



Accounting for a
Sustainable Future™

BUILDING PRODUCTS & FURNISHINGS

Research Brief

Sustainable Industry Classification System™ (SICS™) #CN0603
Research Briefing Prepared by the
Sustainability Accounting Standards Board®
September 2015

BUILDING PRODUCTS & FURNISHINGS

Research Brief

SASB's Industry Brief provides evidence for the disclosure topics in the Building Products & Furnishings industry. The brief opens with a summary of the industry, including relevant legislative and regulatory trends and sustainability risks and opportunities. Following this, evidence for each disclosure topic (in the categories of Environment, Social Capital, Human Capital, Business Model and Innovation, and Leadership and Governance) is presented. SASB's Industry Brief can be used to understand the data underlying SASB Sustainability Accounting Standards. For accounting metrics and disclosure guidance, please see SASB's Sustainability Accounting Standards. For information about the legal basis for SASB and SASB's standards development process, please see the Conceptual Framework.

SASB identifies the minimum set of disclosure topics likely to constitute material information for companies within a given industry. However, the final determination of materiality is the onus of the company.

Related Documents

- [Building Products & Furnishings Sustainability Accounting Standards](#)
- [Industry Working Group Participants](#)
- [SASB Conceptual Framework](#)

INDUSTRY LEAD

Nashat Moin

CONTRIBUTORS

Andrew Collins

Arturo Rodriguez

Henrik Cotran

Jean Rogers

Bryan Esterly

Evan Tylanda

Eric Kane

Quinn Underriner

Jerome Lavigne-Delville

Gabriella Vozza

Himani Phadke

SASB, Sustainability Accounting Standards Board, the SASB logo, SICs, Sustainable Industry Classification System, Accounting for a Sustainable Future, and Materiality Map are trademarks and service marks of the Sustainability Accounting Standards Board.

Table of Contents

- [Introduction](#) 1
- [Industry Summary](#)..... 2
- [Legislative and Regulatory Trends in the Building Products & Furnishings Industry](#) 4
- [Sustainability-Related Risks and Opportunities](#) 5
- [Environment](#) 6
 - [Energy Management in Manufacturing](#) 7
- [Social Capital](#) 9
 - [Management of Chemicals in Products](#) 9
- [Business Model and Innovation](#) 12
 - [Product Lifecycle Environmental Impacts](#) 13
- [Leadership and Governance](#) 16
 - [Wood Sourcing](#) 16
- [Appendix](#)
 - [Representative Companies : Appendix I](#) 21
 - [Evidence for Sustainability Disclosure Topics : Appendix IIA](#) 22
 - [Evidence of Financial Impact for Sustainability Disclosure : Appendix IIB](#) 23
 - [Sustainability Accounting Metrics : Appendix III](#) 24
 - [Analysis of SEC Disclosures : Appendix IV](#) 25
- [References](#)

SUSTAINABILITY DISCLOSURE TOPICS

ENVIRONMENT

- Energy Management in Manufacturing

SOCIAL CAPITAL

- Management of Chemicals in Products

BUSINESS MODEL AND INNOVATION

- Product Lifecycle Environmental Impacts

LEADERSHIP AND GOVERNANCE

- Wood Sourcing

INTRODUCTION

The Building Products & Furnishings industry manufactures a range of products and materials used in the furnishing and construction of residential and commercial buildings. The industry benefitted from rapid economic growth throughout the 20th century, as residential and commercial construction activity mirrored rising wealth and standards of living. Innovation enabled the industry to manufacture products using a wide variety of raw materials including plastics, metals, textiles, synthetic materials, and wood. These materials helped improve product quality, safety, and the range of applications of the products. The industry has recently experienced rapid demand growth from emerging economies, driving international expansion of manufacturing operations.

Regulatory and social trends suggest a rising concern over the human health impacts and environmental externalities of building products and furnishings throughout their lifecycle. Increasing resource scarcity and the persistence of some products in the environment at end of life elevate the importance of product reuse and reduced environmental impact. These factors are driving innovation in the industry, with a

focus on alternative, safer materials, enhanced recyclability, and sustainably sourced raw materials.

Management (or mismanagement) of certain sustainability issues, therefore, has the potential to affect company valuation through impacts on profits, assets, liabilities, and cost of capital.

Investors would obtain a more holistic and comparable view of performance with building products and furnishing companies reporting metrics on the sustainability risks and opportunities that could affect value in the near- and long-term in their regulatory filings. This would include both positive and negative externalities, and the non-financial forms of capital that the industry relies on for value creation.

Specifically, performance on the following sustainability issues will drive competitiveness within the Building Products & Furnishings industry:

- Managing energy consumption in manufacturing operations;
- Ensuring that products do not pose risks to human health;
- Minimizing the environmental impacts of products through their lifecycle; and
- Mitigating risks and externalities in the wood supply chain.

INDUSTRY SUMMARY

The Building Products & Furnishings industry comprises companies involved in the design and manufacturing of home improvement products, home and office furnishings, and structural wood building materials. Home improvement and furnishing products include flooring, ceiling tiles, and home and office furniture and fixtures. The wood building materials segment includes companies that operate sawmills and manufacture wood building materials such as trusses, plywood, paneling, lumber, siding, framing joists, and plywood.¹

In 2014, the Building Products & Furnishings industry generated global revenues of approximately \$216 billion. The home improvement, wood building materials, and home and office furnishings segments garnered approximately \$98 billion, \$63 billion, and \$55 billion in revenues in 2014, respectively. Large representative companies headquartered and publicly traded in the U.S. include Universal Forest, Armstrong World Industries, Mohawk Industries, Fortune Brands, Steelcase, and Tempur-Sealy.¹ In 2014, these companies generated revenues of between \$1.9 and \$7.5 billion. These companies generate the majority of their sales in the U.S.² The majority of U.S.-listed companies own manufacturing locations that are based in North America, while some companies operate manufacturing facilities in South America, Europe, and Asia. The majority of companies with a retail focus operate in the U.S.³

Companies in this industry typically sell their products to wholesalers and retail companies, including the Home Depot and Lowe's, or

through independent or company-owned dealers.⁴ Most companies in the industry operate globally and generate revenue from diverse regions. The industry's largest end market is the U.S., while major international markets include Europe, China, and Mexico.⁵ Mohawk Industries, for example generated approximately 29 percent of its revenue from outside the U.S. in 2014.⁶

Across segments, the Building Products & Furnishings industry is cyclical: Revenues are strongly correlated with economic growth and discretionary spending. The primary financial drivers for the industry include residential and commercial construction and remodeling, disposable income, raw materials prices, and product pricing.⁷

In all segments of the industry, raw materials account for the majority of costs. These raw materials include wood, metal, plastics, leather, textiles, and chemicals, among others. High materials prices, therefore, can affect industry profitability. Wages are also a significant cost, accounting for nearly 21 percent of revenues for the home and office furniture segments.⁸ For these segments, high wages in large part are due to the need for workers with craftsmanship and design skills. Other primary costs in these segments include research and development, insurance, freight, rent and utilities, and administrative costs.⁹ In the wood building materials segment, purchases represent approximately 55 percent of revenues, while labor costs are approximately 18 percent.¹⁰ Generally, the Building Products & Furnishings industry maintains relatively low margins. In 2014, the industry had a median gross margin

¹ Industry composition is based on the mapping of the Sustainable Industry Classification System (SICS™) to the

Bloomberg Industry Classification System (BICS). A list of representative companies appears in Appendix I.

of 27.8 percent and a net income margin of 2.8 percent.¹¹

Competition dynamics vary widely across the various industry sub-segments. Higher value-add products will typically compete on materials and design as well as price, while basic building materials products, such as lumber or plywood, compete largely on price and quality.¹²

Companies may also compete on materials – responding to customer preferences for plastic, wood, metal, or synthetic materials. According to Steelcase, a major furniture manufacturer, “[t]he Americas’ office furniture industry is highly competitive, with a number of competitors offering similar categories of products. The industry competes on a combination of insight, product performance, design, price and relationships with customers, architects and designers.”¹³ Emerging trends in innovation are also shaping the competitive landscape for the Building Products & Furnishings industry. Office furniture is typically a commodity-like business, but there is some potential for differentiation through product design, quality, service, and technology. In some segments of the industry, sustainability features, such as the use of responsibly sourced wood, can drive competition.¹⁴ According to Mohawk Industries, a flooring manufacturer “the principal methods of competition within the floor covering industry generally are service, style, quality, price, product innovation and technology. In each of the markets, price and market coverage are particularly important because there is limited differentiation among competing product lines.”¹⁵

In the office furniture-manufacturing segment, many companies compete for market share. According to IBISWorld, the four largest companies in this segment represent only 18.1 percent of the domestic U.S. market.¹⁶ Small,

privately-owned businesses represent a large share of the industry. New companies may be able to enter the market for niche products, however, they typically do not have access to the key relationships with suppliers and customers necessary to compete effectively with established manufacturers. Industry globalization is growing as furniture manufacturers expand operations overseas to capture new markets and lower wages.¹⁷

The wood building products segment is highly competitive, and has both domestic and international companies. The segment also competes with companies that manufacture other building products materials, including steel and plastics. Approximately one-fifth of U.S. domestic demand for wood building materials is met by imports.¹⁸

The green building movement is an important trend affecting the Building Products & Furnishings industry. The adoption of green building codes and standards, such as the U.S. Green Building Council’s (USGBC) Leadership in Energy and Environmental Design (LEED) rating system and the Building Research Establishment Environmental Assessment Methodology (BREEAM), encourages the design and construction of buildings with improved environmental performance and reduced human health impacts. This driver, combined with customer preferences for products that can help them obtain LEED credit or other certifications, has increased demand for products, systems, and services that contribute to building sustainable spaces. The industry expects ongoing, long-term growth in demand for products that meet regulatory and customer sustainability standards; some estimates predict that the green building materials industry could hit \$254 billion by 2020.¹⁹

Valuation in the industry may vary depending on which segment is analyzed. For manufacturers, valuation typically involves analysis of raw materials costs, sales volume and prices, and foreign exchange adjustments. Key financial metrics for valuation include price-to-earnings ratios and enterprise value over EBITDA.²⁰

LEGISLATIVE AND REGULATORY TRENDS IN THE BUILDING PRODUCTS & FURNISHINGS INDUSTRY

Regulations in the U.S. and abroad represent the formal boundaries of companies' operations, and are often designed to address the social and environmental externalities that businesses can create. Beyond formal regulation, industry practices and self-regulatory efforts act as quasi-regulation and also form part of the social contract between business and society. In this section, SASB provides a brief summary of key regulations and legislative efforts related to this industry, focusing on social and environmental factors. SASB also describes self-regulatory efforts on the part of the industry, which could serve to pre-empt further regulation.¹¹

The Building Products & Furnishings industry is subject to regulation by agencies at the federal, state, and local levels. Legislation and voluntary regulatory efforts relate primarily to product safety and chemicals of concern, product disposal, and wood sourcing.

