Sarah E. Light & Eric W. Orts**

Private actors, including business firms and non-governmental organizations, play an essential role in addressing today's most serious environmental challenges. Yet scholars have not fully recognized the parallels between public environmental law and the standard-setting and enforcement functions of private environmental governance. "Instrument choice" in environmental law scholarship is generally understood to refer to government actors choosing among options from the public law "toolkit," which includes prescriptive rules, the creation of property rights, the leveraging of markets, and informational regulation. Each of these major public law tools, however, has a parallel in private environmental governance.

This Article first provides a descriptive account of these parallels, which highlights two underappreciated tools used by both public and private actors: procurement and insurance for environmental risks. It then considers the normative criteria that should inform choices among instruments by using the example of climate change. The resulting portrait of a multi-tiered, global regime of environmental governance with both public and private options promises greater flexibility and institutional power to address otherwise intractable environmental problems than the traditional paradigm of relying only on public regulation.

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* Assistant Professor of Legal Studies and Business Ethics, The Wharton School, University of Pennsylvania; and Guardsmark Professor of Legal Studies and Business Ethics, and Faculty Director of the Initiative for Global Environmental Leadership (IGEL), The Wharton School, University of Pennsylvania, respectively. For helpful comments, we thank participants in the Sabin Colloquium for Innovative Environmental Law Scholarship at Columbia Law School; the Colorado/Duke Law Schools' workshop on Natural Resources, Energy, and Environment in a Climate Changed World; the junior faculty in the Legal Studies and Business Ethics Department at Wharton; and an environmental law seminar at the UCLA School of Law. Thanks to David Adelman, William Boyd, Jonathan Cannon, Ann Carlson, Michael Gerrard, Gwen Gordon, Miranda Helmes, Michael Herz, Sharon Jacobs, Sarah Krakoff, Doug Kysar, Jennifer Mnookin, Jed Purdy, Deepa Badrinarayana, Jim Salzman, Mark Squillace, Richard Revesz, Carol Rose, Barton Thompson, Michael Vandenbergh, Alex Wang, and Kevin Werbach for their comments and insights on earlier drafts. Special thanks to James Klima, Michael Steele, and Kristin Teager for excellent research assistance. This Article represents solely the views of its authors, and any errors are our own. For general research funding support, we are indebted to the Legal Studies and Business Ethics Department at the Wharton School, as well as IGEL.

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Introduction

Instrument choice—the selection of mechanisms to achieve desired environmental standards and goals—is a central consideration of environmen-

tal law.[1] To date, environmental law scholarship has not acknowledged the instrument choice implications of private environmental governance, by which we mean the traditionally "governmental" functions of environmental standard setting and enforcement that private actors, including business firms and non-governmental organizations (NGOs), adopt to address environmental concerns.[2] Economists and legal scholars have recognized the importance of non-governmental solutions to environmental problems.[3]

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1. This Article deliberately eschews the terms "policy instrument choice," "regulatory choice," and "regulatory options," which are often used in the environmental policy literature, because those terms presume a public regulator. Here, we instead use the term "instrument choice" in an expansive way that incorporates both the possibility that public regulators will choose not to act, and that private actors may adopt governance alternatives in the absence of governmental regulation.

2. Michael P. Vandenbergh, *Private Environmental Governance*, 99 CORNELL L. REV. 129, 133 (2013) (arguing that private environmental governance, defined as "play[ing] the standard-setting, implementation, monitoring, enforcement, and adjudication roles traditionally played by public regulatory regimes," should be recognized as a form of law); *cf.* ROBERT C. ELLICKSON, ORDER WITHOUT LAW 29, 40 (1991) (describing "private ordering" as a way to resolve environmental disputes when costs of state involvement are high); Marc Allen Eisner, *Private Environmental Governance in Hard Times: Markets for Virtue and the Dynamics of Regulatory Change*, 12 THEORETICAL INQUIRIES L. 489 (2011) (examining the viability of private governance to respond to global financial crises).

3. For example, seminal works on management of common pool resources, such as Elinor Ostrom's discussion of fisheries management and Robert Ellickson's work on Shasta County cattle ranchers, have acknowledged the relevance and effectiveness of non-governmental solutions to local environmental challenges created through collective action by insiders. ELINOR OSTROM, GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION 1 (1990) (describing case studies of "insider" solutions to the management of common pool resources); ELLICKSON, *supra* note 2; Robert Ellickson, *Of Coase and Cattle: Dispute Resolution Among Neighbors in Shasta County*, 38 STAN. L. REV. 623, 624, 672–77 (1986) (describing how Shasta County cattle ranchers interact privately to address problems that the law would categorize as nuisance or trespass); *see also* Thomas Dietz, Elinor Ostrom & Paul C. Stern, *The Struggle to Govern the Commons*, 302 SCIENCE 1907, 1907 (2003) (critiquing Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 1243 (1968), for positing that "only two state-established institutional arrangements—centralized government and [creation by the state of] private property—could sustain [the] commons over the long run").

Private governance has also received attention in the management literature in recent years, though under a different nomenclature. *See, e.g.*, David P. Baron, *Private Politics*, 12 J. ECON. & MGMT. STRATEGY 31 (2003) (describing "private politics" as when "activists" target firms' behavior through boycotts and other reputational campaigns in the public arena, and "private regulation" as the resulting "private ordering" that governs the relationship between the firm and activists); *see also* David Baron, *Private Politics, Corporate Social Responsibility, and Integrated Strategy*, 10 J. ECON. & MGMT. STRATEGY 7, 7 (2001) (providing "a theory of private politics in which an activist seeks to change the production practices of a firm for the purpose of redistribution to those whose interests it supports"); David P. Baron & Daniel Diermeier, *Strategic Activism and Nonmarket Strategy*, 16 J. ECON. & MGMT. STRATEGY 599, 600–01 (2007) (discussing "private regulation" as "an alternative to or substitute for government regulation"). Our view of private environmental governance adopts a broader perspec-

However, they have not fully acknowledged the parallel forms that public and private environmental governance can take and have not considered the normative problems involved when choosing among options within a larger taxonomy of instruments.[4]

Many of today's most challenging environmental problems—such as climate change, biodiversity loss, deforestation, loss of arable land, nitrogen over-fertilization, destruction of the ocean's fisheries, and fresh water shortages—have defied easy governmental regulatory solutions.[5] In our view, these kinds of global environmental problems require multi-faceted legal approaches that combine local, regional, national, and international public law.[6] Moreover, we believe that at least some large-scale problems such as climate change and biodiversity loss cannot be solved only by deferring to various levels of formal government. Other important organizational players such as private business firms and NGOs must come to the table—and conceptions of environmental law and governance should expand to include them explicitly.

Recognizing the parallel forms of public and private governance is important in the quest for solutions to global environmental problems because

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tive that includes actions beyond the internal governance of firms. On the legal foundations of business firms, including an account of their organizational independence and capacity for self-governance, see ERIC W. ORTS, BUSINESS PERSONS: A LEGAL THEORY OF THE FIRM (rev. ed. 2015). We use the broader term "governance" to refer both to traditional public laws and purely private interactions that fulfill the same traditionally public functions with respect to environmental performance. We restrict the term "public law" to the use of formally recognized legal rules employed by nation-states and other public governmental authorities.

4. Carol Rose arguably has come the closest in this regard in proposing four management strategies that she asserts could be employed by either government actors or insiders (private actors). *See* Carol M. Rose, *Rethinking Environmental Controls: Management Strategies for Common Resources*, 1991 DUKE L.J. 1, 9–10. However, Rose contends that focusing too much on the public-private distinction "misses the substantive content of these various techniques or strategies," and thus spends no time on it. *Id.* at 8–9. For example, she does not offer a theory of how private actors can employ market-leveraging instruments, or what the normative implications may be of public or private action in any particular situation, all of which we grapple with here. *Id.* at 8–10. We discuss Rose's approach in greater detail *infra* in Part I.

5. JAMES GUSTAVE SPETH, THE BRIDGE AT THE END OF THE WORLD: CAPITALISM, THE ENVIRONMENT, AND CROSSING THE BRIDGE FROM CRISIS TO SUSTAINABILITY 19–39 (2008) (listing these major global environmental challenges).

6. As some scholars observe, the largest political clout in terms of institutional capacity to address environmental issues—even when they are global—remains with nation-states. *See, e.g.*, JERRY MCBEATH & JONATHAN ROSENBERG, COMPARATIVE ENVIRONMENTAL POLITICS (2011). For an argument that state and local governments should act with greater awareness to address global environmental problems, see Donald A. Brown, *Thinking Globally and Acting Locally: The Emergence of Global Environmental Problems and the Critical Need to Develop Sustainable Development Programs at State and Local Levels in the United States*, 5 DICK. J. ENVTL. L. & POL'Y 175 (1996).

they represent a diverse set of tools, the contemplation of which may lead to new and even surprising approaches. These tools include such options as private emissions trading systems, private carbon fees, private supply chain management, and private insurance, as well as their corollaries in public law.[7]

The recognition of this expanded set of instruments requires a reassessment of normative criteria used for the selection of options. Well-known criteria for selecting among options in public environmental law include, *inter alia*, effectiveness, economic efficiency, environmental justice, and the ability to stimulate technological innovation.[8] We suggest that a more complete taxonomy that includes private options should invoke consideration of additional normative factors with particular salience for comparing public and private action, including accountability and transparency, legitimacy, transnational consequences, durability and adaptability, and expressive content.

Traditionally, scholarship on instrument choice has embodied an assumption that the government acts as "the regulator" and private firms (or individual citizens) are "regulatory targets."[9] For example, one study by Kenneth Richards of fifteen taxonomies of environmental governance published from 1971–1998 lacks any mention of private environmental standard setting or enforcement.[10] Richards himself argues that private voluntary actions to address environmental concerns are merely a response to the threat

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7. For discussion of the parallel use by public and private actors of carbon fees and carbon emissions trading identified by this Article's framework, see Sarah E. Light, *The New Insider Trading: Environmental Markets Within the Firm*, 34 STAN. ENVTL. L.J. 3 (2015).

8. *See infra* Section III.B.

9. For some recent exceptions to this assumption, see Vandenbergh, *supra* note 2, at 134 (focusing on private actors as the source of environmental standards); Sarah E. Light, *NEPA's Footprint: Information Disclosure as a Quasi-Carbon Tax on Agencies*, 87 TUL. L. REV. 511, 513 (2013) [hereinafter Light, *NEPA's Footprint*] (noting the unspoken assumption that the environmental regulator is the government and the regulatory targets are private firms, when the government is a source of pollution); Sarah E. Light, *The Military-Environmental Complex*, 55 B.C. L. REV. 879 (2014) [hereinafter Light, *The Military-Environmental Complex*] (same); Eric W. Orts, *Climate Contracts*, 29 VA. ENVTL. L.J. 197, 199, 205, 205 n.22 (2011) (arguing for a multi-dimensional approach to climate change including "national and regional regulations, public-private partnerships brokered by non-governmental organizations, various organizational alliances, and everyday transactions for goods and services").

10. Kenneth R. Richards, *Framing Environmental Policy Instrument Choice*, 10 DUKE ENVTL. L. & POL'Y F. 221, 284–85 tbl.A2 (2000) (surveying taxonomies of environmental instrument choice). The study mentions "voluntary programs" by the Department of Energy in a 1996 taxonomy; however, we consider government-encouraged voluntary programs to be a form of "reflexive law" or collaborative governance, rather than a pure form of private environmental governance. *See* Eric W. Orts, *Reflexive Environmental Law*, 89 NW. U. L. REV. 1227 (1995); sources cited *infra* notes 19–23.

of government-mandated regulation.[11] Other taxonomies, such as James Salzman's "Five P's" teaching mnemonic for policy instrument choice and Jonathan Wiener's influential discussion of global instrument choice in environmental law, likewise focus only on *public* "policy instruments" rather than private alternatives.[12]

Historical accounts of different "generations" of environmental law similarly focus only on public regulatory options.[13] Although scholars differ on some of the details, such accounts focus on the standards and legal rules set by government actors. The hand of government appears in all of the "policy instruments" recommended by these successive generations of environmental law, including public prescriptive standards,[14] the creation of property rights or entitlements,[15] market-leveraging approaches such as taxes and

11. Richards, *supra* note 10, at 251–52.

12. James Salzman, *Teaching Policy Instrument Choice in Environmental Law: The Five P's*, 23 DUKE ENVTL. L. & POL'Y F. 363, 363, 374 n.29 (2013) (arguing that all forms of public environmental regulation can be categorized as falling into one of five categories: prescription, property, penalties, payments, and persuasion); Jonathan Baert Wiener, *Global Environmental Regulation: Instrument Choice in Legal Context*, 108 YALE L.J. 677, 675–80 (1999) (discussing issues arising in the choice among public law instruments in the global context). The "Five P's" approach is also described in JAMES SALZMAN & BARTON THOMPSON, ENVIRONMENTAL LAW AND POLICY 44–52 (4th ed. 2013).

13. *See, e.g.*, Richard B. Stewart, *A New Generation of Environmental Regulation?*, 29 CAP. U. L. REV. 21 (2001) (describing historical evolution of approaches to environmental law).

14. *See, e.g.*, Howard Latin, *Ideal Versus Real Regulatory Efficiency: Implementation of Uniform Standards and "Fine-Tuning" Regulatory Reforms*, 37 STAN. L. REV. 1267, 1270 (1985) (advocating prescriptive approaches over markets); Rena I. Steinzor, *Reinventing Environmental Regulation: The Dangerous Journey from Command to Self-Control*, 22 HARV. ENVTL. L. REV. 103 (1998) (favoring prescription over market strategies, which Steinzor likens to "self-control").

15. *See, e.g.*, Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089 (1972) (developing a framework for analysis of entitlements and the legal rules that states may adopt to protect entitlements in different contexts); Robert J. Smith, *Resolving the Tragedy of the Commons by Creating Private Property Rights in Wildlife*, 1 CATO J. 439 (1981).

subsidies,[16] emissions trading,[17] and informational regulation.[18]

Scholarship on "reflexive law,"[19] "responsive regulation,"[20] "new governance,"[21] and "collaborative governance"[22] has chipped away at the model of state-centric environmental governance. For example, the government may

16. *See, e.g.*, Richard B. Stewart, *Regulation, Innovation, and Administrative Law: A Conceptual Framework*, 69 CAL. L. REV. 1256 (1981) (arguing that market approaches stimulate innovation more than prescriptive regulation); Gilbert E. Metcalf & David Weisbach, *The Design of a Carbon Tax*, 33 HARV. ENVTL. L. REV. 499 (2009) (advocating a carbon tax); Nathaniel O. Keohane, Richard L. Revesz & Robert N. Stavins, *The Choice of Regulatory Instruments in Environmental Policy*, 22 HARV. ENVTL. L. REV. 313 (1998) (explaining through a public choice model why firms and government actors prefer prescriptive environmental rules over market solutions); David Weisbach, *Instrument Choice Is Instrument Design*, *in* U.S. ENERGY TAX POLICY 113 (Gilbert E. Metcalf ed., 2011) (arguing that distinctions between a carbon tax and cap-and-trade system can be eliminated through careful design).

17. *See, e.g.*, Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law*, 37 STAN. L. REV. 1333 (1985) (advocating emissions trading to combat pollution); Thomas Merrill, *Explaining Market Mechanisms*, 2000 U. ILL. L. REV. 275, 282–85, 290–96 (2000) (discussing emissions trading); Robert N. Stavins, *A Meaningful U.S. Cap-and-Trade System to Address Climate Change*, 32 HARV. ENVTL. L. REV. 293, 344–53 (2008) (advocating an upstream carbon cap-and-trade system).

18. *See, e.g.*, Daniel C. Esty, *Environmental Protection in the Information Age*, 79 N.Y.U. L. REV. 115, 124 (2004); Bradley C. Karkkainen, *Bottlenecks and Baselines: Tackling Information Deficits in Environmental Regulation*, 86 TEX. L. REV. 1409, 1412–13 (2008); Paul R. Kleindorfer & Eric W. Orts, *Informational Regulation of Environmental Risks*, 18 RISK ANALYSIS 155 (1998); Light, *NEPA's Footprint*, *supra* note 9, at 525–26.

19. Orts, *supra* note 10, at 1232 ("[R]eflexive environmental law aims to establish self-reflective processes within businesses to encourage creative, critical, and continual thinking about how to minimize environmental harms and maximize environmental benefits."); *see also* Stewart, *supra* note 13, at 127–34.

20. IAN AYRES & JOHN BRAITHWAITE, RESPONSIVE REGULATION: TRANSCENDING THE DEREGULATION DEBATE 4–6 (1992) (arguing that "responsive regulation" incorporates "enforced self-regulation").

21. *See, e.g.*, Neil Gunningham, *The New Collaborative Environmental Governance: The Localization of Regulation*, 36 J.L. & SOC'Y 145 (2009); Orly Lobel, *The Renew Deal: The Fall of Regulation and the Rise of Governance in Contemporary Legal Thought*, 89 MINN. L. REV. 342 (2004); Karen Bradshaw Schulz, *New Governance and Industry Culture*, 88 NOTRE DAME L. REV. 2515 (2013) (describing forest certification programs as a form of new governance).

22. Jody Freeman, *Collaborative Governance in the Administrative State*, 45 UCLA L. REV. 1 (1997); Bradley C. Karkkainen, *Collaborative Ecosystem Governance: Scale, Complexity, and Dynamism*, 21 VA. ENVTL. L.J. 189 (2002); Eric W. Orts & Cary Coglianese, *Debate, Collaborative Environmental Law: Pro and Con*, 156 U. PA. L. REV. ONLINE 289 (2007), http://www.pennlawreview.com/online/156-U-Pa-L-Rev-PENNumbra-289.pdf; *see also* Jody Freeman & Daniel A. Farber, *Modular Environmental Regulation*, 54 DUKE L.J. 795, 797 (2005) (discussing collaborative governance in the context of water use); *cf.* Jody Freeman, *Private Parties, Public Functions and the New Administrative Law*, 52 ADMIN. L. REV. 813 (2000) (discussing implications of private provision of public services).

The management literature sometimes refers to "voluntary agreements" in a manner that is collaborative rather than purely self-regulating. *See, e.g.*, Thomas P. Lyon & John W. Maxwell, *Corporate Social Responsibility and the Environment: A Theoretical Perspective*, 2 REV.

encourage private environmental management, or the private sector may enforce compliance with public law standards.[23] This scholarship suggests that an appreciation of collaboration and interaction between the public and private sectors is an emerging and essential aspect of environmental law.[24] Yet even reflexive, responsive, and collaborative conceptions of environmental law assume that the government plays *some* role in the creation or enforcement of environmental standards. In contrast, in private environmental governance, private actors, including business firms and NGOs, have developed environmental instruments and tools that do not rely on government participation. In this Article, we seek to provide a better conceptual framework to understand this development, which will furnish an improved standpoint from which to address real environmental problems, especially those that have been impervious to traditional modes of public environmental law. We also seek to inform future research assessing alternative approaches to these problems.

Recent legal scholarship has recognized that private environmental governance is worthy of study and analysis.[25] Increasingly, private firms and NGOs are adopting environmental governance policies that are not man-

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ENVTL. ECON. & POL'Y 240, 246 (2008) (describing firms negotiating voluntary agreements with government entities).

23. *See, e.g.*, AYRES & BRAITHWAITE, *supra* note 20, at 101 (proposing state delegation of standard setting to firms, subject to participation of public interest groups and government approval, with government enforcement); Cary Coglianese & David Lazer, *Management-Based Regulation: Prescribing Private Management to Achieve Public Goals*, 37 LAW & SOC'Y REV. 691, 696–700 (2003); Jody Freeman, *The Private Role in Public Governance*, 75 N.Y.U. L. REV. 543, 547 (2000) (arguing that private organizations play an essential role in environmental governance when they "implement, monitor, and enforce compliance with [public] regulations"); Orts, *supra* note 10, at 1232.

24. Collaboration can either be informal or formalized in law, such as in regulatory negotiation. *See, e.g.*, Lawrence Susskind & Gerard McMahon, *The Theory and Practice of Negotiated Rulemaking*, 3 YALE J. ON REG. 133 (1985). However, public-private collaboration in regulation is not always effective. Cary Coglianese, *Assessing Consensus: The Promise and Performance of Negotiated Rulemaking*, 46 DUKE L.J. 1255 (1997) (providing empirical assessment demonstrating that negotiated rulemaking neither reduces litigation nor reduces time in promulgating rules).

25. *See, e.g.*, Vandenbergh, *supra* note 2, at 133; Michael P. Vandenbergh, *The Private Life of Public Law*, 105 COLUM. L. REV. 2029, 2029, 2040–41 (2005) (arguing that "private actors play an increasing role in traditional and government standard setting, implementation and enforcement functions"); Michael P. Vandenbergh, *The New Wal-Mart Effect: The Role of Private Contracting in Global Governance*, 54 UCLA L. REV. 913, 913 (2007) [hereinafter Vandenbergh, *The New Wal-Mart Effect*] (describing private contracting as environmental governance); Freeman, *Private Parties*, *supra* note 22, at 816–17 (discussing rise of collaborative and private governance); Howard C. Kunreuther & Erwann O. Michel-Kerjan, *Climate Change, Insurability of Large-Scale Disasters and the Emerging Liability Challenge*, 155 U. PA. L. REV. 1795 (2007) (addressing the role of public and private insurance in driving individual behavior in the climate change context); Tracey M. Roberts, *Innovations in Governance: A*

dated, directly controlled, or even encouraged by government.[26] In isolated contexts such as climate change,[27] hydraulic fracturing,[28] and challenges of agricultural pollution and adaptation in light of climate change,[29] legal scholars have observed that public law and private environmental governance initiatives have often arisen simultaneously.[30]

Missing from the current scholarship, however, is an account of how private environmental governance actually employs the same instruments as public governance, and how this expanded set of tools should be integrated

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Functional Typology of Private Governance Institutions, 22 DUKE ENVTL. L. & POL'Y F. 67, 68–69 (2011) (addressing why different forms of private governance arise in different contexts.

26. Although there is some overlap between private governance and "environmental corporate social responsibility," the two are not identical. Thomas Lyon and John Maxwell define "environmental corporate social responsibility" (environmental CSR) as "environmentally friendly actions not required by law, . . . the private provision of public goods, or voluntarily internalizing externalities." Lyon & Maxwell, *supra* note 22, at 240–41. Private governance is broader because it embraces not only the voluntary actions of private firms, which may or may not be corporations, but also privately organized interest-group associations and NGOs that exert pressure on for-profit firms and other private actors. One other key difference is that some management scholars reject the idea that actions count as environmental CSR if firm managers lack an altruistic motivation (as opposed to a business strategy or profit-driven motivation). *Id.* at 241. This Article instead contends that while the motivations of firm managers may affect *normative* choices among instruments (e.g., certain motivations may reflect an increased risk of greenwashing), *see infra* Part III, firm motivations are irrelevant to whether private standard setting qualifies as private environmental governance in the first place.

