



Greening the Invisible Hand: The Policy Implications of Corporate Environmentalism

By Devin Hartman, Kenneth Richards and Emily Giovanni

Policy reforms that unleash the greening of the invisible hand—especially those that correct deficiencies in information, transaction costs, property right definitions and principal-agent alignment—will prove integral to unlocking CE’s potential.

Executive Summary

Over the past decade, there has been a sea change in voluntary corporate environmental behavior. Much of this is associated with “environmental, social and governance” (ESG) activity, a term coined in 2005.¹ But corporate environmentalism (CE) has a history predating the adoption of ESG.² Historically, CE has been limited, but it has become mainstream business practice in the past decade. Generally, CE refers to firm-level efforts to reduce pollution and resource use and to protect natural habitats beyond the requirements of the law.³

Recent trends in CE behaviors have led to extensive confusion and debate among scholars, practitioners and policymakers. Federal policy development has proven exceptionally contentious, punctuated by the Biden administration’s first veto, which was related to the treatment of environmental factors in pension fund management.⁴ States have quickly diverged into pro- and anti-ESG policy agendas

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1. Qayyum Rajan, “Where did the term ESG come from anyway?,” ESG Analytics, March 29, 2022. <https://www.esganalytics.io/insights/where-did-the-term-esg-come-from-anyway#:~:text=So%20where%20does%20the%20term,Freshfields%20Report%20in%20October%202005>.

2. See, e.g., Thomas Lyon and John Maxwell, *Corporate Environmentalism and Public Policy* (Cambridge University Press, 2004). <https://econpapers.repec.org/bookchap/cupcbooks/9780521603768.htm>.

3. Elizabeth Chrun et al., “Corporate Environmentalism: Motivations and Mechanisms,” *Annual Review of Environment and Resources* 41 (November 2016), pp. 341-362. <https://www.annualreviews.org/doi/10.1146/annurev-environ-110615-090105>.

4. Katharine Jackson et al., “Biden uses first veto to defend rule on ESG investing,” *Reuters*, March 20, 2023. <https://www.reuters.com/business/sustainable-business/biden-vetoes-resolution-block-labor-dept-rule-esg-investing-2023-03-20>.

that work at cross purposes, with some imposing billions in costs to a single state economy.⁵ This has undermined a healthy business climate and underscores why public policy must better reflect CE motivations and mechanisms.

The meteoric rise in corporate environmental investing and environmental management practices between 2016 and 2020 was headlined by clean energy procurement.⁶ The investment community was attracted to the financial performance advantage of certain environmental investing practices, as evidenced by the more than 1,000 studies undertaken between 2015 and 2020.⁷ Notably, this tipping point occurred when federal environmental regulation was relaxing.⁸ This context reinforces that the renaissance of CE is foremost explained as a strategic business response to shifts in market forces and civil society.⁹ Since 2021, the relative importance of federal regulation has become far more pronounced. CEO surveys in 2021 and 2022 found a mixture of motivations underlying ESG actions, including regulation, investor requests, consumer trends, ratings and expected business benefits.¹⁰

To understand the implications of these trends, particularly for policy, it is helpful to contextualize them in terms of economists' long-held theories on CE motivations, which underlie many existing environmental policies. Historically, CE was primarily motivated by firms' desires to influence public policy to their benefit, and markets only consistently demonstrated the ability to account for environmental consequences at the local level.¹¹ This happened through the participation of parties motivated to reduce the environmental harm that they incurred directly. Novel approaches to CE, however, reveal that market actors who do not directly bear the environmental harm nevertheless act on strong intrinsic environmental preferences. In particular, younger generations of investors, consumers, employees and non-governmental organizations are willing to incur higher costs to alter corporate environmental behavior.¹² Such forces have had marked effects on corporate environmental pledges, with roughly two-thirds of global gross domestic product now under a 2050 net-zero emissions commitment.¹³



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5. See, e.g., "Fiscal Note for SB 224 by Senate Committee on Federal and State Affairs," Kansas Division of the Budget, March 7, 2023, p. 5. http://kslegislature.org/li/b2023_24/measures/documents/fisc_note_sb224_00_0000.pdf.
6. See, e.g., "Global Sustainable Investment Review 2020," Global Sustainable Investment Alliance, 2021, p. 9. <http://www.gsi-alliance.org/wp-content/uploads/2021/08/GSIR-20201.pdf>.
7. Tensie Whelan et al., "ESG and Financial Performance: Uncovering the Relationship by Aggregating Evidence from 1,000 Plus Studies Published between 2015-2020," NYU Stern, August 2021. <https://www.stern.nyu.edu/sites/default/files/assets/documents/ESG%20Paper%20Aug%202021.pdf>.
8. Devin Hartman, "Toward Clarity and Consensus on 'E'SG,'" R Street Real Solutions, March 22, 2023. <https://www.rstreet.org/commentary/toward-clarity-and-consensus-on-esg>.
9. Ibid.
10. See, e.g., "CEO Survey 2021," Deloitte, 2022. <https://www2.deloitte.com/content/dam/Deloitte/id/Documents/risk/id-risk-ceo-survey-on-esg-2021.pdf>; "Sustainability action report: Survey findings on ESG disclosure and preparedness," Deloitte, December 2022, p. 5. <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/audit/us-survey-findings-on-esg-disclosure-and-preparedness.pdf>.
11. See, e.g., Lyon and Maxwell. <https://econpapers.repec.org/bookchap/cupcbooks/9780521603768.htm>.
12. See, e.g., Stephen Haber et al., "2022 Survey of Investors, Retirement Savings, and ESG," Hoover Institution, Rock Center for Corporate Governance, and Stanford Business Graduate School, 2022. <https://www.gsb.stanford.edu/sites/default/files/publication/pdfs/survey-investors-retirement-savings-esg.pdf>.
13. Sebastian Gatzert and Clarisse Magnin, "Prioritizing sustainability in the consumer sector," McKinsey & Company, Aug. 5, 2021. <https://www.mckinsey.com/industries/retail/our-insights/prioritizing-sustainability-in-the-consumer-sector>.

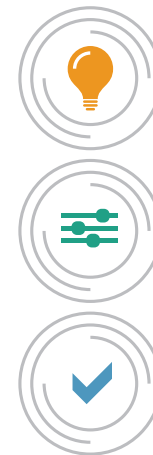
The environmental and public policy ramifications of such changes are potentially transformative. Conventional policy assumes markets lack the motivation to internalize the environmental costs of their activities, but novel CE reveals an increasing market motivation to self-correct environmental problems. To date, these market forces have not fully translated such motivations into superior environmental outcomes. Markets exhibit poor confidence in the ability to measure and verify the environmental impact of corporate claims, products and programs. There are also challenges in aligning fund-management practices with environmentally motivated clients. Further, CE is constrained by inefficient public policies, especially those preventing investment in cleaner practices and imposing barriers to market access. Altogether, this suggests far greater potential for environmental benefits through the “invisible hand” of unconstrained market activity than previously believed.

Novel CE reveals that a shift in government’s role toward “greening the invisible hand” could improve social welfare. This involves three core functions:

1. **Resolve** market failures that are more pronounced with CE. These include aligning fiduciaries with clients pertaining to environmental investing, clarifying property rights regarding environmental attributes, and lowering environmental information deficiencies and transactions costs.
2. **Adjust** existing policy to accommodate market trends that internalize environmental costs. This includes reexamining conventional interventions while expanding or improving voluntary environmental programs.
3. **Correct** existing government failures that impede voluntary environmental improvement. These include addressing policies that inhibit investor and consumer choice and the deployment of new capital, such as clean energy project approvals.

Greening the invisible hand emphasizes a role for public policy to empower individual choice to address environmental problems where possible. In practice, this means environmental institutions like the U.S. Environmental Protection Agency (EPA) may be more useful in promoting reporting and transparency and less useful in applying conventional approaches that directly control economic activity. This approach also places greater emphasis on non-environmental institutions to enable and facilitate greener market forces. For example, financial institutions may play a more pronounced role in overseeing the provision of material environmental information that is critical to investors’ decisions, productively deterring greenwashing, decreasing corporate liabilities for environmental innovation and aligning fund manager-client incentives. Industry-specific institutions, such as the Energy Information Administration (EIA) and Federal Energy Regulatory Commission, can assist with bringing more environmental transparency to complex supply chains while reducing barriers to the flow of capital.

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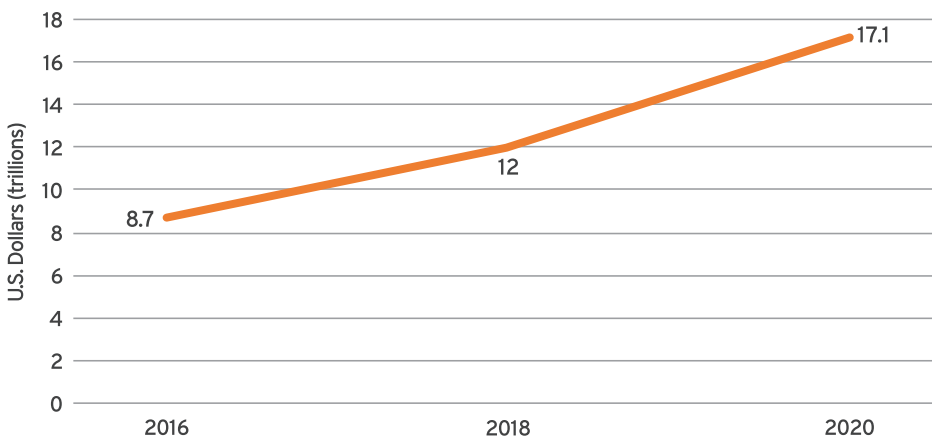


Novel CE suggests a broader but lighter role for government. In other words, the government may need to address more conditions, but the depth of its role in the economy would decline. Markets need a reliable scoreboard, clear rules of the game and fair referees to leverage increased CE motivations to improve performance organically. If armed with the appropriate tools, the invisible hand has never held greater environmental potential.

Introduction

Prior to the ESG era, motivations for CE initiatives were primarily attributed to strategic behavior to influence environmental activists, legislators and regulators.¹⁴ This is not sufficient, however, to explain why CE became mainstream in the 2010s.¹⁵ For example, domestic ESG investment products surged 96 percent between 2016 and 2020, topping \$17 trillion (Figure 1).¹⁶ CE hit a tipping point in 2019, highlighted by a spike in corporate climate commitments.¹⁷ This occurred during the Trump administration, which provided a natural experiment for the CE boom absent federal government coercion on environmental issues.¹⁸ The results of this natural experiment strongly suggest that motivations beyond government intervention—or the anticipation of government intervention—have new importance in corporate decision-making around environmental issues.

Figure 1. Domestic Sustainable Investing Assets¹⁹



Further, the CE trend has been global, despite limited developments in the stringency of international environmental agreements. The most prolific contemporary CE behavior is clean energy procurement, which rose globally by 658

FIGURE 1 KEY TAKEAWAY

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14. Lyon and Maxwell. <https://econpapers.repec.org/bookchap/cupcbooks/9780521603768.htm>.

15. Devin Hartman, "The ESG Controversy," R Street Institute, Jan. 25, 2023, pp. 6-7. <https://www.rstreet.org/2023/01/25/the-esg-controversy>.

16. "Global Sustainable Investment Review 2020," p. 9. <http://www.gsi-alliance.org/wp-content/uploads/2021/08/GSIR-20201.pdf>.

17. Hartman, "Toward Clarity and Consensus on 'E'SG.'" <https://www.rstreet.org/commentary/toward-clarity-and-consensus-on-esg>.

18. Ibid.

19. "Global Sustainable Investment Review 2020," p. 9. <http://www.gsi-alliance.org/wp-content/uploads/2021/08/GSIR-20201.pdf>.

percent from 2016 to 2021.²⁰ This is not explained solely by trends in energy costs or conventional corporate risk management.²¹ Rather, this behavior embodies a broader trend in normalizing CE. A survey of companies in the United States, United Kingdom, France and Germany found that 81 percent of large companies had adopted a formal ESG program by the end of 2020.²²

This CE surge triggered an accompanying spike in political discourse and policy responses. Some states introduced laws mandating environmental considerations in government investment decisions; others, seeking to shield industries seen as antithetical to CE (e.g., oil and gas), introduced laws restricting voluntary CE.²³ The trend has escalated since 2021, resulting in a rapid bifurcation of state policies working at cross purposes.²⁴

At the same time, federal policy has seesawed between administrations. For example, the Trump administration issued a final Department of Labor (DoL) rule in 2020 that restricted fiduciaries' consideration of ESG factors in 401(k) investments, only for the Biden administration to issue an executive order months later to suspend, revise or rescind the rule.²⁵ This resulted in a final rule in 2022 that overturned and replaced the Trump administration rule.²⁶ Both the Senate and House passed a resolution to kill this rule, which prompted the first veto of the Biden administration.²⁷

In 2022, other notable federal developments included a Federal Acquisition Regulation proposed rule to require certain federal contractors to disclose greenhouse gas emissions and climate-related financial risk; the Federal Trade Commission (FTC) seeking comment on updating its Green Guides to clarify what environmental marketing claims are unfair or deceptive; and the Commodity Futures Trading Commission requesting information on firms' climate-related financial risk, including environmental product innovation, greenwashing and risk management.²⁸ Arguably the most contentious and significant regulatory development is a proposed rule by the Securities and Exchange Commission (SEC) to standardize climate-related disclosures for investors.²⁹ In 2023, Congressional

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20. "Corporate Clean Energy Buying Tops 30GW Mark in Record Year," BloombergNEF, Jan. 31, 2022. <https://about.bnef.com/blog/corporate-clean-energy-buying-tops-30gw-mark-in-record-year>.
21. Hartman, "Toward Clarity and Consensus on 'E'SG,'" <https://www.rstreet.org/commentary/toward-clarity-and-consensus-on-esg>.
22. "Global Survey Finds Business Increasing ESG Commitments, Spending," NAVEX Inc., Feb. 23, 2021. <https://www.navex.com/blog/article/environmental-social-governance-esg-global-survey-findings>.
23. Taylor K. Brown, "Maine Takes on Fossil Fuel Divestment. How Will It Happen?," *Governing*, July 13, 2022. <https://www.governing.com/finance/maine-takes-on-fossil-fuel-divestment-how-will-it-happen>; Richard Vanderford, "Texas Blacklists BlackRock, UBS and Other Financial Firms Over Alleged Energy Boycotts," *The Wall Street Journal*, Aug. 24, 2022. <https://www.wsj.com/articles/texas-blacklists-blackrock-ubs-and-other-financial-firms-over-alleged-energy-boycotts-11661381425>.
24. Austin R. Ramsey, "Public, Private Pensions Set to Collide Over ESG Investing," *Bloomberg Law*, Oct. 13, 2022. <https://news.bloomberglaw.com/daily-labor-report/public-private-pensions-on-collision-path-over-esg-investing>.
25. "Tracking regulatory changes in the Biden era," *Brookings*, Jan. 30, 2023. <https://www.brookings.edu/interactives/tracking-regulatory-changes-in-the-biden-era>.
26. *Ibid.*
27. David Baumann, "DOL's ESG investing rule challenge alive, despite Biden veto," *Benefits Pro*, March 24, 2023. <https://www.benefitspro.com/2023/03/24/dols-esg-investing-rule-challenge-alive-despite-biden-veto/?slreturn=20230324081900>.
28. *Ibid.* "FTC Green Guide Update Gets Longer Comment Period," Sandler, Travis & Rosenberg, P.A., Feb. 3, 2023. <https://www.strtrade.com/trade-news-resources/str-trade-report/trade-report/february/ftc-green-guide-update-gets-longer-comment-period>; "CFTC Releases Request for Information on Climate-Related Financial Risk," Commodity Futures Trading Commission, June 2, 2022. <https://www.cftc.gov/PressRoom/PressReleases/8541-22>.
29. "SEC Proposes Rules to Enhance and Standardize Climate-Related Disclosures for Investors," U.S. Securities and Exchange Commission, March 21, 2022. <https://www.sec.gov/news/press-release/2022-46>.