Manufacturers in this industry use various glues, coatings, wood particle board, and other materials that may contain chemicals that have

been determined to be hazardous to human health, and which are regulated under various environmental and consumer safety laws.²¹ As many of the industry's products are used in indoor settings or in the construction of buildings, regulations affecting indoor air quality are particularly pertinent. While the U.S. Environmental Protection Agency (EPA) does not directly regulate indoor air quality, it two U.S. states, California and New Jersey, regulate indoor air quality for work environments.²² The EPA sets standards for emissions from certain products that can affect indoor air quality. The agency is expected to finalize its formaldehyde emissions standards for composite wood products in November 2015. The standards will address formaldehyde emissions from hardwood plywood, particleboard, and medium-density fiberboard.²³ Similarly, California's Composite Wood Products Airborne Toxic Control Measure, approved in 2007, established formaldehyde emission standards for hardwood plywood, plywood veneer and composite core, particleboard, and medium-density fiberboard.²⁴

Internationally, the European Union's (EU) EN 13986 standard, Japan's JIS standard, and similar standards in Australian and New Zealand address formaldehyde emissions for many wood-based products.²⁵ In addition, the EU's Registration, Evaluation, Authorization and Restriction (REACH) regulation, which went into effect on June 1, 2007, requires manufacturers and importers to declare the presence of substances of very high concern above a concentration of 0.1 percent, and whether the total quantity of the harmful substance in products that are produced or imported in one year exceeds one ton.²⁶

¹¹ This section does not purport to contain a comprehensive review of all regulations related to this industry, but is intended

to highlight some ways in which regulatory trends are impacting the industry.

Aside from regulations, consumer preference and voluntary initiatives are also driving a shift in the use of harmful chemicals. New sustainable building standards, such as LEED and Living Building Challenge (LBC), require greater transparency and reduced use of chemicals in building interiors. The LBC certification mandates that products may not contain restricted chemicals included on its “red list.” Such chemicals are known to be harmful to humans and the environment.²⁷

Carpeting manufacturers are currently the only companies in the industry that have regulatory requirements related to the treatment of their products at the end of life.²⁸ In the state of California, mattress and carpet manufacturers face extended producer responsibility (EPR) legislation that makes them responsible for properly disposing of their products at the end of life.²⁹

International regulations may also address the product lifecycle. The European Waste Management Directive has a provision for construction and demolition waste, which may include products from the Building Products & Furnishings industry. According to the directive, a minimum of 70 percent of non-hazardous construction waste shall be prepared for re-use, recycling, or other material recovery by 2020.³⁰

Some segments of the Building Products & Furnishings industry, such as furniture, flooring, and wood building products, are large consumers of wood, and must adhere to regulations governing the importation of wood across international borders.³¹ Under the U.S. Lacey Act, amended in 2008, it is a federal crime to import illegally logged wood into the U.S. In 2006, as much as 10 percent of the value of annual wood imports to the U.S. were believed to be illegally logged. The Lacey Act

has directly affected the business practices of timber producers and manufacturers, triggering a rise in demand for certified wood products.³² Similarly, the European Union Timber Regulation prohibits illegally logged timber from entering the European market by implementing due diligence tracking systems at companies that trade wood products.³³

In addition to expanded environmental and safety laws around the world, voluntary third-party wood and fiber sourcing certification standards have gained acceptance in recent years, as demand for environmentally and socially sustainable forestry products has grown. The Programme for the Endorsement of Forest Certification (PEFC) is the world’s largest timber certification organization, as measured by total certified forest area.³⁴ Other standard-setting organizations of note include the Forest Stewardship Council (FSC) and Sustainable Forestry Initiative (SFI).³⁵

SUSTAINABILITY-RELATED RISKS AND OPPORTUNITIES

Industry drivers and recent regulations suggest that traditional value drivers will continue to impact financial performance. However, intangible assets such as social, human, and environmental capitals, company leadership and governance, and the company’s ability to innovate to address these issues are likely to increasingly contribute to financial and business value.

Broad industry trends and characteristics are driving the importance of sustainability performance in the Building Products & Furnishings industry:

- **Social license to operate:** Because it uses chemicals that can be harmful to

human health, the industry is prone to risk. Issues concerning product safety can affect the industry's social license to operate. Products such as furniture and flooring can contain chemicals that affect indoor air quality. The industry faces pressure from regulators, customers, and sustainability certifications to eliminate or provide transparency around the use of harmful chemicals.

- **Environmental externalities:** The industry is increasingly addressing its products' lifecycle impacts by tackling issues such as responsible materials sourcing, product environmental impacts, and end of life treatment. The drivers for addressing product sustainability characteristics include regulation, customer demand, and company sustainability agendas.

As described above, the regulatory and legislative environment surrounding the Building Products & Furnishings industry emphasizes the importance of sustainability management and performance. Specifically, recent trends suggest a regulatory emphasis on environmental and human health protection, which will serve to align the interests of society with those of investors.

The following section provides a brief description of each sustainability issue that is likely to have material implications for companies in the Building Products & Furnishings industry. This includes an explanation of how the issue could impact valuation and evidence of actual financial impact. Further information on the nature of the value impact, based on SASB's research and analysis, is provided in Appendix IIA and IIB.

Appendix IIA also provides a summary of the evidence of investor interest in the issues. This is based on a systematic analysis of companies' 10-K and 20-F filings, shareholder resolutions, and other public documents, which highlights the frequency with which each topic is discussed in these documents. The evidence of interest is also based on the results of consultation with experts participating in an industry working group (IWG) convened by SASB. The IWG results represent the perspective of a balanced group of stakeholders, including corporations, investors or market participants, and public interest intermediaries.

The industry-specific sustainability disclosure topics and metrics identified in this brief are the result of a year-long standards development process, which takes into account the aforementioned evidence of interest, evidence of financial impact discussed in detail in this brief, inputs from a 90-day public comment period, and additional inputs from conversations with industry or issue experts.

A summary of the recommended disclosure framework and accounting metrics appears in Appendix III. The complete SASB standards for the industry, including technical protocols, can be downloaded from www.sasb.org. Finally, Appendix IV provides an analysis of the quality of current disclosure on these issues in SEC filings by the leading companies in the industry.

ENVIRONMENT

The environmental dimension of sustainability includes corporate impacts on the environment. This could be through the use of natural resources as inputs to the factors of production (e.g., water, minerals, ecosystems, and biodiversity) or environmental externalities and harmful releases in the environment, such as air

and water pollution, waste disposal, and GHG emissions.

The Building Products & Furnishings industry is comprised predominantly of manufacturers. These companies use electricity and other forms of energy in their operations. Some segments of the industry, such as the wood building products segment may utilize wood residues and fossil fuels to generate power. Incentives to reduce costs, together with technological advances, can present opportunities for industry players to improve energy efficiency and limit indirect (Scope 2) greenhouse gas emissions.

Energy Management in Manufacturing

The Building Products & Furnishings industry relies heavily on the use of energy, particularly electricity, for value creation. Data from the U.S. Census Bureau's Annual Survey of Manufacturers (ASM) shows that the industry's purchased electricity outlays are more than three times the cost of purchased fuels.³⁶ The long-term prospect of increased demand from the developing world as well as concerns about energy security, climate change, and the use of nuclear energy, suggest constraints on the availability of conventional sources of electricity and fossil hydrocarbons, as well as increasing upward pressure on prices and price volatility. Rising energy prices over time are likely to increase financial impacts from energy management in the future. Because the industry operates on relatively low margins, even small energy cost savings may have a material influence on company profits.

In the U.S., approximately 67 percent of grid electricity is produced by burning fossil fuels such as coal and natural gas.³⁷ Thus, emissions from electricity production can result in indirect

risks for the Building Products & Furnishings industry, as regulations limiting the emissions of electrical utilities may result in higher electricity costs. The long-term prospect of rising energy prices, together with policy incentives for energy efficiency and renewable energy, can make alternative energy sources and the use of on-site renewable electricity cost competitive. Therefore, the way in which a company manages its overall energy efficiency and intensity, its reliance on different types of energy and associated sustainability risks, and its ability to access alternative source of energy is likely to be financially significant.

Company performance in this area can be analyzed in a cost-beneficial way through the following direct or indirect performance metrics (see Appendix III for metrics with their full detail):

- Total energy consumed, percentage grid electricity, percentage renewable energy.

Evidence

In the U.S., the average retail price of electricity for the industrial end-use sector has gone from 4.7 cents per kilowatt-hour (kWh) in 2001 to 7.5 cents per kWh in 2014.³⁸ The U.S. Energy Information Administration (EIA)'s long-term projections show that nominal electricity prices paid by the end-use sector will increase 2.3 percent annually between 2012 and 2040.³⁹

The cost of electricity as a share of value added and the cost of materials varies according to the industry segment. The wood building products segment (NAICS 321) is relatively energy intensive. In this industry segment, purchased electricity accounted for 5.1 of value added and 3.5 percent of the cost of materials. By contrast, the equivalent values in the furniture

manufacturing segment (NAICS 337) were about 1.4 and 1.5 percent.⁴⁰ Meanwhile, for all U.S. manufacturing facilities included in the survey, purchased electricity accounted for only 1.6 percent of the total cost of materials and 2.3 percent of value added. While these percentages may appear insignificant, the relative financial impact of energy savings is great due to industry's narrow median net income margins.⁴¹ Major companies recognize the risk of rising energy costs and their influence on operating expenses, margins, and profitability. Large companies, including HNI Corp., Knoll Inc., Masco Corporation, Fortune Brands, and Armstrong World Industries, mention the material risk of rising energy prices in SEC disclosure.⁴² For example, HNI Corp., a large office furniture manufacturer, stated, "[o]ur gross margins and the profitability of our business operations are sensitive to the cost of energy because it is reflected in our cost of transportation, petroleum-based materials like plastics, and operation of our manufacturing facilities. If the costs of petroleum-based products, operating our manufacturing facilities or transportation increase, it could adversely affect our gross margins and profitability."⁴³

According to ASM data, the Office Furniture Manufacturing (NAICS code 3372) industry sub-segment spends on average 0.7 percent of the total costs of goods sold (COGS) on fuel and 1.8 percent of COGS on purchased electricity.⁴⁴ This means that fuel and electricity purchases represent 2.6 percent of total COGS. Based on Steelcase's 2013 COGS of \$2 billion, and assuming the company has an industry-average level of energy costs as a percentage of COGS, it spent approximately \$51 million on fuel and electricity.⁴⁵ Steelcase has set a goal of reducing its energy and GHG emissions by 25 percent by 2020;⁴⁶ achieving half of this reduction would result in potential costs savings of nearly \$6.3

million a year based on 2013 energy consumption. Furthermore, in 2013, this reduction would have raised pre-tax income by 11.5 percent, from \$55 million to \$61 million.⁴⁷