27. *See, e.g.*, Mark A. Cohen & Michael P. Vandenbergh, *The Potential Role of Carbon Labeling in a Green Economy*, 34 ENERGY ECON. S53, S60 (2012); J.B. Ruhl, *Climate Change Adaptation and the Structural Transformation of Environmental Law*, 40 ENVTL. L. 363, 382 (2010); Michael P. Vandenbergh, *Climate Change: The China Problem*, 81 S. CAL. L. REV. 905, 939–41 (2008); Michael P. Vandenbergh & Jonathan A. Gilligan, *Beyond Gridlock*, 40 COLUM. J. ENVTL. L. 217 (2015).

28. *See, e.g.*, Amanda C. Leiter, *Fracking, Federalism, and Private Governance*, 39 HARV. ENVTL. L. REV. 107 (2015); Hari M. Osofsky & Hannah J. Wiseman, *Hybrid Energy Governance*, 2014 U. ILL. L. REV. 1; Hannah J. Wiseman, *The Private Role in Public Fracturing Disclosure and Regulation*, 3 HARV. BUS. L. REV. ONLINE 49 (2013), http://www.hblr.org/2013/02/the-private-role-in-public-fracturing-disclosure-and-regulation/.

29. *See, e.g.*, Mary Jane Angelo & Joanna Reilly-Brown, *Whole-System Agriculture Certification: Using Lessons Learned from LEED to Build a Resilient Agricultural System to Adapt to Climate Change*, 85 U. COLO. L. REV. 689 (2014) (discussing public and private options to address the intersection of agriculture and climate change).

30. In addition to Michael Vandenbergh's broader claim that private environmental governance should be recognized as a form of law, one scholar has offered an analysis of why different forms of private environmental governance arise in particular contexts. Roberts, *supra* note 25, at 67–80 (offering a taxonomy of private governance). Unlike Roberts, we do not offer an empirical analysis of why private environmental governance arises in particular contexts (e.g., hydraulic fracturing, fisheries, or forests), but rather outline a more integrated account of instrument choice that includes parallel public and private options to inform normative debates in general terms while allowing for specific applications.

into a deeper understanding of environmental governance and instrument choice. One option might be to categorize private environmental governance as belonging to the next "generation" of environmental governance, representing a shift from governmental to private regulation. But this approach would lack a deeper understanding of the many forms of private environmental governance, and how they may mimic similar forms in public environmental law. This characterization would also pre-judge whether shifting from public to private governance in any situation is a good idea. In this Article, we provide the missing account by disaggregating the many forms of public and private environmental governance to show how they can co-exist, compete, operate in parallel, and inform each other to address environmental problems. In other words, we paint a more complete descriptive picture of instrument choice that includes both public regulation and parallel private options than has previously been provided.

By "parallel" we mean that private actors are adopting *similar techniques and methods* as those that public regulators use to address environmental problems, including prescription, property rights, market leveraging, tradable permits, information, procurement, and insurance. The private actors are doing so, however, in a private organizational context and driven by private motivations rather than governmental compulsion.[31]

This expansion of scope in the context of instrument choice raises the question of *who* is doing the choosing among options: governments, business firms, environmental activists, citizens, consumers, or some combination of these various groups. This Article focuses on environmental governance in which the entities setting environmental standards are business firms or other private actors, such as non-profit organizations and consumers, who seek to influence the behavior of business firms. In this world of what we might call "global environmental governance," there is no omniscient single "chooser" of options. To the extent that the dominant understanding of instrument choice assumes a single governmental chooser, a shift away from that assumption is warranted. Instead, there are many "choosers": governments (at multiple levels), private business firms, NGOs, and individuals acting as both consumers and citizens. This Article speaks, then, to multiple audiences: not only to government regulators, but also to those who lead and advise private business firms, environmental NGOs,

31. This is not to say that private motivations do not derive in part from calculations about possible government action. For example, a private firm may adopt an internal accounting scheme for carbon emissions for various reasons: identifying cost saving opportunities, managing corporate reputation (perhaps "greenwashing"), believing that it is "the right thing to do," or strategically attempting to fend off more burdensome government regulation by signaling private concern. *See also infra* Section III.B (discussing different normative criteria).

consumers, and other groups. Private institutions, often advised by lawyers and other experts, make significant decisions about what governance options and tools best advance their own objectives, which may include "public interest" goals of environmental sustainability as well as the prosaic objectives of profit seeking (for businesses) and revenue raising through donations (for environmental NGOs).[32]

After describing *what* forms environmental governance can take (and its many tools and options), and acknowledging complex issues regarding *who* makes choices in this broader context of global environmental governance, we then consider *how* to evaluate these options against an expanded list of normative criteria.[33] No single tool or instrument, we will maintain, is preferable in all situations.[34] The appropriate governance solution for a particular problem will depend upon the specific context of a problem, available alternative tools, and a weighing of different normative considerations.[35] A complete theory of instrument choice must not only provide a framework of different techniques or strategies, but also must contend with whether it matters if those techniques are employed as public law or private governance.

One additional theoretical caveat is in order. Despite the ostensibly "private" nature of private environmental governance, this approach never-

32. Although many business firms may find motivation exclusively in economic gain, other firms adopt a "social responsibility" point of view with respect to some serious environmental problems. In addition, the advent of new corporate forms, such as benefit corporations, which explicitly authorize a dual objective of both profit seeking and social goals like sustainability, suggests that a one-size-fits-all model of business firms is incomplete. For a discussion of various forms of "hybrid social enterprise," see ORTS, *supra* note 3, at 206–15.

33. *See infra* Part III.

34. Indeed, there are both successful examples of private environmental governance and unsuccessful ones, and our inclusion of private environmental governance options within a complete global governance toolkit should not be read as advocacy of private solutions in all or even most circumstances. *Compare* OSTROM, *supra* note 3, at 1 (discussing examples of successful governance of common pool resources such as fisheries by insider collective action), *and* Ellickson, *supra* note 3, at 671–77 (describing successful management of cattle grazing lands through norms), *with* Andrew A. King & Michael J. Lenox, *Industry Self-Regulation Without Sanctions: The Chemical Industry's Responsible Care Program*, 43 ACAD. MGMT. J. 698, 698 (2000) (arguing that "effective industry self-regulation is difficult to maintain without explicit sanctions" and describing failures of the Responsible Care Program).

35. *See* Kleindorfer & Orts, *supra* note 18, at 166–68, 168 fig.4. By remaining agnostic, of course, we reveal our normative hand as pluralist: that is, if pressed, we would agree that all of the normative criteria listed in the text are important to some extent, even though we do not take a position about which value should be "superior" to others with respect to every type of environmental problem. Instead, we recommend as a default a more pragmatic approach of weighing various normative considerations in the specific "problem context." *See id.*

theless assumes some public legal foundations that structure the private organizational world, including a public legal infrastructure that recognizes the construction, operation, and protection of independently organized business firms and nonprofits—and a general social space (which political theorists call "civil society") in which these entities have freedom to interact.[36] For private environmental governance to engage fully with global environmental problems, legal systems and the governments that establish and maintain them must recognize the legitimacy of private actors taking on this kind of social role.[37] Thus, our distinction here between "public" and "private" necessarily involves some degree of analytical oversimplification. The divide between "public" and "private" is not a radical separation, but it is nevertheless important.[38]

The remainder of our Article is structured as follows. Part I argues that although common approaches to defining environmental problems can accommodate both public and private solutions, legal scholarship on instrument choice has failed to capture the complexity of options available within the broad category of private environmental governance. Part II sets forth the Article's central analytical claim that there are striking parallels between traditional public environmental regulatory options and analogous forms of private environmental governance. Our taxonomy of these parallels includes the general categories of instruments set forth in Table 1.

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36. For a general account of this foundational legal structure of private business enterprise, see ORTS, *supra* note 3, at 1–108.

37. A different issue concerns the extent to which private organizations may have public regulatory authority delegated to them. The Supreme Court has recently addressed the limits of the government's ability to delegate standard-setting functions to non-governmental entities. In *North Carolina Board of Dental Examiners v. Federal Trade Commission*, 135 S. Ct. 1101, 1117 (2015), the Court held that a state's dental board, which consisted of private market participants and was not actively supervised by the state, did not qualify for "state-action immunity" from federal antitrust liability. In another case, the Court examined whether legislative delegations to Amtrak and a private arbitrator regarding the setting of rules were unconstitutional, but ultimately concluded that Amtrak was a public entity for purposes of the delegation at issue, and thus did not address the limits of permissible delegation to private actors. Dep't of Transp. v. Ass'n of Am. R.R.s, 135 S. Ct. 1225, 1233–34 (2015).

38. *See* ORTS, *supra* note 3, at 109–31 (arguing that the distinction between public and private occurs at a foundational level of legal and political organization). In addition, though we do not explicitly discuss them here, "hybrid" public-private approaches to environmental governance are possible. We hope to discuss these alternative governance structures more fully in future work.

TABLE 1. TYPES OF ENVIRONMENTAL GOVERNANCE

Instrument	Public Law	Private Governance
Prescription	Performance- and technology-based standards set by government regulation	Performance- and technology-based standards set by private organizations
Property	Property ownership rules for land, animals, wildlife, inventions, corporations, and other tangibles/intangibles	Private, internal allocation of firm property or costs
Market Leveraging	Taxes, charges, subsidies	Private fees or rewards (such as internal carbon fees)
Tradable Permit Regimes	Public emissions trading	Private emissions trading
Information	Mandatory or permissive information disclosure sanctioned by government	Private information disclosure about the environmental qualities of products or services
Procurement	Green procurement by government agencies	Green supply chain management
Insurance	Government-required or government-provided insurance	Private insurance

Part III.A demonstrates the broader implications of recognizing these parallels of public and private governance, including how the analysis reveals nested choices, non-obvious instruments, and the lack of an omniscient "chooser." Part III.B argues for an expanded list of normative criteria that should inform choices among instruments to address particular problems. Using the example of climate change, the Article evaluates how different options fare. No single option always comes out ahead in our view. The necessary approach for any problem is deeply contextual, but embracing a larger set of options holds out the possibility of greater success in practice along a number of dimensions, including efficiency, efficacy, and fairness.

I. THEORIES OF INSTRUMENT CHOICE IN PUBLIC ENVIRONMENTAL LAW

Environmental law scholars have advocated different approaches to addressing environmental problems, including doing nothing, excluding new uses or users, adopting prescriptive legislation, employing market-leveraging approaches, and mandating or encouraging information disclosure.[39]

39. *See* sources cited *supra* notes 10–18. Again, these approaches are typically framed as alternatives involving public regulation and not private governance. *See supra* text accompanying notes 1–12.

The choice of the "best" approach to environmental governance, or the comparative advantages and disadvantages of each, is informed by how the environmental problem is framed. Common and persuasive frames include conceiving of any particular environmental problem as a "tragedy of the commons,"[40] an issue of comparative risk management,[41] or a question of ethics.[42] Each of these frames can accommodate private action to address environmental problems as well. Nevertheless, current scholarship on instrument choice has neither integrated private environmental governance into comprehensive taxonomies of public and private instrument choice nor recognized that private actors and public actors employ parallel forms of governance.

Carol Rose's influential taxonomy of options for management of common pool resources has arguably come the furthest in recognizing that both public and private actors can employ the tools she delineates.[43] We thus pay special attention to her work. Yet even Rose concludes that "the public/private divide, taken alone, misses the substantive content of these various techniques or strategies" and chooses instead to focus on "substantive characteristics of management, regardless of whether the managers themselves are public or private."[44] Although Rose contends that regulators should determine the appropriate tool in light of overall costs, she offers no normative bases upon which to determine whether the "regulator" should be public or private. Nor does Rose focus on the role that business firms play or should play in this regard.

A. *Framing the Environmental Problem*

Approaches to contemporary environmental problems may adopt one of several different though potentially complementary conceptual frameworks. This section examines how three frameworks—namely, the tragedy of the

40. For scholarship that discusses the tragedy of the commons, see OSTROM, *supra* note 3; Hardin, *supra* note 3; Rose, *supra* note 4; Salzman, *supra* note 12.

41. *See, e.g.*, STEPHEN BREYER, BREAKING THE VICIOUS CIRCLE: TOWARD EFFECTIVE RISK REGULATION (1993); W. Kip Viscusi, *Toward a Diminished Role for Tort Liability: Social Insurance, Government Regulation, and Contemporary Risks to Health and Safety*, 6 YALE J. ON REG. 65 (1989).

42. *See, e.g.*, Frank Ackerman & Lisa Heinzerling, *Pricing the Priceless: Cost-Benefit Analysis of Environmental Protection*, 150 U. PA. L. REV. 1553 (2002) (discussing how the moral importance of goods can be degraded by market valuation and exchange); Hope M. Babcock, *Putting a Price on Whales to Save Them: What Do Morals Have to Do With It?*, 43 ENVTL. L. 1 (2013) (same); Laurence Tribe, *Ways Not to Think About Plastic Trees: New Foundations for Environmental Law*, 83 YALE L.J. 1315 (1974) (emphasizing the essential role of moral values, even if they are "fragile values," in environmental law).

43. Rose, *supra* note 4, at 8–9.

44. *Id.*

commons, comparative risk assessment, and environmental ethics—can expand or limit the options of public environmental law and private environmental governance.

Many influential scholars of instrument choice have examined environmental issues through the economic lens of Garrett Hardin's well-known article on *The Tragedy of the Commons*.[45] Hardin posits that individuals have incentives to overuse common pool resources such as public grazing land.[46] Other scholars have explained the tragedy of the commons in economic terms, and point out the overlap between the tragedy of the commons and related economic concepts, such as the problems of free riding and collective action, as well as environmental externalities.[47] In economic terms, the "tragedy" occurs when individuals internalize the benefits of using the resource, but externalize the negative consequences of this use (e.g., pollution or overgrazing).

Describing a particular problem as a tragedy of the commons suggests the impotence of insiders to avoid the "tragedy." One policy solution is to recommend the imposition by an external authority (usually a government or "Leviathan") of legal rules governing the commons: in Hardin's words, "mutual coercion, mutually agreed upon."[48] In order to avert overfishing, for example, the government may impose and enforce maximum catch limits. An alternative solution, emphasized by Harold Demsetz and Robert Smith, among others, is to privatize ownership of the commons to create the necessary incentives to conserve the resource.[49] To address overfishing in this

45. Hardin, *supra* note 3. As Elinor Ostrom points out, Hardin was not the first to describe this phenomenon. OSTROM, *supra* note 3, at 2–3 (citing Aristotle, Hobbes, William Forster Lloyd, and H. Scott Gordon); *see also* sources cited *supra* note 40.

46. *See* Hardin, *supra* note 3. In addition to Hardin's example of shepherds overgrazing land, another classic example is fisheries. *See, e.g.*, Rose, *supra* note 4, at 3–5.

47. *See, e.g.*, OSTROM, *supra* note 3, at 6 (explaining that "at the heart of" the tragedy of the commons, the prisoner's dilemma, and Mancur Olson's logic of collective action is the "free-rider problem," which arises "[w]henever one person cannot be excluded from the benefits that others provide, [and] each person is motivated not to contribute to the joint effort, but to free-ride on the efforts of others").

48. Hardin, *supra* note 3, at 1247; *see also* WILLIAM OPHULS, ECOLOGY AND THE POLITICS OF SCARCITY 148 (1977) (discussing a Hobbesian "Leviathan" as way to address resource scarcity); WILLIAM OPHULS & A. STEPHEN BOYAN, JR., ECOLOGY AND THE POLITICS OF SCARCITY REVISITED 189 (1992) (same); William Ophuls, *Locke's Paradigm Lost: The Environmental Crisis and the Collapse of Laissez-Faire Politics*, *in* BEYOND GROWTH: ESSAYS ON ALTERNATIVE FUTURES 153–58 (William Burch Jr. & F.H. Bormann Jr. eds., 1975) (same). Note that Hardin's formulation involving "mutuality" assumes some form of democratic government, Hardin, *supra* note 3, at 1248, which is not present in all countries today.

49. OSTROM, *supra* note 3, at 12 (citing Harold Demsetz, *Towards a Theory of Property Rights*, 57 AM. ECON. REV. 347, 350–55 (1967) (discussing the development of property rights and their implications)); Smith, *supra* note 15, at 465–68 (advocating privatization of wildlife as solution to tragedy of the commons).

manner, the government may hold an auction for purchase of rights to catch a certain number of fish, or to fish in certain locations.

However, conceiving of an environmental problem as a tragedy of the commons need not lead inexorably to either government-mandated prescriptive rules or the privatization of resources. Elinor Ostrom's Nobel Prize-winning work recognizes that insiders can act collectively (and privately) to manage common pool resources themselves.[50] For example, a group of local shepherds can agree to set private rules to govern grazing land and then hire an external third-party "enforcement agent."[51] With respect to overfishing, local fishermen may decide to regulate their own behavior (and perhaps keep others out) in order to preserve the long-term sustainability of the resource. Self-governance may be preferable under some circumstances, according to Ostrom, because insiders often have better information than external governmental regulators and better incentives to monitor one another at lower costs. Ostrom demonstrates that diagnosing an environmental problem as involving a "commons" does not require a one-size-fits-all template of prescriptive governmental regulation or the governmental delineation of private property rights.[52]

Another leading policy framework conceives of environmental problems in terms of the comparative risks posed to the health and well-being of human beings or, more broadly, the natural environment including non-human species.[53] Kip Viscusi, for example, defines the problem of environmental protection (as well as protecting public health) as one of controlling risk.[54] Considering the issue as one of addressing risk allows for the recognition that there may be competing risks, which requires comparing trade-

50. OSTROM, *supra* note 3, at 1.

51. *Id.* at 16 (noting that private arbitrators or monitors can act as third-party enforcement agents).

52. *Id.* at 17–18. Ostrom also offers some normative criteria (such as informational asymmetries) for choosing public or private options. *Id.*

53. Leading non-governmental organizations that make the preservation of non-human species a priority include the World Wildlife Fund and the Nature Conservancy. *See About Us*, WORLD WILDLIFE FUND, https://www.worldwildlife.org/about (last visited July 29, 2015); *About Us*, THE NATURE CONSERVANCY, http://www.nature.org/about-us/index.htm (last visited July 29, 2015).

54. Viscusi, *supra* note 41, at 66, 77; *see also* RISK VERSUS RISK: TRADE-OFFS IN PROTECTING HEALTH AND THE ENVIRONMENT 12–17 (John D. Graham & Jonathan Baert Wiener eds., 1995) (describing the ubiquity of risk tradeoffs and providing examples of different types of risk tradeoffs in environmental policy); John S. Applegate & Steven M. Wesloh, *Short Changing Short-Term Risk: A Study of Superfund Remedy Selection*, 15 YALE J. ON REG. 269, 270 (1998) (arguing that people fail to accurately perceive comparative risks).

offs among the different risks.[55] Viewing environmental problems from a perspective of comparative risk assessment is adaptable to both government regulation and private environmental governance. Indeed, the methodology of comparative risk assessment and management has been widely used in business for many years, and it forms the basis for both public and private insurance.[56]

Last but not least, some scholars see environmental problems from the point of view of ethical and moral theory. This is a rich literature to which we cannot do complete justice here, but it is one that can, again, accommodate both public and private action. Competing normative stances include those that argue that environmental protection should aim to maximize social welfare (e.g., utilitarian approaches);[57] reduce social inequality (e.g., theories of distributive justice);[58] or enhance democratic values.[59] Deontological moral theorists contend that environmental protection is required by duties owed to human beings and to "nature" in general—or simply because acting with respect toward the natural environment is the right thing to do.[60]

Each of these approaches embodies normative commitments that ultimately affect how one evaluates the "best" option under the circumstances. Considering a problem as a matter of ethical theory can affect how one selects a solution, but does not necessarily lead to a conclusion that only governmental action is needed. Private action to address environmental problems can also enhance social welfare, reduce social inequality, contrib-

55. Viscusi, *supra* note 41, at 66; *see also* BREYER, *supra* note 41, at 19–20, 28 (1993) (arguing that some risks are radically over-controlled and others are virtually ignored in U.S. law).

56. *See, e.g.*, INSURING AND MANAGING HAZARDOUS RISKS: FROM SEVESO TO BHOPAL AND BEYOND (Paul R. Kleindorfer & Howard C. Kunreuther eds., 1986).

57. *See, e.g.*, Louis Kaplow & Steven Shavell, *Fairness Versus Welfare*, 114 HARV. L. REV. 961, 966, 969 n.8 (2001) (arguing for a welfarist approach, and noting that utilitarianism is a distinct form of welfarism in which "distributive judgments are based on the principle that the sum of individuals' well-being should be maximized"). One common analytical tool used for this normative objective (though not the only tool) is cost-benefit analysis. For a discussion of cost-benefit analysis in the environmental context, see RICHARD L. REVESZ & MICHAEL A. LIVERMORE, RETAKING RATIONALITY: HOW COST-BENEFIT ANALYSIS CAN BETTER PROTECT THE ENVIRONMENT AND OUR HEALTH 10 (2008). *See also* COST-BENEFIT ANALYSIS: ECONOMIC, PHILOSOPHICAL, AND LEGAL PERSPECTIVES (Matthew D. Adler & Eric A. Posner eds., 2001).

58. *See, e.g.*, Richard Lazarus, *Pursuing "Environmental Justice": The Distributional Effects of Environmental Protection*, 87 NW. U. L. REV. 787, 793 (1993).

59. *See, e.g.*, Jedediah Purdy, *The Politics of Nature: Climate Change, Environmental Law, and Democracy*, 119 YALE L.J. 1122, 1130 (2010) (arguing that that public environmental law is part of an "ongoing self-definition of the political community" in the same way as constitutional law, criminal law, and civil rights law).

60. *See* sources cited *supra* note 42. For a collection of essays presenting different ethical approaches in this vein, see also ENVIRONMENTAL ETHICS (Robert Eliot ed., 1995).

ute to democratic values, and meet deontological obligations to do the right thing.

B. *Influential Theories of Instrument Choice*

Embedded within this rich normative context, scholars have proposed different analytical frameworks and taxonomies of environmental instrument choice. James Salzman and Carol Rose have advanced two frameworks of instrument choice that we focus on here.[61]

Salzman (joined by Barton Thompson) has put forward a straightforward view of instrument choice for the purpose of teaching environmental law.[62] Salzman suggests that "there are only five basic policy instruments in play, and these can be effectively taught through a simple framework known as 'The Five P's.'" They are *p*rescriptive regulation, financial *p*enalties (taxes), financial *p*ayments (subsidies), *p*roperty rights, and *p*ersuasion.[63] Salzman acknowledges that hybrids of these options exist; for example, cap-and-trade programs embody features of both prescriptive regulation (the "cap") and property rights (the allocation and "trade" of emissions permits).[64] As we have noted above, the Five P's analysis is limited in its assumption that the government is the sole originator of regulation and governance.[65] The Five P's also incorporate a number of normative criteria that can and should be considered in selecting among options, including efficiency, effectiveness, and ethical considerations such as fairness and justice.[66] This general typology remains an excellent teaching method for introducing basic concepts of public environmental law to new students. Although some of the details differ, the general categories Salzman describes are consistent with other taxonomies of instrument choice.[67]

Carol Rose, building on the insights of the economist Stephen Cheung, has developed her own framework of options to manage common pool re-

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61. Beyond the scholarship that explicitly sets forth complete taxonomies of instrument choice are numerous articles focusing on the advantages or disadvantages of particular instruments, such as prescriptive rules versus taxes or cap-and-trade systems, or taxes versus cap-and-trade systems. *See, e.g.*, sources cited *supra* notes 14–17.

