AUTO PARTS
Research Brief

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Research Briefing Prepared by the
Sustainability Accounting Standards Board®
AUTO PARTS

Research Brief

SASB’s Industry Brief provides evidence for the material sustainability issues in the Auto Parts 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 material sustainability issue (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 sustainability issues likely to be material for companies within a given industry. However, the final determination of materiality is the onus of the company.

Related Documents

- Auto Parts Sustainability Accounting Standards
- Industry Working Group Participants
- SASB Conceptual Framework

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INTRODUCTION

The automobile has become one of the most popular solutions for personal mobility worldwide. Vehicle ownership is a source of personal independence and social status. Developed countries such as the United States, Australia, New Zealand, and Luxembourg have high rates of vehicle ownership; over 700 motor vehicles per 1,000 people.\(^1\) The rate of vehicle ownership is much lower in countries with developing economies, but is growing with GDP, creating significant new markets for auto makers. The Auto Parts industry supplies a wide range of products used almost exclusively for motor vehicle production. As an extension of the Automobiles industry, the Auto Parts industry depends on consumer demand for new vehicles in order to succeed.

Emissions from personal vehicles are one of the main contributors from the Transportation sector to global greenhouse gases (GHGs), and therefore to climate change. Additionally, the safety of drivers and passengers is a paramount goal of automobile manufacturers. With customer demand and regulatory pressure for more fuel-efficient and safer vehicles, the Auto Parts industry plays a crucial role in driving innovation and reducing environmental and social externalities of automobiles. Through auto parts innovation, companies in the industry are able to improve fuel efficiency and reduce emissions of automobiles as well as ensure the safety of vehicle drivers and passengers. As production has shifted to emerging markets in order to lower costs, and with the rising environmental and social sensitivities in such markets, there is a potential for increased regulatory scrutiny and public pressure for improved environmental management of auto parts manufacturing operations.

Management (or mismanagement) of material 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 Auto Parts companies reporting metrics on the material 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 Auto Parts industry:
- Reducing energy use in the manufacturing process;
- Improving resource efficiency through waste management practices;
- Ensuring the highest standards of quality and safety of auto parts;
- Managing environmental and social Sustainability Disclosure Topics

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externalities through product lifecycle management;
- Ensuring competitive behavior through fair pricing; and
- Ensuring strategies for supply chain management and sourcing of key inputs that reduce externalities while lowering risks to company value.

INDUSTRY SUMMARY

The Auto Parts industry mostly supplies parts to companies in the Automobiles industry, also known as original equipment manufacturers (OEM). The Auto Parts industry includes companies that manufacture and assemble a wide variety of motor vehicle parts and accessories, including engine exhaust, alternative drivetrain and hybrid systems as well as catalytic converters, aluminum wheels (rims), tires, rearview mirrors, and onboard electrical and electronic equipment.¹

The automobile manufacturing value chain business has a complex, highly fragmented supply chain that includes procuring raw materials (such as steel, aluminum, plastics, and glass), forming and producing parts, and assembling parts into finished products. The larger automotive industry includes several tiers of suppliers that provide parts and raw materials that are used to assemble a motor vehicle. Tier 1 suppliers are those that supply parts directly to OEMs, and are the only suppliers included in SASB’s Auto Parts industry. Tier 2 suppliers are those that provide inputs for Tier 1 suppliers; Tier 3 provides inputs to Tier 2 and so on. A number of Tier 1 suppliers, such as engine and stamping facilities, are owned and operated by OEMs, and are also known as captive suppliers. Some of the largest independent Tier 1 suppliers were previously captive plants, e.g., Delphi Automotive, Denso Corporation, and Visteon Corporation.

The global auto parts manufacturing market is valued at approximately $1.1 trillion, with no more than 15 percent reported as coming from a specific auto parts product. Tire manufacturing is the largest single segment of the Auto Parts industry, with $165.6 billion in global revenues, followed by seating and trim manufacturing with $116.3 billion, and drivetrain components manufacturing with $112.1 billion.² Companies listed on U.S. exchanges generate $166 billion from the industry. In 2013, the median operating margin for those companies was 6.9 percent while the median net income margin was 3.2 percent, which has been relatively flat over the last four years.³

The number of vehicles in use, in addition to the number of newly manufactured vehicles, is the main driver of demand in the Auto Parts industry. Periods of economic downturn are characterized by longer vehicle lifespans, and therefore a greater demand for replacement parts. In times of economic expansion, however, more vehicles are being manufactured and sold, which results in a higher demand for auto parts from OEMs.⁴ In the U.S., auto parts suppliers generate only between four and

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.
seven percent of their revenue from aftermarket sales, which cover replacement parts, while the majority of parts are sold to vehicle manufacturers. However, sales to OEMs generate a much lower profit margin than sales of aftermarket parts. Globally, this picture is different, with only 49.1 percent of sales revenues coming from OEMs, 27.3 percent from aftermarket sales, and 23.6 percent from exports.

The industry’s capital intensity is very high and companies achieve competitive advantage by investing in capital equipment. Cost of purchases, including raw materials, semi-finished products, and completed parts, accounts for approximately 65 percent of the industry’s revenue. Therefore, volatile prices of commodities such as steel have a strong impact on profit margins. Wages are the second highest portion of operating expenses for auto parts manufacturers and account for 10 percent of revenue.

The 2008 financial crisis was especially difficult for American auto makers and consequently for their auto parts suppliers. Since many large auto parts manufacturers were in Chapter 11 bankruptcy filings or had recently emerged from Chapter 11, several companies were able to negotiate with unions to lower wages and cut back or lower benefits. Between March and December of 2009, some of the largest auto parts companies, including Delphi, Visteon, and Dana, eliminated or reduced healthcare benefits for current and future workers and retirees.

At any given time, an OEM may have contracts with several suppliers that provide different components. While the total number of companies in the Auto Parts industry is large, there may be a limited number of suppliers for any specific component, giving some companies market dominance in specific segments. For some parts, OEMs may have only one or a limited number of suppliers, whose replacement could be difficult. Automobile manufacturing companies have both long-standing relationships and short-term contracts with suppliers. While switching costs are high, short-term contracts can help maintain a level of competition among suppliers.

Major industry players, including TRW Automotive, Delphi Automotive, Bridgestone, and Tenneco, operate plants across the Americas, Europe, and Asia and typically supply parts to several large auto makers. As auto manufacturers compete for market share, auto parts suppliers face intense pressure from OEMs to reduce prices. Thus, lower labor costs and increasing automobile sales in emerging economies are driving parts production to these markets. For example, the Asia-Pacific region accounted for 48 percent of global automobile sales in 2013, up from 34 percent in 2007. In North America, South America, Europe, Southern Africa, and Asia, regional parts producers tend to supply auto makers that produce vehicles for the regional markets. Even though auto parts are more heavily traded than assembled vehicles, parts that are more bulky, heavy, and model-specific, such as engines, transmissions, and seats, are produced close to final assembly plants, while lighter generic parts, such as tires and batteries, are produced where companies can take advantage of economies of scale and lower
As regulators are tightening GHG emissions standards, the demand for more advanced, lighter, fuel-efficient auto parts is expected to grow. As the market is shifting from developed economies to emerging economies and the demand for more fuel-efficient cars is growing, demand for different auto parts will adjust accordingly. For example, in the long run the popularity of electric cars may challenge the demand for auto parts used in traditional vehicles while boosting production of products used in zero-emission vehicles (ZEVs) or hybrids. The demand for emissions-reducing devices is growing in conjunction with the growth in sales of clean diesel powertrain offerings. Both auto parts suppliers and OEMs can drive this type of innovation. Innovative suppliers that address regulatory pressures or customer preferences are able to achieve greater sales. In other cases, OEMs and suppliers collaborate closely to push products to the next level.

**LEGISLATIVE AND REGULATORY TRENDS IN THE AUTO PARTS INDUSTRY**

The following section provides a brief summary of key regulations and legislative efforts related to the Auto Parts industry. The Automobilies industry is regulated by standards on safety, fuel economy, emissions control, noise control, vehicle recycling, use of substances of concern, vehicle damage, and theft prevention. In addition to regulations related to use and disposal of vehicles, the industry must also comply with local regulations regarding the environmental, social, and governance aspects of their operations. Many of these regulations, especially those pertaining to the environment and social factors, are becoming more stringent. Auto parts manufacturers are, in turn, affected by the regulations governing the Automobilies industry. Auto parts manufacturers can leverage these changing demands on OEMs and supply them with components that enable them to address these regulations.