Republicans launched a working group to push back against trends toward ESG investing, citing concerns about effects on the fossil fuel industry and fiduciary conflicts of interest.³⁰

These highly publicized partisan actions obfuscate a need for policy to provide better CE information, validate firms' environmental claims and protect against unwarranted pecuniary losses. There is no clear answer to the question of how to measure and validate the environmental and economic effects of CE.³¹ In short, CE metrics are a notorious mess.³² The absence of coherent metrics fuels CE's credibility problem with market and political actors and leads to a proliferation of discourse and action that lacks a shared understanding of concepts or even basic terminology.³³ This can result in market misallocation of capital and labor in addition to policy responses that misdiagnose CE and the role of government to correct market failure efficiently.

Ultimately, this mix of inefficient market and political behavior reflects the massive confusion shrouding CE motivations, mechanisms and effects.³⁴ Understanding CE influences is a prerequisite to productive policy formulation because policies should be designed to fill in the gaps; if markets are increasingly motivated to address environmental problems, this will affect the selection of the most efficient and appropriate policy instruments. Fortunately, a new body of empirical research and theoretical explanatory frameworks is emerging. Early indications suggest that the rise in CE behaviors is attributable to a much more complex set of drivers than simple policy influence, with powerful civil society and market forces pushing firms toward environmental initiatives.³⁵ However, the policy developments since 2021 suggest that policymakers may be acting based on an incomplete or inaccurate understanding of CE trends. The resulting policies are potentially pushing markets in unintended or even opposite directions.

These developments underscore the need to advance frameworks that explain contemporary CE and how it alters public policy applicability and design. Pursuant to traditional economic theory around environmental protection, government



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30. Rachel Frazin, "Republicans launch group to combat 'threat' posed by ESG investing," *The Hill*, Feb. 3, 2023. <https://thehill.com/policy/energy-environment/3842808-republicans-launch-group-to-combat-threat-posed-by-esg-investing>.
31. Magali Delmas and Vered Doctori Blass, "Measuring corporate environmental performance: the trade-offs of sustainability ratings," *Business Strategy and the Environment* 19:4 (May 2010), pp. 245-260. <https://www.ioes.ucla.edu/wp-content/uploads/2010-Delmas-Doctori-Blass-Business-Strategy-and-the-Environment-1.pdf>; Elena Escrig-Olmedo et al., "Measuring Corporate Environmental Performance: A Methodology for Sustainable Development," *Business Strategy and the Environment* 26:2 (February 2017), pp. 142-162. <https://onlinelibrary.wiley.com/doi/abs/10.1002/bse.1904>.
32. Jim Tyson, "Companies must venture into 'jungle' of approaches to ESG ratings," *UtilityDive*, March 24, 2022. <https://www.utilitydive.com/news/companies-must-venture-jungle-approaches-esg-ratings/620936>.
33. Justine Calma, "New research points to bad math behind corporate renewable energy claims," *The Verge*, June 9, 2022. <https://www.theverge.com/2022/6/9/23160508/corporate-renewable-energy-misleading-rec-power-purchase-climate>.
34. See, e.g., "The Aggregate Confusion Project," MIT Management Sloan School, last accessed May 2, 2023. <https://mitsloan.mit.edu/sustainability-initiative/aggregate-confusion-project>.
35. See, e.g., Kenneth R. Richards and Emily Giovanni, "Understanding the Four Influences in Corporate Sustainability: A Framework for Francis and Friedman," SSRN, Feb. 21, 2022. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4040061; Kenneth Costello, "What is the social responsibility of companies?," *The Electricity Journal* 34:8 (October 2021). <https://www.sciencedirect.com/science/article/abs/pii/S1040619021000993>; Chandan Parsad and Shashank Mittal, "Evolution of corporate environmentalism, a politico-social perspective: Concept, command and control to self-regulatory and voluntary, and future directions," *Journal of Public Affairs* 22:3 (Oct. 6, 2020). <https://onlinelibrary.wiley.com/doi/abs/10.1002/pa.2286>; Chia-Hao Ho et al., "The collaborative and contested interplay between business and civil society in circular economy transitions," *Business Strategy and the Environment* 31:6 (Oct. 1, 2021), pp. 2637-2765. <https://onlinelibrary.wiley.com/doi/epdf/10.1002/bse.3001>.

has crafted policies aimed at remedying market failures that lead to pollution and environmental degradation, such as externalities and common-pool natural resources.³⁶ However, if contemporary CE trends indicate that markets increasingly have the inclination and perhaps the ability to self-correct these environmental market failures, then there is need to reexamine the government's role in environmental protection.

In some cases, this reexamination may identify cases where traditional instruments are now misaligned with the issues they are aimed at addressing, or even where they may be inhibiting the free flow of capital and labor that can fill that role more efficiently. At the same time, however, CE may increase the relative importance of new market failures, such as environmental product information deficiencies and principal-agent misalignment regarding pecuniary trade-offs for environmental preferences. Moreover, unless there is a clear understanding of the drivers of environmental problems, addressing these new market failures through government action carries the substantial risk of introducing new government failures.

This paper aims to enhance policymaker and stakeholder understanding of CE and its general policy implications for improving social welfare. It explores CE trends through existing and emerging firm-behavior frameworks to diagnose the motivations, mechanisms and effects of CE under different market and policy conditions. The analysis finds that the role for government should pivot to “green the invisible hand” by:

- Resolving new market failures that have gained importance through the CE revolution, such as environmental principal-agent problems, unclear property rights associated with environmental attributes, high environmental product transactions costs and information deficiencies.
- Adjusting conventional environmental policy approaches to accommodate trends toward the voluntary internalization of environmental costs.
- Correcting existing government failures that obstruct beneficial CE outcomes.

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CE Theory and Trends

A long progression of theories attempts to explain how socioeconomic settings affect firm behavior, including how firms affect the environment. They provide the foundation for traditional environmental policymaking. Reevaluating this in the context of contemporary CE can promote a deeper understanding of the motivations, mechanisms and effects of CE under the prevailing policy framework. CE performance under this framework reveals insights into which market failures

36. See, e.g., Don Fullerton and Robert Stavins, “How Do Economists Really Think About the Environment?,” Resources for the Future, April 1998. <https://media.rff.org/archive/files/sharepoint/WorkImages/Download/RFF-DP-98-29.pdf>.

are improving and which are worsening and prompts rethinking the basis for government's role in environmental policymaking to improve environmental outcomes and maximize societal welfare.

Basic Market Theory

The classic starting point for market efficiency is captured in a statement regarding the effect of self-interested traders: "[e]very individual... neither intends to promote the public interest, nor knows how much he is promoting it ... he intends only his own security; and by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention."³⁷ In other words, the invisible hand of the market moves resources to their highest-valued uses, achieving efficiencies of which a government planner could only dream. Almost two centuries after that statement was made, welfare economics formalized the efficiency characteristics of competitive markets.³⁸ This and subsequent scholarship clarified key conditions for markets to allocate resources efficiently, including completely exchangeable property rights, limited market power, free market entry and exit, perfect information, low transactions costs and principal-agent alignment.³⁹ When these conditions are satisfied, markets align private costs and benefits with social costs and benefits.⁴⁰



Welfare economics formalized the efficiency characteristics of competitive markets. This and subsequent scholarship clarified key conditions for markets to allocate resources efficiently.

If these preconditions are not met, markets may fail to allocate resources efficiently. For example, a classic market failure is a pollution externality, in which incompletely defined and enforced property rights result in private decision-makers failing to internalize the social costs of their production or investment actions.⁴¹ This market failure invites government intervention to improve social welfare. In the case of pollution, the government can clarify rights to pollute, tax pollution or regulate the polluting activity.

According to the Coase theorem, when transactions costs are low and property rights are clearly assigned, individuals will bargain to the efficient uses of resources.⁴² This provides context for a classic CE example in which parties benefiting from and harmed by a polluting activity negotiate a pollution level and a

37. Adam Smith, "On the Division of Labour," Adam Smith Institute, last accessed April 25, 2023. <https://www.adamsmith.org/adam-smith-quotes>.

38. See, e.g., John Geanakoplos, "Kenneth Arrow's Contributions to General Equilibrium," The Econometric Society, last accessed May 1, 2023. https://www.econometricsociety.org/uploads/inmemoriam/arrow_geanakoplos.pdf.

39. See, e.g., Jakob Thomä and Hugues Chenet, "Transition risks and market failure: a theoretical discourse on why financial models and economic agents may misprice risk related to the transition to a low-carbon economy," *Journal of Sustainable Finance & Investment* 7:1 (2017), pp. 82-98. <https://www.tandfonline.com/doi/pdf/10.1080/20430795.2016.1204847?needAccess=true&role=button>.

40. David Autor, "Externalities, the Coase Theorem and Market Remedies," MIT Open Courseware, last accessed May 1, 2023. http://ocw.oouaguiwoye.edu.ng/courses/economics/14-03-microeconomic-theory-and-public-policy-fall-2010/lecture-notes/MIT14_03F10_lec13.pdf.

41. Gary D. Libecap, "The tragedy of the commons: property rights and markets as solutions to resource and environmental problems," *The Australian Journal of Agricultural and Resource Economics* 53:1 (Dec. 22, 2008), pp. 129-144. <https://onlinelibrary.wiley.com/doi/10.1111/j.1467-8489.2007.00425.x>.

42. Ronald H. Coase, "The Problem of Social Cost," *The Journal of Law and Economics* 3 (October 1960). <https://www.law.uchicago.edu/sites/default/files/file/coase-problem.pdf>.

set of payments that optimizes the use of the environmental resource.⁴³ Of course, in problems involving many parties like regional and global pollution, bargaining costs are not low.⁴⁴

Limitations of the Coase theorem’s purely private approach support calls for stronger forms of government intervention to correct environmental market failures. This raises concerns about the unintended consequences of a more active state, as governments often fail to address market failures efficiently.⁴⁵ Government failure generally occurs when interventions do not address a market failure or, if they do, when the intervention does not resolve the market failure in an efficient manner.⁴⁶

The classic dichotomy argument—market failure versus government failure—provides the basis for the current environmental policy setting, framing environmental improvement as dependent on a coercive role for the state rather than enabling voluntary environmentalism.

Basic market theories imply that CE occurs when environmental costs are incorporated directly through the transactional participation of the parties who bear the cost. If this mechanism cannot occur, such as in the presence of high transaction costs or environmental harm incurred by future generations, then these theories suggest that environmental problems may remain unabated absent government intervention.

Traditional government interventions to address environmental problems, such as command-and-control regulation, have been focused primarily on addressing the market failure of externalities to lessen the societal costs of private market exchanges. Historic CE motivations have primarily been attributed to strategic corporate behavior designed to influence environmental activists, legislators and regulators in the hopes of securing a more favorable policy environment.⁴⁷ Experimental evidence validates that CE as self or private regulation can dissuade voters, environmental activists and government officials from pursuing more draconian regulation.⁴⁸

Contemporary Theory

As described above, traditional market economic theory has treated market exchange as transactional: one-off, isolated trades that, taken together, send a powerful price signal about priorities and needs. However, some have suggested



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43. Autor. <https://www.albany.edu/~gs149266/lecture17%20-%20externalities.pdf>.

44. See, e.g., Jeffrey Marlow, “The Inside Story of the U.N. High Seas Treaty,” *The New Yorker*, March 9, 2023. <https://www.newyorker.com/news/daily-comment/the-inside-story-of-the-un-high-seas-treaty>.

45. Francis M. Bator, “The anatomy of market failure,” *The Quarterly Journal of Economics* 72:3 (August 1958), pp. 351-379. <https://www.jstor.org/stable/1882231>; Joseph E. Stiglitz, “The Invisible Hand and Modern Welfare Economics,” National Bureau of Economic Research, March 1991. <https://www.nber.org/papers/w3641>.

46. Clifford Winston, “Government Failure versus Market Failure,” AEI-Brookings Joint Center for Regulatory Studies, 2006. <https://www.brookings.edu/wp-content/uploads/2016/06/20061003.pdf>.

