# Companies' contribution to sustainability through global supply chains

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Contributed by Eric F. Lambin, January 8, 2018 (sent for review September 26, 2017; reviewed by Greg Distelhorst and Peter Kareiva)

**Global supply chains play a critical role in many of the most pressing environmental stresses and social struggles identified by the United Nations' Sustainable Development Goals (SDGs). Responding to calls from the global community, companies are adopting a variety of voluntary practices to improve the environmental and/or social management of their suppliers' activities. We develop a global survey of 449 publicly listed companies in the food, textile, and wood-products sectors with annual reports in English to provide insight into how the private sector contributes to advancing the SDGs via such sustainable-sourcing practices. We find that while 52% of companies use at least one sustainable-sourcing practice, these practices are limited in scope; 71% relates to only one or a few input materials and 60.5% apply to only first-tier suppliers. We also find that sustainable-sourcing practices typically address a small subset of the sustainability challenges laid out by the SDGs, primarily focusing on labor rights and compliance with national laws. Consistent with existing hypotheses, companies that face consumer and civil society pressure are associated with a significantly higher probability of adopting sustainable-sourcing practices. Our findings highlight the opportunities and limitations of corporate sustainable-sourcing practices in addressing the myriad sustainability challenges facing our world today.**

responsible supply chain management | voluntary sustainability standards | private governance | sustainable development goals

For decades, the global community has urged companies to contribute to the advancement of a sustainable global economy (1). Companies initially responded through corporate social responsibility (CSR) initiatives to address social or environmental challenges in their own operations or in neighboring communities (2). As globalization has spread the production of goods around the world, the social and environmental impacts of consumption in rich and emerging economies has increasingly been displaced to distant locations via global supply chains. With 80% of global trade flowing through multinational corporations (3), one in five jobs tied to global supply chains (4), and over 95% of environmental impacts of food and retail companies stemming from their supply chains (5), supply chains play an outsized role in many of the most pressing social and environmental challenges (6).

The United Nations' Sustainable Development Goals (SDGs) explicitly highlight the role of corporate supply chains for a sustainable global economy (7). Supply-chain sustainability is becoming an integral part of companies' strategies to contribute to sustainable development (8–11). A 2008 KPMG survey reports that over 90% of the world's top 250 businesses employ some form of standard to regulate their suppliers' social and/or environmental behaviors (12). Similarly, sustainable certification or eco-labels have grown in popularity, with over 90% of sustainable-sourcing certifications having been created in the last two decades (8). Empirical evidence suggests that at least some companies' supply-chain initiatives have contributed to tackling sticky problems from Amazonian deforestation to improving factory workers' rights (13–15).

Despite the recent growth in companies' commitments to sustainable supply chains, we lack a comprehensive understanding of how companies are advancing supply-chain sustainability. There have been no large-scale empirical evaluations of what sustainable development topics companies address, what practices companies commonly use, or what types of companies are implementing practices to advance sustainability in their supply chain. To address this gap, we study companies' sustainable-sourcing practices (SSPs), defined as voluntary practices companies pursue to improve the social and/or environmental management of their suppliers' activities. Such SSPs are distinct from a company's approach to addressing social and environmental impacts within their own operations and from general philanthropic initiatives that are not tied to the company's supply chain.

Our current understanding of companies' SSPs is restricted to case studies of individual companies (16–18), conceptual frameworks (9, 19), and theoretical models (20–22). The few empirical evaluations of SSPs are limited by small and nonrepresentative samples that substantially bias their results (23, 24). Scholars have suggested that SSPs will be used primarily by large companies facing consumer, civil society, investor, or government pressures (18, 21, 25–28). Other research has suggested that corporate sustainability approaches will deal only with practices relevant to companies' self-interest (25, 29). These hypotheses have not yet been tested in a representative sample (*SI Materials and Methods*).

We address the following questions: What SSPs currently exist, and which practices do companies most commonly use? How do these SSPs contribute to the United Nations' SDGs? What factors influence the adoption of SSPs by companies? We develop an

## Significance

**Supply chains tied to multinational corporations represent over 80% of global trade and engage over one in five workers. Supply-chain management therefore has a significant impact on key social and environmental challenges. Despite this importance, there is currently no comprehensive, empirically grounded understanding of how companies address sustainability in their supply chains. We develop a global database based on a random sample of publicly listed companies with annual reports in English to provide insight into how the private sector contributes to advancing global sustainability via their supply chains. This study provides a large-scale empirical analysis of corporate sustainable-sourcing practices across multiple sectors and geographies.**

Author contributions: T.T., J.F.d.Z., and E.F.L. designed research; T.T. and J.F.d.Z. performed research; and T.T., J.F.d.Z., and E.F.L. wrote the paper.

