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## Environmental Governance by Contract: The Growing Role of Supply Chain Contracting

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# ENVIRONMENTAL GOVERNANCE BY CONTRACT: THE GROWING ROLE OF SUPPLY CHAIN CONTRACTING

*Michael P. Vandenberg<sup>†</sup> & Patricia A. Moore<sup>††</sup>*

*Corporate net zero climate commitments and environmental, social, and governance (ESG) policies have the potential to bypass barriers to international, national, and subnational government action on climate change and other environmental issues. This Article presents the results of a new empirical study that demonstrates the remarkably widespread use of environmental supply chain contracting requirements. The study finds that roughly 80% of the ten largest firms in seven global sectors include environmental requirements in supply chain contracting, a substantial increase over the 50% reported by a comparable study fifteen years ago. The Article concludes that the prevalence of environmental supply chain requirements, the types of contract requirements, and the motivations of the contracting parties signal new ways to fill important gaps in public governance.*

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## INTRODUCTION

In the last several years, most large multinational corporations have adopted “net zero” climate commitments and a variety of other environmental, social, and governance (ESG) policies.<sup>1</sup> At the same time, governments at the international, national, and subnational levels have struggled to make progress on climate change and other environmental issues.<sup>2</sup> If new corporate environmental policies are widely adopted and implemented, they could help fill gaps in public governance.<sup>3</sup> Anecdotal examples of environmental supply chain contracting requirements suggest that this may already be happening. Maersk, the largest shipping firm in the world, with roughly a quarter of all goods transported globally by ship, has responded to pressure from half of its 200 largest corporate customers and committed to use carbon emissions-free ships for many corporate customers and become carbon neutral by 2050.<sup>4</sup> With oversight from several environmental nongovernmental organizations

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1. Roughly two-thirds of the Fortune 500 have set at least one target related to greenhouse gas (GHG) emissions reduction, energy efficiency, renewable energy sourcing, and/or net zero emissions. *Power Forward 4.0: A Progress Report of the Fortune 500's Transition to a Net-Zero Economy*, WORLD WILDLIFE FUND (June 2, 2021), <https://www.worldwildlife.org/stories/fortune-500-companies-are-acting-on-the-climate-crisis-but-is-it-enough>.

2. See, e.g., Coral Davenport, *Biden Crafts a Climate Plan B: Tax Credits, Regulation and State Action*, N.Y. TIMES (Oct. 21, 2022) (discussing barriers to adoption of major climate legislation). For a discussion of the factors driving federal gridlock, see *infra* Part I.A.

3. See, e.g., John Ruggie (U.N. Secretary-General's Special Representative for Business and Human Rights), *Rep. of the Special Representative of the Secretary General on the Issue of Human Rights and Transnational Corporations and other Business Enterprises: Protect, Respect, and Remedy: A Framework for Business and Human Rights*, P3, U.N. Doc. A/HRC/8/5 (Apr. 7, 2008) (noting the importance of “governance gaps” that facilitate anti-social behavior by firms regarding human rights); John Knox, *The Ruggie Rules: Applying Human Rights Law to Corporations*, in THE UN GUIDING PRINCIPLES ON BUSINESS AND HUMAN RIGHTS (Radu Mares ed., 2011) (exploring application of the Ruggie Rules to corporations).

4. See *A.P. Moller - Maersk Will Operate the World's First Carbon Neutral Liner Vessel by 2023 – Seven Years Ahead of Schedule*, MAERSK (Feb. 17, 2021) <https://www.maersk.com/news/articles/2021/02/1>

(NGOs), the largest retailer in the world, Walmart, has committed to achieve a billion tons of carbon emissions reductions from its 100,000 global suppliers by 2030. These emissions reductions are roughly equal to the total annual emissions of Germany, the sixth largest emitting country.<sup>5</sup>

These anecdotal examples suggest that corporate supply chain requirements are forming a global network of environmental agreements that bypass national boundaries and other barriers to government action at the international, national, and subnational levels. But these corporate actions will only have important effects on environmental quality if they include large numbers of firms and if they affect firms' environmental behavior.<sup>6</sup> This Article examines the first of these issues and provides anecdotal information about the second. The Article presents the results of an original empirical study examining the use of environmental supply chain contracting requirements by many of the largest global corporations, including those in sectors with large exposure to retail consumers and those that only sell to other companies.

This empirical study demonstrates that the use of environmental requirements in supply chain contracting is remarkably widespread and growing. Roughly 80 percent of the ten largest corporations in seven leading global sectors have adopted environmental supply chain contracting requirements, a figure that has increased from roughly 50 percent fifteen years ago.<sup>7</sup> More research remains to be done to assess the effects of these requirements, but the Article explores the motivations of the participants in supply chain contracting – buyers, sellers, investors, lenders, employees, NGOs, community stakeholders, and others – and concludes that this supply chain activity is likely to be improving the environmental performance of many companies. Even if supply chain contracting only has limited effects on any one supplier's environmental performance, the results of this study demonstrate that environmental supply chain contracting is remarkably widespread.

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<sup>7</sup>maersk-first-carbon-neutral-liner-vessel-by-2023 (announcing that Maersk was accelerating its timeline for developing emissions-free cargo ships because half of its largest 200 customers had either set or were about to set supply chain emissions targets).

5. John Fialka, *Walmart Has Thousands of Suppliers. It's Slashing Their CO<sub>2</sub>*, E&E NEWS (May 14, 2019), <https://www.eenews.net/stories/1060328353/>.

6. See, e.g., Jeff Tollefson, *Climate Pledges from Top Companies Crumble Under Scrutiny*, NATURE (Feb. 7, 2022), <https://www.nature.com/articles/d41586-022-00366-2> (disclosing limitations of corporate climate goals and implementation among 25 large companies); Orly Lobel, *The Paradox of Extralegal Activism: Critical Legal Consciousness and Transformative Politics*, 120 HARV. L. REV. 937, 971 (2007) (raising concerns that corporate social responsibility activities might reduce support for laws that would address these issues and concluding that some environmental protections are simply "marketing, recruitment, public relations, and 'greenwashing' strategies"); Stephen M. Johnson, *Junking the "Junk Science": Reforming the Information Quality Act*, 58 ADMIN L. REV. 37, n.6 (2006) (defining greenwashing to be the "dissemination of misleading information... to conceal... abuse of the environment in order to present a positive public image."); Eric L. Lane, *Greenwashing 2.0*, 38 COLUM. J. ENVTL. L. 279 (2013); Akriti Bhargava et. al, *CSSN Research Report 2022:1: Climate-Washing Litigation: Legal Liability for Misleading Climate Communications*, CLIMATE SOCIAL SCIENCE NETWORK (2022), <https://www.cssn.org/cssn-research-report-20221-climate-washing-litigation-legal-liability-for-misleading-climate-communications/>.

7. See *infra* Part III.A.

The study of supply chain requirements is important for several reasons. These requirements may affect climate change mitigation strategies because many large companies beyond Maersk and Walmart, such as Amazon, Google, and major automakers, have supply chains with tens of thousands of suppliers, which are often located in jurisdictions without strong environmental laws or the ability to enforce them. Additionally, in many sectors across the U.S. economy, supply chains account for the bulk of carbon emissions, with roughly 80 percent of emissions coming from suppliers.<sup>8</sup> Supply chain issues are also important for climate change mitigation because many suppliers are difficult to regulate; they often are small and medium-sized businesses that fly under the radar of government regulators or are located beyond national or subnational boundaries.<sup>9</sup> Suppliers are also not typically targeted by NGO litigation or naming-and-shaming campaigns.<sup>10</sup> As firms increasingly rely on global supply chain contracts with thousands of third-party suppliers around the world, supply chain requirements are becoming an important complement to or substitute for environmental standards that in the past might have been enforced through government regulation or the employment rules and corporate culture that exist within a single, integrated firm.<sup>11</sup>

The results of this new environmental supply chain study also add to a growing literature on private environmental governance.<sup>12</sup> For more than a generation, environmental law has been conceived of and taught as a public law field. The leading environmental law supplement for law students suggests that “[t]he simplest definition of ‘environmental law and policy’ might read: ‘the use of public

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8. See H. Scott Matthews et al., *The Importance of Carbon Footprint Estimation Boundaries*, 42 ENVTL. SCI. TECH. 5839 (2008) (discussing supply chain emissions); Alexis Bateman & Leonardo Bonanni, *What Supply Chain Transparency Really Means*, HARV. BUS. REV. (Aug. 20, 2019), <https://hbr.org/2019/08/what-supply-chain-transparency-really-means> (identifying corporations that are making supply chain commitments); CDP, *TRANSPARENCY TO TRANSFORMATION: A CHAIN REACTION* (2021) [https://cdn.cdp.net/cdp-production/cms/reports/documents/000/005/554/original/CD\\_P\\_SC\\_Report\\_2020.pdf?161416076](https://cdn.cdp.net/cdp-production/cms/reports/documents/000/005/554/original/CD_P_SC_Report_2020.pdf?161416076).

9. Jody Freeman & Dan Farber, *Modular Environmental Regulation*, 54 DUKE L.J. 795 (2005) (discussing lack of government environmental regulations that target small businesses).

10. See Sarah Light, *The Law of the Corporation as Environmental Law*, 71 STAN. L. REV. 137 (2019). Although much of the attention regarding supply chains has been directed at climate change mitigation, supply chains also play important roles in other areas of environmental concern that have been difficult for governments to address, such as toxic chemical releases and agricultural non-point pollution. See Michael P. Vandenbergh et al., *Lamarck Revisited: The Implications of Epigenetics for Environmental Law*, 7 MICH. J. OF ENVTL. & ADMIN. L. 1 (2017) (discussing supply chain toxic emissions of Walmart and Target); Tannis Thorlakson, Joann F. de Zegher & Eric F. Lambin, *Companies Contribution to Sustainability Through Global Supply Chains*, 115 PNAS 2072, (2018) (examining multiple pollutants).

11. See Ronald J. Gilson et al., *Contracting for Innovation: Vertical Disintegration and Interfirm Collaboration*, 109 COLUM. L. REV. 431, 435 (2009).

12. Michael P. Vandenbergh, *Private Environmental Governance*, 99 CORNELL L. REV. 129, 140 (2013). The private environmental governance builds on the willingness of new governance scholars to think broadly about the origins and functions of governance. See, e.g., Michael Dorf & Charles F. Sabel, *A Constitution of Democratic Experimentalism*, 98 COLUM. L. REV. 267 (1998) Charles F. Sabel & William H. Simon, *Minimalism and Experimentalism in the Administrative State*, 100 GEO. L.J. 53 (2011); Charles F. Sabel & William H. Simon, *Contextualizing Regimes: Institutionalization as a Response to the Limits of Interpretation and Policy Engineering*, 110 MICH. L. REV. 1265 (2012).

authority to protect the natural environment and human health from the impacts of pollution and development.”<sup>13</sup> As the barriers to public authority at the international, national, and subnational levels have become clear over the last decade, however, environmental law scholars, corporate law scholars, change agents, and practitioners are increasingly turning to private authority to understand environmental governance.<sup>14</sup> In the face of government gridlock, preferences for environmental protection are being expressed through the actions of investors, lenders, insurers, employees, managers, retail consumers, NGOs, and community stakeholders, and the resulting private governance activity has important implications across a wide range of fields.<sup>15</sup>

In many cases, these private initiatives, currently overlooked by the environmental law literature, are filling gaps in public governance. Models of environmental governance that favored public responses were embraced by environmental law scholars working under 20th century conditions – including an industrial economy with large, visible sources of pollution located within national boundaries, support for international agreements in the post-Second World War order, historically low levels of domestic partisanship, and a Supreme Court that roughly reflected the views of the majority of the population. These models persist today, despite changing conditions that have opened gaps in the public response. The worldview, training, and activities of many researchers, practitioners, and policymakers that developed under 20th century conditions yield a consistent response to these gaps: double down on international, national, and subnational public governance. If the hammer is public governance, most nails look like problems of government. Each one of those 20th-century conditions is no longer in place, however, and for many environmental issues important inflection points, feedback effects, and lock-in effects provide little time for wrestling with outdated mental models and desirable but infeasible options.<sup>16</sup> More recently, scholars have noted the importance of private environmental governance in instrument choice,<sup>17</sup> the

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13. JAMES SALZMAN & BARTON S. THOMPSON, ENVIRONMENTAL LAW AND POLICY 3 (5<sup>th</sup> ed. 2019) (emphasis added).

14. James Salzman was one of the first environmental law scholars to recognize this trend. See James Salzman, *Informing the Green Consumer: The Debate Over the Use and Abuse of Environmental Labels*, 1 J. OF INDUS. ECOLOGY 11, 12 (1997).

15. See John Cruden, *The Brave New World of Private Governance*, ENVTL. F. 60 (Sept.–Oct. 2013); ERIC POSNER & GLEN WYLE, RADICAL MARKETS: UPROOTING CAPITALISM AND DEMOCRACY FOR A JUST SOCIETY (2018) (examining the potential role of markets in addressing issues of social justice).

16. See Michael P. Vandenbergh, *Environmental Law in a Polarized Era*, 37 J. OF LAND USE & ENVTL. LAW (forthcoming 2022) (discussing implications of partisan gridlock for environmental law and policy); Kristian S. Nielsen et al., *Improving Climate Change Mitigation Analysis: A Framework for Examining Feasibility*, 3 ONE EARTH 325, 332 (Sept. 2020) (discussing the need to account for policy initiative feasibility in climate modeling); Jonathan Gilligan & Michael Vandenbergh, *A Framework for Assessing the Impact of Private Climate Governance*, 60 ENERGY AND SOCIAL SCIENCE 1 (2020) (discussing the need to account for initiative feasibility in climate policy).

17. Sarah E. Light & Eric W. Orts, *Parallels in Public and Private Environmental Governance*, 5 MICH. J. ENVTL. & ADMIN. L. 1 (2015); Sarah E. Light & Michael P. Vandenbergh, *Private Environmental Governance*, in DECISION MAKING IN ENVTL. LAW 253 (LeRoy C. Paddock et al. eds., 2016).

conception of the corporation,<sup>18</sup> and the roles that banks,<sup>19</sup> insurers,<sup>20</sup> land conservation groups,<sup>21</sup> and many other organizations play in environmental protection.<sup>22</sup> These developments suggest that an emerging body of private governance is often filling gaps in, complementing, and competing with public governance.<sup>23</sup>

The analysis of supply chain contracts presented in this Article draws on two earlier studies by Michael Vandenbergh: a 2005 empirical analysis of environmental provisions in commercial transactions that demonstrated the growing role of private governance by examining the widespread use of these provisions in merger and acquisition agreements, commercial loans, and commercial leases,<sup>24</sup> and a 2007 study that used information available via the Internet to examine the extent of environmental supply chain contracting. The 2007 study concluded that roughly 50 percent of the largest firms in eight global sectors used environmental supply chain contracting requirements; because Walmart was an early leader in the use of supply chain requirements, the 2007 study described the role of supply chain pressure for environmental improvement as “the New Wal-Mart Effect.”<sup>25</sup>

The empirical study results presented in this Article revisit the status of the New Wal-Mart Effect. Part I demonstrates that important gaps exist in public environmental governance and that those gaps are likely to persist for an extended period. Part I also identifies concerns about supply chain contracting that arise if contracting is not sufficiently widespread, does not improve firm environmental behavior, or displaces more effective public governance. Part II then presents the

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18. Sarah Light, *supra* note 10.

19. Sarah E. Light & Christina Parajon Skinner, *Banks and Climate Governance*, 121 COLUM. L. REV. 1895 (2021).

20. Carolyn Kousky & Sarah E. Light, *Insuring Nature*, 69 DUKE L. J. 323 (2019).

21. Jessica Owley, *Land Conservation*, in ENVIRONMENTAL LAW DISRUPTED (Keith Hirokawa & Jessica Owley eds., 2021).

22. See also Jason J. Czarnezki & Sarah Schindler, *President Trump, the New Chicago School and the Future of Environmental Law and Scholarship*, in PERSPECTIVES ON ENVIRONMENTAL LAW SCHOLARSHIP: ESSAYS ON PURPOSE, SHAPE AND DIRECTION 195 (Ole W. Pedersen ed., 2018) (describing the scholarship in this field as the New Chicago School).

23. The effort by major employers to impose COVID-19 protocols on their employees and contractors during the early stages of the pandemic even absent federal, state, or local requirements – and in some cases over the objections of politicians – is only one example of the growing use of private governance in the face of increasingly high hurdles for public governance. See, e.g., Noah Higgins-Dunn & Leslie Josephs, *Businesses Sick of Policing Mask Use to Prevent Coronavirus, Ask Government to Step in*, CNBC (July 2020), <https://www.cnbc.com/2020/07/07/businesses-sick-of-policing-mask-use-ask-government-to-step-in.html> (providing example of employee mask mandates predating government mandates); Catherine Thorbecke, *Businesses Continue with Mask Requirements Despite States Lifting Mandates*, ABC NEWS (Mar. 4, 2021, 2:08 PM), <https://abcnews.go.com/Business/businesses-continue-mask-requirements-states-lifting-mandates/story?id=76249924> (describing business implementation of COVID-19 mitigation measures despite politician and government statements discouraging such).

24. Michael P. Vandenbergh, *The Private Life of Public Law*, 105 COLUM. L. REV. 2029, 2034 (2005).

25. Michael P. Vandenbergh, *The New Wal-Mart Effect: The Role of Private Contracting in Global Governance*, 54 UCLA L. REV. 913 (2007).

methodology and results of the new empirical study. To achieve an adequate apples-to-apples replication of the 2007 study, the new study followed three approaches, each of which revealed an increase in environmental supply chain contracting from roughly 50% of all firms studied fifteen years ago to roughly 80% today.

Part III examines the implications of the study. It observes that the widespread use of environmental supply chain contracting should ease concern that corporate environmental commitments are not sufficiently widespread to reach large numbers of suppliers. Important questions remain about the extent to which contract requirements improve firm environmental behavior and how they interact with public governance, but the study results and recent developments in the ESG literature provide reasons for optimism on each of these issues.<sup>26</sup>

The Article concludes by suggesting that the network of global contracting requirements has now grown into an important aspect of environmental law and policy. This network has the potential to fill gaps in public environmental governance. If supply chain contracting is to fulfill its potential, however, scholars, policymakers, corporate and NGO managers, and practicing lawyers will need to understand that some contracts are not just an agreement between parties, but also a form of environmental governance.<sup>27</sup>

## I. THE ROLE OF ENVIRONMENTAL SUPPLY CHAIN CONTRACTING

Contracting is often the concern of private law scholars who examine why parties enter into contracts, the commercial function contracts perform, and contract enforcement and efficiency.<sup>28</sup> If supply chain contracting is having important effects on the processes, functions, and goals of public governance, however, it should also be important to public law scholars and policymakers. Notable recent examples include the growing use of supply chains to address human rights issues, labor trafficking, blood diamonds, and the response to the COVID-19 pandemic.<sup>29</sup> Supply chain contracting pressure is one way to bypass domestic and international gridlock

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26. See, e.g., Khan M.R. Taufique et al., *Revisiting the Promise of Carbon Labeling*, 12 NATURE CLIMATE CHANGE 132, 137–39 (2022) (concluding that carbon labeling may reduce corporate carbon emissions because of supply chain effects, not just consumers).

27. See Errol Meidinger, *Governance Interactions in Sustainable Supply Chain Management*, in TRANSNATIONAL BUSINESS GOVERNANCE INTERACTIONS: ENHANCING REGULATORY CAPACITY, RATCHETING UP STANDARDS AND EMPOWERING MARGINALIZED ACTORS (Stepan Wood, Rebecca Schmidt, Errol Meidinger, Burkard Eberlein & Kenneth Abbott, eds., 2018) (concluding that “sustainable supply chain management (1) is likely to make modest contributions to improving governance capacity, (2) may or may not ratchet up standards, and (3) may help protect marginalized parties, but is focused on better using the existing power of lead firms in supply chains”).

28. See, e.g., Charles J. Goetz & Robert E. Scott, *Principles of Relational Contracts*, 67 VA. L. REV. 1089 (1981) (developing relational theory for contracts with high levels of uncertainty).

29. David V. Snyder, *The New Social Contracts in International Supply Chains*, 68 AM. U. L. REV. 1869, 1910 (2019) (examining the use of contract requirements to address human rights and labor trafficking). See also Kishanthi Parella, *Improving Social Compliance in Supply Chains*, 95 NOTRE DAME L. REV. 1869, 1871 (2019) (examining methods for increasing compliance with human rights-related supply chain contracting).



on climate change and other environmental issues and enable individuals to express widely-held preferences for achieving ESG goals that are not being addressed by governments.

Supply chain contracting is particularly important for environmental protection and natural resource management because problems such as climate change, toxic chemical emissions, non-point water pollution, fisheries depletion, and deforestation occur across international, national, and subnational boundaries, and they have characteristics discussed below that make them remarkably difficult for governments to address. Viewing environmental supply chain contracting through the lens of governance rather than simply as an economic or market instrument requires an understanding of both the core issues studied by private law scholars and the core public law concerns of efficacy and accountability. A full examination of these issues is well beyond the scope of this Article, but this part briefly examines the public law concerns at issue to provide context for the empirical data presented in Part II and the analysis of the results in Part III.

### A. The Regulatory Gap

For many scholars and advocates, the frequently asked question for environmental problems is: What can government do? Often, the answer is “not enough,” even for the most pressing issues. Climate change provides a valuable case study for explaining the failure of public governance. Although the Paris Agreement set a global goal of not exceeding a 2°C global average temperature increase over pre-industrial levels, and an aspiration of no more than a 1.5°C increase, the post-Paris process has not yielded binding commitments to achieve those goals. Current projections suggest that temperature increases will reach 1.5° C by the mid-2030s<sup>30</sup> and be closer to 3°C than 2°C by the end of the century.<sup>31</sup> Some progress has been made by replacing efforts to achieve binding requirements with voluntary national commitments, but global emissions continue to rise, and deep divides exist regarding emissions reductions and other responsibilities between the Global North and Global South.<sup>32</sup>

At the domestic level in the U.S., every four years commentators and advocates express fresh optimism about the opportunity for major new federal legislation, whether in the form of a cap-and-trade system, a carbon tax, or the Green New Deal, yet these efforts have repeatedly failed. Important legislative subsidies

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30. Myles Allen et. al., *Special Report: Global Warming of 1.5° C: Summary for Policymakers*, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (last visited Jan. 28, 2022), [https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15\\_SPM\\_version\\_report\\_LR.pdf](https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_SPM_version_report_LR.pdf).

31. See J.B. Ruhl & Robin Kundis Craig, *4° Celsius*, 106 MINN. L. REV. 191 (2021).

32. Sinan Ulgen, *How Deep is the North-South Divide on Climate Negotiations*, CARNEGIE EUROPE (Oct. 6, 2021), <https://carnegieeurope.eu/2021/10/06/how-deep-is-north-south-divide-on-climate-negotiations-pub-85493>.

have emerged in the last year that will encourage decarbonization,<sup>33</sup> but major new legislation to limit emissions has failed despite Democratic control of the White House, Senate, and House of Representatives.<sup>34</sup> A swinging pendulum of White House control has been a barrier to regulatory and policy efforts as well. The EPA has promulgated regulations under the Clean Air Act for motor vehicles and some stationary sources, but the Supreme Court has sent an unequivocal signal that it will take a narrow view of existing agency authority under the Clean Air Act and other existing federal environmental statutes, whether based on the major questions doctrine or other theories of limited government.<sup>35</sup> The Court also has sent negative signals about the use of common law torts and other litigation options for addressing climate change.<sup>36</sup> Similarly, although California and several other states have adopted major climate measures, states representing roughly half of U.S. carbon emissions have not, and in many cases these states have litigated against federal actions.<sup>37</sup>

Importantly, inaction on climate change over the last three decades is not just the product of industry lobbying and disinformation – although these industry activities are certainly a problem.<sup>38</sup> If that were the case, it would follow that exposing and reducing industry lobbying and disinformation should unleash major government climate mitigation measures. This is an attractive message, but it overlooks the extent to which gridlock is the product of deep structural and social barriers to major government action on climate change. Political action draws on public support from political parties, and the country is roughly evenly divided

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33. See, e.g., INFLATION REDUCTION ACT OF 2022, Pub. L. No. 117-169, 136 Stat. 1818 (2022).