47. Lyon and Maxwell. <https://econpapers.repec.org/bookchap/cupcbooks/9780521603768.htm>.

48. Neil Malhotra et al., “Does Private Regulation Preempt Public Regulation?,” Stanford Center on Global Poverty and Development, November 2017. https://kingcenter.stanford.edu/sites/g/files/sbiybj16611/files/media/file/1028wp_0.pdf.

that businesses are meeting places of stakeholders, each with their own, sometimes complex, interests.⁴⁹ Rather than treating market exchange as transactional, this stakeholder theory suggests that businesses are more robust when they build relationships that recognize the diverse needs of all stakeholders.⁵⁰

Stakeholder theory opens the door to firms needing to account for the intrinsic environmental values of their internal and external constituents, such as employees taking environmental pride in the workplace, investors supporting environmental responsibility, and suppliers and consumers expressing preferences for environmentally friendly goods. Thus, firms start to voluntarily and often indirectly address environmental market failures in the interest of building stronger stakeholder relations. This is bolstered by social media advances that have increased firms' sensitivities to environmental public reputation.

Firms are now subject not only to conventional market forces and government regulation, but also to the shifting environmental values of their internal constituents and the external pressures of civil society.⁵¹ This results in a complex business atmosphere in which stakeholder environmental preferences influence corporate behavior to reflect public environmental sentiment. While markets are still subject to the imperfections recognized under the theorems of welfare economics, the relative importance of different market failures is shifting. With this closer alignment between corporate behavior and social environmental preferences, the government may have the opportunity to shift its emphasis from coercive strategies to enabling voluntary markets to resolve environmental market failures.

It might appear that incorporating broader stakeholder concerns could cause a firm to lose focus and sacrifice financial performance. In neoclassical theory, the social responsibility of the firm is to increase profits, accomplished by prioritizing shareholders, but firms cannot maximize profits by responding to only a narrow set of stakeholders.⁵² By including broader stakeholder motivations, novel CE can align with profit objectives and negate the concern that this necessarily strays from shareholder interests.⁵³ Shifts in environmental preferences of market forces and civil society may compel CE even when firms' leaders are environmentally indifferent. Importantly, pecuniary trade-offs of pursuing environmental objectives are borne by the parties willing to pay them, such as consumers and investment clients, not necessarily by the firm itself. The invisible hand analogy often presumes extrinsic motivation only, whereas contemporary CE may be best explained by the rise of intrinsic hands. In



Stakeholder theory opens the door to firms needing to account for the intrinsic environmental values of their internal and external constituents. Firms start to voluntarily and often indirectly address environmental market failures in the interest of building stronger stakeholder relations.

49. R.E. Freeman, *Strategic management: A stakeholder approach* (Cambridge University Press, 2010).

50. Mel Wilson, "Corporate Sustainability: What is it and where does it come from?," Ivey Business Journal, 2003. <https://www.iveypublishing.ca/s/product/corporate-sustainability-what-is-it-and-where-does-it-come-from/01t5c00000Cwb6nAAB>.

51. Richards and Giovanni. <https://ssrn.com/abstract=4040061>.

52. Milton Friedman, "A Friedman doctrine—The Social Responsibility Of Business Is to Increase Its Profits," *The New York Times*, Sept. 13, 1970. <https://www.nytimes.com/1970/09/13/archives/a-friedman-doctrine-the-social-responsibility-of-business-is-to.html>; Abigail McWilliams and Donald Siegel, "Corporate Social Responsibility: a Theory of the Firm Perspective," *Academy of Management Review* 26:1 (Jan. 1, 2001), pp. 117-127. <https://journals.aom.org/doi/abs/10.5465/amr.2001.4011987>.

53. Chrun et al. <https://www.annualreviews.org/doi/10.1146/annurev-environ-110615-090105>.

such a way, decentralized forces may be acting to improve society intentionally, in contrast to one assumption that societal improvement occurred unintentionally.

Reconciling Theory with CE Developments

The fact that formal CE went from niche to mainstream during a period in which the private sector faced no risk of greater federal environmental regulation indicates that CE causation may be flowing in the opposite direction to traditional understanding. In fact, firms made CE commitments explicitly because of a lack of federal commitment to environmental concerns.⁵⁴ For example, the U.S. withdrawal from the Paris climate agreement spurred widespread corporate pledges promoting the objectives of the agreement.⁵⁵

This may be traced to the rising importance of market factors such as cost and alignment with consumer preferences, which literature on historic CE commonly viewed as merely ancillary benefits.⁵⁶ This historical view is no longer reflected in the current business community, as the environmental preferences of market actors manifest as business risks and opportunities. Business surveys and management strategies reveal many rationales for CE to enhance the financial performance of the firm beyond policy influence.⁵⁷ These include:

- **Revenue growth.** Stated and revealed consumer preferences suggest significant and increasing willingness to pay (WTP) for environmentally superior goods and services, including clean electricity, packaging, ingredients, materials and recyclability.⁵⁸ Environmental advantage benefits customer acquisition and market expansion; consumer products with environmental claims averaged 28 percent growth over the past five years compared to 20 percent for products without such claims.⁵⁹ Retail markets once punished environmental products through higher prices for consumers and higher operating costs for investors, but shifts in sentiment now reward CE to create value for customers and investors.⁶⁰ Boosting environmental credibility helps explain the increase in the number of global retailers adopting science-based carbon emission targets from five in 2018 to 66 in 2021.⁶¹

NO government intervention

Firms made CE commitments explicitly because of a lack of federal commitment to environmental concerns.

Business surveys and management strategies reveal many rationales for CE to enhance the financial performance of the firm beyond policy influence.



54. Devin Hartman and Philip Rossetti, "The private sector is making progress for climate change," *The Hill*, March 30, 2021. <https://thehill.com/opinion/finance/545404-the-private-sector-is-making-progress-for-climate-change>.

55. "One year later, companies and investors are 'Still In' the Paris Agreement," Ceres, June 1, 2018. <https://www.ceres.org/news-center/press-releases/one-year-later-companies-and-investors-are-still-paris-agreement>.

56. Lyon and Maxwell. <https://econpapers.repec.org/bookchap/cupchbooks/9780521603768.htm>.

57. See, e.g., Witold Henisz et al., "Five ways that ESG creates value," McKinsey Quarterly, November 2019. <https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/Strategy%20and%20Corporate%20Finance/Our%20Insights/Five%20ways%20that%20ESG%20creates%20value/Five-ways-that-ESG-creates-value.ashx>.

58. See, e.g., "Recent Study Reveals More Than a Third of Global Consumers Are Willing to Pay More for Sustainability as Demand Grows for Environmentally-Friendly Alternatives," Businesswire, Oct. 14, 2021. <https://www.businesswire.com/news/home/20211014005090/en/Recent-Study-Reveals-More-Than-a-Third-of-Global-Consumers-Are-Willing-to-Pay-More-for-Sustainability-as-Demand-Grows-for-Environmentally-Friendly-Alternatives>; "The State of Consumer Spending: Gen Z Influencing All Generations to Make Sustainability-First Purchase Decisions," FirstInsight, Nov. 23, 2021. <https://www.firstinsight.com/press-releases/the-state-of-consumer-spending-gen-z-influencing-all-generations-to-make-sustainability-first-purchase-decisions>; Sherry Frey et al., "Consumers care about sustainability—and back it up with their wallets," McKinsey & Company and NielsenIQ, Feb. 6, 2023. <https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/consumers-care-about-sustainability-and-back-it-up-with-their-wallets>.

59. Frey. <https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/consumers-care-about-sustainability-and-back-it-up-with-their-wallets>.

60. Anamika Bhargava et al., "Climate sustainability in retail: Who will pay?" McKinsey & Company, May 4, 2022. <https://www.mckinsey.com/industries/retail/our-insights/climate-sustainability-in-retail-who-will-pay>.

61. Ibid.

- **Cost reduction.** Various CE initiatives yielded operational savings up to 60 percent while reducing water, energy and materials consumption.⁶² There is a significant correlation between energy, water and waste efficiency and financial performance.⁶³ Although this concept is not new—programs like “pollution prevention pays” have been around for half a century—new trends may warrant closer attention.⁶⁴
- **Financial risk reduction.** CE initiatives now include resilience from physical environment change, such as emergency preparedness.⁶⁵ Certain physical environmental effects like climate change are worsening and present growing material risks to firms like property and casualty insurers, who are proponents of private climate risk finance initiatives.⁶⁶ Business strategists cite studies on corporate environmental practices as increasing risk resilience and returns to shareholders.⁶⁷ Superior environmental practices also reduce litigation risks.
- **Reputational and risk reduction.** Securing a social license to operate is not just a strategy to avoid government coercion; it can also secure public trust among non-governmental actors.⁶⁸ The importance of a firm’s public reputation has grown in the age of social media, and it increasingly determines the outcome of business opportunities, such as new facilities in extractive and emission-intensive industries.⁶⁹ Environmental reputation risk has grown as civil society has pivoted to directly pressure the business community on environmental impact.⁷⁰ Credit rating agencies now factor environmental reputation into default risk.⁷¹
- **Enhanced labor productivity.** Significant CE appeal to human capital attraction and retention is a fairly recent phenomenon and varies by age cohort and industry. A recent survey found that nearly half of workers would accept a lower salary to work for an environmentally responsible company, with over 10 percent saying they would accept a \$5,000-\$10,000 pay cut.⁷² Generally, firms with environmental stigmas tend to lose talent and face restricted talent pools.⁷³



62. Henisz et al. <https://www.mckinsey.com/~media/McKinsey/Business%20Functions/Strategy%20and%20Corporate%20Finance/Our%20Insights/Five%20ways%20that%20ESG%20creates%20value/Five-ways-that-ESG-creates-value.ashx>.

63. Ibid.

64. Ibid.

65. Judith Rodin and Saadia Madsbjerg, “ESG is missing a metric: R for resilience,” World Economic Forum, June 7, 2021. <https://www.weforum.org/agenda/2021/06/esg-resilience-investment-environment-social-governance>.

66. See, e.g., “Annual Form 10-K Report to the U.S. Securities and Exchange Commission,” United Insurance Holdings Corporation, December 2015. <https://www.sec.gov/Archives/edgar/data/1401521/000140152116000138/a10-kdocument31dec15.htm>; “Climate Summit 2022,” Business Development Agency Bermuda, May 24, 2022. <https://www.bda.bm/events/bermuda-climate-summit-2022>.

67. “ESG resilience: A true measure of success,” Grant Thornton, 2021. <https://www.grantthornton.com/content/dam/grantthornton/website/assets/content-page-files/advisory/pdfs/2021/esg-resilience-true-measure-success/esg-resilience-true-measure-success.pdf>.

68. See, e.g., Lucy Pérez, “Does ESG really matter—and why?” McKinsey Quarterly, Aug. 10, 2022. <https://www.mckinsey.com/capabilities/sustainability/our-insights/does-esg-really-matter-and-why>.

69. Gabriel Friedman, “Barrick Gold lost its ‘social licence’ in Papua New Guinea. This is the price it’s paying to earn it back,” *Financial Post*, April 15, 2021. <https://financialpost.com/commodities/mining/barrick-gold-lost-its-social-licence-in-papua-new-guinea-this-is-the-price-its-paying-to-earn-it-back>.

70. André Höck et al., “The effect of environmental sustainability on credit risk,” *Journal of Asset Management* 21 (March 7, 2020), pp. 85-93. https://kobra.uni-kassel.de/bitstream/handle/123456789/11552/Hoeck2020_Article_TheEffectOfEnvironmentalSustain.pdf?sequence=1&isAllowed=y.

71. Hartman, “Toward Clarity and Consensus on ‘E’SG,” <https://www.rstreet.org/commentary/toward-clarity-and-consensus-on-esg>.

72. Adele Peters, “Most millennials would take a pay cut to work at an environmentally responsible company,” *Fast Company*, Feb. 14, 2019. <https://www.fastcompany.com/90306556/most-millennials-would-take-a-pay-cut-to-work-at-a-sustainable-company>.

73. Henisz et al. <https://www.mckinsey.com/~media/McKinsey/Business%20Functions/Strategy%20and%20Corporate%20Finance/Our%20Insights/Five%20ways%20that%20ESG%20creates%20value/Five-ways-that-ESG-creates-value.ashx>.

- **Optimized capital and investment.** Allocations to environmental investing massively increased in recent years, and reports project that it will reach \$34 trillion by 2026.⁷⁴ Institutional investors with long-time horizons are a pronounced driver of this trend.⁷⁵ This should accelerate trends that reflect how a firm's environmental profile affects its cost of debt and equity capital.⁷⁶ Access to conventional capital is challenging for the most environmentally degrading industries, such as coal.⁷⁷



Business community behaviors and attitudes suggest that fundamental shifts in the production and consumption functions of the economy have been the main propellants of mainstream CE in the last decade. Several social, economic and technological catalysts are behind these new market fundamentals.

Technological advances may catalyze CE through several mechanisms. **First**, the digital age has lowered transactions costs markedly, enabling the potential for more extensive applications of the Coase theorem in which many parties are involved in environmental negotiations to address environmental problems beyond local scales.⁷⁸ **Second**, digital platforms enable the more novel drivers of CE, especially the ability to inform and allocate resources based on heterogeneous consumer and investor environmental preferences. **Third**, new technology creates pathways to influence corporate reputation, such as through social media campaigns. For example, building on its successful public campaigns to pressure Nestle, Mattel and Lego to revise their supply chains toward more environmentally benign approaches, Greenpeace offers training programs and materials in digital environmental activism.⁷⁹ Technology has enabled many stakeholder preferences that were once exogenous to firms to become endogenous.

Technological advances may catalyze CE through several mechanisms.



