Sustainable Supply Chain Management in Information Technology

Trends in responsible supply chain management across the information technology value chain

A Study by Malk Sustainability Partners

MALK
Sustainability Partners

About Malk Sustainability Partners

Malk Sustainability Partners (MSP) is a specialty management consultancy that guides businesses in developing profitable corporate sustainability strategies. We enhance the social responsibility, resource efficiency, and environmental management of our clients to maximize earnings and build winning brands in an era of increasing stakeholder interest in sustainability.

Our expertise in responsible business practices helps our clients to manage and exceed customer expectations, capture and create new markets, and cut operating costs to improve profits. Furthermore, MSP's depth of knowledge, extensive experience, and broad technical network positions us to be a trusted advisor to companies across the information technology sector, providing them with the tools to implement a successful corporate sustainability program.

For more information about MSP, please visit us online at www.MalkSP.com

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Glossary

BSR	Business for Social Responsibility
CDP	Carbon Disclosure Project
CERES	Coalition for Environmentally Responsible Economies
CFS	Conflict-Free Smelter
CSR	Corporate Social Responsibility
EHS	Environmental, Health, and Safety
EICC	Electronic Industry Citizenship Coalition
EPA	Environmental Protection Agency
EPEAT	Electronic Product Environmental Assessment Tool
E-TASC	Electronics - Tool for Accountable Supply Chains
GESI	Global e-Sustainability Initiative
GHG	Greenhouse Gas
ICT	Information Communication Technology
IPE	Institute for Public and Environmental Affairs
ISO	International Organization for Standardization
IT	Information Technology
KPI	Key Performance Indicators
MSP	Malk Sustainability Partners
NGO	Non-Governmental Organization
OEM	Original Equipment Manufacturer
SA	Social Accountability
SAQ	Self-Assessment Questionnaire
SEC	Securities and Exchange Commission
SSC	Sustainable Supply Chain or Supply Chain Sustainability
SSCM	Sustainable Supply Chain Management
The Industry	Electronics & IT Industry
UNGC	United Nations Global Compact
UN PRI	United Nations Principles for Responsible Investment
VAP	Validated Audit Process

HIGHLIGHTS

- Despite suppliers' desire to guard margins by resisting perceived cost increases from transparency requirements, stakeholder interests indicate transparency, both mandated and incidental, will continue to increase. Prepare for it.

- Growth of regulatory requirements makes compliance a continual challenge, one that a sustainable supply chain management strategy can help overcome.

- IT companies sense a growing imperative to use sustainable supply chain management to minimize risks and harness opportunities.

- Enterprise buyers are influenced by sustainability-oriented product labeling and this trend is expected to increase.

- Beginning to develop and implement a successful sustainable supply chain strategy can be daunting, but best-in-class examples and specialized advisors provide guidance to simplify the process.

Introduction

For many companies, the majority of their environmental and social impacts are not within their own operations, but instead are spread out across their supply chain. This is particularly true in the information technology (IT) sector, where companies tend to have small direct workforces and environmental footprints but a much greater impact across the long value chain necessary to produce electronics and IT services. In an era of intensifying scrutiny of supply chains and increasing interest in triple bottom line management (people, planet, profit), understanding and effectively managing sustainability in the supply chain is a critical issue.

In our firm's work across the IT sector, we have seen different approaches and perspectives on this important aspect of triple bottom line management. To this end, this study engaged a wide range of companies in the sector, from Facebook to Oracle to Dell, seeking to understand the drivers of supply chain sustainability efforts, the challenges, and efforts underway to manage them.

We are extremely grateful to the team that made this effort possible, particularly to Michael Shoemaker, Anqi Chen, and Ben Flores. Special thanks go out to Pat Tiernan, who so generously made introductions to advance this effort and, of course, to the 34 respondents who shared their insights and perspectives.

Zach Goldman
Partner
Malk Sustainability Partners

Our Approach

The MSP team engaged 34 organizations across the electronics and information technology sectors; 29 corporations and 5 industry experts. Corporate participants included consumer electronics manufacturers, chip designers, telecom operators, cloud software companies, and enterprise buyers of electronic equipment. Interviewees held supply chain management positions or sustainability management roles with supply chain management responsibilities.

The interviews focused on drivers of sustainable supply chain management, specific issues of concern, and approaches to managing sustainability across the long and complex IT value chain.

The results of these interviews were augmented by secondary research as well as MSP's experiences.

Background
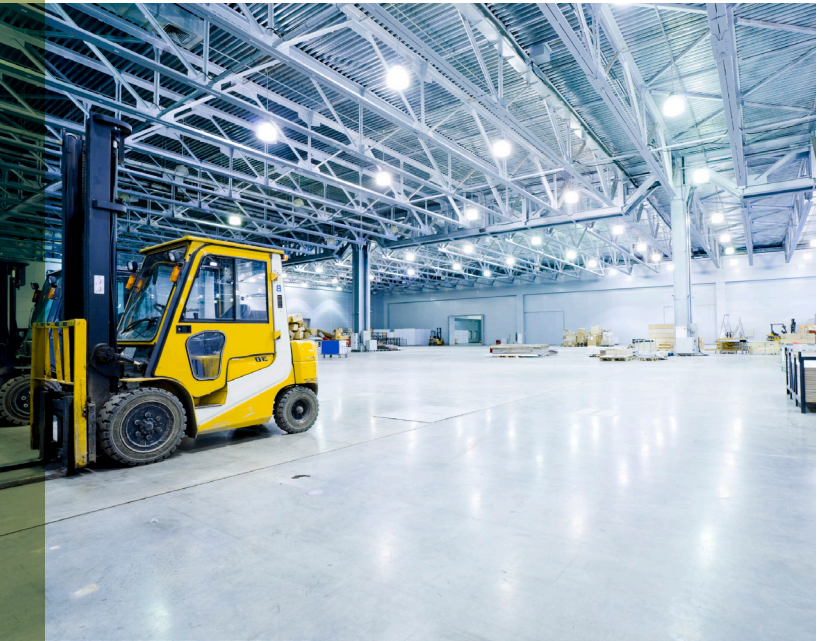
Sustainability scrutiny of supply chain management began in earnest in the early 1990s, when non-governmental organizations (NGOs) scrutiny and public concern induced Chiquita (formerly United Fruit) to take a deep dive into its supply chain. Chiquita has a long and controversial history of environmental management and labor relations with its suppliers in Central and South America. Their highly criticized supply chain management performance had become a serious business continuity issue. By partnering with Rainforest Alliance and developing a new set of supplier standards, which would become known as the Better Banana Program, Chiquita reformed its image, enhanced its supply chain's resiliency, and reduced costs.[1]

During the same decade, apparel and shoe companies such as Nike came under fire for labor practices in Asia. This concern drove increased transparency of worker and environmental standards across another major industry.

More recently, leading companies such as Apple, Sony, and Motorola have faced complicated challenges related to the presence of hazardous materials in consumer products, pollution from e-waste, and environmental and labor abuses in factories overseas. As such, growing interest in the management of triple bottom line issues across supply chains has extended to the electronics and IT industry.

In a time of ever-increasing demand for transparency, these companies are now striving to understand and address these issues across their operations, and those of their vendors. However, there is a long way to go. A recent study by the United Nations Global Compact (UNGC) and Accenture found that 81 percent of communications CEOs (primarily CEOs of telecom and IT companies) believe that companies should integrate sustainability across their supply chain, yet only 48 percent believe that their company has done so.[2]

The electronics value chain is a long and complex one. Products pass through many hands from the wolframite and cassiterite mines, which produce essential minerals, to the distribution of smart phones and servers. This is a sector where companies' suppliers can also be their customers and competitors. Therefore, there are unique properties intrinsic to sustainable supply chain management (SSCM) in the electronics and IT industry, referred to going forward as the 'Industry', that need focus and attention.

This study attempts to shed light on SSCM across this value chain. It examines why companies in the sector are focusing on this issue, which issues they are concerned about, and how they are addressing these concerns. Our intent is to arm the reader with a working knowledge of this complex and contentious issue and the tools being used to better manage it.

Executive Summary

Findings from our interviews with 34 supply chain managers and experts across the electronics value chain are summarized below. A full list of our survey respondents can be found in Appendix A to this paper.

1. Drivers of Supply Chain Sustainability

Focus on SSCM has increased dramatically since 2005, with 89 percent of respondents having implemented a sustainable supply chain (SSC) policy as of 2012. Our respondents described a range of drivers behind their efforts. These drivers are briefly explored below.

- **Thirty-four percent of respondents identified stakeholder interest as a primary driver of their SSCM efforts.** This interest generally comes from customers and investors.

  Customers listed by respondents included government, enterprise buyers, individual consumers, universities, original equipment manufacturers (OEMs), and retailers. Self-Assessment Questionnaires (SAQs) on sustainability management are the most common form of inquiry suppliers receive from customers. Increasingly, customers expect firms to go beyond legal compliance to establish SSCs. Public sector customers are also adding sustainability requirements by referencing standards such as the Electronic Product Environmental Assessment Tool (EPEAT).

  Investor and shareholder opinions also influence these efforts. Investors are focusing on sustainability because poor SSCM can lead to loss of revenue and reduced returns. Additionally, publicly traded companies are subject to more stringent transparency and governance standards; as a result, their supply chain policies are more visible and may draw shareholder interest.

- **Thirty-one percent listed regulatory pressure and compliance as a primary driver of their companies' efforts.** Commonly referenced regulations include the California Transparency in Supply Chains Act, Dodd-Frank Section 1502, and the Sarbanes-Oxley Act. All of these regulations promote greater transparency in supply chain management, particularly around the issue of conflict minerals.

- **Thirty-one percent cited risk and cost management as a key issue.** These citations reflect an increasing understanding of the relationship between sustainability factors and cost competitiveness. Managers are leveraging efficient procurement to reduce operating, product, and compliance costs. Doing so has resulted in hundreds of millions of dollars in cost savings for some electronics companies.

  The risk of negative media exposure and NGO attention from supply chain mismanagement incidents is also important. A number of major Industry companies have weathered such incidents in recent years and this has driven their increasing focus on SSCM.

- **Twenty-four percent believe leadership drives their SSCM programs.**
Leadership refers to pressure from industry initiatives and internal interest in SSCM either from employees or a company's top management.

2. Supply Chain Sustainability Issues

While the sustainability issues in the electronics supply chain often reflect those in other industries, there are some concerns unique to the Industry. The prioritization of such concerns can vary at different points in the value chain. Our survey found:

- **Social issues are the primary area of sustainability concern, followed by management and the environment.** Forty-two percent of our respondents cited social issues such as labor concerns and human trafficking as their primary sustainability concern. Thirty-seven percent referenced management and governance issues, such as transparency and risk management, and 21 percent mentioned environmental management as their primary concern.

- **The most prominent social issues are conflict minerals and labor hours.** Conflict minerals, and the related regulations requiring transparency, are a leading concern for many respondents. Nearly 20 percent of respondents referenced the controversial issue of labor hours and difficulty finding the middle ground between fair hours and worker desire for overtime. Child labor, a concern in other industries, was not reported to be highly relevant in the Industry's supply chain.

- **E-waste management and electronics take-back are common environmental concerns.** Divergent e-waste regulations, with over 25 variations in the United States alone, were described as a complex issue to navigate. However, companies such as Cisco and Brightstar have developed effective and highly profitable take-back programs.

- **Water and greenhouse gas (GHG) management at OEMs and other vendors are of increasing interest.** Use of heavy metals in electronics manufacturing and the associated water pollution has drawn the attention of NGOs, such as the Institute of Public Environmental Affairs (IPE) in China, though regulation has thus far been relatively ineffective in addressing this issue. GHG management across the supply chain is another area of increasing interest, with many large customers such as Dell and Intel expecting major vendors to set targets to reduce their GHG footprints.

- **The complex and interwoven nature of the electronics supply chain complicates SSCM.** Many large OEMs contract manufacture for numerous brands and are often bigger than their customers. At the same time, it is not uncommon for companies to be competitors with their customers in different facets of their business. These issues have fostered a complex environment which frustrates some efforts toward greater transparency and sustainability. Cross-industry coordination is attempting to address this issue.

3. Management & Monitoring of Supply Chain Sustainability

Companies are employing a number of techniques in SSCM, from SAQs to audits, with industry associations playing a key role.

- **Approaches to SSCM vary between companies.** Some companies employ a dedicated sustainability department to manage supply chain sustainability while others disperse accountability across existing departments. Chapter 3 explores the respective pros and cons related to each approach.

- **Sustainability is generally seen as adding value to supply chain management.** Roughly 70 percent of respondents see SSCM as adding value, often through increased supply chain resiliency, improved brand image, and enhanced cost-efficiency.

- **Eighty-nine percent of respondents have a supply chain sustainability policy in place defining their organizational approach to the issue set.** These policies are often based on common standards such as those developed by the Electronic Industry Citizenship Coalition (EICC). Sixty-one percent of respondents also update their policy on a regular basis.

- **Stakeholder communication, supplier transparency, and managing regulatory requirements are the most common challenges that affect SSCM.** Thirty-three percent of companies have experienced challenges communicating policies and commitments to stakeholders, while 30 percent see their suppliers' transparency as a primary challenge and 27 percent cited difficulty navigating regulatory requirements.

- **SAQs are a common form of supplier engagement, with audits becoming more prevalent.** Seventy-one percent of respondents utilize SAQs to monitor compliance with SSC requirements. Fifty-four percent leverage audits; of these, 5 percent employ third-party auditors, 45 percent conduct first and second-party audits, and 50 percent utilize both types.

- **EICC and the Global e-Sustainability Initiative (GeSI) are cross-industry forums which provide useful tools for SSCM.** Many respondents use EICC's Validated Audit Process (VAP) as their standard engagement process in working with vendors on sustainability. The Electronics – Tool for Accountable Supply Chains (E-TASC), developed jointly by the EICC and GeSI, is used to collect and share SSC information. Some respondents noted that they would like to see EICC and GeSI act more aggressively to promote sustainability across the Industry's supply chain.

- **Awarding business to suppliers which comply with sustainability standards and scorecards are common approaches to encouraging vendor compliance.** A few respondents claimed to have denied business to non-compliant suppliers.

4. Taking Action

Chapter 4 highlights our team's predictions of what electronics companies can expect in the coming years and offers recommendations to assist in building a platform and benefiting from SSCM practices. Our insights include:

- **Transparency, both mandated and incidental, will continue to increase. Prepare for it.** Between regulation, customer inquiries, and the wide dissemination of camera-phones, companies' supply chain operations will become increasingly public. Supply chain managers should prepare for this and the growing public stance that firms are responsible for the activities of their overseas suppliers.