Reviewers: G.D., Massachusetts Institute of Technology; and P.K., University of California, Los Angeles.

The authors declare no conflict of interest.

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Data deposition: Data are available on the Stanford Digital Repository at https://purl.stanford.edu/hn344kt7076.

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This article contains supporting information online at www.pnas.org/lookup/suppl/doi:10.1073/pnas.1716695115/-/DCSupplemental.

Published online February 12, 2018.

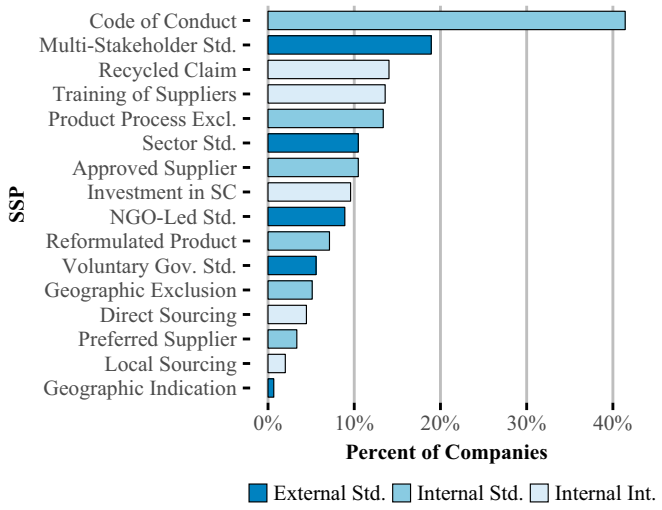


**Fig. 1.** Percent of companies that use a given SSP. Colors refer to major SSP groupings. A single company can use multiple SSPs.

original dataset of SSPs in a random, global sample of 449 companies with annual reports in English in the food, wood-products, and textile sectors that are listed on the 12 largest Organisation for Economic Co-Operation and Development (OECD) stock exchanges. We use content analysis of corporate sustainability reports, annual reports, and company websites to identify SSPs reported by the sampled companies. (For an example of how iconic companies perform in our content analysis, see *SI Materials and Methods*.) This study provides a large-scale analysis of sustainable sourcing across multiple sectors and geographies.

## Results

Our main findings are as follows:

*i*) Fifty-two percent of companies have adopted at least 1 of 16 distinct SSPs, with the most common SSP being a supplier code of conduct.

Overall, 235 of 449 companies sampled (52%) use some form of SSP within their supply chain (Fig. 1 and *SI Materials and Methods*). We identified 16 distinct practices, which range from third-party certification of production standards defined by nongovernmental organizations (NGOs) to training suppliers related to social or environmental criteria (Table 1). These practices can be classified based on (*i*) who defines the practice and (*ii*) whether social and/or environmental production standards are defined. External standards have production standards defined by entities external to the company. Internal standards have production standards defined internally by a company for its supply chain. Internal interventions apply to a company's supply chain but do not have defined production standards.

Thirty-one percent of companies use external standards, 45% of companies use internal standards, and 28% of companies use internal interventions. A single company can use multiple SSPs. By far the most common approach is a supplier code of conduct, with over 40% of companies having a code of conduct related to social and/or environmental issues in their supply chain. Other SSPs often build on a code of conduct: 82% of companies who adopt any other SSP also have a code of conduct.

Companies may also conduct research to better understand social and/or environmental issues in their supply chain, convey aspirational goals and commitments, or donate to projects or civil society groups in regions from which they supply. While such practices may signal a company's interest in impacting their suppliers' production practices, they are not tools that companies use to change the social and/or environmental management of their suppliers' activities. Hence, we do not consider such efforts SSPs. These other activities include risk screening of a supply chain, life-cycle assessments, donations, and pledges to address key issues in the supply chain (*SI Materials and Methods*).

*ii*) Seventy-one percent of SSPs are tied to specific input materials.