34. In fact, only one major federal pollution control statute has been adopted in the last thirty years. Vandenberg, *Private Environmental Governance*, *supra* note 12, at 2039 nn.42–44; Richard J. Lazarus, *Congressional Descent: The Demise of Deliberative Democracy in Environmental Law*, 94 GEO. L.J. 619, 628–29 (2006). The Inflation Reduction Act included subsidies to curb climate change but did not include a carbon price or pollution control measures. INFLATION REDUCTION ACT, PL 117-169, 136 Stat. 1818 (2022).

35. NFIB v. Dep't of Lab., 595 U. S. \_\_ (2022) (OSHA covid mandate); West Virginia v. EPA, 597 U.S. (2022); Sackett v. EPA, No. 10-62 (2012) (cert. granted on WOTUS jurisdiction); Lisa Heinzerling, *The Rule of Five Guys*, 119 MICH. L. REV. 1137 (2021) (noting that several of the justices in the majority in the 5–4 Supreme Court majority that concluded in *Massachusetts v. EPA* that greenhouse gases are air pollutants have been replaced with justices more likely to take a narrower view of EPA authority).

36. Am. Elec. Power Co. v. Connecticut, 564 U.S. 410 (2011).

37. See *Energy-Related CO2 Emission Data Tables*, ENERGY INFO. ADMIN. (last visited Feb. 1, 2022), <https://www.eia.gov/environment/emissions/state/>; *State Climate Policy Maps*, CTR. FOR CLIMATE & ENERGY SOLUTIONS (last visited Feb. 1, 2022), <https://www.c2es.org/content/state-climate-policy/>.

38. NAOMI ORESKES, *MERCHANTS OF DOUBT*, 169–215 (2010) (describing the influence of lobbyists on climate change denial in American policy and public life).

between Democrats, Republicans and independents.<sup>39</sup> Similar divides exist between liberals, moderates, and conservatives.<sup>40</sup>

As partisan polarization deepens, voters across the political spectrum are becoming less open to policies and ideas that do not fit their worldview.<sup>41</sup> Polarization is particularly important for understanding the politics of climate change.<sup>42</sup> Polling suggests that climate change is one of the most polarized issues between Democrats and Republicans in the U.S.<sup>43</sup> Although some polling suggests that public concern over climate change is increasing, only 55% of respondents in a 2020 survey were “alarmed” or “concerned” about climate change.<sup>44</sup> Political polling has demonstrated that from 2008 to 2020 increasing percentages of Democrats placed a high priority on major climate action, but support *declined* among independents (from 58 percent to 56 percent) and Republicans (from 30 percent to 22 percent).<sup>45</sup> Furthermore, structural biases in the United States constitutional design<sup>46</sup> mean that support from 55 percent of the population has been insufficient for sustained, major federal action on climate change. As long as these underlying problems persist, it is reasonable to assume that adequate government action on climate change will not occur during this decade. The gap available for private governance to fill is thus large and likely to remain for some time. This Article addresses the question of how, and to what degree, supply chain contracting is filling this gap.

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39. *Trends in Party Affiliation Among Demographic Groups*, PEW RSCH. GRP. (Mar. 20, 2018) <https://www.pewresearch.org/politics/2018/03/20/1-trends-in-party-affiliation-among-demographic-groups/>.

40. *Political Polarization in the American Public*, PEW RSCH. GROUP (June 12, 2014) <https://www.pewresearch.org/politics/2014/06/12/section-1-growing-ideological-consistency/>.

41. See Lilliana Mason, *Losing Common Ground: Social Sorting and Polarization*, 16 THE FORUM 47 (2018); Michelle LeBaron, *Cultural and Worldview Frames*, BEYOND INTRACTABILITY (Aug. 2003), [https://www.beyondintractability.org/essay/cultural\\_frames](https://www.beyondintractability.org/essay/cultural_frames).

42. For a discussion about taxes and other forms of carbon pricing, see Shi-Ling Hsu, *Carbon Pricing, in LEGAL PATHWAYS TO DEEP DECARBONIZATION IN THE UNITED STATES* (M. Gerrard & J.C. Dernbach eds., 2018).

43. For instance, a 2020 survey concluded that climate change is the most polarized issue in the United States, with more polarization than abortion, health care, or immigration. *As Economic Concerns Recede, Environmental Protection Rises on the Public's Policy Agenda: Partisan Gap on Dealing with Climate Change Gets Even Wider*, PEW RSCH. CTR. (Feb. 13, 2020), <https://www.pewresearch.org/politics/2020/02/13/as-economic-concerns-recede-environmental-protection-rises-on-the-publics-policy-agenda/> (noting that climate concern has risen but that “it’s more partisan than ever”).

44. Anthony Leiserowitz et al., *Climate Change in the American Mind: December 2020*, YALE PROGRAM FOR CLIMATE COMM’N & GEORGE MASON UNIV. CTR. FOR CLIMATE CHANGE COMM’N, Dec. 2020, at 34 <https://climatecommunication.yale.edu/wp-content/uploads/2021/02/climate-change-american-mind-december-2020.pdf>. (summarizing findings from Nov. 2008 – Dec. 2020).

45. ANTHONY LEISEROWITZ ET AL., *POLITICS AND GLOBAL WARMING: APRIL 2020* 30 (2020), <https://climatecommunication.yale.edu/wp-content/uploads/2020/06/politics-global-warming-april-2020-c.pdf>.

46. See *American Democracy's Built-in Bias Towards Rural Republicans*, THE ECONOMIST, July 14, 2018, at 11. See also Sarah A. Binder, *Going Nowhere: A Gridlocked Congress*, BROOKINGS (Dec. 1, 2000), <https://www.brookings.edu/articles/going-nowhere-a-gridlocked-congress/> (discussing whether the framers intended to create a structure that tended toward inaction rather than action).

### B. *The Definition and Functions of Supply Chain Contracting*

To assess whether environmental supply chain contracting can serve as a valuable gap filler, it is necessary to understand the functions that contracting performs and the motivations of the participants in environmental supply chain contracting. Because private governance initiatives perform traditionally governmental functions (e.g., reducing pollution and managing common pool resources), it is appropriate to examine environmental supply chain contracting using the criteria often applied to public governance: efficacy and accountability.<sup>47</sup> The empirical study that forms the core of this Article provides insights into one aspect of efficacy – the prevalence of supply chain contracting – but it does not address accountability, which was addressed in the 2007 New Wal-Mart Effect study.<sup>48</sup>

To be an effective form of environmental governance, supply chain contracting should be sufficiently widespread to reach many of the sources of important environmental problems, should lead to substantial improvements in firm performance regarding those problems, and should not undermine more effective government measures.<sup>49</sup> Part II addresses the extent of supply chain contracting, but this Part I.B defines supply chain contracting and examines the motivations of the parties that engage in supply chain contracting to provide insights into the potential efficacy of environmental provisions in supply chain contracting and to provide context for the empirical results.

#### 1. Definition

For the purposes of the empirical study, the term “supply chain contracting” refers not only to the inclusion of specific provisions in contracts entered into by buyers and sellers in the supply chain, but also to the use of procurement policies that are incorporated into supply chain contracts or used to screen out potential suppliers who are unwilling or unable to commit to standards. The source of the environmental requirements varies. In some cases, corporations and NGOs develop collaborative standards that are then incorporated into private contracts. Examples include the Marine Stewardship Council (MSC) and Forest Stewardship Council (FSC) standards, which are set by NGOs in collaboration with businesses and other stakeholders and establish sustainability standards for the management of a large share of the fisheries and forests around the world. In other cases, industry

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47. See, e.g., Vandenberg, *supra* note 25, at 943 (asking two questions “typically asked of other forms of governance: (1) Will environmental contracting be effective in achieving a desired social goal [for example, improved environmental conditions]?; and (2) To whom and how should the parties that engage in environmental contracting be held accountable?”).

48. *Id.* at 941–69.

49. See, e.g., *id.* at 944 (noting that “[t]o be effective, the private governance agreements must meet several conditions: (1) Widespread adoption in the form of incorporation into procurement policies or into terms in procurement contracts; (2) Environmental standards that have content adequate to achieve environmental protection objectives; and (3) adequate implementation of the standards by suppliers”).

groups set standards, such as the Responsible Business Alliance standards developed by the electronics industry. Often, however, the standards are developed unilaterally by a company or through bilateral negotiations with its suppliers. Initiatives in the United Kingdom and U.S. are developing model supply chain contracting provisions designed to reduce transaction costs, ensure a minimum amount of environmental rigor in contract requirements, and increase the reputational value of environmental contracting requirements.<sup>50</sup>

Corporate buyers are the principal focus of the empirical study discussed in this Article, although corporate buyers are not the only sources of environmental supply chain requirements. In some cases, corporate sellers impose conditions on buyers, presumably out of concern for the reputational or legal risks arising from the use of the purchased products or services. For instance, the chemical industry's trade association, the American Chemistry Council, has developed an industry standard called the Responsible Care Program that imposes standards for chemical handling and disposal not only on chemical sellers, but also on chemical buyers.<sup>51</sup> Private organizations other than corporations, such as universities and religious organizations, also include environmental requirements in their supply chain contracting. Examples include recent efforts by Rutgers University, the University of Wisconsin,<sup>52</sup> and the Catholic Church.<sup>53</sup> These private governance activities can have major effects on carbon emissions, but national, state, and local government procurement requirements also have substantial potential. These requirements are proliferating at all three levels of government,<sup>54</sup> and the federal government alone

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50. See *About the Chancery Lane Project*, CHANCERY LANE PROJECT, <https://chancerylaneproject.org/about/> (last visited Jan. 27, 2022); *Private Environmental Governance*, ENVTL. L. INST., <https://www.eli.org/private-environmental-governance> (last accessed Jan. 10, 2022). For an overview, see Michael P. Vandenberg et al., *Model Environmental Supply Chain Contracts*, in *CONTRACTS FOR RESPONSIBLE AND SUSTAINABLE SUPPLY CHAINS: MODEL CLAUSES, LEGAL ANALYSIS, AND PRACTICAL DISCUSSION* (American Bar Association, David Snyder & Susan Maslow, eds., forthcoming 2023).

51. *Responsible Care®: Driving Safety & Industry Performance*, AM. CHEMISTRY COUNCIL, <https://www.americanchemistry.com/chemistry-in-america/responsible-care-driving-safety-industry-performance> (last visited Jan. 27, 2022).

52. See Office of Sustainability, *Projects*, UNIV. OF WISC.-MADISON, <https://sustainability.wisc.edu/projects/> (last visited Jan. 27, 2022) (discussing green procurement program); University Procurement Services, *Green Purchasing Program*, RUTGERS, <https://procurementservices.rutgers.edu/purchasing/diversity-and-sustainability/green-purchasing-program> (last visited Jan. 27, 2022).

53. Paul Simpson, *Can Compliant Procurement Fix the Pope's Financial Crisis?*, SUPPLY MANAGEMENT (Dec. 2019), <https://www.cips.org/supply-management/analysis/2019/december/can-compliant-procurement-fix-the-popes-financial-crisis/> (describing Papal efforts to combat climate change through procurement for the Vatican, including investment in a new eco-center, banning single-use plastics, and committing to electric vehicle procurement for the Catholic Church).

54. See Exec. Order No. 14030, 86 Fed. Reg. 27,269; Federal Acquisition Regulation: Minimizing the Risk of Climate Change in Federal Acquisitions, 48 C.F.R. Ch. 1 (2021) (describing the Department of Defense, General Service Administration, and National Aeronautics and Space Administration proposed rulemaking ensuring major federal agency procurements minimize the risk of climate change) (available at <https://perma.cc/2N6S-9K5R>) plus existing requirements. See also Federal Acquisition Regulation: Disclosure of Greenhouse Gas Emissions and Climate-Related Financial Risk, 87 Fed. Reg. 68312 (proposed Nov. 14, 2022) (to be codified at 48 CFR pt. 1, 4, 9, 23 and 52) (implementing a requirement to ensure certain federal contractors disclose their greenhouse gas emissions and climate-

buys over \$600 billion in products and services, so the potential for emissions reductions is remarkable.<sup>55</sup> This Article leaves non-corporate procurement activity for future research, although it is important to note that synergistic effects may arise if corporations, government, and other organizations establish comparable environmental contracting standards.

## 2. Functions

*Legal and Social Norm Enforcement.* Understanding how contracting affects firm behavior and the motivations of the firms that enter into supply chain contracts can shed light on the functions performed by environmental contracting.<sup>56</sup> Of course, in its most basic form, a contract is an exchange of promises, but law and economics scholars have wrestled with the function of contracts given the uncertainties involved in contracting and the difficulties of obtaining legal remedies. Much of the law and economics scholarship on relational contracts examines why firms enter into formal, written contracts given the large number of uncertainties in many contractual relationships and the low likelihood that courts will issue an enforceable legal remedy for many violations.<sup>57</sup> This is a particularly acute problem for contract provisions that focus on social responsibility, and Jonathan Lipson has argued that these contract provisions are “unlikely to be enforceable in any ordinary sense.”<sup>58</sup>

Courts often limit contract enforcement to expectation damages, consequential damages, and specific performance. If the legal enforceability of contract terms is necessary for contracts to affect firm ESG behavior, then these contract terms might have limited effects.<sup>59</sup> Courts are wary of requiring specific performance for ESG-related terms in contracts. In addition, the difficulty of pricing

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related financial risk and set science-based targets to reduce their greenhouse gas emissions). For an overview of federal policy, see Federal Agencies Consider Incorporating Climate Impacts and Risks in Procurement Decisions, Colum. Climate Sch. Sabin Ctr. For Climate Change L. (Oct. 2021) <https://climate.law.columbia.edu/content/federal-agencies-consider-incorporating-climate-impacts-and-risks-procurement-decision> [hereinafter Sabin Ctr.]; Danielle M. Conway, *Sustainable Procurement Policies and Practices at the State and Local Level*, in GREENING LOCAL GOVERNMENT 43–73 (Keith H. Hirokawa & Patricia E. Salkin eds., 2012). For more recent examples, see compiled sets of state programs in Neil Seldman, *State and Local Government – Environmentally Preferable Purchasing Programs and Policies*, INST. FOR LOCAL SELF-RELIANCE (Apr. 6, 2020), <https://ilsr.org/state-and-local-government-environmentally-preferable-purchasing-programs-and-policies/>.

55. Sabin Ctr. *supra* note 54; Press Release, The White House, President Biden to Sign Executive Order Strengthening Buy American Provisions, Ensuring Future of America is Made in America by All of America’s Workers (Jan. 25, 2021), <https://www.whitehouse.gov/briefing-room/statements-releases/2021/01/25/president-biden-to-sign-executive-order-strengthening-buy-american-provisions-ensuring-future-of-america-is-made-in-america-by-all-of-americas-workers/>.

56. See Jonathan Lipson, *Promising Justice: Contract (as) Social Responsibility*, 2019 WIS. L. REV. 1109, 1111–12 (2019).

57. See Scott Baker & Albert Choi, *Contract’s Role in Relational Contract*, 101 VA. L. REV. 559, 561 (2015).

58. Lipson, *supra* note 56, at 1111.

59. See *supra* note 6 for a definition of greenwashing.

expectation or consequential damages may undermine the likelihood that courts will award these types of damages in the ESG context.<sup>60</sup>

In many cases the buyer may not be interested in winning damages from the seller, however. Instead, the buyer may simply want to be able to walk away from the contract with a minimum risk of litigation from a seller unwilling or unable to comply with the buyer's environmental requirements. Buyers thus may benefit from environmental supply chain contracting provisions, not by being able to secure an enforceable specific performance or damages remedy, but by discouraging a seller from suing the buyer for canceling a contract based on ESG concerns.

Furthermore, some forms of legal enforceability are possible despite the concerns mentioned above. Consequential damages, which include damages to reputation, may be an increasingly promising avenue for legal enforcement of environmental supply chain contracts. Reputation makes up much of the value of many of the largest firms, and, as the title of one leading political economist's book suggests, for many corporations, "Reputation Rules."<sup>61</sup> Environmental and other ESG provisions in supply chain contracts are sometimes thought to benefit third parties and therefore require a third-party beneficiary claim to succeed, but the benefits of environmental provisions often run directly to the buying firm rather than to third parties. As the discussion below suggests, a buying firm's reputation with its investors, lenders, insurers, retail customers, employees, managers, and local communities may be precisely the value that the seller's environmental promises are designed to provide. The challenge of quantifying harms to reputation remains a barrier but one that empirical research is increasingly able to address.<sup>62</sup>

Perhaps most important, firms may enter into contracts with environmental provisions for a variety of reasons that do not rest on formal legal enforceability. Contracts perform both instrumental and expressive functions, and as early as 1963 Stuart Macaulay demonstrated that legal enforceability is not the holy grail of contracts.<sup>63</sup> Instead, social norms among the contracting parties play a large role in determining whether contracts are performed. Lipson draws on the work of Lisa Bernstein, Ronald Gilson, Matt Jennejohn, Robert Scott, and others to argue that supply chain contracting with ESG terms can affect firm behavior even if supply chain contracts have a mix of enforceable and unenforceable terms.<sup>64</sup> This is because these terms can clearly identify and call attention to specific norms while providing the flexibility necessary for the parties to modify their performance over time.

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60. Lipson, *supra* note 56, at 1124–26.

61. See DANIEL DIERMEIER, REPUTATION RULES: STRATEGIES FOR BUILDING YOUR COMPANY'S MOST VALUABLE ASSET (2011) (explaining the importance of a company's reputation as an asset).

62. Lipson cites several studies elaborating on this point. See Lipson, *supra* note 56, at 1125–27 n.68–70.

63. Stewart Macaulay, *Non-Contractual Relations in Business: A Preliminary Study*, 28 AM. SOC. REV. 55, 57 (1963). For a discussion of the expressive functions of contracts, see Lipson, *supra* note 56, at 1151–52.

64. See Lipson, *supra* note 56, at 1114 nn.15–17.

The motivations for buyers to adopt environmental requirements, for buyers to agree to them, and for these requirements to change supplier behavior are complex and have shifted strongly in the direction of pro-environmental behavior in the fifteen years since the publication of the first New Wal-Mart Effect study. Supply chain contracting requirements regarding ESG issues can be understood as a response to changes in the global economy that have resulted in social disruptions and flattening of organizational hierarchies.<sup>65</sup> As large, integrated organizations have responded to the make-or-buy decision in light of modern technological developments and the increasingly globalized economy, many firms have contracted with third parties for goods and services that might have been produced by a vertically-integrated firm in earlier periods.

Firms that may have been able to establish norms that control employees' corporate decision-making regarding environmental issues and even personal behavior now face the challenge of establishing norms for third party contractors. As a result, the preferences held by retail customers and other core firm constituencies may be important to the firm's profitability, but the firm must now satisfy those preferences through supply chain contracting rather than through corporate policies and incentives for employees.

*Other Motivations.* To understand the functions that environmental supply chain contracting may perform in environmental governance, it is also important to look beyond legal and social norm-based enforcement to understand the other motivations of the interested parties. These motivations have shifted in recent years and help explain the growth in environmental supply chain contracting. A commonly discussed motivation begins with the preferences of the population for environmental protection. As a study on climate and politics suggests, many Americans support climate action, but they are insufficient in numbers and geographic distribution to overcome the structural and other barriers to major federal legislation.<sup>66</sup> Unlike legislators, however, many businesses cannot gerrymander their markets for retail customers, employees, investors, lenders, insurers, and community stakeholders. When those actors have preferences that are not being satisfied by governments, they look to the private sector to satisfy them. This occurs through retail investor, retail customer, employee, and community stakeholder actions, all of which can affect firm profitability.

The motivations for companies to engage in environmental supply chain contracting are complex, but they are often consistent with the assumption that

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65. Lipson refers to these types of contracts as a form of corporate social responsibility or CSR, but Alan Palmiter has demonstrated that an inflection point occurred in roughly 2012 when CSR approaches, which are often grounded in altruism or pro-social motivations, transitioned to the ESG movement, which draws more heavily on corporate motivations that do not require altruism. Lipson, *supra* note 56, at 1110. See also ALAN R. PALMITER, CAPITALISM, HEAL THYSELF 1 (2021), [papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3940395](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3940395).

66. *Global Warming's Six Americas*, YALE PROGRAM ON CLIMATE CHANGE COMMUNICATION, <https://climatecommunication.yale.edu/about/projects/global-warmings-six-americas/> (last visited Jan. 27, 2022).



private sector actors have a strong profit motive, and many actions to reduce pollution absent government regulation do not require altruism. In fact, the shift from corporate social responsibility (CSR) to ESG initiatives in the last decade reflects the idea that pro-social corporate behavior often does not arise because of altruistic motivations.<sup>67</sup> Instead, on issues such as climate change, many companies may view the reputational benefits of a positive environmental image as outweighing any increased costs of supply chain contracting. Although, as discussed above, reputational costs and benefits can be hard to quantify, reputation may have important effects on retail consumers and investors, employee recruitment and retention, local communities, investors, lenders and insurers, and regulators.

For many years, antitrust law, corporate law, trade law, and other fields have operated as if individuals in the marketplace have only pecuniary goals and that the legal system should be arranged to only satisfy those goals. This is the basic view attributed to Friedman in the famous quotation that “the social responsibility of business is to increase its profits.”<sup>68</sup> It also permeates the role assigned to the consumer in the Chicago School approach to antitrust law,<sup>69</sup> to the role of fiduciary duties in corporate law,<sup>70</sup> and to the role of environmental concerns about the provenance of a good, rather than its other characteristics, in trade law.<sup>71</sup> According to this approach, any other goals should be satisfied through government action, such as progressive taxation for addressing social equity, subsidies for social programs and research, and environmental regulations for reducing pollution. This approach also affects the legal enforceability of environmental and other ESG supply chain contracting provisions. The assumption is that a buyer’s goals regarding “commercial interests” are enforceable, whereas those “designed to have an important social or environmental impact” are not.<sup>72</sup> This narrow legal view does not insulate companies from reputational or other pressure, however. Contracting with third parties in states or nations with weak environmental requirements or disengaged communities is no longer a way to avoid reputational pressure. With the growth of global supply chains and social media, the behavior of suppliers can be monitored, attributed to buying firms, and communicated to important stakeholders at low cost and in a matter of minutes. An example of a social media platform performing this role is TikTok,

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67. See Palmiter, *supra* note 65, at 3.

68. Milton Friedman, *The Social Responsibility of Business is to Increase Its Profits*, N.Y. TIMES, Sept. 13, 1970 (§ SM), at 17.

69. See Herbert Hovenkamp & Fiona Scott Morton, *Framing the Chicago School of Antitrust Analysis*, 168 U. PA. L. REV. 1843, 1843–44 (2020).

70. See Leo Strine, Kirby Smith & Reilly Steel, *Caremark and ESG, Perfect Together: A Practical Approach to Implementing an Integrated, Efficient, and Effective Caremark and EESG*, 106 IOWA L. REV. 1885, 1885–1886 (2020).

71. See Douglas A. Kysar, *Preferences for Processes: The Process/Product Distinction and the Regulation of Consumer Choice*, 118 HARV. L. REV. 526, 526 (2004).

72. Lipson, *supra* note 56, at 1117.

which users frequently employ to highlight the environmental impact of industries such as fashion.<sup>73</sup>

In addition, efficiency is an important motivation for including environmental requirements in supply chain contracting. Companies sometimes reduce pollution because they save money by finding efficiencies that reduce costs and emissions.<sup>74</sup> This is true not only for large buyers such as Walmart, but for their suppliers as well, and may explain some major environmental supply chain contracting initiatives such as Walmart's Project Gigaton. Research suggests that when firms are pushed to identify emissions reductions, they often find savings.<sup>75</sup> An example is Walkers Crisps, the largest maker of potato chips in England, which identified major potential savings in its potato chip-making process when it studied the carbon footprint of its chips. It found that its pricing scheme was paying farmers by weight, which created incentives for the farmers to dig the potatoes when they were wet and humidify warehouses, only to have Walkers Crisps bear high transport and drying costs before cooking the potatoes.<sup>76</sup> The ability to use environmental requirements to identify efficiencies that can then lead to price reductions captured by the buyer is a potential motivator in many sectors.

The increased ESG efforts of large institutional investors also may reflect the insights of universal owner theory.<sup>77</sup> This theory holds that large institutional investors manage index funds and other large, diversified portfolios, so they and their clients have an interest in the overall success of the economy, and they often do not have an interest in having one firm in their portfolio increase in value at the expense of the other firms in their portfolio. A recent model analysis suggests that the value of Blackrock's holdings may decline by \$6 billion if it induces ExxonMobil to decarbonize, but that would be more than offset by a \$9 billion increase in the other stocks in its portfolio arising from the avoided costs of climate change.<sup>78</sup>

Whether or not this example bears up under further scrutiny, the universal owner concept appears to have merit and to be driving the thinking of large

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73. See, e.g., Eliza Huber, *Gen Z is Using Fashion TikTok to Fight Climate Change. Will it Work?*, REFINERY29 (Sept. 25, 2020), <https://www.refinery29.com/en-gb/2020/09/10052835/tiktok-sustainable-fashion-cottagecore-clothes>.