- **Sustainability oriented product labeling which accounts for SSCM practices across the supply chain, such as EPEAT, will become increasingly important to winning business.**

- **To effectively navigate and capitalize on SSCM, companies should consider the following actions:**

  1. Assign accountability for SSCM with a seasoned operations expert who is empowered to engage with departments across the company.

  2. Define their position through a policy covering key elements of concern. Industry coalitions provide valuable tools which can serve as reference.

  3. Map their supply chain for risks and opportunities by prioritizing significant product or service lines, tracing the flow of materials backward, and tracking compliance across this flow.

  4. Realize cost savings by systematically targeting efficiency in procurement decisions, product packaging and features, and compliance management.

  5. Get engaged in industry coalitions such as the EICC or GeSI. Doing so provides access to tools and a chance to influence a rapidly evolving dialogue on important issue sets.

1 - Drivers of Supply Chain Sustainability

Introduction

Twenty years ago the apparel industry, including industry leader Nike, was forced to identify and rectify unsustainable supply chain practices. In commenting on SSCM in electronics, Tim Mohin, Director of Corporate Sustainability at AMD noted that, "This is our industry's 'Nike moment.' We are heading for continued upward awareness and scrutiny on supply chain behavior."

Reflecting this, the number of corporate commitments to SSCM in the Industry has grown exponentially. By 2010, over 85 percent of our 29 corporate respondents had adopted SSC policies.[1] This change reflects a rapid increase in attention paid to sustainability in the Industry driven by a range of factors including stakeholder requirements, risk and cost management, regulatory compliance, and industry leadership. Our respondents cited the drivers below, which are explored throughout this chapter:

- Thirty-four percent identified stakeholder interest, primarily from customers and investors, as a key driver of their SSCM efforts. Customers include the government, enterprise buyers, individual consumers, universities, original equipment manufacturers (OEMs), and retailers.

- Thirty-one percent listed regulatory pressure and compliance as a primary driver of companies' efforts, particularly evolving regulation around conflict minerals and e-waste.

- Thirty-one percent cited risk and cost management as a key issue, reflecting an increased understanding of the relationship between sustainability factors and cost competitiveness.

- Twenty-four percent believe leadership, meaning industry initiatives and the desire to lead in corporate sustainability, drives companies' SSCM commitments.
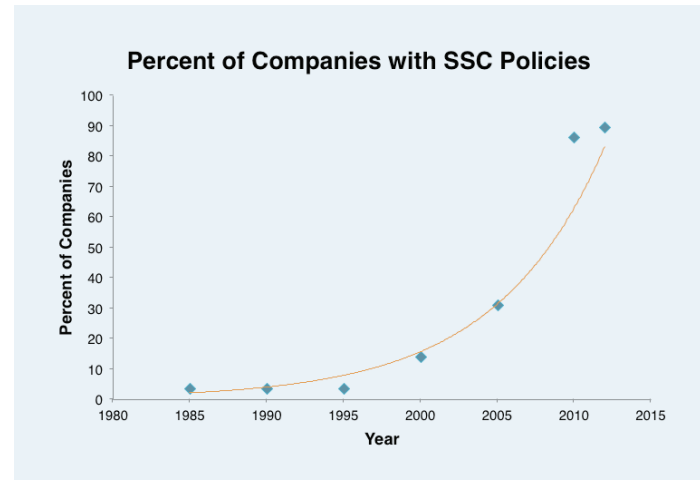

Figure 1: The cumulative number of respondent companies that developed an SSC policy in the past 20 years.
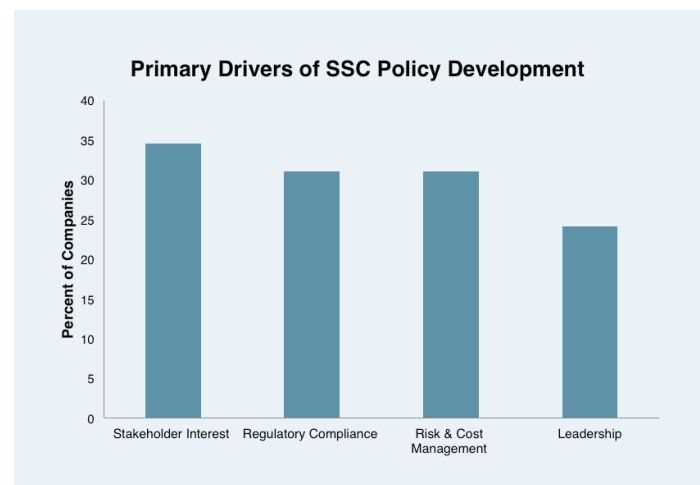

Figure 2: Respondents' primary drivers of SSC policy development.

Stakeholder Interest

The most cited driver of SSCM, stakeholder interest, encompasses an increasing number of inquiries from a broad range of stakeholders including customers, investors, individual consumers, and NGOs.

Large Customers Expect SSCM

Inquiries from large customers in both the public and private sectors have increased dramatically in recent years. Over 70 percent of our respondents received inquiries from customers on their SSCM practices and/or submitted such inquiries to their own vendors.

The Private Sector Leads in SSCM Inquiries

Inquiries from private sector customers were consistently referenced in our interviews and 'B to B' interaction is perceived as a crucial impetus in the evolution of SSCM programs. Large retailers and brands are increasing their own sustainability commitments and pushing them up the Industry supply chain through supplier requirement forms and customer inquiries.

Supply Chain Manager at a Global Electronics & IT Company

"One considerable challenge for companies further [up] the supply chain is that the business case for investing money in improving the management of corporate social responsibility (CSR) issues in the supply chain is less obvious. In other words, brands feel the heat more because they are directly exposed to the pressure of consumers, investors, and other stakeholders. B to B companies rely on their customers (the brands), as well as other stakeholders, for their business case and do not have exactly the same reputational risks; they are at [least one tier] removed, and the further away they are from the consumer market, the more diluted the pressure becomes. B to B companies therefore tend to rely on the strong approach of their customers (and other stakeholders) to insist on action in the supply chain. Then the resources can more easily be obtained and allocated to those actions."

As noted in the quote above, consumer-facing brands are often the first to establish such policies. Such companies are more concerned with corporate image as their business operations interact directly with the general public. As a result, they must carefully manage their value chains to avoid unsustainable incidents that result in consumer, government, or NGO scrutiny. Wal-Mart is a leading example of this, as explored in the call-out section below.

Case Study:
Wal-Mart: Solving a Public Relations Crisis while Becoming an Industry Leader

Between 2004 and 2005, Wal-Mart faced immense public scrutiny over allegations of child labor, underpaying for overtime, and cutting employee healthcare benefits. The company launched a series of TV commercials attempting to counter negative publicity, with limited results.

In October 2005, then CEO Harold Lee Scott announced the introduction of a sweeping sustainability initiative to reduce the company's impact on the environment. Scott wanted to make Wal-Mart the global sustainability innovator and believed that the company would profit by doing so.

In an interview with the New York Times, Scott said "I think an outcome of what we are doing with sustainability [is] that customers will have a better feeling about Wal-Mart and more positive reaction to Wal-Mart".[2]

Wal-Mart has since led SSCM efforts by pushing stringent ethical sourcing requirements onto suppliers across its massive supply chain. Some of the suggestions/requirements that pertain specifically to the Industry include but are not limited to:

- Energy Star
- Electronic Product Assessment
- EPEAT Registry – Silver or Gold
- Supplier List Transparency
- Reporting GHG emissions to the Carbon Disclosure Project (CDP)
- Materials Efficiency

Although many of Wal-Mart's electronics suppliers have sustainability policies of their own, the retailer's rigorous auditing process has influenced other suppliers to adopt more sustainable manufacturing practices or face the risk of being phased out of their value chain.

Government Clients Buy on SSCM

Government buyers of electronics are setting increasingly strict sustainability criteria. Our respondents who do substantial business with government clients consistently referenced those contracts as a driver of SSCM.

Leilani Latimer, Senior Director of Sustainability Initiatives at Sabre Holdings

"If you are working with government contracts today, there are procurement guidelines with regards to women and minority-owned businesses. Governments are now extending that to include sustainable companies. We need to broaden our perspective on procurement and see that by changing the choices we make with our procurement spend we can really make more change happen."

In addition to adopting basic sustainability programs, such as diversity requirements, companies seeking government contracts often require third-party product verifications. For example, an executive order signed in 2007 requires that federal agencies purchase the vast majority of electronics hardware from the EPEAT registry.[3]

Eric Johnson, Senior Sustainability Engineer at Sony Electronics

"Now, the federal government is required to purchase PCs that are EPEAT certified for 95% of their consumption and considers manufacturer led reuse and recycling programs as a part of drivers behind purchasing decisions. Sony Electronics has volunteered to partner with the Environmental Protection Agency (EPA) to promote certified recycling efforts, protect public health, and support best practices in electronics stewardship."

As the U.S. government continues to focus more attention towards the sustainability of both its contractors and their supply chains, government contracts will play an increasingly significant role promoting the adoption of sustainable business practices in the United States and Europe through scenarios such as the one described below.

Case Study:
Apple Reregisters with EPEAT after Losing its Contract with the City of San Francisco

In early July 2012, Apple removed all its personal computers, laptops, and monitors from the EPEAT registry.[4] Rumors circulated that the reason was Apple's soon to be released version of the MacBook Pro would not meet EPEAT's e-waste recycling requirements.[5] As a result, the City of San Francisco announced it would no longer purchase Apple products for its employees, forcing Apple to reverse its decision just days later.[6]

Apple's decision to relist its products in the EPEAT registry suggests the company faced both direct and indirect risks. The City of San Francisco's decision held direct implications for Apple, as it spanned across 50 departments and a total of 28,000 employees.[7] More importantly, its decision could indirectly affect Apple by influencing other institutional buyers to begin considering similar action. For example, The University of California considered suspending all purchases of Apple products because its bylaws require electronic equipment to comply with environmental standards considered in EPEAT's registry.[8] Executive Order 13423 already requires federal agencies to buy EPEAT certified products, and the UK and Canadian governments have similar procurement policies.[9] Thus, had Apple stood by its decision to withdraw from the registry, its sales and brand image would have undoubtedly suffered severe ramifications. This example demonstrates the power green labels and institutional procurement policies can exert in the Industry.

Investor Interest is Growing

Investor interest in sustainable business operations and SSCM has increased dramatically in recent years. In the Industry, this is often driven by concerns over public image, the risk of business disruptions or impaired revenue, and regulatory compliance.

"We are a publicly listed company and we want to govern our internal operations – that is the reason for implementing those policies," explained Michael Chen, Global Vendor Manager at Trend Micro, in discussing why sustainability concerns were incorporated into their corporate policy. Additionally, many major shareholders are also setting their own commitments to sustainable investment strategies. For instance, the United Nations Principles for Responsible Investment (UN PRI) has grown to roughly 1,100 signatories since its formation in 2006.[10] These guidelines instruct investors on managing sustainability issues, including SSCM, in their portfolios. As a result, a growing number of investment managers are watching environmental, social, and governance metrics when engaging with investment companies through forums such as the Coalition for Environmentally Responsible Economies (CERES).[11]

Individual Consumers Play a Limited Role

One issue which arose consistently was the role of individual consumers in driving SSCM. While the individual buyer of an electronics product is increasingly aware of sustainable brands, the sustainability of a product is merely one of many factors considered when making purchasing decisions.

Tony Kingsbury, Director of Corporate Sustainability at ChemRisk and an Executive in Residence at the Haas Business School at University of California at Berkeley, commented on the limited nature of consumer interest in sustainability, saying "Consumers know the right answers, but they [currently] do not buy things with this knowledge. Take the example of Apple. [They] got hammered in the news and negative press about some of their practices with Foxconn, but did people stop buying iPhones and iPads? In surveys people tell us they do not like the sort of labor practices seen in the Foxconn facilities making Apples product, but people love their products more and continue to purchase them while ignoring the labor practices."

While consumers' purchasing decisions are not entirely dictated by sustainability, they often value energy efficient products and respond critically to health risks posed by unsustainable business practices. As such, consumer-facing brands understand the need to adopt sustainability policies as a form of risk management. Although they cannot completely rely on sustainable business practices to sell products, clearly product attractiveness and cost play important roles, they must also consider the threat unsustainable production practices pose to business continuity and future sales. External organizations, like non-profit watchdogs and institutional investors, expect these companies to have functioning sustainability programs.

Regulatory Pressure and Compliance

Thirty-one percent of respondents cited regulatory compliance as a primary driver of their SSCM policies and programs. The scope of sustainability regulation is evolving rapidly and the resulting legal frameworks can be complex and difficult to navigate.

Commonly referenced SSCM regulations are listed in the table below.

Name	Focus	Requirements/Implication	Penalties
California Transparency in Supply Chains Act (2010)	Human Trafficking	» Retailers and manufacturers that earn at least $100 million of gross revenue in California must audit suppliers to certify that no form of human trafficking or compulsory labor is present in their supply chain » Companies must publicly disclose this information	» Failure to comply with disclosure requirements results in action from the Attorney General of California for injunctive relief
Wall Street Reform and Consumer Protection Act (Dodd-Frank) - Section 1502 (2010)	Conflict Minerals	» Companies must certify to the Securities and Exchange Commission (SEC) that their supply chain uses no minerals sourced from conflict regions in or around the Democratic Republic of Congo, though companies have a grace period if they do not know the origins of the minerals in their products	» Federal law imposes no penalty for sourcing conflict minerals, and instead relies on public pressure to deter U.S. companies from such practices » States (CA & MD), municipalities (Pittsburg, PA, St. Petersburg, FL, and Edina, MN), and some universities have enacted legislation that prohibits contracts with companies that source conflict minerals
Sarbanes-Oxley Act (2002)	Executive Accountability	» Corporate executive officers must personally verify that all information submitted to the SEC is true	» Criminal indictment and potentially jail time

Table 1: Commonly Cited SSCM Regulations[12]

Respondents noted executive participation in SSCM efforts increased as regulations began to hold corporations accountable for publicly disclosed CSR information. In their current form, the regulations listed above rely on reputational ramifications to motivate compliance.[13] At present, the financial consequences for non-compliance with the laws explored above is somewhat limited, and increasing penalties for such failures can be expected to drive additional focus on SSCM.

Effectively managing these regulatory requirements is further explored in Chapter 3.