SSPs often cover only a single input of a company's product(s). For example, a company might use recycled materials for the packaging of a product but leave the remainder of a product's upstream impact unaddressed. Seventy-one percent of SSPs relate to only one or a subset of a company's input materials, covering 1.3 materials on average. Companies who use SSPs cover a total of four input materials on average. The most common input materials addressed through SSPs are wood and palm oil.

In addition, 27% of input-specific SSPs apply to only a single product line or are being implemented at a pilot scale rather than being implemented systematically across all purchases of the input. For example, a company may use fair trade certification for only one line of coffee that it sells or may provide training to only a small subset of its suppliers.

*iii*) Thirty-seven percent of SSPs use external verification (third-party audits).

For external and internal standards, where verification of environmental and/or social standards is possible, we examined whether the company reported verification and, if so, the type of audit used. We find that 96% of external standards are third-party audited (verification by an independent body), with only sector standards relying somewhat on second-party audits (conducted by the buying company) or first-party audits (conducted by the supplier) (Fig. 2 and *SI Materials and Methods*). In contrast, many internal standards do not provide information on whether audits are conducted. For example, if companies require that a supplier change its production practices, they do not disclose whether the supplier is audited to ensure such a change has in fact occurred. Overall, 37% of all SSPs are third-party audited, 15% are second-party audited, 5% use first-party audits, and 18% disclose no information on their audit approach. The remaining 25% of SSPs are internal interventions.

*iv*) The vast majority of SSPs apply only to a single tier in the supply chain, with 60.5% of SSPs applying only to first-tier suppliers.

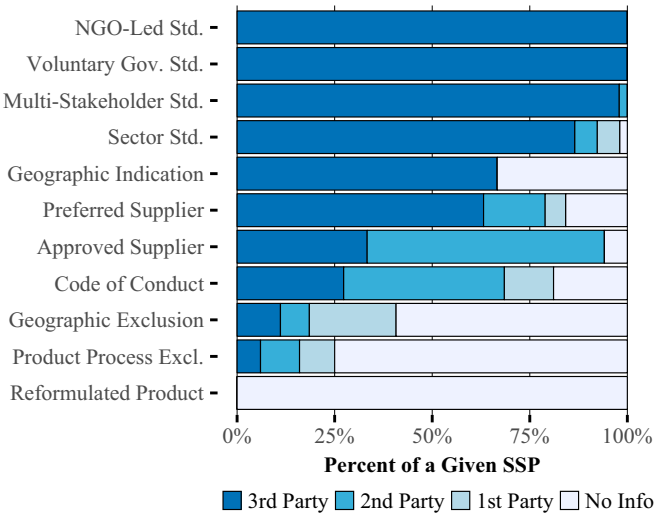


**Fig. 2.** Type of audit conducted for external and internal standards. First-party audits are self-audits conducted by the supplier; second-party audits are conducted by the buying company; third-party audits are conducted by an independent body. "No Info" indicates that companies did not disclose whether an audit was conducted.

**Table 1. Definitions of SSPs based on empirical analysis of company documents**

| Group | SSP | Definition |
|---|---|---|
| External standard | NGO-led standard | Standard developed by an NGO |
| | Multi-stakeholder standard | Standard developed by multiple parties, typically including companies, NGOs, producers and/or government agencies in governance positions |
| | Sector standard | Standard developed by industry participants |
| | Voluntary government standard | Standard developed by a government but voluntarily adopted by companies |
| | Geographic indication | The product is sourced from a specific region where indication of the source is regulated, e.g., Appellation of Origin |
| Internal standard | Code of conduct | The company policy, code of conduct or standard is developed unilaterally by a company and applicable only to that company's supply chain |
| | Geographic exclusion | Exclusion of suppliers from a particular geographical region |
| | Product/process exclusion | Exclusion of products that are produced with a certain practice or that are in themselves considered unsustainable |
| | Approved supplier | Supplier must pass a screening before becoming a supplier |
| | Preferred supplier | Company gives preferential treatment (prices, payment terms, volumes) to specific suppliers |
| | Reformulated product | Company changed the formulation of the product specifically to make it more sustainable |
| Internal intervention | Direct sourcing | Direct contract between the focal company and producer or production cooperative, where the contract is implicitly contingent on social and/or environmental criteria |
| | Local sourcing | Product is produced and sold within the same subnational region |
| | Investment in supply chain | Company provides resources (materials, capital, and so forth) to actors in the supply chain |
| | Training of suppliers | Company provides training to actors in their supply chain |
| | Recycled claim | Products made at least in part with recycled materials, where the term "recycled" is not defined by a body external to the company |

To be categorized as an SSP, the practice must relate to social and/or environmental issues. See *SI Materials and Methods* for examples of each SSP.