Companies have achieved significant cost savings through energy efficiency. Masco Corporation, a large home improvement products manufacturer, saved more than \$6 million in 2009 through energy, water, and waste efficiency initiatives.⁴⁸ In its FY2013 Form 10-K, Masco identified energy as a key risk. "Increases in energy costs could increase our production costs as well as our transportation costs, each of which could negatively affect our financial condition and operating results ... If we are not able to increase the prices of our products or achieve cost savings to offset increased commodity and production costs, our financial condition and operating results could be negatively impacted. If we are able to increase our selling prices, sustained price increases for our products may lead to sales declines and loss of share, particularly if our competitors do not increase their prices."⁴⁹ With electricity prices rising, companies in the industry are trying to lower their reliance on grid electricity by using alternative sources of energy. For example, Herman Miller, a large furniture manufacturer, has a long-term goal of powering its facilities through renewable energy with "on-site and local generation." The company uses wood manufacturing residuals to generate more than 92 percent of the heat and cooling needs of its primary manufacturing facility.⁵⁰

Value Impact

Energy management is likely to have a chronic impact on value. Building products and furnishings manufacturers can improve their operational efficiency and lower their cost structure in the medium to long term by taking

steps such as undertaking process innovation designed to improve electricity consumption efficiency and investing in renewable sources of energy for manufacturing facilities. Energy efficiency and a reduced reliance on traditional sources of energy, plus a greater share of purchased or self-generated electricity from renewable sources, indicate a firm's ability to mitigate its environmental footprint and its exposure to energy cost increases.

Energy management primarily impacts current and future operating costs. In addition, there could be one-time effects on cash flows through capital expenditures for energy-related projects. Active energy management can also reduce a company's risk profile and its cost of capital in the face of increasing electricity prices and electricity supply risks, particularly given the low margins of this industry.

The probability and magnitude of these impacts could increase in the future as emerging governmental regulations on environmental impacts continue to drive energy cost increases.

The total amount of energy a company uses can give analysts an indication of its relative energy efficiency and vulnerability to rising prices. The percentage of a company's energy coming from grid electricity indicates its exposure to electricity price increases, as utilities internalize the costs of carbon pollution (for example, through new GHG mitigation regulations). Disclosure on the percentage of renewable energy used indicates how well a company is positioned to capture possible cost savings and ensure stable energy prices from the use of renewables.

SOCIAL CAPITAL

Social capital relates to the perceived role of business in society, or the expectation of business contribution to society in return for its license to operate. It addresses the management of relationships with key outside stakeholders, such as customers, local communities, the public, and the government.

The Building Products & Furnishings industry manufactures products that are used in indoor living environments. These products may contain chemicals that have the potential to influence indoor air quality and affect human health. Because of this, consumers have at times expressed concern over potential product chemical hazards, with subsequent reputational and financial consequences for the industry. In response, regulations have been put in place to standardize allowable emission levels from products, while companies have adopted voluntary certification schemes to ensure continued compliance and mitigate risks associated with chemical concerns.

Management of Chemicals in Products

Building products and furnishings can contain substances that have the potential to harm human health, including certain volatile organic compounds (VOCs) and potential reproductive toxins, carcinogens, and endocrine disruptors. In general, these substances are found at low concentrations, if at all, and therefore do not pose a health concern. Nonetheless, the use of these substances exposes the industry to potentially significant regulatory and reputational risks. Actual or perceived human health risks create the potential for future regulation over the chemical content of

products, as well as the risk for potential reputational impacts for companies, which can significantly affect demand for products.

Regulations may go so far as to ban substances from use, which is what happened with asbestos.⁵¹ Conversely, regulations may take a more cautious approach, limiting substances to specified exposure thresholds. The EPA's pending formaldehyde regulations for composite wood products are an example of exposure-based regulations.⁵² Both regulatory approaches can have financial impacts on building products and furnishings companies. There is also the possibility that unknown harmful effects may become known over time, which could subject companies to additional regulation or health-related litigation.

Increasing consumer concern over potentially harmful chemicals is driving the industry's voluntary efforts to use alternative materials. Building and product certifications are driving a shift towards increased transparency of product chemical content and reduced use of potentially harmful substances within products. Customer demand for certified products is likely to continue to grow due to increasing awareness of possible health impacts and the popularity of building certification programs. Companies that effectively manage harmful chemicals in their products may enjoy a competitive advantage over the long term through higher customer demand and an improved brand reputation.

Company performance in this area can be analyzed in a cost-beneficial way through the following direct or indirect performance metrics (see Appendix III for metrics with their full detail):

- Description of processes to assess and manage risks and/or hazards associated with chemicals in products; and

- Percentage of applicable products meeting VOC emissions and content standards.

Evidence

The importance of addressing chemicals of concern in the industry is driven by pressure from a number of outside stakeholder groups, including regulators, nongovernment organizations, and customers. Building certifications, such as LEED or the International Living Futures Institute's Living Building Challenge, restrict the use of certain chemicals. Regulations addressing product safety are likely to shape industry output, and could benefit companies by increasing consumer confidence in safety of products. The EPA is expected to issue final rules on formaldehyde emissions standards for composite wood products in the second half of 2015. The rules will match the formaldehyde emissions restrictions for California's specification for VOCs.⁵³

The Building Products & Furnishings industry's customers may develop their own purchasing criteria for products containing harmful chemicals.⁵⁴ For example, Google has developed a Healthy Materials Program to set guidelines for building furniture and furnishings used in their North American locations. Google seeks to purchase materials that avoid substances included on the Living Building Challenge's Red List and the U.S. EPA's Regulated Chemicals list.⁵⁵ In April 2015, Home Depot announced that it was asking several vinyl-flooring suppliers to phase out the use of ortho-phthalates from their products by the end of 2015. The company's decision came after pressure from a number of consumer groups concerned with the substances' potential human health impacts.⁵⁶ These purchasing decisions can influence manufacturers' policies regarding the chemical content of their products and

transparency with customers, and directly affect demand for products.

Some top companies have responded to customer and regulatory concerns through the gradual elimination or replacement of potentially hazardous substances. For example, in order to improve human and environmental health, Haworth, a large private office furniture manufacturer, stated in its 2013 sustainability report that it plans to eliminate 56 “chemicals of concern” from its products by the end of 2015. The company assessed an initial list of more than 2,000 chemicals commonly used in the industry.⁵⁷ Furthermore, through the Business and Institutional Furniture Manufacturers Association (BIFMA), companies in the office furniture segment of the industry have combined efforts to improve chemicals transparency. They have also developed standards for manufacturers to identify and evaluate harmful substances.⁵⁸ According to the EPA, vinyl chloride, used in the production of PVC, can have both short- and long-term health effects, such as nervous system damage, liver damage, and even cancer.⁵⁹ Interface, a carpet panel manufacturer, has announced a plan to eliminate all virgin (non-recycled) PVC from its products by 2020. The company’s previous lifecycle analyses had determined that PVC was a sustainable industrial material. After the company incorporated the potential human toxicity of PVC into the product lifecycle, however, it decided to eliminate PVC. Interface’s move follows that of its competitors Shaw and Miliken.⁶⁰

Several companies in the industry recognize the potential financial impacts of addressing chemical safety and regulatory standards related to their products. For example, in its FY2014 Form 10-K, Fortune Brands stated, “Compliance with these [health and safety] regulations (such

as the restrictions on lead content in plumbing products and on volatile organic compounds and formaldehyde emissions that are applicable to many of our businesses) may require us to alter our manufacturing and installation processes and our sourcing. Such actions could increase our capital expenditures and adversely impact our results of operations, cash flows and financial condition, and our inability to effectively and timely meet such regulations could adversely impact our competitive position.”⁶¹

In its FY2015 form 10-K, HNI Corporation describes the business uncertainty caused by potential unknown hazards from chemicals and materials used in its products. “We use chemicals and materials in our products and include components in our products from external suppliers, which we believe are safe and appropriate for their designated use; however, harmful effects may become known which could subject us to litigation, including health-related litigation, and significant losses.”⁶²

Since many of the industry’s products are consumer facing, reputational damage arising from concerns over product safety may also result in significant financial impacts. Treated wood furniture and building products may contain high levels of chemicals known to harm human health, including formaldehyde, which is commonly found in particle board and some wood flooring products. Concern over possible health impacts can cause significant reputational and financial repercussions for manufacturers. In March 2015, CBS’s *60 Minutes* aired a report that found high levels of formaldehyde in some of Lumber Liquidator’s laminate flooring products. Consequently, the company’s stock dropped by more than 25 percent.⁶³ Later that month, the U.S. Consumer

Product Safety Commission launched an investigation into formaldehyde levels in the company's products. In its first quarter 2015 financial statements, Lumber Liquidators reported that sales in March had dropped 12.8 percent and comparable-store sales fell 17.8 percent due to the negative media reports.⁶⁴ The company further stated that direct costs associated with the formaldehyde allegations, including legal fees and air quality tests, had reached more than \$15 million by the end of the first quarter.⁶⁵

Value Impact

Addressing concerns about the presence of chemicals in products may be a source of a competitive advantage, as consumers increasingly demand products without harmful chemicals. The real or perceived presence of harmful quantities of these substances can cause reputational harm, lowering product demand and adversely affecting revenues and profits. Product liability claims can result in legal fees or remediation. Companies with acute and high-magnitude or frequent occurrences of product safety concerns could experience a higher cost of capital.

Conversely, companies that eliminate harmful chemicals from their products or reduce risks related to chemical use could experience sales growth by meeting consumer demand. Purchasing these products could also enable customers to obtain sustainable building certifications, driving revenues.

Furthermore, while investment into research and development (R&D) of less harmful products can increase costs in the short term, lowering profitability, new products with reduced externalities can result in increased market share and revenues over the medium to long term.

As the regulatory environment regarding human and environmental health is likely to become more stringent over time, and new scientific evidence may reveal previously unknown hazards, the probability and magnitude of financial impacts are likely to increase over the medium term.

Companies' chemical hazard and risk management plans give insight into the strength of internal systems and management's preparation to address regulatory and customer concerns over the use of chemicals in products. This information can suggest a company's individual level of risk. The percentage of applicable products meeting VOC emissions and content standards indicates potential risks to a company's revenues in the event of product bans, recalls, or reduced sales stemming from lower customer demand or regulatory changes.