Risk and Cost Management

Thirty-one percent of respondents cited risk and cost management as a primary driver of their SSCM programs. Risks included supply chain incidents compounded by negative exposure from the media or NGOs, as well as supply chain resiliency concerns. Cost management refers to opportunities that reduce operating, product, and compliance costs through SSCM.

Incidents Drive Action

Supply chain incidents have historically driven sustainability initiatives at a number of major electronics companies. Some notable examples are explored in the table below.

Company	Incident	Explanation	Response	Effects
SONY (2001)	Playstation 1 Cadmium Crisis	» Dutch authorities prevented a shipment of 1.3 million systems and 800,000 accessories, valued at $160 million, from being shipped to retailers because the products' wires contained cadmium concentrations in excess of the EU Cadmium Directive's (91/338/EEC) 0.01% mass limitation	» Sony spent 18 months investigating 6,000 factories to identify the source. A Sony press release indicated contaminated models accounted for ~7% of the Playstations available in Europe at the time	» Sony quantified the impacts of the crisis and associated corrective actions on sales and operating profit to be $124 million and $58.5 million, respectively
MOTOROLA (2006)	Improper working conditions at Giant Wireless, Motorola's primary Chinese supplier	» Workers collectively demanded protective equipment, but management neglected to address the complaint » Employees developed chronic health conditions	» Motorola began to audit suppliers and create Corrective Action Plans to work with problematic suppliers » Motorola led the development of the GeSI Supplier Self-Assessment Questionnaire	» By the end of 2006, Motorola made 115 facilities from 68 different suppliers complete the GeSI Supplier Self-Assessment Questionnaire
ERICSSON (2008)	Improper working conditions in Bangladesh	Four suppliers' factories were found with employees working: » Near 460° Celsius zinc baths without protective gear » Near untreated wastewater » Underage	» Ericsson developed a Supplier Code of Conduct in 2009, and conducted over 500 audits and over 500 more assessments of high risk supplier facilities » All general agreements with suppliers require they adhere to the Code of Conduct and Environmental Requirements	» Ericsson terminated relations with three of the four suppliers, but chose to work with the fourth (Confidence Steel) to correct the unsustainable business practices
APPLE (2009 - 2011)	Suicides and death at Foxconn, Apple's main supplier	» 2009 – 25 year old Foxconn employee committed suicide after being interrogated about a missing iPhone prototype » 2010 – A series of 16 suicides attempts, by workers ranging in age from 18 to 24, concentrated in a two month period raised more concerns about Foxconn's employee treatment » 2011 – Three workers were killed, and 15 injured, by an explosion caused from combustible dust in Foxconn's Chenegdu factory	» In 2010, Apple commissioned an independent team to interview Foxconn employees about their quality of life and investigate Foxconn's treatment of employees » Foxconn decided to stop condolence payments (~$14,000) to employees who commit suicide and only pay legally obligated compensation » Foxconn hired psychological counselors, established a 24-hour care center, and installed large nets on certain buildings to prevent more suicides	» Apple received a significant amount of negative press for the suicide incidents in 2009 and 2010. Nevertheless, the statistical significance of these suicides is open for debate. Although the suicides in 2010 were concentrated over a short time period, Foxconn employs nearly 1 million workers. Statistics on the average suicide rate in other manufacturing factories are not publicly available for comparison.

Table 2: Major Supply Chain Incidents[14]

Media and NGO Exposure Compounds Risks and Drives Action

Incidents such as those explored in the table above are further compounded by media and NGO exposure. On the NGO front, organizations such as the Enough Project closely monitor conflict mineral management in the Industry while campaigns like Greenpeace's Cool IT focus media attention to drive action at companies like Facebook.[15]

Greenpeace Cool IT Campaign Rates Companies on Supply Chain and Procurement Issues

The IT industry is a major industrial consumer of electricity, primarily due to its use of energy to fuel large data centers that hold cloud based information. The Greenpeace Cool IT Campaign was launched to pressure large cloud computing companies, such as Apple, Microsoft, and Amazon, to shift their data centers away from coal power. The campaign successfully engaged Facebook to develop a policy that prioritizes data centers fueled by clean energy. The campaign has also developed three tools to better inform consumers and the public:

» The Guide to Greener Electronics: Analysis of leaders in the consumer electronics market

» Greener Products Survey: Focus on IT developments in consumer products

» The Cool IT Leaderboard: Focus on leaders in climate control in the IT sector

Sources: 16

Figure 3: Media and NGO exposure of supply chain incidents drives SSCM efforts.

Media outlets play an important role in publicizing supply chain incidents by shedding light on the Industry's complex and often opaque value chain. Michael Loch, Director of Environmental, Health, and Safety (EHS) Strategic Initiatives, acknowledged the role of media and NGOs in driving the development of Motorola's initiatives. Loch explained, "We also started to have a lot more of the NGOs and media putting together various reports and findings around supply chain issues. So that helped create awareness. It gave us the information we needed to set up the management structures." Attention from these groups is often prompted by incidents, and the transparency they promote drives SSCM initiatives as highlighted in Figure 3.

Managing Costs through Sustainability
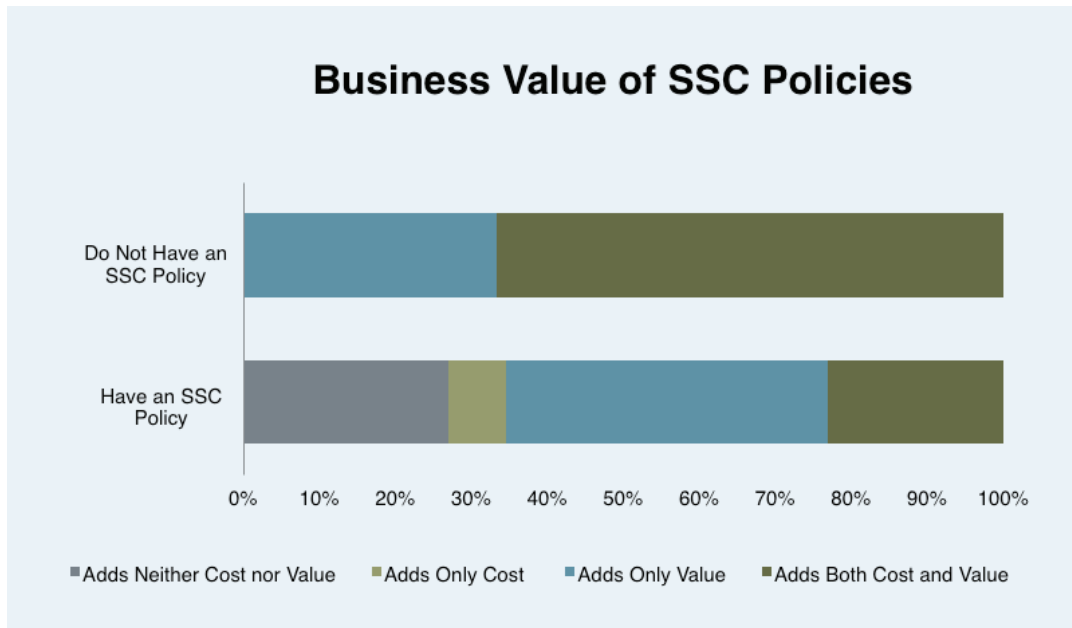

Business Value of SSC Policies

Figure 4: Industry sentiments on the business value of an SSC policy. Responses were separated, based on whether firms have SSC policies, to reveal how current sustainability performance influences managers' perceptions of policies' business value.

Cost management is always on the minds of supply chain managers. Their mandate is to get products delivered reliably on time and at the lowest cost possible. Our respondents cited SSCM as contributing to lower costs by reducing internal operating costs, product delivery costs, and environmental compliance costs. Almost 70 percent of managers interviewed believed that sustainability policies add value, even from managers at companies without SSC policies. This reflects the growing realization that there is a need, and thus value, for such policies.

Reducing Operating Costs

The cost-saving benefits of sustainable operations ranging from facilities operation to employee engagement programs have been explored in a wide range of publications. Supply chain managers can contribute to reducing operating costs through procurement decisions, logistics optimization programs, and efforts in warehouses or distribution centers.

Procurement decisions refer to decisions managers can make to purchase products that result in cost savings in their own organizations' operations. "Some companies have [scaled] small improvements, such as the installation of LED lights across warehouses, which add up to large savings," noted Johnson of Sony Electronics.

Hewlett Packard (HP) BladeSystem Matrix

HP offers a variety of products and services designed to minimize companies' operating expenses and environmental footprints at the same time. One example is the recently developed BladeSystem Matrix, which is a server designed to reduce costs associated with server maintenance, Virtual Connect labor, deployment and administration, power and cooling, floor space, and carbon emissions. Using Alinean Inc.'s ROI tool and IT spending database of 20,000 companies, HP calculated the BladeSystem Matrix's three year OpEx savings at over $4 million in IT spend, or 79.1 percent of the database average.

Sources: 17

Similarly, supply chain management teams can work with vendors to reduce logistics costs by examining issues such as mode and mix. David Pyke, Dean of University of San Diego's School of Business Administration and a supply chain expert said, "Some solutions in my mind are a clear win-win. For instance, you can use optimization software that will reduce miles driven by up to 10%, which saves you an enormous amount of money and also reduces carbon footprint. That is a win-win. The environment wins and the company wins." Between academia and the private sector, David Pyke accumulated over 25 years of experience in the field of supply chain management. His positions as Dean of University of San Diego's School of Business Administration, former Associate Dean of the MBA Program at Dartmouth's Tuck School of Business, Operating Partner at Tuckerman Capital LLC, and consultant at the Rand Corporation, Accenture, and Marken qualified him to serve as an expert witness on supply chain management for securities cases.[18]

Product Delivery Costs

In some cases, cost savings can be realized by partnering with customers and vendors to change product and packaging specifications, resulting in substantial cost savings for the companies and their customers. In early 2006, for instance, Nokia reduced packaging for its phones by over 50%. By the end of 2007, this change allowed 250 million phones to be shipped using 5,000 fewer trucks and creating financial savings of over $130 million.[19]

Beyond packaging, companies can realize savings by removing unnecessary accessories and virtualizing documentation.

Sustainability Manager at a Global Electronics & IT Company

"With regards to reducing packaging [and] documentation, [we are] putting all documentation online (nobody reads it anyway) and reducing the amount of content in our accessory kits – cables, […] brackets, and things of that nature – [by] making them orderable options. The customer can get those things if they want, but they are not shipped standard. We were really able to achieve millions and millions of dollars of cost savings by streamlining our products."

Environmental Compliance Costs

As explored earlier in this chapter, navigating regulation and potential compliance costs are drivers of SSCM. This environment motivates managers to focus on controlling costs and leveraging savings. "For example," noted one of our respondents, "e-waste [represents both a cost and savings opportunity]. It can cost us money to collect in many states, but it is the kind of thing where in the long run it is going to be cheaper because resources are going to be more expensive to extract from the ground."

Some respondents are going further to capture revenue generating opportunities. Rich Kroes, Director of Product Strategy at Oracle explained their lifecycle assessment tool is used in-house as well as licensed to clients. "There is an internal cost management opportunity for us," Kroes continued, "but there is also an opportunity for us to help our customers make reductions in their respective environmental impacts by using our solutions."

Leadership

Twenty-four percent of respondents cited leadership as driving their SSCM initiatives, including internal interest and value to be realized from participating in industry forums. The former element refers to internal interest in positioning their company as a leader in sustainability through responsible supply chain initiatives. This internal pressure can come from the bottom up, in the form of grassroots employee movements, or from the top down, driven by the interests and commitments of management.

Industry forums, such as EICC or GeSI, act as both a driver and valuable tool for SSCM. Companies are driven to participate to remain competitive on sustainability issues. However, these forums also provide a compass to navigate diverging regulatory standards across regions, tools to implement SSCM initiatives, and platforms to showcase accomplishments.

Internal drivers and industry forums are discussed further in Chapter 3.

2 - Supply Chain Sustainability Issues: Environmental and Social

Introduction

This chapter focuses on the specific social and environmental issues indicated by interviewees as relevant to SSCM. Each of these issues is shown as a section of the outer portion of Figure 5. As indicated below, respondents placed a much greater emphasis on social issues than environmental ones. This distinction can be ambiguous at times as most environmental issues develop into social ones once negative environmental impacts begin to threaten social wellbeing and prioritization of issues may be influenced by their associated regulatory response times. As Chapter 1 explained, regulation consolidates corporate efforts around specific sustainability issues. Thus, corporations focus more on social issues because public concern for environmental issues lags with the time frame necessary for environmental ramifications to materialize.

When asked which issues receive less than their deserved amount of attention in the IT sector, a social and environmental sustainability program manager respondent explained, "The environmental ones, because I think the impacts are sometimes longer term, and so they do not get the attention that they need, even though the impact can be much greater to a large group of people, the extended community, and I just think there just is not the necessary focus and validation of good practices in that space." This chapter will explore social and environmental issues related to SSCM. In addition to these matters, 37 percent of respondents cited management issues, including corporate risk management and transparency, as another area of concern. They are explored in greater detail in Chapter 3.

Areas of Sustainability Concern

Figure 5: The outer portion shows the frequency of responses that referenced specific sustainability concerns. The inner portion categorizes these responses into general areas of concern.