62. *See* SALZMAN & THOMPSON, *supra* note 12, at 44–52; Salzman, *supra* note 12, at 363.

63. Salzman, *supra* note 12, at 363–64.

64. *Id.* at 364–75.

65. This choice was intentional for teaching purposes. Interview with Jim Salzman, Donald Bren Distinguished Professor of Envtl. L., UCLA Sch. of Law, in Boulder, Colorado (Aug. 7, 2014); *see also* Salzman, *supra* note 12, at 364, 374 n.29.

66. *See* Salzman, *supra* note 12, at 268, 365, 369.

67. *See, e.g.*, Richards, *supra* note 10, at 230–31 (comparing multiple taxonomies); Wiener, *supra* note 12, at 705 (discussing "conduct-based" instruments, "price-based" instruments, and "quantity-based" instruments).

sources.[68] Rose describes four basic alternatives including: "DO NOTHING" (a baseline no-action alternative); "KEEP OUT" (exclusion of outsiders or new uses of a resource); "RIGHTWAY" (limitations on the way a resource is used, such as a prescriptive approach requiring a particular technology for abatement or nuisance law's prohibition on the "unreasonable" use of a resource); and "PROP" (the creation of individual property rights in a common resource or other market mechanisms that employ property rights).[69] Rose argues that there is no one "best" management strategy. Selecting among strategies requires consideration of the normative value of minimizing overall costs.[70] According to Rose, the costs of regulatory strategies may change as the level of congestion or "pressure" on a particular resource increases. For example, a field in which only two shepherds graze sheep might be manageable with a DO NOTHING strategy, which imposes the lowest costs and is sufficient to manage the resource. If fifty shepherds moved into the area, however, a more expensive management strategy, such as KEEP OUT (to prohibit the entry of new shepherds) or RIGHTWAY (to limit the methods allowed for grazing in some fashion), might be necessary to protect the common resource from destruction. Finally, if 1,000 shepherds all wanted to use the same field, PROP might become the best strategy (such as selling sustainable-sized tracts to the highest bidders). In addition, Rose observes that the users of the resource often have the best information about how to reduce grazing pressure on the resource at the lowest overall social cost.[71]

Beyond these four primary categories, Rose argues that a fifth dimension of "moral suasion" or "exhortation" exists both independently and as a component of each of the other four strategies.[72] As an independent strategy, Rose defines "exhortation" as asking "citizens to refrain from overuse of the air, the water, the land and its growing things."[73] She notes that critics

68. Rose, *supra* note 4, at 9–10 (citing Stephen Cheung, *The Structure of a Contract and the Theory of a Non-Exclusive Resource*, 13 J.L. & ECON. 49, 64 (1970)).

69. *Id.* Rose's category PROP is not coterminous with privatization (such as through enclosures of land). Her category broadly encompasses mechanisms such as pollution taxes and tradable pollution permits. *Id.* at 9–10. Rose, like Salzman, *supra* note 12, acknowledges that combinations or hybrid strategies exist. *See, e.g.*, Rose, *supra* note 4, at 11 (noting that controls on air pollution distinguishing between existing power plants and new power plants are a combination of RIGHTWAY and KEEP OUT).

70. *Id.* at 12. Relevant costs include "administrative or system costs" (including costs of devising, running, and enforcing the management strategy), "user costs" (including the costs of new technologies users must adopt), and "overuse or failure costs" (including the cost of failure to achieve efficient resource use). *Id.*

71. *Id.* at 16–24.

72. *Id.* at 30.

73. *Id.*

see exhortation as a form of DO NOTHING because it accomplishes "little."[74] Rose argues, however, that scholars such as Robert Ellickson have demonstrated the success of certain voluntary regimes that are "founded on principles of neighborliness."[75] Rose concludes that exhortation tends to be inexpensive (though more expensive than doing nothing), but in situations of low levels of congestion or pressure on the resource "next-to-nothing might be all we need."[76] Moreover, Rose counts exhortation as a component of the other four management strategies, because some degree of moral suasion is required to "induce" members of a group to "trust one another and to undertake their respective shares of a management system."[77] In other words, moral suasion is needed both to "supply" the management system in the first place (to use Ostrom's terms) and then to motivate compliance with such a system.[78]

Unlike many scholars of instrument choice, Rose states that each of her four management strategies can be employed by government actors or by insiders (private parties) faced with managing a common pool resource.[79] However, Rose remains agnostic about the public-private aspect of instrument selection, and spends little time on it. For example, she does not offer a theory of how private actors can employ PROP as a strategy.[80] Rose is more interested in "the substantive content of these various techniques or strategies," rather than the choice of public or private action.[81]

In contrast, we suggest that a complete theory of instrument choice must not only describe the content of different techniques or strategies, but also must contend with whether it matters if the techniques are employed as public law or private governance. For example, individual insiders such as Maine lobstermen may be able to employ KEEP OUT as a self-help strategy, but such a strategy would raise serious legal concerns of anti-competitive behavior under antitrust law if espoused by business firms of larger size and economic scope of operations. Similarly, strategies employing procurement to address environmental problems may differ depending on whether the actors are public or private. "Green" procurement rules employed by the federal government may have more of an impact on domestic business firms

74. *Id.*

75. *Id.* (citing Ellickson, *supra* note 3, at 672–77 (describing interactions among cattle ranchers as a set of norms involving "neighborliness" that do not rely on traditional law enforcement)); *see also* OSTROM, *supra* note 3, at 13–15.

76. Rose, *supra* note 4, at 32.

77. *Id.*

78. *Id.*

79. *Id.* at 8–9.

80. *See infra* Section II.B.

81. Rose, *supra* note 4, at 8–9.

that contract with the federal government than on foreign firms.[82] In contrast, the suppliers of many multinational firms such as Walmart or Apple are located abroad. When such private firms impose environmental standards on their suppliers, there may be greater potential for transnational impact. Thus, private "green" supply chain management may have greater potential for global impact than public procurement policies with similar aims.[83]

Despite Rose's decision not to focus on normative choices between public and private instruments, her analysis offers an important lesson that informs our own normative approach. Rose argues that each management strategy tells a story with "expressive content" regarding the government or the private entity that selects the strategy.[84] For Rose, KEEPOUT "carries a moral message of self-protectiveness" rather than "generosity, understanding, and helpfulness."[85] RIGHTWAY "carries the message that at a minimum, one should use congestible common resources in a 'reasonable' way, and one should respect one's neighbor's rights."[86] One of the chief challenges that Rose identifies with a PROP strategy is that "PROP loses RIGHTWAY's moral thrust by surrounding pollution with rights-talk, by

82. This is not to say that U.S. government procurement rules would have no global impact. Indeed, government contractors may pass environmental standards through their own supply chains, including restrictions on materials that can be used. However, given that the largest U.S. government contractors by dollar value are military contractors, and many military projects are manufactured in the United States, including at Government-Owned, Government-Operated or Government-Owned, Contractor-Operated facilities (GOGOs or GOCOs), there may be some differences in global impact in this field. *See Federal Supplier Greenhouse Gas Management Scorecard*, COUNCIL ON ENVIL. QUALITY, https://www.whitehouse.gov/administration/eop/ceq/initiatives/sustainability/supplier-GHG (last updated Mar. 10, 2015) (listing largest government contractors, many of which are military contractors); *cf.* U.S. DEPT. OF DEF., JOINT PUBLICATION 1-02, DICTIONARY OF MILITARY AND ASSOCIATED TERMS A-72 (June 2015), http://www.dtic.mil/doctrine/new_pubs/jp1_02.pdf (defining GOGOs and GOCOs). In addition, one can imagine that many different national governments might adopt similar standards for "green" procurement, which would magnify global impact. We recognize that the comparative global impacts of procurement and supply chain policies by governments and private companies are empirical questions that will depend on particular circumstances.

83. *See infra* Section III.B. We use "green" in its colloquial sense meaning "environmentally beneficial" or "environmentally sustainable," recognizing that these definitions beg important empirical and normative questions of what should count as "environmentally beneficial" and "sustainable."

84. Rose, *supra* note 4, at 33–35; *see also* Cass Sunstein, *On the Expressive Function of Law*, 144 U. PA. L. REV. 2021 (1996) (discussing the idea that law must be judged not only by its consequences, but also by the norms it enunciates in condemning or valuing certain behaviors).

85. Rose, *supra* note 4, at 33.

86. *Id.* at 34 ("They tell each would-be polluter that she must do her best . . . .").

using a rhetoric of entitlement to pollute."[87] The lesson we take from Rose's analysis is that whoever chooses the strategy—whether it is a government, a private business firm, a non-governmental organization, or some other entity or group—should take into account what message the strategy sends.[88] The content of the message may matter as much as the economic efficiency and environmental effectiveness of performance, depending on one's normative perspective.[89]

We now propose to build on traditional frameworks of instrument choice for addressing environmental problems, including those provided by Salzman and Rose, by including private governance options as well as government-centered approaches. In addition, we attempt to maintain normative neutrality in our analytical account concerning whether the "regulator" should be public or private in the context of specific problems. The next Part offers our taxonomy of the parallel forms of public environmental law and private environmental governance.

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87. *Id.* Purdy, for example, describes the defeat by the Clean Water Act's sponsors of a proposed amendment that would have added a Pigouvian tax on the grounds that the law should not incorporate a "right to pollute." Purdy, *supra* note 59, at 1187–88. More recently, Pope Francis raised questions about whether using regulatory methods such as buying and selling carbon credits could actually reduce emissions, or would rather "simply become a ploy which permits maintaining the excessive consumption of some countries and sectors." POPE FRANCIS, ENCYCLICAL LETTER, *Laudato Si'* (On Care for Our Common Home) ¶ 171 (May 24, 2015), http://w2.vatican.va/content/dam/francesco/pdf/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si_en.pdf.

88. Rose, *supra* note 4, at 38 (citing Aristotle, *Politics* 1337a11-b23 *in* THE BASIC WORKS OF ARISTOTLE (R. McKeon ed., 1941) ("The point is only a variant of a very old idea, one that goes back at least to Aristotle—that our laws are not just our controllers, but our teachers.").

89. We distinguish the "expressive content" of the message, which may be determined by a third party (e.g., public opinion that tradable emissions permits constitute a "right to pollute"), from marketing messages made by the actors adopting environmental instruments. Many private firms and government actors may virtuously adopt internal measures to address climate change. Yet if these measures are proven to be ineffective at reducing emissions, then the marketing may be wasteful or even amount to greenwashing if adopted with an eye to preventing public regulation or misleading the public. *See infra* Subsection III.B.8 (discussing greenwashing).

Note also that a deontological normative stance might give greater weight to the intentions of particular governance actions compared with consequentialist normative views that focus on actual results. With respect to climate change in particular, one might suggest that the long-term consequences are difficult to predict, and therefore good intentions make sense to reward, as long as they are truly good intentions and take into account likely consequences as far as can be authoritatively and accurately judged.

II. Parallels in Public Environmental Law and Private Environmental Governance

This Part makes two analytical claims. First, we argue that each form of public environmental law has a parallel form in private environmental governance.[90] The specific primary categories of governance that we include in a global regime of environmental instrument choice are the following: prescription (sometimes called "command-and-control"), property, market leveraging, tradable permit regimes, information, procurement, and insurance.[91]

Second, drawing these parallels reveals two strategies the private sector frequently employs, namely procurement in the form of supply chain management and insurance for environmental risks, which have been underappreciated in the legal literature on instrument choice. In part for this reason, we break them out separately in our taxonomy of environmental governance.[92]

After presenting our proposed analytical framework here, we address its normative implications in Part III.

A. *Prescription*

In a very general sense, all public law and internally ordered rules are "prescriptive," given that such rules are adopted to prescribe or govern behavior and set forth particular conditions by which actions gain the benefit of legitimate authority. All modes of governance involve different kinds of ordering rules.[93] In our taxonomy, we use "prescription" more narrowly to

90. When we say "parallel" or "equivalent," we do not mean "identical." We recognize also that a comparison of "public law" with "private governance" elides some jurisprudential issues. *See supra* text accompanying notes 35–37 (noting that the existence of "private governance" assumes a public legal governance structure that allows for privately organized firms and other non-governmental organizations to exercise powers of self-governance and self-regulation).

91. *See supra* Table 1.

92. Although we believe that our proposed taxonomy of environmental governance captures most, if not all, of the currently available options, nothing fundamental hinges on whether our categories are a complete description of these options. We recognize also that the real world of environmental governance is complex, and some categories often bleed into others in practice. Nevertheless, we believe that the analytical framework that we propose is useful because it provides a conceptual perspective that allows decisionmakers at different levels and with different normative priorities to compare and contrast alternatives.

93. H.L.A. Hart further divides legal rules between "duty-imposing" mandatory rules (such as prescriptive regulation for specific behavior, including many provisions in the criminal law) and "power-conferring" enabling rules many of which together compose the "private" realm of business enterprise, commercial contracts, and the ownership of private property. H.L.A. Hart, The Concept of Law 40–41 (3d ed., 2012). A set of power-conferring enabling legal rules also provides a background framework (albeit also generally "prescriptive") of

refer to mandatory duty-imposing rules that govern behavior directly. Other governance options, including property, market leveraging, and information, offer more indirect alternatives, whether employed by public or private actors.[94] By "prescription," then, we mean performance-based or technology-based standards adopted in either public law or private governance that mandate particular behavior aimed either to achieve an environmental benefit or to avoid an environmental harm.[95]

1. Prescription in Public Environmental Law

Prescription in public environmental law comes in two basic varieties: one focuses on mandating performance, and the other requires the use of particular technologies. Performance-based standards specify caps or limits on environmental harms, such as how much pollution a firm is permitted to emit or discharge, usually with a goal to achieve certain levels of ambient air or water quality.[96] Technology-based standards mandate or prohibit the use of particular technologies, such as pollution-prevention treatment technologies at the "end of the pipe" or pollution-reduction processes of manufacture, use, or disposal.[97] As public law, these standards are set through statutes, administrative regulations, and individualized permits granted by government agencies.

Some scholars refer to prescriptive approaches, particularly technology-based standards, as "command-and-control" regulation, though we prefer to

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broad-based private choice, much of which occurs in legally organized firms and markets. For further discussion of this jurisprudence, see ORTS, *supra* note 3, at 53–108. A substantial literature in corporate law addresses the distinction (and policy choice) between "mandatory" and "enabling" rules. *See, e.g.*, John C. Coffee, Jr., *The Mandatory/Enabling Balance in Corporate Law: An Essay on the Judicial Role*, 89 COLUM. L. REV. 1618 (1989); Jonathan R. Macey, *A Pox on Both Your Houses: Enron, Sarbanes-Oxley and the Debate Concerning the Relative Efficiency of Mandatory Versus Enabling Rules*, 81 WASH. U. L.Q. 329 (2003).

94. In some cases, a public environmental law may confer specific legal authority to private firms or other organizations to "make the law" for themselves. In this sense, the public law operates to allow private organizations to operate prescriptively *with respect to themselves*. This is a subtle but important point. Operating in this fashion, for example, a private corporation has the ability to "self-legislate" with respect to various internal governance issues under its corporate charter and by-laws, including the selection of private environmental governance policies and management strategies.

95. This category is similar to Rose's "RIGHTWAY" and many scholars' (including Salzman's) "Prescription" approach. Rose, *supra* note 4, at 9 (defining "RIGHTWAY" as regulating the "the way in which the resource is used or taken, effectively prescribing the methods by which users may take the resource"); Salzman, *supra* note 12, at 364–65 (defining prescriptive regulation as mandates and noting the alternative moniker of "command-and-control" regulation).

96. *See, e.g.*, SALZMAN & THOMPSON, *supra* note 12, at 47 (describing prescription to include performance-based standards).

97. *Id.*

use "prescription" as a more neutral and capacious term.[98] Examples of performance-based prescription in public law include the National Ambient Air Quality Standards in the Clean Air Act[99] and effluent limitations in the Clean Water Act.[100] These approaches specify a particular performance level—such as parts per million of specific pollutants in the air or water—and then promote regulations to achieve the standards. Illustrations of technology-based prescriptive standards in public law include the Clean Air Act's requirements that automobile manufacturers install catalytic converters and standards established under different statutes and regulations that require the use of the "best available technology" for pollution control.[101] Sometimes stating a standard in terms of performance can dictate a technological result. For example, the Energy Independence and Security Act of 2007's phase-out of incandescent light bulbs does not ban incandescent light bulbs outright, but rather sets performance-based standards for bulb life and light-delivered-per-unit-of-energy-consumed with the same practical effect.[102]

2. Prescription in Private Environmental Governance

Just as the government can enact prescriptive environmental standards, so too can private non-governmental organizations. Business firms and NGOs may promulgate prescriptive standards (both performance-based and technology-based) to govern environmental behavior. The source of the

98. *See, e.g.*, Stewart, *supra* note 16 (describing prescription as "command-and-control" rules). As Jodi Short has argued, the term "command-and-control" has been "deployed routinely in articles that criticize regulation," but "it is rarely defined and its meanings and functions have become either submerged or taken for granted." Jodi L. Short, *The Paranoid Style in Regulatory Reform*, 63 HASTINGS L.J. 633, 658–59 (2012); *see also* Kathryn Harrison, *Talking with the Donkey: Cooperative Approaches to Environmental Protection*, 2 J. INDUS. ECOLOGY 51, 53 (1999) (warning that "analysts of environmental policy must be wary of the tendency to use the phrase 'command and control' as a pejorative catchall for any and all criticisms of environmental regulation, because the term denies important differences among regulatory approaches and contexts").

99. Clean Air Act, 42 U.S.C. §§ 7408(b)(2), 7409(d)(2)(C) (2013).

100. Clean Water Act, 33 U.S.C. § 1326(b) (2013); 40 C.F.R. § 122.41(a)(1) (2014).

101. *See, e.g.*, Clean Air Act Amendments of 1970 tit. IV, 42 U.S.C. §§ 7651–7651o. Performance-based standards are often calibrated to ambient pollution allowed on the basis of "health," which is a primary standard under the Clean Air Act § 109(b)(1), 42 U.S.C. § 7409(b)(1), or the basis of protecting the public welfare from harm, which is the basis for secondary standards under the Clean Air Act § 109(b)(2), 42 U.S.C. § 7409(b)(2).

102. Energy Independence and Security Act of 2007, Pub. L. No. 110-140 § 321, 121 Stat. 1492, 1573-1587 (codified at 42 U.S.C. § 6295(i) (2012)); Gary E. Marchant, *Complexity and Anticipatory Socio-Behavioral Assessment of Government Attempts to Induce Clean Technologies*, 61 UCLA L. REV. 1858, 1884 (2014) ("Notwithstanding the deliberate performance-based phrasing of the legislation, its practical effect will be to ban the traditional incandescent light bulb.").

rules that firms and other private organizations adopt varies and can include: (1) a single firm;[103] (2) industry associations; or (3) third-parties,[104] including NGOs or business and nonprofit coalitions such as Ceres,[105] the International Organization for Standardization (ISO),[106] the Forest Stewardship Council (FSC),[107] or the Marine Stewardship Council (MSC).[108] Depending on the source, a firm's compliance with environmental standards may be verified or audited by unaffiliated third parties (e.g., accountants or specialized consultants). In any case, the organizational source of the environmental standards is *private*. We address each of these three sources of private prescriptive standards in turn.

The first type of private prescription appears in performance standards that firms impose on themselves, including those that they publicly announce in annual sustainability reports or reports to nonprofit third parties (such as the CDP, formerly known as the Carbon Disclosure Project).[109] Firms have, for example, adopted internal performance targets to reduce

103. Michael Vandenbergh has referred to such standards as "unilateral" standards. Firms can also negotiate standards with other firms and embody those standards in contracts (which he calls "bilateral" standards). Vandenbergh, *The New Wal-Mart Effect*, *supra* note 25, at 924. To the extent that standards are created in the procurement context, we address these separately from prescription. *See infra* Section II.F.

104. Vandenbergh, *supra* note 2, at 136–38.

105. *About Us*, CERES, http://www.ceres.org/ (last visited Sept. 13, 2015) (Ceres is a "non-profit organization advocating for sustainability leadership . . . to accelerate the adoption of sustainable business practices and solutions.").

106. *About ISO*, ISO, http://www.iso.org/iso/home/about.htm (last visited July 12, 2015) (ISO is "the world's largest developer of voluntary International Standards," including standards for environmental management systems such as ISO 14001.).

107. *Mission and Vision*, FOREST STEWARDSHIP COUNCIL, https://us.fsc.org/mission-and-vision.187.htm (last visited July 12, 2015) (FSC's mission is "to promote environmentally sound, socially beneficial and economically prosperous management of the world's forests").

108. *About Us*, MARINE STEWARDSHIP COUNCIL, https://www.msc.org/about-us/vision-mission (last visited July 12, 2015) (MSC's mission is "to use our ecolabel and fishery certification program to contribute to the health of the world's oceans by recognising and rewarding sustainable fishing practices, influencing the choices people make when buying seafood, and working with our partners to transform the seafood market to a sustainable basis.").

109. Although some might contend that a single firm setting standards unilaterally or internally is not private environmental governance, we adopt a broader view. As one of us has previously argued, "a complete account of private environmental governance must acknowledge that the phenomenon exists in many different forms, each with particular strengths and weaknesses." Light, *supra* note 7, at 6 n.6. Again, our descriptive account is not intended to advocate for any one governance option in all circumstances. We address some concerns about unilateral standards in Part III, *infra*, including the risk of greenwashing and lack of durability. For a description of the CDP, see *About Us*, CDP, https://www.cdp.net/en-US/Pages/About-Us.aspx (last visited July 12, 2015).

water and energy use, as well as greenhouse gas emissions.[110] Firms have also adopted private rules that require or prohibit the use of particular technologies to reduce greenhouse gas emissions or the risk of spills of hazardous materials. Some firms have imposed internal requirements that specify that a percentage of energy used on site must come from renewable sources rather than fossil fuels; others have set goals to replace petroleum-based packaging with renewable packaging; and still others have imposed self-limitations on their use of certain chemicals.[111] This category of private prescription also includes other forms of private contract-based environmental standard setting such as in "deal" documents in corporate mergers and acquisitions. Such contractual agreements are often privately motivated, rather than mandated by public law.[112] For example, a deal may be designed to placate environmental NGOs or others who might otherwise oppose a merger or acquisition by pledging that the new company will meet environmental performance targets or undertake other initiatives, such as preserving endangered species habitats.

A second category of private prescription arises from private industry associations or multi-stakeholder groups, which both set environmental standards for their members and have the power to monitor compliance. For example, the Center for Sustainable Shale Development, a coalition that includes energy firms such as Shell and Chevron, and NGOs such as the

110. Some performance targets are stated in absolute terms—for example, the goal to reduce CO_2-equivalent emissions by one million metric tons or to produce a certain amount of renewable energy by a certain date. *See, e.g.*, AT&T, ENERGY MANAGEMENT (2013), http://about.att.com/content/dam/csr/issuebriefs/June13IssueBriefs/energy_management.pdf; *Sustainability*, VERIZON, http://responsibility.verizon.com/sustainability/2013#sustainability-goals (last visited July 12, 2015); *Data and Goals*, HEWLETT-PACKARD, http://www8.hp.com/us/en/hp-information/global-citizenship/data-and-goals.html#environment (last visited July 12, 2015). Other targets can be stated in terms of intensity of use or increased efficiency. *See, e.g.*, CITI, ENVIRONMENTAL POLICY FRAMEWORK (2014), http://www.citigroup.com/citi/environment/data/937986_Env_Policy_FrameWk_WPaper_v2.pdf (setting environmental targets, including a twenty percent increase in energy efficiency).