74. Michael P. Vandenberg, *Keynote: Motivating Private Climate Governance: The Role of the Efficiency Gap*, 71 ARK. L. REV. 349, 353–54 (2018). See also Taufique et al., *supra* note 26, at 136–38.

75. Vandenberg, *supra* note 74, at 351–52. See Taufique et al., *supra* note 26, at 136.

76. MICHAEL P. VANDENBERGH & JONATHAN M. GILLIGAN, *BEYOND POLITICS: THE PRIVATE GOVERNANCE RESPONSE TO CLIMATE CHANGE* 197–98 (2017).

77. See John C. Coffee Jr., *The Future of Disclosure: ESG, Common Ownership, and Systemic Risk*, 2021 COLUM. BUS. L. REV. 602, 610 (2021); Madison Condon, *Externalities and the Common Owner*, 95 WASH. L. REV. 1, 6 (2020). Recent research demonstrates that the managers of large index funds have been active in shareholder votes regarding ESG issues. See Michael Barzuza, Quinn Curtis & David Webber, *Shareholder Value(s): Index Fund ESG Activism and the New Millennial Corporate Governance*, 93 S. CA. L. REV. 1243, 1309 (2020) (arguing that index funds may be adopting ESG policies to differentiate themselves to attract millennial investors).

78. Condon, *supra* note 77, at 3, 45–47.

institutional investors.<sup>79</sup> And large institutional investors have begun taking major steps to improve the environmental performance of firms. The most dramatic recent examples were the votes by large institutional investors to elect climate change-savvy board members over the objections of the Exxon Mobil management, and to adopt a shareholder proposal seeking to force Chevron to assess and disclose the carbon emissions of the oil and gas it sells.<sup>80</sup> Because roughly 30 of the largest institutional investors together own over half of the shares of the 500 largest firms in the U.S., institutional investor ESG and climate pressure is a major potential driver of firm environmental supply chain contracting.<sup>81</sup>

The financial risks of climate change and pressure from retail customers, employees, and others, are affecting not only the policies of large institutional investors, but also other investors, lenders, and insurers.<sup>82</sup> To reduce these risks, many financial actors are motivated to pressure the companies they do business with to improve their environmental performance. For instance, all the major U.S. banks refused to lend to bidders on the oil and gas rights to land in the Alaska National Wildlife Refuge, leading to many parcels going unleased.<sup>83</sup> Similarly, over twenty nine of the largest global insurers have committed not to insure coal mines and other fossil fuel-heavy projects.<sup>84</sup>

In addition, supply chain contracting can extend pressure for climate commitments from large firms to the much larger pool of smaller firms. Much of private governance involves actions by large, multinational firms like Apple, Google, Microsoft, Walmart, and Target. For instance, roughly two-thirds of the firms in the Fortune 100 have made major climate commitments, often including reductions in carbon emissions with a “net zero” commitment by 2050.<sup>85</sup> The level of activity drops off somewhat as firm size falls: of the Fortune 500, roughly 23% have made climate

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79. See, e.g., Larry Fink, *Larry Fink's 2022 Letter to CEOs: The Power of Capitalism*, BLACKROCK, <https://www.blackrock.com/corporate/investor-relations/larry-fink-ceo-letter> (last visited Jan. 31, 2022).

80. Steven Mufson, *The Fight for the Soul – and Future – of ExxonMobil*, WASHINGTON POST (May 21, 2021), <https://www.washingtonpost.com/climate-environment/2021/05/21/exxon-faces-shareholder-revolt-over-climate-change/>; *Chevron's Investors Call for Improved Methane Disclosures in a Near-Unanimous Vote*, CERES (May 25, 2022), <https://www.ceres.org/news-center/press-releases/chevrons-investors-call-improved-methane-disclosures-near-unanimous-vote>; *Chevron investors back proposal for more emissions cuts*, REUTERS (May 26, 2021), <https://www.reuters.com/business/energy/chevron-shareholders-approve-proposal-cut-customer-emissions-2021-05-26/>.

81. See Palmiter, *supra* note 65, at 12.

82. See Louis Leonard, *Under the Radar: A Coherent System of Climate Governance, Driven by Business*, 50 ENVTL. L. REP. 10546, 10547 (2020).

83. Rachel Koning Beals, *Bank of America Joins Big U.S. Banks That Won't Finance Oil in the Arctic Refuge Trump Opened to Drilling*, MARKETWATCH (Dec. 5, 2020) <https://www.marketwatch.com/story/bank-of-america-joins-big-u-s-banks-that-wont-finance-oil-in-the-arctic-refuge-trump-opened-to-drilling-1606843342>.

84. *Net-Zero Insurance Alliance*, UNITED NATIONS ENVIRONMENT PROGRAMME FINANCE INITIATIVE, <https://www.unepfi.org/net-zero-insurance/> (last visited Sept. 25, 2022).

85. See Alan Murray & David Meyer, *The Latest Fortune 500 CEO Survey Does Not Show A Lot of Optimism*, FORTUNE (May 24, 2022), <https://fortune.com/2022/05/24/2022-fortune-500-ceo-survey-ceo-daily>.

commitments.<sup>86</sup> Of the over 4,000 firms working with the Science-Based Targets Initiative to reduce their emissions, many are among the largest firms in their sectors.<sup>87</sup>

These environmental commitments extend to supply chain contracting in some cases. For instance, although specific supply chain contracts are often not material and therefore not required to be filed with the SEC, firms are required to disclose whether supply chain contracting may have material effects on the firm's financial performance. For instance, if a firm is a supplier and a particularly large buyer or group of buyers include environmental requirements in procurement that will have a large effect on the supplier's costs or ability to satisfy the buyer's demand for its product, SEC disclosure may be required. An assessment of the 2020 SEC disclosures of the Fortune 100 finds that 10 percent of the firms disclose the use of environmental provisions in supply chain contracting.<sup>88</sup>

Many NGOs and firms have recognized that reaching small and medium-sized enterprises (SMEs) is important if their goal is to achieve emissions reductions at the scale necessary to achieve the 2°C goal or 1.5°C aspiration of the Paris Agreement. Influencing the behavior of SMEs is also important for many non-climate issues as well, including toxics, deforestation, natural resource depletion, and other issues. For climate change mitigation, CDP (formerly the Carbon Disclosure Project) has taken a leading role on supply chain contracting among NGOs in the last several years. CDP uses the backing of investment firms with over one hundred trillion dollars of assets under management to induce corporations to disclose and reduce emissions.<sup>89</sup> CDP has recognized that large scale emissions reductions will require inducing major firms to commit to extend carbon reductions to their suppliers, and it ranks firms based on their supply chain contracting activity. As of 2021, CDP has given an "A" rating to a handful of the largest global firms based on their supply chain contracting activity.<sup>90</sup> The Environmental Defense Fund (EDF) has a supply chain effort that it describes as a "digital hub for sustainability resources, best practices, thought leadership, and news."<sup>91</sup> The Clean Energy Buyers Alliance (CEBA) (formerly the "Renewable Energy Buyers Alliance"), a collaboration between major corporations and NGOs designed to promote renewable power,

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86. NATURAL CAPITAL PARTNERS, DEEDS NOT WORDS: THE GROWTH OF CLIMATE ACTION IN THE CORPORATE WORLD 2 (2019).

87. See *Companies Taking Action*, SCI. BASED TARGETS, <https://sciencebasedtargets.org/companies-taking-action> (last visited Feb. 4, 2023).

88. Michael P. Vandenbergh, *Disclosure of Private Environmental Governance Risks*, 63 WILLIAM & MARY L. REV. (2022) (available at <https://scholarship.law.wm.edu/wmlr/vol63/iss5/6>) (noting that the firms disclosing environmental supply chain contracting requirements in SEC filings were Alphabet, Best Buy, Costco, Facebook, Intel, HP, Home Depot, Lowes, Microsoft, and Target).

89. *What We Do*, CDP, <https://www.cdp.net/en/info/about-us/what-we-do> (last visited Apr. 4, 2021).

90. *CDP Scores*, CDP, <https://www.cdp.net/en/scores> (last visited Sept. 25, 2022).

91. *About*, EDF SUPPLY CHAIN SOLUTIONS CTR., <https://supplychain.edf.org/about/> (last visited Jan. 10, 2022).

focuses on supply chain contracting regarding the electricity used by its member companies. It encourages its members to induce suppliers to make renewable power commitments as well.<sup>92</sup> These examples of corporate and NGO activity provide indications that supply chain contracting has grown since the first New Wal-Mart Effect study and is now widespread.

## II. EMPIRICAL STUDY OF SUPPLY CHAIN CONTRACTING

Widespread uptake of environmental supply chain contracting provisions is an essential aspect of efficacy, and the anecdotal examples of new supply chain contracting initiatives discussed above suggest that environmental supply chain contracting has grown substantially in recent years. But no systematic empirical studies have tested this assertion at the core of understanding the efficacy of environmental supply chain contracting. The study discussed below replicated the 2007 New Wal-Mart Effect study by drawing on the same types of public information sources and including many of the same firms and sectors included in the earlier study. Using this approach, the New Wal-Mart Effect study concluded that more than half of the 94 firms included in the study publicly acknowledged engagement in such efforts.<sup>93</sup> Today these requirements are even more widespread, and we discuss the study methodology and results below.

### A. Methodology

The current study examined the same sources of information as the 2007 New Wal-Mart Effect study. Because specific supply chain contracts are often not subject to disclosure in SEC filings, searches of supply chain contracts filed with the SEC are unlikely to provide an accurate view of the extent of environmental supply chain contracting, even among the large, publicly traded firms that have SEC disclosure obligations. As a result, like with the 2007 study, the current study examined publicly available policies and statements found on corporations' websites, in their supplier codes of conduct, and in media reports.<sup>94</sup>

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92. See *REBA Announces Top 10 U.S. Large Energy Buyers in 2020*, BUSINESSWIRE (Feb. 10, 2021, 9:00 AM), <https://www.businesswire.com/news/home/20210210005144/en/REBA-Announces-Top-10-U.S.-Large-Energy-Buyers-in-2020> (demonstrating involvement by multiple sectors); *Supply Chain & International Collaboration*, CEBA, <https://cebuyers.org/programs/supply-chain-and-international-collaboration/> (last visited Sept. 25, 2022).

93. Vandenberg, *supra* note 25, at 913.

94. The SEC disclosure study searched the LexisNexis EDGARPlus Exhibits database "descriptions" search field using all caps and terms "supply agreements" and "supply contract" for agreements filed in the fourth quarter of 2001. An agreement was classified as a supply agreement if it involved the sale of goods as defined in U.C.C. § 2-103(k) (2004). The broader study performed Google searches using firm names with the following search terms added: "supplier code of conduct", "code of conduct", "bans chemicals from suppliers", "requires EMS for suppliers", "requires suppliers to reduce ghg emissions", "requires iso 14001 for suppliers", "requires suppliers to reduce energy", "requirements for suppliers", and "sustainability." Researchers also visited the firms' corporate websites to view the firms' sustainability sub-pages as well as vendor and supplier portals, many of which included codes of conduct

Although a single apples-to-apples comparison would involve applying the same screen to the same firms in the same sectors, changes in sector designations and in the firms that qualify as the largest ten firms in each sector make simple replication of the earlier study impossible. The 2007 New Wal-Mart Effect study relied on the Hoovers database, which provides searchable company profiles and industry analysis to sales and marketing professionals. The 2007 study analyzed the top ten firms in eight sectors selected to include a broad swath of consumer-facing (business-to-consumer or B-to-C) and non-consumer facing (business-to-business or B-to-B) firms with global supply chains.<sup>95</sup> These sectors, as classified by the Hoovers database, were discount and variety retail, home improvement and hardware retail, office products retail and distribution, automobile manufacturing, personal computers, lumber and wood production, aluminum production, and industrial machinery and equipment manufacturing. The 2007 study identified the top ten firms in each sector by sales and examined their public disclosures of environmental supply-chain requirements. Six firms included by Hoovers in the aluminum production sector were not principally involved in aluminum production, and they were excluded from the analysis, resulting in a total of 94 firms in the study.

In the fifteen years since the publication of the New Wal-Mart Effect research results, several changes have affected the sectors included in the initial study. Hoovers, which in 2007 was a Dun & Bradstreet affiliate, was fully acquired by Dun & Bradstreet in 2017 and rebranded as D&B Hoovers.<sup>96</sup> In this transition,

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or terms of engagement for suppliers. It is important to note that the extent of environmental supply chain contracting and the text of individual supply agreements can be difficult to uncover, making empirical evaluation of the prevalence and form of those agreements challenging. Many agreements are private documents between suppliers and their customers and are not publicly available. In addition, as to the SEC study, although suppliers may be collectively an integral part of a business, because the individual contracts are rarely comprehensive enough to be material under the SEC, disclosure of those documents is not compelled. For more detail, see Vandenberg, *supra* note 25 at 936–39 (describing the study methodology).

95. See *id.* at 926 (noting that “the analysis includes sectors comprised of large retail firms, mixed retail and industrial firms, and non-retail industrial firms” and that “three sectors are comprised principally of firms that have retail operations in developed countries and do little or no manufacturing . . . , two sectors are comprised principally of firms that have both retail and industrial operations . . . , and three sectors are comprised principally of firms that do not have retail operations . . .”).

96. The D&B Hoovers data used to identify the firms used in the current study was taken from the Dunn & Bradstreet Business Directory, *Business Directory*, DUNN & BRADSTREET [www.dnb.com/business-directory.html](http://www.dnb.com/business-directory.html). Due to the structure of the online database, *Michigan Journal of Environmental and Administrative Law* editors were unable to confirm the revenue numbers used to select the firms in the current study. Since the database updates frequently, the numbers used in this study are also not reflected in the database’s current data. The authors attest, however, that the numbers used to select the firms in this study were accurate when the initial selection of firms was made in June 2020. These choices are reflected in two memos on file with the authors that were written at that time. Unless otherwise identified, all references to the current size of a firm (relative or absolute) were sourced from the D&B Business Directory in 2020. For purposes of this study, “firm” should be understood to mean an entity as reported in the D&B Directory at the time the study was conducted (i.e. each firm listed in this study was recorded in the database as a separately operating entity). Some firms that had undergone mergers were recorded in the D&B database as separate entities. See *infra* note 102. Other firms, particularly those operating under new names, were recorded in the D&B database as the merged entity. See *infra* note 146. It should also be noted that the corporate form of a number of the firms in the study has changed since the scope of the study was defined in 2020. As is noted below, several of these firms

the sector classifications and industry codes were re-worked. The industry sector categories listed in 2007 thus have evolved, although comparable sectors exist for seven of the eight sectors included in the first study. As a result, although a completely parallel sector-to-sector comparison is no longer possible, it is possible to examine seven current sectors that are analogous to seven of the eight initial sectors included in the earlier study.

The new study identified close equivalents to the sectors by using the 2020 incarnations of each company and selecting the current D&B Hoovers sector with the most overlaps to the earlier Hoovers sectors. This process was clear for most sectors; however, the original discount and variety retail sector was split equally across the new department stores and grocery stores sectors, so both were included in the new study. Furthermore, although the original office products sector was split between paper wholesale and miscellaneous store retailers in D&B Hoovers, neither was sufficiently analogous to the original classifications, so both sectors were removed from the analysis. The office products firms that exist from the previous paper are still analyzed in the B-to-B analysis, however. Finally, the D&B Hoovers aluminum production sector is most closely approximated by Hoovers' metal products manufacturing sector. This sector is very different, though, from the original aluminum production sector. It is largely steel- rather than aluminum-dominated. Steel and aluminum have different environmental profiles, in that aluminum production from bauxite requires large amounts of electricity and generates many consumer products, while steel production does not. Therefore, the current metal products manufacturing sector does not provide the same snapshot of aluminum-focused firms as the old aluminum production sector in the original analysis, so no equivalent to the aluminum production sector was included in the study. As with the office products firms, however, the surviving forms of the original aluminum firms are still captured in the B-to-B analysis. In sum, the current sectors analyzed were as follows: department stores, grocery stores, home and garden retail, motor vehicle manufacturing, computer and peripheral equipment manufacturing, paper product manufacturing, and construction machinery manufacturing.<sup>97</sup>

Changes also have occurred to the firms within each of the sectors included in the 2007 study. These changes are the result of shifts in business lines, corporate mergers, acquisitions, and divestitures. The new methodology also accounts for the fact that mergers, acquisitions, divestitures, and bankruptcies have caused some of the businesses to no longer exist or continue to operate as part of another business listed in the original sector. Some of the original firms no longer produce the same

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went through mergers both during and after the collection of environmental commitments used in this study. When an environmental commitment is attributed to a firm, therefore, it should be understood as reflecting that firm's behavior at some point after the study's scope was defined in 2020 but before that firm was affected by major changes in corporate structure.

97. See Vandenberg, *supra* note 25 at 926 (noting that the top ten companies for each sector in the original paper were chosen by U.S. sales, and by global sales where U.S. sales were not listed; as U.S. sales are no longer listed at all in D&B Hoovers, for the current study the top ten current companies were those with the highest revenue).

products or services as they did at the time of the 2007 study, or those business lines now make up a very small share of their operations. For example, Apple, which was in the personal computer sector in 2007, is now primarily a mobile communications company and is categorized differently today. These changes have required some adjustments to produce valuable B-to-B comparisons.

Although there are only seven sectors in the new study as opposed to the eight in the original study, because there were new entrants into the top ten firms in these sectors, the new study also analyzed the original firms in their 2020 incarnations. In sum, to achieve an adequate apples-to-apples replication of the first study, the new study followed three approaches: (1) it compared the supply chain contracting disclosures of the firms that were included in the 2007 study to disclosures of the same firms in 2020 (excluding those firms that no longer had comparable business lines); (2) it compared the disclosures of the ten largest firms in the seven 2020 sectors that most closely match the eight sectors included in the initial study with those of the firms in the initial eight sectors; and (3) it compared the disclosures of all of the firms included in the first study with all of the firms included in the second study. In total, because the new study examined both the same firms as the first study and the firms that are now in the newly-configured sectors, it analyzed one hundred thirteen firms, compared to the original paper's seventy-four.

### B. *The Sectors Analyzed*

For each sector, the discussion below compares the original study results with the current study results in two ways. First, the discussion compares the firms in a sector included in the original study to the same firms in 2020, to the extent those firms still operate the same business lines. Appendix A identifies all the companies included in the first study and identifies the same or analogous firms included in the current study. Second, the discussion identifies the 2020 sector most analogous to the sector in the original study and identifies which firms in the current analogous sector disclose that they engage in environmental supply chain contracting. Appendix B identifies the sectors included in the first study and the same or analogous sectors included in the current study.

#### 1. Discount and Variety Retail

In 2007, the top ten firms in the discount and variety retail sector were Wal-Mart, Kroger, Costco Wholesale, Target, Walgreens, Albertsons, Safeway, CVS, Ahold USA, and Loblaw.<sup>98</sup> At the time, these firms had a combined total of \$697 billion in annual sales.<sup>99</sup> Half of them (representing \$495 billion in sales)

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98. Vandenberg, *supra* note 25, at 927.

99. *Id.*



publicly stated that they imposed environmental requirements on suppliers.<sup>100</sup> The other half (with \$202 billion in sales) did not have any public information available on environmental standards for suppliers.<sup>101</sup>

*a. Firm-to-Firm Analysis*

All ten of these companies were still operating in 2020, if in slightly different forms.<sup>102</sup> Every one of these firms now has some form of publicly stated environmental requirement that it imposes on suppliers. Walmart, Inc. remains the largest firm of the ten and has over 100,000 suppliers.<sup>103</sup> Because of Walmart's position as the largest retailer in the world, it has enormous power over its suppliers.<sup>104</sup> A frequent target of NGO-led protests, Walmart has long used this power to address environmental issues through its supply chain.<sup>105</sup> As mentioned in *The New Wal-Mart Effect*, Walmart began educating suppliers about sustainability measures in 2006, while doubling its organic product offering and instituting a policy of purchasing only MSC-certified fish for the wild-caught fish in its North American market.<sup>106</sup> In 2017, Walmart introduced Project Gigaton, its plan to cut 1 billion metric tons in greenhouse gases from its supply chain by 2030, with participation from several environmental groups including the Environmental Defense Fund.<sup>107</sup>

The second largest firm of the ten is Kroger, with \$122 billion in annual sales.<sup>108</sup> Although Kroger was the largest firm in this sector that did not publicly disclose environmental requirements for suppliers in 2007,<sup>109</sup> today it requires vendors to comply with environmental laws in all countries in which they operate.<sup>110</sup>

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100. *Id.*

101. *Id.*

102. While Albertson's owner and Safeway merged in 2015, see *Albertsons, Safeway complete merger*, SUPERMARKET NEWS (Jan. 30, 2015), <https://www.supermarketnews.com/safeway-albertsons-merger/albertsons-safeway-complete-merger>, the firms continued to operate independently such that they appeared separately in the Dun and Bradstreet database in 2020 and were considered separately for this study, see *supra* note 96.

103. Kim Souza, *Walmart to Roll Out a New Supplier Excellence Program in Early 2021*, TALK BUSINESS & POLITICS (Sept. 4, 2020, 2:59 PM), <https://talkbusiness.net/2020/09/walmart-to-roll-out-a-new-supplier-excellence-program-in-early-2021/>.

104. See Matthew Boyle, *Fined for Arriving Early? Wal-Mart [sic] Puts Its Suppliers On Notice*, INDUSTRYWEEK (July 14, 2017), <https://www.industryweek.com/supply-chain/article/22022636/fined-for-arriving-early-walmart-puts-its-suppliers-on-notice> (detailing the exacting standard Walmart expects of suppliers and penalties imposed by Walmart even when imperfect performance is the result of extreme weather).

105. Vandenbergh, *supra* note 25, at 927.

106. See *id.* at 936–39 (2007).

107. John Fialka, *Walmart Has Thousands of Suppliers. It's Slashing Their CO<sub>2</sub>*, E&E NEWS (May 14, 2019, 7:26 AM), <https://www.eenews.net/stories/1060328353/>.

108. *The Kroger Co.*, D&B BUS. DIRECTORY, [https://www.dnb.com/business-directory/company-profiles.the\\_kroger\\_co.64841d2bdccb79bc0e64e1e5298ccb7.html](https://www.dnb.com/business-directory/company-profiles/the_kroger_co.64841d2bdccb79bc0e64e1e5298ccb7.html) (last visited Feb. 1, 2022).

109. Vandenbergh, *supra* note 25, at 928.

110. *Vendor Code of Conduct*, KROGER, <https://www.thekrogerco.com/wp-content/uploads/2017/09/code-of-conduct.pdf> (Aug. 3, 2020).

As of 2018, vendors must operate through Kroger's portal to assure compliance.<sup>111</sup> Kroger also states that it is attempting to improve the sustainability of its branded products' packaging.<sup>112</sup> Kroger reports that in 2020 80% of its *Our Brand* products used RSPO-certified palm oil, and in 2021 it reported an increase to 88%.<sup>113</sup> In 2020 Kroger committed to a target of 30% reduction of scope 1 and 2 greenhouse gas emissions based on a 2018 baseline, and pledged in 2022 to set new emissions target goals based on a 1.5 degree Celsius scenario covering scope 1, 2, and 3 emissions by 2023.<sup>114</sup>

Of the remaining eight companies, Costco, Target, Walgreens, Loblaw, Ahold Delhaize USA, and CVS all require suppliers to comply with the environmental laws of their host countries.<sup>115</sup> Costco is committed to achieving 100% RSPO-certified palm oil in its Kirkland Signature products and imposes environmental standards on waste disposal on all of its suppliers.<sup>116</sup> CVS has committed to a target of 70% of their suppliers setting science-based carbon emissions-reduction targets on scope 1 and 2 emissions by 2023.<sup>117</sup> Scope 1 emissions arise from a company's facilities, whereas scope 2 emissions arise from electricity or hot water generated off-site.<sup>118</sup>

Target requires all suppliers to have environmental monitoring systems in place and to work towards reducing energy consumption.<sup>119</sup> In 2013, Target

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111. *Supplier Hub*, KROGER, <https://www.thekrogerco.com/vendors-suppliers/supplier-hub/> (last visited June 1, 2021).