Social Issues

Social issues across the supply chain, from labor hours to human rights violations in regions where key minerals are sourced, can quickly draw public attention, evoke strong emotions, and inspire regulation. As a result, corporations recognize more immediate risk associated with the social impacts of business operations and allocate more attention to related issues.
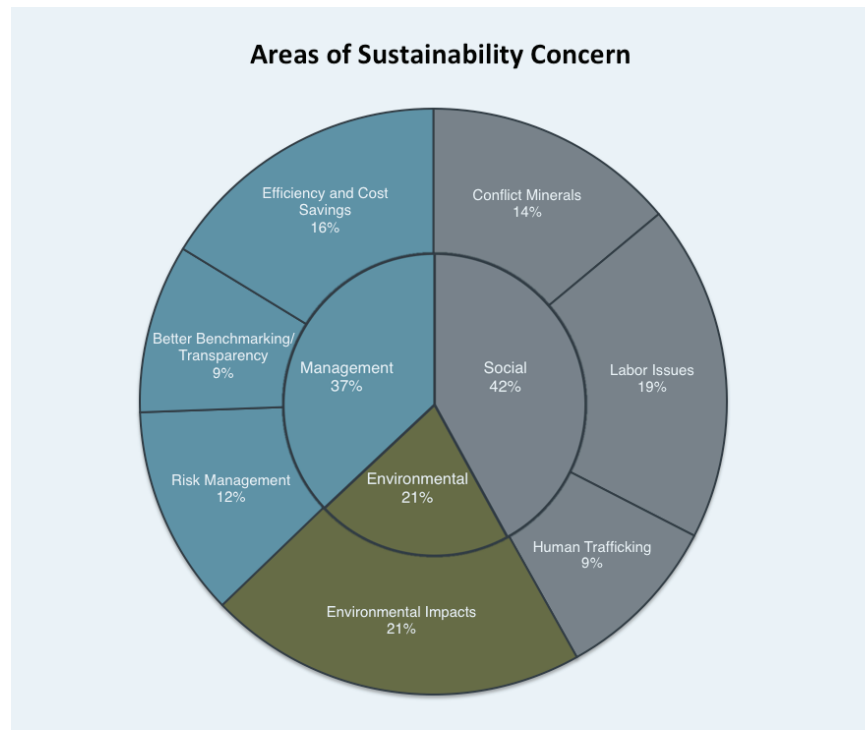
Complying with the California Transparency in Supply Chains Act

Nine percent of survey respondents explicitly listed human trafficking as an SSCM concern. Attention to this issue and other forced labor concerns was likely spurred by the recent implementation of the California Transparency in Supply Chains Act, which is expected to affect 3,200 global companies.[1] The sheer size of this estimate speaks to the power state regulation can wield; particularly when that state is California. As of 2011, the Golden State's gross domestic product (GDP) of $1.74 trillion was the 8th largest in the world, with roughly a third of its exports coming from computers and electronics.[2] Consequently, state regulation in California that applies to all companies that conduct a minimum level of business in-state has the capability to exert national and even international influence.

In 2009, the U.S. Department of Labor indicated 122 goods produced in 58 countries utilize some form of exploitative labor, including electronics produced in China.[3] Thus, corporate attention to labor issues in the Industry's supply chain may increase as the impact of the recently enacted California Transparency in Supply Chains Act becomes fully apparent.

Conflict Minerals

Fourteen percent of respondents expressed concern over the use of conflict minerals in the Industry's supply chain. This concern is reflected in the Dodd-Frank Act signed by President Obama in July 2010. Section 1502 of the legislation requires U.S. based multinational firms to verify to the SEC that their products do not contain materials sourced from the Democratic Republic of Congo or surrounding 'conflict zones'. This legislation affects the electronics industry significantly because the four regulated minerals, columbite-tantalite, cassiterite, wolframite, and gold, hold elements necessary for the production of electronics. In addition to heavy use of gold, production processes require tantalum, tin, and tungsten, which are extracted from the first three minerals respectively.

Every retailer and manufacturer conducting business in California with annual worldwide gross receipts exceeding $100 million must conspicuously disclose its efforts to eradicate slavery and human trafficking from its direct supply chain by:

- Engaging in verification of supply chain products to evaluate and address risks of human trafficking and slavery. The disclosure must specify if the verification was conducted by a third party.
- Conducting audits of suppliers to evaluate supplier compliance with company standards for trafficking and slavery in supply chains.
- Requiring direct suppliers to certify that materials incorporated into their products comply with the anti-slavery and human trafficking laws of the countries where they do business.
- Maintaining internal accountability standards and procedures for employees or contractors that fail to meet company standards regarding slavery and trafficking.
- Providing company employees and management, who have direct responsibility for supply chain management, training on human trafficking and slavery, particularly with respect to mitigating risks within products' supply chains.

Figure 6: Requirements of the California Transparency in Supply Chains Act, in effect January 2012 - California's supply chain legislation focuses on empowering consumers through corporate transparency. However, no financial penalty is in place for companies that do nothing to eliminate human trafficking in their supply chains. The law only requires companies to disclose that information on their website. Source: California Civil Code § 1714.43.

Tony Kingsbury, Director of Corporate Sustainability at ChemRisk

"The ban on conflict metals has been a wakeup call for companies with supply chains that involve metals, especially the electronics industry. This has led to monitoring and deeper understanding of the supply chain and where all the materials used come from. I have seen a lot more efforts to understand the full supply chain."

A recent publication by KPMG investigating the effects of Dodd-Frank's conflict mineral legislation across the economy found that most sectors of the U.S. economy are responding to the legislation slowly.[4] Fifty-nine percent of KPMG's survey respondents indicated they have not developed a strategy to comply by the bill's 2012 deadline while 24 percent of respondents indicated they are not sure or do not know about the status of their companies' compliance.

KPMG divides the economy into seven sectors, and lists the electronics sector to be at a notably more advanced stage of the due diligence required by Dodd-Frank than the other six. While the legislation lacks financial penalty for noncompliant companies, the intense need for 'conflict minerals' in the production of electronics greatly exposes the industry to public opinion. As such, the electronics sector will likely continue to lead other industries in Dodd-Frank compliance.[5]

Labor Issues

Working Hours

Of the 19 percent of survey respondents who indicated labor issues to be an area of SSCM concern, many specifically referenced working hours. Respondents expressed two competing concerns for working hours. Some respondents indicated the need to moderate vendor policies governing the length of a fair workday, while others highlighted the fact that many workers desire long hours in order to adequately support a family.

Fair working hours is a major labor issue in corporate sustainability. While concern for this issue helps prevent human rights abuse, conceptions of what constitutes fair working conditions differ across nations and cultures.

Supply Chain Sustainability Program Manager at a Global Electronics & IT Company

"Working hours seems to be a challenge for the entire industry. Of course, we oppose any kind of forced labor or excessive working hours, and it is absolutely against our Supplier Code of Conduct. But we hear from suppliers that a lot of laborers want to work as many hours as possible in order to make as much money as possible in a short amount of time, often to send back to their families. Some suppliers say that restricting overtime makes it difficult for them to recruit enough workers, both because they need the additional people to meet customer demand but also because workers are choosing other employers that do not restrict overtime. Lots of players in the industry, including non-profit organizations, suppliers, and customers, are trying to find that intersection where wages are high enough so that workers are content to work fewer hours, yet suppliers and customers are still satisfied with their margins and can stay competitive in the marketplace. There is no easy fix, and there is a lot of work going into finding creative solutions."

David Pyke, Dean at University of San Diego's School of Business Administration

"It is very easy to sit in the US and say that people in Vietnam should not be working more than 40 hours a week or have child labor but then when you go to the village and you realize that if the 16-year-old kid is not working in the factory, there is nothing else to do, there is no school and the family does not have money to send her to boarding school. What seems like a black-and-white answer is a much more complicated set of issues."

The solution to unfair working hours may lie in establishing a wage rate that enables laborers to support themselves and a family working a more reasonable number of hours. If this decision is left to corporations, government regulations should require transparency on the issue to incentivize a socially sustainable resolution. Forcing corporations to readily disclose information regarding their worker conditions will likely sway managers to find a sustainable balance between operating efficiency and social wellbeing.

Child Labor

The public is understandably highly sensitive to the use of child labor. As such, provisions against the use of any form of child labor exist in the vast majority of SSC policies. Respondents to our survey indicated their companies consider it unacceptable for suppliers to use child labor, and that their audits discover child labor on an extremely infrequent basis (although the Industry has experienced child labor scandals). One respondent explained that in addition to corporate concern, the requisite skill level necessary to manufacture electronic goods limits the extent to which children are able to work in electronics manufacturing facilities.

> **Jörgen Karlsson, Global Program Manager, Supplier Code of Conduct at Ericsson**
>
> "Child labor is in our Code of Conduct document, but fortunately for our line of business it is less of a problem. In general, the level of education and training required from employees is relatively high, thus excluding minors[…]Of course it is not acceptable and it is something we always check during audits, but fortunately it is very very seldom a real issue."

Environmental Issues

Environmental issues become pertinent to the Industry's supply chain once concerns for the environmental impacts of its operations are recognized in public policy and addressed by specific regulations. One respondent articulated this sentiment, "One of the things that helps us to ensure that we manage sustainable processes is regulation." Without such regulation, corporations often fear that efforts to address issues of environmental sustainability will render them uncompetitive or exposed to scrutiny by NGOs and the public. This is reflected in the disparity between the percentage of respondents citing social and environmental issues, 42 percent and 21 percent respectively, as being concerns.

Recycling – Product Take-Back Programs

The 21 percent of survey respondents who referenced environmental impact as an SSCM concern consistently mentioned recycling practices; in particular, recent state level legislation mandating e-waste recycling and product take-back programs.[6] Johnson of Sony Electronics, explained, "From a take-back perspective, some of the challenges the industry faces is that over 25 states have enacted e-waste legislation that place different obligations on manufacturers. We have to manage against each of these requirements and in most cases collect a certain amount of e-waste for each state, as mandated based on the amount of sales and market share within that state. As you would expect, this is a complex challenge. However, we are committed to making the e-waste recycling as easy as purchasing electronics through responsible recycling, keeping valuable resources out of landfills. To date we have collected over 80 million pounds of old Sony products in the U.S."

While managing multiple state-level regulations for e-waste is an undeniably difficult task, some companies have found ways to make complying with the legislation profitable. For example, Liz Abbett, Program Manager of Supply Chain Sustainability at Cisco Systems, described Cisco's e-waste recycling program as a great success: "Whatever products cannot be refurbished or remarketed, ultimately have to be recycled. We end up sending

less than half of one percent of our solid waste to landfills. Ninety-nine and one half percent [or more] ends up being recycled or recovered." Abbett went on to highlight Cisco's e-waste recycling program as enhancing the company's energy and resource efficiency, as well as control over the security of client information.

Opportunity to profit from e-waste recycling extends beyond electronics manufacturers. Value added resellers, like Brightstar, have developed e-waste refurbishment and recycling programs for cellular phones. A growing share of Brightstar's business involves buying used phones in developed markets, refurbishing and then reselling them in emerging markets. In discussing the Industry's potential at the World Economic Forum on East Asia 2012, Brightstar CEO Marcelo Claure revealed the U.S. market alone contains over 5 billion used phones that were sold by telecommunication service providers at heavily subsidized prices.[7] He indicated phone prices depreciate by 50 percent or more during the two year lifespan for U.S. consumers. This discounted cost of production inputs enables Brightstar to refurbish and resell phones at a 70 percent yield, which today totals 25 to 30 million like-new phones per year.[8] This high rate of recycling combined with environmentally friendly disposal processes and high profit margins on resold devices indicates the industry to be extraordinarily valuable for both Brightstar and the environment.

Case Study: Water Pollution by Chinese Electronics Manufacturers

Director of IPE, Ma Jun

Xie 2009, via BSR Report

"Of the 745 river sections being monitored in China, only 40 percent met the Grades I-III surface quality standards (safe for human consumption after treatment)."

Growth in Chinese electronics manufacturing has been concentrated in the Jiangsu and Guangdong provinces and Shanghai municipality. Intensive use of heavy metals in manufacturing processes has contributed to water quality problems. While this issue is currently defined as 'environmental', its negative impact on people's wellbeing implies that it can be considered both environmental and social in nature.

A recent study of water quality in China by Businesses for Social Responsibility (BSR) in conjunction with The Institute of Public and Environmental Affairs (IPE), a Chinese NGO, reviewed lists of 640 Chinese suppliers submitted by 10 EICC member-companies to identify suppliers in violation of local water quality standards.[9] This effort represented one the most comprehensive reviews of this subject to date; the IPE database is so valuable to highlighting environmental management issues in China that institute director Ma Jun recently won a 2012 Goldman Environmental Prize for his efforts.[10] It also highlighted the interconnected and complex nature of the Industry's supply chain.

Together, BSR and IPE found that roughly five percent of the Chinese suppliers failed to comply with Chinese water quality regulation. Of these noncompliant suppliers, 30 percent sold products to multiple EICC members and many were in violation of multiple regulations.

The report shows a small portion of suppliers to be responsible for significant environmental degradation. These unsustainable suppliers interact extensively with many large manufacturers, and thus hold an important role in the smooth function of the electronics industry. Although Chinese state regulation is quite strong, implementation at the local level is complicated.

The inconsistency between China's legislation and implementation results from the source of government tax revenues. The financial health, and subsequent enforcement capabilities, of the Ministry of Environmental Protection's municipal branches depend on local government, which in turn relies on tax revenue for financing. As nearly 85 percent of the non-compliant companies are in areas where economic activity is heavily dependent on electronics manufacturing, such as Jiangsu Province, Guandong Province, and the Shanghai Municipality, local governments in these areas have little incentive to take corrective action. Thus, water quality management remains an issue in China, despite stringent legislation.

GHG Emissions and Carbon Tracking

GHG emissions tracking is an environmental issue that applies broadly across the Industry's supply chain. Many respondents indicated that their companies are reluctant to implement GHG tracking and reduction initiatives because of perceived costs, but there is an increasing mandate for them to do so. A recent EPA publication on managing supply chain GHG emissions revealed a number of electronics and IT companies require suppliers to report their GHG emissions and reduction efforts, including three companies from our survey; Applied Materials, Dell, and IBM.[11] This indicates attention to GHG management is growing.

Supply Chain Manager at a Global Electronics & IT Company

"You are starting to see people curious about their overall carbon footprints, so they are trying to understand their suppliers' carbon footprints. We have not done that yet because we are not quite sure what you do with the data, or if you want to actually manage that, and how much of the data is double-counted."