111. For example, Proctor & Gamble has set short-term goals of sourcing thirty percent of its energy needs through renewable sources. PROCTOR & GAMBLE, 2014 SUSTAINABILITY REPORT: EXECUTIVE SUMMARY 10 (2014), http://www.pg.com/en_US/downloads/sustainability/reports/2014_SustainabilityReport_ExecutiveSummary.pdf. Walmart has prioritized a list of approximately ten chemical ingredients for continuous reduction, restriction, and elimination. *See* WALMART, POLICY ON SUSTAINABLE CHEMISTRY IN CONSUMABLES, http://az204679.vo.msecnd.net/media/documents/wmt-chemical-policy_130234693942816792.pdf. Ford Motor Company has eliminated the use of chromium and mercury in all production vehicles in the United States, and significantly reduced the use of lead. Ford, *Eliminating Undesirable Materials*, SUSTAINABILITY 2012/13, http://corporate.ford.com/microsites/sustainability-report-2012-13/environment-products-materials-undesirable.html (last visited Oct. 4, 2015).

112. *See, e.g.*, Vandenbergh, *The New Wal-Mart Effect*, *supra* note 25, at 925 (discussing private environmental governance in "deal" documents in mergers and acquisitions).

Environmental Defense Fund, has published a set of "performance standards" for high-volume hydraulic fracturing that "were developed to drive leading industry practices and to set a bar that goes above and beyond the regulatory requirements established" by several U.S. states.[113] Other industry-wide standards include the International Rubber Study Group's efforts to promote sustainable rubber harvesting and the Roundtable on Sustainable Palm Oil's efforts to promote sustainable harvesting of palm oil.[114] The Responsible Care Program, created by the American Chemistry Council, also establishes standards that qualify as this kind of private prescription.[115]

A third source of private performance-based standards are certification programs created and monitored by third-party NGOs, both domestic and international. Performance in this context is sometimes associated with the award by the NGO of an eco-label.[116] Many firms have adopted formal environmental management systems under voluntary standards such as the ISO's 14000 series.[117] These voluntary standards often use third-party audits to verify compliance. Other similar third-party performance standards include the U.S. Green Building Council's Leadership in Energy & Environmental Design (LEED) certification,[118] the FSC's standard for sustaina-

113. *Performance Standards*, CTR. FOR SUSTAINABLE SHALE DEV., https://www.sustainableshale.org/performance-standards/ (last visited July 12, 2015). *See generally* Leiter, *supra* note 28 (discussing these standards).

114. Huileng Tan, *Rubber Study Group Looks for Sustainability Plan*, WALL STREET J. (Sept. 3, 2013), http://blogs.wsj.com/searealtime/2013/09/03/rubber-study-group-looks-for-sustainability-plan/.

115. AM. CHEMISTRY COUNCIL, THE CHEMICAL INDUSTRY'S COMMITMENT TO PRODUCT SAFETY (2013), http://responsiblecare.americanchemistry.com/2013-Program-Enhancements/Product-Safety-Code-Fact-Sheet.pdf. The Responsible Care Program was established after the Toxics Release Inventory, an informational public environmental law program, revealed widespread releases of toxic chemicals by business firms in the chemical industry. The environmental effectiveness of Responsible Care has been the subject of criticism. *See, e.g.*, King & Lenox, *supra* note 34, at 698–702 (arguing that industry self-regulation is subject to opportunism in the absence of external sanctions). Other forms of private environmental governance following this approach are potentially subject to the same criticism, though ultimately such questions require empirical examination.

116. *See* Tracey M. Roberts, *The Rise of Rule Four Institutions: Voluntary Standards, Certification and Labeling Systems*, 40 ECOLOGY L.Q. 107 (2013) (discussing eco-labels and other forms of private environmental governance). Such third-party standards arguably provide a greater degree of accountability through external verification and monitoring than first-party standards.

117. Three ISO standards apply to environmental management systems: ISO 14001 (requirements), ISO 14004 (guidelines), and ISO 14006 (guidelines for eco-design). *See ISO 14000 - Environmental Management*, ISO, http://www.iso.org/iso/home/standards/management-standards/iso14000.htm (last visited July 12, 2015).

118. U.S. Green Bldg. Council, *Overview*, LEED, http://www.usgbc.org/leed (last updated July 29, 2015).

ble forestry, and the MSC's performance-based standard for sustainable fisheries.[119] Such performance-based standards are analogous to public performance-based standards in the sense that the firm must meet certain specified performance criteria to gain the benefit of private certification or other recognition.[120]

B. *Property*

As discussed above, many scholars have argued that the best way to address an environmental problem they define as a "tragedy of the commons" is through privatization of common-pool resources.[121] We contend, perhaps counter-intuitively, that both public and private actors can employ property-rights approaches.

1. Property in Public Environmental Law

Property has deep historical roots.[122] Property, at least on one understanding, involves a determination by the government (as regulator) that private, rather than public, ownership creates better incentives to manage a resource well over time.[123] Thus, there are "traditional" forms of property rights, such as the private ownership of tangible physical resources including land, which entail certain rights to exclude others and to sue under the common law for harms others cause.[124] Government and legal systems may

119. *See supra* notes 107–08 and accompanying text.

120. Because certifications and eco-labels provide information about firms and products to the marketplace, they also count as a governance option that we categorize as "information." *See infra* Section II.E. Our point here is that they share features of prescriptive standards.

121. *See supra* Section I.A. Rose refers to this strategy as "PROP." Rose, *supra* note 4, at 9–11. Her category includes not only privatization of the resource, but also tradable permits and market-leveraging approaches such as limiting the total amount of fish that can be taken from a fishery and then auctioning the rights to fish, or figuring out a "per-fish or per-pound price that would discourage fishing above an acceptable level." *Id.* Salzman likewise includes property rights in the Five P's approach, but separates taxes and subsidies as different instruments. Salzman, *supra* note 12, at 366–72 (discussing property, penalties, and payments separately).

122. *See, e.g.*, Robert Ellickson, *Property in Land*, 102 YALE L.J. 1315, 1319 (1993) (amassing "historical evidence on the evolution of land institutions").

123. There are other traditions in law and philosophy that understand property rights as deriving from natural rights or settled social expectations, but these deeper concerns are beyond the scope of our discussion regarding the role of property in instrument choice frameworks. For an introduction to these deeper issues, see, for example, JEREMY WALDRON, THE RIGHT TO PRIVATE PROPERTY (1988). Conceptual questions regarding the public law of property and its relationship to environmental issues are likewise numerous, and we cannot do justice to them here.

124. *See* Max Radin, *A Restatement of Hohfeld*, 51 HARV. L. REV. 1141, 1146–63 (1938) (describing private property rights as a "bundle of sticks"). The idea of "ownership" also

also reassert rights of ownership of "public property," such as through declarations of national parks or public rights of access to beaches or forests.[125]

There are also relatively new forms of property designed to serve environmental protection objectives, including regulatory efforts by governments to commodify natural resources such as wildlife by granting some property or quasi-property rights over the resources.[126] Examples include the commodification of whales and putting a price on ecosystem services.[127]

2. Property in Private Environmental Governance

Property-rights approaches in private environmental governance depend on initial property rights allocations recognized in public law. Assuming that a business firm or NGO owns and has authority over its property, then the firm or NGO may decide how to govern its own property.[128] Although it is true, then, that the firm or NGO is the *recipient* of property rights previously created or recognized by *government*, the firm or NGO may then treat *its own property* internally in a manner within its own discretion.[129] In this sense relevant to instrument choice, the business firm or NGO steps into the shoes of the regulator, and acts effectively as the *creator* or manager of private property rights or entitlements. As one of us has previously argued, a business firm is composed of private property; business managers therefore have control (within limits set by the owners) of allocat-

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involves many complex relationships. *See* ORTS, *supra* note 3, at 105 (citing WALDRON, supra note 123, at 49).

125. *See, e.g.*, JOSEPH L. SAX, MOUNTAINS WITHOUT HANDRAILS: REFLECTIONS ON THE NATIONAL PARKS (1980); Carol Rose, *The Comedy of the Commons: Custom, Commerce, and Inherently Public Property*, 53 U. CHI. L. REV. 711 (1986).

126. *See, e.g.*, Smith, *supra* note 15, at 448–50 (discussing the merits of privatizing wildlife).

127. *See, e.g.*, Babcock, *supra* note 42, at 11–12 (recognizing but arguing against commodification of living species); Barton H. Thompson, Jr., *Ecosystem Services and Natural Capital: Reconceiving Environmental Management*, 17 N.Y.U. ENVTL. L.J. 460, 462–63 (2008). *See generally* James Salzman et al., *Protecting Ecosystem Services: Science, Economics, and Law*, 20 STAN. ENVTL. L.J. 309 (2001); James Salzman, *Valuing Ecosystem Services*, 24 ECOLOGY L.Q. 887, 899 (1997). To the extent that such "new" forms of property involve tradable permits, we address those separately. *See infra* Part II.D.

128. *See* ORTS, *supra* note 3, at 71–105 (providing an account of property rights as foundational to the existence of business firms). An analogous argument applies to NGOs, which similarly exercise internal authority over organizationally owned property (often in the form of a nonprofit corporation).

129. *See supra* note 38 and accompanying text (discussing importance of the "public" and "private" distinction).

ing property owned by the firm in various configurations.[130] The same is true of NGOs and other relatively autonomous organizations.[131]

The private governance form of the property approach to environmental problems, then, considers a resource that a business firm "owns" and generally manages as a collective resource (such as office space or waste removal). Management decisions with respect to that resource are allocated to business units or individuals within the firm. Such internal governance of resources by private actors has the power to create incentives for better environmental stewardship through alignment of ownership and control of the firm's resources within the firm itself.

For example, consider a firm that decides to manage its internal water or electricity use to create incentives for better resource stewardship.[132] Assume that the firm currently pays for water through a centralized office, as an overhead charge that is divorced from the actual usage decisions made by decentralized business units. This leads to a split incentives problem, whereby the central entity that pays for the water has no control over actual water use (or its conservation). Correspondingly, the users of the water are not responsible for the costs of what they actually use, creating incentives to over-consume (or at least not to conserve).[133] The firm can instead govern water use within the firm by allocating to each business unit a certain amount of water that the unit can use over the course of a quarter or a year.[134] This internal property rights approach corrects the problem of split incentives by forcing the end consumers of the resource to bear the true costs of their consumption, thus providing incentives to manage the resource more judiciously.[135]

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130. Orts, *supra* note 3, at 53–108.

131. For purposes of this Article, NGOs are treated similarly to business firms. On the drawing of legal lines between for-profit and nonprofit organizations, which is not always easy, see, for example, Orts, *supra* note 3, at 200–06.

132. If, in order to increase accountability, one prefers a third-party enforcement agent, then imagine that the rules and permits are created by a third-party NGO and the firm receives a "certification" if it complies with the rules and performance is audited.

133. *See* Salzman et al., *supra* note 127, at 328 (describing a split incentives problem as one where the costs and benefits do not "accrue to the same actor").

134. Again, note that these internal actions of firms occur entirely within the private sphere. The mechanisms of internal property rights are used instrumentally to affect similar policy outcomes as some public law designations of property rights, but within the private realm of the firm or NGO.

135. The recent phenomenon of "green leases" illustrates how the problem of split incentives can be solved in market transactions regarding real property. In contrast to traditional leases in which landlords bear the costs of utilities, tenants in "green leases" self-monitor and take responsibility for their own energy expenditures. *See* Green Lease Library, http://www.greenleaselibrary.com/ (last visited July 3, 2015). Of course, this illustration is somewhat different from the example given in the text because a landlord-tenant contract

This example of water use is not hypothetical. When James Salzman served as an environmental manager for a major multinational firm in the Netherlands, he witnessed how a large manufacturing plant addressed waste water discharges. Three manufacturing lines contributed waste water to the same drain. The plant's manager blocked the drain, put bins next to the drain to collect waste water, and then charged each manufacturing line for the waste water it discarded. The line managers realized that the "waste" water that they were discarding could be employed instead as raw materials in other manufacturing processes and changed their practices accordingly.[136]

C. *Market Leveraging*

Market-leveraging approaches constitute a third primary category of public and private governance. Other commentators have conceived of the use of markets for environmental governance in terms that are helpful for gaining analytical clarity, but which we distinguish here. The Five P's framework, for example, separates taxes ("*p*enalties") from subsidies ("*p*ayments"), which seems unnecessary.[137] From our perspective, penalties and payments are two sides of the same coin. Carol Rose lacks a separate category for market approaches, and instead includes taxes, fees, privatization of property, and cap-and-trade systems all within her overarching category of "PROP."[138] Other scholars, particularly those focusing on how best to reduce greenhouse gas emissions, tend to lump carbon taxes and cap-and-trade regimes into the same category of market instruments, with some going so far as to argue that any distinctions between the two can be minimized or eliminated through careful instrument design.[139] The closest approach to our own is that of Jonathan Wiener, who separates "price"-based instruments such as carbon taxes from "quantity"-based instruments such as emissions trading schemes.[140]

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involves a more complex division of private property rights between two organizationally distinct entities (landlord and tenant) rather than allocations made within the ownership structure of a single integrated firm or NGO.

136. Interview with Jim Salzman, Donald Bren Distinguished Professor of Envtl. Law, UCLA Sch. of Law, in Boulder, Colo. (Aug. 7, 2014). Thanks to Jim Salzman for sharing this anecdote.

137. *See* Salzman, *supra* note 12, at 370–72.

138. *See* Rose, *supra* note 4, at 10–11.

139. *See, e.g.*, Stewart, *supra* note 13, at 22 n.1 (citing extensive literature); Weisbach, *supra* note 16, at 113 (arguing that the distinctions between a carbon tax and cap-and-trade system can be eliminated through careful design).

140. Wiener, *supra* note 12, at 679. We likewise separate market-leveraging approaches such as taxes and subsidies (price-based instruments) from quantity-limited instruments such as tradable permits. However, our discussion differs from Wiener's in that we consider trad-

In contrast, we propose that it is useful to consider a primary category of *market leveraging* as embracing a mode of governance that intends to affect market behavior by using prices, incentives, and other market signals within *already-existing markets*. By taking advantage of already-existing markets trading various goods, services, and information, these approaches *leverage* such markets by either adding penalties or providing subsidies in accordance with environmental objectives.

We treat new instruments and markets created specifically for purposes of environmental governance in which there is a limit on the quantity of items, permits, or allowances that can be traded separately, under the general category of tradable permit regimes.[141] The administrative costs of creating new governance markets (such as a cap-and-trade regime for greenhouse gas emissions) are often likely to be greater than leveraging existing market mechanisms to achieve similar ends (such as imposing taxes on greenhouse gas emissions).[142] In any event, we believe it makes sense to be clear analytically about the difference between leveraging pre-existing markets (such as for everyday goods and services) and creating new markets for regulatory purposes that also incorporate a prescriptive "cap" on unwanted behavior (as in the case of tradable permit regimes).

1. Taxes, Charges, and Fees in Public Environmental Law

Government regulators impose taxes, charges, or fees to change behavior through the use of market incentives, as well as to raise funds for government operations. In common parlance, regulators impose taxes, charges, or fees on "bad" behavior (such as environmental pollution of various types) to provide incentives to stop or reduce this behavior and to find "good"

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able permits to share some features with both prescription and market-leveraging approaches as well.

141. *See infra* Section II.D. Although tradable emissions permits share characteristics of market-leveraging options (namely, the use of a market), they also involve elements of property and prescription, and a separate category is therefore warranted. *Cf.* Salzman, *supra* note 12, at 369–70 (arguing that tradable emissions permits are a hybrid form of property and prescription).

142. *See infra* Section II.D. This is not to say that tradable permits may not sometimes do the job better than market-leveraging or other approaches in particular circumstances. We do not take a position here about which is a better approach to control the emission of greenhouse gases: tradable permits or taxes. For an influential argument for a tradable permit regime to address climate change at the global level, see RICHARD B. STEWART & JONATHAN B. WIENER, RECONSTRUCTING CLIMATE POLICY: BEYOND KYOTO 65–75 (2003). For examples of the alternative position advocating taxes on greenhouse gases, see WILLIAM NORDHAUS, A QUESTION OF BALANCE: WEIGHING THE OPTIONS OF GLOBAL WARMING POLICIES 148–64 (2008); Reuven S. Avi-Yonah & David M. Uhlmann, *Combating Global Climate Change: Why a Carbon Tax Is a Better Response to Global Warming than Cap and Trade*, 28 STAN. ENVTL. L.J. 3, 37–44 (2009).

substitutes (such as waste reduction, recycling, or "clean tech" inventions). In economic terms, this approach assesses a tax or charge on environmental externalities, leveraging the power of existing markets to achieve an environmental goal. Examples include a carbon tax assessed on coal, oil, or other fossil fuels and "pay-as-you throw" programs that adjust the costs of municipal solid waste collection based on the amounts that residents discard.[143] The tax, charge, or fee may be assessed either on "outputs" of pollution or "inputs" of materials expected to produce pollution.[144]

Unlike in prescription, a tax or charge does not mandate an environmental performance target or require a specific technology. Instead, the aim is to approximate the costs of the externality (i.e., the harm caused by the pollution) and transpose them into the internal calculations of market participants.[145] An advantage of this approach is that there is no central direction concerning *how* to adjust behavior, and so, at least in theory, an environmental tax or charge allows for social adaptation to achieve beneficial environmental results at a lower cost than prescriptive regulation. At the same time, the amount of the tax or charge may require reassessment in light of experience. For example, if a pollution charge is instituted, but experience then reveals that firms and consumers gladly pay the charge without any significant effect on the overall environmental problem, then the regulator must increase the charge to yield higher-powered incentives for pollution reduction.

2. Charges and Fees in Private Governance

Just as governments can impose charges or fees on polluting behavior, so too can private actors. For example, Disney and Microsoft have each adopted internal carbon fees to reduce greenhouse gas emissions.[146]

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143. *See supra* note 140 and accompanying text (discussing carbon taxes); *Pay-As-You-Throw*, U.S. EPA, http://www.epa.gov/solidwaste/conserve/tools/payt/index.htm (last visited June 25, 2015) (describing pay-as-you-throw).

144. For an innovative examination focusing on the option of taxing "dirty inputs," see David M. Driesen & Amy Sinden, *The Missing Instrument: Dirty Input Limits*, 33 HARV. ENVTL. L. REV. 65 (2009). In our terms, "dirty input limits" may be applied either through prescription or market-leveraging approaches. Prescription would mandate input limits directly. Market-leveraging approaches would provide economic incentives for reductions by imposing taxes or charges on the inputs.

145. Such taxes are often called "Pigouvian." Keohane et al., *supra* note 16, at 313 & n.2 (citing ARTHUR PIGOU, ECONOMICS OF WELFARE (1920)).

146. *See* Light, *supra* note 7, at 41–50 (discussing Microsoft's internal carbon fee); THE WALT DISNEY COMPANY, 2014 DISNEY CITIZENSHIP PERFORMANCE SUMMARY, (2014), https://cdn.thewaltdisneycompany.com/sites/default/files/reports/FY14-Performance-Summary.pdf; TAMARA DICAPRIO, MICROSOFT, BECOMING CARBON NEUTRAL: HOW MICROSOFT IS STRIVING TO BECOME LEANER, GREENER, AND MORE ACCOUNTABLE 12 (2012), http://download.microsoft.com/

Microsoft has set a public goal to become carbon neutral in certain areas of its operations, including its data centers (which include its cloud computing platform) and employee business travel.[147] Despite being an "internal" scheme of private governance, there are both external-facing elements and potentially broad implications. Microsoft reports its carbon emissions publicly to investors via the CDP platform, creating some degree of public accountability for the program.[148] And because Microsoft is a global firm, the fee has transnational impact. For example, in fiscal year 2013, Microsoft assessed the fee in more than 100 countries and on fourteen different divisions within the firm.[149] According to the firm's Chief Environmental Strategist, Microsoft selected a carbon fee, rather than centrally set (i.e., prescriptive) performance targets, in order to provide incentives for innovation within organizational divisions and to "distribute accountability across the firm."[150] Like a public carbon tax, a private carbon fee can at least potentially achieve environmental results at lower cost and encourage innovation within the private realm. Private carbon fees may also have global environmental impact that exceeds the scope of public law alternatives when they are established within a multinational firm.

3. Public and Private Subsidies

A second market-leveraging approach is the use of subsidies. Both public and private actors may use subsidies rather than taxes, charges, or fees to provide economic incentives for environmentally friendly behavior or investments.

In the public context, the government grants a benefit (usually the payment of money in the form of a grant or tax credit) to encourage "good" environmental behavior or expenditures. One example is a tax credit or de-

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download/1/A/C/1AC87972-4DC7-43F2-92A8-8B159C3C8E77/Microsoft_Becoming%20Carbon%20Neutral.pdf (describing Microsoft's internal emissions fee); Pilita Clark, *Microsoft to Adopt Carbon Offset Scheme*, FIN. TIMES (May 8, 2012), http://www.ft.com/cms/s/0/8b0e70fa-9622-11e1-9d9d-00144feab49a.html#axzz3ldA00ZEY (describing internal emissions fees at Microsoft).

147. Light, *supra* note 7, at 42.

148. *Microsoft Corporation*, CDP, https://www.cdp.net/en-US/Results/Pages/Company-Responses.aspx?company=11930 (last visited Oct. 17, 2015). On CDP, *see supra* note 109 and accompanying text.

149. TAMARA DICAPRIO, MICROSOFT, THE CARBON FEE: THEORY AND PRACTICE 7 (2013), http://download.microsoft.com/download/2/3/C/23C9C89B-664B-4D1D-BD7B-C0724E52A568/Microsoft%20Carbon%20Fee%20Guide.pdf.

150. Light, *supra* note 7, at 42 (citing Telephone Interview with Robert Bernard, Chief Envtl. Strategist, Microsoft Corp. (June 4, 2014)).

duction for the purchase of zero- or low-emissions vehicles.[151] Another is government subsidies for solar energy production.[152]

Some scholars have argued that public subsidies serve as "second-best" solutions compared with taxes or charges.[153] For example, if a carbon tax is not politically feasible, then subsidies for low-carbon energy technology development may provide a substitute market incentive.[154] Subsidies may also create incentives for misallocations of funds based on political connections rather than economic merit. For our analytical purposes here, however, it is sufficient to recognize that subsidies are one available market-leveraging instrument available to governments.