112. *2021 Performance Tables*, KROGER, <https://www.thekrogerco.com/sustainability/2021-performance-tables/> (last visited Sept. 22, 2022).

113. NURTURING SHARED VALUES: KROGER CO. ESG REPORT 2022, KROGER 15, (2022), <https://www.thekrogerco.com/wp-content/uploads/2022/08/Kroger-Co-2022-ESG-Report.pdf>.

114. *Id.* at 37.

115. *Supplier Code of Conduct*, COSTCO, (last visited June 1, 2021), <https://investor.costco.com/static-files/4563ac77-f3ca-45a8-a9d1-545c56339d92>; *Standards of Vendor Engagement*, TARGET (last visited June 1, 2021), <https://corporate.target.com/corporate-responsibility/responsible-sourcing/social-compliance/standards-of-vendor-engagement>; *New Vendor – Vendor Expectations*, WALGREENS (last visited June 1, 2021), [https://webapp.walgreens.com/VendorPortalStellent/prodpublisher/new\\_vendor/walgreens\\_vendor\\_expectations/vendor\\_expectations.htm#P266\\_23808](https://webapp.walgreens.com/VendorPortalStellent/prodpublisher/new_vendor/walgreens_vendor_expectations/vendor_expectations.htm#P266_23808); *Supplier Code of Conduct*, LOBLAW (last visited October 11, 2022), <https://www.loblaw.ca/en/supplier-code-of-conduct>; *Our standards of engagement*, AHOLD DELHAIZE (last visited Oct. 11, 2022), <https://www.aholddelhaize.com/about/governance/our-standards-of-engagement/>; *Responsible sourcing standard*, CVS HEALTH (last visited Oct. 11, 2022), <https://www.cvshealth.com/policies/responsible-sourcing-standard>.

116. *Environmental Impacts*, COSTCO (last visited June 2, 2021), <https://www.costco.com/sustainability-environment.html>; COSTCO, *supra* note 115, at 9.

117. *Our Commitment to Reducing Our Greenhouse Gas Emissions*, CVS HEALTH (last visited June 2, 2021), [https://cvshealth.com/news-and-insights/articles/our-commitment-to-reducing-our-greenhouse-gas-emissions#:~:text=CVS%20Health%20also%20commits%20that,Fund%20for%20Nature%20\(WWF\)](https://cvshealth.com/news-and-insights/articles/our-commitment-to-reducing-our-greenhouse-gas-emissions#:~:text=CVS%20Health%20also%20commits%20that,Fund%20for%20Nature%20(WWF)).

118. See the Greenhouse Gas Protocol (GHG Protocol) jointly convened by the World Business Council for Sustainable Development (WBCSD) and the World Resources Institute (WSI), GREENHOUSE GAS PROTOCOL, <https://ghgprotocol.org/about-us>; THE GREENHOUSE GAS PROTOCOL: A CORPORATE ACCOUNTING AND REPORTING STANDARD REVISED EDITION, 25 (2004) <https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf> (defining Scope 1, 2 and 3 emissions).

119. TARGET, *supra* note 115.

partnered with the now-defunct GoodGuide app to develop an industry standard for sustainability in cleaning products, cosmetics, personal care items, and baby care.<sup>120</sup> The resulting Target Sustainable Product Standard appears to have since been deprioritized, but Target's current standards for suppliers focus on the sustainability of products throughout its stores, including forest products, cotton, coffee, and seafood.<sup>121</sup> In 2017, Target introduced its chemicals strategy, aimed at reducing harmful chemicals in its products through managing ingredients across the supply chain, providing transparency to consumers, and developing safer alternatives.<sup>122</sup> It also participates in Clean by Design, a program through the Apparel Impact Institute that reduces emissions and waste in textile mills.<sup>123</sup> As of 2022, Target has committed to a goal of net-zero emissions by 2040, and has committed to reducing scope 3 supply chain emissions 30% from a 2017 baseline by 2030.<sup>124</sup>

Ahold Delhaize requires suppliers to meet ingredient standards and chemical restrictions above those required by law.<sup>125</sup> Albertsons also requires suppliers for store-brand products to meet chemical and ingredient restrictions,<sup>126</sup> and it stated that it was working toward 100% sustainable palm oil production in store brands.<sup>127</sup> Safeway imposes ingredient limitations on cleaning products suppliers.<sup>128</sup>

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120. Mary Mazzoni, *Target Teams Up with GoodGuide to Rate Sustainable Products*, TRIPLE PUNDIT (Oct. 14, 2013), <https://www.triplepundit.com/story/2013/target-teams-goodguide-rate-sustainable-products/48461>.

121. *Target Forward: Our Sustainability Strategy*, TARGET, <https://corporate.target.com/sustainability-ESG/strategy-target-forward> (last visited Feb. 4, 2023).

122. *Chemicals*, TARGET, <https://corporate.target.com/sustainability-esg/environment/chemicals> (last visited Sept. 16, 2022).

123. *Climate & Energy*, TARGET, <https://corporate.target.com/sustainability-ESG/environment/climate-and-energy> (last visited Sept. 17, 2022).

124. TARGET *supra* note 121.

125. Russell Redman, *Ahold Delhaize USA Raises Sustainability Standards*, SUPERMARKET NEWS (Sept. 20, 2019), <https://www.supermarketnews.com/sustainability/ahold-delhaize-usa-raises-sustainability-standards>.

126. *See Position Statements*, ALBERTSONS COMPANIES, <https://www.albertsonscompanies.com/our-impact/position-statements/default.aspx#:~:text=Chemical%20Policy,certain%20ingredients%20of%20consumer%20concern> (last visited Sept. 19, 2022); *Albertsons Revenue 2019–2022*, MACROTRENDS, <https://www.macrotrends.net/stocks/charts/ACI/albertsons/revenue#:~:text=Albertsons%20annual%20revenue%20for%202022,a%203.17%25%20increase%20from%202019> (last visited Sept. 19, 2022).

127. ALBERTSONS COMPANIES, SUSTAINABILITY UPDATE 4 (2018), [https://s29.q4cdn.com/239956855/files/our\\_impact/sustainability\\_doc/AlbertsonsCompanies\\_SustainabilityUpdate\\_2018.pdf](https://s29.q4cdn.com/239956855/files/our_impact/sustainability_doc/AlbertsonsCompanies_SustainabilityUpdate_2018.pdf); *See also RESPONSIBLE SOURCING*, ALBERTSONS <https://www.albertsonscompanies.com/our-impact/products/responsible-sourcing/default.aspx> (last visited Feb. 4, 2022).

128. *See ALBERTSONS COMPANIES, SUPPLIER SUSTAINABILITY GUIDELINES AND EXPECTATIONS 10–11* (2020), [https://suppliers.safeway.com/docs/supplier\\_sustainability\\_expectations.pdf](https://suppliers.safeway.com/docs/supplier_sustainability_expectations.pdf); *Albertsons Revenue 2019–2022*, MACROTRENDS, <https://www.macrotrends.net/stocks/charts/ACI/albertsons/revenue#:~:text=Albertsons%20annual%20revenue%20for%202022,a%203.17%25%20increase%20from%202019> (last visited Sept. 19, 2022).

As of 2022, Albertson's has committed to achieving net zero emissions by 2040, and a 47% reduction in scope 1 and 2 emissions by 2030.<sup>129</sup>

*b. Sector-to-Sector Analysis*

As discussed above, the Hoovers 2007 discount and variety retail sector has split into department stores and grocery stores, with Walmart, Inc. and Kroger leading the sectors in annual sales, respectively.

(1) Department Stores

The top ten firms in the department stores sector are Walmart, Costco, Target, The TJX Companies, Inc., Dollar General, Macy's, Dollar Tree, Kohl's, BJ's Wholesale Club, and J.C. Penney.<sup>130</sup> All of the top ten firms impose environmental requirements of some sort on their suppliers, including requirements that their suppliers must cooperate with the environmental laws of their host countries.<sup>131</sup> Walmart, Costco, and Target were all analyzed above in the firm-to-firm analysis.

Dollar General, Macy's, and Dollar Tree all impose chemical ingredient policies on their suppliers.<sup>132</sup> Macy's and Kohl's both require suppliers to use the Higg index, a set of five tools to measure supply chain sustainability developed by

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129. RECIPE FOR CHANGE, ALBERTSONS COMPANIES: 2021/2022 ENVIRONMENTAL, SOCIAL AND GOVERNANCE (ESG) REPORT, ALBERTSONS 7 (2022) [https://s29.q4cdn.com/239956855/files/our\\_impact/sustainability\\_doc/ALBCIV193285\\_CORP\\_ESG\\_Report\\_Update\\_October2022-\(2\).pdf](https://s29.q4cdn.com/239956855/files/our_impact/sustainability_doc/ALBCIV193285_CORP_ESG_Report_Update_October2022-(2).pdf).

130. See *supra* note 96. JC Penney filed for bankruptcy during the research phase of this project, after top ten data compiled. See Catherine Leffert, *JCPenney to Exit Bankruptcy by Mid-2021 upon Approval of Sale*, DALLAS BUSINESS JOURNAL (Dec. 7, 2020, 3:54 PM), <https://www.bizjournals.com/dallas/news/2020/12/07/jcpenney-exit-bankruptcy.html>.

131. See *Vendor Code of Conduct*, TJX, <https://www.tjx.com/responsibility/responsible-business/vendor-code-of-conduct> (last visited Sept. 18, 2022); *Corporate Social Responsibility*, DOLLAR GENERAL, <https://www.dollargeneral.com/about-us/corporate-social-responsibility.html> (last visited Sept. 18, 2022); MACY'S, INC., VENDOR & SUPPLIER CODE OF CONDUCT 7 (2019), [https://content-az.equisolve.net/macysinc/files/pages/vendors-h7gvr8coq8pq/code-of-conduct/200226\\_CoC+DOCUMENT+%288.5x11%29.pdf](https://content-az.equisolve.net/macysinc/files/pages/vendors-h7gvr8coq8pq/code-of-conduct/200226_CoC+DOCUMENT+%288.5x11%29.pdf); DOLLAR TREE, INC., CODE OF VENDOR CONDUCT 3 (2020), [https://www.dollartree.com/file/general/Code\\_of\\_Vendor\\_Conduct.pdf](https://www.dollartree.com/file/general/Code_of_Vendor_Conduct.pdf); KOHLS, TERMS OF ENGAGEMENT 13, <https://corporate.kohls.com/content/dam/kohlscorp/corporate-responsibility/responsible-sourcing/TOE%20Corporate%20Website%20Version.pdf> (last visited Sept. 18, 2022); BJ'S WHOLESALE CLUB, INC., CODE OF CONDUCT 2 (2014), [https://www.bjs.com/biz/about\\_conduct/images/Code\\_of\\_Conduct\\_120814.pdf](https://www.bjs.com/biz/about_conduct/images/Code_of_Conduct_120814.pdf); JCPENNEY, SUPPLIER PRINCIPLES 3 (2018), [https://www.jcpenney.com/dotcom/images/2018\\_SupplierPrinciples.pdf](https://www.jcpenney.com/dotcom/images/2018_SupplierPrinciples.pdf).

132. Mike Schade & Mike Belliveau, *Dollar General, Sephora, Lowe's Among 7 Most Improved Retailers Addressing Toxic Chemicals*, GreenBiz (Feb. 3, 2020), <https://www.greenbiz.com/article/dollar-general-sephora-lowes-among-7-most-improved-retailers-addressing-toxic-chemicals#:~:text=The%20policy%20includes%20a%20list,to%20reduce%20or%20eliminate%20their>; Christie Boyden & Lindsey Rupp, *After Activist Pressure, Macy's Vows to Ensure Furniture is Free of Toxic Flame Retardants*, BLOOMBERG (Oct. 20, 2015, 2:38 PM), <https://www.bloomberg.com/news/articles/2015-10-20/macy-s-to-ensure-furniture-is-free-of-toxic-flame-retardants>; *Dollar's Tree Grade*, RETAILERREPORTCARD.COM (last visited June 4, 2021), <https://retailerreportcard.com/retailer/dollar-tree/>.

the Sustainable Apparel Coalition.<sup>133</sup> J.C. Penney requires all suppliers of wood and paper products to meet sustainable forestry management practices.<sup>134</sup>

## (2) Grocery Stores

The top ten firms in the grocery stores sector are Kroger, Albertsons, Publix, Ahold Delhaize, H.E. Butt, Target Stores, Whole Foods Market,<sup>135</sup> Safeway,<sup>136</sup> Supervalu,<sup>137</sup> and Southeastern Grocers, Inc.<sup>138</sup> All but Supervalu impose at least one environmental requirement on their suppliers. Kroger, Albertsons, Ahold Delhaize, and Safeway have all been discussed above in the firm-to-firm comparisons.

Publix requires all suppliers to have environmental commitments in place and encourages them to implement resource conservation practices.<sup>139</sup> H.E. Butt requires suppliers to maintain environmental management systems and work to minimize pollution.<sup>140</sup> Target Stores and Whole Foods Market require suppliers to maintain environmental management systems, monitor all energy use, air emissions, and wastewater, and work to reduce energy use.<sup>141</sup> Southeastern Grocers partners with the Global Aquaculture Alliance (GAA) to hold suppliers of its farm-raised seafood to GAA standards.<sup>142</sup>

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133. See *Responsible Products and Sourcing*, MACY'S, <https://www.macysinc.com/purpose/responsible-products-and-sourcing> (last visited June 4, 2021); *Terms of Engagement – Vendor Partners*, KOHLS, <https://corporate.kohls.com/content/dam/kohlscorp/corporate-responsibility/responsible-sourcing/TOE%20Corporate%20Website%20Version.pdf> (last visited June 4, 2021); *The Higg Index*, APPARELCOALITION.ORG, <https://apparelcoalition.org/the-higg-index/> (last visited June 4, 2021).

134. See *JCP 2014 Environmental Principles*, JCPENNEY (2014), [https://www.jcpenney.com/dotcom/images/JCP\\_2014\\_EnvironmentalPrinciples.pdf](https://www.jcpenney.com/dotcom/images/JCP_2014_EnvironmentalPrinciples.pdf).

135. Although Amazon acquired Whole Foods in 2017, see Aine Cain, *The history of Amazon and Whole Foods' sometimes-rocky marriage, which kicked off 5 years ago with a \$13.7 billion acquisition*, BUSINESS INSIDER (Aug. 29, 2022) <https://www.businessinsider.com/amazon-whole-foods-market-history-2022-8>. The two companies remained separate for purpose of the Dun and Bradstreet database and this study.

136. See *supra* note 102.

137. While United Natural Foods acquired Supervalu in 2018, see Mark Reilly, *Supervalu's gone— at least from Wall Street—as \$2.9B acquisition closes. Now what?*, MINNEAPOLIS/ST. PAUL BUSINESS JOURNAL (Oct. 23, 2018) <https://www.bizjournals.com/twincities/news/2018/10/23/supervalus-gone-at-least-from-wall-street-as-2-9b.html>. The two companies remained separate for purpose of the Dun and Bradstreet database and this study.

138. See *supra* note 96.

139. PUBLIX, SUPPLIER POLICIES & GUIDELINES, 30 (Nov. 1, 2022), <http://corporate.publix.com/business/publix-business-connection/retail-product-supplier>.

140. H-E-B SUPPLIERS, SUPPLIER CODE OF CONDUCT, 1–2 (June 2, 2021) <https://supplier.heb.com/requirements>.

141. TARGET, *supra* note 115; WHOLE FOODS MARKET, WHOLE FOODS MARKET SUPPLIER CODE OF CONDUCT, 6–7, 10 (2019), [https://assets.wholefoodsmarket.com/www/company-info/WFM%20Supplier%20Code%20of%20Conduct\\_12.30.19.pdf](https://assets.wholefoodsmarket.com/www/company-info/WFM%20Supplier%20Code%20of%20Conduct_12.30.19.pdf).

142. *Southeastern Grocers is Committed to Sustainable Seafood*, EL DIARIO NY (Oct. 27, 2016) <https://eldiariiony.com/latinowire/southeastern-grocers-is-committed-to-sustainable-seafood/>.

## 2. Home Improvement and Hardware Retail

In 2007, the top ten home improvement and hardware retail stores were Home Depot, Lowe's, Wolseley, CCA Global Partners, Menard, Sherwin-Williams, Stock Building Supply, 84 Lumber, Ace Hardware, and Do It Best.<sup>143</sup> At the time, these firms had combined annual sales totaling over \$178 billion.<sup>144</sup> Four of the ten firms, representing \$152 billion in sales, had some sort of publicly disclosed environmental requirement.<sup>145</sup> All ten companies still exist, although Wolseley has changed its name to Ferguson in all but its Canadian and U.K. markets<sup>146</sup>, and Stock Building Supply merged with BMC to become BMC Stock Holdings.<sup>147</sup>

### a. Firm-to-Firm Analysis

At the time of the current study, six of these ten firms imposed environmental requirements of some kind on their suppliers. Home Depot purchases its lumber almost entirely from suppliers certified under FSC, SFI, and PEFC.<sup>148</sup> They also require suppliers' factories to operate in a way that minimizes their environmental impact and have phased out a number of chemicals from their paints.<sup>149</sup> Lowe's has pledged that 100 percent of its suppliers will have sustainability goals by 2025.<sup>150</sup> Both companies require vendors to comply with all local environmental laws,<sup>151</sup> as do Ferguson,<sup>152</sup> Sherwin-Williams and BMC Stock Holdings.<sup>153</sup> Sherwin-Williams and Ace Hardware have also worked to phase out

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143. Vandenbergh, *supra* note 25, at 929.

144. *Id.* This figure represents the annual sales of the top nine firms, plus the sales of Do It Best, the exact number of which was unavailable at the time of writing.

145. *Id.*

146. Sam Dean, *Wolseley to Rebrand as Ferguson as it Departs from Scandinavia*, THE TELEGRAPH (Mar. 28, 2017), <https://www.telegraph.co.uk/business/2017/03/28/wolseley-rebrand-ferguson-departs-nordic-region/>; Esha Vaish, *Wolseley to Change Name to U.S. Brand Ferguson, Reflecting Regional Focus*, REUTERS (Mar. 28, 2017), <https://www.reuters.com/article/us-wolseley-results/wolseley-to-change-name-to-u-s-brand-ferguson-reflecting-regional-focus-idUSKBN16Z0LV>.

147. *BMC History*, BMC, <https://www.buildwithbmc.com/bmc/s/bmc-history> (last visited June 16, 2020).

148. *5 Tips for a Sustainable Remodel*, THE HOME DEPOT, <https://corporate.homedepot.com/news/sustainability/five-tips-sustainable-remodel> (last visited Oct. 8, 2022).

149. HOME DEPOT, RESPONSIBLE PRODUCT STANDARDS, 2, 8 (2019), [https://corporate.homedepot.com/sites/default/files/image\\_gallery/PDFs/responsible-product-standards.pdf](https://corporate.homedepot.com/sites/default/files/image_gallery/PDFs/responsible-product-standards.pdf).

150. *Our Approach to Corporate Responsibility*, LOWES (last visited June 9, 2021), <https://corporate.lowes.com/our-responsibilities/our-approach-corporate-responsibility>.

151. HOME DEPOT, *supra* note 149, at 8; See LOWES, VENDOR CODE OF CONTRACT, 1, 3 (2021) <https://www.loweslink.com/llmain/pubdocuments/lgsbusinessethics.pdf>.

152. *Environmental & Social Sustainability Policy*, FERGUSON 1, <https://www.fergusonplc.com/content/dam/ferguson/corporate/sustainability/our-approach/Environment-and-Social-Sustainability-Policy.pdf>. (last visited Oct. 15, 2022).

153. BMC, GENERAL PURCHASE ORDER TERMS AND CONDITIONS 2 (2018), [https://cdn-media.amplience.com/stock/pdfs/BMC\\_Supplier\\_Purchase\\_Order\\_Terms\\_Conditions\\_2018\\_FINAL3.pdf](https://cdn-media.amplience.com/stock/pdfs/BMC_Supplier_Purchase_Order_Terms_Conditions_2018_FINAL3.pdf).

some chemicals from their paints.<sup>154</sup> CCA Global Partners, Menard, 84 Lumber, and Do It Best have not publicly disclosed any environmental requirements for suppliers.

*b. Sector-to-Sector Analysis*

The D&B Hoovers new sector classification most closely analogous to home improvement and hardware retail is home and garden retail. The top ten firms in this sector are Home Depot, Lowe's, Menard, Volt Parent, Fortive, Ace Hardware, Snap-On, Fred Meyer Stores, Ufp Warrens, and LBM Borrower.<sup>155</sup> Of these firms, six impose at least one environmental requirement on suppliers. Home Depot, Lowe's, Menard, and Ace Hardware are all discussed above in the firm-to-firm analysis.

Fortive requires all suppliers to have environmental management systems, obey all local environmental laws, and seek to reduce their environmental impact.<sup>156</sup> Snap-On and Fred Meyer Stores both also require that suppliers obey all local environmental laws.<sup>157</sup> Volt Parent, Ufp Warrens, and LBM Borrower do not publicly disclose any environmental supply chain requirements.

### 3. Office Products Retail and Distribution

The top ten firms in the office products retail and distribution sector in 2007 were Staples, Office Depot, Office Max, Unisource, IKON, United Stationers, Corporate Express, S.P. Richards, School Specialty, and Global Imaging Systems, accounting in total for \$61 billion in annual sales for the sector.<sup>158</sup> Of these, only Staples and Office Depot imposed environmental requirements on their suppliers.<sup>159</sup>

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154. *Sherwin-Williams Commits to Ban Deadly Paint Strippers*, Nat'l Res. Def. Council (June 15, 2018), [https://www.nrdc.org/media/2018/180615#:~:text=Today%20the%20nation's%20largest%20specialty,the%20end%20of%20this%20year;Sujatha%20Bergen,Mike%20Schade,&Daniel%20Rosenberg,Toxic%20Paint%20Strippers:Ace%20Hardware%20\(Finally\)%20Acts;Trump%20EPA%20Stalls,TOXIC-FREE%20FUTURE](https://www.nrdc.org/media/2018/180615#:~:text=Today%20the%20nation's%20largest%20specialty,the%20end%20of%20this%20year;Sujatha%20Bergen,Mike%20Schade,&Daniel%20Rosenberg,Toxic%20Paint%20Strippers:Ace%20Hardware%20(Finally)%20Acts;Trump%20EPA%20Stalls,TOXIC-FREE%20FUTURE) (Feb. 28, 2019), <https://toxicfreefuture.org/blog/toxic-paint-strippers-ace-hardware-finally-acts-trump-epa-stalls/>.

155. See *supra* note 96.

156. *The Fortive Supplier Code*, FORTIVE 4, 11, [https://www.fortive.com/sites/default/files/2021-09/FOR-000\\_Supplier%20Code%20Brochure\\_R3\\_ENGLISH-compressed.pdf](https://www.fortive.com/sites/default/files/2021-09/FOR-000_Supplier%20Code%20Brochure_R3_ENGLISH-compressed.pdf) (last visited Oct. 15, 2022).

157. *Supplier Code of Business Conduct*, SNAPON 1, [https://www.snapon.com/Snap-on-Files/Suppliers/Code-of-Conduct/2019-Code-of-Conduct/Snap-on-Suppliercodeofconduct-Nov2019\\_English.pdf](https://www.snapon.com/Snap-on-Files/Suppliers/Code-of-Conduct/2019-Code-of-Conduct/Snap-on-Suppliercodeofconduct-Nov2019_English.pdf) (last visited June 9, 2021); Fred Meyer, as a subsidiary of the Kroger Co., abides by the Kroger Co. Vendor Code of Conduct: *Vendor Code of Conduct*, KROGER (Aug. 3, 2020), <https://www.thekrogerco.com/wp-content/uploads/2017/09/code-of-conduct.pdf>.

158. Vandenberg, *supra* note 25, at 929–30.

159. *Id.* at 930.

#### a. Firm-to-Firm Analysis

A number of these firms have gone through major changes since 2007. Office Max was purchased by Office Depot,<sup>160</sup> Unisource merged with International Paper's xpedx division to become Veritiv,<sup>161</sup> IKON was purchased by Ricoh Co.,<sup>162</sup> and United Stationers changed its name to Essendant.<sup>163</sup> Since Office Max and IKON are now owned by other companies, eight firms of the original ten remain. Of these eight firms, half have disclosed the use of environmental supply chain requirements. Staples and Office Depot continue to impose environmental requirements on their suppliers.<sup>164</sup> Both Veritiv and Essendant require suppliers to comply with all local environmental laws,<sup>165</sup> and Veritiv requires that paper suppliers meet either FSC, SFI, or PEFC standards.<sup>166</sup>

#### b. Sector-to-Sector Analysis

As noted above, no current sector is analogous to the office products retail and distribution sector, so no sector in this general business area was included in the current study.