As mentioned in the quote above, responsibility for GHG emissions should be shared between businesses at different levels of the supply chain but can be difficult to allocate. Ultimately, third-party organizations, like the Greenhouse Gas Protocol Initiative and the government, must standardize processes to quantify the Industry's GHG impact. Once this is complete, the industry will have a solid foundation from which to move forward to attribution and finally management. Toward this end, the Greenhouse Gas Protocol Initiative has developed a Sector Toolset for the semiconductor industry and is developing one for the information communication technology (ICT) sector; implying electronics companies are likely to begin viewing this challenge in a different light.[13]

Tony Kingsbury, Director of Corporate Sustainability at ChemRisk

"Scale certainly helps and in most cases we see companies begin by pulling carbon out of their supply chain, which adds value. Remember carbon is money since its source is energy or raw materials."
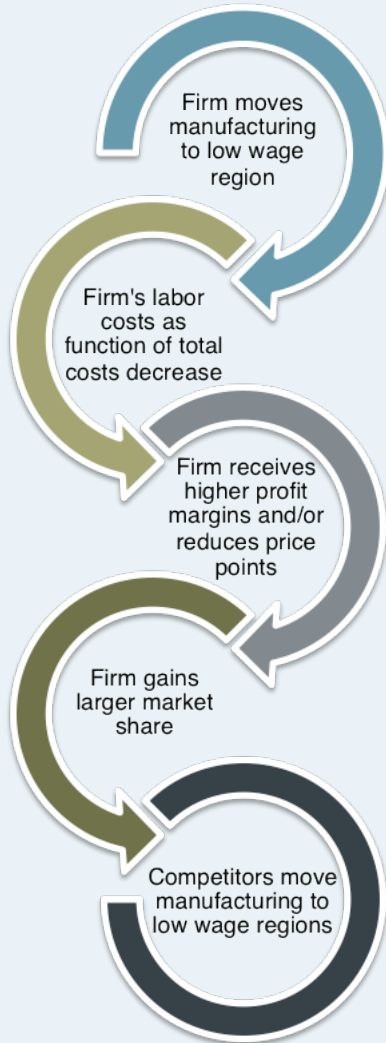
Characterization of the Industry's Supply Chain

Figure 8: Competition to increase margins and reduce price points drives manufacturing to low cost regions.
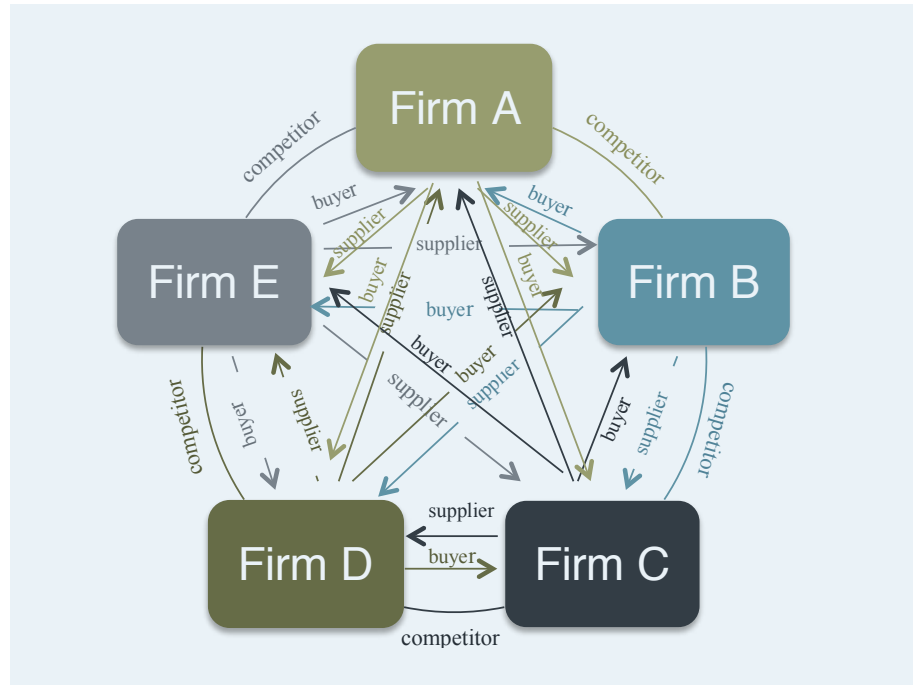

Figure 7: Depiction of the complexity of relationships in the Industry's supply chain. This complexity is exemplified by the recent string of lawsuits between Apple and Samsung. Apple's largest components manufacturer, Samsung, is also its biggest competitor in the smartphone and touchpad space.

This section explores some unique elements of the Industry's supply chain cited by respondents, including complexity, interconnectedness, scale, and competitive nature of supplier operations, as characteristics that define this industry's supply chain.

Complex and Interwoven

As the Industry has grown, the degree of complexity and overlap across its supply chain has increased. Respondents explained that many of their companies' largest customers are also their main competitors and sometimes suppliers. This unique circumstance intensifies the challenge of attributing responsibility for SSC issues.

The implication of such a high degree of complexity in the electronics supply chain is the need for more industry wide collaboration through forums such as the EICC or GeSI.

Wilson Korol, Sustainability Business Leader at Avaya

"The supply chains for our company and our industry are very complex, very interwoven. One of our clients is both a massive supplier of servers to us and then they are a more than $100 million customer for us as well. It is hard to disaggregate that value chain into discrete things. There is a lot of overlay because we are using their products and they are using our products."

Large Scale Supplier Operations

Industry OEMs are often large organizations and can have operations on a much larger scale than those of their customers. This characteristic can further reduce the leverage companies have on their suppliers, making the implementation of SSCM measures more difficult. Whereas the power structure in relationships between customers and suppliers in other industries is often aligned to the benefit of the customer, relationships in the Industry's supply chain are more balanced. Thus, the extent to which customers can convince suppliers that sustainability is important can be limited by the nature of the Industry's power structure.

Supply Chain Manager at a Global Electronics & IT Company

"What may distinguish our industry from others is the fact that the contract manufacturers tend to have large operations, and you have got Foxconn with 100,000 or more employees in a site. Within our company and outsourcing, semiconductor manufacturers in some cases can be very large companies as well. So the scale of production can make negotiation between customers and suppliers more difficult because if you have a huge company as a contract manufacturer, then you might have less influence and leverage as a customer on that contract manufacturer than if you are dealing with a regular-sized company."

Competition

The Industry is a competitive one, with many of its sub-sectors operating on very tight margins. Low cost production is important, and the Industry's supply chain gravitates toward lesser developed nations with low labor costs. These regions typically lack political infrastructure or will to implement regulation, as social or environmental requirements which raise a region's cost of production can drive out manufacturers. As such, the balance between the realities of economic law and potential benefit of regulation must be considered carefully.

Supply Chain Manager at a Global Electronics & IT Company

"International trade and economics dictates that business moves as labor rates and other costs change. China has become expensive. So when labor moves out of China and it moves to areas with less established infrastructure, people can move around and all they are looking for is a quick buck. [Thus,] you do not have the ability to retain people by the same kind of methodology, and you are not going to, because people just go in and out and across the street. You just do not have the infrastructure in place to enforce the laws or [even] the laws in the first place. You sort of take steps back every time, and the companies that do want to abide by the same standard face more challenges to figure out how to get there in the business environments they operate in. What are the local challenges? What are the local complications driving this and how does that change what you thought was the answer in the other country? It is not necessarily the answer in this new one."

In China, for example, the cost of production has increased in recent years. Further cost increases could drive electronics manufacturing to other areas with lower labor wages, yet worker demonstrations, such as those of 2010 in the Guangdong and Jiangsu provinces, indicate increasing wage expectations in the workforce. Increasing costs in China might therefore drive electronics producers to find lower cost manufacturing regions which often have less regulation supporting SSCM. Promoting SSCM while manufacturers seek areas with the lowest cost of production will remain a challenge for the Industry for some time to come.

3 - Management and Monitoring

Introduction

In this chapter:

- **MANAGEMENT:** refers to the organizational structure customers use to define, engage, and enforce sustainability issues with suppliers.
- **MONITORING**: refers to corporate efforts to continue and improve the management of these issues.
- **CUSTOMER**: refers to customers in respondent companies' supply chains.
- **CONSUMER:** refers to the end-use purchaser who consumes the electronic product or service.

This chapter analyzes the major management and monitoring themes referenced by interview respondents in four main sections. The first section explains the different organizational approaches electronics companies utilize to manage and monitor SSC issues. The second describes how corporate policies define sustainability concerns in the Industry's supply chain. The third continues with an explanation of how corporations communicate their sustainability policies through engagement efforts. The chapter concludes with an assessment of the use of incentives and deterrents to enforce sustainability policies across the supply chain.

Organizational Approaches

Dedicated Sustainability Departments vs. Dispersed Responsibilities

Our respondents highlighted two approaches to sustainability program management: the dedicated and dispersed models. Effective sustainability programs utilize SSCM to define, communicate, and enforce sustainability concerns up the supply chain.

	Dedicated Model	Dispersed Model
Description	» Full-time employees staff a 'sustainability division'	» Employees with pre-existing roles in the corporation are embedded into or volunteer for sustainability responsibilities
Advantages	» Enhanced organizational focus » Employees own sustainability responsibilities	» Participants that have different corporate backgrounds can develop more innovative solutions and identify a wider array of improvement areas
Disadvantages	» Increased overhead » Sustainability staff may be incapable of influencing other departments to cooperate with implementation efforts	» Bottom up sustainability initiatives face resource limitation and coordination challenges » Voluntary members may not be responsible for the divisions necessary to implement supply chain sustainability

Table 3: Advantages and disadvantages of different organizational approaches to sustainability program management.

Supply Chain Manager at a Global Electronics & IT Company

"I fill a number of roles in relation to teams across the company– everything from delivering resources and educational materials about sustainability issues to managing the implementation of specific projects. Ideally, we are supporting the incorporation of sustainability practices within individual business units and giving teams the opportunity to include sustainability considerations in their decision making processes."

Respondents commonly cited cost minimization as a reason their companies chose the dispersed model. Although cost considerations are important, overloading company personnel with added sustainability responsibilities can be problematic for overall productivity. Without additional corporate resources allocated to offset the SSCM workload employees must prioritize tasks across different functional areas. Kroes of Oracle, which adopted the dispersed approach, commented on the prioritization challenge, "One of the hurdles we often hear about is, 'I have so much to do, why should I concern myself with sustainability as well?'" Thus, companies interested in implementing an effective dispersed model must incorporate sustainability objectives into conventional metrics and Key Performance Indicators (KPIs) used to gauge employee performance.
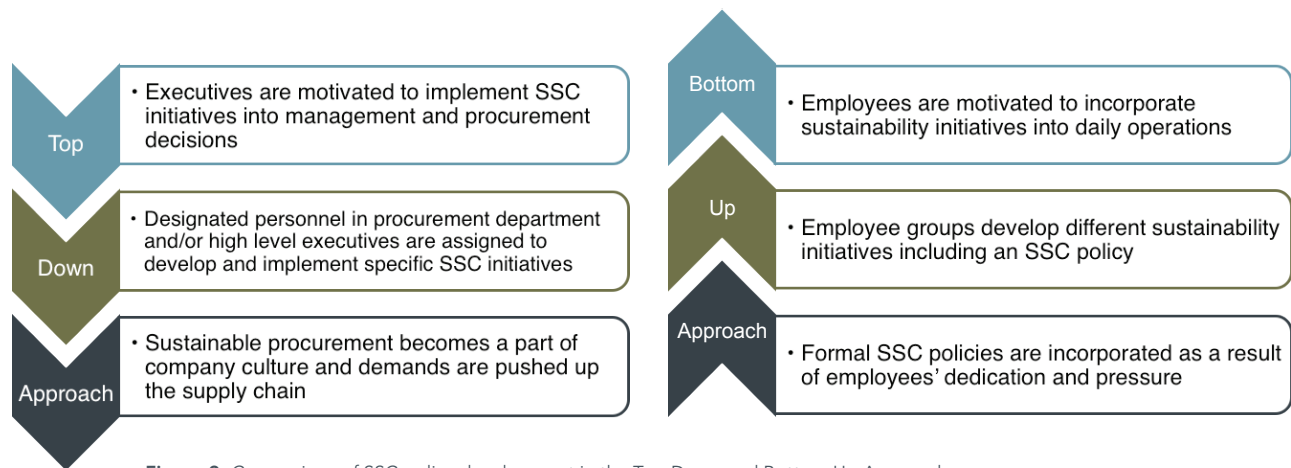

Top
- Executives are motivated to implement SSC initiatives into management and procurement decisions

Down
- Designated personnel in procurement department and/or high level executives are assigned to develop and implement specific SSC initiatives

Approach
- Sustainable procurement becomes a part of company culture and demands are pushed up the supply chain

Bottom
- Employees are motivated to incorporate sustainability initiatives into daily operations

Up
- Employee groups develop different sustainability initiatives including an SSC policy

Approach
- Formal SSC policies are incorporated as a result of employees' dedication and pressure

Figure 9: Comparison of SSC policy development in the Top Down and Bottom Up Approaches.

Sustainability Responsibilities and Sourcing Departments: Integrated vs. Separated

Another important organizational approach that our interviewees highlighted was the integration of sustainability and procurement departments. Most sustainability departments are kept separate from sourcing departments, presumably to avoid potential conflicts of interest caused by sourcing departments' pressure to negotiate supplier cost, quality, and delivery time.

Such separation can also prevent interaction necessary to implement SSC initiatives. For example, a sustainability manager without formal procurement responsibilities would likely experience difficulty implementing an SSC policy. Alternatively, consider Arnie Bawden of Research in Motion (RIM). As a 30 year industry veteran recently brought to RIM as a Supply Chain Social Responsibility Manager, Bawden holds responsibilities in both the supply chain and sustainability departments. As such, he can implement supply chain sustainability initiatives while being conscious of RIM's procurement needs.

Resources and Scope

The resources dedicated to, and perceived value from, SSCM vary at different points across the Industry's value chain. Consumer electronics brands and OEMs that source from component manufacturers are greatly exposed to risk from unsustainable supplier operations and have developed more extensive monitoring mechanisms. Monitoring efforts by component manufacturers are more limited due to resource constraints and less exposure to risk. "Being a components manufacturer, we do not have as much clout as the brands do. We do not have as many resources as they do. We struggle in having the resources to go do lots of audits," explained one respondent.

Nevertheless, the Industry's long supply chain and highly commoditized market force companies to allocate limited resources across many suppliers. "The fact is that the problems are numerous and huge, and many companies are not doing enough to address this issue. Companies set ambitious goals but they do not come close to meeting them because they are too ambitious," said Pyke of USD.

However, nearly 70 percent of respondents see value derived from dedicating resources to SSCM. As transparency continues to increase due to media and NGOs monitoring companies' SSCM activities, such dedication may become increasingly necessary.
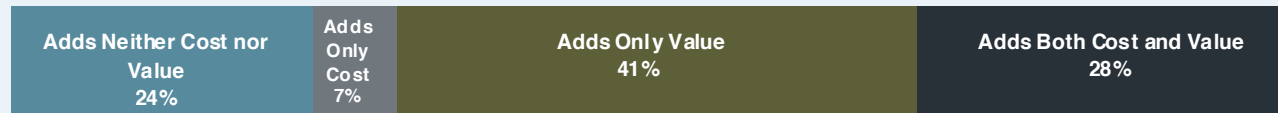
Adds Neither Cost nor Value 24%	Adds Only Cost 7%	Adds Only Value 41%	Adds Both Cost and Value 28%

Figure 10: Breakdown of all respondents' perspectives about the business value SSC policies afford their companies (aggregate of Figure 4).