A company operating in a multitiered supply chain can enforce an SSP with its direct suppliers (first tier), intermediate-tier suppliers (subsuppliers), raw material producers (at the farm, fishery, or forest level), or via traceability through the whole supply chain. A company that sources directly from the raw material producer only has a single tier to which to apply the SSP (first tier, raw material). Forty-eight percent of SSPs address only first-tier suppliers. An additional 12.5% of SSPs focus on first-tier, raw material producers. Thirty-five percent of SSPs address a company's raw material producers that are not direct suppliers of the company. SSPs rarely address the intermediate tiers of a supply chain (1.5%). SSPs that trace a product from raw material producer to final product are used in just 3% of the cases. Most raw material producers are covered by external standards, while internal standards primarily address first-tier suppliers (Fig. 3 and *SI Materials and Methods*).

*v*) SSPs rarely address the broad social and environmental challenges outlined in the SDGs, focusing primarily on SDGs related to working conditions and compliance with national laws.

When relating SSPs to the SDGs, we first note that, by definition, all SSPs relate to SDG 12: Responsible Production and Consumption. In addition, SSPs primarily address SDG 8: Decent Work and Economic Growth (via labor rights) and SDG 16: Peace, Justice, and Strong Institutions (via compliance with national law requirements), with almost 50% of all companies addressing each of these topics in their supply chain (*SI Materials and Methods*). In contrast, only 15% of companies address health, energy, infrastructure, climate change, education, gender, or poverty in the supply chain directly. External standards focused the most on SDG 2: Zero Hunger (via sustainable agriculture) and SDG 15: Life on Land (mostly via land use), while internal standards focused primarily on SDGs 8 and 16. Internal interventions dealt with topics that were largely missing from the standards, including SDGs related to health, education, gender, and inequality. The focus of SDGs was largely consistent across sectors.

*vi*) Large, branded companies exposed to consumer and civil society pressure are significantly more likely to adopt SSPs.

We used a logistic regression (logit) model to identify which variables significantly predict SSP adoption in our sample, using Lasso estimation. We find that high brand value, large revenues, serving European markets, not serving markets in

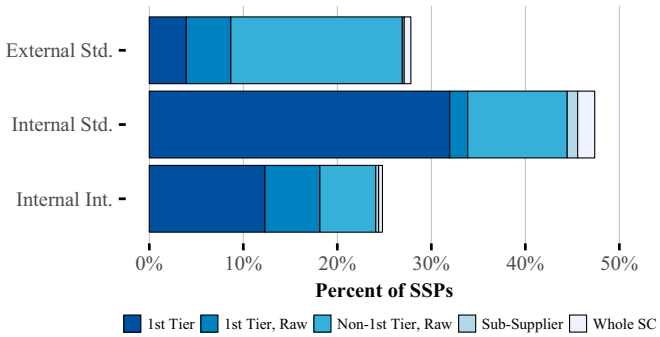


**Fig. 3.** How far down the supply chain each SSP applies for each SSP group.

Asia-Oceania, being headquartered in a country with a high density of international NGOs ("HQ NGO density"), identifying environmental or social risks in the supply chain, and having a brand that is visible to consumers are significantly associated with the adoption of at least one SSP (significant at the 5% level; 42.4% of deviance explained by the model). These results are after controlling for sector, report type [sustainability report, adherence to the Global Reporting Initiative (GRI)], membership in the Consumer Goods Forum, and company profitability. In contrast, there is no statistically significant association with a larger market share, serving North American markets, serving multiple continents, or stringency of environmental regulation in the headquarter country. These results are consistent across model specifications (exclusion of companies listed on Asian stock exchanges, exclusion of producing companies, different specifications of company revenues and profitability, using additional controls) and model types (linear probability model, maximum likelihood estimation of logit model) (*SI Materials and Methods*).

The first-difference results from the logit model allow us to estimate the magnitude of these predictor variables (Table 2). These results can be interpreted as the change in predicted probability of adopting an SSP when moving from 0 to 1 for binary variables or from the 25th percentile to the 75th percentile for continuous variables, holding all else constant. For example, companies that have a strong brand are associated with a seven percentage-point increase in likelihood to adopt an SSP compared with companies that do not have recognizable brands, holding all else constant. Similarly, increasing a company's revenues from the 25th percentile to the 75th percentile is associated with increasing the likelihood of adopting an SSP by 11 percentage points.