### 4. Automobile Manufacturing

In 2007, the top ten firms in the automobile manufacturing sector were General Motors, Toyota, DaimlerChrysler, Ford, Volkswagen, Nissan, Honda, Peugeot, Fiat, and Renault.<sup>167</sup> Of those ten firms, General Motors, DaimlerChrysler, Toyota, Nissan, and Fiat had some form of environmental requirements, with Renault planning to impose requirements in 2007.<sup>168</sup> These seven firms represented

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160. Dhanya Skariachan, *Office Depot Closes Deal to Buy OfficeMax*, REUTERS (Nov. 5, 2013), <https://www.reuters.com/article/us-officedepot-officemax-results/office-depot-closes-deal-to-buy-office-max-idUSBRE9A418720131105>.

161. *International Paper Announces Completion of xpedx Spinoff and Merger with Unisource*, CISION PR NEWSWIRE (July 1, 2014), <https://www.prnewswire.com/news-releases/international-paper-announces-completion-of-xpedx-spinoff-and-merger-with-unisource-265434071.html>.

162. *S&P Summary: Ricoh Co. Ltd.*, REUTERS (Mar. 29, 2012), <https://www.reuters.com/article/idUSWLA550620120329>.

163. *Our Company History*, ESSENDANT <https://www.essendant.com/about-us/our-history> (last visited June 17, 2020).

164. *Staples Supplier Code of Conduct*, STAPLES, [https://www.staples.com/sbd/cre/noheader/about\\_us/documents/suppliercodeofconduct.pdf](https://www.staples.com/sbd/cre/noheader/about_us/documents/suppliercodeofconduct.pdf) (last visited June 9, 2021); *Greener Purchasing Policy for Paper Products*, OFFICE DEPOT, <https://www.officedepot.com/cm/help/paper-policy> (last visited June 9, 2021).

165. *Veritiv Supplier Code of Conduct 2019*, VERITIV, <https://www.veritivcorp.com/sites/default/files/veritiv-supplier-code-of-conduct-2019.pdf> (last visited June 9, 2021); *Essendant Inc. Supplier Code of Ethics*, ESSENDANT, [https://www.essendant.com/wp-content/uploads/2019/04/ESND\\_Supplier\\_Code\\_of\\_Ethics\\_1-2016.pdf](https://www.essendant.com/wp-content/uploads/2019/04/ESND_Supplier_Code_of_Ethics_1-2016.pdf) (last visited June 9, 2021).

166. *2021 Corporate Social Responsibility Report*, VERITIV 2 (2021), [https://s2.q4cdn.com/507213534/files/doc\\_downloads/2021/Veritiv-2021-CSRR-FINAL.pdf](https://s2.q4cdn.com/507213534/files/doc_downloads/2021/Veritiv-2021-CSRR-FINAL.pdf).

167. Vandenberg, *supra* note 25, at 930.

168. *Id.*, at 930 n.69.



\$910 billion in sales, 77 percent of the sales for the top ten firms in the sector.<sup>169</sup> All ten companies existed at the time of the new study, although Chrysler had become a subsidiary of Fiat, not Daimler.<sup>170</sup>

*a. Firm-to-Firm Analysis*

All ten currently impose at least one environmental requirement on their suppliers. General Motors, Volkswagen, and Fiat Chrysler require suppliers to address a variety of environmental matters including reducing their carbon footprint, energy use, water use, waste, and emissions.<sup>171</sup> In addition, General Motors encourages suppliers to increase usage of renewable energy and develop environmentally friendly technologies.<sup>172</sup> Similarly, Daimler requires suppliers to implement emissions reduction strategies, as well as strategies for reducing and recovering resources.<sup>173</sup> Toyota asks suppliers to aim for carbon neutrality,<sup>174</sup> while Ford requires that raw materials be responsibly sourced.<sup>175</sup> Nissan asks suppliers to reduce carbon dioxide emissions and water use throughout the supply chain and to be proactive about recycling.<sup>176</sup> Honda requires management, reduction, and, wherever possible, elimination of greenhouse gas emissions from suppliers.<sup>177</sup> Fiat Chrysler, Volkswagen, Peugeot, and Daimler all required or suggested that certain

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169. *Id.* at 930.

170. James R. Healey, *Done deal: Fiat owns Chrysler*, USA TODAY (Jan. 21, 2014), <https://www.usatoday.com/story/money/cars/driveon/2014/01/21/done-deal-fiat-now-owns-all-of-chrysler/4718529/>; After the scope of this study was set in June 2020, Chrysler and Peugeot merged to become Stellantis, Colin Beresford, *It's Official: Fiat Chrysler and PSA Group Are Now Stellantis*, CAR AND DRIVER, (Jan. 19, 2021) <https://www.caranddriver.com/news/a35254008/fiat-chrysler-peugeot-become-stellantis/>; Graeme Roberts, *Daimler Becomes Mercedes Benz Group*, JUST AUTO, (Feb. 1, 2022), <https://www.just-auto.com/news/daimler-becomes-mercedes-benz-group/>. Since this change happened after the commencement of the study, the companies remain separate herein, and their environmental commitments are derived from before the merger and reflect the behavior of the companies in 2020.

171. GENERAL MOTORS, GM SUPPLIER CODE OF CONDUCT, 6–8 [https://www.gmsustainability.com/pdf/policies/GM\\_Supplier\\_Code\\_of\\_Conduct.pdf](https://www.gmsustainability.com/pdf/policies/GM_Supplier_Code_of_Conduct.pdf) (last visited Oct. 11, 2022); VOLKSWAGEN, CODE OF CONDUCT FOR BUSINESS PARTNERS, 14 (2021), [https://www.volkswagenag.com/presence/nachhaltigkeit/documents/policy-intern/CodeofConduct\\_BusinessPartners\\_V2020.pdf](https://www.volkswagenag.com/presence/nachhaltigkeit/documents/policy-intern/CodeofConduct_BusinessPartners_V2020.pdf); FIAT CHRYSLER AUTOMOBILES, FCA ENVIRONMENTAL GUIDELINES, 3, [https://www.stellantis.com/content/dam/stellantis-corporate/archives/fca/corporate-regulations/FCA\\_Environmental\\_Guidelines\\_2018.pdf](https://www.stellantis.com/content/dam/stellantis-corporate/archives/fca/corporate-regulations/FCA_Environmental_Guidelines_2018.pdf) (last visited Feb. 6, 2018).

172. GENERAL MOTORS, *supra* note 171, at 6.

173. DAIMLER AG, DAIMLER SUSTAINABILITY REPORT 2019, 39, 49, 92 (2020), [https://sustainabilityreport.daimler.com/2019/servicepages/downloads/files/daimler\\_sr\\_2019.pdf](https://sustainabilityreport.daimler.com/2019/servicepages/downloads/files/daimler_sr_2019.pdf).

174. TOYOTA MOTOR CORP., TOYOTA SUSTAINABILITY GUIDELINES, 5 (2021), [https://global.toyota/pages/global\\_toyota/sustainability/esg/supplier\\_csr\\_en.pdf](https://global.toyota/pages/global_toyota/sustainability/esg/supplier_csr_en.pdf).

175. *See generally*, FORD, FORD SUSTAINABILITY REPORT 2019/20, 4 (2020), [https://s23.q4cdn.com/799033206/files/doc\\_downloads/esg/2020/06/Ford-sr20.pdf](https://s23.q4cdn.com/799033206/files/doc_downloads/esg/2020/06/Ford-sr20.pdf).

176. NISSAN, NISSAN GREEN PURCHASING GUIDELINES, 5 (2020), [https://www.nissan-global.com/EN/DOCUMENT/PDF/SR/Nissan\\_Green\\_Purchasing\\_Guideline\\_e.pdf](https://www.nissan-global.com/EN/DOCUMENT/PDF/SR/Nissan_Green_Purchasing_Guideline_e.pdf).

177. HONDA, HONDA SUPPLIER SUSTAINABILITY GUIDELINES, 5, [https://global.honda/sustainability/cq\\_img/report/pdf/supply-chain/supplier-sustainability-guidelines.pdf](https://global.honda/sustainability/cq_img/report/pdf/supply-chain/supplier-sustainability-guidelines.pdf) (last visited Oct. 15, 2022).

suppliers obtain ISO 14001 certification or work within certified systems.<sup>178</sup> Although most companies require their suppliers to comply with local environmental laws, Renault also requires that they anticipate and stay ahead of new legislation by implementing and continuously improving environmental management systems.<sup>179</sup>

*b. Sector-to-Sector Analysis*

The automobile sector is now referred to as the motor vehicle parts manufacturing sector in the D&B database classifications.<sup>180</sup> Of the top ten from 2007, Volkswagen, Toyota, Ford, General Motors, Honda, Nissan, Fiat, and Peugeot remain at the top today.<sup>181</sup> SAIC, a Chinese automobile manufacturer, and Audi have replaced Daimler and Fiat Chrysler. As a member of Volkswagen Group, Audi has the same supplier requirements as Volkswagen.<sup>182</sup> SAIC claims to advance the ISO 14001 environmental management system, and it requires subsidiaries and affiliated holding companies to comply with local environmental laws and set standards for pollutants.<sup>183</sup> SAIC expresses interest in “green supply chain” but does not have published targets, goals, or compliance metrics for suppliers.<sup>184</sup>

## 5. Personal Computers

The top ten firms in personal computers in 2007 were Hewlett-Packard, Sony, Dell, Toshiba, NEC, Apple, Acer, Fujitsu Siemens Computers, Gateway, and Lenovo.<sup>185</sup> At the time, these companies had \$336 billion in global sales.<sup>186</sup> The seven largest of these firms, Hewlett-Packard, Sony, Dell, Toshiba, NEC, Apple Computer, and Acer, accounting for 96 percent of computer sales, all imposed

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178. VOLKSWAGEN, VOLKSWAGEN AKTIENGESELLSCHAFT SUSTAINABILITY REPORT 2019, 39 (2020), [https://www.volkswagenag.com/presence/nachhaltigkeit/documents/sustainability-report/2019/Nonfinancial\\_Report\\_2019\\_e.pdf](https://www.volkswagenag.com/presence/nachhaltigkeit/documents/sustainability-report/2019/Nonfinancial_Report_2019_e.pdf) (but limiting the ISO 14001 requirement to suppliers with 100 or more employees); DAIMLER AG, *supra* note 173, at 113.

179. NISSAN, RENAULT-NISSAN CSR GUIDELINES FOR SUPPLIERS, 7 (2021), [https://www.nissan-global.com/EN/DOCUMENT/PDF/SR/CSR\\_Alliance\\_Guidelines.pdf](https://www.nissan-global.com/EN/DOCUMENT/PDF/SR/CSR_Alliance_Guidelines.pdf).

180. *See supra*, note 96.

181. *Id.*

182. VOLKSWAGEN GROUP, BRANDS, <https://www.volkswagenag.com/en/group/brands-and-models.html> (last visited Oct. 15, 2022); AUDI, VOLKSWAGEN CODE OF CONDUCT FOR BUSINESS PARTNERS, (2021), [https://www.audi.com/content/dam/gbp2/company/sustainability/downloads/documents-and-policies/corporate-guidelines/Volkswagen\\_Code\\_of\\_Conduct\\_for\\_Business\\_Partners-2019-DE-EN.pdf](https://www.audi.com/content/dam/gbp2/company/sustainability/downloads/documents-and-policies/corporate-guidelines/Volkswagen_Code_of_Conduct_for_Business_Partners-2019-DE-EN.pdf).

183. SAIC, SAIC MOTOR CORPORATION LIMITED: ANNUAL REPORT 2021, 56–58, [https://www.saicmotor.com/english/images/investor\\_relations/annual\\_report/2022/7/12/763203D083E54499855A319FB8356217.pdf](https://www.saicmotor.com/english/images/investor_relations/annual_report/2022/7/12/763203D083E54499855A319FB8356217.pdf).

184. *Id.*

185. Vandenbergh, *supra* note 25, at 932.

186. *Id.*



change, green purchasing, designing for long product lifetimes, and designing with recycling in mind.<sup>196</sup> It also explicitly requires suppliers to encourage and supervise these practices in upstream companies.<sup>197</sup> Fujitsu encourages suppliers to set carbon dioxide reduction targets and implement policies to meet them, specifically encouraging working with outside organizations and upstream suppliers.<sup>198</sup>

*b. Sector-to-Sector Analysis*

The most closely analogous sector to the former personal computer sector is now referred to as computer and peripheral equipment manufacturing.<sup>199</sup> Dell, HP, and Toshiba all remain in the top ten in the sector. The remaining seven are Hitachi, Cisco Systems, Denali Intermediate, EMC, Canon, Cloud Network Tech Singapore, and Wistron.<sup>200</sup> All except Denali and Cloud Network Tech impose at least one environmental requirement on suppliers. EMC was acquired by Dell in 2016 and follows its environmental policies.<sup>201</sup> Hitachi requires suppliers to reduce resource use and waste, and to implement environmental management systems, recommending suppliers obtain an international environmental certification.<sup>202</sup> Cisco and Wistron are members of the RBA and require suppliers to follow the RBA code of conduct.<sup>203</sup> Cisco also requires GHG emissions reporting and auditing through CDP.<sup>204</sup> Canon requires adoption of environmental management systems.<sup>205</sup>

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196. JPN<sub>1</sub> *supra* note 192, at 7–10.

197. *Id.* at 7.

198. FUJITSU, FUJITSU GROUP SUSTAINABILITY DATA BOOK 2019 (2019), <https://www.fujitsu.com/global/documents/about/resources/reports/sustainabilityreport/2019-report/fujitsudatabook2019-020501-e.pdf>.

199. *See supra*, note 96.

200. *Id.*

201. *See*, John Pflueger, *Engaging Our Suppliers on Energy and Carbon Emissions*, DELLTECHNOLOGIES.COM (July 27, 2017), <https://www.delltechnologies.com/en-us/blog/engaging-our-suppliers-on-energy-and-carbon-emissions/>.

202. HITACHI, HITACHI GROUP CSR MANAGEMENT GUIDELINE THE 3RD EDITION, 15–17 (2017), [https://www.hitachicm.com/global/wp-content/uploads/2017/09/HSC\\_CSR\\_GB\\_E.pdf](https://www.hitachicm.com/global/wp-content/uploads/2017/09/HSC_CSR_GB_E.pdf); HITACHI, GREEN PROCUREMENT GUIDELINES, S2, [https://www.hitachi.com/environment/library/pdf/green\\_en.pdf](https://www.hitachi.com/environment/library/pdf/green_en.pdf) (last visited June 11, 2021).

203. CISCO, SUPPLIER CODE OF CONDUCT, <https://www.cisco.com/c/en/us/about/csr/impact/environment/supplier-code-of-conduct.html> (last visited June 11, 2021); WISTRON, RESPONSIBLE BUSINESS, <https://esg.wistron.com/en/innovation/SustainableSupplyChain/> (last visited June 11, 2021).

204. Douglas Bellin, *Making Manufacturing Sustainable – Starting with Our Supply Chain*, CISCO BLOGS (Apr. 13, 2016), <https://blogs.cisco.com/manufacturing/making-manufacturing-sustainable-starting-with-our-supply-chain>.

205. CANON, CANON GREEN PROCUREMENT STANDARDS, 8 (2021), <https://global.canon/en/procurement/gp-docs/green-v13-en.pdf>.

## 6. Lumber and Wood Production

In 2007, the top ten firms in the lumber and wood production sector were International Paper, Weyerhaeuser, Georgia-Pacific, OfficeMax, MeadWestvaco, Bowater, Louisiana-Pacific, Universal Forest Products, Potlatch, and Sweetheart.<sup>206</sup> The combined 2005 U.S. sales for these companies was over \$91 billion.<sup>207</sup> Of these, International Paper, Weyerhaeuser, Georgia-Pacific, MeadWestvaco, Bowater, and Louisiana-Pacific all imposed SFI and local law compliance requirements on their timber suppliers, while Potlatch encouraged FSC compliance.<sup>208</sup> OfficeMax, Universal Products, and Sweetheart did not publicly disclose whether they imposed any standards on suppliers.<sup>209</sup>

Of the top ten companies in 2007, International Paper, Georgia-Pacific, Weyerhaeuser, Louisiana-Pacific, and Universal Forest Products remain in essentially the same form. OfficeMax, as stated in the discussion of the office products and retail distribution sector, is now a subsidiary of Office Depot, which is not a major player in the lumber and wood production sector. Similarly, Sweetheart, which had been acquired by Solo Cup shortly before the 2007 paper was published, was acquired by Dart Container in 2012.<sup>210</sup> Dart is primarily a rubber and plastics products manufacturer, and thus is not analyzed here as a member of the lumber and wood production sector.<sup>211</sup> MeadWestvaco merged with Rock-Tenn in 2015 to form WestRock, and Potlatch became Potlatchdeltic after acquiring Deltic Timber in 2018.<sup>212</sup> Finally, Bowater merged with Abitibi-Consolidated in 2007 to become AbitibiBowater, then changed its name to Resolute Forest Products after emerging from bankruptcy in 2010.<sup>213</sup>

### a. Firm-to-Firm Analysis

Today, seven of the eight remaining companies (all save Universal Forest Products) impose environmental performance standards on suppliers, primarily

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206. Vandenbergh, *supra* note 25, at 933–34.

207. *Id.* at 933.

208. *Id.* at 934.

209. *Id.*

210. *Dart Container Closes on Acquisition of Solo Cup Company*, DART CONTAINER CORP., (May 4, 2012), <https://www.dartcontainer.com/news/news-archives/news-stories/2012/05/dart-container-closes-on-acquisition-of-solo-cup-company/>.

211. Dart Container, DUN & BRADSTREET BUS. DIRECTORY, [https://www.dnb.com/business-directory/company-profiles.dart\\_container\\_corporation.a14b6c3f69735cc4d095048e7e26d40b.html](https://www.dnb.com/business-directory/company-profiles.dart_container_corporation.a14b6c3f69735cc4d095048e7e26d40b.html) (last visited Feb. 1, 2022).

212. Arno Schuetze, *U.S. Packaging Group Westrock Puts Dispensers Unit Up for Sale*, REUTERS (Nov. 18, 2016), <https://www.reuters.com/article/us-westrock-divestment/u-s-packaging-group-westrock-puts-dispensers-unit-up-for-sale-sources-idUSKBN13D1ZS>; Potlatchdeltic Corporation, DUN & BRADSTREET BUS. DIRECTORY, [https://www.dnb.com/business-directory/company-profiles.potlatchdeltic\\_corporation.cdfb211202377dec452734119b91b3.html](https://www.dnb.com/business-directory/company-profiles.potlatchdeltic_corporation.cdfb211202377dec452734119b91b3.html) (last visited Feb. 1, 2022).

213. *Our History*, RESOLUTE FOREST PRODS., [https://www.resolutefp.com/About\\_Us/Our\\_History/](https://www.resolutefp.com/About_Us/Our_History/) (last visited Oct. 17, 2022).

because their certifications through SFI, FSC or PEFC require that certain environmental practices be met by suppliers for the producers to retain their certifications.<sup>214</sup> Both International Paper and Resolute Forest Products work with small landowners to help them become FSC-certified.<sup>215</sup> WestRock is the only company of the seven that is not independently certified under one of the above certification systems, but it does require its suppliers to comply with all local laws and regulations.<sup>216</sup>

*b. Sector-to-Sector Analysis*

The lumber and wood production sector is the only one included in the 2007 study that has not changed to a different sector in the D&B Hoovers reorganization.<sup>217</sup> The makeup of the top ten companies has changed, however. International Paper and Georgia-Pacific remain the top two companies in terms of revenue, and WestRock has moved up from fifth to third.<sup>218</sup> The remaining seven companies from 2007 are no longer in the top ten.<sup>219</sup> The fourth through tenth largest companies today are Kimberly-Clark, Graphic Packaging International, Avery Dennison, Packaging Corporation of America, Sonoco Products, Domtar, and Bemis.<sup>220</sup> All ten companies impose at least one environmental supply chain requirement on suppliers.

International Paper, Georgia-Pacific and WestRock were discussed above. Of the remaining seven, Graphic Packaging, Packaging Corp. of America, Sonoco Products, and Domtar all have SFI and PEFC certifications, and Sonoco and Domtar

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214. *Forest Management Certification*, INTERNATIONALPAPER.COM, [https://www.internationalpaper.com/docs/default-source/english/sustainability/2013-sustainability-report.pdf?sfvrsn=df57a033\\_0](https://www.internationalpaper.com/docs/default-source/english/sustainability/2013-sustainability-report.pdf?sfvrsn=df57a033_0) (last visited June 11, 2021); GP, SUSTAINABILITY BROCHURE, 7, <https://www.gppackaging.com/wp-content/uploads/2020/08/GP-Sustainability-Brochure-5.pdf> (last visited June 11, 2021); WEYERHAEUSER, SUSTAINABILITY, 16 (2014), [https://www.weyerhaeuser.com/application/files/1615/1303/1667/Weyerhaeuser-Sustainability-Report\\_2014.pdf](https://www.weyerhaeuser.com/application/files/1615/1303/1667/Weyerhaeuser-Sustainability-Report_2014.pdf); *Forestry and Fiber Sourcing*, RESOLUTEFP.COM, [https://www.resolutefp.com/Sustainability/Forestry\\_and\\_Fiber\\_Sourcing/](https://www.resolutefp.com/Sustainability/Forestry_and_Fiber_Sourcing/) (last visited June 11, 2021); *A commitment to sustainable forestry*, WESTROCK, <https://www.westrock.com/company/forest-resources#fiber-certifications> (last visited Oct. 17, 2022); LP, SUSTAINABILITY BROCHURE, 2 (2020), <https://lpcorp.com/media/5087/17-lp-0150-m2mp-lp-sustainability-brochure-digital.pdf>; *Corporate Responsibility—Environment*, POTLATCHDELTIC.COM, <https://www.potlatchdeltic.com/Page/ViewPage/19> (last visited June 11, 2021).

215. INTERNATIONAL PAPER, FOREST MANAGEMENT CERTIFICATION, 29–30 (2013), [https://www.internationalpaper.com/docs/default-source/english/sustainability/2013-sustainability-report.pdf?sfvrsn=df57a033\\_0](https://www.internationalpaper.com/docs/default-source/english/sustainability/2013-sustainability-report.pdf?sfvrsn=df57a033_0); *Forestry and Fiber Sourcing*, RESOLUTEFP.COM, [https://www.resolutefp.com/Sustainability/Forestry\\_and\\_Fiber\\_Sourcing/](https://www.resolutefp.com/Sustainability/Forestry_and_Fiber_Sourcing/) (last visited June 11, 2021).

216. WESTROCK, GLOBAL PRINCIPLES OF CONDUCT (2021), <https://www.westrock.com/-/media/pdf/policies/supplier-principles-of-conduct-pdf.pdf?modified=20180725145724#:~:text=Business%20Practices%3A%20Suppliers%20shall%20not,to%20the%20satisfaction%20of%20WestRock>.

217. After the scope of the study was defined, however, the sector was renamed as Converted Paper Product Manufacturing, *see supra* note 96.

218. *See supra* note 96.

219. *Id.*

220. *Id.*

are also FSC certified.<sup>221</sup> These certifiers require participating companies to meet certain standards in their choice of suppliers.<sup>222</sup> In addition, International Paper, Georgia-Pacific, WestRock, Graphic Packaging International, and Packaging Corporation of America all are part of Amazon's Packaging Support and Supplier Network, which tests and certifies packaging materials in an effort to reduce waste, including requiring packages above a certain size to ship in the original box to avoid double-packaging and that all packaging be 100% recyclable.<sup>223</sup>

Kimberly-Clark states on its website that its "sustainability policies outline [its] commitment to operating in a . . . responsible manner" and that it expects its suppliers "to adopt these same commitments."<sup>224</sup> It also requires suppliers to be in full compliance with local laws and regulations, as do all nine other firms in this section.<sup>225</sup> Graphic Packaging requires suppliers to demonstrate a commitment to

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221. GRAPHIC PACKAGING INT'L, 2017 SUSTAINABILITY AND SOCIAL RESPONSIBILITY REPORT, 17 (2017), <https://www.graphicpkg.com/documents/2018/12/gpi-sustainability-report-2017.pdf>; PACKAGING CORP. OF AMERICA, PCA 2019 RESPONSIBILITY REPORT, 31 (2019), [https://www.packagingcorp.com/filebin/pdf/PCA\\_2019\\_Responsibility\\_Report.pdf](https://www.packagingcorp.com/filebin/pdf/PCA_2019_Responsibility_Report.pdf); Sonoco, Sustainable WOOD AND FIBER POLICY, 1 (2020), [https://www.sonoco.com/sites/default/files/technical-files/Sustainability%20Reports%20Page/Sonoco%E2%80%99s%20Sustainable%20Wood%20and%20Fiber%20Policy\\_0720.pdf](https://www.sonoco.com/sites/default/files/technical-files/Sustainability%20Reports%20Page/Sonoco%E2%80%99s%20Sustainable%20Wood%20and%20Fiber%20Policy_0720.pdf); DOMTAR, DOMTAR SUSTAINABILITY REPORT 2019, 14 (Aug. 2019), <https://www.domtar.com/sites/default/files/2019-08/Domtar-Sustainability-Report-2019.pdf>.