Sustainability Policies in the Industry's Supply Chain

Corporations' sustainability policies define the issues they consider most important and serve as foundations for SSCM efforts. The majority of companies in the Industry have adopted SSC policies. While 89 percent of respondent companies had adopted a formal policy, each company defines its level of commitment and engagement differently.
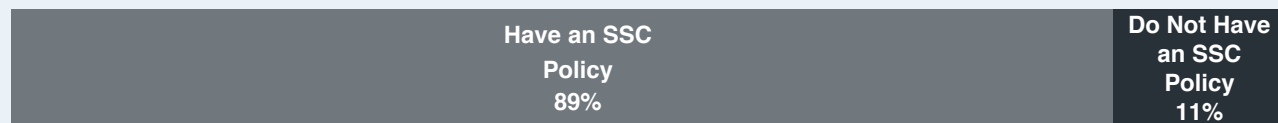
Have an SSC Policy 89%	Do Not Have an SSC Policy 11%

Figure 11: Percentage of surveyed companies with an SSC policy.

Sustainability Policy Foundations

Supplier policies are derived from the combination of national, international, and industry standards addressing environmental and social responsibility touched upon in Chapter 2. Supplier Codes of Conduct, which are components of sustainability policies, generally require business partners to comply with all applicable laws in the jurisdictions in which they operate. When regional regulation is insufficient or unenforced and local regulation fails to adequately address a particular issue, international standards provide a baseline.

Commonly referenced standards include International Labor Organization conventions on labor issues and UNGC guidance on environmentally sustainable and socially responsible policies. The UNGC has 260 participants in its Electronic & Electrical Equipment sector, many of which include the UNGC's Ten Principles in their corporate sustainability policy.[1]

While international guidelines define common issues and recommend approaches, specialization of companies across the Industry makes standardization of SSCM a challenge. Many of the issues material to a telecom company's supply chain, for example, are not as pertinent to a component manufacturer's supply chain, and vice versa.

Liz Abbett, Program Manager, Supply Chain Sustainability at Cisco

"When companies want to share sustainability information with the public, they can leverage Global Reporting Initiative (GRI) standards, which is what Cisco uses and what we encourage our suppliers to use for their CSR reports. But within the Industry, when customers and suppliers are trying to exchange information that may be proprietary or confidential, there is not an efficient way to share information in a standardized fashion. Each customer may ask for slightly different information, which creates a lot of work for suppliers who are responding to these requests. I would say that is a challenge for the Industry."

To overcome this deficiency, industry-wide coalitions have become the driving force behind the standardization of SSCM practices across the Industry, most notably the EICC and GeSI. Collaboration through these forums coordinates efforts around common issues and creates an opportunity to standardize methods used to engage suppliers. For more information about the EICC's standardized methods of supplier engagement, reference the EICC VAP in the *Corporate Communication through Engagement* section of this chapter.

Policy Review

While the majority of respondents periodically review and update their sustainability policies, they stressed the importance of maintaining consistency in supplier relationships. Karlsson from Ericsson emphasized this importance with regard to updating his company's Supplier Code of Conduct, "It is not changed often; that is intentional. It is not that we do not want to evolve. It is that we want to have a kind of consistency towards the supplier, and have a very high degree of recognition."

Many respondents noted that their companies update their policies by periodically referencing codes developed by industry coalitions to stay abreast of evolving approaches while maintaining consistency with peer organizations.

Percent of Companies that Review/Update Sustainability Policies

- Review / Update — 61%
- Do Not Review / Update — 32%
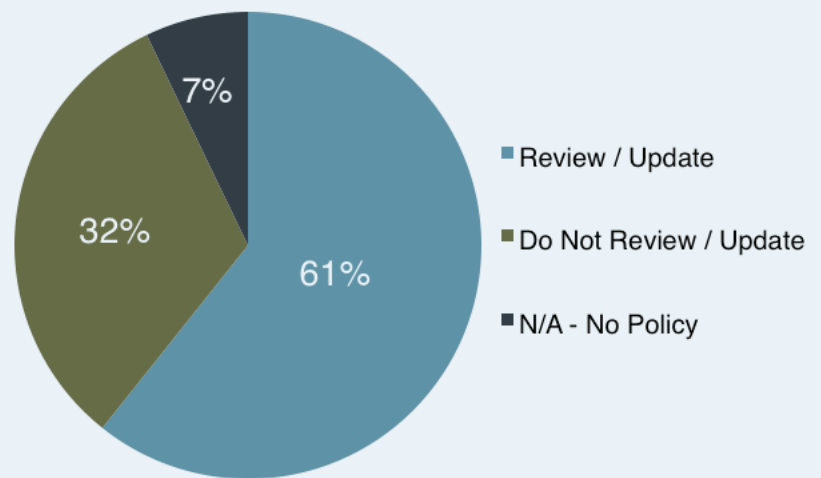- N/A - No Policy — 7%

Figure 12: 61 percent of respondents reported their companies' sustainability policies are cyclically reviewed on a basis ranging from once a year to once every three years. Many respondents explained a three year cycle was chosen to align their update with the review of the EICC Code of Conduct.

Challenges

Respondents cited three categories of challenges in adopting SSC policies: supplier transparency, regulatory compliance, and stakeholder communication.

Supplier Transparency

Thirty percent of our respondents cited concerns surrounding supplier transparency as a challenge faced in monitoring suppliers. Managing supply chains requires customers to monitor suppliers' business practices. As suppliers are independent organizations that compete for profit, complete transparency can be threatening.

The transparency challenge is material to industry efforts to comply with Section 1502 of the Dodd-Frank Act covered in Chapter 1. The issue is exacerbated because many links in the supply chain are multiple tiers away from U.S. based customers. To minimize the challenge customers must consider consolidating their value chains around compliant suppliers with whom they can interact more closely, alleviating competitive concerns which dissuade suppliers from providing appropriate transparency. Audits also play an important role in addressing the transparency challenge and are explored later in this chapter.
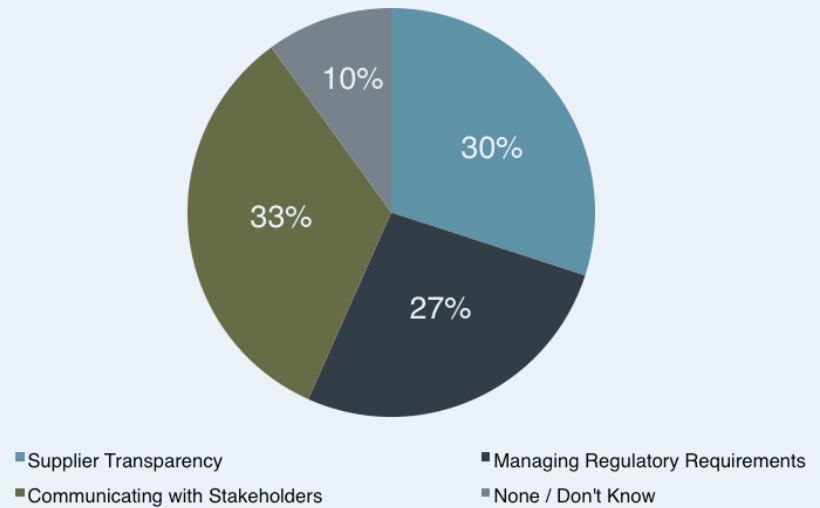

Implementation Challenges

- Supplier Transparency — 30%
- Managing Regulatory Requirements — 27%
- Communicating with Stakeholders — 33%
- None / Don't Know — 10%

Figure 13: The proportion of responses that referenced implementation challenges in each category.

Tony Kingsbury, Director of Corporate Sustainability at ChemRisk

"Do not make the assumption that a retailer knows all the details of their supplier's supply chain. For example, a consumer products company does not want the retailer [to which] it sells to know all the details of their supply chain, because if the buyer knows their supply chain then they can leverage this to their advantage for bargaining power. Transparency of everything in products is risky. If the retailer knows fully every product input then they can duplicate the product and they will know the true cost of the product. They can then go to the supplier and bargain hard with this knowledge."

Managing Regulatory Requirements

Navigating regulatory requirements was another theme commonly referenced by respondents as an SSCM challenge. Companies with global supply chains must comply with a variety of governments' increasingly complex regulations.

Previously, multinational companies could contract suppliers versed in local requirements who assumed the compliance risk for manufacturing operations. However, recent regulations in the U.S. and Europe have applied more stringent standards to both internal and contracted operations in major manufacturing regions and primary retail markets. Aside from the regulatory compliance challenge created by international supply chains, differences in states' standards require companies to allocate extra resources to coordinate compliance across states.

As an example, Johnson of Sony cited the e-waste recycling legislation enacted in over 25 states, each requiring Sony to collect different quantities of e-waste. These quantity quotas are determined by Sony's market share in each state and differ per state, creating a significant regulatory compliance challenge. While navigating regulation can be difficult, doing so results in benefits for both businesses and the environment. "However," he noted, "we are committed to making e-waste recycling as easy as purchasing electronics through responsible recycling, keeping valuable resources out of landfills. To date we have collected over 80 million pounds of old Sony products in the U.S."

The growth of regulatory compliance risk in the Industry has created an environment where companies value 'staying ahead of the regulatory curve'. Companies that actively monitor and prepare to comply with pending regulation experience improved supply chain performance from effectively managing the risk of regulation-oriented disruptions.

Figure 14: As international, national, and state regulations evolve, SSCM practices must adapt to ensure compliance.

Communicating with Stakeholders

Thirty-three percent of our respondents noted communicating with stakeholders as a common challenge. Communication to colleagues to maintain support for sustainability programs is important, as is external communication with suppliers.

One of our respondents touched upon the importance of ongoing internal communication to maintain support: "We are trying to convince the organization internally that this is something that adds value in terms of brand protection and reduced risk. The vast majority agrees but there are exceptions. Maybe in some parts of the world, or in some cases internally, people see this as a nuisance – something that we have to do rather than something that is good for business in the long run."

Externally, the availability of information from suppliers was noted as an issue. While sustainability managers receive information from supplier self-assessments and audit reports, relevant information often comes through other channels of communication such as NGOs or 'whistleblower' employees of suppliers. If this information does not reach sustainability managers it can hinder their capability to preemptively identify and avoid risks.

Wilson Korol, Sustainability Business Leader at Avaya

"Margins are not thick. Neither the supplier nor the people that work in our sourcing organization have a lot of superfluous energy, time, or resources to dedicate to new criteria. They are already maxed out on the existing metrics of quality, cost, and those things can always carry the day, and as a company, they should carry the day."

> ### Supply Chain Manager at a Global Electronics & IT Company
>
> "We get allegations from NGOs or specific employees that work for our suppliers, and we have an incidents process that we manage through as well."

Corporate Communication through Engagement

While sustainability policies define which issues are considered most important, corporations actively communicate their sustainability concerns by engaging with suppliers. Respondents consistently referenced three forms of supplier engagement: customer inquiries, compliance audits, and industry collaboration. This section reviews the focus and goal each form of engagement uses to communicate sustainability concerns across the supply chain.

Customer Inquiries Formalize Sustainability Policies for Suppliers

Seventy-one percent of respondents use customer inquiries to monitor supplier performance against their sustainability criteria. These inquiries are the basic form of supplier engagement; they often take the form of Self-Assessments Questionnaires (SAQs) based on the customers' Supplier Codes of Conduct and related requirements. Customers that use SAQs conduct first-party audits because they require suppliers to self-report sustainability practices.

Inquires About SSC Practices

- Not Sure
- No
- Yes
- Cost Savings and Efficiency Enhancements, 26%
- Regulatory Compliance, 28%
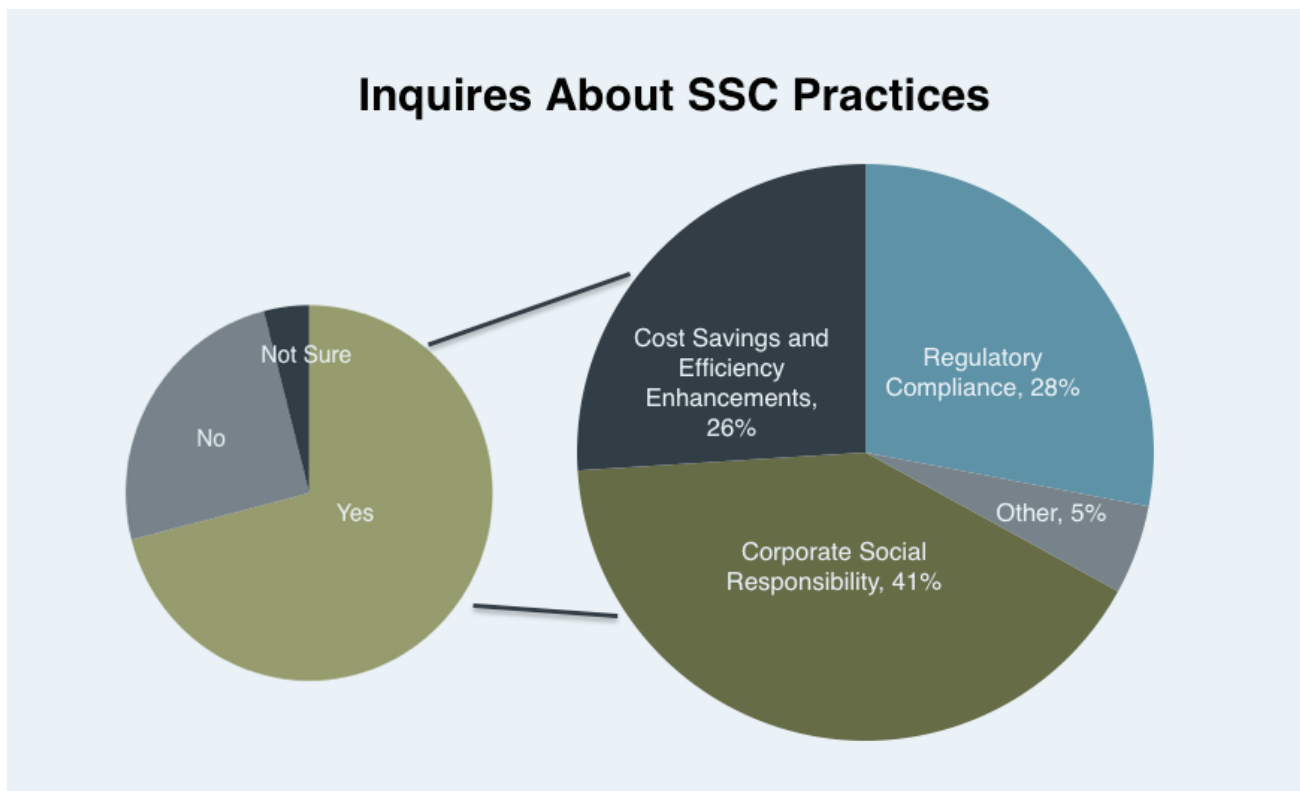- Other, 5%
- Corporate Social Responsibility, 41%

Figure 15: The graphic to the left shows 71 percent of respondents interface with customer inquiries. The graphic to the right breaks down the major SSC concerns referenced in customer inquiries.