BUSINESS MODEL AND INNOVATION

This dimension of sustainability is concerned with the impact of environmental and social factors on innovation and business models. It addresses the integration of environmental and social factors in the value-creation process of companies, including resource efficiency and other innovation in the production process. It also includes product innovation and efficiency and responsibility in the design, use-phase, and disposal of products. It includes management of environmental and social impacts on tangible and financial assets—either a company's own or those it manages as the fiduciary for others.

In addition to the removal of harmful chemicals, emerging societal trends are pushing companies to start addressing their products' environmental performance throughout their lifecycle, during both use and end of life

phases. As a result, there is increased demand for products, systems, and services that contribute to a more sustainable environment. Thus, companies that focus their efforts on innovations and programs that minimize the lifecycle impact of their products could enjoy a strong competitive position over the long-term.

Product Lifecycle Environmental Impacts

Rising consumer and regulatory preference has spawned the growth of building products and furnishings with lower lifecycle environmental impacts, broadly termed 'green' building materials. Generally, there is concern over the materials used and the method of disposal for building products and furnishings. These products include many of those manufactured by the Building Products & Furnishings industry, including interior furnishings, fixtures, and wood construction materials. Depending on the specific product, environmental impacts could arise during raw material sourcing, transportation, manufacturing, use-phase, or end-of-life. The green building trend has created opportunities for companies that can innovate and manufacture products that minimize lifecycle impacts on the environment. SASB standards for the industry also contain disclosure topics that relate to specific aspects of a product's lifecycle – Energy Management in Manufacturing and Wood Sourcing.

Product lifecycle certification has arisen as a tool for companies and their customers to assess and improve a product's lifecycle impact. For products such as office furniture, multiple certification programs address specific sustainability characteristics, including the use of closed-loop materials that help to minimize a product's end-of-life environmental impacts and reduce the need for extracting or producing

virgin materials. Common standards used to certify products manufactured by the Building Products & Furnishings industry include Cradle-to-Cradle, LEED, BREEAM, and BIFMA Level. These certification standards may also address the potential human health risks discussed in the previous disclosure topic, Management of Chemicals in Products.

In addition to market demand dynamics, companies face regulatory pressure and incentives related to product end-of-life. Regulations can provide financial incentives to improve product recovery and recycling, while increasing prevalence of extended producer responsibility (EPR) legislation, which currently affects only carpet products sold in California, could make manufacturers financially responsible for product recycling and recovery.⁶⁶

Through product innovation and design that facilitates end-of-life product recovery and the use of less-impactful materials, adoption of product certification programs, and partnerships with customers, building products manufacturers can achieve improvements in lifecycle impacts, reduce regulatory risk, meet shifting customer demand, and realize cost savings.

Company performance in this area can be analyzed in a cost-beneficial way through the following direct or indirect performance metrics (see Appendix III for metrics with their full detail):

- Discussion of efforts to manage product lifecycle impacts and meet demand for sustainable products; and
- Weight of end-of-life material recovered, percentage of recovered materials that are recycled.

Evidence

The volume of building product and furnishing waste is cause for concern because the products are made of plastics and other highly durable materials. Building construction companies, major customers of the Building Products & Furnishings industry, use large quantities of natural resources. According to the EPA, construction activities use 60 percent of the raw materials (other than food and fuel) used in the entire U.S. economy.⁶⁷ Carpets alone account for about five billion pounds of landfill waste every year, and represent nearly two percent of the total volume of landfill waste. In the U.S. in 2002, only around four percent of carpets were recycled. In 2013, the percentage of carpet recycled in the U.S. reached 14 percent.⁶⁸ In an effort to improve the recycling and reuse of carpets, the EPA established the Carpet America Recovery Effort (CARE), a third-party organization.⁶⁹ The government has also implemented disposal regulation to improve the recyclability and end-of-life treatment of products such as carpets and mattresses. In some cases, manufacturers are financially responsible for end-of-life disposal through extended producer responsibility laws.⁷⁰ For example, California introduced Law AB 2398 to increase diversion rates and recycling of carpets sold in the state. The bill places a tax of five cents per square yard on carpets, which helps fund end-of-life treatment while also incentivizing reclamation and recycling efforts.⁷¹

Companies are also addressing end-of-life concerns on their own, through take-back programs and partnerships that may facilitate new revenue opportunities. These programs may also strengthen partnerships with key customers. For example, Steelcase partnered with the Institutional Recycling Network (IRN) to help customers recycle, donate, or reuse old office furniture, which helps save customers

money—including 10 to 30 percent on landfill fees.⁷² Interface, a carpet and tile manufacturer, offers customers a reclamation service called ReEntry, which will recycle, repurpose, or downcycle old flooring to ensure it is not sent to landfill. ReEntry can save money for the customer, as it lowers landfill fees, and can potentially facilitate the recovery of raw materials and the sale of new products.⁷³ Servicing initiatives like these can also help foster relationships with key customers.

Customers of the Building Products & Furnishings industry, which include construction and architectural firms and residential and corporate consumers, are increasingly seeking green building certification for their projects to reduce the environmental impacts of their buildings. According to the USGBC, the share of newly constructed, non-residential green buildings grew from two percent in 2005 to 41 percent in 2012.⁷⁴ Every day, more than 1.9 million square feet of space is certified using LEED, and a total of 15 billion square feet of building space participates in the LEED suite of rating systems.⁷⁵ There are also currently more than 425,000 BREEAM-certified buildings, and more than two million have been registered for future assessment.⁷⁶

To reduce the lifecycle impacts of their products, building products and furnishing companies are adopting innovative design techniques such as Cradle-to-Cradle (C2C) design and certification. Design requirements for C2C certification include utilizing materials that are fully reusable or recyclable at the end of a product's life. For example, the Steelcase Think office chair is made with 99 percent recyclable materials and more than 41 percent recycled material. It was the first office chair to be certified C2C.⁷⁷ Innovations like this may require substantial investments into research

and development. For example, Mohawk Industries, a large flooring manufacturer, has invested more than \$180 million to develop a proprietary process for manufacturing polyester fiber using recycled plastic bottles. According to the company, the material is better for the environment and satisfies consumer preferences for more environmentally friendly carpeting.⁷⁸ Since 2001, all Herman Miller products have been developed using C2C guidelines. As part of its effort, the company utilized alternative materials to PVC plastics, which can emit harmful emissions during manufacturing and incineration at end-of-life.⁷⁹ Shaw Industries, the world's largest carpet manufacturer with more than \$4 billion in annual sales, generates more than 60 percent of its revenue from C2C certified products.⁸⁰ Following the C2C certification of EcoWorx Tile flooring, which is also PVC-free, the product became the company's fastest-growing carpet product and in 2012 saved it an estimated \$4 million in manufacturing energy and water costs, while halving the environmental cost of production.⁸¹

Other voluntary industry initiatives to address lifecycle impacts can lead to financial benefits through increased revenues and improved operational efficiency.⁸² For example, certifications such as NSF 140, Carpet and Rug Institute Green Label, BIFMA Level,⁸³ and ILFI Declare can help satisfy demand for green products, particularly LEED building certifications.⁸⁴ The BIFMA Level certification program rates furniture according to a set of sustainability indicators, including energy use in manufacturing and transportation, use of materials designed for minimized environmental impacts, including climate neutrality and biodegradability, and chemicals of concern.⁸⁵

Companies recognize the influence that regulations, sustainability certifications, and

standards have on industry operations. For example, in its 2014 Form 10-K, Armstrong World Industries stated that "The adoption of environmentally responsible building codes and standards such as the Leadership in Energy and Environmental Design, or LEED, rating system established by the U.S. Green Building Council, has the potential to increase demand for products, systems and services...that enable construction of buildings that require fewer natural resources to build, operate and maintain. We also believe that our ability to continue to provide these products, systems and services to our customers will be necessary to maintain our competitive position in the marketplace. "⁸⁶

Value Impact

Addressing product end-of-life impacts can help companies can create opportunities to build brand equity and facilitate new sales. Companies that obtain sustainability certifications for industry products can capture growing demand from sustainability-conscious consumers. These certifications can also provide a source of competitive advantage, leading to higher market share and revenues in the medium- to long-term as demand for less impactful products increases. This revenue growth can provide competitive returns on R&D investments to develop green building products. Furthermore, companies may be able to preempt future EPR regulation if they develop products that can be more cost-effectively recovered at end-of-life.

Conversely, adverse product lifecycle impacts can affect companies through damage to brand value and reduced demand for products. The industry's customers may shift demand away from products that are proven or believed to have greater lifecycle environmental impacts, directly lowering revenue and profitability.

The discussion of efforts to manage product lifecycle impacts and meet demand for sustainable products gives analysts insight into a company's sustainable product pipeline and potential revenue growth as well as its ability to comply with evolving regulations. Expanding use of sustainability certifications and evolving regulations related to product lifecycle impacts are likely to increase the probability and magnitude of impacts from this issue in the medium to long term. The weight of end-of-life material recovered and the percentage of recovered materials that are recycled can indicate how a company's products are designed for recovery and therefore a company's exposure to future EPR regulation

LEADERSHIP AND GOVERNANCE

As applied to sustainability, governance involves the management of issues that are inherent to the business model or common practice in the industry and are in potential conflict with the interest of broader stakeholder groups (government, community, customers, and employees). They therefore create a potential liability, or worse, a limitation or removal of license to operate. This includes regulatory compliance, lobbying, and political contributions. It also includes risk management, safety management, supply chain and resource management, conflict of interest, anti-competitive behavior, and corruption and bribery.

Building products and furnishings companies face both risks and opportunities related to wood sourcing. Manufacturers source wood, including lumber and wood flour, from companies that manage and harvest forests or that source from forestry companies. The industry's customers, as well as government and

public stakeholders, are placing increasing value on strong environmental and social performance during timber production. This focus has resulted in an increased use of third-party certification systems and greater supplier engagement. Companies can mitigate downside risks such as reputational impacts on brand value by encouraging strong environmental and social performance among their timber and fiber suppliers, which can also lead to gains in market share and revenues.

Wood Sourcing

The Building Products & Furnishings industry sources large quantities of wood to manufacture building products and interior furnishings. Solid timber, sawn lumber, wood flour, veneer, wood chips, and other forms of wood are key components of many types of hardwood flooring, furniture, home improvement products, and building materials.⁸⁷

Forestry and logging activities can result in environmental and social externalities, including unsustainable harvesting practices that result in biodiversity loss and soil erosion, as well as adverse impacts on forest-dependent communities. Reports of illegal logging, environmental pollution, or adverse impacts on communities—even if they're unwarranted—can result in reputational repercussions that can damage a company's brand value, affecting demand for their products. Additionally, regulations such as the U.S. Lacey Act could affect the industry's timber supply and cause significant reputational repercussions. As a result, customers of the Building Products & Furnishings and construction industries increasingly seek third-party certification that verifies that sourced wood materials—virgin from forests, post-industrial or post-consumer—originate from responsible, well-managed

forests that do not contribute to environmental degradation or social harm. Products containing wood that are certified to such standards are therefore a potential growth driver for the industry.