222. See *SFI Standards*, FORESTS.ORG, <https://www.forests.org/standards> (last visited June 11, 2021); *Our Approach*, PEFC.ORG, <https://www.pefc.org/what-we-do/our-approach> (last visited June 11, 2021); *Forest Management Certification*, FSC.ORG, <https://fsc.org/en/forest-management-certification> (last visited June 11, 2021).

223. *APASS Combined Referral List*, APASS, <https://assets.aboutamazon.com/a0/ad/e742c51e482584453a60009032c2/apass.Combined.Referall.List.5.26.2021.pdf> (last visited June 11, 2021); AMAZON, *Amazon Packaging Support and Supplier Network (APASS)*, 3–5 (Mar. 3, 2021), <https://assets.aboutamazon.com/a2/b7/83f5d066470d9b02259b6d7e7f18/apass.Combined.Referall.List.3.03.2021.pdf>.

224. KIMBERLY-CLARK, *Sustainability Policies*, <https://www.kimberly-clark.com/en-us/company/supplier-link/standards-and-requirements/social-compliance/sustainability-policies> (last visited Oct. 9, 2022).

225. KIMBERLY-CLARK, *Stewardship Standards for Suppliers*, <https://www.kimberly-clark.com/en-us/company/supplier-link/standards-and-requirements/stewardship> (last visited Oct. 9, 2022); INTERNATIONAL PAPER, *Supplier Code of Conduct*, 1 (2013), [https://www.internationalpaper.com/docs/default-source/english/company/suppliers/supplier-code-of-conduct/supplier-code-of-conduct---united-states-\(en\)-previous-version.pdf?sfvrsn=7d58b833\\_6](https://www.internationalpaper.com/docs/default-source/english/company/suppliers/supplier-code-of-conduct/supplier-code-of-conduct---united-states-(en)-previous-version.pdf?sfvrsn=7d58b833_6); GEORGIA-PACIFIC, *Supplier Sustainability Guidelines*, 1–3 (2022), <https://kochind.scene7.com/is/content/kochind/Sustainability-Supplier-Guidelines>; WESTROCK, *supra* note 216; GRAPHIC PACKAGING INTERNATIONAL, *Global Supplier Code of Conduct*, 1 (2020), <https://www.graphicpkg.com/documents/2020/01/global-supplier-code-of-conduct-english.pdf/>; AVERY DENNISON, *Supplier Standards*, 3 (May 6, 2020), [https://esg.averydennison.com/content/dam/avery\\_dennison/corporate/global/english/documents/procurement/Supplier\\_Standards\\_2020.pdf](https://esg.averydennison.com/content/dam/avery_dennison/corporate/global/english/documents/procurement/Supplier_Standards_2020.pdf); PACKAGING CORP. OF AMERICA, *PCA's Social Responsibility and Sustainability Expectations of our Direct Suppliers*, <https://www.packagingcorp.com/supplier-expectations> (last updated October 18, 2013); SONOCO, *Sonoco Products Company – Supplier Standards*, 1 [https://www.sonoco.com/sites/default/files/Sonoco%20Supplier%20Standards\\_18.pdf](https://www.sonoco.com/sites/default/files/Sonoco%20Supplier%20Standards_18.pdf) (last updated Nov. 29, 2018); DOMTAR, *Code of Business Conduct and Ethics*, 4, 9 (Feb. 2022), <https://www.domtar.com/sites/default/files/2022-02/Code%20of%20Business%20Conduct%20and%20Ethics.pdf>; Bemis was acquired by Amcor in 2019 and abides by its supplier code of conduct. AMCOR, *Amcor Completes Acquisition of Bemis, Creating the Global Leader in Packaging* (June 11, 2019), <https://www.amcor.com/media/news/amcor-completes-acquisition-of-bemis>; AMCOR, AMCOR SUPPLIER CODE OF CONDUCT, 1, <https://assets.ctfassets.net/f7tuyt85vtoa/6vKfxsmeRisoQumUWIsEQw/09eac164d42103e24abb101c431c9037/Amcor-Supplier-Code-of-Conduct.pdf> (last visited Oct. 9, 2022).

preservation of the environment through waste reduction, resource conservation, and pollution control.<sup>226</sup> Packaging Corporation of America and Sonoco Products both require quantifiable sustainability goals from their suppliers and that suppliers work towards those goals.<sup>227</sup> Domtar conducts reviews to verify that the fiber they are purchasing comes from sustainably managed forests.<sup>228</sup> It also has a policy against purchasing fiber from genetically modified trees.<sup>229</sup>

## 7. Aluminum Production

In 2007, of the top ten firms in the aluminum production sector only four produced aluminum as their principal business.<sup>230</sup> These four were Alcoa, Norsk Hydro, Alcan, and Nippon Light Metal.<sup>231</sup> None of them disclosed the imposition of environmental requirements on their suppliers.<sup>232</sup> Alcoa split in 2016 into Alcoa Corp., which is analyzed here, and the smaller Arconic Inc.<sup>233</sup> Alcan was acquired by Rio Tinto in 2007 and now operates as the subsidiary Rio Tinto Alcan.<sup>234</sup> Norsk Hydro is now Hydro Aluminum Metals, and Nippon Light Metal continues to exist under the same name.<sup>235</sup>

### a. Firm-to-Firm Analysis

Today, Nippon is the only company of the four that does not disclose at least one environmental supply chain requirement. Alcoa, Rio Tinto Alcan, and Hydro Aluminum require suppliers to follow all local environmental laws and regulations.<sup>236</sup> Alcoa also requires suppliers to reduce or eliminate waste and manage environmental risks.<sup>237</sup> In 2019, it created a Global Supplier Sustainability Program to oversee the sustainability of its suppliers and act to manage risks and demand

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226. GRAPHIC PACKAGING INT'L, *supra* note 225.

227. PACKAGING CORP. OF AMERICA, *supra* note 225; SUNOCO, *supra* note 225, at 1.

228. *Sustainability Policies*, DOMTAR.COM, <https://www.domtar.com/en/resources/sustainability/sustainability-policies> (last visited June 11, 2021).

229. *Id.*

230. Vandenberg, *supra* note 25, at 934.

231. *Id.*

232. *Id.*

233. *Alcoa Inc. Board of Directors Approves Separation of Company*, ALCOA, (Sept. 29, 2016), <https://news.alcoa.com/press-releases/press-release-details/2016/Alcoa-Inc.-Board-of-Directors-Approves-Separation-of-Company/default.aspx>.

234. *Rio Tinto makes a recommended all cash offer for Alcan*, RIO TINTO ALCAN, (July 12, 2007), <https://www.sec.gov/Archives/edgar/data/4285/000100329707000184/ex992.htm>.

235. *See supra* note 96.

236. ALCOA, ALCOA SUPPLIER STANDARDS DECEMBER 2020, 3 (2020), [https://www.alcoa.com/global/en/who-we-are/ethics-compliance/pdf/supplier-standards/Supplier\\_Standards.pdf](https://www.alcoa.com/global/en/who-we-are/ethics-compliance/pdf/supplier-standards/Supplier_Standards.pdf); RIO TINTO, SUPPLIER CODE OF CONDUCT, 2 (2021), <https://www.riotinto.com/en/footer/suppliers>; HYDRO, HYDRO SUPPLIER CODE OF CONDUCT, 3, (2020), <https://www.hydro.com/globalassets/download-center/supplier-code-of-conduct/hydro-supplier-code-of-conduct2.pdf>.

237. ALCOA, *supra* note 236, at 5.



improvement in supplier sustainability performance.<sup>238</sup> Rio Tinto Alcan states that it expects suppliers to “continuously improv[e] environmental and resource management.”<sup>239</sup> Hydro Aluminum requires suppliers to minimize emissions and waste production and to implement environmentally-friendly processes.<sup>240</sup> Suppliers are subjected to reviews and audits to evaluate compliance.<sup>241</sup>

#### b. Sector-to-Sector Analysis

Under D&B Hoover’s new classifications, the aluminum production sector is now most closely approximated by Hoovers’ metal products manufacturing sector.<sup>242</sup> This sector differs greatly from the former aluminum production sector, being largely steel- rather than aluminum-dominated. Due to steel and aluminum’s differing environmental profiles (discussed above in section III.A), the current metal products manufacturing sector does not provide the same snapshot of aluminum-focused firms as the old aluminum production sector in the original article’s analysis, and the sector has been removed from the analysis.

### 8. Industrial Machinery and Equipment Manufacturing

The final sector analyzed in the 2007 article was industrial machinery and equipment manufacturing.<sup>243</sup> The top ten firms at the time were United Technologies, Caterpillar, Mitsubishi Heavy Industries, John Deere, ABB, MAN Aktiengesellschaft, Komatsu, Illinois Tool Works, CNH Global, and Parker Hannifin.<sup>244</sup> Of these firms, seven – United Technologies, Mitsubishi Heavy Industries, John Deere, ABB, MAN Group, Komatsu, and Illinois Tool Works – publicly disclosed the imposition of environmental requirements on their suppliers.<sup>245</sup> All ten companies exist today in some form. United Technologies merged with Raytheon in 2020 to form Raytheon Technologies Corp., and CNH Global merged with Fiat Industrial in 2013 to become CNH Industrial.<sup>246</sup>

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238. ALCOA, 2019 SUSTAINABILITY REPORT, 56–58 (2020), <https://www.alcoa.com/sustainability/en/pdf/2019-Sustainability-Report.pdf>.

239. RIO TINTO, *supra* note 236, at 5.

240. HYDRO, *supra* note 236, at 3.

241. *Responsible Supply Chain*, HYDRO, <https://www.hydro.com/en/sustainability/business-integrity-and-responsible-sourcing/responsible-supply-chain/> (last visited June 12, 2021).

242. *See supra* note 96.

243. Vandenbergh, *supra* note 25, at 935.

244. *Id.*

245. *Id.*

246. *United Technologies and Raytheon Complete Merger of Equals Transaction*, RAYTHEON TECHNOLOGIES, (Apr. 3, 2020), <https://www.rtx.com/News/2020/04/03/United-Technologies-and-Raytheon-Complete-Merger-of-Equals-Transaction> (last visited Oct. 8, 2022); *Our History*, CNH INDUSTRIAL, [https://www1.cnhindustrial.com/en-us/know\\_us/who\\_we\\_are/Pages/our\\_history.aspx](https://www1.cnhindustrial.com/en-us/know_us/who_we_are/Pages/our_history.aspx) (choose “2013” from timeline below CNH INDUSTRIAL subheader) (last visited June 18, 2020).

a. *Firm-to-Firm Analysis*

Today, all ten companies publicly disclose environmental requirements for their suppliers. Raytheon Technologies not only requires its suppliers to responsibly source metals but also obligates those suppliers to impose the same obligations on their suppliers as well.<sup>247</sup> It also requires that suppliers “conduct [their] operations in a manner that: actively manages risk; conserves natural resources; prevents pollution; safeguards the environment; and minimizes waste, emissions, and energy consumption.”<sup>248</sup> Caterpillar requires minimization of water discharges and other waste, improvement of material and energy efficiency, reduction of greenhouse gas emissions, and use of co-generation and renewable energy sources.<sup>249</sup> Likewise, ITW requires reduced waste, energy consumption, and greenhouse gas emissions, as well as responsible chemical management and the development of more efficient technologies.<sup>250</sup> CNH has very similar requirements as well.<sup>251</sup> Deere & Co. and Komatsu restrict or discourage the use of some chemicals by suppliers.<sup>252</sup>

Deere & Co., MAN Group, Komatsu, MAN and CNH all recommend ISO 14001 compliant environmental management systems.<sup>253</sup> In addition, Komatsu requests that suppliers maintain ISO 14001 or Eco-Stage certifications, and Illinois Tool Works expects that suppliers will attain ISO-14001 standards, whether or not actual certification is achieved.<sup>254</sup> Nine firms require suppliers to comply with all local environmental laws and regulations, while Mitsubishi Heavy Industries

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247. Documentation on file with author.

248. RAYTHEON, SUPPLIER CODE OF CONDUCT, 3, <https://prd-sc101-cdn.rtx.com/-/media/rtx/suppliers/2020-03/files/english.pdf?rev=0f2c7b1a8b924abaa88f24e22a0effb7#:-:text=RTX%20officers%2C%20directors%2C%20employees%2C,effectively%2C%20and%20hold%20themselves%20accountable> (last visited June 12, 2021).

249. CATERPILLAR, CATERPILLAR’S SUPPLIER CODE OF CONDUCT, 5, <https://s7d2.scene7.com/is/content/Caterpillar/CM20200319-f7958-d691d> (last visited June 12, 2021).

250. ITW, SUPPLIER CODE OF CONDUCT 2 (2021), <https://www.itw.com/media/4dgdjo14/itw-supplier-code-of-conduct.pdf>.

251. CNH, SUPPLIER CODE OF CONDUCT, 3–4 (2021) [https://www1.cnhindustrial.com/en-us/governance/policies\\_and\\_guidelines/policies\\_and\\_guidelines\\_documents/supplier/Supplier\\_Code\\_of\\_Conduct.pdf](https://www1.cnhindustrial.com/en-us/governance/policies_and_guidelines/policies_and_guidelines_documents/supplier/Supplier_Code_of_Conduct.pdf).

252. DEERE, RESTRICTED MATERIALS LIST FOR JOHN DEERE SUPPLIERS, [https://jdsn.deere.com/wps/wcm/connect/jdsn/646eb909-6198-447f-903c-f90d24d05f8b/restricted\\_materials\\_list\\_suppliers.pdf?MOD=AJPERES](https://jdsn.deere.com/wps/wcm/connect/jdsn/646eb909-6198-447f-903c-f90d24d05f8b/restricted_materials_list_suppliers.pdf?MOD=AJPERES) (last visited June 12, 2021); KOMATSU, ENVIRONMENTAL RISK MANAGEMENT, <https://komatsu.disclosure.site/en/themes/153#anc13> (last visited Oct. 6, 2022).

253. JOHN DEERE, JOHN DEERE SUPPLIER CODE OF CONDUCT, 3 [https://s22.q4cdn.com/253594569/files/doc\\_downloads/code\\_of\\_conduct/SupplierCodeofConduct\\_English.pdf](https://s22.q4cdn.com/253594569/files/doc_downloads/code_of_conduct/SupplierCodeofConduct_English.pdf) (last visited June 21, 2021); *CSR procurement guidelines*, KOMATSU, <https://komatsu.disclosure.site/en/themes/189> (last visited June 12, 2021); CNH, *supra* note 251 at 3; MAN also accepts other options, such as the European Union’s EMAS directive. MAN, MAN CODE OF CONDUCT SUPPLIERS AND BUSINESS PARTNERS, 4, [https://www.man-es.com/docs/default-source/compliance/code-of-conduct-for-suppliers-and-business-partners.pdf?sfvrsn=83402c3f\\_46](https://www.man-es.com/docs/default-source/compliance/code-of-conduct-for-suppliers-and-business-partners.pdf?sfvrsn=83402c3f_46) (MAN also accepts the European Union’s EMAS directive) (last visited June 12, 2021).

254. KOMATSU, *supra* note 252, at § 4; *Illinois Tool Works Inc. Supplier Expectations*, ITW, 3 (2021), <https://www.itw.com/media/0b5moago/illinois-tool-works-supplier-expectations.pdf>.

requires compliance with local waste disposal laws and requires suppliers to “minimize environmental impact.”<sup>255</sup>

### b. Sector-to-Sector Analysis

The most analogous current sector is the construction machinery manufacturing sector.<sup>256</sup> Of the top ten firms in 2007, only Caterpillar, Deere & Co., and Komatsu remain in the top ten.<sup>257</sup> The top ten firms today are STA Services Techniques, Caterpillar, Deere & Co., Komatsu, Huarun Concrete Co., Liebherr-Intertrading, Dingsheng Tiangong Engineering Machinery Sales, IHI Corp., Hitachi Construction Machinery, and Sany Heavy Ind. Co., Ltd.<sup>258</sup> Of these, six, including Caterpillar, Deere, and Komatsu (discussed above), require environmental measures from suppliers.

The three firms not discussed in the firm-to-firm comparison are Liebherr-Intertrading, IHI, and Hitachi. All three require compliance with local laws and regulations.<sup>259</sup> In addition, IHI asks suppliers to minimize environmental impact.<sup>260</sup> Hitachi requires reduction of waste and energy use, as well as requiring environmental management systems.<sup>261</sup>

## III. DISCUSSION: THE GROWTH OF ENVIRONMENTAL SUPPLY CHAIN CONTRACTING

To what extent do the study results address whether supply chain contracting provisions are sufficiently widespread to have an important impact on

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255. RAYTHEON, SUPPLIER CODE OF CONDUCT, 3, <https://prd-sc101-cdn.rtx.com/-/media/rtx/suppliers/2020-03/files/english.pdf?rev=0f2c7b1a8b924abaa88f24e22a0effb7#:-:text=RTX's%20officers%2C%20directors%2C%20employees%2C,effectively%2C%20and%20hold%20themselves%20accountable> (last visited June 12, 2021); CATERPILLAR, *supra* note 249, at 5; JOHN DEERE, *supra* note 253, at 3; ABB, ABB SUPPLIER CODE OF CONDUCT, 2 (2018) [https://new.abb.com/docs/librariesprovider46/scm/abb-supplier-code-of-conduct\\_v2\\_en\\_2018.pdf?sfvrsn=2#:-:text=As%20a%20supplier%20to%20ABB,%2C%20threatening%2C%20abusive%20or%20exploitative](https://new.abb.com/docs/librariesprovider46/scm/abb-supplier-code-of-conduct_v2_en_2018.pdf?sfvrsn=2#:-:text=As%20a%20supplier%20to%20ABB,%2C%20threatening%2C%20abusive%20or%20exploitative); MAN, *supra* note 253, at 4; KOMATSU GREEN PROCUREMENT GUIDELINES, KOMATSU, 2, [https://s3-ap-northeast-1.amazonaws.com/sustainability-cms-komatsu-s3/en/csr/pdf/green\\_procurement\\_guideline\\_e.pdf](https://s3-ap-northeast-1.amazonaws.com/sustainability-cms-komatsu-s3/en/csr/pdf/green_procurement_guideline_e.pdf) (last visited June 12, 2021); ITW, *supra* note 250, at 3; CNH, *supra* note 251, at 3; PARKER, DISTRIBUTOR CODE OF CONDUCT, 9 (2021), [https://www.parker.com/parkerimages/Parker.com/About%20Us/Literature/Ethics%20and%20Integrity/Distributor%20Code%20of%20Conduct\\_EN.pdf](https://www.parker.com/parkerimages/Parker.com/About%20Us/Literature/Ethics%20and%20Integrity/Distributor%20Code%20of%20Conduct_EN.pdf); MITSUBISHI HEAVY INDUSTRIES, MHI GROUP SUPPLY CHAIN CSR PROMOTION GUIDELINES, (2018), <https://www.mhi.com/company/procurement/csr/pdf/guideline.pdf>.

256. *See supra* note 96.

257. *Id.*

258. *Id.*

259. LIEBHERR, LIEBHERR CODE OF CONDUCT, 2, 4, [https://www.liebherr.com/shared/media/corporate/documents/brochures/compliance/code-of-conduct/li\\_compliance-groupemployees\\_a4\\_en.pdf](https://www.liebherr.com/shared/media/corporate/documents/brochures/compliance/code-of-conduct/li_compliance-groupemployees_a4_en.pdf) (last visited June 12, 2021); IHI GRP., *IHI Group Procurement Policy*, 2–3 (Dec. 31, 2013), [https://www.ihi.co.jp/var/ezwebin\\_site/storage/original/application/c51ebfca37f67d71a80e573adedc711c.pdf](https://www.ihi.co.jp/var/ezwebin_site/storage/original/application/c51ebfca37f67d71a80e573adedc711c.pdf); HITACHI GRP., *supra* note 202, at 14–18..

260. IHI GRP., *supra* note 259, at 3.

261. HITACHI GRP., *supra* note 202, at 15–19.

environmental quality? Even if they are sufficiently widespread, do they actually improve firm environmental performance? Do they displace preferable government action? The results presented above provide an answer to the first question, and they hint at the answers to the other two. Part IV addresses these questions in turn.

*A. Is Environmental Supply Chain Contracting Sufficiently Widespread to Yield a Substantial Improvement in Environmental Quality?*

The simple answer to the first question is yes. The study results indicate remarkably wide use of environmental supply chain contracting and provide insights into overall trends within sectors. As discussed above, a direct apples-to-apples comparison to the firms included in the original New Wal-Mart study was not possible due to changes in sector designations as well as mergers and acquisitions, bankruptcies, and changes in business lines over the intervening period. The results regarding the firm-to-firm, sector-by-sector, and overall frequency of environmental supply chain contracting produce a comparable assessment, however, and the results show widespread use and growth of supply chain contracting across all three measures.

*Firm-to-Firm.* The first New Wal-Mart Effect study reviewed 74 companies, and it found that 41 (55 percent) imposed environmental requirements on their suppliers.<sup>262</sup> Just over a decade later, as to the 74 firms reviewed in the first study, 69 of these firms still existed in a comparable form at the time of the current study, and 60 (85 percent) utilize environmental requirements in supply chain contracting.

*Sector-to-Sector.* To conduct a sector-to-sector comparison of all firms in the comparable sectors then and at the time of the current study, regardless of whether the firms were included in the first study, the firms in the eight sectors included in the original study were compared to the firms in the seven most analogous sectors. The eight sectors included in the original study were selected to provide a broad overview of sectoral types and included business-to-consumer sectors (B-to-C, such as discount and variety retail) and business-to-business sectors (B-to-B, such as industrial machinery and equipment manufacturing), and the seven sectors included in the current study include analogous representatives from B-to-C and B-to-B sectors. The results by sector are summarized in Table 1.

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262. Although the study attempted to review the top ten firms in eight sectors, six of the firms in the aluminum production sector were not engaged principally in aluminum production activities and were excluded. See, Vandenberg, *supra* note 25, at 934.

Table 1. Percent of Sector Disclosing Environmental Contracting, Original vs. Current Study			
Sector	Original Study	Sector	Current Study
Discount/Variety Retail	50%	Department Stores Grocery Stores	100% 90%
Home Improvement/ Hardware Retail	40%	Hardware/Home and Garden Retail	60%
Automobile Manufacturing	50%	Motor Vehicle Manufacturing	100%
Personal Computers	70%	Computer and Peripheral Equipment Manufacturing	80%
Lumber and Wood Production	70%	Lumber and Wood Production	100%
Industrial Machinery and Equipment Manufacturing	70%	Construction Machinery Manufacturing	60%
Office Products Retail/Distribution	20%	Office Products Retail/ Distribution	n/a
Aluminum Production	0%	Aluminum Production	n/a

These results are consistent with the firm-to-firm analysis. They suggest widespread use of environmental supply chain contracting, with at least half of the firms in all seven sectors disclosing supply chain contracting, and among all 70 firms in the seven sectors, a total of 59 of the firms (84 percent) disclosing supply chain contracting. In three sectors, all firms now engage in environmental supply chain contracting. In all but one sector supply chain contracting is more common now than it was in the original study, and the decline in the one sector (construction machinery manufacturing) was only by one firm.

*All Firms.* As a final check to ensure that the increase in observed supply chain contracting reflects actual growth rather than differences in methodology between the two studies, the second study also compared all firms included in the first study to all firms included in the second study. The second study analyzed more companies than the first study because it re-examined those firms included in the first study with the same business lines, and it studied firms in the seven most comparable sectors. In some of those sectors, new firms emerged over the intervening period as among the ten largest or were included because of small differences in the sector definitions. In total, the second study analyzed 113 firms as compared to the

74 included in the first study. As to all 113 firms included in the second study, 93 (82 percent) disclosed the use of environmental supply chain requirements for suppliers.