Major Concerns

Of the respondents who use SAQs and other forms of customer inquiries, 28 percent cited regulatory compliance as a key area assessed. Regulatory compliance is a natural driver of such inquiries; as explored above, companies must ensure suppliers comply with an increasing number of requirements.

Roughly one quarter, 26 percent, of our respondent subset reported customer inquiries concerned cost savings and efficiency enhancements. This category of inquiry focuses on reinforcing the traditional bottom line by coordinating supply chains to minimize unnecessary logistics, packaging, and resource expenses. As mentioned in Chapter 1, increased information often reveals inefficient use of resources, which if addressed appropriately reduces costs.

Corporate Social Responsibility (CSR) was the final customer inquiry concern referenced by a significant percentage, 41 percent, of our respondent subset. Growth in concern for SSC practices is closely tied to growth in general concern for CSR. Specific references categorized as CSR included sustainability concerns like life- cycle analyses (LCAs), recyclability, and labor conditions.

Compliance Auditing

Companies that desire more in-depth verification of supplier operations go beyond SAQs to conduct audits. Respondents described second and third-party supplier audits as the next level of supplier engagement. Fifty-four percent of companies invest resources and time in auditing suppliers, compared to 71 percent who submit customer inquiries as shown in Figure 15.

54%

of companies interviewed conduct on-site supplier audits

The higher costs associated with audits make choosing which suppliers should be reviewed an important issue, as explored in Figure 16. Basic supplier information is necessary to profile risky suppliers and prioritize which ones must be audited. Companies collect this preliminary
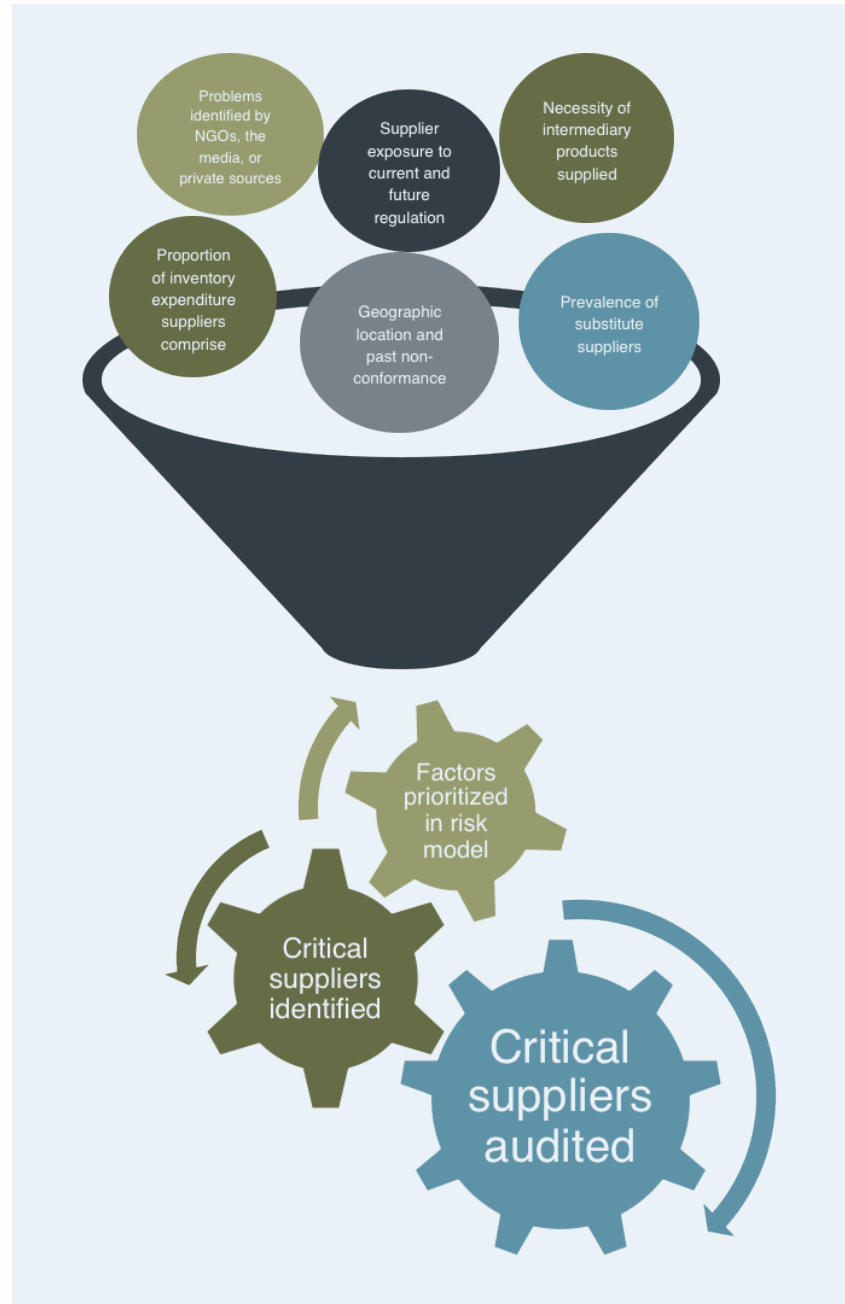

Figure 16: Choosing Suppliers to Audit - Many aspects are considered when firms decide which suppliers to audit. These factors are then weighted according to their perceived risk and formal supplier requirements.

information through first-party audits, also referred to as customer inquiries or SAQs. This risk categorization is influenced by internal information about suppliers' proportion of customers' inventory expenditure and the necessity of inputs they provide. Third-party sources such as NGOs or the media can also provide relevant information.

Once companies have a basic understanding of suppliers' level of sustainability management, they determine which self-assessments lack credibility or reveal risky suppliers. Companies address these issues by conducting second and third-party audits at suppliers' manufacturing facilities. By visiting suppliers' facilities, customers can more adequately verify supplier compliance.

Second-Party and Third-Party Auditing

DEFINITIONS:

- **Second-Party Audits:** also known as external audits, are assessments conducted by organizations separate, but not independent, from the audited enterprise. In the case of the Industry's supply chain, second-party audits occur when customers collect their suppliers' information.

- **Third-Party Audits:** involve independent parties assessing an organization based on a set of international quality standards. Third-party audits require both the auditor and the audit standards to be independent of the organization being audited. Examples of international quality standards used to conduct third-party audits include the International Organization for Standardization (ISO) and Social Accountability (SA) series.

Companies benefit from the experience acquired through second-party audits. Using internal personnel to audit a supplier provides companies with an 'on-the-ground' perspective of supplier facilities and operations. One respondent explained the benefit from second-party audits: "When you audit a supplier, you learn a lot about the supplier and about real life, so to speak, and that's a great experience for a sourcing professional as well. That's a positive side effect, and that's internalized after every audit rather than having a third-party doing it and then running away with the experience."

Types of Audits Conducted

- Second-Party: 45%
- Third-Party: 5%
- Both: 50%
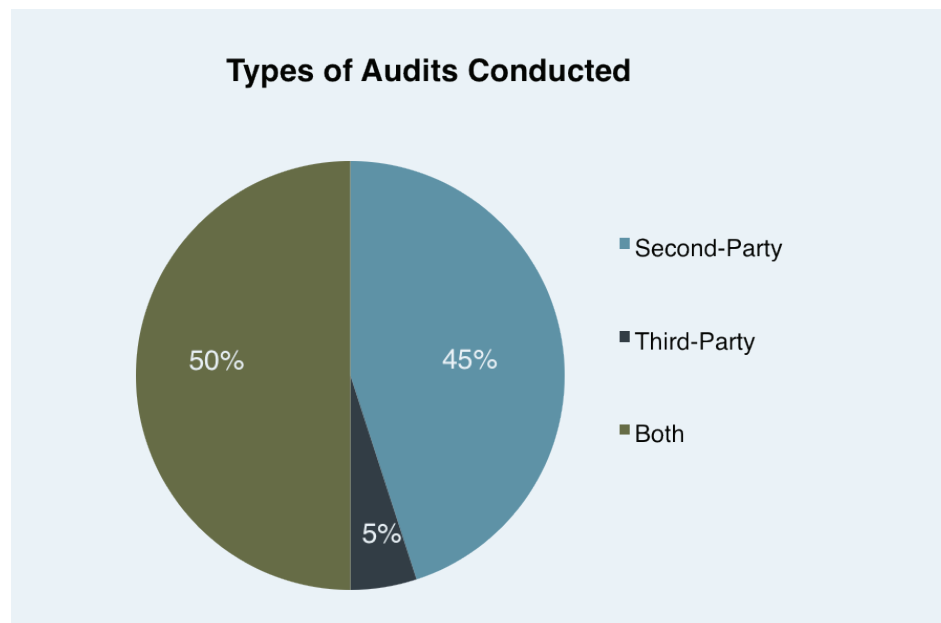
Figure 17: 55 percent of respondent companies that audit suppliers conduct third-party audits.

Tim Mohin, Director of Corporate Responsibility at AMD

"I view the audit as an opportunity to improve. If you are not paying attention or if you are not open to feedback, you are going to miss something. So whenever I have been on the receiving end of an audit, I have looked at it as a gift. Somebody cares enough to come in and look at what I am doing and gives me perspective on things that I should be doing better. The benefit from the audit is improved management systems and compliance."

The second-party model does raise some credibility concerns as both parties share business interests. This can lead companies to disregard sustainability risks capable of destabilizing their supply chains. Pyke of USD explained: "It has just never been believable to many people when Apple or Nike, for instance, says they have sent their own teams to audit factories to ensure there is no child labor or other hazardous conditions. It may be that they hold to very rigorous requirements, but nobody will believe them."

Third-party audits that use independent auditors and audit standards are the most objective. Independent auditors typically include NGOs such as the Fair Labor Association, industry associations such as the EICC, and in some cases government agencies. Companies may contract third parties to conduct audits based on internal standards, like their Supplier Codes of Conduct. Audits of this nature can often be misleading because they appear to be objective by virtue of the third-party auditor, but results may be influenced by the standard applied.

Even when third-party auditors use independent standards, objectivity can be compromised if customer companies finance the endeavor. Nonetheless, audits help companies engage suppliers with the concerns defined in their sustainability policies.

Limitations of Auditing

The legitimacy of audits can be limited by suppliers' capability to manipulate the information acquired. Specifically, when customers announce audits, which is common practice for second and third-party auditors, suppliers can alter manufacturing processes or conceal unsustainable operations.

An alternative scheduling option is the semi-announced audit. This option limits the extent to which suppliers can temporarily manipulate business practices because suppliers are informed an audit may take place within a range of dates. To ensure audit results accurately reflect supplier operations, however, companies should conduct unannounced audits. These audits are rare in the Industry because they disrupt supplier operations, though some companies do take this approach.[2]

Building close relationships with suppliers across the supply chain is the most feasible way to overcome the limitations covered in this section. Katie Schindall, Principal Program Manager of Sustainability at EMC explained this type of approach: "I would say that the biggest challenge is transparency. It comes down to knowing what is actually going on in your supply chain. In order to reach the point of full transparency, you need more than just reporting and audits. You need regular, open communication with full information exchange. This is one reason we really emphasize a collaborative sustainability approach when working with our suppliers." While relationships of this nature threaten the profitability of upstream suppliers, efforts in industry collaboration greatly enhance the viability of this engagement option.

Collaboration through Industry Coalitions

Industry collaboration is the most integrated form of engagement corporations use to facilitate communication of SSC policies. Groups like the EICC and GeSI have created sustainability forums where companies collaboratively develop SSCM practices. These industry coalitions unite peers, competitors, customers, and suppliers around common engagement efforts to effectively achieve mutual goals. Nearly half of our survey respondents, and nearly all that are consumer electronics brands, are EICC members.

Sustainability Manager at a Global Electronics & IT Company

"Our view is – and I think we share it with many companies – that one single company, even if it is a multinational, cannot do very much on its own. But if you team up with a lot of other big companies and you work systematically within the framework of, for example GeSI, then you can really make a difference."
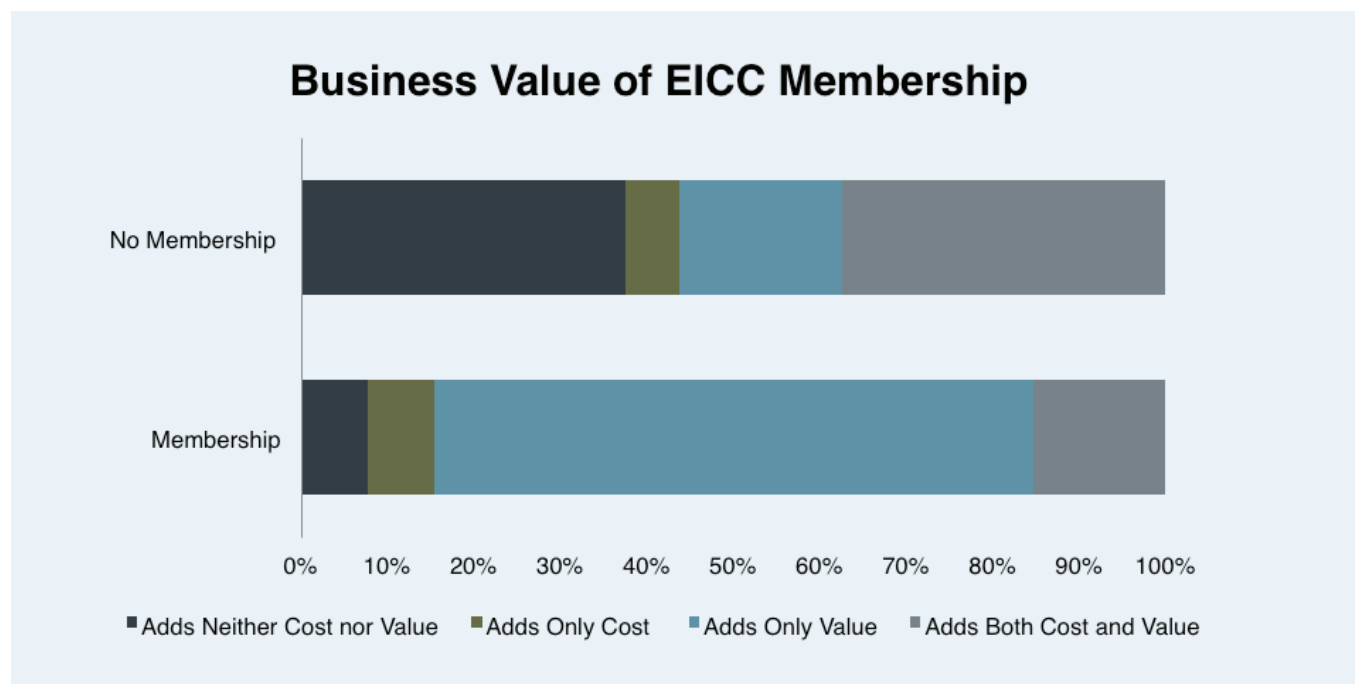

Business Value of EICC Membership

Figure 18: 69 percent of all corporate respondents believe that EICC membership adds business value. 85 percent of EICC members believe their membership adds value, while 56 percent of non-EICC members consider participation to add business value.