Technology is a vehicle, but its fuel is the novel motivation of market forces and civil society. This is a function of environmental attitudes and economic conditions, which together translate into economic preferences measured by increasing WTP for environmental attributes. Such attitudes and conditions vary over time and by location, which may alter the nature and magnitude of CE.⁸⁰

Novel CE Motivations

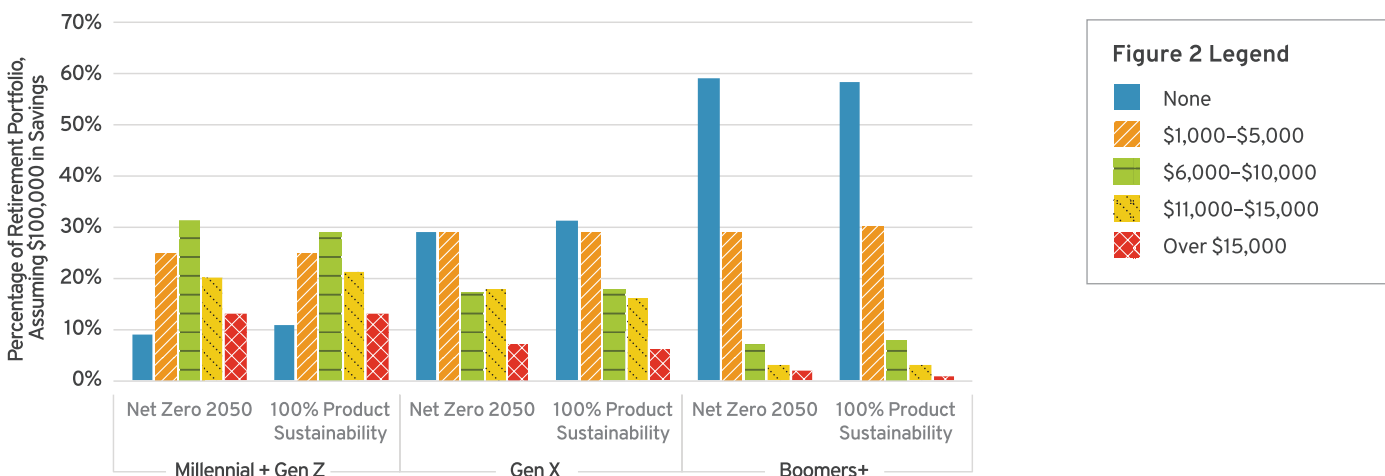
The major uptick in recent CE parallels changes in aggregate environmental preferences, which, when broken down by age cohort, reveal major spreads between generations. Generally, environmental preferences affect the economic behavior of Baby Boomers modestly, of Generation X quite significantly, and of Millennials and

74. "Asset and wealth management revolution 2022: Exponential expectations for ESG," PWC, last accessed April 4, 2023. <https://www.pwc.com/gx/en/industries/financial-services/asset-management/publications/asset-and-wealth-management-revolution-2022.html>.
75. Whelan et al. <https://www.stern.nyu.edu/sites/default/files/assets/documents/ESG%20Paper%20Aug%202021.pdf>.
76. Sudheer Chava, "Environmental Externalities and Cost of Capital," *Management Science* 60:9 (September 2014), pp. 2223-2247. <https://www.jstor.org/stable/24550583>.
77. Taylor Kuykendall, "Shut off from conventional capital, US coal companies seek creative options," S&P Global, June 2, 2021. <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/shut-off-from-conventional-capital-us-coal-companies-seek-creative-options-64515285>.
78. See, e.g., Nestor M Davidson et al, eds., *The Cambridge Handbook of the Law of the Sharing Economy* (Cambridge University Press, November 2018), Ch. 5. <https://www.cambridge.org/core/books/cambridge-handbook-of-the-law-of-the-sharing-economy/02C6EEA2C55CC3BFA4A4CDD63558081>.
79. "Toolkit: Digital Organizing and Digital Campaigning 101," Greenpeace, last accessed May 2, 2023. <https://www.greenpeace.org/usa/toolkits/digital-organizing-and-digital-campaigning-101>.
80. See, e.g., Farida Saleem et al., "Corporate Environmentalism: An Emerging Economy Perspective," *Sustainability* 12:15 (Aug. 3, 2020). <https://www.mdpi.com/2071-1050/12/15/6225>.

younger generations very substantially. For example, a survey found that almost 40 percent of Millennials chose a job because of a firm's superior environmental record, compared to less than 25 percent of Generation X individuals and just 17 percent of Baby Boomers.⁸¹ Additionally, a 2022 survey found that 51 percent of business students across 30 countries would be willing to accept a lower salary from a company with better environmental practices, up from 44 percent in 2015.⁸²

Although environmental preferences are strongest in younger generations, the preferences of the wealthier Generation X may have been the catalyst behind the environmental investing revolution in the 2010s.⁸³ A Bank of America survey found that 63 percent of high-net-worth Generation X investors reviewed their portfolios for ESG investments in 2018, compared to 36 percent in 2013.⁸⁴ In addition, a 2022 survey of nearly 2,500 investors found a large generation gap in environmental investing preferences (Figure 2).⁸⁵ Most Generation X and younger investors want investment companies to use their size and voting power to influence the environmental practices of the firms they invest in, even if it decreases their value of investment.⁸⁶ Only 35 percent of Baby Boomers and those from older cohorts agree.⁸⁷ Thus, there is a striking variance between generations on their willingness to lose retirement savings for invested companies to require 100 percent sustainable products and achieve "net-zero" carbon emissions by 2050.⁸⁸

Figure 2: Proportion of Retirement Savings that Investors are Willing to Lose for their Invested Companies' to Adopt Environmental Practices



Source: Haber et al., "2022 Survey of Investors, Retirement Savings, and ESG," pp. 15-16. <https://www.gsb.stanford.edu/sites/default/files/publication/pdfs/survey-investors-retirement-savings-esg.pdf>.

81. Peters. <https://www.fastcompany.com/90306556/most-millennials-would-take-a-pay-cut-to-work-at-a-sustainable-company>.

82. "Rising Leaders on Social and Environmental Sustainability: A Global Survey of Business Students," Yale Center for Business and the Environment, 2022, p. 12. https://cbey.yale.edu/sites/default/files/2022-02/Rising%20Leaders_2022%20_Final.pdf.

83. Dieter Holger, "What Generation Is Leading the Way in ESG Investing? You'll Be Surprised," *The Wall Street Journal*, Sept. 10, 2019. <https://www.wsj.com/articles/what-generation-is-leading-the-way-in-esg-investing-youll-be-surprised-11568167440>.

84. Ibid.

85. Haber et al. <https://www.gsb.stanford.edu/sites/default/files/publication/pdfs/survey-investors-retirement-savings-esg.pdf>.

86. Ibid., p. 12.

87. Ibid.

88. Ibid., pp. 15-16.

Significant political and scholarship concern has focused on corporate leadership preferences in driving CE. Some have categorized it as distinct from true market forces.⁸⁹ Managers' perceptions of environmental values and protection plays an important role in a firm's environmental stance.⁹⁰ However, because leadership decides firm behavior, it is difficult to disentangle the extent to which CE reflects leadership personal preferences as opposed to strategic business decisions. For example, attributing technology companies' CE initiatives to the values of corporate leadership versus a corporate value-driven response is complex, if not impossible.⁹¹ Nevertheless, markets historically sort out managers and management practices that are misaligned with the financial health of the firm. Further, corporate leadership preferences might explain the behavior of a handful of CE leaders, but would not explain the sweeping CE trend across industry.

At the same time, it is increasingly difficult to attribute CE trends to any single force or category of forces, including markets. With the change in administrations in 2021, regulatory developments may now be as or more influential in driving corporate environmental behavior than they were in previous administrations. Nevertheless, market environmental forces remain robust. In the consumer sector, business managers view consumer willingness to move toward sustainable products as the strongest force at work despite growing regulatory pressure.⁹² Since 2021, however, the anticipation of federal regulatory actions has played a growing role in driving CE. For example, a 2022 survey of corporate executives found major gains in voluntary greenhouse gas disclosure driven by a mixture of factors, including business performance and anticipated SEC regulation.⁹³ In 2022, domestic institutional investors cited stakeholder concerns (55 percent), organizational value alignment (53 percent), fiduciary responsibility (50 percent), improved risk profile (42 percent), higher long-term returns (21 percent) and impact (21 percent) as the reasons for incorporating environmental factors.⁹⁴ This suggests that both traditional CE drivers (anticipation of and response to government intervention) and novel CE drivers (increased incorporation of stakeholders' non-pecuniary preferences) are likely to play increased roles in CE performance going forward.

ROBUST

Market environmental forces remain robust. In the consumer sector, business managers view consumer willingness to move toward sustainable products as the strongest force at work despite growing regulatory pressure.

89. Costello. <https://www.sciencedirect.com/science/article/abs/pii/S1040619021000993>.

90. Sanjay Sharma, "Managerial Interpretations and Organizational Context as Predictors of Corporate Choice of Environmental Strategy," *The Academy of Management Journal* 43:4 (August 2000), pp. 681-697. <https://www.jstor.org/stable/1556361>.

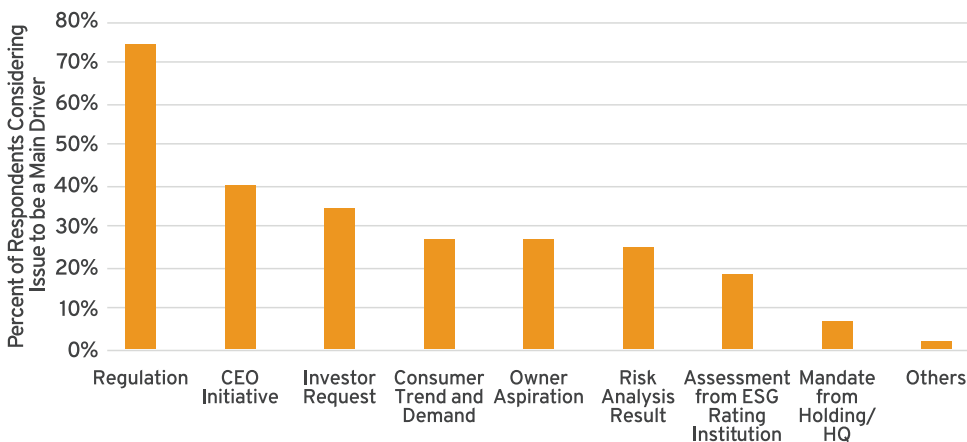
91. Justine Calma, "Jeff Bezos announces first beneficiaries of his \$10 billion climate fund," *The Verge*, Nov. 16, 2020. <https://www.theverge.com/2020/11/16/21569902/jeff-bezos-first-recipients-10-billion-climate-change-fund>.

92. Sebastian Gatzert and Clarisse Magnin, "Prioritizing sustainability in the consumer sector," McKinsey & Company, Aug. 5, 2021. <https://www.mckinsey.com/industries/retail/our-insights/prioritizing-sustainability-in-the-consumer-sector>.

93. "Sustainability action report: Survey findings on ESG disclosure and preparedness," Deloitte, December 2022. <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/audit/us-survey-findings-on-esg-disclosure-and-preparedness.pdf>.

94. Thomas Shingler and Hannah Vieira, "Callan Survey Sees First Decline in ESG Incorporation Since 2019," *Callan*, Nov. 28, 2022. <https://www.callan.com/blog-archive/2022-esg-survey>.

Figure 3: CEO Survey of Drivers of ESG Discussion on Board Agendas (2021)



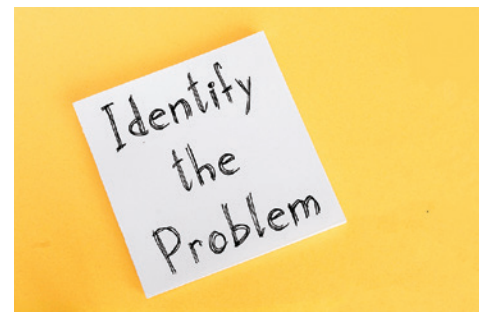
Source: “CEO Survey 2021,” Deloitte, last accessed May 2, 2023. <https://www2.deloitte.com/content/dam/Deloitte/id/Documents/risk/id-risk-ceo-survey-on-esg-2021.pdf>.

CE Performance and Market Failures

The above analysis indicates that other drivers are effectively supplementing—or even replacing—government intervention in pushing firms toward CE, thereby lessening (but not eliminating) the need for policies that force the internalization of environmental costs. However, rather than eliminating market failures, CE behaviors may yield a shift in the relative importance of different market failures in environmental outcomes. If firms are voluntarily internalizing the environmental costs of their market exchanges, then there is a need to examine and reframe our understanding of what is leading to poor environmental outcomes—that is, to identify the “new” market failures around which environmental policymaking should be built.

First, there is a question of measurement. CE performance evaluations have evolved from focusing on the financial performance of firms or investments to also encompassing the non-pecuniary welfare of consumers, labor and investors. Specifically, the utility function of market actors has become environmentally differentiated, revealing highly variable non-pecuniary preferences.⁹⁵ Failure to account for this results in misleading performance evaluations, such as solely examining the pecuniary performance of ESG funds while ignoring environmental performance.

This raises the question of how to measure firms’ environmental performance to enable market actors to make decisions that reflect their preferences. Accurate baselines are hard to establish and often require the construction of complex counterfactuals. Thus, the environmental additionality of firm behavior is difficult to assess. The quality of corporate environmental data and metrics remains poor, stymieing efficient market and environmentally beneficial behavior.⁹⁶



If firms are voluntarily internalizing the environmental costs of their market exchanges, then there is a need to examine and reframe our understanding of what is leading to poor environmental outcomes—that is, to identify the “new” market failures around which environmental policymaking should be built.

95. See, e.g., Ruben Hernandez and Deborah Roisman, “The Economics of Charitable Giving: What Gives?,” Federal Reserve Bank of St. Louis, Oct. 1, 2005. <https://www.stlouisfed.org/publications/regional-economist/october-2005/the-economics-of-charitable-giving-what-gives>.