Table 2 presents the combined results of the study. The firm-to-firm comparisons include 69 companies, while the sector-to-sector includes 70. Twenty-six firms that are analyzed in the firm-to-firm comparison also appear in the sector-to-sector analysis, as they are still among the top ten earners in their categories. The remaining 44 firms are new to the top ten list in their sectors. Of the 69 companies in the firm-to-firm analysis, 60 (or 85%) disclose use of environmental supply chain contracting requirements. Of the 44 firms which appear only in the sector-to-sector analysis in the current study, 33 (or 75%) impose one or more environmental requirement on suppliers. Of the 70 firms in all seven sectors included in the current study, a total of 59 (84%) impose one or more environmental requirements on suppliers. In total, 93 out of the 113 companies (82%) contain at least one environmental requirement in their supply agreements.

Table 2. Results by Firm, Sector, and Total			
Firm Category	Firms	Number of Firms w/Environmental Requirements	Percent of Firms w/Environmental Requirements
Firm-to-Firm	69	60	87
Sector-to-Sector (newly added firms in current study)	44	33	75
Sector-to-Sector (all firms in current study)	70	59	84
All Firms in Study	113	93	82

*Limitations.* The results of the study are not based on a representative sample of sectors. The included sectors are sufficiently broad and sufficiently economically and environmentally important, however, to provide an indication about the level of activity regarding environmental supply chain contracting even if they are not representative of all U.S. or global sectors. It is also possible that some of the firm disclosures and media accounts about environmental supply chain contracting activity are inaccurate. Although this is possible, there is a greater risk about the level of enforcement of environmental supply chain requirements than about the existence of the requirements, given that the existence of requirements is often easily verifiable, and in many cases multiple sources confirmed the information included in the study. In addition, although there is no claim of statistical significance, the results are sufficiently robust to speak for themselves: the percentage of firms that disclose environmental supply chain contracting requirements in these

sectors is so high that even if some firms were erroneously included or excluded, environmental contracting appears to be very widespread and growing. Finally, it is also possible that changes in the sector categories and the firms in each sector have affected the results, but the fact that three perspectives on the data produced comparable results suggests that this is not a serious concern.

In short, a consistent conclusion emerges: the percentage of firms that disclose that they engage in environmental supply chain contracting has increased from roughly 50% to roughly 80% over the last fifteen years. Environmental supply chain contracting is sufficiently widespread to produce important environmental benefits if these contracts are improving firm environmental performance and are not undermining more effective public governance.

*B. Is Environmental Supply Chain Contracting Likely to Improve Firm Environmental Performance?*

Although the study demonstrates that environmental supply chain contracting requirements are remarkably widespread, it does not address the effects of this supply chain contracting on the buyers or their supply chains, and it is possible that despite being widely deployed, environmental supply chain contracting requirements are not affecting corporate environmental behavior or performance. The percentage of firms engaging in environmental supply chain contracting is so high, however, that even if they are inducing only small improvements in environmental performance, the results are likely to be important for climate change mitigation and other environmental issues. The potential for effects on environmental performance can be inferred from the provisions included in the contracts, the ways that contracting requirements can affect behavior, the motivations of the parties involved, and the existing research on the environmental behavior and performance of suppliers.

*Criteria.* At the outset, it is important to distinguish among the three criteria used to assess environmental success: environmental behavior, environmental performance, and environmental conditions. Positive firm environmental behavior changes could include changes in a wide range of activities, such as adoption of an environmental management system, adding an environmental health and safety manager or chief sustainability officer, adopting new pollution control measures, banning the use of toxic chemicals in products or in the production of products by suppliers, or compliance with government or supplier environmental requirements. Many firm environmental behavior changes are likely to result in improved environmental performance, but they may not.

In contrast, firm environmental performance refers to the environmentally significant effects of changes in firm behavior. An example might be reduced greenhouse gases in air emissions or reduced discharges of pollutants in wastewater. Of course, ultimately the most important consideration involves improvements in environmental conditions, not in the environmental performance of firms, such as

reductions in atmospheric carbon concentrations or the amount of toxic chemicals in fish. Measurement of environmental performance and environmental conditions is difficult, however, and often scholars and policymakers default to measuring environmental behavior.<sup>263</sup> This analysis focuses on the environmental performance of firms, which is more meaningful for environmental protection than environmental behavior and easier to measure than environmental conditions.

*Types of Provisions.* The study did not attempt to identify all the provisions used by the firms that engage in environmental supply chain contracting, but it did reveal a range of provisions in procurement policies or specific contracts, many of which are likely to affect environmental performance if implemented. These include requirements to comply with government environmental laws, to disclose carbon, toxics, or other pollutant emissions, to achieve a level of environmental performance (a requirement to meet an environmental standard even if not required by government environmental laws), and to adopt an environmental management system (EMS).<sup>264</sup> In some cases the provisions commit the seller to take specific actions, such as to report carbon emissions to the seller and to reduce them by a specific amount. In others they are much more general or only require the seller to “review” the buyer’s environmental policies. In some cases, the information produced through the contracting is required to be made available to third parties, but in many cases it is not. If the buyer is motivated to enforce these provisions, either through legal action or by opting not to trade with the seller in the future, many of these provisions provide sufficient requirements to result in important environmental behavior change and improved performance by the buyer. The buyer and the seller may both want the terms to create the impression about environmental concerns but not want to bear the costs, however, and they could do this through very vague or unenforceable provisions or through provisions that are clear and stringent but unenforced. For most environmental supply chain contracting, the motivations of the buyer are likely to determine whether these provisions change the behavior or performance of suppliers.

*Capacity for Monitoring and Enforcement.* Even if supply chain environmental requirements are stringent and focus on important pollutants or actions, they may have little effect on firm environmental performance if the seller does not perceive that compliance with environmental requirements is linked to a meaningful likelihood of detection and substantial sanctions or rewards, whether via formal legal enforcement or economic or social norm effects. Two aspects of modern supply chain contracting suggest that the risks of monitoring are growing for many suppliers.

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263. See Michael P. Vandenbergh, *Beyond Elegance: A Testable Typology of Social Norms in Corporate Environmental Compliance*, 22 STAN. ENVTL. L.J. 55, 92–93 & nn.116–17 (2003) (explaining that the “link between particular reductions in noncompliance rates or in pollutants emitted and changes in human health and environmental quality is poorly understood in some cases” due in part to difficulty and cost).

264. See Vandenbergh, *supra* note 25, at 936 (noting “the frequencies of several provisions: (1) environmental performance (a requirement to meet an environmental standard even if not required by host country environmental laws); (2) law compliance (a requirement to comply with host country environmental laws); and (3) a requirement to adopt an EMS”).



Monitoring is difficult for many types of environmental requirements, but with the growth of the Internet information is much more easily acquired now and transmitted to those with the preferences for environmental protection and the ability to use their market power to create pressure for improvements. Monitoring risks for sellers also are affected by the extensive auditing systems that many large firms use to inspect suppliers. For instance, Walmart performed approximately 14,000 audits of supplier facilities in 2022<sup>265</sup> and Nike performed 561 audits of supplier factories in 2020, although the extent to which these monitors are focused on environmental issues as opposed to labor, human rights and other requirements is unclear.<sup>266</sup> The demand for monitoring of supply chain requirements is sufficiently great to have spawned a new compliance assurance sector in many accounting and management firms, but more research is needed on the environmental aspects of this sector.<sup>267</sup>

*Motivations of Key Participants.* The effects of environmental supply chain contracting likely turn more on the motivations of the parties than on the specific terms of contracts or the availability of monitoring mechanisms and legal remedies. As discussed above, corporate buyers have strong internal economic incentives to reduce supply chain costs by forcing suppliers to reduce energy use and other sources of pollution.

Large institutional investment firms are another source of motivations to monitor and enforce environmental supply chain contract requirements. These investment firms now manage large, diversified portfolios that create incentives to pressure the firms they invest in to reduce carbon emissions, and multiple examples in the last several years demonstrate that after decades of not even voting the shares they own, they are beginning to push for boards of directors that will focus on carbon emissions reductions and to support shareholder resolutions on climate change and other environmental issues.<sup>268</sup> Major lenders and insurance companies have adopted similar policies. The motivations for reducing climate change and other society-wide risks are sufficiently strong to generate a major new NGO, the Shareholder Commons, which is developing a set of global guardrails. The guardrails will form a set of global private ESG standards that large investors will require major companies to follow, and if they include supply chain contracting requirements the guardrails could affect suppliers as well.<sup>269</sup> Starting with economic, not altruistic, motivations, large segments of the financial industry thus have shifted from a passive to an active role on ESG issues. The goal of social and environmental success that large financial institutions need for financial success cannot be achieved without transferring these

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265. WALMART, INC., ENVIRONMENTAL, SOCIAL, AND GOVERNANCE SUMMARY REPORT FY2022 34 (2022).

266. NIKE INC., BREAKING BARRIERS: FY2020 NIKE INC. IMPACT REPORT 29 (2020).

267. See, generally, Reiner Quick & Sanjar Sayer, *The Impact of Assurance on Compliance Management Systems on Bank Director's Decisions*, 25 INT'L J. OF AUDITING 3 (Oct. 25, 2020).

268. See Barzuza et al., *supra* note 77, at 1272–75.

269. *The Shareholder Commons*, FREDERICK ALEXANDER (last visited Jan. 31, 2022), <https://frederickalexander.net/the-shareholder-commons/>.

ESG goals from the largest, publicly traded companies to millions of small and medium-sized businesses around the world, and this transfer is likely to occur through supply chain contracting.<sup>270</sup>

In addition, in the last two decades preferences for environmental protection and climate mitigation have increased in the U.S. and many areas around the world. These majorities are often insufficient to produce adequate government action, but technology has made expressing these preferences in the marketplace much easier. Retail consumers and investors, employees, managers, and local community members are all important players in the potential for supply chain contracts to be enforced through legal or social means. Research demonstrates that retail consumer responses to environmental information are mixed, but some types of labeling and other information affect consumer behavior, and concerns about consumer behavior in turn influence corporate behavior.<sup>271</sup> In the current study, the three sectors with all firms disclosing environmental supply chain contracting are all consumer-facing firms.<sup>272</sup> Carbon labeling efforts are increasing, and they not only can affect consumer behavior but also induce firms to find efficiencies and reduce carbon emissions even absent consumer behavior change.<sup>273</sup>

Finally, employee recruitment and retention are also increasingly important drivers of firm behavior on climate and other ESG issues. Organizations such as Climate Voice have organized employees and have pushed not only for changes in firm environmental behavior but also changes in how firms lobby governments, which often conflicts with stated ESG goals.<sup>274</sup>

*Empirical Research on Supply Chain Contracting Effects.* Empirical research is beginning to shed light on the effects of sustainability or environmental supply chain requirements on the environmental behavior of firms. Early studies indicated that the costs of supply chain sustainability initiatives may undermine their effects, but recent meta-analyses have identified positive associations between supply chain sustainability commitments and firm performance.<sup>275</sup> In some cases, early

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270. Potential efficiencies combined with investor, insurer, lender, and employee pressure may be important drivers. These firms also may be attempting to anticipate future government requirements or raise rivals' costs. See Tim Kraft & Yanchong Zheng, *How Supply Chain Transparency Boosts Business Value*, MIT SLOAN MGMT. REV. 34–35 (Sep. 8, 2021), <https://sloanreview.mit.edu/article/how-supply-chain-transparency-boosts-business-value/>

271. See Taufique et al., *supra* note 26, at 132 (discussing literature on consumer responses to product environmental information).

272. As in 2007, in sectors with only some firms engaging in public disclosure of environmental supply chain requirements, those who required some level of compliance tended to be the larger firms in the sector. The exception to this general rule is the Construction Machinery Manufacturing Sector. Most notably, STA Services Techniques, the largest company in the sector, does not publicly disclose whether it imposes environmental requirements on suppliers. This could be due to the business-to-business nature of the sector, although thirteen of the seventeen companies analyzed did impose requirements on suppliers.

273. Taufique et al., *supra* note 26, at 7–8.

274. *About Us*, CLIMATEVOICE, <https://climatevoice.org/about/> (last visited Oct. 12, 2022).

275. See Kannan Govindan et al., *Supply Chain Sustainability and the Performance of Firms: A Meta-Analysis of the Literature*, 137 TRANSP. RSCH. PART E: LOGISTICS & TRANSP. REV. 101923 (May 2020);

investigations were less than promising; for instance, a 2010 study of Chinese electronics firms found that although managers were concerned about environmental impacts, a wide range of factors drove the sustainability-related decisions of companies in the supply chain.<sup>276</sup>

As sustainability costs have decreased, however, and benefits associated with improved environmental performance have increased over the past decade, firms have grown more willing to engage in sustainable supply chain contracting. A meta-analysis of over 100 papers, including 27 empirical surveys conducted in a variety of sectors including textiles, automobiles, food, and electronics, found overwhelmingly positive associations between firm performance and the adoption of supply chain sustainability programs.<sup>277</sup> Another study, conducted in 2021, found that companies that used green supply chain management practices benefitted from a buffer effect during COVID-19 market disruptions.<sup>278</sup> Although research results differ about whether these effects are limited to a specific type of environmental supply chain management, with the best results coming from “agile” as opposed to “traditional” construction of sustainable supply chains,<sup>279</sup> the overall lesson from the empirical research published in the last five years is that positive outcomes are linked to environmental supply chain contracting.

In sum, although environmental supply chain contracting has not been demonstrated to improve firm environmental performance, it is likely to have a positive effect. Many of the environmental provisions, if enforced, are of a type that are likely to affect suppliers’ environmental behavior. Monitoring and enforcement are hard to gauge, but as information is increasingly available, many parties have motivations to ensure that supply chain contract requirements are enforced, and there are initial indications in the literature of an association between environmental supply chain contracting and improved environmental performance.

### C. *Is Environmental Supply Chain Contracting Likely to Reduce the Likelihood of Preferable Government Action?*

Although environmental supply chain contracting is widespread and the prospects for improvement in supplier environmental behavior are encouraging, the

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Dayal Prasad et al., *Critical Success Factors of Sustainable Supply Chain Management and Organizational Performance: An Exploratory Study*, 48 TRANSPORTATION RESEARCH PROCEEDIA 327 (2020).

276. Jason Park et al., *Creating Integrated Business and Environmental Value Within the Context of China’s Circular Economy and Ecological Modernization*, 18 J. CLEAN. PROD. 1494, 1495 (2010) (emphasizing the importance of multiple drivers of sustainable supply chain action, including “achiev[ing] both firm- and industrial-level value in terms of cost reduction, revenue generation, resiliency, and legitimacy”).

277. See Govindan et al., *supra* note 276, at 137.

278. Marco Fasan et al., *An Empirical Analysis: Did Green Supply Chain Management Alleviate the Effects of COVID-19*, 30 BUS. STRATEGY & THE ENVIRO. 2702, 2703 (Mar. 2021).

279. Ricardo Zimmerman et al., *An Empirical Analysis of the Relationship between Supply Chain Strategies, Product Characteristics, and Environmental Uncertainty and Performance*, 25 SUPPLY CHAIN MGMT. 275, 386–86 (2020).

growth of this private governance model raises three related questions when compared with traditional public governance: first, is private governance as effective as public governance in enforcing desired behaviors; second, does the growth of private governance displace public governance; third, is private governance able to adequately address concerns about environmental justice and equality, at least when compared to public governance? The remainder of this section suggests approaches to answering the first two questions. The third question – the effect of environmental supply chain contracting on disadvantaged and disempowered communities across the globe – requires a much fuller discussion than can be adequately provided in this article.

*Standard of Review.* Identifying the appropriate standard of review for assessing the implications of environmental supply chain contracting is essential for evaluating whether scholars and policymakers should be encouraging or discouraging its use. The proper standard for NGOs, policymakers, and environmental governance scholars is whether the use of environmental requirements improves corporate environmental performance in ways that are preferable to other viable options. In other words, the appropriate question is not whether environmental supply chain contracting is an ideal response, but whether it is better than feasible alternatives. This may sound simple, but it includes several important easily-overlooked aspects. Reviewers may be inclined to ask whether environmental provisions in supply chain contracts achieve full compliance or solve the environmental problems that they address,<sup>280</sup> which Nobel laureate Elinor Ostrom called the Panacea Bias, but these questions misconstrue the potential contribution of supply chain contracting to environmental protection.

*Achieving Comparable Levels of Compliance.* High levels of compliance are important indicators of potential environmental benefits by suppliers, but compliance levels should be compared to levels that would be achieved under feasible government regulations, not to ideal levels. Measured levels of material compliance with environmental statutes vary widely, but the leading study concluded that they were in the range of 75%.<sup>281</sup> Anecdotal examples of failures that occurred despite the existence of supply chain contracts are common in the literature. The most famous failure is the tragic Rana Towers disaster, in which over 1,100 workers lost their lives in a building collapse.<sup>282</sup> This disaster occurred despite the fact that many of the workers were producing goods for suppliers to major companies with labor-focused supply chain contracting requirements. Anecdotal examples are not a sound basis for

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280. See Sudheer Gupta & Omkar D. Palsule-Desai, *Sustainable Supply Chain Management: Review and Research Opportunities*, 23 IIMB MGMT. REV. 234, 241–42 (2011).

281. Wesley A. Magat & W. Kip Viscusi, *Effectiveness of the EPA's Regulatory Enforcement: The Case of Industrial Effluent Standards*, 33 J. L. & ECON. 331, 357 (Oct. 1990).

282. A search for the term “Rana Plaza” in Westlaw on January 27, 2022, yielded over 23,000 articles and a search in Google Scholar yielded more than 29,000 articles. Westlaw, <https://1.next.westlaw.com/>, (search in search bar for “Rana Plaza”) (last visited Oct. 12, 2022); Google Scholar, [https://scholar.google.com/scholar?hl=en&as\\_sdt=0%2C23&q=Rana+Plaza&btnG=](https://scholar.google.com/scholar?hl=en&as_sdt=0%2C23&q=Rana+Plaza&btnG=) (search in search bar for “Rana Plaza”) (last visited Oct. 12, 2022).

evaluating any public or private governance effort, however. Anecdotes tell us that a failure occurred in a particular situation, and in the Rana Towers case the failure was catastrophic. They do not tell us whether these failures are widespread or whether a government requirement would have been adopted and better enforced in the absence of the supply chain contract requirements.<sup>283</sup>

*Potential to Displace Beneficial Government Action.* The next consideration is whether environmentally beneficial aspects of environmental supply chain contracting are outweighed by displacement of more beneficial governmental action. Displacement could occur if a viable government option exists but the environmental supply chain contracting discourages government action. For instance, if information about environmental supply chain contracting discourages development of viable government measures, it could be harmful on net. This could occur if the information reduces support among voters or the advocacy groups that mobilize them. It also could occur if it increases resistance by companies to public governance. These are plausible concerns and the assumption that this is a genuine risk appears to underlie many critiques of private environmental governance initiatives such as supply chain contracting requirements.<sup>284</sup>

But this is an empirical question, and there is little or no evidence that the growth in environmental supply chain contracting requirements reduces support among voters or advocacy groups. In fact, the most relevant empirical study on this topic concludes that focusing on private sector climate change mitigation activities can bypass solution aversion by moderates and conservatives and increase support for climate mitigation.<sup>285</sup> As discussed in Part I, in the U.S. mobilization of moderates and some conservatives is necessary because the primary system combined with polarization now undermines the ability of support from liberals, moderates, and moderate-conservatives to be reflected in electoral or regulatory outcomes.<sup>286</sup>

In addition, advocacy groups such as CDP, the Environmental Defense Fund, and the Natural Resources Defense Council have become leaders in pushing firms to adopt supply chain requirements.<sup>287</sup> They could become co-opted if personal

283. As discussed above, levels of compliance by suppliers are only a rough surrogate for changes in environmental performance. A high level of compliance with a weak or misdirected standard is often of little value.

284. See Cary Coglianese, *Environmental Soft Law as a Governance Strategy*, 61 JURIMETRICS 19, 51 (2020).

285. Ash Gillis et al., *Convincing Conservatives: Private Sector Action Can Bolster Support for Climate Change Mitigation in the United States*, 73 ENERGY RESEARCH & SOCIAL SCIENCE 101947 (2021).

286. See *supra* note 41 and accompanying text.

287. See CDP, *TRANSPARENCY TO TRANSFORMATION: A CHAIN REACTION*, (Feb. 2021) [https://cdn.cdp.net/cdp-production/cms/reports/documents/000/005/554/original/CDP\\_SC\\_Report\\_2020.pdf?161416076](https://cdn.cdp.net/cdp-production/cms/reports/documents/000/005/554/original/CDP_SC_Report_2020.pdf?161416076); *About*, EDF SUPPLY CHAIN SOLUTIONS CENTER <https://supplychain.edf.org/about/> (last visited Jan. 10, 2022) (describing EDF's Supply Chain Solutions Center as a "digital hub for sustainability resources, best practices, thought leadership and news"); *Sustainable Development: Green Supply Chain*, NATURAL RESOURCES DEFENSE COUNCIL (last visited Jan. 10, 2022) <http://www.nrdc.cn/work?cid=25&cook=1>; Natural Resource Defense Council, *NRDC's Green Supply Chain Initiative to Clean Up the Fashion Industry*, CLEAN BY DESIGN (May 2015) <https://www.nrdc.org/sites/default/files/cbd-initiative-fs.pdf>.

or financial relationships undermine their willingness to pursue government regulation or litigation against corporations. Similarly, if the funds they use on supply chain contracting could otherwise be used for government lobbying or litigation, that could reduce the funds available for lobbying governments or litigating. Again, this is a legitimate concern, but the obverse also could occur – these efforts could attract new levels of funding and generate insights that NGOs could use in government or litigation initiatives. The NGO displacement critique at this point lacks empirical support. In short, to have a beneficial effect, environmental supply chain contracting does not need to yield perfect compliance or completely solve environmental problems, but it must produce greater net environmental gains than other viable alternatives, and it cannot displace those other alternatives.

### CONCLUSION

This Article demonstrates that roughly 80 percent of the largest corporations in seven global sectors are engaging in environmental supply chain contracting. This supply chain contracting is not only very widespread but also growing: the share of these firms that include environmental requirements in supply chain contracts has increased from roughly 50 percent fifteen years ago. The research results are consistent with anecdotal observations about the growth of ESG commitments by corporations, private sector activity on climate change, and the emergence of supply chain initiatives by major global environmental NGOs. When combined with other recent research, these results suggest that many large firms are not simply making climate and other ESG commitments regarding their own operations without the means to induce their supply chains to improve their behavior.

The study did not directly examine the effects that procurement requirements are having on the environmental behavior of firms or on environmental quality. The growth in environmental contracting, the contract terms used, the increasing availability of environmental information, and the motivations of change agents including NGOs, retail customers, investors, lenders, insurers, employees, and local communities, however, all suggest reasons for optimism. With the limited progress by international, national, and subnational governments on climate change and other environmental issues in the last several years, major gaps exist in public governance. Private responses are not a panacea, but the Article demonstrates that global contracting networks are emerging that have the potential to fill important gaps in public environmental governance.

### *Appendix A*

The left-hand column lists the original companies used in “The New Wal-Mart Effect: The Role of Private Contracting in Global Governance.”<sup>288</sup> The column

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288. Vandenbergh, *supra* note 25.

on the right lists the recommended companies for a side-by-side comparison of contracting policies between 2007 and 2020. Footnotes indicate any major reorganizations and account for the sometimes wholly different company name in the second column. If the company name has changed significantly but is not footnoted, the company has simply changed its name without reorganizing. Mergers and reorganizations that did not change the way the study was catalogued in the Dun and Bradstreet database were not accounted for in the study and are therefore not reflected here.<sup>289</sup>

Original Company	Current Company
<u>Discount and Variety Retail</u>	
Wal-Mart Stores, Inc.	Walmart, Inc.
The Kroger Co.	The Kroger Co. <sup>290</sup>
Costco Wholesale Corp.	Costco Wholesale Corp.
Target Corp.	Target Corp.
Walgreen Co.	Walgreen Co. <sup>291</sup>
Albertsons	Albertsons Cos., Inc.
Safeway	Safeway, Inc. <sup>292</sup>
CVS Corp.	CVS Pharmacy, Inc. <sup>293</sup>
Ahold	Ahold Delhaize USA, Inc. <sup>294</sup>

289. See *supra* note 96.

290. Purchased Axiom Pharmacy Holdings in 2012. *Kroger Announces Merger with Axiom Pharmacy*, PR NEWswire, Nov. 15, 2012, <https://www.prnewswire.com/news-releases/kroger-announces-merger-with-axiom-pharmacy-179486181.html>.