Across the world, regulations around fuel efficiency of engines and emissions from vehicle use are growing more stringent. In the U.S., a sales-weighted average fuel economy of 45 miles per gallon (mpg) is mandated by the 2021 model year. Vehicle efficiency is also regulated at the state level. In California, for example, 4.5 percent of manufacturers’ state sales in 2018 must be ZEVs or a mixture of ZEV and plug-in hybrid. In contrast, E.U. regulations are more rigorous and based on tailpipe emissions. By 2020, vehicles sold in the region will be allowed to emit no more than 95 grams of carbon dioxide per kilometer (g CO₂/km), using a sliding scale based on vehicle weight. Non-E.U. countries, such as Canada, Mexico, and many countries in the Asia-Pacific region, are adopting fuel economy standards with specific regulations around disclosure of vehicle fuel economy at points of sale. As a result of these regulations, auto parts

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95 g/km is approximately equivalent to 57 mpg.
manufacturers are likely to see an increasing demand from OEMs for products aimed at improving fuel efficiency and reducing vehicle emissions.

Standards for motor vehicle safety vary across regions. In the U.S., motor vehicle safety is regulated by the U.S. National Traffic and Motor Vehicle Safety Act of 1966. For auto parts manufacturers, meeting safety standards can conflict with emissions and fuel economy standards because additional safety measures can add weight to a vehicle and reduce its fuel economy. But innovation in the use of lightweight, high-strength materials may help auto parts makers overcome this trade-off. The U.S. Department of Transportation’s National Highway Traffic Safety Administration (NHTSA) has the authority to order the recall of automotive products, including tires that have safety-related defects. Vehicles must be recalled if any safety standard is not met. The Transportation Recall Enhancement, Accountability, and Documentation Act, or TREAD Act, enacted on November 1, 2000, imposes numerous requirements on OEMs and auto parts manufacturers with respect to early-warning reporting of warranty claims, property damage claims, and bodily injury and fatality claims. Other countries, such as those in the E.U., also have safety regulations that are likely to become more stringent in the future. The E.U. puts an emphasis on active features such as stability control and automatic brake assistance.

The E.U. Directive on End-of-life Vehicles is built on the concept of extended producer responsibility. It is designed to encourage auto manufacturers to “limit the use of hazardous substances in their new vehicles; design and produce vehicles which facilitate re-use and recycling; [and] develop the integration of recycled materials.” According to the directive, 95 percent of the vehicle by weight must be recoverable and 85 percent recyclable by 2015. Since July 2003, the E.U. has banned the use of mercury, hexavalent chromium, cadmium, and lead in the components of vehicles placed on the market. This directive indirectly puts pressure on auto parts suppliers to modify parts in order to facilitate the process of recycling and reuse, in addition to pressure to limit the use of hazardous substances in their products. Moreover, the Auto Parts industry generates significant amounts of hazardous and non-hazardous waste. The E.U. Waste Framework Directive and the U.S. Resource Conservation and Recovery Act (RCRA) provide frameworks for the collection, transport, recovery, and disposal of waste from manufacturing facilities.

Finally, with the increasing computerization of cars and auto parts, companies in this industry are subject to the conflict minerals disclosure rule of the Dodd-Frank Act of 2010 and subsequent rules adopted by the U.S. Securities and Exchange Commission (SEC). Auto parts companies are required to publicly disclose their use of “conflict minerals” if they are “necessary to the functionality or production of a product” that the company manufactures or contracts to be manufactured. These minerals include tantalum, tin, gold, or tungsten, originating in the Democratic Republic of the Congo (DRC) or adjoining countries.
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 Auto Parts industry:

- **Lifecycle impacts**: The most significant environmental and social impacts of auto parts lifecycles occur at the use phase of the automobile rather than during assembly. While OEMs face increasingly stringent regulations that require constant innovation in the manufacturing process and design of vehicles, these are passed onto auto parts suppliers who must also innovate to address the regulations. The design of auto parts can reduce the significant environmental impacts associated with use-phase and end-of-life disposal of automobiles.

- **Resource scarcity**: Auto parts manufacturing is a material-intensive process that is impacted by growing resource scarcity and the increasing prices of critical materials.

As described above, the regulatory and legislative environment surrounding the Auto Parts industry emphasizes the importance of sustainability management and performance. Specifically, recent trends suggest a regulatory emphasis on reduction of environmental impacts and high safety standards, 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 Auto Parts 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. It also based on the results of consultation with experts participating in an industry working group convened by SASB.

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.

Similar to other manufacturing industries, auto parts companies use significant amounts of materials and generate hazardous and non-hazardous waste in their operations. This can create environmental externalities that may affect the value of an auto parts manufacturer. As resources become limited or exhibit price volatility, and legislation seeks to address externalities, companies need to manage these risks and innovate to reduce the environmental impacts of their operations in order to protect shareholder value.

Energy Management

Most of the energy consumption in the vehicle manufacturing process happens in the supply chain. Auto parts manufacturers’ use of electricity and fossil fuels in their production processes results in direct and indirect emissions of GHGs. Purchased electricity represents a major share of the energy sources used in the Auto Parts industry. Major uses of electricity in the industry vary depending on the type of component being manufactured. From extruding rubber and metals, die cutting, melting lead, and flash drying to cutting fabric, the various automated and manual processes all require energy. Therefore, by improving efficiency of the manufacturing process, companies can reduce their indirect GHG impact as well as reducing their operating expenses.

Fossil fuel-based energy production and consumption contribute to significant environmental impacts, including climate change and pollution, which have the potential to indirectly yet materially impact the results of operation of auto parts companies. Sustainability factors, such as GHG emissions pricing, incentives for energy efficiency and renewable energy, and risks associated with nuclear energy and its increasingly limited license to operate are leading to an increase in the cost of conventional energy sources while making alternative sources cost-competitive. Therefore, it is becoming increasingly material for companies in energy-intensive industries to manage their overall energy efficiency, their reliance on different types of energy and the associated risks, and their access to alternative energy sources.

Company performance in this area can be analyzed internally and externally 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.

Evidence

The energy consumed in the production of an automobile is concentrated in the supply chain of auto makers. Only 12 percent of the total energy
required in vehicle production is utilized by OEMs that assemble the final product. The remaining 88 percent is consumed by the supply chain, for activities ranging from metal mining and casting to parts production. As part of this supply chain, the Auto Parts industry can have a significant impact on lifecycle energy consumption through its own operations.

Manufacturing processes in the Auto Parts industry require significant energy consumption. According to 2011 data from the Annual Survey of Manufacturers, conducted by the U.S. Census Bureau, the “motor vehicle parts manufacturing” (NAICS code 3363) and “tire manufacturing” (NAICS code 32621) industries purchased 25.8 billion kWh of electricity for heat and power, which represented 3.1 percent of the total energy consumption of the manufacturing sector. Electricity purchases accounted for $1.7 billion of operating expenses, or 3.3 percent of the electricity purchases of the manufacturing sector. The Auto Parts industry (which includes NAICS codes 3363 and 32621 industries) reported electricity purchases that were 2.6 times that of the “motor vehicle manufacturing industry” (NAICS code 3361) in absolute amount of kWh and 3.5 times that of the “motor vehicle manufacturing industry” in terms of operating expenses. As the Auto Parts industry has relatively thin net income margins of 3.2 percent, initiatives aimed at reducing energy consumption may have a positive impact on operational efficiency. Due to the energy intensity of their operations, energy costs can be significant for auto parts manufacturers. In 2012, TRW Automotive, an active and passive safety auto parts manufacturer, spent more than $202 million in worldwide utility purchases. This highlights the company’s reliance on electricity and the significance of its Scope 2 emissions. While expenditure on utility purchases represented less than two percent of TRW’s revenue in absolute terms, the monetary cost is significant. According to 2013 CDP data, auto parts manufacturers consistently reported having significantly higher Scope 2 emissions than Scope 1 emissions. For example, for the fiscal year ended December 31, 2012, Delphi Automotive reported Scope 2 emissions of 592,662 metric tons of CO₂e, or over eight times their Scope 1 emissions. Likewise, for the fiscal year ended September 30, 2012, Johnson Controls reported 1,465,658 metric tons of CO₂e, nearly twice as much as their Scope 1 emissions. This indicates the importance of managing electricity use as a means of reducing exposure to rising or volatile energy prices that may include indirect carbon prices.