Many building products and furnishings companies implement responsible sourcing practices in an effort to verify that wood is grown and harvested in a sustainable manner. Forestry certification programs typically set standards for the protection of biodiversity and ecosystems, worker's rights, indigenous peoples' rights, local employment, and legal logging practices.⁸⁸ Chain-of-Custody certification is designed to prevent illegally or unsustainably logged timber from entering the supply chain.⁸⁹ Legislation such as the U.S. Lacey Act strengthens the case for certification as a regulatory risk management tool for forestry companies.

Building products and furnishings companies can make strategic decisions about which suppliers to source from and how to ensure that suppliers adhere to industry best practices. Company performance in this area can be analyzed in a cost-beneficial way through the following direct or indirect performance metrics (see Appendix III for metrics with their full detail):

- Total wood fiber purchased, percentage from third-party certified forestlands and percentage meeting other fiber sourcing standards.

Evidence

Statistics from the United Nations Food and Agriculture Organization (FAO) indicate that the

^{III} Industrial roundwood includes harvested logs used for non-energy applications, including the production of wood building materials and pulp and paper products.

volume of sawnwood and wood-based panels produced in 2013 represented approximately 46 percent of total industrial roundwood^{III} production, or a combined 779 million cubic meters.⁹⁰

Nearly 30 percent of the world's forests are used for the production of wood products. The area of the world covered by forests is shrinking by an average of 15,000 hectares per day due to conversion to agricultural lands, illegal logging, and climate change.⁹¹ According to the FAO, approximately 57 percent of the world's forests are naturally regenerated, 36 percent are primary growth, and 7 percent are planted forest. Primary forests^{IV} are especially important for biodiversity: About 66 percent of terrestrial species originate from them. Thus, logging of these forests threatens the existence of thousands of species, many of which are endangered.⁹²

Wood harvesting can directly affect the lives of millions of people, underscoring the importance of community inclusion and social issues in all aspects of operations. The Programme for Endorsement of Forest Certification (PEFC), one of the largest forest certification programs in the world, estimates that forests contribute to the livelihoods of about 1.6 billion people worldwide, and that 60 million indigenous peoples are fully dependent upon forests, and a further 350 million people depend on forests for income and food.⁹³

The sourcing of illegally logged timber can result in low-probability, high impact events that affect company value. Commoditized timber can be difficult to trace through the extensive global timber supply chain, increasing the potential sourcing risk to companies that

^{IV} Primary forests are forests of native tree species that have previously not been disturbed by human activity or have attained significant age without significant disturbance.

source large volumes of wood from around the world. Some large furniture companies use more than 100 million pounds of wood a year.⁹⁴ Although most timber sourced by the industry is grown in North America, some companies use wood grown in high-risk areas like Brazil, where an estimated 47 percent of primary forest areas are illegally logged.⁹⁵ The Nature Conservancy estimates that 70 percent of Indonesian timber exports are illegally logged, and that nearly 30 percent of all hardwood and plywood traded globally originates from suspicious sources.⁹⁶ In the U.S. however, only three percent of the wood market is estimated to be illegally logged.⁹⁷

Through chain of custody certification, companies can mitigate the risk of reputational harm while addressing customer concerns over the environmental and social impacts of their supply chains and products. For wood fiber-based paper products, CoC certification includes third-party certifications like the FSC, the SFI, and the Programme for the Endorsement of Forest Certification (PEFC). In order to achieve CoC certification, every organization in a company's supply chain must independently obtain third party verification.⁹⁸ Certification programs typically set standards for the protection of biodiversity and ecosystems, worker's rights, indigenous peoples' rights, local employment, and legal logging practices.⁹⁹

Companies are increasingly using third-party certification standards to respond to customer demand and reduce supply chain impacts. Some of the industry's customers have implemented guidelines regarding the use of sustainably sourced wood and fiber, driving demand for certified products. For example, in 1999, Home Depot, a retailer of lumber and other wood building materials, instituted a wood purchasing

policy that established a preference for materials sourced from sustainably managed forests. The company embraced FSC certification as a tool to establish traceability of wood products through the supply chain, and Home Depot is now the largest retailer of FSC-certified wood in the U.S. The company also committed to cease purchasing wood products sourced from the top 10 most vulnerable forest regions, as identified by the World Wildlife Fund in 2001, or products made from 40 tree species listed by the World Conservation Monitory Centre as potentially endangered.¹⁰⁰

According to Haworth, ensuring that their wood is responsibly sourced and sustainably harvested is important to customers seeking more environmentally friendly furniture. The company has set a goal of sourcing 100 percent of its wood from sustainably managed forests by 2015 using third-party programs.¹⁰¹ While certified wood may be more expensive, costs have been driven down through increased scale of production.¹⁰² Masco developed its Kitchen Cabinet Global Forest Policy in order "to promote the manufacture of cabinets using timber from forests certified by the Forest Stewardship Council, Sustainable Forestry Initiative, American Masco Corporation 2009 Global Reporting Initiative Tree Farm System and Canadian Standards Association. Masco expects suppliers to follow good environmental and sustainable forestry practices, and we endeavor to obtain our timber from forestry companies with certified management practices."¹⁰³

The continued adoption of green building standards in the U.S., Europe, the Asia-Pacific region will likely drive continued demand for certified wood building products and CoC certification.¹⁰⁴ Certifications exist for products in different industry segments. For example,

LEED encourages the use of certified wood building materials by allotting one point to a project if more than half of its wood-based materials used are FSC certified.¹⁰⁵ The demand for certified wood products for LEED projects is expected to increase.¹⁰⁶ Meanwhile, the National Wood Flooring Association has developed a Responsible Procurement Program for wood flooring products.¹⁰⁷

A prominent example of the risks related to wood sourcing and its financial impacts is Lumber Liquidators, a hardwood flooring manufacturer and retailer. In 2013, the Homeland Security Investigation Unit, along with the U.S. Fish and Wildlife Services and Justice Department, investigated the company after allegations that it had imported illegal wood from Russia, a violation of the Lacey Act.¹⁰⁸ The investigation followed a report released by the Environmental Investigation Agency that linked the company with sourcing wood that was illegally logged in the Russian Far East, an area that is home to endangered Siberian Tigers.¹⁰⁹

After the Lacey Act investigation was announced, Lumber Liquidators' stock price dropped more than 9 percent, a decline in market value of more than \$275 million, based on the company's September 27, 2013 market capitalization of \$3.1 billion.¹¹⁰ Following the investigation, the company improved its quality assurance requirements for its suppliers. These improvements included demanding more documentation from its wood mills. However, these increased compliance requirements led to production delays for suppliers, as they were unable to fill orders in time. The delays were partially responsible for the company's second quarter sales miss in 2014, which resulted in a loss of market share for the company.¹¹¹ This example highlights the importance of sourcing

materials in compliance with legislation. It also highlights the potential detrimental effects that violations can have on a company's supply chain and financial results.

Company financial disclosure alludes to the financial risks of sourcing from uncertified suppliers. In its FY2014 Form 10-K, Resolute Forest Products, a diversified wood building materials, paper, and pulp company, stated that, "If we are unable to offer certified products, or to meet commitments to supply certified product, it could affect the marketability of our products and our ability to compete with certain producers."¹¹² The company describes potential impacts on both revenues and competitiveness, which can affect market share.

Value Impact

Building products and furnishings companies face potential reputational impacts stemming from poor environmental and social performance of wood and fiber suppliers. These impacts could affect demand for companies' products, lowering profitability. Companies could also face an increase in extraordinary expenses (e.g., fines for Lacey Act violations) and an increase in selling, general and administrative (SG&A) expenses if they need to respond to investigations. Furthermore, uncertainty surrounding supplier performance and the resulting interruption of wood fiber supplies could increase companies' cost of capital.

Conversely, companies that implement responsible sourcing practices through third-party certification or other means may be better insulated from activities that can result in reputational harm. Downstream customers may require product certification to prove the responsible forestry credentials of their

suppliers. Customer requirements could result in product differentiation, leading to greater revenues and increased market share. These benefits could offset the impact on cost structure due to the implementation of responsible sourcing practices and the possible need to switch suppliers to address deficiencies in performance.

The probability and magnitude of this issue are likely to increase with the growth in demand for green building products.

The amount of wood purchased and the percentage certified can indicate a company's exposure to regulatory risks and other risks related to suppliers' environmental and social performance, such as the risk of supply disruption and reputational damage. These metrics also give a sense of a company's ability to capture the growing market opportunity for certified products.

APPENDIX I

FIVE REPRESENTATIVE BUILDING PRODUCTS & FURNISHINGS COMPANIES^v

| COMPANY NAME (TICKER SYMBOL) |
|----------------------------------|
| Tempur Sealy International (TPX) |
| Steelcase Inc. (SCS) |
| Mohawk Industries (MHK) |
| Masco Corporation (MAS) |
| Universal Forest (UFPI) |

^v This list includes five companies representative of the Building Products & Furnishings industry and its activities. This includes only companies for which the Building Products & Furnishings industry is the primary industry, companies that are U.S.-listed but are not primarily traded over the counter, and for which at least 20 percent of revenue is generated by activities in this industry, according to the latest information available on Bloomberg Professional Services. Retrieved on September 10, 2015.

APPENDIX IIA: Evidence for Sustainability Disclosure Topics

| Sustainability Disclosure Topics | EVIDENCE OF INTEREST | | | | EVIDENCE OF FINANCIAL IMPACT | | | | FORWARD-LOOKING IMPACT | | |
|---|----------------------|------|----------|--------|------------------------------|---------------------|-----------------|--------|-------------------------|---------------|-----|
| | HM (1-100) | IWGs | | EI | Revenue & Cost | Asset & Liabilities | Cost of Capital | EFI | Probability & Magnitude | Externalities | FLI |
| | | % | Priority | | | | | | | | |
| Energy Management in Manufacturing | 56* | 76 | 3 | Medium | • | | • | Medium | • | | Yes |
| Management of Chemicals in Products | 56* | 86 | 1 | High | • | • | • | High | • | • | Yes |
| Product Lifecycle Environmental Impacts | 50* | 71 | 2 | High | • | • | | High | • | | Yes |
| Wood Sourcing | 25 | 71 | 4 | Medium | • | • | • | High | • | • | Yes |

HM: Heat Map, a score out of 100 indicating the relative importance of the topic among SASB’s initial list of 43 generic sustainability issues; asterisks indicate “top issues.” The score is based on the frequency of relevant keywords in documents (i.e., 10-Ks, 20-Fs, shareholder resolutions, legal news, news articles, and corporate sustainability reports) that are available on the Bloomberg terminal for the industry’s publicly-listed companies; issues for which keyword frequency is in the top quartile are “top issues.”