291. Now U.S. subsidiary of Walgreens Boots Alliance following 2014 merger of Walgreen and Boots. Ellen J. Hearst, *Walgreen-Alliance Boots deal is complete*, CHICAGO TRIBUNE (Dec. 31, 2014), <https://www.chicagotribune.com/business/ct-walgreen-completes-merger-0101-biz-20141231-story.html>.

292. Sold its Canada Safeway division to Sobeys in 2013. Marina Strauss & Steve Ladurantaye, *Sobeys snaps up Safeway in western push*, THE GLOBE AND MAIL (June 12, 2013), <https://www.theglobeandmail.com/report-on-business/sobeys-to-buy-safeway-in-58-billion-deal/article12499648/>.

293. Acquired AETNA in 2019. *DealBook Briefing: Is U.S. Ready to Rein in Big Tech?* N.Y. TIMES (Sept. 9, 2019), <https://www.nytimes.com/2019/09/05/business/dealbook/tech-youtube-pfine.html?searchResultPosition=8>.

294. Koninklijke Ahold, N.V., merged with Delhaize Group in 2016 to become Ahold Delhaize. Jon Springer, *Ahold, Delhaize Deal to Close This Month*, SUPERMARKET NEWS (July 12, 2016), <https://www.supermarketnews.com/ahold-delhaize-merger/ahold-delhaize-deal-close-month>.

Loblaw Cos., Ltd.	Loblaw Cos., Ltd. <sup>295</sup>
<b>Home Improvement and Hardware Retail</b>	
Home Depot	The Home Depot, Inc.
Lowe's	Lowe's Cos., Inc. <sup>296</sup>
Wolseley	Ferguson, PLC <sup>297</sup>
CCA Global Partners	CCA Global Partners, Inc.
Menard	Menard, Inc.
Sherwin-Williams	The Sherwin-Williams Co. <sup>298</sup>
Stock Building Supply	BMC Stock Holdings, Inc. <sup>299</sup>
84 Lumber	84 Lumber Co.
Ace Hardware	Ace Hardware Corp. <sup>300</sup>
Do It Best	Do It Best Corp.
<b>Office Products Retail and Distribution</b>	
Staples	Staples, Inc. <sup>301</sup>
Office Depot	Office Depot, Inc. <sup>302</sup>

295. Acquired T&T Supermarket in 2009. Marina Strauss, *Loblaw buys Asian grocery chain*, THE GLOBE AND MAIL (July 24, 2009), <https://www.theglobeandmail.com/globe-investor/loblaw-buys-asian-grocery-chain/article4389458/>.

296. Acquired ATG Stores in 2010. Chris Burritt, *Lowe's Acquires ATG Stores to Boost Sales From Websites*, BLOOMBERG (Dec. 29, 2011), <https://www.bloomberg.com/news/articles/2011-12-29/lowe-s-acquires-atg-stores-to-increase-revenue-from-websites>.

297. Wolseley, PLC changed its name to Ferguson, PLC in 2017, but retained the brand name Wolseley in its Canadian and U.K. incarnations. Sam Dean, *Wolseley to Rebrand as Ferguson as it Departs from Scandinavia*, THE TELEGRAPH (Mar. 28, 2017), <https://www.telegraph.co.uk/business/2017/03/28/wolseley-rebrand-ferguson-departs-nordic-region/>; Esha Vaish, *Wolseley to change name to U.S. brand Ferguson, reflecting regional focus*, REUTERS (Mar. 28, 2007), <https://www.reuters.com/article/us-wolseley-results/wolseley-to-change-name-to-u-s-brand-ferguson-reflecting-regional-focus-idUSKBN16Z0LV>.

298. Made a number of acquisitions from 2010-2013. See, e.g., SHERWIN-WILLIAMS, 2012 ANNUAL REPORT 51-52 (2013), <https://www.sec.gov/Archives/edgar/vprr/1300/13000788.pdf>.

299. Stock Building Supply merged with BMC in 2015. BMC, BMC History, <https://www.buildwithbmc.com/bmc/s/bmc-history> (last visited June 16, 2020).

300. International division reorganized into its own company, Ace Hardware International Holdings (Ace is still the majority shareholder). Sold its paint manufacturing division to Valspar in 2012.. *Ace Hardware Opens First Store Under New Franchise Model in Mexico*, PR NEWswire (Dec. 1, 2021), <https://www.prnewswire.com/news-releases/ace-hardware-opens-first-store-under-new-franchise-model-in-mexico-301434296.html>; *Valspar Inks Supply Deal with Ace Paint*, PAINTSQUARE (Jan. 4, 2013), <https://www.paintsquare.com/news/view/?8938>.

301. Acquired by Sycamore Partners in 2017. Lauren Hirsch, *Staples in \$6.9 billion sale to private equity firm Sycamore*, REUTERS (June 28, 2017), <https://www.reuters.com/article/us-staples-m-a-sycamorepartners/staples-in-6-9-billion-sale-to-private-equity-firm-sycamore-idUSKBN19J2QH>.

302. Sold Office Depot Israel stores to New Hamashbir Lazarchan in 2010. Shira Horesh, *Hamashbir signs Office Depot Israel acquisition*, GLOBES (Nov. 7, 2010), <https://en.globes.co.il/en/article-1000599341>.



Office Max	- removed - <sup>303</sup>
Unisource	Veritiv Corp. <sup>304</sup>
IKON	- removed - <sup>305</sup>
United Stationers	Essendant, Inc. <sup>306</sup>
Corporate Express	Corporate Express US Finance, Inc. <sup>307</sup>
S.P. Richards	S.P. Richards Co.
School Specialty	School Specialty, Inc.
Global Imaging Systems	Global Imaging Systems, Inc. <sup>308</sup>
<b>Automobile Manufacturing</b>	
General Motors	General Motors Co.
DaimlerChrysler	Daimler AG <sup>309</sup>
Toyota	Toyota Motor Corp.
Ford	Ford Motor Co.
Volkswagen	Volkswagen AG
Nissan	Nissan Motor Co., Ltd.
Honda	Honda Motor Co., Ltd.

303. Office Max is now a subsidiary of Office Depot, and not listed independently on D&B Hoovers. Dhanya Skariachan, *Office Depot Closes Deal to Buy OfficeMax*, REUTERS (Nov. 5, 2013), <https://www.reuters.com/article/us-officedepot-officemax-results/office-depot-closes-deal-to-buy-office-max-idUSBRE9A418720131105>.

304. Established in 2014 from merger of Unisource and International Paper's xpedx division. See Michael Sheffield, *Merged xpedx and Unisource company will be Veritiv*, MEMPHIS BUS. J. (Jun. 11, 2014), <https://www.bizjournals.com/memphis/news/2014/06/11/merged-xpedx-and-unisource-company-will-be-veritiv.html>.

305. IKON Office Solutions is now a subsidiary of Ricoh Co., Ltd., and not listed independently on D&B Hoovers. *S&P Summary: Ricoh Co. Ltd.*, REUTERS (Mar. 29, 2012), <https://www.reuters.com/article/idUSWLA550620120329>.

306. United Stationers changed its name to Essendant in 2015 and was acquired by Staples in 2019. *Our Company History*, ESSENDANT, <https://www.essendant.com/about-us/our-history> (last visited June 17, 2020); see Eric Beech, *U.S. FTC Approves Staples' Acquisition of Essendant with Conditions*, REUTERS (Jan. 28, 2019), <https://www.reuters.com/article/us-essendant-staples-m-a-ftc/u-s-ftc-approves-staples-acquisition-of-essendant-with-conditions-idUSKCN1PM2NF>.

307. Acquired by Staples in 2008. See Foo Yun Chee, *Staples Wins Corporate Express in \$2.65 Bln Deal*, REUTERS (June 11, 2008), <https://www.reuters.com/article/us-corporateexpress/staples-wins-corporate-express-in-2-65-bln-deal-idUSL1141489020080611>.

308. Purchased by Xerox in 2007. See Kenneth Li, *Xerox to buy Global Imaging Systems for \$1.5 bln*, REUTERS (Apr. 2, 2007), <https://www.reuters.com/article/us-globalimaging-xerox/xerox-to-buy-global-imaging-systems-for-1-5-bln-idUSN0239279620070402>.

309. DaimlerChrysler sold Chrysler in 2007 and rebranded. *Name change to Daimler AG*, DAIMLER AG, <https://www.daimler.com/company/tradition/company-history/1995-2007.html> (last visited June 17, 2020).<sup>310</sup> Hewlett-Packard split into Hewlett-Packard Enterprise and HP, Inc. in 2015. HP, Inc. is the printer and PC half of the business. *Hewlett-Packard Revenue Falls in Last Report Before Split*, REUTERS (Nov. 24, 2015), <https://www.reuters.com/article/hp-results/hewlett-packard-revenue-falls-in-last-report-before-split-idUSL3N13J4L520151124>.

Peugeot	Peugeot Citroen Sochoux SNC
Fiat	Fiat Chrysler Automobiles N.V.
Renault	Renault SAS
<u>Personal Computers</u>	
Hewlett-Packard	HP, Inc. <sup>310</sup>
Sony	Sony Corp. <sup>311</sup>
Dell	Dell Tech., Inc.
Toshiba	Toshiba Corp.
NEC	NEC Corp.
Apple Computer	Apple, Inc. <sup>312</sup>
Acer	Acer, Inc. <sup>313</sup>
Fujitsu Siemens Computers	Fujitsu Technology Solutions GmbH <sup>314</sup>
Gateway	- removed - <sup>315</sup>
Lenovo Group	Lenovo Group, Ltd.
<u>Lumber and Wood Production</u>	

310. Hewlett-Packard split into Hewlett-Packard Enterprise and HP, Inc. in 2015. HP, Inc. is the printer and PC half of the business. *Hewlett-Packard Revenue Falls in Last Report Before Split*, REUTERS (Nov. 24, 2015), <https://www.reuters.com/article/hp-results/hewlett-packard-revenue-falls-in-last-report-before-split-idUSL3N13J4L520151124>.

311. Sold Sony Manufacturing Systems, its measuring equipment business, to Mori Seiki in 2010. *Mori Seiki and Sony Sign Definitive Agreement Regarding Transfer of SMS Measuring Systems Business*, SONY (Jan. 8, 2010), <https://www.sony.com/en/SonyInfo/News/Press/201001/10-0108E/>. Acquired remaining 50% stake in subsidiary Sony Ericsson in 2012 and renamed it Sony Mobile Communications. *Sony completes takeover of Sony Ericsson, renames it Sony Mobile*, L.A. TIMES (Feb. 12, 2012), <https://www.latimes.com/business/la-xpm-2012-feb-16-la-fi-tn-sony-takeover-of-sony-ericsson-complete-20120216-story.html>.

312. Purchased P.A. Semi in 2008 and Intrinsicity in 2010. Bryan Gardiner, *Four Reasons Apple Bought PA Semi*, WIRED (Apr. 23, 2008), <https://www.wired.com/2008/04/four-reasons-ap/>; Ashlee Vance & Brad Stone, *Apple Buys Intrinsicity, a Maker of Fast Chips*, N.Y. TIMES (Apr. 27, 2010), <https://www.nytimes.com/2010/04/28/technology/28apple.html>.

313. Sold Sertek (electronic components distribution subsidiary) and acquired Gateway in 2007. Acquired E-TEN in 2008. *Yosun acquires an Acer distribution unit*, REUTERS (Mar. 28, 2007), <https://www.reuters.com/article/acer-yosun/update-1-yosun-acquires-an-acer-distribution-unit-idUSTR19046320070328>; see Dan Nystedt, *Acer to acquire smart-phone maker E-Ten*, COMPUTERWORLD (Mar. 3, 2008), <https://www.computerworld.com/article/2537320/acer-to-acquire-smart-phone-maker-e-ten.html>.

314. Fujitsu Ltd. bought out Siemens in 2009, renaming company Fujitsu Technology Solutions GmbH. *Fujitsu to Acquire Siemens's Stake in Fujitsu Siemens Computers*, FUJITSU (Nov. 4, 2008), <https://www.fujitsu.com/global/about/resources/news/press-releases/2008/1104-01.html>; *Fujitsu Technology Solutions GmbH*, BLOOMBERG <https://www.bloomberg.com/profile/company/7575612Z:GR?leadSource=verify%20wall> (last visited Oct. 11, 2022).

315. Gateway is now owned by Acer and no longer independently listed in Hoovers. See *supra* note 96.

International Paper	International Paper Co. <sup>316</sup>
Georgia-Pacific	Georgia-Pacific, LLC <sup>317</sup>
Weyerhaeuser	Weyerhaeuser Co. <sup>318</sup>
Office Max	- removed - <sup>319</sup>
MeadWestvaco	WestRock <sup>320</sup>
Bowater	Resolute Forest Products, Inc. <sup>321</sup>
Louisiana-Pacific	Louisiana-Pacific Corp.
Universal Forest Products	Universal Forest Products, Inc.
Potlatch	Potlatchdeltic Corp. <sup>322</sup>
Sweetheart	- removed - <sup>323</sup>
<u>Aluminum Production</u>	
Alcoa	Alcoa Corp. <sup>324</sup>

316. Acquired Temple-Inland in 2012. Michael Sheffield, *International Paper completes Temple-Inland deal*, MEMPHIS BUS. J. (Feb. 13, 2012), <https://www.bizjournals.com/memphis/news/2012/02/13/international-paper-completes.html>.

317. Sold its European tissue business in 2012. *EU approves SCA's acquisition of Georgia-Pacific's European tissue business*, GLOBENEWSWIRE (July 05, 2012), <https://www.globenewswire.com/news-release/2012/07/05/269942/0/en/EU-approves-SCA-s-acquisition-of-Georgia-Pacific-s-European-tissue-business.html>.

318. Merged its fine paper operations with Domtar in 2007. Weyerhaeuser to Combine Fine Paper, Papergrade Pulp, Related Assets with Domtar; Creates Largest North American Fine Paper Company, PRNEWswire-FIRSTCALL (Aug. 23, 2006), <https://investor.weyerhaeuser.com/2006-08-23-Weyerhaeuser-to-Combine-Fine-Paper-Papergrade-Pulp-Related-Assets-With-Domtar-Creates-Largest-North-American-Fine-Paper-Company>.

319. *See supra* note 161.

320. MeadWestvaco merged with Rock-Tenn Co. in 2015 to form WestRock. Arno Schuetze, *U.S. Packaging Group Westrock Puts Dispensers Unit Up For Sale*, REUTERS (Nov. 18, 2016), <https://www.reuters.com/article/us-westrock-divestment/u-s-packaging-group-westrock-puts-dispensers-unit-up-for-sale-sources-idUSKBN13D1ZS>.

321. Merged with Abitibi-Consolidated in 2007 to become AbitibiBowater, then changed its name to Resolute Forest Products after emerging from bankruptcy in 2011. *Bowater completes merger with Abitibi*, CHARLOTTE BUS. J. (Oct. 29, 2007), <https://www.bizjournals.com/charlotte/stories/2007/10/29/daily3.html>; *AbitibiBowater Changing Name to Resolute Forest Products*, PRNEWswire-FIRSTCALL (Oct. 11, 2011), <https://www.prnewswire.com/news-releases/abitibibowater-changing-name-to-resolute-forest-products-131508313.html>.

322. Merged with Deltic Timber Co. in 2018, becoming Potlatchdeltic Corp. *History*, POTLATCH, <https://www.potlatchdeltic.com/Page/ViewPage/12> (last visited Oct. 3, 2022).

323. Parent Solo Cup was acquired by Dart Container, primarily a rubber and plastic products manufacturer, in 2012. *Solo History*, DART, <https://www.dartcontainer.com/about-us/solo-history/> (last visited Feb. 1, 2022).

324. Alcoa Corp. is the larger of two companies formed by the 2016 split of Alcoa Inc. *Alcoa Separates into Two Independent Companies: Alcoa and Arconic*, ALCOA, <https://www.alcoa.com/global/en/who-we-are/history> (expand the "In the Last 5 Years" header) (last visited Oct. 4, 2022); *compare* Alcoa Corporation Reports Fourth Quarter and Full Year 2021 Results, Alcoa (Jan. 19, 2022), <https://investors.alcoa.com/news-releases/news-release-details/2022/Alcoa-Corporation-Reports-Fourth-Quarter-and-Full-Year-2021-Results/default.aspx> (revenue of \$12.2 billion in 2021) *with Arconic Reports Fourth Quarter 2021 and Full Year 2021 Results*, ARCONIC (Feb. 18, 2022),

Alcan	Rio Tinto Alcan, Inc. <sup>325</sup>
Hydro Aluminum	Hydro Aluminum Metals USA, LLC
Nippon Light Metal	Nippon Light Metal Co., Ltd.
<b>Industrial Machinery and Equipment Manufacturing</b>	
United Technologies	Raytheon Technologies Corp. <sup>326</sup>
Caterpillar	Caterpillar, Inc.
Mitsubishi Heavy Industries	Mitsubishi Heavy Industries, Ltd.
John Deere	Deere & Co.
ABB	ABB Ltd.
MAN Group	MAN SE
Komatsu	Komatsu Ltd.
Illinois Tool Works	Illinois Tool Works, Inc.
CNH Global	CNH Industrial, NV <sup>327</sup>
Parker Hannifin	Parker-Hannifin Corp.

### Appendix B

The chart below shows the original sectors with the top ten companies as identified in 2007,<sup>328</sup> as well as the 2020 sector that is most similar to the former sector. The top ten companies in the left-hand column were included in the original study based on U.S. sales, or global sales if U.S. sales were unavailable. Where sales data were unavailable, the original study used the “key companies” listed in the industry description in Hoovers. The right-hand columns contain the current sectors identified as most similar to the 2007 sectors, based on the number of companies present in both the 2007 and current sectors. Although this was relatively clear in most instances, as discussed in Part III the firms in the original discount and variety retail sector were split roughly equally between department stores and grocery stores.

<https://www.arconic.com/financial-release/2022-02-18/arconic-reports-fourth-quarter-2021-and-full-year-2021-results/> (revenue of \$7.5 billion in 2021).

325. Acquired by Rio Tinto in 2007 and is now a subsidiary. *Rio Tinto to buy Alcan for \$38.1 billion*, N.Y. TIMES (July 12, 2007), <https://www.nytimes.com/2007/07/12/business/worldbusiness/12iht-rio.4.6634247.html>.

326. Formed in 2020 from merger between United Technologies and Raytheon. *United Technologies and Raytheon Complete Merger of Equals Transaction*, RAYTHEON TECH. (Apr. 3, 2020), <https://www.rtx.com/news/2020/04/03/united-technologies-and-raytheon-complete-merger-of-equals-transaction>.

327. Formed in 2013 from merger of CNH Global N.V. and Fiat Industrial. *Our History*, CNH INDUSTRIAL, [https://www1.cnhindustrial.com/en-us/know\\_us/who\\_we\\_are/Pages/our\\_history.aspx](https://www1.cnhindustrial.com/en-us/know_us/who_we_are/Pages/our_history.aspx) (select “2013” in timeline) (last visited Oct. 20, 2022).

328. With the exception of the aluminum sector, for which only four companies were identified as having aluminum as their principal business. See Vandenberg, *supra* note 25, at 934.

In addition, an attempt to analogize office products retail and distribution to the current paper wholesale category provided an unsatisfactory comparison, as shown in the chart below. Similarly, the closest approximation to the original aluminum production sector is the metal products manufacturing sector, but this sector is dominated by steel rather than aluminum production. These two metals have very different environmental impacts, making the comparison unsuitable for assessing comparable uses of and motivations for environmental supply chain contracting, so this sector was also removed from the sector-to-sector analysis.

Original Sector		Current Sector <sup>329</sup>	
<u>Discount and Variety Retail</u>	<u>Department Stores</u>	<u>Grocery Stores</u>	
Wal-Mart Stores, Inc.	Walmart, Inc.	The Kroger Co.	
The Kroger Co.	Costco Wholesale Corp.	Albertsons Cos, Inc.	
Costco Wholesale Corp.	Target Corp.	Publix Super Markets, Inc.	
Target Corp.	The TJX Cos., Inc.	Ahold Delhaize	
Walgreen Co.	Dollar General Corp.	H.E. Butt Grocery Co.	
Albertsons	Macy's, Inc.	Target Stores, Inc.	
Safeway	Dollar Tree, Inc.	Whole Foods Market, Inc.	
CVS Corp.	Kohl's Corp.	Safeway, Inc.	
Ahold	BJ's Wholesale Club Holdings	Supervalu, Inc.	
Loblaw Cos., Ltd.	J.C. Penney Co., Inc.	Southeastern Grocers	
<u>Home Improvement and Hardware Retail</u>	<u>Home and Garden Retail</u>		
Home Depot	The Home Depot, Inc.		
Lowe's	Lowe's Cos., Inc.		
Wolseley	Menard, Inc.		
CCA Global Partners	Volt Parent, LP		
Menard	Fortive Corp.		
Sherwin-Williams	Ace Hardware Corp.		
Stock Building Supply	Snap-On Inc.		
84 Lumber	Fred Meyer Stores, Inc.		
Ace Hardware	UfpWarrens, LLC		
Do It Best	LBM Borrower. LLC		

329. See *supra* note 96.

<u>Office Products Retail and Distribution</u>	<u>Paper Wholesale</u>
Staples	Staples, Inc.
Office Depot	Hallmark Cards, Inc.
Office Max	Veritiv Corp.
Unisource	Pactiv LLC
IKON	Uline, Inc.
United Stationers	Essendant, Inc.
Corporate Express	Central National Gottesman, Inc.
S.P. Richards	McLane Foodservice Dist., Inc.
School Specialty	The Havi Group Ltd. Partnership
Global Imaging Systems	S.P. Richards, Co.
<u>Automobile Manufacturing</u>	<u>Motor Vehicle Manufacturing</u>
General Motors	Volkswagen Aktiengesellschaft
DaimlerChrysler	Toyota Motor Corp.
Toyota	Ford Motor Co.
Ford	General Motors, Co.
Volkswagen	Honda Motor Co., Ltd.
Nissan	SAIC Motor Corp., Ltd.
Honda	Nissan Motor Co., Ltd.
Peugeot	FCA Venezuela L.L.C.
Fiat	PSA Automobiles, SA
Renault	Audi Aktiengesellschaft
<u>Personal Computers</u>	<u>Computer and Peripheral Equip. Mfg.</u>
Hewlett-Packard	Dell Tech, Inc.
Sony	Hitachi, Ltd.
Dell	HP, Inc.
Toshiba	Cisco Sys., Inc.
NEC	Denali Intermediate, Inc.
Apple Computer	Toshiba Corp.
Acer	EMC Corp.
Fujitsu Siemens Computers	Canon, Inc.
Gateway	Cloud Network Tech. Singapore PTE Ltd.
Lenovo Group	Wistron Corp.
<u>Lumber and Wood Production</u>	

International Paper	International Paper Co.
Georgia-Pacific	Georgia-Pacific, LLC
Weyerhaeuser	WestRock Co.
Office Max	Kimberly-Clark Corp.
MeadWestvaco	Graphic Packaging Intl., LLC
Bowater	Avery Dennison Corp.
Louisiana-Pacific	Packaging Corp. of America
Universal Forest Products	Sonoco Products, Co.
Potlatch	Domtar Corp.
Sweetheart	Bemis Co., Inc.
<u>Aluminum Production</u>	<u>Metal Products Manufacturing</u>
Alcoa	New Arts & Gems FZCO
Alcan	CVG Industria Venezolana de Aluminio CA
Hydro Aluminum	Dominguez & Cia La Victoria, S.A.
Nippon Light Metal	Nippon Steel Corp.
	Siderurgica Zuliana, C.A.
	Baoshan Iron & Steel Co., Ltd.
	Alambres y Cables Venezolanos C.A.
	Jiangxi Copper Co., Ltd.
	Pdsva Industrial S.A.
	POSCO
<u>Industrial Machinery and Equipment Mfg.</u>	<u>Construction Machinery Manufacturing</u>
United Technologies	STA Services Techniques Alpines SA
Caterpillar	Caterpillar
Mitsubishi Heavy Industries	Deere & Co.
John Deere	Komatsu Ltd.
ABB	Huarun Concrete (Longyan) Co., Ltd.
MAN Group	Liebherr-Intertrading AG
Komatsu	Dingsheng Tiangong Engineering Mach. Sales, Co., Ltd.
Illinois Tool Works	IHI Corp.
CNH Global	Hitachi Construction Machinery, Co. Ltd.
Parker Hannifin	Sany Heavy Ind. Co., Ltd.