As an additional benefit to saving energy costs, decreasing energy consumption reduces direct and indirect GHG emissions. Many auto parts suppliers have stated targets for reduction of both Scope 1 and Scope 2 GHG emissions in their corporate social responsibility (CSR) reports. Goodyear, a tire manufacturer, states in its 2012 CSR report that, in 2011, all of its German plants signed a contract to purchase electricity from only renewable sources. The company has a target of reducing energy use by 15 percent by 2015 from 2010 levels. Denso Corporation, a Japanese diversified automotive parts supplier, has a similar emissions-reduction target, aiming to generate lower emissions than 1991 levels.
With electricity costs increasing, companies in the industry are trying to lower their reliance on grid electricity by investing in alternative sources of energy. For example, Delphi Automotive is trying to minimize environmental impacts at its Mexican facilities by using energy from renewable sources. According to the company, 11 of its plants across Mexico get 30 percent of their electric energy from renewable resources. The company recognizes material impacts associated with energy management in the following statement: “The cost of electric power has significant impact on the operations of Delphi Mexico. The energy market environment, generally with an upward trend, also impacts our operations’ competitiveness. That is why the global operations group in Mexico has been looking for lower cost, sustainable energy alternatives with reduced environmental impact.” As a result of the investment, Delphi reduced its electricity costs by three to five percent. 25

Value Impact
Energy management is likely to have a chronic impact on value though operational costs. Auto parts manufacturers that invest in process innovation aimed at reducing electricity consumption as well as research and development of alternative sources of energy are likely to improve their operational efficiency in the medium to long term. Lower reliance on traditional sources of energy and greater share of purchased or self-generated electricity from renewable sources indicates a firm’s ability to mitigate its environmental footprint and its exposure to energy cost increases driven by sustainability impacts.

Materials Efficiency & Waste Management
The auto parts manufacturing process involves the use of significant amounts of materials (including steel, iron, aluminum, and plastics, among others). Types of waste generated in the Auto Parts industry include machine lubricants and coolants, aqueous and solvent cleaning systems, paint, and scrap metals and plastics. 26 As stated above, the cost of materials represents a significant portion of auto parts manufacturers’ revenue. Due to constrained resources, material prices are likely to increase in the future. Therefore, companies that are able to manage their inputs through reducing and recycling manufacturing waste are likely to be better protected from price volatility. Moreover, auto parts manufacturers can achieve substantial savings, reduce energy intensity, and improve their operational efficiency by increasing the amount of waste that is recycled. Improvement of waste management can reduce environmental impacts, which would result in lower remediation costs as well as reduced risk of litigations and regulatory penalties.

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

- Amount of total waste from manufacturing, percentage hazardous, percentage recycled.
Evidence

Motor vehicle parts manufacturing (NAICS code 3363) ranked 25th in terms of the fifty largest quantities of RCRA hazardous waste generated in 2011 in the U.S. In 2011, auto parts manufacturing facilities in the U.S. generated 38,188 tons of hazardous waste. Motor vehicle parts manufacturing facilities spent around $220 million on pollution-abatement operating costs. The industry’s pollution-abatement capital expenditures accounted for 1.7 percent of pollution-abatement capital expenditures by all U.S. manufacturing industries, at around $102 million, according to EPA data for 2005 (the latest available data). Auto parts companies disclose capital expenditures related to mitigation of pollution in their SEC filings. For example, Goodyear Tire states: “We expect capital expenditures for pollution control facilities and occupational safety and health projects to be approximately $42 million and $74 million during 2014 and 2015, respectively.”

Further analysis of the 10-K filings of the largest auto parts companies shows that processing and disposal of hazardous and non-hazardous waste is likely to be a material issue for manufacturers. One reason for this is the regulatory liabilities that companies could face for remediation following inadequate treatment of waste. For example, Johnson Controls states that “the Company is responding to allegations that it is responsible for performing environmental remediation, or for the repayment of costs spent by governmental entities or others performing remediation, at approximately 38 sites in the United States,” including many landfills used by the company. Johnson Controls’ reserves for environmental liabilities totaled $25 million and $30 million as of September 30, 2012 and 2011, respectively. As of December 31, 2013 and 2012, TRW Automotive’s reserves for environmental matters were $68 million and $67 million, respectively. Annually, TRW spends $8 to $10 million for remediation activities and has reserves of approximately $70 million for ongoing and future remediation activities. According to the 10-K filings of auto parts makers Visteon Corporation, Borgwarner, and Federal Mogul, corporate environmental liabilities ranged from $1 million to $15 million as of December 31, 2012. Manufacturers also state that actual liabilities may exceed the reserves in cases that include additional violations, and the results of operations could be materially affected.

Waste treatment and disposal regulations can increase the risk of litigation, which may result in large compensation payments or settlements. Vehicle parts manufacturer East Side agreed to settle waste-related class action lawsuits for a total of $7.2 million. The lawsuits allege that the company failed for more than 15 years to adequately investigate and clean up contaminants, including the human carcinogen tetrachloroethylene (PCE), that have seeped into the ground water, contaminated the soil, and whose vapors have entered the houses neighboring the company’s facilities.

As mentioned in the industry description, cost of materials accounts for about 65 percent of revenue for auto parts manufacturers. Waste reduction initiatives can save expenditures on energy, water, and raw materials. JPMorgan estimates that
throughout the period from 2013 to 2015, Pirelli, Italian tire manufacturer, is likely to achieve around 36 percent of cumulative cost savings from raw materials, driven by waste reduction, the use of alternative raw materials, and sourcing cost rationalization. The report further states, “[u]sing Pirelli’s strategic and operational targets for 2013, we calculate that Pirelli can achieve between €20m–€35m in savings from more efficient use of raw materials.”

Innovation in manufacturing processes may not only reduce production costs and increase materials utilization but also reduce the amount of scrap metal generated. For example, in its Form 20-F, China Zenix Auto International, a vehicle wheel manufacturer, stated that its more cost-effective steel cutting technique helped the company to maximize the number of rounded plates that can be stamped from a steel plate. This resulted in a higher raw material utilization rate, reduced the amount of scrap steel, and lowered the total production costs. Furthermore, by using the spinning and pressing method instead of the traditional pressing method for shaping the wheel discs, the company reduced the amount of steel used per wheel. The method helped to reduce the weight of the wheel without lessening the strength and durability of the wheel disc.

The auto parts manufacturing plants of Robert Bosch GmbH, a multinational engineering and electronics company, use a remanufacturing initiative that includes an “intelligent return system” for old components that no longer work. The company remanufactures about 2.5 million parts each year, making the initiative a significant revenue source. For just one of the company’s facilities in Germany, the total volume of reused materials includes 240 tons of copper, 440 tons of aluminum, and 2,200 tons of steel annually. The system helped the company to reduce its waste by 5.4 percent from 2007 to 2011. According to Denso’s 2012 CSR report, the company is “working to expand its parts rebuilding business by practicing recycling with the following priorities (…): product reconditioning (rebuilding) > parts reuse > material recycling.”

At one of TRW’s facilities in Reynosa del Norte, Mexico, which manufactures plastic fasteners and components, the company reduced the amount of plastic scrap disposed by more than 600 tons per year and reduced electricity consumption by more than 1.2 million kWh per year. The improvements helped the company to save $129,000 per year in energy and waste-disposal costs. Similar initiatives aimed at minimizing raw materials consumption were taken at the TRW’s Pruszkow facility in Poland. TRW reduced its process-related costs at the facility by more than $50,000 per year.

**Value Impact**

Materials efficiency is likely to have a chronic impact on value through operational costs while waste management can result in acute impacts on value as a result of regulatory noncompliance. Cost of raw materials is a substantial part of the cost of goods sold. Companies that are able to re-use waste from scrap metals and plastic can achieve significant cost savings, improve profitability, and be better positioned to mitigate the impact of scarcity and price increases of raw materials.
Waste management and prevention of environmental externalities is driven by regulatory pressure. As the evidence shows, violation of environmental regulations around waste can lead to substantial fines and can require capital expenditures for pollution-control facilities and occupational safety and health projects. In their SEC filings, companies recognize that laws and regulations governing environmental safety and health are likely to become stricter over time, which could increase materiality of the issue in the future. Similarly, certain key resources for the industry are likely to become increasingly scarce in the future. The total amount of waste and percentage that is hazardous indicate the magnitude of potential financial impact from waste generation. Percentage recycled indicates the degree of mitigation of those risks, as well as the maximization of materials efficiency.

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.

In the Auto Parts industry, social capital issues revolve around the safety of automotive parts directly as well as the vehicles in which the parts are used, and the social externalities that may result from a failure to ensure driver and passenger safety.

The ability of companies to manage product quality and safety is critical to protecting their reputation and license to operate, and therefore their brand value.