Subsidies may also be provided in the context of private governance in analogous fashion. "Good" environmental behavior may be rewarded with cash payments or other compensation paid by a firm to its employees, for example, rather than taxing or charging them for "bad" behavior. Firms may also allocate internal capital in a manner that relaxes usual standards or financial hurdles for return on investment expectations for proposed projects that have environmental benefits or cost savings. For example, at the same time that Microsoft created its internal carbon fee, it also created an internal grant program called the "Plowback Fund" to "support energy efficiency and carbon reduction programs and improvements that do not otherwise meet Microsoft's internal return on investment criteria."[155] Simi-

151. *See, e.g.*, 26 U.S.C. § 30D (2013) (federal tax incentive); CAL. HEALTH & SAFETY § 44272 (West 2013) (California state tax incentive).

152. Germany has been a leader in adopting this approach. Thomas L. Friedman, *Germany, The Green Superpower*, N.Y. TIMES, May 6, 2015, at A21.

153. *See, e.g.*, Orts, *supra* note 9, 205 & n.22 (citing R.G. Lipsey & Kelvin Lancaster, *The General Theory of Second Best*, 24 REV. ECON. STUD. 11 (1956)); *see also* Lori Snyder Bennear & Robert Stavins, *Second-Best Theory and the Use of Multiple Policy Instruments*, 37 ENVIL. & RES. ECON. 111 (2007) (describing economic principles involved) Jonathan M. Gilligan & Michael P. Vandenbergh, *Accounting for Political Feasibility in Climate Instrument Choice*, 32 VA. ENVIL. L.J. 1, 1–6 (2014) (arguing that a second-best yet politically feasible policy or set of policies to combat climate change is preferable to waiting for an optimal policy solution).

154. The idea of a carbon tax in the United States has been a perennial non-starter, dating at least to the failed proposal for a "BTU tax" in the first Clinton Administration. *See* Walter Wang, *Looking Back to Move Forward: Revisiting the BTU in Evaluating Current Policy Alternatives*, 2 SAN DIEGO J. CLIMATE & ENERGY L. 181 (2010) (discussing history of failed effort to enact a broad-based energy tax based on British thermal unit measurements). Recent experience in Australia—which first imposed a national carbon tax, and then reversed it when the political winds changed—bears out the political difficulties with carbon taxes. *See, e.g.*, Julia Baird, *Why Australia Killed Its Carbon Tax*, N.Y. TIMES, July 25, 2014, at A27; *see also* Orts, *supra* note 9, at 226–27 (discussing subsidies as an option for climate regulation). In contrast, the United States government and many individual states have employed many different subsidies to encourage, for example, the purchase of low-emissions vehicles. *See supra* note 151.

155. Light, *supra* note 7, at 45.

larly, when British Petroleum adopted an internal emissions trading scheme, it simultaneously created a $50 million capital fund for "business unit leaders to use for emissions-reduction investments, separate from other capital funds."[156] Both of these efforts were intended to subsidize environmentally positive decisionmaking within the firm.

Market leveraging in general aims to increase efficiency, reduce system costs, and promote innovation by "tweaking" existing markets to take environmental externalities into account. As with other governance options, there are advantages and disadvantages when using this approach. For example, there are risks that market-leveraging approaches can exacerbate environmental justice concerns in situations in which people lack equal resources to pay taxes.[157] Also, market leveraging, without the prescriptive "cap" available in tradable permit regimes, cannot guarantee environmental outcomes. Nevertheless, market leveraging in both public law and private governance can have a significant and often global impact.

D. *Tradable Permit Regimes*

It is useful to think of tradable permit regimes as constituting their own category—separate and apart from the earlier categories of prescription, property, and market-leveraging instruments. Some scholars elide these categories, referring, for example, to both carbon taxes and cap-and-trade regimes as "market" approaches.[158] We contend that tradable permit regimes should be understood as a separate category because they can be distinguished analytically from the preceding governance methods.

Similar to performance-based prescription, tradable permits are quantity-limited, as regulators set an overall "cap" requiring performance reductions. Similar to property, tradable permits, once granted, may be bought and sold like other commodities. Similar to market-leveraging approaches, tradable permits employ markets, but these markets are specially constructed outside of the realm of preexisting markets. In market leveraging, the regulator sets the price for an environmental externality (a charge for negative externalities and a subsidy for positive externalities), and this price or surcharge is added to the price determined by traditional market forces. Market actors then respond to the adjusted price. In contrast, in a tradable permits regime, the regulator sets an overall quantity of environmental harm that can be tolerated, and then allows market participants to trade

156. *Id.* at 37.

157. *See also infra* Subsection III.B.3.

158. For examples of sources referring to both emissions trading and taxes as "market" approaches, see *supra* note 7 and accompanying text.

among themselves to set a price for individual units of pollution allowed.[159] Permit trading schemes thus combine prescriptive elements (the cap on overall total emissions or a target for performance) with the creation of a "new" form of property (the emissions allowance or permit). In other words, they leverage market behavior (the trading of the permits) to achieve an efficient allocation of resources in order to yield a specified standard of environmental performance.[160]

Tradable permits are not classically prescriptive duty-imposing rules because such instruments do not dictate to targets how to achieve the goal, and they do not require every target to reach the same goal. Tradable permits are also not purely market leveraging because they do not rely on existing markets but instead create new markets to achieve a prescribed governance objective. Finally, tradable permits are not the same as property approaches, because the newly created permits, while tradable, otherwise lack features of the canonical "bundle of sticks."[161] The holder of an air pollution permit, for example, does not "own" a quantum of air to husband, cannot exclude others from using the air, and cannot sue under property rules of trespass to protect the air from others' emissions. What is "owned" is a regulatory or governance right or entitlement to pollute rather than a concrete or tangible object.[162]

The legal literature on emissions trading assumes that the creator of such tradable permit schemes is a public actor.[163] However, a parallel world of *private* emissions trading has emerged as well. Just as public actors including states, regional compacts, and the European Union have adopted emissions trading regimes, so too have private firms.

In the public context, for example, California has adopted the Global Warming Solutions Act,[164] nine states currently participate in the Regional

159. *See* Wiener, *supra* note 12, at 679 (discussing the difference between quantity-based and price-based mechanisms).

160. *See, e.g.*, Stavins, *supra* note 17, at 293 (advocating an upstream carbon cap-and-trade system); *cf.* Salzman, *supra* note 12, at 369–70 (describing tradable permits as a hybrid of property rights and prescriptive regulation).

161. *See* Radin, *supra* note 124 (referring to "bundle of sticks" metaphor).

162. This is not to say that a tradable permit may not count as "property" for certain legal purposes. For example, once allocated, a tradable permit may be defended as "owned" in court by the entity that purchased it. In this respect, the "property" of a tradable permit is similar to other intangible property categories such as shares of corporate stock or intellectual property rights.

163. Light, *supra* note 7 (noting absence of discussion of private emissions trading in legal scholarship). We use the terms "tradable permits" and "emissions trading" interchangeably.

164. California Global Warming Solutions Act of 2006 (A.B. 32), CAL. HEALTH & SAFETY § 38,500–38,599 (West 2006).

Greenhouse Gas Initiative,[165] and the federal government acted to reduce acid rain through the trading of sulfur dioxide emissions permits under the Clean Air Act.[166] The largest scale attempt at creating tradable permits with respect to greenhouse gases is the European Union's Emissions Trading System.[167] The Obama Administration's recently announced Clean Power Plan also contemplates the adoption of tradeable permit regimes for carbon emissions.[168]

Private firms have likewise created tradable emissions permits as a form of private environmental governance. For example, British Petroleum and Royal Dutch/Shell each adopted internal tradable permit systems to reduce greenhouse gas emissions.[169] These private emissions trading regimes share many characteristics with public regimes given that the private firm must determine at what level to set the cap, how to create the trading platform, how to enforce compliance, and how to distribute allowances. The idea is that business units within the firm will trade among themselves to achieve an efficient allocation of emissions permits.[170] As with private carbon fees and private supply chain management, if multinational firms engage in emissions trading, then global-scale effects may be obtained.[171]

E. *Information*

Public law and private governance may use the disclosure of information as a method to advance environmental goals or objectives.[172] Disclosure may be mandatory, encouraged, or entirely voluntary. Informational governance exploits the fact that market decisions (by both consumers and producers) are affected by the quantity and quality of informational signals. We

165. Regional Greenhouse Gas Initiative, http://www.rggi.org (last visited July 7, 2015).

166. Clean Air Act Amendments of 1990, Pub. L. No. 101-549, tit. IV, 104 Stat. 2399 (codified as amended at 42 U.S.C. §§ 7651-7651o (2012)). In particular, 42 U.S.C. §§ 7651b-7651e permits trading among coal-fired utilities.

167. *See The EU Emissions Trading System*, European Comm'n, http://ec.europa.eu/clima/policies/ets/index_en.htm (last visited July 7, 2015).

168. Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,661 (Oct. 23, 2015) (to be codified at 40 C.F.R. pt. 60).

169. Light, *supra* note 7, at 31–33 nn.129–38 (analyzing BP's adoption of a private emissions trading scheme and mentioning Shell's program).

170. *Cf.* Ackerman & Stewart, *supra* note 17, at 1341–43.

171. *See* Light, *supra* note 7, at 9–10. There is no guarantee, of course, that positive measures adopted by multinational firms will have global net-positive consequences, such as with respect to climate change. Reductions of carbon footprints by some firms may be offset by increases elsewhere. We only mean to point out here the potential for global consequences, especially if many global firms adopt similar measures.

172. *See supra* note 18 (citing sources discussing information disclosure as a form of governance).

divide this primary category into three secondary categories: (1) disclosure/reporting, (2) eco-labels, and (3) rankings/awards.

Although many scholars identify public informational regulation as a form of environmental governance, their treatment of it varies. Under the rubric of Salzman's Five P's, informational regulation counts as a form of "persuasion."[173] For Richards, disclosure addresses informational asymmetries to aid other forms of public regulation, but it is not equivalent to a law requiring pollution abatement.[174] Rose lacks a specific category for informational governance, though one might interpret her comments about "exhortation" in various circumstances as involving the provision of information.[175] We recognize information as a separate category given its distinctive features, though it enhances and sometimes merges with other approaches.[176]

Information disclosure has several potential advantages as a form of both public and private governance. First, disclosing information may improve behavior through the "sunlight" of internal or external monitoring.[177] With respect to internal monitoring, for example, the manager of a polluting firm, previously unaware of or inattentive to the firm's negative environmental impacts, may change the firm's behavior as a consequence of receiving and understanding relevant information. With respect to external monitoring, other stakeholders (broadly defined here to include, *inter alia*, shareholders, customers, and members of the public harmed by a polluter's behavior), upon learning of a firm's reported pollution, may seek to force or persuade the polluter to change the firm's behavior by various means, such as through boycotting, litigation, lobbying, or protesting.[178]

Second, accurate information may have instrumental value in promoting and facilitating better prescriptive rules or market-leveraging approaches through the identification of negative or positive externalities. Information disclosure may also establish or reinforce social norms and expectations for positive environmental performance.[179] Informational governance may thus leverage market forces if key stakeholders, such as customers

173. Salzman, *supra* note 12, at 373.

174. *See* Richards, *supra* note 10.

175. Rose, *supra* note 4, at 30–33.

176. For example, we list eco-labels as a form of informational governance, but they also presuppose private standard-setting regimes given that a firm must comply with prescribed standards in order to qualify for an eco-label. *See supra* note 116 and accompanying text.

177. As Brandeis famously argued, "[s]unlight is said to be the best of disinfectants . . . ." Louis Brandeis, Other People's Money 62 (1933). *Cf.* Bradley C. Karkkainen, *Toward a Smarter NEPA: Monitoring and Managing Government's Environmental Performance*, 102 Colum. L. Rev. 903, 925 (2002) (describing the value of environmental impact statements in terms of the "sunlight" of disclosure and citing Brandeis).

178. *See* Light, *NEPA's Footprint*, *supra* note 9, at 521–22.

179. *Id.* at 520.

or other firms within the value chain, prefer environmentally beneficial businesses, products, and services. The corollary, of course, is also true: if stakeholders do not care very much about environmentally beneficial behavior, then informational governance of this kind will not work.[180]

Third, information can facilitate performance benchmarking, that is, comparative analysis of a firm's environmental performance over time, either compared to the performance of other firms, or compared to its own historical performance.[181] Firms may wish at least not to remain outliers in their environmental performance within their industry, which may invite regulatory scrutiny or targeting by activist environmental NGOs such as Greenpeace or the Rainforest Action Network.

Informational governance tends to be less expensive and coercive than prescriptive approaches.[182] In addition, it has the benefit of not requiring the selection of a specific performance benchmark if there is reasonable disagreement as to what an optimal benchmark should be. At the same time, several scholars have recently attacked public informational regulation, particularly in its mandatory form, as broadly ineffective and inefficient.[183]

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180. For example, surveys often indicate that consumers say they are willing to pay a premium for ecologically friendly products or services, but empirical studies of their actual behavior often show otherwise. *See, e.g.*, Ming-Yuan Hsieh, *An Empirical Study: Can Green Marketing Really Entice Customers to Pay More?*, 2 J. BUS. MGMT. & ECON. 132, 133 (2011) (acknowledging the expectation that consumers who claim to care about the environment will use their purchasing power to promote green companies, but finding that the majority of customers are not willing to pay a premium in practice); NIELSEN, DOING WELL BY DOING GOOD 5 (2014), http://www.springerprofessional.de/spmblob/5414514/data/corporate-social-responsibilty-nielsen.pdf (finding that 55% of respondents said they were willing to pay more for products with a positive social and environmental impact, but observing only a one- to four-percent corresponding increase in green product sales).

181. *See* Esty, *supra* note 18, at 167; Bradley C. Karkkainen, *Information as Environmental Regulation: TRI and Performance Benchmarking, Precursor to a New Paradigm?*, 89 GEO. L.J. 257 (2001).

182. Light, *NEPA's Footprint*, *supra* note 9, at 520; *see also* Dan M. Kahan, *Gentle Nudges vs. Hard Shoves: Solving the Sticky Norms Problem*, 67 U. CHI. L. REV. 607 (2000) (gentle nudges can eradicate negative social norms more effectively than hard shoves).

183. OMRI BEN-SHAHAR & CARL E. SCHNEIDER, MORE THAN YOU WANTED TO KNOW: THE FAILURE OF MANDATED DISCLOSURE (2014) (attacking mandatory disclosure broadly, across many areas of regulation). One ground for their objection is that informational regulation is relatively inexpensive compared to alternatives and therefore too often politically expedient to adopt as a compromise against more effective (and more expensive) alternatives. *Id.* at 145. Ben-Shahar and Schneider limit their critique to mandatory informational regulation rather than encouraged or voluntary disclosures of information. *Id.; see also* Omri Ben-Shahar & Carl E. Schneider, *The Failed Reign of Mandated Disclosure*, REGBLOG (June 15, 2015), http://www.regblog.org/2015/06/15/ben-shahar-schneider-failed-disclosure/. *But see* Charles Howland, *Are Mandated Environmental, Health and Safety Risk Disclosures Really as Bad as iTunes License Agreements?*, REGBLOG (June 17, 2015), http://www.regblog.org/2015/06/17/howland-mandated-risk-disclosures/ (defending several forms of mandatory environmental informa-

Our analysis here, however, is limited to description rather than making detailed policy judgments about the relative effectiveness or efficiency of various governance options in different contexts.

Although public informational regulation is usually *mandatory*, the line between mandatory and voluntary disclosure is somewhat blurrier for private informational governance.[184] In purely voluntary disclosure or reporting, firms decide for themselves to disseminate information about their environmental performance. However, in some cases, firms may be subject to boycotts or other forms of what David Baron calls "private politics" if they fail to disclose certain information or refuse to adopt a private environmental standard.[185] Although not required by the government, "voluntary" information disclosure may feel "mandatory" in practice when demanded by influential consumers or suppliers. In the context of private supply chain management, for example, a purchasing firm such as Walmart may *require* a supplier to disclose information or lose the contract.[186] The voluntary or mandatory nature of this instrument may also affect the quality of the information.[187]

1. Disclosure/Reporting

The first type of informational governance involves disclosure and reporting about environmental performance. This form of governance requires the target to provide information about environmental performance to the public, but lacks prescriptive requirements concerning the underlying environmental performance itself. In other words, no substantive requirements for performance are required; instead, transparency about perform-

tion reporting); Eric W. Orts, *Defending Disclosure*, RegBlog (June 18, 2015), http://www.regblog.org/2015/06/18/orts-defending-disclosure/ (arguing that Ben-Shahar and Schneider overstate their thesis because some forms of mandatory informational regulation still make sense).

184. One exception to the assumption that public informational regulation is mandatory appears in the European Union's Eco-Management and Audit Scheme (EMAS), a government scheme that encouraged voluntary participation by firms. *See* Orts, *supra* note 10 (describing EMAS). As a voluntary approach, however, EMAS did not attract the participation of a great number of firms. *See* David W. Case, *Corporate Environmental Reporting As Informational Regulation: A Law And Economics Perspective*, 76 U. Colo. L. Rev. 379, 402–07 (2005) (recounting mixed historical experience with EMAS). This experience casts doubt on the viability of at least some kinds of encouraged or permissive informational strategies in public law.

185. *See* Baron & Diermeier, *supra* note 3.

186. *See infra* Section II.F (discussing procurement as a form of governance).

187. With respect to quality of information, for example, it is likely that greenhouse gas reporting information required by the government (i.e., the EPA) will prove more reliable than voluntary information because the possibility of legal sanctions for misreporting to the government heightens incentives for accuracy.

ance is the point. Two examples of public disclosure/reporting regimes are the National Environmental Policy Act (NEPA),[188] which requires federal agencies to disclose "significant" environmental impacts of proposed major federal actions, and the Toxics Release Inventory program, which requires certain industrial facilities to report annually on their use and releases of certain listed chemicals.[189] Similarly, the Environmental Protection Agency's (EPA's) Mandatory Greenhouse Gas Reporting Rule recently began to require certain large emitters of greenhouse gases to report their annual emissions.[190] These public laws and regulations require reporting of environmental impacts, but contain no substantive environmental performance or technology mandates to reduce those impacts.[191] Certain cities have likewise required commercial building owners to disclose utility consumption data, without corresponding substantive mandates to reduce utility use.[192]

Private actors have also widely adopted informational governance of this kind—also without prescription of either performance targets or specific technologies. For example, approximately eighty financial institutions have adopted the Equator Principles, which were created by commercial lending institutions in response to NGO pressure.[193] These principles require financial firms to undertake an environmental impact assessment to manage "environmental and social risk" when making loans to support large-scale infrastructure projects such as hydroelectric dams.[194] In addition,

188. National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321–35 (2013).

189. Emergency Preparedness and Community Right to Know Act § 313, 42 U.S.C. § 11,023 (2013); *see, e.g.*, Karkkainen, *supra* note 177, at 956–58; Karkkainen, *supra* note 181, at 283–86.

190. Mandatory Reporting of Greenhouse Gases, 74 Fed. Reg. 56,260 (Oct. 30, 2009) (codified at scattered sections of 40 C.F.R.); U.S. ENVTL. PROT. AGENCY, FACT SHEET: MANDATORY REPORTING OF GREENHOUSE GASES (2011), http://www.epa.gov/ghgreporting/documents/pdf/2009/FactSheet.pdf.

191. This limitation has been recognized by the Supreme Court, for example, which characterized NEPA as a purely procedural statute. Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 352 (1989).

192. *See, e.g.*, *LL84: Benchmarking*, N.Y.C. MAYOR'S OFFICE OF SUSTAINABILITY, http://www.nyc.gov/html/gbee/html/plan/ll84.shtml (last visited July 22, 2015) (discussing New York City Local Law 84 requiring such disclosure); *see also* BUILDING ENERGY DISCLOSURE LAWS, https://www.wegowise.com/compliance (last visited July 22, 2015) (providing links to other municipal laws requiring utility use disclosure by commercial building owners).

193. Ariel Meyerstein, *Transnational Private Financial Regulation and Sustainable Development: An Empirical Assessment of the Implementation of the Equator Principles*, 45 N.Y.U. J. INT'L L. & POL. 487, 518 (2013) (providing empirical evidence of how banks adopting the Equator Principles have changed their internal organizational structures and contributed to growth of the Principles); *About the Equator Principles*, EQUATOR PRINCIPLES, http://www.equator-principles.com/index.php/about-ep (last visited July 29, 2015).

194. EQUATOR PRINCIPLES, *supra* note 193.

many firms have voluntarily adopted the environmental reporting platform of the CDP to disclose their greenhouse gas emissions both to the public and in response to demand from more than 750 institutional investors holding approximately $92 trillion in assets.[195] The ISO has also issued specifications and requirements for voluntary greenhouse gas reporting.[196] Companies are increasingly publishing voluntary annual reports about their environmental performance.[197] These reports follow the model of annual financial reports, and in some cases they are audited by third parties, who are often certified accountants or professional verifiers.[198]

2. Eco-Labels

Eco-labels are a second form of informational governance that both public and private actors employ. They have both informational and prescriptive elements. Eco-labels not only require the disclosure of environmental performance information to the public, but also require compliance with specific environmental performance-based or technology-based standards.[199] There are striking similarities between public and private forms of eco-labels.

One public law eco-label is the U.S. Department of Agriculture's "organic" label for food, which requires growers to comply with certain agricultural practices and eschew others (such as the use of pesticides).[200] Another example is the Energy Star program, run jointly by the EPA and the Department of Energy, which provides a government-sponsored certification for energy-efficient appliances and other products.[201] Yet another example

195. *CDP Investor Initiatives*, CDP, https://www.cdp.net/en-US/WhatWeDo/Pages/investors.aspx (last visited July 22, 2015).

196. *See* ISO, ISO 14064-1:2006 (2006), http://www.iso.org/iso/catalogue_detail?csnumber=38381; *see also supra* notes 106 and 117 and accompanying text (discussing ISO standards).

197. Vandenbergh, *supra* note 2, at 135–36.

198. For one account, see Globe Reporting Initiative, The External Assurance of Sustainability Reporting (2013), https://www.globalreporting.org/resourcelibrary/GRI-Assurance.pdf. Voluntary reporting without third-party verification runs substantial risks of error and potential "greenwashing." *See* William A. Laufer, *Social Accountability and Corporate Greenwashing*, 43 J. Bus. Ethics 253 (2003). For more general discussion of the risk of greenwashing, see *infra* Section III.B.8.

199. *See supra* notes 106–08 and accompanying text (listing various eco-labels and discussing their prescriptive elements). For a recent examination of the effectiveness and challenges facing eco-labels from an economic perspective, see Hajin Kim, Student Essay, *Eco-Labels and Competition: Eco-Certification Effects on the Market for Environmental Quality Provision*, 22 N.Y.U. Envtl. L.J. 181, 181–83 (2015).

200. National Organic Program, 7 C.F.R. § 205 (2015).

201. 42 U.S.C. § 6294a (2013); Energy Star, https://www.energystar.gov/ (last visited July 22, 2015).

is the EPA's "Safer Choice" label (formerly known as "Design for Environment") for cleaning products, which certifies that chemicals used in the product comply with an EPA standard.[202] Other nations use government-sponsored eco-labeling programs too, such as Germany's Blue Angel program.[203]

Private actors have likewise employed eco-labels in many environmental contexts. Private environmental certifications for firms that act in accordance with certain prescriptive standards, including standards for sustainable timber harvesting and sustainable fisheries, fit into this category.[204] The LEED certification program similarly sets private environmental performance standards for the design and construction of buildings, and authorizes applicants who meet those standards to use its label.[205] ISO establishes standards for environmental management systems and allows qualifying firms to use its label only if the firm makes certain disclosures about its environmental performance, methods, and practices.[206] Private eco-labels, like their public-sponsored correlates, thus rely on prescriptive standards that have an informational purpose and methodology.