IWGs: SASB Industry Working Groups

%: The percentage of IWG participants that found the disclosure topic to likely constitute material information for companies in the industry. (-) denotes that the issue was added after the IWG was convened.

Priority: Average ranking of the issue in terms of importance. One denotes the most important issue. (-) denotes that the issue was added after the IWG was convened.

EI: Evidence of Interest, a subjective assessment based on quantitative and qualitative findings.

EFI: Evidence of Financial Impact, a subjective assessment based on quantitative and qualitative findings.

FLI: Forward Looking Impact, a subjective assessment on the presence of a material forward-looking impact.

APPENDIX IIB: Evidence of Financial Impact for Sustainability Disclosure Topics

| Evidence of Financial Impact | REVENUE & EXPENSES | | | | | | | ASSETS & LIABILITIES | | | | RISK PROFILE | |
|---|--------------------|-------------|---------------|--------------------|-----|------------------------|-------------------------|----------------------|-------------------|-------------------------------------|-----------------------------|-----------------|--------------------------|
| | Revenue | | | Operating Expenses | | Non-operating Expenses | | Assets | | Liabilities | | Cost of Capital | Industry Divestment Risk |
| | Market Share | New Markets | Pricing Power | Cost of Revenue | R&D | CapEx | Extra-ordinary Expenses | Tangible Assets | Intangible Assets | Contingent Liabilities & Provisions | Pension & Other Liabilities | | |
| Energy Management in Manufacturing | | | | • | | • | | | | | | • | |
| Management of Chemicals in Products | • | • | • | | • | | | | • | • | | • | |
| Product Lifecycle Environmental Impacts | • | • | • | | • | | | | • | | | | |
| Wood Sourcing | • | • | • | | | | • | | • | | | • | |

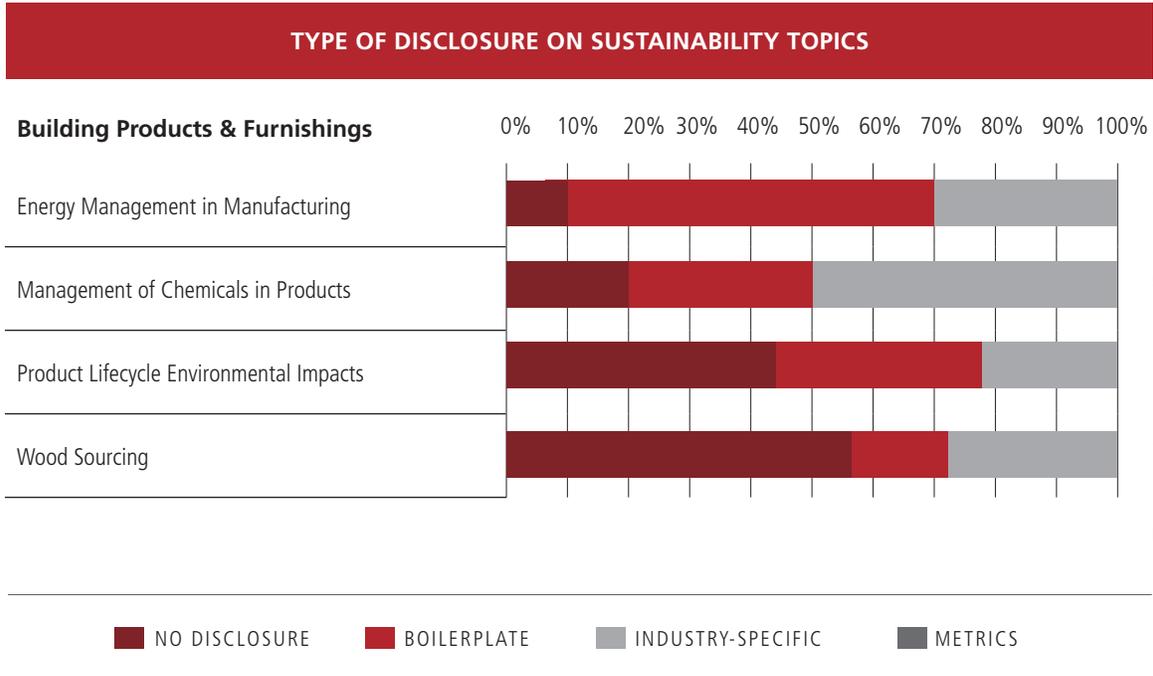
MEDIUM IMPACT
 HIGH IMPACT

APPENDIX III: Sustainability Accounting Metrics | Building Products & Furnishings

| TOPIC | ACCOUNTING METRIC | CATEGORY | UNIT OF MEASURE | CODE |
|--|--|-------------------------|---|-----------|
| Energy Management in Manufacturing | Total energy consumed, percentage grid electricity, percentage renewable energy | Quantitative | Gigajoules (GJ), Percentage (%) | CN0603-01 |
| Management of Chemicals in Products | Description of processes to assess and manage risks and/or hazards associated with chemicals in products | Discussion and Analysis | n/a | CN0603-02 |
| | Percentage of applicable products meeting volatile organic compound (VOC) emissions and content standards | Quantitative | Percentage (%) by revenue | CN0603-03 |
| Product Lifecycle Environmental Impacts | Discussion of efforts to manage product lifecycle impacts and meet demand for sustainable products | Discussion and Analysis | n/a | CN0603-04 |
| | Weight of end-of-life material recovered, percentage of recovered materials that are recycled | Quantitative | Metric tons (t), Percentage (%) by weight | CN0603-05 |
| Wood Sourcing | Total wood fiber purchased, (1) percentage from third-party certified forestlands, by standard, and (2) percentage meeting other fiber sourcing standards, by standard | Quantitative | Metric tons (t), Percentage (%) by weight | CN0603-06 |

APPENDIX IV: Analysis of SEC Disclosures | Building Products & Furnishings

The following graph demonstrates an aggregate assessment of how representative U.S.-listed Building Products & Furnishings companies are currently reporting on sustainability topics in their SEC annual filings.



*Percentage of IWG participants that agreed topic was likely to constitute material information for companies in the industry.

REFERENCES

- ¹ Revenue data from Bloomberg Professional service accessed on July 1, 2015, using the EQS <GO> command. The data represents global revenues of companies listed on U.S. exchanges and not traded over-the-counter from the Building Products & Furnishings industry, using Levels 3 and 4 of the Bloomberg Industry Classification System.
- ² Data from Bloomberg Professional service accessed on July 29, 2015 using the FA GEO <GO> command. The data represents revenues for the Building Products & Furnishings industry by geographic location.
- ³ Brandon Ruiz, *Industry Report 33721 Office Furniture Manufacturing in the US*, IBISWorld, June 2014, p. 22., Brandon Ruiz, *Industry Report 33712 Household Furniture Manufacturing in the US*, IBISWorld, May 2014, p. 19, Antal Neville, *Industry Report 32111 Sawmills & Wood Production in the US*, IBISWorld, April 2015, p. 21.
- ⁴ Customer information from Bloomberg Professional service accessed on July 29, 2015, using the SPLC <GO> command. The information represents primary customer types for the top five companies in Appendix I.
- ⁵ Data from Bloomberg Professional service accessed on July 29, 2015 using the FA GEO <GO> command. The data represents revenues for the Building Products & Furnishings industry by geographic location.
- ⁶ Data from Bloomberg Professional service accessed on July 29, 2015 using the MHK Equity FA GEO <GO> command. The data represents revenues for Mohawk Industries by geographic location.
- ⁷ Brandon Ruiz, *Industry Report 33721 Office Furniture Manufacturing in the US*, IBISWorld, June 2014, p. 5. Brandon Ruiz, *Industry Report 33712 Household Furniture Manufacturing in the US*, IBISWorld, May 2014, p. 32, Antal Neville, *Industry Report 32111 Sawmills & Wood Production in the US*, IBISWorld, April 2015, p. 6.
- ⁸ Brandon Ruiz, *Industry Report 33712 Household Furniture Manufacturing in the US*, IBISWorld, May 2014, p. 22-23.
- ⁹ Brandon Ruiz, *Industry Report 33721 Office Furniture Manufacturing in the US*, IBISWorld, June 2014, p. 20-21.
- ¹⁰ Antal Neville, *Industry Report 32111 Sawmills & Wood Production in the US*, IBISWorld, April 2015.
- ¹¹ Author's calculation based on profit margin data from Bloomberg Professional service accessed on August 25, 2014, using the EQS <GO> command. The data represents global margins of companies listed on U.S. exchanges and not traded over-the-counter from the Building Products & Furnishings industry, using Levels 3 and 4 of the Bloomberg Industry Classification System
- ¹² Brandon Ruiz, *Industry Report 33721 Office Furniture Manufacturing in the US*, IBISWorld, June 2014, p. 5. Brandon Ruiz, *Industry Report 33712 Household Furniture Manufacturing in the US*, IBISWorld, May 2014, p. 32, Antal Neville, *Industry Report 32111 Sawmills & Wood Production in the US*, IBISWorld, April 2015, p. 6.
- ¹³ Steelcase Corporation, FY2013 form 10-K for the Period Ending February 22, 2013 (filed on April 19, 2014), p. 6.
- ¹⁴ Sandra Martinez, "Haworth aims to be first West Michigan office furniture-maker to achieve this green goal," *Mlive*, last modified November 29, 2013, accessed September 23, 2014, http://www.mlive.com/business/west-michigan/index.ssf/2013/11/holland_office_furniture-maker.html.
- ¹⁵ Mohawk Industries, FY2014 Form 10-K for the Period Ending December 31, 2014 (filed February 27, 2015), p. 4.
- ¹⁶ Brandon Ruiz, *Industry Report 33721 Office Furniture Manufacturing in the US*, IBISWorld, June 2014, p. 21-22.
- ¹⁷ *Ibid.*, p. 21-22
- ¹⁸ Antal Neville, *Industry Report 32111 Sawmills & Wood Production in the US*, IBISWorld, April 2015, p. 28.
- ¹⁹ Richard Martin, "Green Building Materials Will Reach \$254 Billion in Annual Market Value by 2020," Navigant Research, 2013, accessed July 8, 2013, <http://www.navigantresearch.com/newsroom/green-building-materials-will-reach-254-billion-in-annual-market-value-by-2020>.
- ²⁰ Joel Havard, "Tempur-Sealy," Hilliard Lyons, November 8, 2013.
- ²¹ Brandon Ruiz, *Industry Report 33712 Household Furniture Manufacturing in the US*, IBISWorld, June 2014, p. 29, World, May 2014, p. 32.
- ²² "Indoor Air Quality," U.S. Department of Labor Occupational Health and Safety Administration, 2015, accessed August 4, 2015, <https://www.osha.gov/SLTC/indoorairquality/>.
- ²³ "Formaldehyde Emissions Standards for Composite Wood Products," United States Environmental Protection Agency, last updated July 30, 2015, accessed July 30, 2015, <http://yosemite.epa.gov/oepi/rulegate.nsf/byRIN/2070-AJ92#2>.
- ²⁴ "Composite Wood Products ATCM Frequently Asked Questions," California Air Resources Board, last updated June 19, 2015, accessed August 3, 2015, <http://www.arb.ca.gov/toxics/compwood/implementation/faq.htm>.