Product Safety

The Center for Disease Control and Prevention (CDC) cites motor vehicle crashes as one of the leading causes of death in the U.S. According to the World Health Organization, traffic injuries are the leading cause of death worldwide for people between the ages 10 and 24. The total number of road traffic deaths is 1.24 million per year globally. Thus, safety features in automobiles that improve both occupant and pedestrian safety are crucial in reducing traffic injuries.

Product safety pertains to technological advancements that enhance the safety of vehicles. Vehicles sold in the U.S. must meet safety requirements set forth in regulations. If any component of a vehicle fails to meet standards, the vehicle must be recalled and the feature repaired or replaced at no cost to the customer. Auto parts companies are, in turn, impacted when a faulty part leads to a recall. Financial impact may go beyond acute costs associated with recalling defective parts, as companies could open themselves to risks involving lawsuits leading to significant compensations. Failure to improve safety of auto parts may result in a lower demand and loss of contracts with OEMs.

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

- Number of recalls and total units recalled.

Evidence
Safe auto parts are critical to ensuring safe vehicles. Responding in a timely manner when defects are identified can protect companies from regulatory action or customer lawsuits, which can affect company profitability through one-time costs and contingent liabilities. Through effective management of the issue, companies can enhance reputation and brand value and drive higher sales over the long term.

Product recalls represent a significant cost for companies and have a negative impact on brand value. From 1990 through September 2013 there were 3,303 recalls in the U.S., which affected nearly 385 million vehicles. Fuel system and service brakes were the most common reasons for the recalls, accounting for 290 and 315 recalls, respectively, followed by airbags and seatbelts at 267 and 252 recalls, respectively. According to Automotive News analysis of data from the NHTSA, the number of light-vehicle recalls has doubled from two decades ago, and in the period from 2012 to 2013, there was an average of one recall every two to three days. The vast majority, or 78 percent, of the 3,303 recalls were initiated by OEMs or auto parts manufacturers.39

While the primary impact of a recall is on the OEM, there are material impacts for the responsible auto parts company as well, either legally (by contract or associated liability) or by loss of customers. Several auto parts companies mention product recalls in their SEC filings as a factor that could materially and adversely impact the results of their operations. For example, Dana Holdings reports in its 2012 Form 10-K that “(t)here is no assurance that the costs of complying with current laws and regulations (...) that relate to health, safety and product liability matters will not adversely impact us. There is also a risk of warranty and product liability claims, as well as product recalls, if our products fail to perform to specifications or cause property damage, injury or death, including a risk that asbestos related product liability claims could result in increased liabilities.”40

To reduce the costs associated with recalls, automobile manufacturers share liabilities for safety recalls with their suppliers. In 2013, GM adopted a new purchasing contract under which suppliers can be held responsible if auto parts manufactured by the supplier pose safety risks to consumers.41 New terms could better align the goals of auto parts manufacturers with that of OEMs to ensure passenger safety and quality of vehicles.

Costs associated with recalls have substantial impacts on companies’ value and often result in lower earnings for the period of a recall. In April 2013, Honda, Nissan, Mazda, and Toyota recalled 3.3 million vehicles worldwide because the passenger-side airbag could deploy with excessive force.42 BMW recalled 220,000 of its 3 series cars for a related airbag issue.43 Takata Corporation, manufacturer of the airbags that caused the recall, reported that it would have an annual loss of $307 million in 2013 as a result of the recalls.44 Auto
parts manufacturers that are able to recognize safety issues in a timely manner and initiate voluntary recalls may minimize costs by avoiding regulatory intervention and potential penalties and contingent liabilities for failure to promptly address safety issues.

Recalls can involve any auto part; in the past defective tires have triggered recalls. In April 2011, Hyundai recalled 63,588 vehicles because they used Kumho Tires that were made with more recycled rubber than was allowed. In 2006, Cooper Tire & Rubber Co. recalled about 288,000 replacement tires due to concerns about slow leaks and cracking tires. More recently, in 2012 Cooper Tire voluntarily recalled 10,236 tires due to tread separation issues.

While safety problems can negatively impact auto parts companies, good performance in this area can also enhance their competitive position and positively impact financial performance. Tenneco, an auto parts company, summarizes in its 2012 Form 10-K how companies can benefit by making technological advancements in safety: “To serve the needs of their customers and meet government mandates, OEMs are seeking parts suppliers that invest in new technologies, capabilities and products that advance vehicle safety, such as roll-over protection systems, computerized electronic suspension, and safer, more durable materials. Those suppliers able to offer such innovative products and technologies have a distinct competitive advantage.” As an example of innovations in product safety, Autoliv introduced the first pedestrian protection airbag in cooperation with Volvo in 2012.

**Value Impact**

Inherent safety and safety features of auto parts is a major driver of market share and revenue growth for auto parts companies, as vehicle safety is central to OEMs’ competitiveness. Additionally, auto parts manufacturers are likely to share in the liabilities that OEMs face as a result of recalls or safety incidents. Automobile companies may reclaim part of their lost profits or cost of business interruption due to recalls or safety incidents if those incidents can be attributed to a supplier’s product. This can impact auto parts companies’ revenue and costs, and can create contingent liabilities. In the extreme, safety concerns may also lead automobile manufacturers to discontinue their relationship with their suppliers, resulting in revenue loss. The total number of recalls is a proxy for how well companies manage product safety, and provides an understanding of the probability and magnitude of the impact of recalls. The percentage of recalls voluntarily issued indicates a company’s proactive approach to managing the safety of its products.

**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 the Auto Parts industry, advances in business models and innovation can serve to reduce the lifecycle environmental impacts of automobiles. From an economic standpoint, such innovation directly impacts the total cost of vehicle ownership, which takes into account the purchase price as well as taxes, insurance, operating costs (such as fuel, maintenance, and repair), and resale value. Fuel efficiency and use of alternative energy may reduce owners’ operating costs. The longevity of a vehicle can also reduce costs by delaying purchase of replacement vehicles, lowering maintenance costs, and improving resale value. Such innovation therefore becomes attractive to auto companies’ consumers while lowering the industry’s lifecycle environmental impacts.

Emerging environmental and social trends in the Auto Parts industry, including changing customer preferences, higher regulatory requirements, and heightened regulatory scrutiny, are creating new innovation and business opportunities for companies. Those companies that are able to harness intellectual capital to address significant environmental and social challenges will therefore also be able to improve operational and financial performance.

Product Lifecycle Management

The product lifecycle management issue, for the purposes of this brief, focuses on innovations in the Auto Parts industry that drive fuel efficiency and improve end-of-life management of vehicles. Transportation accounts for a significant share of global GHG emissions. Motor vehicles’ combustion of petroleum-based fuels cumulatively generates significant direct GHG emissions and contributes to global climate change. While these impacts are further downstream from auto parts companies (resulting from the use of vehicles rather than their manufacture), regulations are focusing on auto manufacturers to address some of these issues; for example, by imposing fuel economy standards. Aside from the regulations, there is also customer demand for vehicles with lower environmental impacts and lower total cost of ownership. Together, these factors are driving auto manufacturers to lower use-phase emissions, which in turn increases OEMs demand for auto parts that improve fuel efficiency and reduce vehicle emissions.

In addition, millions of vehicles worldwide reach the end of their useful lives every year. At the same time, the rate of vehicle ownership is expanding globally, and leading to higher numbers of end-of-life vehicles (ELV). Recycling rates and amounts recovered per vehicle vary by country. In the U.S., about 95 percent of vehicles that reached the end-of-life stage were disassembled for recycling. In order to reduce the lifecycle impacts of vehicles and mitigate the strain on natural resources from the production of new vehicles, it is crucial for OEM
companies to take into consideration re-usage, modularity, and/or recycling principles. The role of auto parts manufacturers is therefore critical in the process. Auto parts manufacturers can lower the lifecycle impact of disposing their products at the end of their productive life by designing them to be easily recyclable and reusable and by applying modularity principles into their product designs. They can also create take-back programs to ensure safe disposal and reuse of the product. Take-back programs are usually geared toward parts like tires and batteries, which are replaced during the life of a vehicle, and so are disposed separately from the rest of the vehicle. Proper management of the issue enables reduction of negative environmental impacts from automobiles’ value chain. Moreover, the emergence of several laws regarding vehicles’ end-of-life phase have recently heightened the importance of the issue. These regulations include the E.U.’s Directive on End-of-life Vehicles, Japan’s 2002 End-of-life Recycling Law, South Korea’s 2007 Act for Resources Recycling of Electrical and Electronic Equipment and Vehicles, and the U.S.’s programs for safe removal of mercury from disposed vehicles and tire recycling and reuse.