3. Rankings/Awards

Rankings and awards are a third form of informational governance. In this approach, the public regulator or private organization analyzes information about a firm's environmental performance, and then provides a public ranking of that performance, or bestows an award that recognizes superior performance or a singular achievement.

Public agencies employ this form of informational governance to provide incentives for firms to establish themselves as industry leaders in environmental performance. One example is EPA's Green Power Leadership

202. U.S. ENVTL. PROT. AGENCY, EPA'S SAFER CHOICE STANDARD 4 (Feb. 2015), http://www2.epa.gov/sites/production/files/2013-12/documents/standard-for-safer-products.pdf (describing Safer Choice program as a partnership between EPA and other stakeholders to promote informed substitution of ingredients by identifying the least hazardous chemicals within various classes, such as surfactants, solvents and chelating agents); *Learn About the Safer Choice Label*, U.S. EPA, http://www2.epa.gov/saferchoice/learn-about-safer-choice-label (last visited July 22, 2015) (explaining Safer Choice program as successor to Design for the Environment program).

203. For background on more than 400 eco-labels in different countries, see *Home*, ECOLABEL INDEX, http://www.ecolabelindex.com/ (last visited July 29, 2015).

204. *See supra* notes 107–08 and 119 and accompanying text.

205. *See supra* note 118 and accompanying text; *cf.* Timothy Simcoe & Michael W. Toffel, *Government Green Procurement Spillovers: Evidence from Municipal Building Policies in California*, 68 J. ENVTL. ECON. & MGMT. 411 (2014) (arguing that government procurement policies may stimulate the private sector's adoption of environmental standards).

206. *See supra* notes 106, 117 and accompanying text.

Awards, which "serve to recognize the leading actions of organizations, programs, suppliers, and individuals that significantly advance the development of green power sources."[207] In partnership with three NGOs, the EPA also grants the Climate Leadership Awards to recognize "exemplary corporate, organizational, and individual leadership in response to climate change."[208]

Private environmental governance has likewise incorporated rankings and awards as a method of driving environmental performance without government involvement or supervision. For example, the Dow Jones Sustainability Index and the FTSE4Good Index are designed in part to provide information to socially responsible investors about comparative environmental performance of listed firms.[209] The CDP rates both the quality of firms' disclosures about greenhouse gas emissions as well as overall firm performance in its annual survey of emissions reporting.[210]

F. *Procurement*

Both private and public actors employ procurement and supply chain management to set environmental standards. Public environmental procurement policies encourage business firms contracting with the government to adopt internal sustainability or environmentally beneficial practices by either (1) implementing government standards forbidding the purchase of nonconforming products or services or (2) preferring products or services with certain environmental characteristics. In the private context, environmental supply chain management operates in a similar fashion: a firm imposes environmental standards on its suppliers or vendors. Although legal scholarship has recently focused on private firms' use of environmental supply chain management, taxonomies of public environmental law instruments

207. U.S. EPA, *Awards*, GREEN POWER PARTNERSHIP, http://www.epa.gov/greenpower/awards/ (last updated July 27, 2015).

208. U.S. EPA, *Climate Leadership Awards*, CENTER FOR CORPORATE CLIMATE LEADERSHIP, http://www.epa.gov/climateleadership/awards/ (last updated June 23, 2015) (highlighting that the collaboration between EPA and NGOs exemplifies the potential for enhancing public-private partnerships).

209. *See Sustainability Investing*, DOW JONES SUSTAINABILITY INDICES, http://www.sustainability-indices.com/sustainability-assessment/sustainability-investing.jsp (last visited July 29, 2015); *FTSE4Good Index Series*, FTSE, http://www.ftse.com/Indices/FTSE4Good_Index_Series/index.jsp (last visited July 29, 2015).

210. *Climate Change Program Guidance*, CDP, https://www.cdp.net/en-US/Pages/guidance-climate-change.aspx#scoring (last visited July 29, 2015). Our own university offers annual awards for business firms that exhibit innovations for social impact and sustainability. The Barry and Marie Lipman Family Prize at the University of Pennsylvania is awarded to "organizations devoted to positive social impact and creating sustainable solutions to significant social and economic challenges." *Lipman Family Prize*, WHARTON: UNIVERSITY OF PENNSYLVANIA, http://lipmanfamilyprize.wharton.upenn.edu/ (last visited July 29, 2015).

have so far not incorporated procurement as a primary "tool" in the public law set of instrument options.[211] One significant implication of our analysis highlighting the parallels between public and private governance is to elevate the status of procurement as a choice that public as well as private actors should consider as a governance option.[212]

Procurement has prescriptive elements in the sense that one organizational entity (either public or private) imposes an obligation on its suppliers to behave in a certain way with respect to the environment: for example, to avoid certain chemicals, metals, or manufacturing processes, or to adopt an environmental management system. If a supplier does not meet the standard, the government agency or firm can either refuse to purchase from the supplier or terminate an existing contract. Yet procurement is not entirely prescriptive with respect to our categorization of options because procurement policies do not establish mandatory duty-imposing rules in either the public or private context.[213] Procurement and supply chain contracts are executed within the context of markets. Thus, assuming a competitive market, the supplier is free to choose to contract with another firm (or another government) and to disregard the environmental standard.[214] In this way, procurement and supply chain management options share some features with the market-leveraging approach of subsidies. Suppliers that meet the environmental standard get a benefit, either in the form of a government contract or a private contract. Procurement and supply chain management are not equivalent to market-leveraging subsidies, however, because neither the firm nor the government is necessarily paying a price premium for environmental attributes. In some cases, the mere prospect of a contract with a

211. *See, e.g.*, Vandenbergh, *The New Wal-Mart Effect*, *supra* note 25, at 925 (discussing supply chain agreements as private governance); Vandenbergh, *supra* note 27, at 950-51 (discussing supply chain contracting as a form of private environmental governance with global impact); Roberts, *supra* note 25, at 107 (noting that private entities employ procurement as a strategy).

212. The European Union adopted a directive in 2004 allowing its member states to employ environmental criteria in government procurement policies, and Germany appears to be a leader in this development. Susanne Lottermoser, *Green Public Procurement (GPP) in Germany*, 8 EUR. PROCUREMENT & PUB. PRIV. PARTNERSHIP L. REV. 93, 94 (2013).

213. *See supra* notes 95–96 and accompanying text (discussing our relatively narrow use of the "prescription" category).

214. We recognize that in practice procurement or supply chain management "requirements" by purchasers such as the U.S. government (especially for military equipment that could not be sold to any other purchasers), Walmart, or Target (which may have a dominant share of a particular retail market) may be experienced as effectively "mandatory" and "prescriptive." In other words, there is often no real choice but to follow the procurement standards or go out of business. The style of procurement and supply chain management options is nevertheless different and more oblique than the direct standard-setting methods of prescription described in Section II.A.

large firm or government agency provides concentrated demand that is sufficient to warrant the change. In the public context, what sets procurement apart is that the government agency is not acting as a regulator, but rather in a commercial capacity as a purchaser. And in the private context, a firm decides voluntarily to restrict its choice of suppliers using sustainability criteria. For these reasons, procurement warrants its own category.

In the context of public law, government agencies use environmental procurement policies to prefer the purchase of environmentally beneficial goods or services, creating demand-side pressure for government contractors and vendors to produce such goods and services. For example, both the U.S. Department of Defense and the General Services Administration impose environmental standards in their procurement practices.[215] Environmental standards include, for example, the requirement that agencies prefer Energy Star-certified products in government purchasing.[216]

Government procurement, and in particular military procurement, has a long history of stimulating technological innovation in the private sector.[217] The stimulation occurs in two ways. First, procurement rules place economic pressure on existing firms to comply with such standards in order to access significant government demand. Second, government procurement can provide support for fledgling industries and innovative technologies that may not otherwise generate sufficient demand in the absence of government support. For example, military demand is now driving the construction of new renewable energy generation facilities on military lands to power military installations.[218] This demand-based government purchasing

215. Light, *The Military-Environmental Complex*, *supra* note 9, at 879 (discussing U.S. military procurement of green technology); SHAWNA GANLEY, FEDERAL "GREEN" PRODUCT PROCUREMENT POLICY IN THE UNITED STATES (2013), https://web.law.columbia.edu/sites/default/files/microsites/climate-change/files/Publications/Collaborations-Visiting-Scholars/us_product_procurement_ganley.pdf; SHAWNA GANLEY, "GREEN PRODUCT" PROCUREMENT POLICY IN THE EUROPEAN UNION: TREATMENT OF LIFECYCLE CARBON ANALYSIS AND ENVIRONMENTAL PPM RESTRICTIONS 1 (2013), https://web.law.columbia.edu/sites/default/files/microsites/climate-change/files/Publications/Collaborations-Visiting-Scholars/ganley_eu_product_procurement.pdf.

216. 10 U.S.C. § 2915(e) (2013) (requiring the Department of Defense to prefer purchasing Energy Star products in facilities construction); Energy Independence and Security Act of 2007, Pub. L. No. 110-140, §§ 524-525, 42 U.S.C. § 8259b (2013) (requiring government agencies to prefer Energy Star products in procurement); *see also supra* note 201 and accompanying text (describing Energy Star program).

217. *See, e.g.*, Light, *The Military-Environmental Complex*, *supra* note 9, at 929–31.

218. *See* 10 U.S.C. § 2922a (2013) (authorizing military contracts for renewable energy generation facilities).

program is creating new sources of renewable energy and at the same time reducing greenhouse gas emissions in military facilities and installations.[219]

Private firms have also been leaders in using supply chain management to set environmental standards.[220] For example, Walmart requires its suppliers to provide environmental reports and verifications, report greenhouse gas emissions, and reduce their packaging.[221] Supply chain management improves environmental performance in several ways: it not only improves the environmental performance of Walmart's suppliers, but also provides Walmart with more environmentally friendly products to sell to customers. (Again, both the degree of environmental improvement and whether this matters to customers are separate empirical questions.) Other large companies have employed similar methods.[222] In addition to firm-specific requirements, a number of firms impose requirements that suppliers adopt third-party environmental management systems, such as the ISO 14001 standard.[223] The CDP Supply Chain Management Program provides a platform for major global firms to request or require that their suppliers disclose

219. Light, *The Military-Environmental Complex*, *supra* note 9, at 929–30 (discussing power purchase agreements).

220. Vandenbergh, *The New Wal-Mart Effect*, *supra* note 25, at 916. Vandenbergh refers to such supply chain contracts as a form of "bilateral" standard setting. Vandenbergh, *supra* note 2, at 147.

221. Charles Fishman, The Wal-Mart Effect (2006); Walmart, Policy on Sustainable Chemistry in Consumables (2013), http://az204679.vo.msecnd.net/media/documents/wmt-chemical-policy_130234693942816792.pdf (noting that Walmart will require suppliers to disclose ingredients in products publicly online starting in 2015); *Targeting zero waste*, Walmart, http://corporate.walmart.com/global-responsibility/environment-sustainability/packaging (last visited July 10, 2015) (noting that Walmart is working with its suppliers to develop product packaging that cuts unnecessary waste); Walmart, *Environmental Sustainability*, Global Responsibility, http://corporate.walmart.com/global-responsibility/environment-sustainability (last visited Oct. 5, 2015).

222. For example, IBM reported that it has achieved a 15.7% reduction in greenhouse gas emissions through procurement and conservation methods since 2005. IBM, 2012 IBM and the Environment Report (2013), http://www.ibm.com/ibm/environment/annual/IBMEnvReport_2012.pdf. Citigroup has established "supplier assessments" to ensure compliance with certain environmental values. Citi, Environmental Policy Framework 3 (Aug. 2014), http://www.citigroup.com/citi/environment/data/937986_Env_Policy_FrameWk_WPaper_v2.pdf. Home Depot imposes "Social Environmental Responsibility Standards" on its suppliers. The Home Depot, From One Generation to The Next: 2014 Sustainability Report 19 (2014), https://corporate.homedepot.com/CorporateResponsibility/Environment/Documents/Sustainability__Brochure_pages.pdf. The firm 3M has committed to monitor 5,000 suppliers in more than 70 countries for sustainable forestry practices. *3M Moves Toward Using Sustainably Logged Timber*, N.Y. Times, Mar. 6, 2015, at B2. The company reacted to pressure imposed by the nonprofit ForestEthics. *Id.*

223. Vandenbergh, *The New Wal-Mart Effect*, *supra* note 25, at 956 (discussing requirement that suppliers adopt environmental management systems); *see also supra* notes 106, 117 and accompanying text (discussing ISO 14001 standards).

their greenhouse gas emissions.[224] Private multi-stakeholder organizations such as the Sustainable Apparel Coalition, a group that includes apparel firms, NGOs, and governments, has adopted standards of supply chain management "to reduce the environmental and social impacts of apparel and footwear products around the world."[225] The multinational scope of large firms has the potential to address global environmental issues given the border-spanning contracts that these firms employ.[226]

G. *Insurance*

A final governance option that tends to be underappreciated in the literature on public law instrument choice is insurance for environmental risks. Like procurement, insurance can be mandated by public law or can be offered by private insurance firms without government intervention. From an economic perspective, insurance forces the wrongful actor to "internalize" the expected costs of environmental damage by assessing its anticipated costs on that actor, and allowing the risks of losses to be pooled with other similarly situated actors.

Insurance incorporates elements of market leveraging because it assesses costs for environmentally "bad" behavior in the form of premiums that are calculated to pay for the risk of harm and then offers insurance coverage for sale. Insurance can also provide benefits (similar to subsidies) for "good" behavior when third-party auditors or long-term reports confirm low-risk behavior. But insurance is not a purely market-leveraging instrument. In some cases, insurance can have prescriptive elements, such as in situations where flood insurance is required by law in order to allow construction in a high-risk zone near rivers or seacoasts.[227] In the private con-

224. *Supply Chain Program*, CDP, https://www.cdp.net/supplychain/ (last visited July 10, 2015).

225. Sustainable Apparel Coalition, http://www.apparelcoalition.org/ (last visited July 10, 2015). Depending upon the nature of government involvement in standard-setting and enforcement, a multi-stakeholder group might be better categorized as a public-private hybrid than a purely private form of environmental governance. We leave a detailed discussion of these kinds of public-private hybrid governance structures for another day.

226. *See* Vandenbergh, *supra* note 2, at 169–70 (arguing that private environmental governance is especially good at filling gaps for environmental problems that span national boundaries); Vandenbergh, *supra* note 27, at 911 (arguing that green supply chain management by U.S. multinational firms can reduce emissions abroad). Again, the effectiveness of such programs raises empirical questions. Our contribution here is to clear the way for analysis with an awareness of the full range of options.

227. *See infra* notes 229–31 and accompanying text (discussing evolution of the National Flood Insurance Program); *see also* Benjamin J. Richardson, *Mandating Environmental Liability Insurance*, 12 Duke Envtl. L. & Poly F. 293 (2002) (examining various contexts in which mandatory insurance may be employed).

text, insurance may have prescriptive effects if the premiums (set by private insurers) are so high as to prohibit certain environmentally risky behavior. In other situations, insurance may simply be unavailable. Insurance therefore does not fit neatly in either the market leveraging or pure prescription category.

In addition, insurance warrants its own category because it affords unique opportunities for public-private collaboration, such as when public law mandates the purchase of insurance that is offered by private institutions. Insurance is particularly amenable to theoretical frameworks that consider the importance of comparative risk management.[228]

Insurance can take both public and private forms. Government-sponsored or mandated insurance programs such as the National Flood Insurance Program (NFIP) can create incentives for environmentally conscientious behavior.[229] So too can private insurance.[230] For example, the NFIP, enacted in 1968, made flood insurance available for residences and businesses located in flood zones designated by the Federal Emergency Management Agency (FEMA). The Flood Disaster Protection Act of 1973 then mandated federally regulated or insured lenders to require flood insurance on properties that are located in areas at high risk of flooding.[231] If residences or businesses are located in a flood zone, they must purchase federal public flood insurance.

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228. *See supra* notes 54–57 and accompanying text (discussing scholarship framing environmental problems as challenges of managing comparative risk).

229. *See* PAUL K. FREEMAN & HOWARD KUNREUTHER, MANAGING ENVIRONMENTAL RISK THROUGH INSURANCE (1997) (describing general benefits of insurance in dealing with risk); Sean Hecht, *Climate Change and the Transformation of Risk: Insurance Matters*, 55 UCLA L. REV. 1559 (2008) (arguing that insurance affects behavior in the climate context); Kunreuther & Michel-Kerjan, *supra* note 25, at 1839–40 (discussing the possible use of insurance in encouraging climate change mitigation); Annie Linsky, *FEMA's New Flood Maps Pressure Homeowners to Raise Their Houses*, BLOOMBERG BUSINESSWEEK (Aug. 22, 2013), http://www.businessweek.com/articles/2013-08-22/femas-new-flood-maps-pressure-homeowners-to-raise-their-houses (noting that increases in flood insurance rates affect behavior of homeowners to fortify against rising sea levels).

230. *See, e.g.*, Howard Kunreuther, Erwann Michel-Kerjan & Mark Pauly, *Making America More Resilient Toward Natural Disasters: A Call for Action*, ENV'T MAG. (July-Aug. 2013), http://www.environmentmagazine.org/Archives/Back%20Issues/2013/July-August%202013/making-america-full.html (discussing national flood insurance program).

231. 42 U.S.C. §§ 4001–4130. In 2012, Congress passed the Biggert-Waters Flood Insurance Reform Act, which increased rates to better reflect risk. Biggert-Waters Flood Insurance Reform Act of 2012, Pub. L. No. 112-141, 126 Stat. 405 (codified as amended at 42 U.S.C. § 4001–4129). However, in 2014, in response to protests about increased flood insurance rates, Congress repealed and modified aspects of Biggert-Waters in the Homeowner Flood Insurance Affordability Act of 2014, which lowered the rate increases on some insurance policies. H.R. 3370, Pub. L. No. 113-89, 128 Stat. 1020 (codified as amended at 42 U.S.C. §§ 4001–4130).

Whether insurance is "public" or "private" depends on both who is offering the insurance coverage (and collecting the premiums) and who is deciding whether to purchase the insurance (i.e., a voluntary private decision or mandated by public law). As the example of flood insurance shows, hybrid approaches are possible where government mandates insurance coverage and then private insurance firms provide the required coverage. So, for example, if a private insurer requires the insurance, sets the rate of that insurance, and provides the insurance (e.g., most life insurance and fire insurance), this would qualify as "private." If the government mandates that individuals or firms purchase insurance, but then private firms provide the coverage (e.g., most forms of automobile insurance), this would constitute a public-private hybrid form of governance. If the government mandates insurance and then acts to supply it as well, then this would be a pure form of public governance. Note that we do not put any weight on whether insurance regimes are private, public, or hybrid. Our point is only to make the analytical distinction which may then be useful in terms of surveying options available for environmental governance in particular situations.

The additional "insurance cost" of doing business can affect behavior in several ways. The availability of inexpensive insurance (i.e., underpriced in comparison to the external environmental costs) can create a moral hazard and encourage risky behavior, such as building properties near flood-prone areas.[232] If the cost of insurance increases, then owners of properties may respond by either fortifying their properties or leaving the area. Increasing prices for insurance premiums near rivers and seacoasts can stimulate environmental outcomes such as "managed retreat" from flood-prone areas and other adaptive responses encouraging greater resilience.[233] On the flip side, business firms and residences that have environmentally desirable features may pay reduced rates or receive bonuses to encourage good environmental behavior.

Although insurance is increasingly used as a public governance tool, its origins lie in private markets. Howard Kunreuther and Erwann Michel-Kerjan have argued that insurers are at the forefront of responding to cli-

232. *See, e.g.*, Carolyn Kousky & Howard Kunreuther, WHARTON CENTER FOR RISK MANAGEMENT AND DECISION PROCESSES 1 (Wharton Issue Brief, 2013), http://opim.wharton.upenn.edu/risk/library/WRCib2013d_Affordability_NFIP.pdf (noting that FEMA has estimated that approximately "20 percent of flood insurance policies currently receive premium discounts of about 40–45 percent of full-risk rates"); Jenna Schweitzer, *Climate Change Legal Remedies: Hurricane Sandy and New York City Costal Adaptation*, 16 VT. J. ENVTL. L. 243, 250 (2014).

233. *See* ANNE SIDERS, COLUMBIA LAW SCHOOL, MANAGED COASTAL RETREAT (2013), https://web.law.columbia.edu/sites/default/files/microsites/climate-change/files/Publications/Fellows/ManagedCoastalRetreat_FINAL_Oct%2030.pdf.

mate-related risks by raising insurance premiums, largely because natural catastrophes "have had a more devastating impact on insurers" in recent years than in their "entire history."[234] Private insurers such as Fireman's Fund Insurance Co., Traveler's Auto Insurance, and American International Group have offered lower rates to customers who use environmentally preferable building techniques, drive hybrid vehicles, and take other steps to increase climate resilience and reduce emissions.[235] Another example appears in a study demonstrating that leaks from underground storage tanks at gas stations decreased after states began requiring the purchase of private insurance, rather than relying only on government-funded insurance programs.[236] Other examples of private insurance that have the potential to affect behavior are fire insurance, catastrophe bonds, and insurance for other natural environmental risks such as hurricanes and drought.

III. Implications and Normative Choices

This Part discusses the implications of the analytical framework of public and private governance choices that we have outlined, as well as the role of different normative considerations in making these choices in particular problem contexts.

A. *Implications*

The analytical framework that we have presented serves three primary objectives. First, this taxonomy provides our answer to the essential question facing scholars, policymakers, firm managers, NGO activists, and teachers of *what* options are available in for global environmental governance. Our analysis highlights non-obvious categories for both government regulators and private firms, such as private emissions trading and carbon fees, as well as public procurement and insurance. To be sure, the taxonomy involves some oversimplification, and in the real world there are governance options that combine the various techniques we have outlined, but our analytical framework suggests that there are more options available to decisionmakers than traditionally believed.

Second, our analysis highlights the complexity of *who* is doing the choosing among governance options. In contrast to the standard public law

234. Kunreuther & Michel-Kerjan, *supra* note 25, at 1798.

235. *Id.* at 1839 (citing five percent rate credit to owners of buildings who employ "solar panels, green roofs, and recycled water supply systems, '[b]ecause green buildings are proven to be less prone to water damage, electrical fires, or full loss due to fire'").

236. Haitao Yin, Howard Kunreuther & Matthew W. White, *Does Private Insurance Reduce Environmental Accidents?*, Regulation, Summer 2012, at 36, http://object.cato.org/sites/cato.org/files/serials/files/regulation/2012/8/v35n2-5.pdf.

account of instrument choice in which government regulators are choosing among options, our analysis underscores that there is no omniscient single "chooser." Instead, there are often many "choosers"—including government regulators (at multiple levels of government), NGOs, private business firm managers, and individuals acting in their capacities as both citizens and consumers. And these diverse "choosers" are acting simultaneously, sometimes in concert, and sometimes not.