-
- ²⁵ Muhammad Salem & Martin Bohn, "Understanding of Formaldehyde Emissions from Wood: an Overview," BioResources, 2013, accessed August 3, 2015, 8(3), p. 4775-4790, https://www.ncsu.edu/bioresources/BioRes_08/BioRes_08_3_4775_Salem_Bohm_Understanding_Formaldehyde_Emission_Wood_4170.pdf.
- ²⁶ "Notification of substances in articles," European Chemicals Agency, 2015, accessed August 3, 2015, <http://echa.europa.eu/regulations/reach/candidate-list-substances-in-articles/notification-of-substances-in-articles>.
- ²⁷ "Product and Building Materials Red List," Green Building Alliance, 2014, accessed September 30, 2014, <https://www.go-gba.org/resources/green-building-methods/materials-red-list/>.
- ²⁸ "Extended Producer Responsibility for Furniture," UpstreamPolicy, June 2015, accessed August 3, 2015, http://upstreampolicy.org/wp-content/uploads/2015/06/EPR_Furniture-Fact-Sheet.pdf.
- ²⁹ "Product Stewardship and Extended Producer Responsibility (EPR)," Cal Recycle, last modified March 20, 2014, accessed September 30, 2014. <http://www.calrecycle.ca.gov/epr/PolicyLaw/default.htm>.
- ³⁰ "Construction and Demolition Waste (CDW)," European Commission, July 8, 2015, accessed August 19, 2015, http://ec.europa.eu/environment/waste/construction_demolition.htm.
- ³¹ McLaughlin, David, "Lumber Liquidators Plunges after U.S. Raids Offices," *Bloomberg*, September 27, 2013, accessed September 29, 2014, <http://www.bloomberg.com/news/2013-09-27/lumber-liquidators-plunges-after-u-s-raids-offices.html>.
- ³² "U.S. Lacey Act," Environmental Investigation Agency, 2014, <http://eia-global.org/lacey/>.
- ³³ "EU Timber Regulation," Programme for the Endorsement of Forest Certification, 2014, accessed August 7, 2015, <http://www.pefc.org/certification-services/eu-timber-regulation>.
- ³⁴ Programme for the Endorsement of Forest Certification home page, 2015, accessed August 7, 2015, <http://www.pefc.org/>.
- ³⁵ "Basics of SFI," Sustainable Forestry Initiative, 2014, <http://www.sfiprogram.org/about-us/basics-of-sfi/>; "Mission and Vision," Forest Stewardship Council, 2014, accessed August 7, 2015, <https://us.fsc.org/mission-and-vision.187.htm>.
- ³⁶ Author's calculation based on data from the U.S. Census Bureau, 2011 Annual Survey of Manufacturers.
- ³⁷ "What is U.S. electricity generation by energy source?" United States Energy Information Administration, last updated June 13, 2014, accessed March 6, 2015, <http://www.eia.gov/tools/faqs/faq.cfm?id=427&t=3>.
- ³⁸ "Average Retail Price of Electricity: United States: Commercial: Annual, U.S.," Energy Information Administration Electricity Data Browser, accessed on August, <http://www.eia.gov/electricity/data/browser>.
- ³⁹ "Electricity: End-use prices: Commercial (nominal cents per kilowatt hour), Electricity Supply, Disposition, Prices, and Emissions," Annual Energy Outlook 2013, U.S. Energy Information Administration, <http://www.eia.gov/oiaf/aeo/tablebrowser/#release=AEO2013&subject=3-AEO2013&table=8-AEO2013®ion=0-0&cases=co2fee10-d021413a.co2fee10hrd021413a.ref2013-d102312a>.
- ⁴⁰ Author's calculation based on data from the U.S. Census Bureau, 2011 Annual Survey of Manufacturers.
- ⁴¹ Data from Bloomberg Professional service accessed on August 25, 2014, using the EQS <GO> command. The data represents global margins of companies listed on U.S. exchanges and not traded over-the-counter from the Building Products & Furnishings industry, using Levels 3 and 4 of the Bloomberg Industry Classification System.
- ⁴² HNI Corp., FY2013 form 10-K for the Period Ending December 29, 2013 (filed February 22, 2014), p. 12, Fortune Brands Home & Security, FY2013 form 10-K for the Period Ending December 31, 2013 (filed February 26, 2014), p. 9, Knoll Inc., FY2013 form 10-K for the Period Ending December 31, 2013 (filed March 3, 2014), p. 15, Masco Corporation, FY2013 form 10-K for the Period Ending December 31, 2013 (filed February 14, 2014), p. 10.
- ⁴³ HNI Corp., FY2015 form 10-K for the Period Ending January 3, 2015 (filed on February 27, 2015), p. 12.
- ⁴⁴ Author's calculation based on data from "Annual Survey of Manufactures: General Statistics: Statistics for Industry Groups and Industries: 2011," U.S. Census Bureau, released December 17, 2013. Accessed September 23, 2014.
- ⁴⁵ Data from Bloomberg Professional service accessed on September 22, 2014, using the SCS Equity FA IS (GO) command. The data represents Cost of Goods Sold for Steelcase Corporation.
- ⁴⁶ Steelcase Corporation, 2013 Corporate Sustainability Report, pg. 37
- ⁴⁷ Author's calculation based on Data from Bloomberg Professional service, accessed on September 22, 2014, using the SCS Equity FA IS <GO> command. The data represents Cost of Goods Sold for Steelcase Corporation.
- ⁴⁸ Masco Corporation, *2009-2010 Corporate Sustainability Report*, 2011, p. 44.

-
- ⁴⁹ Masco Corporation, FY2014 Form 10-K for the Period Ending December 31, 2014 (filed February 13, 2015), p. 10.
- ⁵⁰ Herman Miller, FY2013 Corporate Sustainability Report, p. 23.
- ⁵¹ "U.S. Federal Bans on Asbestos," United States Environmental Protection Agency, February 3, 2015, accessed August 19, 2015, <http://www2.epa.gov/asbestos/us-federal-bans-asbestos>.
- ⁵² "Formaldehyde Emissions Standards for Composite Wood Products," United States Environmental Protection Agency, last updated July 30, 2015, accessed July 30, 2015, <http://yosemite.epa.gov/oepi/rulegate.nsf/byRIN/2070-AJ92#2>.
- ⁵³ "Formaldehyde Emissions Standards for Composite Wood Products," United States Environmental Protection Agency, last updated July 30, 2015, accessed July 30, 2015, <http://yosemite.epa.gov/oepi/rulegate.nsf/byRIN/2070-AJ92#2>.
- ⁵⁴ Denise Valkenburg, "How office furniture makers tackled chemical transparency," *Green Biz*, Last modified October 11, 2013, accessed September 24, 2014, <http://www.greenbiz.com/blog/2013/10/11/how-office-furniture-industry-tackled-chemical-transparency>.
- ⁵⁵ Nadav Malin, "A Peek Inside Google's Healthy Materials Program," *Building Green*, accessed September 24, 2014, <http://www2.buildinggreen.com/article/peek-inside-googles-healthy-materials-program-0>.
- ⁵⁶ Rachel Abrams, "Home Depot Says It Will Phase out Chemical Used in Vinyl Flooring," *The New York Times*, April 22, 2015, accessed September 21, 2015, http://www.nytimes.com/2015/04/23/business/home-depot-says-it-will-phase-out-chemical-used-in-vinyl-flooring.html?_r=0.
- ⁵⁷ Shandra Martinez, "Haworth to remove 56 'potentially harmful' chemicals from products," *Mlive*, last modified April 25, 2014, accessed September 24, 2014, http://www.mlive.com/business/west-michigan/index.ssf/2014/04/haworth_to_remove_56_chemicals.html.
- ⁵⁸ Denise Valkenburg, "How office furniture makers tackled chemical transparency," *Green Biz*, last modified October 11, 2013, accessed September 24, 2014, <http://www.greenbiz.com/blog/2013/10/11/how-office-furniture-industry-tackled-chemical-transparency>.
- ⁵⁹ "Vinyl chloride," United States Environmental Protection Agency, last modified October 18, 2013, accessed October 23, 2014, <http://www.epa.gov/ttnatw01/hlthef/vinylchl.html>.
- ⁶⁰ "Pioneering Green Carpeting Manufacturer Interface Ends its Defense of PVC," Center for Health, Environment & Justice, last updated October 20, 2012, accessed August 4, 2015, <http://chej.org/2012/10/pioneering-green-carpeting-manufacturer-interface-ends-its-defense-of-pvc/>.
- ⁶¹ Fortune Brands, FY2014 Form 10-K for the Period Ending December 31, 2014 (filed February 25, 2015), p. 11.
- ⁶² HNI Corp., FY2014 form 10-K for the Period Ending January 3, 2015 (filed on February 27, 2015), section 1A, p. 14.
- ⁶³ Gregory Wallace, "Lumber Liquidators stock pummeled after '60 Minutes' probe," *CNN Money*, March 2, 2015, accessed July 30, 2015, <http://money.cnn.com/2015/03/02/investing/lumber-liquidators-60-minutes/>.
- ⁶⁴ Maggie McGrath, "Lumber Liquidators Sales Fall amid Controversy, But Not as Much As feared," *Forbes*, April 2, 2015, accessed July 30, 2015, <http://www.forbes.com/sites/maggiemcgrath/2015/04/02/lumber-liquidators-shares-pop-on-preliminary-q1-sales-results/>.
- ⁶⁵ Rachel Abrams, "Lumber Liquidators Reports a First-Quarter Loss," *The New York Times*, April 29, 2015, accessed July 30, 2015, http://www.nytimes.com/2015/04/30/business/lumber-liquidators-q1-earnings.html?_r=0.
- ⁶⁶ "California Carpet Stewardship Bill," Carpet America Recovery Effort, accessed October 23, 2014, <https://carpetrecovery.org/california-ab-2398/>.
- ⁶⁷ "Choosing Green Materials and Products," United States Environmental Protection Agency, last updated December 19, 2013, accessed July 31, 2015. <http://www.epa.gov/greenhomes/SmarterMaterialChoices.htm>.
- ⁶⁸ "CARE 2013 Annual Report," Carpet America Recovery Effort, last modified 2014, p. 7, accessed October 23, 2014, <https://carpetrecovery.org/wp-content/uploads/2014/04/CARE-2013-Annual-Report.pdf>.
- ⁶⁹ "Carpet," United States Environmental Protection Agency, last modified November 15, 2012, accessed October 23, 2014, <http://www.epa.gov/waste/conserva/tools/stewardship/products/carpet.htm>.
- ⁷⁰ "Product Stewardship and Extended Producer Responsibility (EPR)," United States Environmental Protection Agency, last modified March 20, 2014, accessed September 25, 2014, <http://www.calrecycle.ca.gov/epr/PolicyLaw/default.htm>.
- ⁷¹ "California Carpet Stewardship Bill," Carpet America Recovery Effort, accessed October 23, 2014, <https://carpetrecovery.org/california-ab-2398/>.
- ⁷² Melissa Desota, "Driving greater impact with less impact," Steelcase Inc., accessed September 26, 2014, http://www.steelcase.com/en/Company/Who/corporate-responsibility/Documents/CSR/story_disposal.html.