## Discussion

We find that 52% of the randomly selected companies in our global sample of publicly listed companies with annual reports in English address some component of social or environmental issues within their supply chain. This result is substantially lower than estimates drawn from only the largest companies, where sustainable-sourcing coverage was estimated at over 90% among major Western firms (12). Still our estimate of SSP prevalence is likely to be biased upward, as companies without English annual reports tend to differ from companies with annual reports available in English (*SI Materials and Methods*).

In addition to a much lower adoption of SSPs than commonly discussed, we find several other limitations to current SSPs that likely affect their ability to drive change. First, our findings suggest that SSPs are most commonly adopted by downstream firms to address issues with their first-tier suppliers only. This raises concern about the potential impact of SSPs when the most pressing social and environmental practices are often taking place among subsuppliers (6, 30). Given that non–consumer-facing companies are less likely to adopt SSPs, a transmission of sustainable-sourcing requirements down the supply chain may not be occurring, leaving many of the most challenging sustainability problems unaddressed.

Second, companies are often using SSPs for only a small subset of their input materials or product lines. On one hand, a focus on key input materials, like palm oil and wood products allows companies to address the most critical inputs in their supply chains, as these commodities can have significant negative impacts (31). On the other hand, the lack of comprehensive coverage across suppliers and input materials highlights an important limitation of the reach and impact of SSPs that is rarely acknowledged in the discourse on sustainable sourcing. Companies may be unlikely to use SSPs for 100% of a product's input materials, as consumers rarely differentiate between fully and partially sustainable products (32). Furthermore, consistent with our finding that consumer and civil society pressure significantly drives SSP adoption, companies may target their sustainable-sourcing efforts only at input materials that have been the topic of visible campaigns (33).

We also find significant diversity in the audit stringency by which SSPs are enforced, and a large number of companies provide no information on SSP audit requirements. This might reflect the lack of consensus on how best to verify compliance or the challenges that companies face with trying to ensure compliance. Previous studies have questioned the ability of third-party (34–36), second-party (37), and first-party verification (38) to effectively identify and remediate issues in supply chains. Theoretical studies have suggested that the inability to effectively monitor and punish actors based on adherence to requirements makes compliance unlikely (39, 40). There is a critical need to better understand how different types of verification, or lack thereof, influence the effectiveness of SSPs.

The United Nations' SDGs define the global agenda for sustainability for years to come. However, we find that companies' sustainability efforts in global supply chains are largely focused on workers' rights and compliance with national laws. Important social (e.g., health, education, gender, inequality) and environmental (e.g., climate change, energy) issues are rarely the primary focus of SSPs. This raises concern, as companies are expected to be a major player in achieving the SDGs via their global supply chains (7). However, we also see a few leading companies finding

**Table 2. First-difference results of the simple logit model with Lasso model selection and estimation**

| Variable | First difference | 95% CI |
|---|---|---|
| Independent variable | | |
| High brand value (0/1) | 0.07** | 0.00, 0.17 |
| Top-10 market share (0/1) | 0.00 | −0.09, 0.12 |
| Revenue: log 5-y average | 0.11*** | 0.05, 0.18 |
| Serves North America (0/1) | 0.01 | −0.04, 0.11 |
| Serves Europe (0/1) | 0.05** | 0.00, 0.16 |
| Serves Asia-Oceania (0/1) | −0.15*** | −0.25, −0.05 |
| Serves multiple markets (0/1) | −0.01 | −0.12, 0.04 |
| HQ environmental stringency | −0.02 | −0.10, 0.06 |
| HQ NGO density, logged | 0.11*** | 0.04, 0.21 |
| Operational risk (0/1) | 0.09*** | 0.02, 0.17 |
| Consumer-facing (0/1) | 0.11** | 0.02, 0.23 |
| Control variable | | |
| Consumer Goods Forum member (0/1) | −0.05 | −0.16, 0.19 |
| Adheres to GRI (0/1) | 0.13** | 0.03, 0.31 |
| Food sector (0/1) | −0.06 | −0.13, 0.03 |
| Wood-products sector (0/1) | 0.11** | 0.02, 0.32 |
| Textile sector (0/1) | 0.07** | 0.00, 0.20 |
| Sustainability report (0/1) | 0.35*** | 0.25, 0.47 |
| Return on assets: 5-y average | 0.00 | −0.02, 0.04 |