Third, our analysis reveals complex, nested choices among options, and these nested choices can interact in significant ways. For example, if government regulators select a prescriptive technology-based standard to reduce air pollution, then the regulatory targets (private firms) must use the selected technology. Some scholars argue that public market-leveraging approaches better stimulate technological innovation within firms than prescriptive standards.[237] The assumption is that encouraging firms to innovate is better than allowing government to mandate specific pollution-control technology. Our analysis suggests that innovation within firms is not merely technological, but may also occur through innovation in various forms of private governance. A private business firm—either in response to inaction by government regulators, or in response to particular kinds of action by government regulators, NGOs, or other stakeholders—has many choices to make among available tools and instruments. These choices have implications for how effectively or efficiently environmental performance targets can be achieved.

The willingness and ability of firms to make good governance choices may, in turn, affect public regulatory choices. For example, innovations within firms regarding private governance techniques of supply chain management may help to improve public procurement strategies. Similarly, firms may make improvements regarding disclosure standards for climate change impacts, water use, or energy consumption that governments might borrow and build upon in public informational regulation. And vice versa: firms may learn from government innovations, too. In general, the possibilities for cross-fertilization between public and private governance are expansive and deserving of continuing study.

B. *Choosing Among Options: Normative Criteria*

Our analytical taxonomy of environmental governance choice is descriptive. Deciding how to compare and decide among the alternatives that we have descriptively mapped requires normative considerations, as well as an empirical understanding of the particular environmental problem at is-

237. *See, e.g.*, Ackerman & Stewart, *supra* note 17, at 1335–36.

sue. A scientifically and socially informed understanding of any particular problem and its context is needed as a foundation.[238] Then, there are two axes of comparison: first, whether to rely on the government or private actors (or both) to address a particular problem; and second, how to choose among the specific governance alternatives that are available.[239]

The existing literature on instrument choice in environmental law has generated deep insights about the values that should inform choices among public law options.[240] The normative criteria against which others have assessed the options for public environmental governance include *effectiveness* (i.e., whether an option will achieve the desired result);[241] *efficiency* (i.e., whether an option achieves the desired result at the lowest overall economic cost);[242] and *environmental justice* (i.e., whether the distribution of costs—including economic and ecological costs as well as comparative risks to human health—among the regulator, the regulatory target, and the citizenry at large meet some basic measure of fairness).[243] Other criteria include the

238. *See* Kleindorfer & Orts, *supra* note 18, at 167–68 & fig.4 (arguing that one must begin with a robust account of the "problem context and problem features" before proceeding to an assessment of various normative criteria for selecting governance options).

239. Although we focus here on the "parallels" between public and private governance options, we also emphasize that hybrid public-private approaches are feasible. One example noted above is the Sustainable Apparel Coalition, which employs a multi-stakeholder process incorporating both public and private actors to set standards. *See supra* note 225 and accompanying text. We expect that analytical components identified here will prove useful to assessing these hybrid governance options, but details of application remain outside the scope of this Article.

240. *See, e.g.*, Salzman, *supra* note 12 (discussing cost, administrative ease, effectiveness, potential to stimulate innovation, and environmental ethics); Rose, *supra* note 4, at 5–6, 12 (cost and congestion); Ackerman & Stewart, *supra* note 17, at 1335–36 (innovation promotion); Stavins, *supra* note 17, at 303 (environmental effectiveness, efficiency, and distributional justice). For an overview of the normative criteria used to assess instruments in different taxonomies, see Richards, *supra* note 10, at 283 tbl.A1 (listing different criteria for public policy instrument choice selection).

241. *See, e.g.*, Latin, *supra* note 14, at 1271 (arguing that environmental regulation is best evaluated in terms of effectiveness, not economic efficiency); *see also* Thomas R. Mounteer, *The Inherent Worthiness of the Struggle: The Emergence of Mandatory Pollution Prevention Planning as an Environmental Regulatory Ethic*, 19 COLUM. J. ENVTL. L. 251, 258–65 (1994) (evaluating the effectiveness of existing environmental regulations).

242. *See, e.g.*, Stavins, *supra* note 17, at 303 n.54 (discussing efficiency of market instruments); Dietz, Ostrom & Stern, *supra* note 3, at 1909 (discussing relevance of market failures to commons issues); Rose, *supra* note 4, at 14–23 (discussing overall costs).

243. *See, e.g.*, Salzman, *supra* note 12 (discussing costs, fairness, efficiency, and effectiveness). "Environmental justice" concerns the relative burdens and distributional effects that different approaches to regulation may impose on different groups of citizens. *See* Exec. Order No. 12,898, 59 Fed. Reg. 7629, 7629 (1994); Lazarus, *supra* note 58, at 787; Rae Zimmerman, *Issues of Classification in Environmental Equity: How We Manage is How We Measure*, 21 FORDHAM URBAN L.J. 633 (1994); Rae Zimmerman, *Social Equity and Environmental Risk*, 13 RISK ANALYSIS 649 (1993). Ethical principles may include the idea of "environmental

method's ability to *stimulate innovation*[244] and pragmatic considerations of *political feasibility*.[245]

Including private environmental governance in the menu of options suggests that additional normative considerations must also be weighed, including:

- *accountability* and *transparency* (i.e., the degree to which those who set standards are accountable to the public and their actions apparent to anyone who wishes to see and understand them);
- *legitimacy* (i.e., the extent to which standard setting comports with basic values of democratic politics and freedoms of self-organization and self-governance);
- *potential for transnational impacts* (i.e., whether the standards may have global effects, rather than domestic effects alone);
- *risk of greenwashing* (i.e., whether the standards have meaningful environmental impacts or are merely creating false public perceptions);
- *durability* and *adaptability* (i.e., how likely are the standards to last, even in the face of changing politics or business context, and, conversely, how easily a choice can be modified in the face of information about effectiveness);[246] and
- *expressive content* (i.e., what message does the instrument send or promote).[247]

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constitutional rights." *See, e.g.*, PA. CONST. art. I, § 27. Valuing the natural environment may also have independent normative weight. *See, e.g.*, Eric W. Orts & Alan Strudler, *The Ethical and Environmental Limits of Stakeholder Theory*, 12 BUS. ETHICS Q. 215 (2002).

244. *See, e.g.*, Stewart, *supra* note 13, at 33–34 (arguing that prescriptive regulation does not stimulate social and market innovation); *see also* Stephen Breyer, *Analyzing Regulatory Failure: Mismatches, Less Restrictive Alternatives, and Reform*, 92 HARV. L. REV. 547, 553 (1979) (arguing that self-imposed performance standards encourage firms to develop new technologies); Richard B. Stewart, *Environmental Regulation and International Competitiveness*, 102 YALE L.J. 2039, 2085 (1993) (same).

245. Political feasibility questions also arise at the international level. *See, e.g.*, Gilligan & Vandenbergh, *supra* note 153, at 1–7 (political opportunity costs must be used to evaluate climate policy instruments); Orts, *supra* note 9, at 207–12 (global climate change regime must be politically feasible in major countries); Wiener, *supra* note 12, at 681–82 (global instrument choice must involve considerations of political feasibility).

246. *See, e.g.*, Holly Doremus, *Adaptive Management, Endangered Species Act, and the Institutional Challenges of "New Age" Environmental Protection*, 41 WASHBURN L.J. 50, 52, 55 (2001) (discussing competing desires for "flexibility" of adaptive management and "the long-term certainty we often seek through our legal and political institutions"); J.B. Ruhl, *Taking Adaptive Management Seriously: A Case Study of the Endangered Species Act*, 52 U. KAN. L. REV. 1249, 1284 (2004) (discussing lack of cohesive adaptive management approach in the Endangered Species Act).

247. *See supra* notes 84–89 and accompanying text.

Some, if not all, of these additional criteria are also applicable to public law or public-private hybrid governance options.[248]

Although it is impossible to provide algorithmic certainty as to which form of governance is best for any particular environmental problem, we now turn to a general assessment of how different forms of environmental governance fare on these normative criteria, using the problem of climate change as an occasional illustration.

1. Effectiveness

The comparative environmental effectiveness of any form of governance is ultimately an empirical question. Although private environmental governance has great potential to be effective, more empirical research is needed. Such research must include comparative assessments of competing governance methods in both public and private contexts, to know with certainty when and where private governance is effective.[249] To be sure, there is one crucial difference between public and private instruments with respect to effectiveness: public law standards are usually (though not always) mandatory, whereas private standards are usually, with the caveats we have discussed above, in some sense "voluntary" (or at least not required by the government with sanctions for failure to comply).[250] Even when a public law may prove more effective, situations may arise in which political or other impediments prevent an arguably "first-best" public law; and in such cases private approaches may present a "second-best" and therefore most practically effective governance option.[251] For example, if politics prevents the adoption of an effective disclosure and monitoring regime for global greenhouse gas emissions, then private nonprofit organizations may seek to fill the governance gap. Private action may also act to spur eventual public

248. Note that public governance is virtually always going to trump private governance along the dimension of "democratic legitimacy" as it is commonly understood, which is why we do not include democratic legitimacy as such in this list. Instead, we include the dimensions of "legitimacy" and of "accountability/transparency," because private governance solutions can be responsive to public will, though through different means. According to Baron and Diermeier's model of private politics, for example, the public often exerts its pressures directly on the firms, rather than through the intermediary institutions of government. Baron & Diermeier, *supra* note 3, at 600.

249. *Cf.* Michael Vandenbergh, *The Implications of Private Environmental Governance*, 99 Cornell L. Rev. Online 117, 133 (2014) (indicating a need for further research on the interactions between public and private methods of governance).

250. In some situations, as noted above, a firm may feel compelled to comply with private standards just as much as public law standards. *See, e.g.*, *supra* note 227 and accompanying text.

251. On the theory of "second-best" solutions adapted from economics, see *supra* note 153 and accompanying text.

regulation. Private disclosures of greenhouse gas emissions by firms organized under the rubric of the CDP and otherwise, for example, prefigured reporting regulations adopted by the U.S. EPA.[252]

In addition, different methods of enforcement affect the relative effectiveness of public and private governance options. For example, public prescription relies on government enforcement, including administrative, civil, and criminal penalties for noncompliance. In private prescription, compliance occurs through self-monitoring, industry monitoring, or third-party verification. One important question for private governance regimes is whether firms may be (or ever are) "decertified" if and when they fail to comply with private standards. A lack of adequate enforcement would open the door to false claims about a company's environmental performance that would constitute "greenwashing" or "environmental fraud."[253] A particularly egregious recent example is Volkswagen's admission that it deceived both consumers and regulators with respect to environmental attributes of its diesel automobiles, and used "defeat devices" to cheat on emissions tests.[254]

Note that government regulation can supplement the effectiveness of private governance through governmental enforcement of the "truthfulness" of business firms' claims. For example, the U.S. Federal Trade Commission (FTC) and other government agencies have promulgated standards to police environmental marketing claims.[255] In addition, private "watchdog" groups such as Consumer Reports and GoodGuide verify claims by firms

252. *See supra* notes 190, 195 and accompanying text (recounting EPA's greenhouse gas reporting regulation and CDP's activities).

253. On the idea of "environmental fraud," see Eric W. Orts, *A Reflexive Model of Environmental Regulation*, 5 BUS. ETHICS Q. 779, 787 (1995); Eric W. Orts & Paula C. Murray, *Environmental Disclosure and Evidentiary Privilege*, 1997 U. ILL. L. REV. 1, 7, 49 (1997); *see also* Orts, *supra* note 9, at 231–32 (discussing greenwashing and environmental fraud in the particular context of consumer transactions relevant to climate change). Greenwashing refers to the phenomenon of misrepresentations of the truth about one's environmental commitments and practices. Usually, the term refers to firms, though other organizations (such as governments, universities, and NGOs) may also be included. Environmental fraud refers to the possibility that lies or misrepresentations of fact about a firm's or a product's environmental qualities can be subject to legal actions, either by government enforcement or in private causes of action.

254. *See, e.g.*, Jack Ewing, *Diesel Scandal at VW Spreads to Core Market*, N.Y. TIMES, Sept. 23, 2015, at A1 (reporting that Volkswagen admitted to environmental deception involving 11 million automobiles worldwide); *Why There's No Quick Fix for Volkswagen's Emissions Crisis*, KNOWLEDGE@WHARTON (Sept. 25, 2015), http://knowledge.wharton.upenn.edu/article/why-theres-no-quick-fix-for-volkswagens-emissions-crisis/ (discussing the fraud and noting the EPA has estimated that costs to VW could run as high as $18 billion).

255. *See, e.g.*, Mary Ann Mullin & Daniel J. Deeb, *Policing of Green Claims*, 26 NAT. RES. & ENV'T 28 (2012) (providing an overview of public oversight standards); Orts, *supra* note 9, at 231–32 (discussing FTC approach).

about the environmental and other attributes of their products.[256] Both public and private verification can increase the effectiveness of governance techniques designed to improve environmental performance.

Ultimately, in any particular problem context, an assessment is required of whether different governance options will actually be effective in addressing the problem. Take global climate change, for example. A range of options, both public and private, may be required to address the problem in the long-term, rather than the selection of any particular method, such as public prescriptive regulation at the international level or the adoption of worldwide tradable permits or taxes on carbon and its equivalents.[257] In other words, an effective response to global climate change likely requires some version of an "all hands on deck" approach.[258]

2. Efficiency

Economic efficiency is important with respect to measuring the best approach to managing any particular environmental problem. Given a world of scarce resources in which at least some tradeoffs are inevitable between economic productivity and environmental protection, the consideration of both "static" and "dynamic" efficiency is necessary.[259]

The comparative costs and benefits of public and private governance also raise essentially empirical questions. Legal and economic scholarship tends to view market-leveraging instruments and tradable permits as less

256. *See About Us*, CONSUMER REPORTS, http://www.consumerreports.org/cro/2012/01/consumer-reports-eco-labels/index.htm (last visited July 12, 2015) ("Unconstrained by advertising or other commercial influences, we have relentlessly exposed landmark public health and safety issues and have strived to be a catalyst for marketplace changes."); *About GoodGuide*, GOODGUIDE, http://www.goodguide.com/about (last visited July 12, 2015) ("GoodGuide's team of scientific and technology experts is tasked with collecting, analyzing and rating the world's product information and creating applications that make this information readily available to consumers."); *see also* Orts, *supra* note 9, at 232 n.131 (discussing GoodGuide and Consumer Reports approaches).

257. For a more detailed argument along these lines, see Orts, *supra* note 9. For a recent argument supporting the view that that it is a mistake to characterize global climate change as a problem only for international law to address, see Cinnamon Carlarne, *Delinking International Environmental Law & Climate Change*, 4 MICH. J. ENVTL. & ADMIN. L. 1 (2014).

258. Anastasia Pantsios, *'All Hands on Deck' Declares Ban Ki-moon at UN Climate Summit*, ECO-WATCH (Sept. 24, 2014), http://ecowatch.com/2014/09/24/un-climate-summit-ban-ki-moon/ (quoting U.N. Secretary General Ban Ki-moon and describing a range of private as well as public commitments).

259. Robert W. Hahn & Robert N. Stavins, *Economic Incentives for Environmental Protection: Integrating Theory and Practice*, 82 AM. ECON. REV. 464, 465–66 (1992) (describing the need for both static and dynamic efficiency in environmental policy making); Kleindorfer & Orts, *supra* note 18, at 167–68 & fig.4 (describing "static" efficiency involving the present costs of particular measures and "dynamic" efficiency involving longer time horizons that include learning and adaptation as elements in the analysis).

costly for public regulators than prescription.[260] And the same may hold true generally for private options, such as internal emissions trading or private carbon fees, as compared with private prescription. For example, Microsoft managers selected an internal private carbon fee to reduce emissions at the lowest overall cost to the firm, and BP has said it reduced its greenhouse gas emissions through private emissions trading by ten percent at no net cost to the firm.[261]

However, private governance may not always be more efficient than public governance. For example, if a single firm employs an internal emissions trading scheme, it may reduce its emissions at the lowest overall cost to the firm. However, once the "low-hanging fruit" within the firm have been plucked, the firm must then begin reducing emissions at a higher marginal cost. Inter-firm trading (either through a public emissions trading system within a larger jurisdiction or a private emissions trading scheme that covers multiple firms or an entire industry) would then likely prove more efficient, because firms could continue trading emissions allowances with other firms that have a lower marginal cost of emissions.[262]

We therefore make no universal claim regarding the relative efficiency of public versus private governance. The devil lies in the details of each environmental problem and its economic context.[263]

3. Environmental Justice

Environmental justice concerns the distribution of costs and environmental impacts across different groups within society. One may posit that we live today in a "risk society" that distributes human-caused environmental and health risks unevenly to individuals in the global population (as well as an economic society of unequally distributed wealth).[264] For example, the location of chemical plants in the United States and their attendant health risks have been found to predominate in counties with largely African-

260. *See, e.g.*, Stavins, *supra* note 17, at 347 (arguing in favor of market-based solutions).

261. Light, *supra* note 7, at 31–33.

262. *Id.* at 52.

263. There is now a large literature concerning environmental economics which we will make no attempt to summarize here. For introductions, see CHARLES D. KOLSTAD, ENVIRONMENTAL ECONOMICS (2d ed. 2010) and ECONOMICS OF THE ENVIRONMENT: SELECTED READINGS (Robert N. Stavins ed.) (6th ed. 2012). For an economic treatment implicitly recognizing the emergence of private environmental governance as well as public applications, see THOMAS P. LYON & JOHN W. MAXWELL, CORPORATE ENVIRONMENTALISM AND PUBLIC POLICY (2004).

264. For a version of this perspective, see ULRICH BECK, RISK SOCIETY: TOWARDS A NEW MODERNITY (1992); ULRICH BECK, WORLD AT RISK (2009). For a critique of current distributions of wealth in the world, see THOMAS PIKETTY, CAPITAL IN THE TWENTY-FIRST CENTURY (Arthur Goldhammer trans., 2014).

American populations and high levels of income inequality.[265] In the context of hazardous air pollutants, scholars have critiqued tradable permit schemes because they can create "hot spots" (areas of high pollution) unlike prescriptive rules that require all firms more uniformly to reduce pollution according to set standards.[266] With respect to climate change, all greenhouse gas emissions mix in the atmosphere, so hot spots may be less of a concern.[267] Still, it is likely that the adverse consequences of climate change will fall much more heavily on poor populations and those living in areas vulnerable to drought or rising sea levels than on wealthier people who may more easily expend resources to adapt.[268] The potential obliteration of island nations provides a poignant example.[269]

Outside of the climate change context, certain other forms of private governance may raise concerns about environmental justice. The geographical locations in which private actors adopt private governance may enjoy better environmental conditions than those locations in which private environmental governance is absent. More affluent areas may benefit more from private governance efforts to improve the quality of the local environment than less affluent areas. Poor areas with little attraction for business may see no private governance at all. Unlike a public regime in which an entire jurisdiction (both affluent and non-affluent areas) benefits from uniform legal rules, private action may have a narrower scope.[270]

At the same time, other instances of private environmental governance may have positive consequences from a global environmental justice per-

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265. M.R. Elliott, et al., *Environmental Justice: Frequency and Severity of US Chemical Industry Accidents and the Socioeconomic Status of Surrounding Communities*, 58 J. EPIDEMIOLOGY & CMTY. HEALTH 24 (2004).

266. *E.g.*, Alice Kaswan, *Environmental Justice and Domestic Climate Change Policy*, 38 ENVIL. L. REP. NEWS & ANALYSIS 10,287, 10,299 (2008).

267. Erwin Chemerinsky et al., *California, Climate Change, and the Constitution*, 25 ENVIL. F. 50, 51 (2008) (noting that the "threat of climate change does not hinge on where GHG emissions occur" because gases mix in the atmosphere). Several scholars have noted, however, the risk of hot spots of "co-pollutants" (i.e., traditional air pollutants that tend to be emitted alongside greenhouse gases). Kaswan, *supra* note 266, at 10,299.

268. *See* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC), CLIMATE CHANGE 2014: SYNTHESIS REPORT 65 (2014), http://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_All_Topics.pdf. Global climate change is predicted to affect some regions of the world more severely than others. *See* IPCC, THE REGIONAL IMPACTS OF CLIMATE CHANGE: AN ASSESSMENT OF VULNERABILITY vii (R.T. Watson et al. eds., Cambridge University Press, UK 1997) (discussing predicted climate impacts).

269. *See, e.g.*, Kathy Marks, *Climate Change Talks our 'Last Chance,' Say Pacific Islands*, INDEPENDENT (Sept. 7, 2015), http://www.independent.co.uk/news/world/australasia/climate-change-talks-our-last-chance-say-pacific-islands-this-is-not-politics-its-survival-10490376.html.

270. Further empirical research is warranted on this point.

spective. Global supply chain management by larger firms such as Walmart, Home Depot, McDonald's, and Target, for example, may have beneficial environmental effects on poor and more vulnerable populations that otherwise might not have the ability to exert social and political pressure favoring environmental health and sustainability. If so, then environmental justice considerations do not inevitably weigh against private governance. The availability of private governance options may also have advantages in addressing environmental problems in places with very weak governments or even "failed states."[271]

Again, answers along this dimension of environmental justice for particular problems will depend on the circumstances and empirical assessments of the effects of different governance options available in different contexts.

4. Ability to Stimulate Innovation

Public law scholarship often assumes that market-leveraging instruments or tradable permit regimes stimulate innovation better than technology-based standards and other forms of prescription.[272] Private actors often take this view as well. Again to use Microsoft as an example, the firm's Chief Environmental Strategist argued that it adopted an internal carbon fee because this "empowered" business units to find creative ways to reduce emissions, rather than dictating centrally how to do so.[273] Informational instruments and property rights—employed either by public regulators or private administrators—may likewise stimulate innovation more effectively than prescriptive rules.

This innovation can be either technological or behavioral. With respect to climate change, for example, enhancing technological innovations could include improved and affordable renewable energy production and battery efficiency, carbon sequestration technologies, and perhaps even atmospheric carbon-removal technologies such as carbon capture and storage. In other words, the challenge of climate change suggests a need for governance options geared at least in part toward "technological optimism."[274] Investments by governments in technology at a scale similar to the Apollo program or Manhattan Project might also be needed to provide solutions, with the mix of private and public options remaining a topic for debate and further anal-

271. For views of the general problem, see Rosa Ehrenreich Brooks, *Failed States, or the State as Failure?*, 72 U. CHI. L. REV. 1159 (2005); John Yoo, *Fixing Failed States*, 99 CAL. L. REV. 95 (2011).

272. *E.g.*, Ackerman & Stewart, *supra* note 17, at 1362.

273. Light, *supra* note 7, at 47.

274. *Cf.* James E. Krier & Clayton P. Gillette, *The Un-Easy Case For Technological Optimism*, 84 MICH. L. REV. 405 (1985).

ysis.[275] On the behavioral side, it may be the case that both public and private actors can help to change behavior with respect to consumption (for example, driving less and reducing the use of heating and cooling) on the necessary widespread scale.[276]

5. Accountability and Transparency

Public law rules embody a degree of accountability and transparency that private environmental governance cannot always achieve. Environmental statutes, of course, are enacted through public legislative processes (at least in democratic countries) which are absent in private governance. The equivalent of an Administrative Procedure Act, which requires public participation in the development of legal regulations through the process of notice and comment, public debate within Congress, and judicial review, does not exist for private environmental governance.[277] Accountability and transparency may be particularly lacking for unilateral standards that firms impose internally.