Auto parts manufacturers that are able to improve vehicle fuel efficiency and reduce emissions at the use phase through product innovation will be able to satisfy growing demand from OEMs, pressured by stricter environmental regulations and customer preferences. Moreover, with input price volatility and resource constraints, automakers and auto parts companies that are able to develop take-back and recycling systems are likely to improve their long-term operational efficiency and strengthen their risk profile.

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

- Total addressable market and share of market for products aimed at improved fuel efficiency and/or reduced emissions;
- Percentage of products sold that are recyclable or reusable; and
- Weight of products and materials recycled or remanufactured.

Evidence

Transportation activities, which include “movement of people and goods by cars, trucks, trains, ships, airplanes, and other vehicles,” is a significant source of GHGs, accounting for 28 percent of U.S. emissions in 2011. According to the International Energy Agency, global transportation emitted 6.8 million metric tons of carbon dioxide (CO2) or 22 percent of global CO2 emissions from fuel combustion in 2010. Road transport alone accounted for 74 percent of transport emissions. Furthermore, in 2013, researchers at the Massachusetts Institute of Technology found that air pollution causes about 200,000 early deaths in the U.S. each year. Road transportation, the most

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Transportation covers emissions from all transport activity (in mobile engines), regardless of the economic sector to which it is contributing. Road includes the emissions arising from fuel use in road vehicles, including the use of agricultural vehicles on highways.
significant contributor, caused 53,000 premature deaths, with California being the most affected state. This highlights the magnitude of the impact of air emissions from the use phase of automobiles, which is prompting regulators around the world to take action.

In order to reduce emissions from automobiles, several countries have set emissions and fuel-efficiency targets for vehicles sold within their borders. They are also providing incentives to consumers to buy low-emission vehicles, often subsidizing the purchase cost. These actions are affecting both the demand for and supply of automobiles, with an impact on automobile company revenues and costs. This explains the relative success of electric vehicles for commercial and industrial uses, with sales that were expected to exceed $30 billion in 2013, compared to $28 billion in the consumer segment. The improvement of a vehicle’s fuel efficiency starts at the auto parts level, therefore, the industry has an opportunity to capture this growing market.

Improving fuel efficiency and reducing air pollution from automobiles are key trends impacting the Auto Parts industry. Top companies in the industry cite the importance of producing products that help improve vehicle performance, fuel efficiency, and air quality in their Form 10-K filings. For example, Lear Corporation, an American automotive interior systems manufacturer, cites the following in its 2012 Form 10-K as a key trend affecting its business:

“stricter fuel economy and emission standards, which will require more efficient engines, lighter weight materials and alternative energy powertrains, driving growth in high-power electrical distribution systems and lighter weight seating components.”

Other companies recognize and report on this trend in their SEC filings. TRW Automotive, for example, states in its 2012 Form 10-K that “[t]he desire to lessen environmental impacts and reduce oil dependence is spurring interest in green technologies and alternative fuels. As such, there is an increased focus on production of advanced powertrain, direct injection and start/stop technologies and hybrid and electric vehicles because of their fuel efficiency, and developing ethanol, hydrogen, natural gas and other clean burning fuel sources for vehicles.”

Similarly, Federal Mogul, manufacturer of powertrain components and vehicle safety products, identifies “focus on fuel economy, reduced emissions and alternative energy sources” and a “focus on vehicle safety” among “significant trends that are impacting the OE market.”

There are several ways in which auto parts companies are innovating to increase fuel efficiency or decrease emissions from vehicles. In September 2013, Tenneco announced that it was actively developing technology to convert waste heat in vehicles into electrical energy that could power electrical systems within the vehicle. Goodyear won the 2012 Breakthrough Award for its Air Maintenance Technology, which maintains optimum tire pressure, leading to fuel savings.
TRW developed electrically assisted steering systems that reduce emissions by eliminating the need for hydraulic fluid to power the system. The systems also improve the fuel efficiency of vehicles, as they are decoupled from the engine and do not cause paralytic loss, and enable fuel savings by shutting down an engine when not in use. Moreover, fully electric power steering (EPS) systems provide significant fuel savings and earn more attention from OEMs. Belt Drive EPS may save up to 0.4 liter/100 km of fuel use and reduce CO₂ emissions by approximately 8 g/km compared with hydraulic power steering. Friction in combustion engines is one of the factors influencing carbon emissions. TRW’s Global Engine Components group reduced the friction between a tappet and a cam by using specially coated tappets which led to lower fuel consumption and a reduction of carbon emissions by up to 3g/km.

Reducing the weight of automobiles can lead to direct fuel savings, and as the following examples show, auto parts companies have an important role to play in this. In 2013, BMW introduced i3 electric cars in Europe. These cars are partly constructed of carbon-fiber-reinforced plastic. The material is 50 percent lighter than steel and 30 percent lighter than aluminum. Autoliv’s new “green” airbag inflator weighs 20 percent less than traditional airbags. The Delphi Aluminum Cable is 48 percent lighter than a copper core cable, which results in weight reduction of about 1.8 kg per vehicle, increases fuel economy, and reduces emissions. Some companies are incorporating environmental considerations in their strategic decisions about product design. Faurecia, a European auto parts producer, includes reducing the weight and volume of components along with lowering GHG emissions as three of its six main considerations for product design.

Tire manufacturers can also help in improving the fuel efficiency of vehicles. For example, the use of husk-derived silica in tire manufacturing helped Pirelli to contribute to lower automobile fuel consumption, as it reduces heating of tire rubber when in contact with the road. Pirelli’s Cinturato™ P7™ Blue tires provide 23 percent less rolling resistance and are able to reduce fuel consumption of a sedan by 5.1 percent and save 123.5 kilograms of CO₂ over 15,000 km driven in a year. The NHTSA is currently working on the “Tire Fuel Efficiency Consumer Information Program,” which would inform consumers about the opportunity to improve fuel efficiency, safety, and durability of a vehicle by choosing proper tires. The program would implement a “national tire fuel efficiency rating system for replacement tires.” The information would be provided to consumers at the point of sale and online. In its Form 10-K, Goodyear recognizes the impacts related to the NHTSA initiative: “When the related rule-making process is completed, certain tires sold in the United States will be required to be rated for rolling resistance, traction and tread wear. While the Federal law will preempt state tire fuel efficiency laws adopted after January 1, 2006, we may become subject to additional tire fuel efficiency legislation, either in the United States or other countries.”

In addition to improving the fuel economy of vehicles, managing environmental impacts at the
end-of-life phase of vehicles, including reuse or recycling of auto parts, also can have a material effect on auto makers and auto parts manufacturers. According to the U.S. EPA, each year, nearly 27 million cars worldwide reach the end of their useful lives, and most are recovered for recycling. Nevertheless, the EPA reports that five million tons of auto shredder residue (ASR) are disposed of in landfills every year. If diverted from landfills, much of the material from vehicles can be recycled or repurposed for use, enabling cost savings and opportunities for revenue generation. At the same time, new regulations related to vehicle end-of-life in some markets could create regulatory compliance costs or lead to penalties for OEM companies.

The U.S. Department of Commerce estimates that the global remanufactured automotive parts industry is an $85–100 billion industry, presenting a significant opportunity for auto parts companies. Remanufactured products are reconstructed from used products by replacing the worn or damaged components. It is less costly to produce a remanufactured product than it is to produce a new product, and the process also requires less energy and generates less waste, contributing to the sustainability of the manufacturing process. For example, the Department of Commerce estimates that remanufactured automotive alternators require only 12 to 14 percent of the energy that it would normally take to manufacture a new alternator.

Managing tires and batteries at the end of their useful lives can be particularly challenging, but can also present opportunities for auto parts manufacturers. As of 2006, over 85 percent of end-of-life tires in the U.S., Europe, and Japan were recycled. However, elsewhere in the world, recycling rates are less favorable. According to the World Business Council for Sustainable Development, one billion tires are disposed of annually and an estimated four billion used tires are in landfills and stockpiles worldwide. Tires are banned from landfills in the E.U. In the U.S., 11 states have placed a total ban, and an additional 31 states have restrictions. Bridgestone opened a new tire recycling plant in Osaka, Japan, that makes retreads or remolds new tires from disposed tires. Since they require less raw material, the retreads can be sold at competitive prices. Industry leaders recognize the challenges and opportunities associated with managing and reducing lifecycle impacts of tires.