96. Tyson. <https://www.utilitydive.com/news/companies-must-venture-jungle-approaches-esg-ratings/620936>.

This contributes to the extensive disagreement and confusion over corporate environmental ratings and fuels significant concerns over greenwashing, which refers to hollow or misleading environmental claims.⁹⁷ Environmental ratings are measured differently across agencies, often resulting in inconsistent performance measures.⁹⁸ Some experts have grown increasingly skeptical that environmental ratings have any direct correlation to business sustainability, which makes more useful and accurate ratings imperative to unlock the potential of environmental investing.⁹⁹ A 2022 survey found that over 70 percent of executives lack confidence in their own organizations' environmental reporting.¹⁰⁰ Real and perceived claims of greenwashing damage market performance, and some practitioners have gone so far as to say pushing firms to adopt environmentally friendly practices does not work.¹⁰¹

Despite such controversy, there is progress; even where information is not perfect, evidence suggests that the rise of non-pecuniary preferences is affecting firm behaviors. Environmental investing practices affect the cost of equity and debt capital, indicating the potential to spur firms to internalize their environmental externalities.¹⁰² In fact, firms that prioritized environmental discussion on earnings calls from 2007-2019 delivered higher levels of pollution abatement and more green patents, even after the United States announced its withdrawal from the Paris Agreement.¹⁰³ Further, even imperfect CE may still improve resource allocation by accounting for environmentally differentiated preferences of market actors. Overall, the performance of non-governmental climate action is unclear and requires additional empirical validation.¹⁰⁴

The popularity of CE mechanisms relative to underlying market fundamentals may be an indicator of how market participants perceive CE performance. After a meteoric rise, environmental investing saw a year-over-year decline in 2022.¹⁰⁵ Importantly, though, it appears that this short-term decrease in CE investment activity runs counter to underlying market sentiment. In 2022, investment banks found that their clients' appetite for environmental factors grew despite debates over metrics and commercial reorientation in capital markets.¹⁰⁶ For example, a

A 2022 survey found that over

70%
of executives

lack confidence in their own organizations' environmental reporting. Real and perceived claims of greenwashing damage market performance.

97. Sudheer Chava et al., "Do Managers Walk the Talk on Environmental and Social Issues?," ARX Series, Nov. 26, 2021. https://www.arx.cfa/-/media/regional/arx/post-pdf/2021/11/26/do-managers-walk-the-talk-on-environmental-and-social-issues.pdf?sc_lang=en&hash=AE26998D419D782B19454345057B473B.
98. Beth Stackpole, "Why sustainable business needs better ESG ratings," MIT Management Sloan School, Dec. 6, 2021. <https://mitsloan.mit.edu/ideas-made-to-matter/why-sustainable-business-needs-better-esg-ratings>.
99. Ibid.
100. Mark Segal, "Survey: Over 70% of Execs Lack Confidence in Their Own ESG Data Reported to Stakeholders," ESGtoday, June 23, 2022. <https://www.esgtoday.com/survey-over-70-of-execs-lack-confidence-in-esg-data-reported-to-stakeholders>.
101. Tariq Fancy, "Tariq Fancy on the failure of green investing and the need for state action," *The Economist*, Nov. 4, 2021. <https://www.economist.com/by-invitation/2021/11/04/tariq-fancy-on-the-failure-of-green-investing-and-the-need-for-state-action>.
102. Chava, "Environmental Externalities and Cost of Capital." <https://www.jstor.org/stable/24550583>.
103. Chava, "Do Managers Walk the Talk on Environmental and Social Issues?" https://www.arx.cfa/-/media/regional/arx/post-pdf/2021/11/26/do-managers-walk-the-talk-on-environmental-and-social-issues.pdf?sc_lang=en&hash=AE26998D419D782B19454345057B473B.
104. Yuhao Ba, "Non-state climate governance, corporate leadership, and governance performance: evidence from the US electric utility sector," IOP Publishing, July 22, 2022. <https://iopscience.iop.org/article/10.1088/1748-9326/ac7fa8>.
105. Shingler and Vieira. <https://www.callan.com/blog-archive/2022-esg-survey>.
106. Markus Müller et al. "ESG Survey 2022: Trends and concerns," Deutsche Bank, November 2022. <https://www.deutschewalth.com/content/dam/deutschewalth/cio-perspectives/cio-special-assets/esg-survey-trends-and-concerns/CIO-Special-ESG-Survey-Trends-and-concerns.pdf>.

2022 survey of Deutsche Bank clients found that 42 percent of investors would be willing to pick a company with an AAA ESG rating over a CCC-rated company even if it dropped their expected returns from 8 percent to 4 percent.¹⁰⁷

Such strong indications of investor preferences may actually be understated given the demonstrable lack of market confidence in environmental ratings. The core problem boils down to having informed market participants. Weak environmental accounting and branding infrastructure exacerbates the risk of greenwashing, which poses reputational risks to industry by eroding trust.¹⁰⁸ This can deter productive environmental innovation and result in unmet demand for environmentally differentiated commodities or consumer products.¹⁰⁹

The difficulties of measuring, communicating and verifying CE increase transactions costs for market participants who have to invest their own resources to become informed. The lack of clear, credible and recognizable ways to differentiate and commoditize environmental attributes across companies may also indicate a property rights definition and enforcement problem.

These issues exacerbate another potential market deficiency: unclear or misaligned fiduciary responsibilities. The push to expand fund managers' scope in environmental investing raises major questions about the quality of representation of investors' and pensioners' interests. Many in the business community view ESG as broadening the objectives and duties of fiduciaries to encompass considerations of additional factors that are somewhat more subjective than pecuniary returns on investments.¹¹⁰ This may induce a principal-agent problem, in which fund managers (agents) maximize their personal utility at the cost of investors' (principals) or cannot make informed decisions given variable preferences and unclear data on actual environmental performance.¹¹¹ Some empirical evidence suggests that principal-agent problems exist, such as hedge funds that have committed to responsible investment principles and may have an incentive to pander to investor preferences while sacrificing risk-adjusted returns.¹¹²

Left uncorrected, these new market failures diminish novel CE's economic and environmental outlook.



The lack of clear, credible and recognizable ways to differentiate and commoditize environmental attributes across companies may also indicate a property rights definition and enforcement problem.

107. Ibid., p. 16.

108. Frey. <https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/consumers-care-about-sustainability-and-back-it-up-with-their-wallets>.

109. Ibid.

110. "Asset and wealth management revolution 2022: Exponential expectations for ESG," PWC, last accessed May 17, 2023. <https://www.pwc.com/gx/en/industries/financial-services/asset-management/publications/asset-and-wealth-management-revolution-2022.html>.

111. Hendrik Kimmerle, "The Principal-Agent Problem Within Sustainable Investing," New Challenges of Economic and Business Development 2019: Incentives for Sustainable Economic Growth, May 16-18, 2019, pp. 400-409. https://scholar.google.com/scholar_lookup?title=The+Principal-Agent+Problem+within+Sustainable+Investing&conference=Proceedings+of+the+New+Challenges+of+Economic+and+Business+Development%E2%80%932019:+Incentives+for+Sustainable+Economic+Growth&author=Kimmerle,+H.+&publication_year=2019&pages=400%E2%80%93409.

112. Hao Liang et al., "Socially Responsible Hedge Funds," July 2020. <https://esginvesting-cdn-1.s3.eu-west-2.amazonaws.com/wp-content/uploads/2020/07/13134942/Socially-Responsible-Hedge-Funds.pdf>.

Outlook

The potential for CE to usher environmental transformation is enormous. For example, roughly two-thirds of global gross domestic product now falls under a 2050 net-zero commitment.¹¹³ However, the promise of this ambition must be balanced with a recognition that firms’ meaningful environmental damage abatement often entails costs and introduces new complexities to expected profit and loss projections.¹¹⁴ Firms are rapidly weighing the costs of environmental actions against the financial benefits of abatement, such as enhanced revenues and risk reduction. This suggests that rational firms will seek an abatement equilibrium in which their individual marginal costs of abatement equal their marginal benefits.

Historically, it has been accepted that this accounting excludes any consideration of societal costs or benefits of abatement. But this equation has become more complicated by the evolving preferences of investors, consumers, employees, civil society and others, which push the firms’ marginal abatement benefits closer to society’s, reducing the size of environmental externalities. Given recent aggregate trends and the age distribution of environmental preferences, these market forces appear poised to increase the “green premium” and thus increase the appetite for CE. The greening of market forces has widespread applicability, as consumer spending and private investment alone approach \$19 trillion, or 80 percent of GDP.¹¹⁵ Nevertheless, the nature, magnitude and longevity of CE influences and their environmental outcomes remain highly uncertain.

Holding public policy constant, the key question is whether the limitations of novel CE would self-correct and transform CE into a highly credible and impactful force to drive environmental improvement and increase social welfare. One indicator of progress would be a much stronger correlation between firms’ environmental reputation and environmental performance. The implications of the status quo suggest that policy reforms that unleash the greening of the invisible hand—especially those that correct deficiencies in information, transaction costs, property right definitions and principal-agent alignment—will prove integral to unlocking CE’s potential.

New Market Failures

The general rationale for environmental policy is to address one of three types of market failures: incomplete property rights (externalities or public goods); imperfect information; and the public good nature of research and innovation. If CE enables markets to self-correct these issues at least to some extent, there is need to revisit this conventional approach and identify issues driving adverse outcomes in this new market environment.

GDP

Greening of market forces has widespread applicability, as consumer spending and private investment alone approach \$19 trillion, or 80 percent of GDP. Nevertheless, the nature, magnitude and longevity of CE influences and their environmental outcomes remain highly uncertain.

113. Gatzert and Magnin. <https://www.mckinsey.com/industries/retail/our-insights/prioritizing-sustainability-in-the-consumer-sector>.

114. Pauline Blum et al., “Net zero or bust: Beating the abatement cost curve for growth,” McKinsey & Company, April 13, 2021. <https://www.mckinsey.com/capabilities/operations/our-insights/net-zero-or-bust-beating-the-abatement-cost-curve-for-growth>.

115. Frey. <https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/consumers-care-about-sustainability-and-back-it-up-with-their-wallets>; “Gross Private Domestic Investment,” St. Louis Federal Reserve, Jan. 26, 2023. <https://fred.stlouisfed.org/series/GPDI>.

The rise of CE is not creating new classes of market failures, but it does raise new twists in the nature and relative importance of types of market failure. Historically, policy development has assumed that firms would minimize their own environmental compliance costs, including the sum of pollution control and expected value of fines. But with the rise of intrinsically motivated investors, employees, consumers and civil society, even firms with pure returns-based motivations are incorporating CE into their calculus; that is, their environmental values are better aligning with those of society.

But for those intrinsic values of key constituents and stakeholders to serve as effective complements to or substitutes for government regulation, governments need to examine whether there are opportunities to support and leverage these less coercive forces. In short, governments need to consider whether there are “new market failures” that inhibit the efficiency-enhancing effects of “new market forces.”

The performance deficiencies of CE raise at least four clear market failures that may be addressed through policy intervention: information deficiency; high transactions costs; principal-agent misalignment; and poorly defined or unenforced property rights. The initial policy objective is to select an instrument suited to the target market failure or failures—for example, information deficiencies and high transaction costs are highly related and may often be addressed together—while accounting for any government failure and the ability of markets to self-correct.

CE influences are diverse, with some motivated solely by pecuniary interests and others willing to compromise or sacrifice pecuniary considerations. For example, a common theme in the ESG controversy is that policymakers and stakeholders struggle to distinguish ESG value-based strategies from values-based strategies.¹¹⁶ This paper refers to this distinction as pecuniary ESG and values-based ESG. Pecuniary ESG integrates financially material ESG factors when assessing a company’s economic prospects, whereas values-based ESG enshrines values into financial decisions to achieve a particular outcome.¹¹⁷ Both forms influence CE.

Complete Information and Minimal Transactions Costs

The largest hindrance to CE may be incomplete information. For example, a 2022 survey revealed that firms are concerned about the accuracy and completeness of environmental data, with data quality as the top challenge and data access concerns also featuring prominently.¹¹⁸ Information deficiency creates higher transactions costs because market participants need to commit more resources to resolve information deficiencies on their own. Public policy has a long history of addressing



The largest hindrance to CE may be incomplete information. For example, a 2022 survey revealed that firms are concerned about the accuracy and completeness of environmental data.

116. See, e.g., Robert G. Eccles and Jill E. Fisch, “The Politics of Values-Based Investing,” Harvard Law School Forum on Corporate Governance, Sept. 7, 2022. <https://corpgov.law.harvard.edu/2022/09/07/the-politics-of-values-based-investin>.

117. Jennifer J. Schulp, “ESG by Another Name?,” Cato Institute, Dec. 21, 2022. <https://www.cato.org/commentary/esg-another-name>.

118. “Sustainability Action Report: Survey findings on ESG disclosure and preparedness.” <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/audit/us-survey-findings-on-esg-disclosure-and-preparedness.pdf>.

environmental information deficiencies through direct provision or mandatory information disclosures. Relatedly, standardization of environmental reporting and product attributes can markedly lower transactions costs via improved information.

Novel CE requires information on a different scale, scope and set of purposes than previously considered. In particular, stakeholders seek information on firms' indirect environmental impact, which often requires complex, dynamic and granular lifecycle data that is difficult to obtain and verify. This is especially the case for the most prominent and urgent CE issue: climate change. Firms' greenhouse gas emissions are measured in different ways depending on their origin and attribution. Scope 1 emissions refer to those produced directly by a firm, Scope 2 emissions refer to indirect emissions from energy procurement and Scope 3 emissions are those generated across a firm's supply chain and outside of their direct control.¹¹⁹ Both Scope 2 and Scope 3 emissions accounting approaches are currently limited by information deficits.

Scope 2 information gaps have hindered CE leader efforts from pursuing and being held accountable to corporate emissions reductions plans.¹²⁰ The EPA's current emissions information is heavily lagged and lacks the spatial and temporal granularity to inform Scope 2 accounting.¹²¹ This highlights a need for public access to real-time marginal electricity emissions in a given location based on transmission system constraints.¹²² Some non-governmental actors like the grid operator for the Mid-Atlantic region have begun to provide this information.¹²³ Other non-governmental actors are increasing environmental transparency to address emissions data gaps, such as the Environmental Defense Fund's global methane tracking initiative.¹²⁴

The federal government is also increasing the direct provision of Scope 2 emissions data. A new initiative by the EIA to provide marginal electricity emissions data is also underway.¹²⁵ This provides more temporally refined information with some regional grid considerations incorporated. The hourly EIA data is a major upgrade, with industry groups believing it will improve the ability of energy customers to conduct transactions that optimize emissions load-shifting; improve siting and procurement based on emission impact; and better measure the emissions performance of clean energy projects.¹²⁶ However, the EIA platform is still a proxy rather than a precise



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119. See, e.g., "Scope 1 and Scope 2 Inventory Guidance," United States Environmental Protection Agency, Sept. 9, 2022. <https://www.epa.gov/climateleadership/scope-1-and-scope-2-inventory-guidance>.