*, **, and *** denote (two-tailed) significance at the 10%, 5%, and 1% level, respectively. Significance levels are computed by bootstrapping observations. These results can be interpreted as the change in the predicted probability of adopting an SSP when moving from 0 to 1 for binary variables or from the 25th percentile to the 75th percentile for continuous variables, holding all else constant. Binary variables are denoted as (0/1).

innovative ways to address these more challenging topics, which suggests that there are opportunities for supply-chain initiatives to contribute to a more comprehensive range of SDGs. Companies also address the SDGs through internal or philanthropic activities, which is outside the scope of this paper.

Our results also illuminate the influence of external pressures on SSP adoption. Companies that face consumer pressures, either by having a consumer-facing product, a high brand value, or by serving European markets, are associated with a significant increase in uptake of SSPs. These findings support the hypotheses that companies facing consumer pressure are most likely to adopt sustainability initiatives (21, 25, 26, 41). We also find that civil society pressure, as measured by HQ NGO density, is associated with an uptake of SSPs. This supports hypotheses that external stakeholders are able to pressure companies into action around sustainability (42, 43). In contrast, there was no association between the strength of environmental regulations in the country where the company is headquartered and the uptake of SSPs. Research should further explore headquarter countries' role in influencing SSP adoption, as regulations are increasingly applying to a company's entire supply chain (e.g., The California Transparency in Supply Chain Act).

This study is limited by our reliance on company documents to assess the uptake of SSPs. There is concern that companies engage in greenwashing, or the overreporting of sustainability initiatives (44, 45). However, there is also evidence that firms may underreport sustainability initiatives (46, 47). Despite this debate, company reports remain the best proxy for assessing, at scale, corporate approaches to sustainability initiatives. Future research should explore how company-reported actions align with actual implementation of SSPs, as some scholars have questioned whether companies actually punish suppliers for failing to comply with sustainability criteria (48, 49). We are also limited to English-only corporate reports to avoid the potential translation bias of defining sustainable-sourcing terms across languages. This sampling decision led to some bias in our sample, with excluded companies being smaller, less likely to be leaders in their sector, and more likely to be serving Asian markets (*SI Materials and Methods*). Our results are thus likely to be an upper estimate of the prevalence of SSPs among global publicly listed companies.

## Conclusion

This study is a large-scale survey of how companies across multiple sectors and geographies contribute to global sustainability via their supply chains. Companies address environmental and social challenges in their supply chain by relying on a portfolio of 16 distinct practices, which is much more diverse than commonly assumed and studied. Supplier codes of conduct and NGO-led certifications are just some of the mechanisms used by companies to promote sustainability in their supply chain. Disciplinary blinders have tended to focus different fields on only a subset of SSPs. Our study combines these separate streams of literature through a comprehensive analysis of the range of strategies companies use in practice to address social and environmental issues in their supply chains.

Although there are positive indications of SSP uptake, the reach of these practices is limited by the types of companies that adopt them, the products and supply-chain tiers they cover, the strength by which they are enforced, and the SDGs they address. Consumer and civil society pressure among branded firms appears to be an effective tool to encourage SSP uptake. For non–consumer-facing firms, encouraging uptake of SSPs is more difficult. Identifying key social and environmental risks may be an effective tool to encourage change among these companies. For supply-chain interventions to effectively drive social and environmental change at a global scale, private-sector actors need to more widely adopt SSPs that are stringent, verifiable, address a broad set of sustainability issues, and reach all tiers of global supply chains.

## Materials and Methods

**Sample.** We took a random sample of 1,000 publicly listed companies on the 12 largest OECD stock exchanges in the food, textile, and wood-product sectors. We oversampled companies because, at the time of sampling, it was not possible to know which companies would have annual reports available in English or would have missing documents. During the coding process, we excluded 293 companies that had documents missing or did not have an annual report in English. This led to some bias, as excluded companies differed from our sample on a number of variables, likely resulting in an overreporting of SSP presence (*SI Materials and Methods*).

**Data Sources.** We use information published by companies relating to sustainability and sourcing in the 2015 fiscal year. We examined the company's sustainability report (if any), annual report, and relevant website pages ("corporate sustainability documents"), using a digital archive of websites from December 31, 2015 (50).