However, certain forms of private environmental governance may embrace other methods of ensuring accountability and transparency, such as through the publication of prescriptive performance-based targets and the reporting of environmental results to third parties such as the CDP.[278] In addition, at least in some cases, private standard setting occurs in ways that include participation by stakeholder groups or environmental NGOs—the same NGOs that comment on public law rules or regulations. For example, the Marine Stewardship Council standards for sustainable fisheries were developed "in consultation with the fishing industry, scientists and conservation groups."[279] In order to improve transparency, the MSC acted in accordance with the ISEAL Code of Good Practice for Setting Social and Environmental Standards, which is a set of practices that are designed to enhance the "credibility" of resulting private standards, and which require at

275. As discussed above in Subsection II.C.3, public and private subsidies often aim at stimulating technological innovation as a primary objective.

276. *See, e.g.*, Light, *The Military-Environmental Complex*, *supra* note 9, at 899–900 (discussing the leading role of the military in driving both technological and behavioral innovation to promote both national security and reduced demand for fossil fuels); Sarah E. Light, *Valuing National Security: Climate Change, the Military, and Society*, 61 UCLA L. Rev. 1772, 1774–79 (2014) (arguing that the military's leadership in innovating to reduce demand for fossil fuels and find renewable sources of energy has the power to change attitudes, beliefs, and behaviors in the climate context).

277. Administrative Procedure Act, 5 U.S.C. §§ 551–559 (2013).

278. *See supra* notes 109, 195, 210 and accompanying text.

279. *MSC Fisheries Standard*, Marine Stewardship Council, http://www.msc.org/about-us/standards/fisheries-standard/msc-environmental-standard-for-sustainable-fishing (last visited July 29, 2015).

least two rounds of public participation.[280] Thus, some forms of private governance are likely to have greater accountability and transparency than others.[281]

The question of relative adequacy and credibility of different methods of providing accountability and transparency in public and private governance is also ripe for further research. When conducting this research with respect to global problems such as climate change, a number of variables should be taken into account. These variables include significant differences in the reliability of governmental reporting in different countries (often depending on institutional capacity as well as whether democratic governance structures and a free press are present), as well as questions about the reliability of private governance reporting (e.g., in annual corporate reports) when done in a legal atmosphere of relatively loose organizational checks on any mistakes or incorrect information that may be released either unintentionally or as "greenwashing."[282]

6. Legitimacy

Legitimacy is a value related to accountability and transparency. Empirical legitimacy refers to the extent to which a particular population assents to a legal and political order. Systemic legitimacy refers to the extent to which legal processes and rule-making follow substantive democratic criteria.[283] There is no perfect political and legal system on this dimension,

280. *MSC Chain of Custody Standard for Seafood Traceability*, MARINE STEWARDSHIP COUNCIL, http://www.msc.org/about-us/standards/chain-of-custody-standard/chain-of-custody-standard#how-was-it-developed (last visited July 29, 2015); *Standard-Setting Code*, ISEAL ALLIANCE, http://www.isealalliance.org/our-work/defining-credibility/codes-of-good-practice/standard-setting-code (last visited July 29, 2015). ISEAL stands originally for "International Social and Environmental Accreditation and Labelling" and was founded in 2002. *Our History*, ISEAL ALLIANCE, http://www.isealalliance.org/about-us/our-history (last visited July 29, 2015).

281. Private governance solutions may also rival public law for accountability and transparency in some places where democratic government is absent or severely challenged. *See supra* note 271 and accompanying text.

282. On the risks of greenwashing, see also *infra* Subsection III.B.8.

283. Kleindorfer & Orts, *supra* note 18, at 166–68 & fig.4 (describing these kinds of legitimacy); *see also* Eric W. Orts, *Positive Law and Systemic Legitimacy*, 6 RATIO JURIS 245 (1993) (describing these forms of political and legal legitimacy). For a more recent examination of legitimacy problems at the global level using a more complex analytical framework, see Daniel C. Esty, *Good Governance at the Supranational Scale: Globalizing Administrative Law*, 115 YALE L.J. 1490, 1515–23, 1561 (2006) (delineating different types of "democratic," "results-based," "order-based," "systemic," "deliberative," and "procedural" legitimacy). *See also* Claire R. Kelly, *Institutional Alliances and Derivative Legitimacy*, 29 MICH. J. INT'L L. 605 (2008) (describing "input" and "output" legitimacy with respect to international organizations and alliances).

but one should not assume away normative differences between different regimes of public law.

Similarly, one should not dismiss private environmental governance as politically illegitimate. Acting within a permissible scope of operation, legally formed and operated private organizations (including business firms and NGOs) have systemic legitimacy to act to pursue environmentally beneficial objectives, as well as to pursue economic profits.[284] The power-conferring enabling rules that create such institutions are themselves legitimate, even if any particular program, eco-label, or supply chain strategy is not subject to democratic controls. To the extent that firms and NGOs are motivated to pursue environmental goals—even if private action may be a "second-best" alternative to global emissions reduction goals—such action has some measure of empirical legitimacy, found in the support of the public or other stakeholders for such actions.

Again to take climate change as an example, one might ideally prefer, from the point of view of democratic legitimacy, a global solution negotiated by the many nation-states of the world to provide an overarching legal solution in the form of a comprehensive and universally binding treaty. However, the complexity of the climate change problem, as well as the major political and philosophical barriers blocking global consensus, suggest that something less than this ideal is needed. Other methods of global governance, even if with less "pure" democratic legitimacy, appear to be necessary as a part of a multi-layered solution to the problem.[285]

7. Potential for Transnational Impacts

In a world composed of both nation-states and multinational firms and NGOs, given the fact that many of the most pressing environmental problems have become global in both their causes and consequences, the question of comparative transnational impacts of alternative governance regimes is important to consider. Again, empirical research is needed to determine if and when private governance methods may work as effectively as public law alternatives. The example of climate change, however, at least illustrates the potential for private environmental governance to have transnational impacts in a manner that public approaches may not.

Private environmental governance, for example in supply chain management by large, multinational, U.S.-based firms, has the potential for sig-

284. For reflections along these lines, see generally Eric W. Orts, *The Complexity and Legitimacy of Corporate Law*, 50 WASH. & LEE L. REV. 1565 (1993); Eric W. Orts, *The Legitimacy of Multinational Corporations*, *in* PROGRESSIVE CORPORATE LAW 247 (Lawrence E. Mitchell ed., 1993).

285. For elaboration of this argument, see Orts, *supra* note 9.

nificant transnational impacts with respect to climate change.[286] In 2011, for example, Walmart's greenhouse gas emissions (direct and from purchased electricity, but not including supply chain emissions) were higher than the 2011 emissions within the jurisdiction of eight U.S. states.[287] Including Walmart's global supply-chain emissions would vastly increase the emissions within Walmart's sphere of control, given that Walmart has estimated that approximately ninety percent of its emissions come from its supply chain, and many of those suppliers are located in China.[288] For this reason, private supply chain management has the potential to reach across national boundaries in ways that other forms of governance, including public procurement, may not.[289] In addition, private actors may have greater flexibility in building transnational coalitions and partnerships than state actors trying to reach international environmental agreements.[290]

This is not to say that public law is not needed to address global environmental problems. It surely is an essential part of the solution, for example, to the challenges of climate change. However, private governance options may encourage new ideas and approaches that will contribute to long-term progress along paths that otherwise would not be traveled.[291]

The larger point is that an expanded menu of public and private governance options enhances the flexibility for policymakers as well as others with respect to global environmental problems such as climate change, especially if one allows that different kinds of governance approaches may be adopted in hybrid combinations.

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286. Vandenbergh, *supra* note 27, at 934; Light, *NEPA's Footprint*, *supra* note 9, at 540.

287. Light, *supra* note 7, at 10. *Compare* WALMART, 2013 GLOBAL RESPONSIBILITY REPORT 56–57 (2013), http://corporate.walmart.com/microsites/global-responsibility-report-2013/pdf/Walmart_GRR.pdf (Walmart emissions data), *with* U.S. ENVTL. PROT. AGENCY, EPA 430-R-15-004, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS 1990–2013 (2015), http://epa.gov/statelocalclimate/documents/pdf/CO2FFC_2012.pdf (EPA data on fossil fuel combustion from the commercial, industrial, residential, transportation, and electric power sectors in each state), *and* U.S. ENERGY INFO. ADMIN., STATE-LEVEL ENERGY-RELATED CARBON DIOXIDE EMISSIONS, 2000–2011 1, 6 (2014), http://www.eia.gov/environment/emissions/state/analysis/pdf/stateanalysis.pdf.

288. *See Wal-Mart Pledges to Cut Supply Chain Emissions 20M Tons by 2015*, ENVTL. LEADER (Feb. 26, 2010), http://www.environmentalleader.com/2010/02/26/walmart-pledges-to-cut-supply-chain-emissions-20m-metric-tons-by-2015/.

289. *See, e.g.*, Vandenbergh, *supra* note 27, at 913 (arguing that supply chain initiatives can address climate change across national borders).

290. *See* Orts, *supra* note 9, at 199, 228–32 (asserting that private NGOs, business firms, and ordinary market transactions can have a global impact in combatting climate change). For an example of this kind of coalition, see *Why We Formed*, THE SUSTAINABILITY CONSORTIUM, http://www.sustainabilityconsortium.org/why-we-formed/ (last updated 2015).

291. One scholar has argued that private entities and multi-stakeholder coalitions now perform functions once assigned to states in so-called "laboratory federalism," in which states serve as laboratories for policy experimentation. Leiter, *supra* note 28, at 107.

8. Risk of Greenwashing

Greenwashing comprises misleading or false public statements about environmental performance.[292] The risk of greenwashing is linked to other normative factors, including transparency, accountability, durability, and the adequacy of enforcement.[293] The risk of greenwashing increases when firms undertake unilateral action and therefore should be considered when choosing between private and public governance options. If a firm sets standards for itself without third-party verification, it may often find itself tempted to grant itself liberal exemptions or to present misleading results. Lack of adequate enforcement would open the door to false claims about a company's environmental performance that could even constitute "environmental fraud."[294]

Greenwashing is arguably less likely if the firm (1) makes clear public commitments, (2) publishes reliable reports that are either audited by a third party (such as an accounting firm) or presented to a trusted third-party NGO, and (3) responds proactively to challenges to the firm's claims made by consumers, investors, and environmental NGOs. In addition, government regulation can supplement and reinforce private governance by policing the "truthfulness" of the business firm's claims. As noted above, the FTC, for example, forbids false environmental marketing claims and takes enforcement actions to deter them.[295] Background public legal rules serve to improve private environmental governance, thus also limiting the risk of greenwashing to some extent.[296]

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292. Magali A. Delmas & Vanessa Cuerel Burbano, *The Drivers of Greenwashing*, 54 CAL. MGMT. REV. 64, 66 (2011); *see also* Miriam A. Cherry & Judd F. Sneirson, *Beyond Profit: Rethinking Corporate Social Responsibility and Greenwashing after the BP Oil Disaster*, 85 TUL. L. REV. 983, 985 (2011) (describing greenwashing as the use of environmental rhetoric without actual commitment); Laufer, *supra* note 198, at 253 (describing greenwashing as a "form[ ] of disinformation from organizations seeking to repair public reputations and further public images").

293. Adequacy of enforcement is a feature of the broader normative criterion that we have described as "effectiveness." *See supra* Subsection III.B.2.

294. *See supra* note 253 and accompanying text (discussing "greenwashing" and "environmental fraud").

295. *See* Guides for the Use of Environmental Marketing Claims, 16 C.F.R. § 260 (2012); *see also supra* note 255 and accompanying text.

296. To admit that public law standards regarding the policing of "environmental fraud" or greenwashing claims play a role in private governance does not undermine our claim that there is a private parallel world of environmental governance. The law plays a similar background role in enforcing basic ground rules concerning contracts. Private parties negotiate terms and agree to a form of "private legislation" regarding their relationship in a contract. The availability of legal enforcement (in public courts or legally sanctioned arbitrations) simply provides a guarantee securing the ability to make the private arrangements.

The risk of greenwashing is not limited to private environmental governance, however. Public authorities may also engage in greenwashing of a sort. For example, a government-imposed technology-based prescriptive rule that touts its "green" qualities is arguably a form of public greenwashing if in fact the empirical claim about its environmental benefits is false. The federal Renewable Fuel Standard, which requires the use of a certain amount of ethanol in gasoline, may provide an illustration. This regulation has been controversial among environmental groups who contend that it actually increases, rather than reduces, greenhouse gas emissions.[297] Similarly, the government could mandate a carbon tax or cap-and-trade system to reduce greenhouse gas emissions, but then may structure the system to have little impact (either by setting the cap too high or the price too low).[298] As a result, any claim of "progress" in addressing the climate change problem would be false or misleading—and therefore an instance of what we would label public greenwashing.

The more general point is that a norm of avoiding greenwashing emphasizes the need to adopt governance options for particular environmental problems in a manner that is truthful. Although the most obvious form of greenwashing involves intentionally false or misleading statements about motivations or consequences for particular actions, there is also a deeper need to respect the underlying scientific truth of environmental problems themselves, as well as the most accurate assessment of alternative policies and governance solutions.

9. Durability and Adaptability

Some forms of public law are likely to be more durable than private environmental governance because public legislation, once enacted, is harder to repeal or change than private action.[299] This feature of public law is

297. Regulation of Fuels and Fuel Additives, 40 C.F.R. § 80 (2014); *see* NAT. RES. DEF. COUNCIL, NRDC POLICY BASICS: BIOFUELS 2 (Feb. 2013), http://www.nrdc.org/legislation/policy-basics/files/policy-basics-biofuels-FS.pdf; *see also* Robert W. Hahn, *Ethanol: Law, Economics, and Politics*, 19 STAN. L. & POL'Y REV. 434, 449 (2008) (finding that "the environmental argument for ethanol is weak"); Roberta F. Mann & Mona L. Hymeld, *Moonshine to Motorfuel: Tax Incentives for Fuel Ethanol*, 19 DUKE ENVTL. L. & POL'Y F. 43, 45–46 (2008) (doubting the environmental benefits of ethanol tax subsidies).

298. Light, *supra* note 7, at 18–20.

299. *See* Steinzor, *supra* note 14, at 154 (critiquing alternatives to public prescriptive rules, arguing that "[w]ithout effective incentives, even a sustained political investment [by the Administration] cannot save . . . any reinvention initiative . . . from faltering over the long run"). This is not to say that durability is always good. Many laws remain on the books long after their usefulness has passed, a phenomenon captured by the jurisprudential concept of desuetude. *See, e.g.*, Note, *Desuetude*, 119 HARV. L. REV. 2209 (2006) (arguing for a revitalization of the doctrine of desuetude in criminal law).

evident in the many unsuccessful efforts to repeal federal environmental laws each year in Congress.[300] Other forms of public law, such as regulations or executive orders, are less durable than statutes.[301] And public actions can indeed be undone. For example, New Jersey withdrew from the Regional Greenhouse Gas Initiative when its governor determined it was no longer a good idea to participate.[302]

The durability of private environmental governance likewise depends upon the form. For example, a unilateral standard to reduce emissions that a firm imposes on itself is less durable than other forms of governance, including supply chain standards imposed through contracts or informational eco-labels verified by third parties through external auditing. A supplier may in fact feel compelled to comply with private standards just as it would with public law standards, depending upon conditions within the market.[303] Some environmental standards are embodied within supply chain contracts, which are enforceable in court. This form of private environmental governance likely has a great degree of durability—at least from the perspective of the supplier. The firm creating the environmental standards can, of course, change its mind about imposing such standards. However, private environmental governance may prove durable (even for the creator of the environmental supply chain standard) when and if private NGOs threaten boycotts, or investors and customers pressure firms to honor environmental standards and values. Some studies have been conducted on these questions, but more empirical work needs to be done.[304]

The durability of private environmental governance options also depends in part on what motivates a firm's managers to adopt them. Motiva-

300. *See, e.g.*, SARAH MATSUMOTO, ET AL., CITIZENS' GUIDE TO THE ENDANGERED SPECIES ACT 44–51 (2003) (recounting repeated attempts by Congress to repeal, defund, and limit the Endangered Species Act).

301. *See, e.g.*, Andrew P. Morriss, Bruce Yadle & Andrew Dorchak, *Choosing How To Regulate*, 29 HARV. ENVTL. L. REV. 179, 227 (2005).

302. Letter from Bob Martin, Comm'r, N.J. Dep't. of Envtl. Prot., to Signatory States, Reg'l Greenhouse Gas Initiative (Nov. 29, 2011), http://www.rggi.org/docs/Documents/NJ-Statement_112911.pdf.

303. *See supra* note 213 and accompanying text (discussing similarities and differences between categories of procurement and prescription).

304. Most studies thus far have focused on consumer demand as the primary motivating factor, but studies point to conflicting results. *See, e.g.*, David G. Mallen, *Private Governance of Green Claims in the Marketplace: The Role of NAD and Advertising Self-Regulation*, 44 ENVIL. REP. NEWS & ANALYSIS 10095, 10095 (2014) (noting consumer studies demonstrating that a majority of global shoppers are willing to pay a premium for the goods and services of firms that have undertaken green initiatives). *But see supra* note 180 (listing studies finding that actual consumer behavior does not always correlate with expressed consumer preferences). Needed also are studies examining the actual environmental effectiveness and durability over time of different private governance approaches.

tions are dynamic. Pressures for firms to adopt private environmental governance may change in response to generational shifts in political and social views about the importance of environmental protection, or other market factors, such as business competition and the price of oil. At least, the inclusion of private governance options in the conceptual toolkit of instrument choice encourages deeper thinking and more research about what motivates private firms to undertake these options.[305]

Related to durability is adaptability. For reasons similar to those discussed above, private governance may well prove to be more adaptable than public law, more responsive to change, and more flexible in adjusting to new information, at least in many situations. Private governance options may also respond better than existing public environmental law to scholarly concerns about the need for "adaptive management," namely, the ability to take into account and be informed by new information.[306]

10. Expressive Content

There are many, sometimes conflicting stories to tell about the expressive content of different forms of governance. On one view, for example, tradable emissions permits (or pollution taxes) might be denigrated for sending the message that polluters have the "right" to pollute—regardless of whether the permits are created by government regulators or private firms.[307] Informational governance may send the message that "sunshine is the best disinfectant" and that transparency is good for the environment; it may also communicate the message that sufficient political will was not present for a stronger approach such as adopting a binding limit on harmful behavior.[308] Some might argue further—whatever particular instrument is employed—that private environmental governance sends the message that the fox is guarding the henhouse, and relying on market actors to solve market failures is a loss for environmental protection.[309]

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305. We cannot do justice here to the full array of options discussed in the management literature; instead, we highlight key issues that go to the heart of choosing among options.

306. *See, e.g.*, J.B. Ruhl, *Regulation by Adaptive Management—Is It Possible?*, 7 MINN. J.L. SCI. & TECH. 21 (2005) (arguing that adaptive management may be incompatible with existing public administrative law).

307. Purdy, *supra* note 59; Rose, *supra* note 4; *see also* Robert E. Goodin, *Selling Environmental Indulgences*, 47 KYKLOS 573, 575 (1994) (arguing that "green taxes . . . amount, in effect, to 'selling rights to destroy nature'"); *supra* notes 87–89 and accompanying text.

308. *See supra* notes 177–83 and accompanying text. For the argument that mandatory informational regulation is often adopted as a weak compromise explained by lack of political backbone, see BEN-SHAHAR & SCHNEIDER, *supra* note 183, at 5–6, 138–39, 146–50.

309. *Cf.* Steinzor, *supra* note 14, at 200 (arguing that public policy employing market-based approaches leaves the environment without adequate protection).

Yet in our view, private environmental governance can and should be interpreted differently and more optimistically. The adoption of private governance options signals a recognition that private firms have an essential role to play in combatting major environmental problems such as climate change—and not merely because the law requires it, but because it is part of the firm's core business strategy, expresses a firm's identity, or simply because it is the right thing to do. In this sense, private governance may support and reinforce an emerging environmental ethic within firms that business managers have a public responsibility as well as a private role to play with respect to the environment. An analogous argument applies to NGOs and other private organizations. Private governance communicates the view that we all have a collective responsibility to address environmental problems, not only as voters or politicians, but also as managers, employees, investors, and consumers.[310] This is a message worth sending.

In both public and private environmental governance, the consequences of various policy options are not always easy to determine—and perhaps even impossible to predict. In these situations at least, intentions and motivations for certain actions matter too. Although the proverbial road to hell may be paved by the best intentions, it is also true that expressions of good will and commitment may lead the way toward finding successful governance solutions when combined with rigorous policy analysis.

Conclusion

In this Article, we hope to have set forth and clarified an expanding menu of governance options that public and private actors have at their disposal to protect the environment. In one sense, we provide a guide for the perplexed. The world of environmental law, the nature of environmental problems, and the constellations of institutions that can provide solutions are becoming increasingly complex and difficult to understand. An appreciation of the emergence of parallel worlds of private and public governance provides some needed focus and lucidity.

We also hope that our analytical taxonomy will prove useful to practitioners and policymakers, as well as teachers and scholars, when grappling with real environmental problems. We anticipate that one area for future research and analysis will concern the extent to which the public and private governance options that we have identified here can be combined or mutually interconnected to address some especially recalcitrant large-scale problems, such as climate change and biodiversity loss.

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310. *Cf.* Freeman, *Private Parties*, *supra* note 22, at 857 (arguing that private provision of public services can extend public law norms into the private sector).

We have provided some hints for what this future agenda may entail. Public law, for example, might mandate private insurance for new kinds of environmental risks, such as those related to climate change.[311] Private environmental governance regimes might also lobby for public ratification of privately derived standards or practices.[312] One may also imagine organizational alliances of governments, business firms, and large NGOs to address global environmental problems through public-private organizational hybrids. Although these extensions lie beyond the scope of this Article, we hope to have supplied some of the necessary analytical tools to pursue them.

We have also begun the work of assessing the normative criteria that decisionmakers will and should use to make choices among the various instruments of environmental governance that we have described. On this score, much more work also remains to be done. Normative values as well as empirical results will remain the touchstones for success for any environmental governance option or set of options assembled. We hope that some of our theoretical groundwork will help designers of environmental law and private governance to think through these options systematically.

Finally, supplementing the traditional public law "toolkit" with private governance options opens a door to effectively address—and eventually to solve—some specific, large, and intractable environmental problems, including not only climate change and biodiversity loss, but also fresh water shortages, destruction of fisheries, and deforestation.[313] Global deployment of public and private options of insurance, as well as procurement policies and supply chain management, for example, may begin to "move the needle" to make progress on some of the toughest global problems.

311. *See supra* Part II.G; *see also* Hecht, *supra* note 229.

312. *Cf.* David Zaring, *Best Practices*, 81 N.Y.U. L. Rev. 294 (2006) (examining how the development of "best practices" in business and government may affect law-making processes).

313. *See supra* note 5 and accompanying text.