120. Hartman, "Liberty never looked so green: Policy implications of private carbon-free energy commitments." <https://www.utilitydive.com/news/liberty-never-looked-so-green-policy-implications-of-private-carbon-free-e/629625>.

121. Ibid.

122. Ibid.

123. "Five Minute Marginal Emission Rates," PJM, March 23, 2022. https://dataminer2-train.pjm.com/feed/fivemin_marginal_emissions/definition.

124. Flavia Lopes, "Chasing Methane: Why The Methane Emissions Data Gap Needs Filling," *IndiaSpend*, Aug. 10, 2022. <https://www.indiaspend.com/explainers/chasing-methane-why-the-methane-emissions-data-gap-needs-filling-830292>; Frances Reuland and Sasha Bylsma, "Clean Energy 101: Methane-Detecting Satellites," *CleanTechnica*, Feb. 9, 2023. <https://cleantechnica.com/2023/02/09/clean-energy-101-methane-detecting-satellites>.

125. "Hourly Electric Grid Monitor," U.S. Energy Information Administration, last accessed May 17, 2023. https://www.eia.gov/electricity/gridmonitor/dashboard/electric_overview/US48/US48.

126. Leigh Yeatts and Sam Schwartz, "Energy Customers Want Transparent, Precise, Reliable Emissions Data," Clean Energy Buyers Association, March 13, 2023. <https://cebuyers.org/blog/energy-customers-want-transparent-precise-reliable-emissions-data>.

measure of marginal emissions; to fully measure emissions and eliminate the information deficiency, the hourly data would need to be further refined to a five-minute interval at a spatially granular level.¹²⁷

Scope 3 greenhouse gas emissions are often difficult to measure, as the current Landscape is marked by opaque carbon accounting and tracking practices.¹²⁸ Nevertheless, Scope 3 emissions are the most important for novel CE in many sectors. They account for 80 percent of the carbon footprint of many companies and 98 percent for certain retail industries.¹²⁹ In 2022, the majority of company executives reported growing confidence in their firms' preparedness to disclose Scope 1 and 2 emissions, but only 37 percent were prepared to disclose Scope 3 emissions.¹³⁰ Given the international nature of Scope 3, efforts to update the Greenhouse Gas Protocol—a tool to track progress on climate goals—may markedly improve Scope 3 data collections and accounting framework; reduce controversy; and enable market participants to make environmental claims with confidence.¹³¹

Various efforts are also underway to close the information gap for firms' environmental impact beyond climate change. For example, defining and measuring recyclability and packaging sustainability is an imperfect proxy for materials and waste impact. Private efforts like the Sustainable Packaging Coalition and the Recycling Partnership aim to address market confusion.¹³² Such efforts are occurring in parallel with a multi-year process to update the FTC Green Guides, which places added emphasis on public policy that harnesses and validates private leadership.

The limitations of environmental impact accounting and reporting hinders markets from making informed decisions around firms' environmental performance. There is a need to bolster information generation and reporting abilities around environmental performance. Mandatory information disclosures have been used as a form of environmental policy for decades. One of the most popular examples is the EPA's Toxics Release Inventory, which has been linked to spurring CE for decades.¹³³ More recently, non-environmental agencies have begun pursuing and enacting mandatory environmental information disclosures led by the SEC.



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127. Hartman, "Liberty never looked so green: Policy implications of private carbon-free energy commitments." <https://www.utilitydive.com/news/liberty-never-looked-so-green-policy-implications-of-private-carbon-free-e/629625>.

128. Peter Spiller, "Making supply-chain decarbonization happen," McKinsey & Company, June 14, 2021. <https://www.mckinsey.com/capabilities/operations/our-insights/making-supply-chain-decarbonization-happen>.

129. Bhargava et al., "Climate sustainability in retail: Who will pay?" <https://www.mckinsey.com/industries/retail/our-insights/climate-sustainability-in-retail-who-will-pay>.

130. "Sustainability action report: Survey findings on ESG disclosure and preparedness," p. 4. <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/audit/us-survey-findings-on-esg-disclosure-and-preparedness.pdf>.

131. See, e.g., Heather Clancy, "Emissions accounting needs a makeover, and it's coming," GreenBiz, Jan. 2, 2023. <https://www.greenbiz.com/article/emissions-accounting-needs-makeover-and-its-coming>.

132. "Recycle Check: Solving consumer confusion with dynamic local information," The Recycling Partnership, last accessed April 4, 2023. <https://recyclingpartnership.org/recyclecheck>; "SPC Releases Comprehensive Update of its Centralized Availability of Recycling Study," Sustainable Packaging Coalition, July 30, 2021. <https://sustainablepackaging.org/spc-releases-comprehensive-update-of-its-centralized-availability-of-recycling-study>.

133. Werner Antweiler and Kathryn Harrison, "Toxic Release Inventories and Green Consumerism: Empirical Evidence from Canada," *The Canadian Journal of Economics* 36:2 (May 2003), pp. 495-520. <https://www.jstor.org/stable/3131854>; Aseem Prakash and Matthew Potoski, *The Voluntary Environmentalists* (Cambridge University Press, 2006). <https://www.cambridge.org/core/books/voluntary-environmentalists/BA42AEAE88E6B3AD104B4A74A0F43F58>.

Given the increased materiality of environmental factors to financial decisions, financial institutions clearly have a role in the provision of environmental information. However, that role can vary widely and either efficiently correct market failure or induce government failure. Clearly delineated financial climate risk disclosure rules can furnish investors with better risk information and improve the consistency and comparability of reporting via standardized definitions for actions that offset or negate climate risk.¹³⁴ At the same time, excessive rules can interfere with market efficiency, obfuscate material climate risk information to investors and degrade private sector-led emissions mitigation efforts.¹³⁵ For example, in 2022, SEC Commissioner Hester Peirce voiced profound concerns that the SEC’s proposed climate disclosure rule would harm investors, the economy and not bring consistency, comparability and reliability to disclosures.¹³⁶ Some market participants stress that financial regulators must “stay in their lane” to enhance material transparency, and missteps would exacerbate risk and induce new corporate liabilities.¹³⁷ Overall, environmental disclosures must be carefully calibrated to emanate from the proper institutions and match requirements with the value they could provide via clarity, lower liabilities, and “private ordering” that improves the depth and quality of environmental reporting.¹³⁸

A key challenge to resolving environmental information deficiencies is the institutional coordination required to match expertise with capabilities. For example, Scope 2 emissions require energy expertise and progress to be made by energy institutions, yet the EPA holds primary responsibility for environmental reporting. It is possible that Scope 2 and 3 emissions will become more financially material to investors; however, it is doubtful that the SEC is the ideal institution to validate such claims given its statutory charge and lack of environmental expertise. Domestically, this may require more institutional coordination, such as memoranda of understanding between agencies, to enhance information and minimize duplicative reporting burdens. Scope 3 emissions, retail product sustainability and other environmental footprints dependent on international economic activities stress that such domestic environmental accounting frameworks must harmonize with international frameworks. This requires efficient coordination between public and private institutions, such as public institutions validating—rather than supplanting—non-governmental frameworks like the World Resources Institute Greenhouse Gas Protocol.¹³⁹ The greater the validity of private-led information enhancement efforts, the lower the market failure warranting policy intervention.



A key challenge to resolving environmental information deficiencies is the institutional coordination required to match expertise with capabilities.

134. Philip Rossetti, “Public Input from the R Street Institute on Proposed Rule for ‘The Enhancement and Standardization of Climate-Related Disclosures for Investors,’” R Street Institute, May 27, 2022. <https://www.rstreet.org/outreach/public-input-from-the-r-street-institute-on-proposed-rule-for-the-enhancement-and-standardization-of-climate-related-disclosures-for-investors>.

135. Ibid.

136. Commissioner Hester Peirce, “We are Not the Securities and Environment Commission – At Least Not Yet,” U.S. Securities and Exchange Commission, March 21, 2022. <https://www.sec.gov/news/statement/peirce-climate-disclosure-20220321>.

137. Hartman, “Liberty never looked so green: the policy implications of private carbon-free energy markets.” <https://www.utilitydive.com/news/liberty-never-looked-so-green-policy-implications-of-private-carbon-free-e/629625>.

138. Devin Hartman, “Healthy markets remedy energy and climate crises,” R Street Institute, March 23, 2022. <https://www.rstreet.org/commentary/healthy-markets-remedy-energy-and-climate-crises>.

139. “Greenhouse Gas Protocol,” World Resources Institute, last accessed April 4, 2023. <https://www.wri.org/initiatives/greenhouse-gas-protocol>.

Clear and Enforced Property Rights

Two forms of property rights are important in the CE context: 1) classic environmental rights; and 2) commercial rights to distinguish goods and services explicitly by specific environmental attributes. Clear, secure and transferable environmental property rights have driven traditional CE, such as efforts to mitigate overfishing, by aligning firms' incentives to account for resource scarcity.¹⁴⁰ A healthy property rights regime may have even greater environmental effect under novel CE, where market forces increasingly reward or punish emitting and extracting firms based on their environmental performance.

The digital age makes the Coase theorem applicable to environmental problems beyond the local scale by lowering the transactions costs associated with negotiations. This adds emphasis to compatible property rights regimes at regional, national and international scales. CE reflects mounting pressure on firms to reduce the environmental footprint of their supply chains, often on an international scale, but the ability to do so is hindered by incomplete or incongruous property rights regimes across political boundaries.

Historically, international environmental problems had to be addressed by multilateral agreements in which the demand for property rights stemmed from governments' valuation of the environment.¹⁴¹ CE influences suggest that such frameworks need to be amended to enable transactions for the market valuation of environmental practices. Various private sector efforts have risen to develop international commercial services distinguished by environmental impact, including those on climate change, water quality and waste management.¹⁴²

In a domestic context, the engine of novel CE—diverse market forces willing to pay a “green premium”—requires environmental differentiation between goods and services. Clearly defined, transactable, and enforced environmental property rights for commercial products ensure proper price formation for environmentally superior “green” and conventional “gray” products. These conditions appear unmet currently, as the commercial product ecosystem is lagging behind the indicators of private environmental product demand. In some cases, green products exist but fail to fetch a price premium in part because of low confidence in the validity of their environmental attributes. Examples include carbon offset markets and clean energy procurement that goes beyond renewable energy credits.¹⁴³



CE reflects mounting pressure on firms to reduce the environmental footprint of their supply chains, often on an international scale, but the ability to do so is hindered by incomplete or incongruous property rights regimes across political boundaries.

140. See, e.g., Tate Watkins, “Save Fish, Establish Property Rights,” Property and Environment Research Center, May 8, 2017. <https://www.perc.org/2017/05/08/save-fish-establish-property-rights>.

141. Gary D. Libecap, “Addressing Global Environmental Externalities: Transaction Costs Considerations,” National Bureau of Economic Research, October 2013. <https://www.nber.org/papers/w19501>.

142. See, e.g., “Ecosystem Markets. Built for Producers. Backed by Science,” Ecosystem Services Market Consortium, last accessed May 17, 2023. <https://ecosystemservicesmarket.org>; “Transparent Pricing for Environmental Commodities,” Xpansiv, last accessed May 2, 2023. <https://xpansiv.com>.

143. Ibid.; Philip Rossetti, “Economic and Environmental Potential of Carbon Offsets may be Underestimated,” *R Street Policy Study* No. 243, October 2021. <https://www.rstreet.org/research/economic-and-environmental-potential-of-carbon-offsets-may-be-underestimated>.

Nevertheless, capital markets are starting to show diverging multiples for “gray” versus “green” products.¹⁴⁴ Combined with growing customer WTP for low-emission products, this is stoking calls from the business community for green commodities in the energy and materials sectors, which requires defining standards for commodities; there is need to explicitly delineate who has the right to claim certain ESG attributes as part of what they are selling.¹⁴⁵ For example, industry-backed efforts to advance a market for environmentally differentiated natural gas note that it requires the development of a standard, secure certification process for products.¹⁴⁶ European standards for environmental criteria in “green bonds” provide an example of regulatory attempts to provide market clarity and confidence to overcome greenwashing concerns.¹⁴⁷

Harnessing CE’s potential requires the establishment of clear environmental property rights aimed at the heart of its credibility problem. This will validate commercial pathways for market forces and civil society to express environmental preferences. But it also raises complex questions about the extent to which government involvement is warranted. Good examples are the pending CFTC role in voluntary carbon markets and the updating of the FTC Green Guides. A limited role for such institutions may be to simply define key terms to achieve greater transparency, whereas a more robust role would establish governing rules with a registration framework and robust standards for auditing purposes.¹⁴⁸

Government failures in such initiatives can manifest in multiple forms. For example, broad or vague definitions of environmental attributes may enable bad actors to proclaim compliance while undermining environmental outcomes; on the other hand, strict definitions of green product eligibility may preclude environmental innovation, and vague definitions of greenwashing combined with robust prosecution could chill capital markets. Governments must focus on structures and rules that age well, acknowledge incomplete information, and encourage the private sector to innovate and self-correct through product trial and error. This could take the form of goals- or objectives-focused guidance with criteria for periodic updates, rather than prescriptive policy based on static conditions that age poorly.

Incomplete property rights can inhibit the ability of firms to capture the full benefits of investment in research and development. Intellectual property rights are positively associated with environmental supply chain management and innovation.¹⁴⁹ To encourage robust research and innovation to support CE and



Governments must focus on structures and rules that age well, acknowledge incomplete information, and encourage the private sector to innovate and self-correct through product trial and error.