According to the U.S. EPA, 96 percent of all lead-acid batteries are recycled and most retailers that sell them also collect used batteries, as required by most states. Johnson Controls’ Florence Recycling Center in South Carolina has the capacity to recycle more than 14 million automotive batteries. The company cites “increasing global environmental and safety regulations related to the manufacturing and recycling of lead-acid batteries, and transportation of battery materials”, as well as the company’s ability to secure sufficient tolling capacity to recycle batteries” as material risks to operations.
in its 2012 Form 10-K. Despite high recycling rates in the U.S., rates may be lower in emerging markets. For example, in China, the biggest producer, consumer, and exporter of lead-acid storage batteries in the world, less than 30 percent of batteries are processed under official standards. Lead leaks pose significant environmental and health threats. Currently, the Chinese government is striving to increase the recycling rates of disposed acid-lead batteries. In March 2013, five ministries issued a document that said the rate of standardized recycling of waste lead-acid storage batteries would reach 90 percent by 2015. As production processes in the Auto Parts industry move to developing countries and environmental regulations become more stringent in those countries, auto parts manufacturers may be exposed to significant liabilities for noncompliance.

Several states have regulations requiring battery recycling. In 1996, the Congress passed the Mercury-Containing and Rechargeable Battery Act, which simplifies the process of collection and recycling of rechargeable batteries. The act requires regulated batteries to be easily removable from consumer products and to be properly labeled. It also establishes uniform standards for collection, storage, and transportation of certain batteries and restricts the use of certain mercury-containing batteries. To ensure maximum recoverability and recyclability of auto parts, companies may need to establish relationships with third parties and develop processes to enable efficient collection and recycling. For example, Johnson Controls developed the LHT Distributor Network in Mexico, which helped the company to collect and recycle nearly 100 percent of car batteries.

**Value Impact**

As stricter environmental regulations put pressure on automobile manufacturers to improve fuel efficiency and reduce emissions of vehicles, the demand for auto parts aimed at reducing environmental externalities will increase. While this lead to additional research and development (R&D) expenses in the short-term, innovative products that help fuel efficiency and emission reductions will drive competitiveness and revenue growth in the medium-term. Total addressable market and share of market for products aimed at improved fuel efficiency and/or reduced emissions provide a sense of how well companies are addressing this new market opportunity.

Stricter regulations around end-of-life management require higher recyclability and recycling rates of both manufactured vehicles and specific auto parts such as batteries and tires. These regulations can affect demand and increase compliance costs for auto parts companies. Noncompliance with regulations may lead to civil penalties and extraordinary expenses. Recovery and recycling of ELV materials can help auto parts manufacturers achieve significant costs savings and insulate them from the risk of rising prices or unavailability of key materials. The percentage of recyclable products indicates how companies are positioned to respond to increased demand from OEMs for these products.
Weight of products and materials recycled or remanufactured indicates the company’s performance in operational and resource efficiency.

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.

High concentration within certain segments of the Auto Parts industry makes it prone to anti-competitive behavior such as collusion and price-fixing. These activities ultimately result in costs passed to consumer through higher prices of vehicles. Moreover, auto parts companies rely on increasingly complex and geographically diverse supply chains for critical material inputs, magnifying the risks of supply disruptions. Effective materials sourcing that is able to mitigate supply risks will play an increasingly important role in shareholder value in the industry, as the supply chain and regulatory environments are constantly shifting.

Competitive Behavior

Authorities in several countries are currently investigating suspected anti-competitive behavior among global auto parts suppliers. While industry concentration is low, suppliers provide a wide range of parts, and competition for business within each category of parts may not be as robust. Thus, leaders in producing any specific auto part may have a lot of market power in that segment, creating antitrust concerns. In recent cases discussed in the Evidence section, companies were found in violation of antitrust laws. Antitrust regulators are also likely to focus in the future on industries that have been investigated or litigated in the past.

In the U.S., the Sherman Antitrust Act, Clayton Act, and Federal Trade Commission Act are the three major federal antitrust laws governing this and other industries. Antitrust laws, also known as anti-monopoly, competition, and trade practices laws, are not unique to the U.S. Companies can be charged for violating local antitrust laws in their markets of operations.

Antitrust regulations like the Sherman Act seek to maintain a competitive environment in order to provide consumers with the “benefit of lower prices, high quality products and services, more choices, and greater innovation.” As discussed above, SASB considers leadership and governance issues that are in potential conflict with the interest of broader stakeholder groups, such as customers, which can create a potential liability or remove a company’s license to operate. In the case of competitive behavior issues in the auto parts industry, there is
potential for conflict of business interests with the interests of customers and governments; for example, through possibly higher prices when a company dominates a market segment, as compared to a competitive environment. The most common forms of antitrust violations include price-fixing, bid-rigging, territorial allocations, and mergers and acquisitions. By colluding to fix prices, companies can act like a cartel, which is a violation of U.S. antitrust laws. Collusive behavior, such as that found among auto parts makers, may be criminally prosecuted, and corporations and individuals may be fined.

Relatively high concentration within some segments of the Auto Parts industry increases the risk that companies may be involved in price-fixing and bid-rigging activities. Such activities, in turn, could affect prices of cars for end users. If involvement in such activities is discovered and proved, the imposed penalties may have acute impacts on a company’s valuation.

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

- Amount of legal and regulatory fines and settlements associated with anti-competitive practices.

Evidence

As mentioned above, the concentration of companies manufacturing any specific auto parts product can be very high in the industry. For instance, globally, there are only three publicly traded companies manufacturing automobile glass. A small number of key market players in an industry may increase the propensity for collusion and price-fixing. In 2008, the European Commission (EC) fined four glass producers, Asahi, Pilkington, Saint-Gobain, and Soliver, for illegal market sharing. The total imposed fines were approximately €1.4 billion. The companies were allegedly exchanging commercially sensitive information regarding deliveries of car glass in the European Economic Area (EEA), in violation of bans on cartels and restrictive business practices by both the EC Treaty and the EEA Agreement. These companies controlled about 90 percent of the €2 billion market for automobile glass in the EEA.

In the U.S., for offences committed after June 22, 2004, the maximum fines and jail terms have been increased to $100 million for corporations and $1 million or a 10-year jail sentence (or both) for individuals.

Collusion and price-fixing by auto parts manufacturers ultimately leads to the costs being passed on to consumers through higher prices on vehicles. This conclusion was reached by the FBI’s Criminal Investigation Division during the investigation of multiple conspiracies by Japan-based auto parts manufacturers that were selling products to U.S. car makers. The conspiracies affected more than $5 billion in auto parts and more than 25 million cars sold to U.S. consumers. By February 2014, 25 auto parts manufacturers pleaded guilty or agreed to plead guilty and were charged by the Antitrust Division of the Department of Justice (DOJ)
with price-fixing and bid-rigging. The companies have agreed to pay a total of more than $1.8 billion in fines.90 Twelve individuals have been sentenced to pay criminal fines and to serve jail sentences ranging from a year and a day to two years each.90

According to the plea agreements, the companies have agreed to assist the U.S. DOJ with current investigations. The European Commission and authorities in other jurisdictions are also looking into antitrust violations related to the DOJ investigations.

There are several more recent high-profile cases of market manipulation by auto parts companies. Aisan, a Japanese auto parts maker, was charged a maximum penalty of $100 million for price-fixing in violation of the Sherman Act.91 Following a price-fixing fine of $28 million in October 2011, Bridgestone agreed to pay an additional $425 million criminal fine in February 2014. At the time it pleaded guilty and paid the first penalty in 2011, the company had failed to disclose the fact that it was also involved in an anti-vibration rubber parts conspiracy, which was a decisive factor in determining the $425 million fine.92 According to its 2012 annual report, Autoliv entered into a plea agreement with the DOJ and paid $14.5 million in fines for two counts of violations of antitrust laws involving a Japanese subsidiary. As a result, the company is also being investigated by representatives of the European antitrust authority, the Competition Bureau of Canada and the Korean Fair Trade Commission for antitrust behavior among suppliers of occupant safety systems.93 Similarly, in 2012, TRW Automotive Holdings agreed to plead guilty to one count of conspiracy in restraint of trade involving sales of occupant safety products and to pay $5.1 million to settle antitrust violations with the DOJ.94

In October 2012, Japanese auto parts maker Tokai Rika Co. agreed to plead guilty and pay $17.7 million in fines for its involvement in price-fixing. Another large auto parts supplier, Denso, also agreed to plead guilty in the DOJ’s ongoing investigation into price-fixing and bid-rigging.95 Denso has agreed to pay a criminal fine of $78 million for violations of antitrust laws in connection with sales of certain automotive components. Another Japanese supplier, Yazaki, will pay $470 million for violation of the Sherman Act.96 In addition, four Yazaki executives will serve prison time for their involvement in the violations. In November 2001, Furukawa Electric pleaded guilty and was fined $200 million for its role in price-fixing and bid-rigging.97

The sheer number of investigations into and confirmed cases of violations of antitrust laws by auto parts suppliers indicate the chronic nature of this problem. In February 2010, E.U. antitrust regulators investigated Lear Corporation, Leoni AG, and their competitors for suspected price-fixing. These cases have alerted not only antitrust authorities around the world, but also auto parts customers. In July 2013, Ford sued Fujikara for setting artificially high prices on wire harnesses supplied to them from 2000 to 2010.98

**Value Impact**

As the evidence shows, failure to comply with antitrust regulations may lead to significant fines and penalties, and potentially criminal prosecution
of a company’s executives. This can impose significant extraordinary expense and create contingent liabilities. Price-fixing and other market manipulation practices can also damage a company’s reputation with customers, resulting in lower market share and revenue. Market manipulation can lead to increased scrutiny from antitrust authorities and can impact companies’ ability to raise prices, with impact on revenue.