**Content Analysis.** We use content analysis to extract information on SSPs mentioned by firms in their corporate sustainability documents. Content analysis is a qualitative method to categorize text into groups based on clear selection criteria (51). Following best practices, we developed a detailed codebook with definitions for each item and calibrated our codebook on over 70 preliminary companies. Four research assistants received 2 wk of intensive training before coding documents in NVivo 11 (QSR International). Cross-coder reliability of over 90% was achieved in the sample of 15 documents.

Our primary outcomes of interest are corporate SSPs. We categorized SSPs based on common sustainable-sourcing typologies used in the literature and expanded this framework based on practices that emerged from the coding process (9, 17, 18). We also collect additional characteristics that have been suggested to influence the effectiveness of sourcing practices (18, 52).

We also categorized each SSP to the primary SDGs it addressed. We developed a codebook defining how each of the 17 SDGs relates to companies' practices by consulting the official definitions and objectives for each SDG and the SDG Compass explanations developed by the United Nations to translate the SDGs into relevant business practices (53, 54). We constrained our analysis of SDGs to the primary focus of each SSP, typically resulting in two or three SDGs being coded to each SSP.

**Statistical Analysis.** We use a logistic regression to explore what company characteristics are associated with the uptake of any SSP. Our model consists of 11 independent variables and seven control variables, with 136 interaction terms. We use Lasso (55), well-suited for high-dimensional regressions, to perform model selection and estimation of regression parameters simultaneously.

**Table 3. Independent variables used in logit model**

| Variable | Measurement |
|---|---|
| High brand value | Company in the Interbrand or Reputation Institute list of companies with high brand value (56, 57) |
| Top-10 market share | Whether firm is one of top 10 companies by revenue in their sector |
| Size of company | Logged average company revenues over last 5 y |
| Markets served | If company derives 10%+ of revenues from Europe, North America, Asia-Oceania, and rest of world |
| Serves multiple regions | Company derives revenue from more than two continents |
| HQ environmental stringency | An equally weighted index of the World Economic Forum's 2015 Executive Opinion Survey questions on perceived stringency and enforcement of environmental regulations and number of ratified international environmental treaties (58) |
| HQ NGO density | Logged number of international NGOs per 1,000 citizens (59) (International NGOs per country from the *Yearbook of International Organizations*; population data from the US Census Bureau's International Database 2016). |
| Operational risk | Company mentions environmental, social, reputation, or regulatory risk of supply in corporate sustainability documents |
| Consumer-facing | Company has a brand visible to end consumers |

To determine the Lasso penalty term, we used 10-fold cross-validation. We then computed the first differences of each independent and control variable using the Lasso estimates for independent variables, control variables, and interaction terms. CIs were calculated using 1,000 bootstrap samples (with replacement).

We developed company-level variables to assess the hypotheses laid out in the literature (Table 3 and *SI Materials and Methods*). We used Bloomberg Financial Services to capture firm-level financial information.

We controlled for sector, profitability as measured by 5-y average return on assets (ROA), the presence of a sustainability report, adherence to the GRI CSR reporting standards, and membership in the Consumer Goods Forum (CGF), a major food, wood-products, and textile industry network that makes sustainability commitments. For robustness checks, we also ran models with the 2015 ROA, the 3-y ROA average, and adding in gross domestic product per capita in the country of the company headquarters (HQ GDP), with similar results.

Several omitted variables may influence results. We expect that what other companies are doing in an industry impacts decisions by companies to adopt certain SSPs. We account for this using an industry-level Top 10 variable to identify leaders in each sector. We also expect that media attacks on individual companies influence the adoption of SSPs (10). We account for this using (*i*) a proxy for brand value and (*ii*) whether the firm is consumer-facing. Strong management commitment to sustainability may also play a role in encouraging SSP adoption (17). Given the cross-sectional nature of our dataset, we are unable to fully account for these influences. Time-series approaches would be required to isolate these potential effects.

Data from this project are available on the Stanford Digital Repository at https://purl.stanford.edu/hn344kt7076.

**ACKNOWLEDGMENTS.** We thank our outstanding research team of Sarah Brickman, Kathy Lee, Zack Zahner, Julie Lambin, Elizabeth McCune, and Makenzie Crews for their help on this project. This work was supported by National Science Foundation Graduate Research Fellowship DGE-114747 and a Teresa Elms and Robert D. Lindsay Fellowship.

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