144. Michael Birshan et al., “Playing offense to create value in the net-zero transition,” McKinsey & Company, April 13, 2022. <https://www.mckinsey.com/capabilities/sustainability/our-insights/playing-offense-to-create-value-in-the-net-zero-transition>.
145. Daniel Cramer et al., “The new imperative for green commodities,” McKinsey Sustainability, Aug. 18, 2022. <https://www.mckinsey.com/capabilities/sustainability/our-insights/the-new-imperative-for-green-commodities>.
146. “Methane Quantification: Toward Differentiated Gas,” Coefficient, March 2022. https://static1.squarespace.com/static/59a83164f7e0ab6c6886dd75/t/621f853ce27e854e02b55947/1646232892325/Methane+Tech+Report_FINAL+RELEASE.pdf.
147. Thijs Elseman and Marijn Bodelier, “EU Green Bonds: One Step Closer to a New Standard for Sustainable Bonds,” *The National Law Review* 13:74 (March 15, 2023). <https://www.natlawreview.com/article/eu-green-bonds-one-step-closer-to-new-standard-sustainable-bonds>.
148. Pamela T. Wu and Levi McAllister, “Voluntary Carbon Markets: What Role Should the CFTC Play?,” Morgan Lewis, Nov. 16, 2022. <https://www.morganlewis.com/blogs/powerandpipes/2022/11/voluntary-carbon-markets-what-role-should-the-cftc-play>.
149. See, e.g., Taewoo Roh et al., “Structural relationships of a firm’s green strategies for environmental performance: The roles of green supply chain management and green marketing innovation,” *Journal of Cleaner Production* 356 (July 1, 2022). <https://www.sciencedirect.com/science/article/abs/pii/S0959652622014871>.

increased private initiative, governments should consider whether their patent systems are functioning to create defensible, marketable property rights.

Principal-Agent Alignment

Environmental preferences are heterogeneous, complex and uncertain. Translating such unclear and diverse preferences into aggregate investment vehicles at the discretion of fund managers is ripe for principal-agent problems. Investment firms now often face conflicting pecuniary and non-pecuniary incentives on behalf of their clients. Business leaders describe the challenge of retaining a “laser focus on fiduciary duty, even amidst intense public debates about whether asset managers are doing too much, or too little, to address climate change.”¹⁵⁰ This is complicated by the fact that the definition of ESG is so broad that it is typically understood to encompass both pecuniary environmental investment strategies as well as values-based strategies that may sacrifice financial performance to achieve non-pecuniary objectives, even though discussions around ESG do not typically include explicit acknowledgement of what is being addressed.

This raises a valid principal-agent concern, but one that is often used as a guise for a broader political agenda. The anti-ESG backlash employs an interpretation of ESG that does not distinguish between pecuniary- and values-based ESG or recognize that fund managers could be legitimately motivated to represent their clients’ ESG motivations.¹⁵¹ For example, a 2021 survey of corporate issuers and investors found that the top-two reasons environmental factors were incorporated into investment strategies were client demand and societal benefit.¹⁵²

Broad conservative opposition to ESG resulted in 2021 Texas legislation requiring state divestment from or blacklisting of investment firms that ostensibly divest from fossil fuels. Since then, there has been a wave of similar proposals in over a dozen states. Although these anti-ESG laws vary, the predominant form over the last two years follows an anti-boycott format using a boycott definition so vague that it may prohibit both pecuniary- and values-based environmental investing.¹⁵³ This expansive language empowers government officials to find ground to challenge the state-contracts eligibility of almost any company with a sufficiently long paper trail.¹⁵⁴

Prevailing anti-ESG laws also conflict with almost every common standard of fiduciary responsibility.¹⁵⁵ For example, the Texas law blacklists firms and funds that account for certain environmental factors and forbids forms of prudent

KEY TAKEAWAY

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150. Simon Jessop, “Exclusive-BlackRock sustainability chief Bodnar to join Bezos Earth Fund – memo,” Saltwire, Feb. 3, 2023. <https://www.saltwire.com/nova-scotia/business/exclusive-blackrock-sustainability-chief-bodnar-to-join-bezos-earth-fund-memo-100821085>.

151. See, e.g., “Protect Americans’ Savings from Ideological Embezzlement Support the Braun/Barr CRA Resolution on ESG,” Advancing American Freedom, Feb. 7, 2023. <https://advancingamericanfreedom.com/wp-content/uploads/2023/02/Coalition-Letter-Opposing-Woke-401k-Rule.pdf>.

152. Deutsche Bank, “ESG Survey – What corporates and investors think,” November 2021. https://www.dbresearch.com/PROD/RPS_EN-PROD/PROD000000000520951/ESG_Survey_%E2%80%93_What_corporates_and_investors_think.PDF?undefined&reaload=ZHUpxxRP/R7f8EQzBQWN~p~4zcl0dNyat8mLof~uCXUEP/zRI4wewF/GNFgoLi.

153. Hartman, “Toward Clarity and Consensus on ‘ESG.’” <https://www.rstreet.org/commentary/toward-clarity-and-consensus-on-esg>.

154. Ibid.

155. Ibid.

pecuniary-based investment, which may sacrifice risk-adjusted returns.¹⁵⁶ Contracting prohibitions on municipalities led to the departure of five of the largest underwriters in the state, elevating municipal borrowing costs by \$300 to \$500 million in the first eight months of enactment.¹⁵⁷ Table 1 delineates the borrowing costs of extending the Texas law model to six other states.¹⁵⁸ Such legislation also imposes investment costs. Similar proposed legislation was expected to drive a respective 10-year pension fund loss of \$3.6 billion in Kansas and a \$6.7 billion loss over 10 years in Indiana, with estimated annual returns dropping from 6.25 percent to 5.05 percent.¹⁵⁹

Table 1: Borrowing Cost of Texas Anti-ESG Legislative Model¹⁶⁰

State	Borrowing Cost (Millions)
Texas	\$300–\$500
Kentucky	\$26–\$70
Florida	\$97–\$361
Louisiana	\$51–\$131
Oklahoma	\$49
West Virginia	\$9–\$29
Missouri	\$32–\$68

Meanwhile, many progressive states have encouraged or forced ESG consideration in public pension management. The most recent trend is state-mandated fossil fuel divestment, with advocates touting pecuniary and non-pecuniary benefits.¹⁶¹ Such policies replace individual environmental choice with collective choice in a manner that restricts the ability of fund managers to maximize performance. This creates a potential principal-agent misalignment, as the literature suggests that such pension plans can lower returns and fail to reflect beneficiaries' interests.¹⁶² Early ESG mandates on state pensions were associated with sacrificing returns by tens of basis points.¹⁶³ However, there is a gap in the literature on the effects of more recent and aggressive mandates, especially those requiring fossil fuel divestment.



Prevailing anti-ESG laws also conflict with almost every common standard of fiduciary responsibility. For example, the Texas law blacklists firms and funds that account for certain environmental factors and forbids forms of prudent pecuniary-based investment, which may sacrifice risk-adjusted returns.

156. Emily Schmidt, "Anti-Boycott Legislation and Texas' ESG Blacklist," APM Research Lab, Oct. 6, 2022. <https://www.apmresearchlab.org/refs-10x-esg#:~:text=Texas%20was%20the%20first%20state,or%20gas%20in%20any%20way>.
157. Daniel Garrett and Ivan Ivanov, "Gas, Guns, and Governments: Financial Costs of Anti-ESG Policies," *Jacobs Levy Equity Management Center for Quantitative Financial Research Paper* (May 30, 2022). <http://dx.doi.org/10.2139/ssrn.4123366>.
158. "ESG Boycott Legislation in States: Municipal Bond Market Impact," Econsult Solutions Inc., Jan. 12, 2023, p. 2. https://econsultsolutions.com/wp-content/uploads/2023/01/Sunrise-ESG-boycott-Impact_FINAL.pdf.
159. "Fiscal Impact Statement for HB 1008," Indiana Legislative Services Agency, Feb. 4, 2023, p. 2. <https://d37sr56shkhro8.cloudfront.net/pdf-documents/123/2023/house/bills/HB1008/fiscal-notes/HB1008.02.COMH.FN001.pdf>.
160. Garrett and Ivanov. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4123366; "ESG Boycott Legislation in States: Municipal Bond Market Impact." https://econsultsolutions.com/wp-content/uploads/2023/01/Sunrise-ESG-boycott-Impact_FINAL.pdf.
161. Jordan Wolman and Debra Kahn, "Divestment's uphill battle," *Politico*, July 5, 2022. <https://www.politico.com/newsletters/the-long-game/2022/07/05/pension-fossil-money-00044002>.
162. Jean-Pierre Aubry et al., "ESG Investing and Public Pensions: An Update," Center for Retirement Research at Boston College, October 2020, p. 7. <https://crr.bc.edu/wp-content/uploads/2020/10/SLP74.pdf>.
163. Jeffrey R. Brown et al., "The In-State Equity Bias of State Pension Plans," National Bureau of Economic Research, March 2015. <https://www.nber.org/papers/w21020>.

Client-motivated environmental pressure on institutional investors also applies to proxy voting, where the firm casts a ballot on behalf of their clients. For example, a 2022 study found that the majority of investors surveyed with funds in American Funds, BlackRock, Invesco, State Street and Vanguard “strongly agree” with the investment firm voting against directors of companies unwilling to move fast enough to address climate change irrespective of the financial success of the company.¹⁶⁴ Although nearly half of Fidelity investors surveyed felt the same, another 31 percent “moderately” agreed.¹⁶⁵ This puts investment firms in a nearly impossible situation: a firm voting on behalf of clients with such diverse pecuniary and non-pecuniary objectives cannot represent all their preferences accurately.

Policy that forces or forbids values-based ESG precludes matching investment behavior with the diverse preferences of investors. Either approach, fundamentally, misallocates capital and undermines the potential to maximize investors’ utility. Similarly, firms that act on values-based ESG in aggregate fashion, namely investing strategies and proxy voting, will not accurately represent the preferences of their diverse clients, especially those unwilling to sacrifice financial returns for environmental impact. Giving investors individual choice to pursue various investment and shareholder voting strategies presents a better opportunity to align investment behavior with the preferences of investors. Firms at the heart of public ESG controversy are already starting to pursue options to expand client choice.¹⁶⁶

If firms are not able to address this issue through such actions, it will be important for policies to focus on aligning fund managers’ incentives and accountabilities with those of their clients, such as policies that clarify and strengthen fiduciary standards. This needs to distinguish between accounts where incorporating non-pecuniary objectives that may sacrifice financial performance are permissible and where they are not. Protections on the latter need to ensure investment practices retain exclusive focus on material factors, which permits pecuniary-based ESG but does not permit values-based ESG if it sacrifices financial performance. For example, despite fierce political debate, the DoL rules under Former President Donald J. Trump and President Joe Biden may not have much difference in effect because the Trump rule required a focus on pecuniary factors only, whereas the Biden rule provides an interpretation that allows consideration of ESG factors without violating those bedrock fiduciary standards.¹⁶⁷

For funds where pecuniary tradeoffs for non-pecuniary objectives are permissible, productive policies include greater transparency on how specific types of environmental investing affect expected financial performance, which may require



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164. Haber et al. <https://www.gsb.stanford.edu/sites/default/files/publication/pdfs/survey-investors-retirement-savings-esg.pdf>.

165. Ibid.

166. Larry Fink, “The transformative power of choice in proxy voting,” BlackRock, last accessed April 4, 2023. <https://www.blackrock.com/corporate/about-us/investment-stewardship/blackrock-voting-choice/proxy-voting-power-of-choice>.

167. Elizabeth S. Goldberg et al., “US Department of Labor Gives a Green Thumbs Up to ESG,” Morgan Lewis, Nov. 22, 2022. [https://www.morganlewis.com/blogs/mlbenefits/2022/11/us-department-of-labor-gives-a-green-thumbs-up-to-esg#:~:text=The%20US%20Department%20of%20Labor,%2C%20as%20amended%20\(ERISA\).](https://www.morganlewis.com/blogs/mlbenefits/2022/11/us-department-of-labor-gives-a-green-thumbs-up-to-esg#:~:text=The%20US%20Department%20of%20Labor,%2C%20as%20amended%20(ERISA).)

a basic distinction in separating pecuniary- from values-based investment vehicles. It may be prudent to legally require robust disclosure and client opt-in, rather than default opt-out treatment, for values-based environmental investing, considering the potential to sacrifice financial performance. Improvements to proxy voting and encouraging voting choice may also better align investment behavior with the underlying environmental preferences of clients.

Remaining Environmental Market Failures

To maximize social welfare, governments must select and calibrate policy instruments to suit the characteristics of the market failure that is driving a given problem. CE, especially in recent years, indicates substantial potential for markets to self-correct environmental market failure, albeit with high uncertainty. This includes internalization of pollution externalities and self-regulation of select natural resources. This is occurring through an acceleration of traditional CE, such as digital Coasean bargaining, as well as novel CE mechanisms.

A key assessment for policymakers is the degree to which new market fundamentals internalize environmental social cost. To the extent that CE causes markets to self-correct for environmental collective action problems, such as pollution externalities and common-good natural resources, there is a need to at least recalibrate conventional environmental policy instruments. One option for this assessment is to compare environmental social cost to firms' effective shadow pricing of environmental damages or the aggregate WTP of market forces for environmental improvement. For example, determining the extent to which the aggregate private social cost curve for a polluting activity converges with the social cost curve that reflects environmental damages will reveal the extent of the unresolved pollution externality. This may vary widely by environmental issue because novel CE reflects popular values, not a direct reflection of social cost.

Empirical evidence suggests that novel CE, such as environmentally exclusionary investing and environmentally sensitive lending, cause the environmental profile of a firm to significantly affect its costs of equity and debt capital.¹⁶⁸ These findings indicate that firms have a market-induced incentive to internalize their environmental externalities.¹⁶⁹ One outstanding question is whether CE leaders will be offset, in part, by firms that are uninfluenced by CE forces. Some firms may choose to cater to constituents and stakeholders with high intrinsic values, whereas others may attract employees, investors, and consumers who are concerned only with individual, extrinsic objectives such as risk, returns, remuneration and price. It is possible that this could result in a separating equilibrium, one in which firms choose their type—clean or dirty. Should this happen, it is also possible, though by no means certain, that the overall environmental gains driven by the clean firms will



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168. Chava, "Environmental Externalities and Cost of Capital." <https://www.jstor.org/stable/24550583>.