Increased regulatory oversight increases the risk of legal liabilities and a restrictive operating environment, raising the risk profile of companies and their cost of capital. Ongoing legal and regulatory fines indicate how well companies manage this issue, and provide an understanding of the probability and magnitude of the financial impact.

Materials Sourcing

Auto Parts companies are exposed to the risk of supply chain disruptions, input price increases or volatility, and damage to brand reputation, particularly when rare earth or “conflict” minerals and metals are used in their products. The use of minerals that originate from certain zones of conflict also exposes auto parts companies to regulatory risks associated with the Dodd-Frank Act.

Rare earth metals, also known as rare earth elements (REEs), and other critical materials play a crucial role in clean energy technologies. Electric and hybrid vehicles use substantial amounts of critical materials. With global regulations aiming to reduce emissions and increase fuel efficiency of vehicles, the share of hybrids and ZEVs produced by the Automobiles industry is likely to continue to increase in the future. Furthermore, more electronic components are being used in automobiles, and these also can contain critical materials. Therefore, OEMs are likely to demand more auto parts that could contain critical and conflict minerals. These factors make the sourcing of REEs important to the Auto Parts industry.

Despite the name, some rare earth elements are actually abundant. However, they are difficult to extract and refine because they tend to be lumped together in rocks along with radioactive thorium and uranium. There are material sourcing risks related to rare earth minerals and metals due to a low substitution ratio, the concentration of deposits in only a few countries, and geopolitical considerations. Auto parts companies also face competition due to increasing global demand for these minerals from other sectors, including Technology, Renewable Energy, and Infrastructure, which, along with supply constraints, can result in significant price increase and supply chain risks.

The industry also faces supply chain challenges in the use of conflict minerals. Companies face pressure from legislation, actions by non-governmental organizations (NGOs), input price risks, and leadership from peers to track and eliminate the use of minerals responsible for conflict in the DRC. To the extent that an auto manufacturer uses these minerals in their production processes, the company is required to provide disclosures around the origin of the minerals in accordance with the Conflict Minerals provision of the Dodd-Frank Act.
Act (see the Regulatory Trends section above). This requires an active monitoring of the supply chain.

Auto parts companies with strong supply chain standards and the ability to adapt to increasing resource scarcity will be better positioned to protect shareholder value. Innovations at the design phase to reduce dependence on some of these materials also contributes to lower risk. Companies that are able to limit the use of critical and conflict materials, as well as secure their supply of the materials they do use, will not only minimize environmental and social externalities related to extraction but also protect themselves from supply disruptions and volatile input prices. Conflict minerals also represent reputational risks, therefore auto parts manufacturers need to ensure that their supply chain is “conflict-free.”

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

- Percentage of products by revenue that contain critical materials;
- Percentage of tungsten, tin, tantalum, and gold smelters and refiners within the supply chain that are verified conflict-free; and
- Discussion of the management of risks associated with the use of critical materials and conflict minerals.

Evidence
According to the U.S. Department of Energy (DOE), electric vehicle (EV) technology is one of the technologies that are most dependent on the availability of rare earth metals. Such materials as lanthanum, cerium, praseodymium, neodymium, nickel, manganese, cobalt, and lithium are used in the manufacturing of EV batteries. A current-generation hybrid vehicle battery contains several kilograms of rare earth elements. The DOE study concluded that, over the short and medium term (by 2025), dysprosium and neodymium were the elements with the highest importance to clean energy and the highest supply risk.\(^{100}\)

Additionally, critical materials such as magnesium are increasingly used in light weighting of automobile components. Reducing weight by 22.5 kg is estimated to improve fuel economy by about one percent. Magnesium is used by auto parts manufacturers in engine blocks, cylinders, steering systems, wheel rims, clutches, and transmission cases.\(^{101}\)

Auto parts companies may face shortages of critical materials used in the expanding EV segment of the industry and in automobile electronics, not just due to physical constraints of recovering the materials, but also due to the concentration of deposits in only a few countries and the low substitution ratio of the materials. Shortages of critical materials can also result in price spikes. In 2011, China was producing 97 percent of the world’s supply of REEs as a by-product of the country’s iron-ore mining activities. Furthermore, the British Geological Survey estimates that China is the top producer of 27 out of 52 critical minerals and metals.\(^{102}\) In 2010, China restricted the export of rare earth elements, supposedly due to environmental concerns; this led
to a five-fold increase in the price of such materials while Chinese companies were able to obtain the same materials at lower cost. As China increases development of its own clean energy technologies, the country could significantly limit exports of critical materials in the future.

Deposits in some other countries also create supply risks. Lithium is one such material for which there may be supply shortages, as more than half of the global reserves of lithium are found in Bolivia alone. The country’s reserves of lithium amount to 73 million metric tons, and President Evo Morales claims the reserves are going to be nationalized. The political situation in the country further exacerbates the risk of sourcing the metal from Bolivia.

The U.S. government recognizes supply risks and price increases of REEs, and in 2011 announced that it would allocate $30 million in grants toward the development of alternatives that do not depend on the environmentally hazardous and increasingly costly minerals.

A 2011 study conducted by PriceWaterhouseCoopers (PWC) demonstrated the materiality of mineral and metal scarcity for the Auto Parts industry. The survey was completed by 69 senior executives from different sectors, including 11 companies in the automotive sector, and found that 73 percent of respondents in the automotive sector perceived minerals and metal scarcity as a pressing issue for their company. Moreover, among automotive sector respondents, 73 percent thought that their company could experience an unstable supply of these inputs within the next five years, with 55 percent of respondents rating the severity of the supply instability as “high” or “very high.” The level of engagement and concern for the issue in the automotive industry is further reflected by the fact that 64 percent of respondents indicated that their company was well-prepared to mitigate the impact of scarce minerals and metals. This issue is key for auto parts suppliers, since they are the key link between OEMs and metal producers.

In certain regions of the world, such as the DRC, the mining and sale of conflict minerals such as tantalum, tin, tungsten, and gold (3TG), provide funding for armed conflicts and their mining is carried out under conditions that do not respect human rights. Electronic components used in modern automobiles use a substantial amount of tin, tantalum, and tungsten, exposing automobile companies not only to regulatory risk associated with the Conflict Minerals rule of the Dodd-Frank Act but also to input price volatility and reputational risks.

The DRC accounts for 6 to 8 percent of global tin production, 15 to 20 percent (or 8.6 percent in 2009, according to the U.S. Geological Survey) of tantalum, and 2 to 4 percent of global tungsten supply. Global input prices of 3TG have shown high volatility, sometimes related to the conflict in the DRC. A 31 percent increase in tin prices in 2008 coincided with a rebel offensive against the DRC’s primary tin-trading center. The price per kilogram of tantalum, which is a rare metal and a conflict mineral that is used in the production of automotive, medical, and aircraft equipment as well as semiconductors, rose from $110 in 2011 to nearly

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$300 in 2012 due to supply constraints and rising demand.\textsuperscript{110} As the use of electronic components becomes more prevalent in automobiles, the Auto Parts industry may become more exposed to risks related to conflict minerals.