-
- ⁷³ Interface Inc., "ReEntry Services," 2014, accessed October 23, 2014, <http://www.interfaceinc.com/us/services/Reclamation/>.
- ⁷⁴ "Green Building Facts," U.S. Green Building Council, February 23, 2015, accessed April 8, 2015, <http://www.usgbc.org/articles/green-building-facts>.
- ⁷⁵ "About LEED," U.S. Green Building Council, 2015, accessed August 20, 2015, <http://www.usgbc.org/articles/about-leed>.
- ⁷⁶ "BREEAM: What Is BREEAM?" BREEAM: What Is BREEAM? Accessed April 17, 2015. <http://www.breeam.org/about.jsp?id=66>.
- ⁷⁷ Steelcase Inc., "Steelcase First to Receive MBDC's New Cradle to Cradle(TM) Product Certification," Last modified October 11, 2005, accessed September 26, 2014, <http://ir.steelcase.com/releasedetail.cfm?ReleaseID=371359>.
- ⁷⁸ Mohawk Industries, FY2013 form 10-K for the Period Ending December 31, 2013 (filed February 28, 2014), p. 5.
- ⁷⁹ "All About the Molecules: Sustainable Products Require Sustainable Materials," Herman Miller, 2015, accessed August 4, 2015, <http://www.hermanmiller.com/research/solution-essays/all-about-the-molecules.html>.
- ⁸⁰ Paul Murray, "Portfolio," MBDC, 2014, accessed September 26, 2014, <http://www.mbdc.com/portfolio/shaw/>.
- ⁸¹ Bridgett Luther, "Study looks at business benefits from cradle to cradle certification," The Guardian, June 24, 2014, accessed August 3, 2015, <http://www.theguardian.com/sustainable-business/cradle-to-cradle-certification-benefit-business-study>.
- ⁸² "LEED brings Cradle to Cradle into green building certification," Green Biz, last modified July 17, 2013, accessed September 26, 2014, <http://www.greenbiz.com/news/2013/07/17/leed-cradle-cradle-certification-green-building>.
- ⁸³ "LEVEL CERTIFIED FURNITURE PRODUCTS TO CONTRIBUTE TOWARDS LEED POINTS IN PILOT CREDIT," BIFMA, last modified June 12, 2013, accessed September 26, 2014, <https://www.bifma.org/news/128125/level-Certified-Furniture-Products-May-Contribute-Towards-Qualifying-for-LEED-Points-in-Pilot-Credit.htm>.
- ⁸⁴ "Certifications," Mohawk Industries, accessed September 26, 2014, http://mohawksustainability.com/greenproducts_certifications.html.
- ⁸⁵ Level Certification program website, BIFMA, last updated 2015, accessed July 30, 2015, <http://levelcertified.org/>.
- ⁸⁶ Armstrong World Industries, FY2014 Form 10-K for the Period Ending December 31, 2014 (filed February 23, 2015), p. 9, <http://files.shareholder.com/downloads/AMDA-1WNMSB/0x0xS1193125-15-57190/7431/filing.pdf>.
- ⁸⁷ Brandon Ruiz, *Industry Report 33721 Office Furniture Manufacturing in the US*, IBISWorld, June 2014, p. 5. Brandon Ruiz, *Industry Report 33712 Household Furniture Manufacturing in the US*, IBISWorld, May 2014, p. 32. Antal Neville, *Industry Report 32111 Sawmills & Wood Production in the US*, IBISWorld, April 2015, p. 6.
- ⁸⁸ "Forest Certification," PEFC, accessed January 10, 2015, <http://www.pefc.org/certification-services/forest>.
- ⁸⁹ "Legality of Timber," PEFC, accessed January 10, 2015, <http://www.pefc.org/forest-issues/sustainability/legality-of-timber>.
- ⁹⁰ "2013 Global Forest Products Facts and Figures," United Nations Food and Agriculture Organization, 2014, accessed August 19, 2015, p. 2-11, <http://www.fao.org/forestry/35445-0e287e9c252335f2936d3cdc5b6bbd5ff.pdf>.
- ⁹¹ "Forestry & Timber," Oekom Research Position Paper, November 2010, p. 1-5.
- ⁹² "Sustainable Forestry Management for Biodiversity Preservation and Soil and Water Conservation," United Nations Food and Agriculture Organization, 2014, accessed January 22, 2015, <http://www.fao.org/forestry/sfm/85292/en/>.
- ⁹³ "Indigenous People & Social Issues," Programme for the Endorsement of Forest Certification.
- ⁹⁴ Martinez, Shandra, "Haworth aims to be first West Michigan office furniture-maker to achieve this green goal," MLive, November 29, 2013, accessed September 29, 2014, http://www.mlive.com/business/west-michigan/index.ssf/2013/11/holland_office_furniture-maker.html.
- ⁹⁵ Ibid.
- ⁹⁶ "Forest Conservation: Responsible Trade," The Nature Conservancy, accessed October 23, 2014, <http://www.nature.org/ourinitiatives/habitats/forests/howwework/combating-illegal-logging-and-advancing-responsible-forest-trade.xml>.
- ⁹⁷ Alison Hoare, "Tackling Illegal Logging and the Related Trade," *Chatham House*, July 2015, p. 2, accessed August 19, 2015, http://www.chathamhouse.org/sites/files/chathamhouse/field/field_document/20150715IllegalLoggingHoareSummary.pdf.
-

-
- ⁹⁸ RockTenn, Inc., FY2012 Sustainability Report, p. 29.
- ⁹⁹ "Forest Certification." PERFC, accessed January 10, 2015, <http://www.pefc.org/certification-services/forest>.
- ¹⁰⁰ "Wood Purchasing Policy," Home Depot, 2013, accessed August 19, 2015, <https://corporate.homedepot.com/corporateresponsibility/environment/woodpurchasing/Pages/default.aspx>.
- ¹⁰¹ Shandra Martinez, "Haworth aims to be first West Michigan office furniture-maker to achieve this green goal."
- ¹⁰² Charlie Dewey, "Haworth moves swiftly toward sustainability goals," *Grand Rapids Business Journal*, April 18, 2014, accessed September 29, 2014, <http://www.grbj.com/articles/79451-haworth-moves-swiftly-toward-sustainability-goals>.
- ¹⁰³ Masco Corp., 2009 Corporate Responsibility Report, p. 24.
- ¹⁰⁴ Kathryn Fernholz and Florian Kraxner, "10 Certified forest products markets, 2011-2012," United Nations Food and Agriculture Organization Forest Products Annual Market Review, 2011-2012, p. 107, 112-113, accessed September 21, 2015, <http://www.unece.org/fileadmin/DAM/timber/publications/10.pdf>.
- ¹⁰⁵ G.D. Estep et al, "Analysis of Certified Wood Product Use in Commercial LEED Green Building Projects," *Wood and Fiber Science*, 47(3), 2015, p. 2-3, accessed August 5, 2015, [http://www.swst.org/publications/wfs/preprints/47\(3\)/WFS1787.pdf](http://www.swst.org/publications/wfs/preprints/47(3)/WFS1787.pdf).
- ¹⁰⁶ Silvio Marcacci, "Green Building Set to Equal Half of U.S. Construction By 2016," *Eco Watch*, August 19, 2013, accessed October 2, 2014, <http://ecowatch.com/2013/08/19/green-building-half-us-construction-2016/>.
- ¹⁰⁷ "Responsible Procurement Program," National Wood Flooring Association, accessed October 1, 2014, <http://www.nwfa.org/rpp.aspx>.
- ¹⁰⁸ David McLaughlin, "Lumber Liquidators Plunges after U.S. Raids Offices," *Bloomberg*, September 27, 2013, accessed September 29, 2014, <http://www.bloomberg.com/news/2013-09-27/lumber-liquidators-plunges-after-u-s-raids-offices.html>.
- ¹⁰⁹ "Liquidating the Forests," Environmental Investigation Agency, 2014, accessed September 29, 2014, <http://eia-global.org/campaigns/forests-campaign/liquidating-the-forests/>.
- ¹¹⁰ Author's Calculations based on Lumber Liquidator's market capitalization of \$3.1 billion on September 27, 2013, data from Bloomberg Professional services and David McLaughlin, "Lumber Liquidators Plunges after U.S. Raids Offices," *Bloomberg*, September 27, 2013, accessed September 29, 2014, <http://www.bloomberg.com/news/articles/2013-09-27/lumber-liquidators-plunges-after-u-s-raids-offices>.
- ¹¹¹ Laura Champine, and Jason Smith, "Analyst Report-Lumber Liquidators Holdings," Canaccord Genuity, last modified August 17, 2014, accessed September 29, 2014.
- ¹¹² Resolute Forest Products, Inc., FY 2014 Form 10-K for the Period Ending December 31, 2014 (filed March 2, 2015), p. 14.

SUSTAINABILITY ACCOUNTING STANDARDS BOARD®

1045 Sansome Street, Suite 450

San Francisco, CA 94111

415.830.9220

info@sasb.org

www.sasb.org

ISBN#: 978-1-940504-64-3

The content made available in this publication is copyrighted by the Sustainability Accounting Standards Board. All rights reserved. You agree to only use the content made available to you for non-commercial, informational or scholarly use within the organization you indicated you represent to keep intact all copyright and other proprietary notices related to the content. The content made available to you may not be further disseminated, distributed, republished or reproduced, in any form or in any way, outside your organization without the prior written permission of the Sustainability Accounting Standards Board. To request permission, please contact us at info@sasb.org.