169. Ibid.

be diminished by expansion in pollution among dirty firms. If that were to happen the case for a less coercive approach to environmental policy could be eroded.

The extent of and uncertainty associated with firms internalizing environmental costs may alter optimal instrument choice and stringency. Novel CE introduces more uncertainty into environmental abatement costs and benefits. This may affect optimal instrument choice, as indicated by the literature on how abatement cost and benefit uncertainty affect the decision on price- versus quantity-based emissions control instruments.¹⁷⁰ This can similarly affect implementation of existing environmental policy, such as instrument targets. For example, CE may have significant ramifications for the baseline allocation of regional cap-and-trade policies, which now cover one-third of U.S. gross domestic product (GDP) but typically do not account for existing voluntary measures.¹⁷¹

Generally, the stronger the CE effect, the more the optimal role for conventional environmental policy shifts to a backstop capacity. For example, the EPA's greenhouse gas authority has been the subject of intense political debate, but CE contributes to its decreasing importance for environmental outcomes.¹⁷² CE also contributes to conditions in which policies aimed at industry are less environmentally effective and more prone to inefficient wealth transfers than predicted.¹⁷³

CE also places greater emphasis on the interactive effects of environmental policy with other policy objectives. For example, CE may diminish the environmental urgency of a carbon tax but place a stronger emphasis on orienting the tax to displace more distortionary tax alternatives. Indeed, some forms of carbon tax revenue recycling have positive effects on economic growth.¹⁷⁴ Given deteriorating domestic fiscal circumstances, the case for a carbon tax increasingly becomes one of public finance in a CE-heavy context.¹⁷⁵

CE mechanisms suggest a useful role of government to enable a further alignment of private and social cost curves—and a narrowing of remaining environmental failures—by leveraging voluntary instruments. In previous decades, the literature found voluntary environmental programs to be effective when tailored to their institutional context, which can compel CE.¹⁷⁶ Similarly, government certification



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170. See e.g., Robert N. Stavins, "Correlated Uncertainty and Policy Instrument Choice," *Journal of Environmental Economics and Management* 30 (1996), pp. 218-232. https://scholar.harvard.edu/files/stavins/files/correlated_uncertainty_jeem.pdf; Torben K. Mideksa and Martin L. Weitzman, "Prices vs. Quantities Across Jurisdictions," *Journal of the Association of Environmental and Resource Economists* (2019), pp. 883-891. https://scholar.harvard.edu/files/weitzman/files/prices_vs_quantities_across_jurisdictions_ca_v1.pdf.
171. "Market-Based State Policy," Center for Climate and Energy Solutions, last accessed May 17, 2023. <https://www.c2es.org/content/market-based-state-policy>.
172. Devin Hartman and Philip Rossetti, "EPA decision has major legal ramifications, but minor climate impact," R Street Institute, June 30, 2022. <https://www.rstreet.org/commentary/epa-decision-has-major-legal-ramifications-but-minor-climate-impact>.
173. Devin Hartman, "Long-term Market Impact of the Inflation Reduction Act," *Future of Power Markets Forum*, Oct. 26, 2022, p. 4. <https://www.rstreet.org/commentary/long-term-market-impacts-of-the-inflation-reduction-act>.
174. See, e.g., Kyle Pomerleau and Elke Asen, "Carbon Tax and Revenue Recycling: Revenue, Economic, and Distributional Implications," *Tax Foundation*, Nov. 6, 2019. <https://taxfoundation.org/carbon-tax>.
175. Philip Rossetti, "Carbon Pricing: The Best Policy that Nobody Wants," *The World Financial Review*, Feb. 6, 2022. <https://worldfinancialreview.com/carbon-pricing-the-best-policy-that-nobody-wants>.
176. Matthew Potoski and Aseem Prakash, "Green Clubs: Collective Action and Voluntary Environmental Programs," *Annual Review of Political Science* 16 (May 2013), pp. 399-419. <https://www.annualreviews.org/doi/10.1146/annurev-polisci-032211-211224>.

or environmental performance labelling can encourage CE above legal minimum performance. An example is the EnergyStar program.¹⁷⁷ As a safeguard, environmental regulators may be able to pair policy instruments that adjust the floor of conventional regulation based on the performance of voluntary programs. Overall, this role for government is more compatible with CE trends than strict, traditional environmental regulation in isolation.

Contemporary CE has the potential to reshape the framework of environmental policy to become less coercive and more enabling of private environmental motivations. Policymakers must select new and modify existing environmental instruments that account for the potential and high uncertainty of CE mechanisms and magnitude. Overall, the socially optimal role of environmental policy is to tailor the scope and aim of traditional interventions to match remaining market failures, bolster CE trend compatibility and harmonize environmental policy's interactive effects with existing policies.

Government Failures

Increased self-motivation for environmental improvement in the private sector can result in situations in which legacy regulations and policies exacerbate environmental harms. Since CE alters the baseline for various forms of market activity, government failure becomes more evident in the forms that inhibit individual choice, create barriers to capital stock turnover and increase corporate liability for environmental innovation. There is some evidence to suggest that the rise of CE may alter the political economy in different ways that reduce or worsen government failure, such as stronger corporate calls to remove barriers to entry alongside increased subsidy rent seeking.

Government failure is chronically underappreciated in the CE context, as policy modelling often ignores what motivates and constrains markets.¹⁷⁸ This can lead to a drastic mischaracterization of policy implications. For example, the baselines of ex ante studies of the Inflation Reduction Act (IRA) presumed that private capital was emissions-agnostic and largely ignored regulatory architectures that presented significant impediments to emissions reductions.¹⁷⁹ As a result, such studies attributed far more emissions impact to the IRA than was plausible and failed to diagnose why regulatory barriers to entry like permitting, power plant grid interconnection and transmission planning are key to electric industry emissions reductions that unlock CE.¹⁸⁰



Government failure is chronically underappreciated in the CE context, as policy modelling often ignores what motivates and constrains markets. This can lead to a drastic mischaracterization of policy implications.

177. "The simple choice for saving energy," Energy Star, last accessed April 24, 2023. <https://www.energystar.gov>.

178. See, e.g., Devin Hartman, "Think the Inflation Reduction Act is a climate savior? Think Again," R Street Institute, Aug. 9, 2022. <https://www.rstreet.org/2022/08/09/think-the-inflation-reduction-act-is-a-climate-savior-think-again>.

179. Ibid.

180. Philip Rossetti, "Submitted Statement before the Select Committee on the Climate Crisis on A Big Climate Deal: Lowering Costs, Creating Jobs, and Reducing Pollution with the Inflation Reduction Act," R Street Institute, Sept. 29, 2022. <https://www.rstreet.org/wp-content/uploads/2022/09/Final-Rossetti-SCCC-testimony-Philip-Rossetti-3.pdf>; Hartman, "Long-term Market Impacts of the Inflation Reduction Act." <https://www.rstreet.org/2022/10/26/long-term-market-impacts-of-the-inflation-reduction-act>.

Environmental permitting, such as under the National Environmental Policy Act or the Endangered Species Act, can create artificial barriers to entry for energy projects that often have a net beneficial effect on emissions.¹⁸¹ While the environmental impact statements that underlie both of these statutes are important tools for environmental protection, the government could revisit whether there are adjustments to the mechanisms that would achieve the same end without hindering the benefits of CE.

Modeling CE motivations and the constraints it exacerbates, such as complex regulatory systems, is not easy. It may require broader application of uncertainty treatment like scenario analysis. But it is imperative to accurately diagnose policies that improve environmental outcomes and social welfare. This means that, in light of fundamental shifts in market motivations, regular reevaluations of existing policies are needed to ensure they still address the targeted market failures without introducing unintended or overly burdensome barriers to CE.

The gap between CE motivations and behavior often reflects existing policy that inhibits individual choice. Importantly, the WTP of market forces for environmental preferences is very heterogenous and difficult to measure. Given measurement difficulties, economists generally advise that governments are poorly equipped to divine such preferences and make optimal choices on people's behalf.¹⁸² This makes a more compelling case for public policy to grant autonomy to market actors like consumers in lieu of government paternalism.¹⁸³ In some financial settings, such as pension plan options, public policy prohibits individuals from expressing their non-pecuniary preferences, which inhibits the potential for them to maximize utility.

Even if a measure of central tendency, such as average or median WTP, is known, it is crucial to examine its distribution. Basing policy off average WTP preferences has been used to justify policies like a national clean energy standard.¹⁸⁴ This forces a mandatory "green premium" to be allocated uniformly, which does not align with variances in preferences. Assuming sufficient information is available to consumers, a more efficient and equitable alternative is to correct the government failure that forbids retail consumer choice, which enables markets to allocate the "green premium" based on voluntary preferences.¹⁸⁵

Even when CE behavior is not expressly forbidden, market participants may be hesitant to experiment in an uncertain regulatory environment. The risk of future regulatory change or enforcement, especially for agencies using ambiguous



The gap between CE motivations and behavior often reflects existing policy that inhibits individual choice.

181. See, e.g., Philip Rossetti, "Addressing NEPA-Related Infrastructure Delays," *R Street Policy Study No. 234*, July 2021. https://www.rstreet.org/wp-content/uploads/2021/07/FINAL_RSTREET234.pdf.

182. John Beshears et al., "How Are Preferences Revealed?," National Bureau of Economic Research, May 2008. https://www.nber.org/system/files/working_papers/w13976/w13976.pdf.

183. Ibid.

184. Joe E. Aldy et al., "Willingness to Pay and Political Support for a U.S. National Clean Energy Standard," *Nature Climate Change* 2 (May 2012), pp. 596-599. <https://scholar.harvard.edu/jaldy/publications/willingness-pay-and-political-support-us-national-clean-energy-standard>.

185. Devin Hartman, "Intrinsic Value and the Green Case for Individual Choice," *R Street Institute*, July 21, 2020. <https://www.rstreet.org/commentary/intrinsic-value-and-the-green-case-for-individual-choice>.

definitions for green products and unclear interpretations of greenwashing, chills environmental innovation.¹⁸⁶ For example, it is within the fiduciary responsibility of corporate leaders to publicize their CE efforts and results. But energy and environmental analysis are complex fields—it is easy to make mistakes. Just as it is critical to craft policies that effectively deter greenwashing, it would be counterproductive to deter honest firms from engaging in robust environmental communications, which is a recent concern.¹⁸⁷ The government might consider how it can better hold firms accountable for deliberate or careless misrepresentation without punishing honest mistakes, which are a natural byproduct of the experimentation and trial and error inherent in innovation.

Given the high degree of uncertainty around the nature and magnitude of CE influences and mechanisms, government failure implications are also highly uncertain. They appear to be unevenly distributed, as the environmental WTP of market forces varies by issue and industry. Altogether, this places a stronger emphasis on “no regrets” policy, where reforms increase social welfare irrespective of CE.

Conclusion

Distilling the policy implications of CE requires a deep understanding of CE’s influences and mechanisms. This paper finds evidence of markets self-correcting, to a degree, for environmental problems beyond local scale. This suggests a potential transformation in the paradigm of state-firm relations. For example, conventional environmental policy is typically predicated on the assumption that markets lack environmental motivation, whereas novel CE identifies pervasive market motivation but profound inefficiencies in CE mechanisms that translate market preferences into superior environmental outcomes. Novel CE places more policy emphasis on information than motivation deficits, suggesting a pivot in the role of government in the market economy from coercive to enabling. However, massive uncertainty remains on the CE policy framework.

Researchers should prioritize advancing understanding of the mechanisms with the greatest knowledge gaps and largest policy implications. This includes more accurate assessments of market willingness to pay for environmental improvement and the barriers inhibiting market outcomes from reflecting aggregate and individual preferences. Researchers should not only assess the effects of first-best policies, but also those that are particularly timely or high profile. This is especially relevant for inefficient forms like green industrial policy and state laws that either require or prohibit ESG considerations, to inform policymakers of the consequences and delineate productive policy alternatives.



Novel CE places more policy emphasis on information than motivation deficits, suggesting a pivot in the role of government in the market economy from coercive to enabling.

186. Hartman, “Liberty never looked so green: Policy implications of private carbon-free energy commitments.” <https://www.utilitydive.com/news/liberty-never-looked-so-green-policy-implications-of-private-carbon-free-e/629625>.

187. Joel Makower, “Greenhushing: Should companies speak up or shut up?,” *GreenBiz*, Oct. 23, 2022. <https://www.greenbiz.com/article/greenhushing-should-companies-speak-or-shut>.

In the meantime, policymakers do not have the luxury of waiting for perfect information to enact policy. Rather, they must adapt their frameworks to what is currently known about the market and government failure implications of CE. Overlaying contemporary CE atop the extant policy and institutional system suggests a pivot toward a broader but lighter role for government. The most influential public policy affecting the environment may not take the form of explicit environmental policy or emanate from environmental institutions. For example, financial institutions have growing environmental influence, such as enhancing material environmental information infrastructure; decreasing corporate liabilities for environmental innovation; productively deterring greenwashing; and strengthening principal-agent alignment incentives. Meanwhile, the EPA's value may increase in environmental reporting and transparency functions but diminish in its traditional command-and-control regulatory function in areas where CE functionally self-corrects market failures.

Our analysis concludes that to maximize social welfare, the government should seek to “green the invisible hand.” This involves correcting environmentally obstructive government failure, resolving environmental principal-agent problems, clarifying environmental attribute property rights, and lowering environmental transactions costs and information deficiencies. Concurrently, the socially optimal role of government in traditional environmental policy is to downsize interventions to match residual market failures, bolster market trend compatibility and emphasize their interactive effects with existing policies. Overall, this emphasizes individual choice over collective choice as a means to address collective action problems by harnessing individual choice in society.¹⁸⁸



Policymakers do not have the luxury of waiting for perfect information to enact policy. Rather, they must adapt their frameworks to what is currently known about the market and government failure implications of CE.

188. Jonathan R. Macey, “ESG Investing: Why Here? Why Now?,” Yale Law and Economics Research Paper, Oct. 14, 2021. <https://ssrn.com/abstract=3942903>.

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