There is mounting evidence of interest from companies and investors in the issue of using conflict-free minerals. Major players in the industry, such as Johnson Controls, TRW, Delphi, Autoliv, Tenneco, and Federal Mogul, already provide disclosure on this issue to investors in their latest 10-K filings. For example, Johnson Controls states that “there may be only a limited number of suppliers offering ‘conflict free’ minerals, we cannot be sure that we will be able to obtain necessary conflict minerals from such suppliers in sufficient quantities or at competitive prices. Also, we may face reputational challenges if we determine that certain of our products contain minerals not determined to be conflict free or if we are unable to sufficiently verify the origins for all conflict minerals used in our products through the procedures we may implement.” \textsuperscript{111}

Compliance with the Conflict Minerals provision of the Dodd-Frank Act is likely to be costly. The SEC estimates that it will cost affected companies a total of $3 to $4 billion in the first year and at least $200 million each year afterward to comply. This cost will be spread across roughly 6,000 companies, including companies in the aerospace and automotive industries. \textsuperscript{112}

Among automobile and auto parts manufacturers, there appears to be consensus around the necessity of eliminating the use of conflict minerals in the production of auto parts and automobiles. According to a statement released by the Automotive Industry Action Group (AIAG), an industry group of major auto manufacturers, “(t)he Automotive Industry fully supports this direction and is investigating ways to ensure that the parts and assemblies in our vehicles and products, regardless of where they are assembled or sold, do not contain Conflict Minerals, which have contributed to the armed conflict in Central Africa.”

**Value Impact**

Failure to effectively manage the sourcing of key materials can result in higher input costs and lost revenue due to production disruptions. Companies may also face regulatory compliance costs associated with the sourcing of conflict minerals if they do not verify or avoid the use of conflict minerals. The increasing scarcity or unavailability of certain key materials used by auto parts companies, as well as the price volatility of such materials, can increase companies’ risk profile and cost of capital if these companies rely heavily on such materials and are unable to source them effectively. Investment (R&D) in alternatives to critical materials and conflict minerals can mitigate such price increases and supply constraints.
The percentage of a company’s products that contain critical materials indicates a company’s exposure to the risk of supply disruption and price volatility for key components. The percentage of tungsten, tin, tantalum, and gold smelters within the supply chain that are verified conflict-free indicates the extent of a company’s exposure to conflict minerals, in terms of both supply and regulatory risk.
APPENDIX I
FIVE REPRESENTATIVE AUTO PARTS COMPANIES

<table>
<thead>
<tr>
<th>COMPANY NAME (TICKER SYMBOL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Johnson Controls (JCI)</td>
</tr>
<tr>
<td>Goodyear (GT)</td>
</tr>
<tr>
<td>TRW Automotive (TRW)</td>
</tr>
<tr>
<td>Delphi Automotive (DLPH)</td>
</tr>
<tr>
<td>Lear Corporation (LEA)</td>
</tr>
</tbody>
</table>

This list includes five companies representative of the Auto Parts industry and its activities. This includes only companies for which the Auto Parts 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 July 9, 2014.
### APPENDIX IIA

#### EVIDENCE FOR SUSTAINABILITY DISCLOSURE TOPICS

<table>
<thead>
<tr>
<th>Sustainability Disclosure Topics</th>
<th>EVIDENCE OF INTEREST</th>
<th>EVIDENCE OF FINANCIAL IMPACT</th>
<th>FORWARD-LOOKING IMPACT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HM (1-100)</td>
<td>IWGs</td>
<td>%</td>
</tr>
<tr>
<td>Energy Management</td>
<td>50*</td>
<td>73</td>
<td>2</td>
</tr>
<tr>
<td>Materials Efficiency &amp; Waste Management</td>
<td>50*</td>
<td>91</td>
<td>5</td>
</tr>
<tr>
<td>Product Safety</td>
<td>63*</td>
<td>100</td>
<td>1</td>
</tr>
<tr>
<td>Product Lifecycle Management</td>
<td>70*</td>
<td>96</td>
<td>4</td>
</tr>
<tr>
<td>Competitive Behavior</td>
<td>60*</td>
<td>64</td>
<td>6</td>
</tr>
<tr>
<td>Materials Sourcing</td>
<td>33</td>
<td>82</td>
<td>3</td>
</tr>
</tbody>
</table>

**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, 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

<table>
<thead>
<tr>
<th>Evidence of Financial Impact</th>
<th>REVENUE &amp; EXPENSES</th>
<th>ASSETS &amp; LIABILITIES</th>
<th>RISK PROFILE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Revenue</td>
<td>Operating Expenses</td>
<td>Non-operating Expenses</td>
</tr>
<tr>
<td>Market Size</td>
<td>New Markets</td>
<td>Pricing Power</td>
<td>COGS</td>
</tr>
<tr>
<td>Energy Management</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Materials Efficiency &amp; Waste Management</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Product Safety</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Product Lifecycle Management</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Competitive Behavior</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Materials Sourcing</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>

- **MEDIUM IMPACT**
- **HIGH IMPACT**
### APPENDIX III
SUSTAINABILITY ACCOUNTING METRICS – AUTOMOBILES

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>ACCOUNTING METRIC</th>
<th>CATEGORY</th>
<th>UNIT OF MEASURE</th>
<th>CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Management</td>
<td>Total energy consumed, percentage grid electricity, percentage renewable</td>
<td>Quantitative</td>
<td>Gigajoules (GJ), Percentage (%)</td>
<td>TR0102-01</td>
</tr>
<tr>
<td>Materials Efficiency &amp; Waste Management</td>
<td>Amount of total waste from manufacturing, percentage hazardous, percentage recycled</td>
<td>Quantitative</td>
<td>Metric tons (t), Percentage (%)</td>
<td>TR0102-02</td>
</tr>
<tr>
<td>Product Safety</td>
<td>Number of recalls and total units recalled(^7)</td>
<td>Quantitative</td>
<td>Number</td>
<td>TR0102-03</td>
</tr>
<tr>
<td>Product Lifecycle Management</td>
<td>Total addressable market and share of market for products aimed at improved fuel efficiency and/or reduced emissions</td>
<td>Quantitative</td>
<td>U.S. Dollars ($), Percentage (%)</td>
<td>TR0102-04</td>
</tr>
<tr>
<td></td>
<td>Percentage of products sold that are recyclable or reusable</td>
<td>Quantitative</td>
<td>Percentage (%) of units sold</td>
<td>TR0102-05</td>
</tr>
<tr>
<td></td>
<td>Weight of products and materials recycled or remanufactured</td>
<td>Quantitative</td>
<td>Metric tons (t)</td>
<td>TR0102-06</td>
</tr>
<tr>
<td>Competitive Behavior</td>
<td>Amount of legal and regulatory fines and settlements associated with anti-competitive practices(^6)</td>
<td>Quantitative</td>
<td>U.S. Dollars ($)</td>
<td>TR0102-07</td>
</tr>
<tr>
<td>Materials Sourcing</td>
<td>Percentage of products, by revenue, that contain critical materials</td>
<td>Quantitative</td>
<td>Percentage (%) by revenue ($)</td>
<td>TR0102-08</td>
</tr>
<tr>
<td></td>
<td>Percentage of tungsten, tin, tantalum, and gold smelters and refiners within the supply chain that are verified conflict-free</td>
<td>Quantitative</td>
<td>Percentage (%)</td>
<td>TR0102-09</td>
</tr>
<tr>
<td></td>
<td>Discussion of the management of risks associated with the use of critical materials and conflict minerals</td>
<td>Discussion and Analysis</td>
<td>n/a</td>
<td>TR0102-10</td>
</tr>
</tbody>
</table>

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\(^7\) Note to TR0102-03 - Disclosure shall include a discussion of notable recalls, such as those that affected a significant number of vehicles of one model or those related to a serious injury or fatality.

\(^6\) Note to TR0102-07 - Disclosure shall include a description of fines and settlements and corrective actions implemented in response to events.
APPENDIX IV: Analysis of SEC Disclosures
Auto Parts

The following graph demonstrates an aggregate assessment of how the top ten U.S.-listed Auto Parts companies by revenue are currently reporting on sustainability topics in the SEC Disclosures.

![Graph showing the type of disclosure on material sustainability topics for Auto Parts companies.]

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


2 Bloomberg Professional service, accessed July 10, 2014, using the BICS <GO> command. The data represents global revenues of companies listed on global exchanges and traded over-the-counter (OTC) from the Automobiles industry, using Levels 3 and 4 of the Bloomberg Industry Classification System.

3 Author’s calculation based on data from Bloomberg Professional service, accessed September 3, 2014 using Equity Screen (EQS) for companies listed U.S. exchanges that generate at least 20 percent of revenue from their Auto Parts segment.


7 Ibid.


18 UN Global Compact and Accenture, Sustainable Energy for All: Opportunities for the Automobile Industry, 2012.


43 "BMW recalled 1,500 cars over airbag fear," Daily Mail, May 9, 2013.


51 Five Winds International, Product Stewardship Opportunities within the Automotive Industry, Minnesota Office of Environmental Assistance, August 2003, p. 29.


76 Johnson Controls, FY2012 Form 10-K for the Fiscal Year Ending September 30, 2012 (filed November 19, 2012),


84 Data from Bloomberg Professional service, accessed on September 4, 2014, using the BICS <GO> command.