The engagement process begins with a common code of conduct. The EICC Code of Conduct is the archetype of sustainability policies in the Industry. While most companies have codes of conduct and sustainability policies, the EICC Code of Conduct is advantageous because of its consistency. Adopting a common code resolves the frustrating issue of different sustainability standards between companies. In addition to a common sustainability policy, industry coalitions develop engagement processes that facilitate efficient SSCM by formalizing consistent modes of communication across the supply chain. Mohin of AMD explained the value of one such tool, the EICC Validated Audit Process (VAP): "The whole advantage of the EICC is that we share a common code of conduct as well as the compliance processes and results. This makes it more efficient for all involved. Rather than auditing a factory for each of its many customers, we share one audit. We have had great luck with that because there seems to be a big overlap in terms of our suppliers and other members of the EICC, so that works very well for us."

| Phase 1:
**ORGANIZATIONAL
ASSESSMENT**

1. Targeted Engagement
    a) Size
    b) Type (operations)
**2. Initial Risk
Assessment**
3. Introductory Training | Phase 2:
**SELF ASSESSMENT &
TRAINING**

1. Training
2. Consultation
    a) Self Assessment
    Tools
**3. Self Assessment
Questionnaire (SAQ)**
4. Risk Assessment | Phase 3:
VALIDATED AUDIT

**1. Validated Audit Process
(VAP)**
    a) On Site Audit
    b) Consultative Corrective
    Actions
**2. Key Performance
Indicator (KPI) Updates**
**3. Validated Risk
Assessment** |

Figure 19: EICC VAP Phases of Assessment.
Source: Recreated from EICC website.

EICC Validated Audit Process (VAP)

The EICC developed the VAP as a standardized engagement process to help members and their suppliers manage continual compliance with the EICC Code of Conduct. The VAP's three phases of assessment and monitoring are described below.

PHASE ONE: 'Organizational Assessment', focuses on identifying member-companies' sustainability practices and policies, as well as defining the steps necessary for them to align with the EICC Code of Conduct.[3] By standardizing the definition of compliance risk, reputation risk, and the reporting paperwork (Risk Assessment forms), the EICC streamlines the process of implementing SSC policies.[4]

PHASE TWO: 'Self-Assessment & Training', relies on companies to self-assess their progress in corporate responsibility using Risk Assessment 2 (RA-2) forms, also referred to as SAQs. Member-companies require suppliers to complete RA-2s as well. This tool helps companies continually gather information necessary to assess their exposure to supply chain risk.

PHASE THREE: 'Validated Audit', requires facility audits for members and their suppliers. Audits validated by the EICC include internal audits, external audits based on the EICC Code of Conduct, and the EICC's VAP.[5] The EICC prefers suppliers that serve multiple EICC members undergo the VAP. Considering the complex and interconnected nature of the Industry's supply chain discussed in Chapter 2, this preference appears to be an astute way of stringently auditing the suppliers capable of incurring the most potential damage.

Kate Cacciatore, Sustainability Strategy Director at ST Microelectronics

"The whole point of the EICC approach was to have audits that could be shared. And that is why if we were going to do audits on our own sites, we would engage with the customers who wanted to do their own audits and just say 'look, we would rather do an EICC VAP.' The EICC approach has had the effect, for a supplier like us, of eliminating a lot of redundancy and overlap– duplication shall we say– between different standards and sets of questionnaires, etc."

Other Tools of Collaboration

The Industry's long and complex supply chain makes tracing products back to their raw material origins extraordinarily difficult, and in certain cases impossible. In an effort to address this challenge, the EICC and GeSI developed tools designed to help companies monitor supply chain risks.

The two groups created the Electronics – Tool for Accountable Supply Chains (E-TASC) in 2007 to gather and analyze supplier information in a consistent fashion for subscribers. With more than 300 members, including many in our sample set, this tool creates a forum for effective communication of sustainability expectations between customers and suppliers.[6]

Another tool currently under development is the Conflict-Free Smelter program (CFS), which reviews smelters' operations to evaluate compliance with conflict mineral legislation.[7] The program's list of compliant smelters will be organized by metal and made available to EICC members. While this tool has extraordinary potential, its developers face the formidable challenge of tracing raw materials to their smelters. Although the magnitude and degree of complexity of this challenge makes effective implementation of the CFS program difficult, the efficiency enhancements derived from collaborative efforts afford the EICC and GeSI advantages other organizations lack.

Limitations of Industry Collaboration

Although the EICC and GeSI have increased the efficiency and efficacy of monitoring mechanisms in the Industry, there are limitations to industry collaboration, such as differing levels of commitment to SSCM across their membership. One respondent noted: "Big groups can only move as fast as their center of gravity. Even though it has greater momentum, it lacks speed." Another manager echoed this sentiment, "we definitely use EICC and GeSI but to be honest with you I think that those are too slow." This is a tough challenge to address across broad industry coalitions, but might be approached by creating niches or sub-groups for specific parts of the Industry value chain to prioritize issues which might move slowly in the organization as a whole.

When electronics companies sell products to customers outside of the Industry they are often subject to standards that differ from the EICC's code. To the extent that these standards are pushed up the supply chain they complicate the challenge of complying with sustainability requirements. A number of organizations have emerged to address this challenge of standardization across industries. The Sustainability Consortium and the Global Social Compliance Programme (GSCP) are the two organizations survey respondents indicated as leaders of this cross industry coordination effort.

Regardless of the limitations described in this section, collaboration through industry coalitions remains the most in depth and involved form of engagement companies have to advance SSCM practices. While overcoming communication challenges is imperative for corporations to implement SSCM programs, ensuring supply chains are actually sustainable require that companies enforce sustainability stipulations in their Supplier Codes of Conduct.

Enforcing Policies through Supplier Incentives

Companies rely on incentives, such as allocating business based on compliance, to enforce their Supplier Codes of Conduct. When discussing SSC policy enforcement, interview respondents noted that the effectiveness of incentives varies by supplier and the timing of implementation.

Supplier Selection

Factories are typically subject to stringent vetting processes before customers approve suppliers. By considering potential suppliers' SSCM practices in approval processes, customers require applicants to increase the sustainability of their business operations. Suppliers with specific competitive advantages, like specialty manufacturing, pricing, and product quality, can still earn major contracts despite poor CSR, but interview responses indicated SSCM practices differentiate two otherwise comparable potential suppliers. Suppliers seeking to develop lucrative long-term relationships with consumer-facing brands should consider this when implementing their business plans.

Eric Johnson, Senior Sustainability Specialist at Sony Electronics

"We source from suppliers that meet our Green Partner Standards and have passed the Green Partner Audit. Additionally, we have implemented a simple questionnaire for suppliers of some goods and services for the operation and established a green catalog for office supplies. Finally, all suppliers are expected to meet Sony Supplier Code of Conduct based on the EICC Code of Conduct."

Customers interested in effectively enforcing SSCM practices across their supply chains must consider these issues when choosing suppliers. Once supplier contracts are established customers prioritize supply chain stability, which leads to decreased enforcement leverage.

Corrective Action 45%

No Corrective Action 55%

23% — Will terminate suppliers

62% — Prefer to work with suppliers

15% — Prefer to work with suppliers, but will terminate for serious infractions
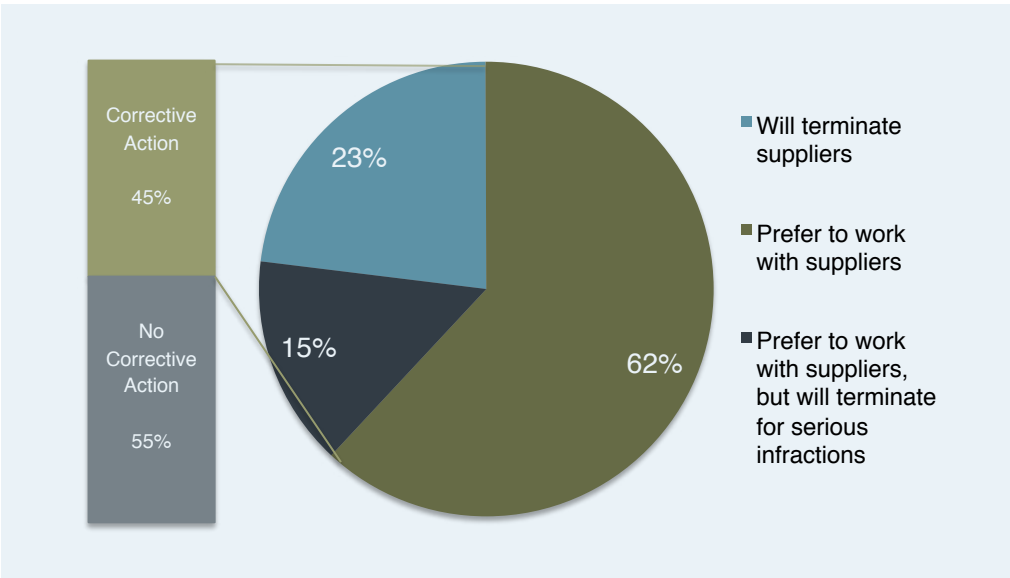
Figure 20: A significant proportion, 77 percent, of survey respondents that impose corrective action prefer to work with non-compliant suppliers.

Companies that inspect potential suppliers' sustainability performance are likely interested in suppliers' continual improvement of SSCM practices. However, the complexity of ongoing business relationships limits customers' capability to leverage continual improvement from suppliers. This is due in part to customers' desire to maintain supplier relationships; customers generally prefer to work with, rather than terminate, suppliers experiencing SSCM problems. This practice complicates efforts to leverage continued supplier improvement, but is preferable to cutting suppliers as customers that sever ties lose all potential to influence. Additionally, terminating suppliers creates a sustainability liability because lost business resulting in financial strain can push suppliers to resort to cheaper and even less sustainable business operations.

Companies understandably value maintaining supplier relationships for fundamental business reasons, many of which directly affect company financial performance more than suppliers' sustainability practices. Suppliers that reliably deliver quality products offer stability for companies' supply chains. Conversely, new suppliers create supply chain uncertainty.

Supplier selection criteria must include sustainability concerns to communicate SSC is a priority. Likewise, these criteria must be continually considered as customers build supplier relationships. This informs suppliers of customers' expectations and creates an incentive for continued improvement on sustainability initiatives. Developing supplier relationships of this nature enables customers to rearrange sourcing contracts. If a supplier is in violation of customers' sustainability requirements customers can decide to purchase less from the non-compliant supplier, creating compliance incentives.

Kate Cacciatore, Sustainability Strategy Director at ST Microelectronics

"One area in which many companies in the sector may still require support in improving the effectiveness of their management of CSR in their supply chain is in creating synergies with their purchasing departments to ensure that the company's regular business interactions with suppliers are supportive of and in alignment with their CSR supply chain programs."

The Business Scorecard as an Incentive

Our investigation found companies have successfully used business scorecards to establish a tighter relationship between sustainability performance and purchasing. Scorecards allow companies to clearly articulate and measure suppliers' implementation of SSCM expectations. Customers demonstrate their priorities to suppliers quantitatively, by heavily weighting the most important issues. Wal-Mart, among other consumer electronics brands' clients, has adopted this approach. Wal-Mart's SSCM efforts are further explored in Chapter 1.

Jörgen Karlsson, Global Program Manager, Supplier Code of Conduct at Ericsson

"One large telecom operator, for example, has a supplier evaluation model where they evaluate supplier code of conduct and corporate responsibility issues, which are weighted relatively heavily. It is not something on the side just for the sake of having it. It could really mean the difference for us between getting a contract with a customer or not getting it, being beaten by a competitor [that has a stronger sustainability program]. It really weighs in and it is a factor."

Building Supplier Capabilities

A customer's ultimate goal is for suppliers to assume responsibility for their own sustainability issues. Achieving this goal requires educating and training suppliers about SSCM practices. In lesser developed regions few suppliers are familiar with SSCM as an issue pertinent to business operations. One supply chain manager explained an implementation challenge his company faced: "Overall, our suppliers were willing – but not necessarily able – to implement sustainability policies."

As explored above, E-TASC is an important tool intended to help suppliers develop their capabilities.[8] Customers that successfully build suppliers' capacity by encouraging them to use E-TASC's training tools will reduce their enforcement challenge.

Tying It Together

Electronics companies utilize a variety of approaches to manage and monitor sustainability concerns across the value chain. Companies must choose between dedicated departments and dispersed responsibilities when considering their organizational approach to SSCM. Resource constraints were often cited as influential in organizational decisions. Thus, companies must weigh the cost of dedicating personnel to a sustainability department against the value created by employees that assume responsibility for sustainability initiatives.

Our interviews indicated governmental, international, and industry standards are the bases of corporate sustainability policies and programs. After corporations define which sustainability issues are priorities and how they should be addressed, there remains the challenge of communicating these priorities up the supply chain.

Customers address this communication challenge through supplier engagement efforts in three primary ways: customer inquiries, compliance audits, and industry collaboration. Customer inquiries are the most basic form of supplier engagement because they expand the corporate sustainability policy to articulate supplier requirements. Companies that desire more involved forms of communication engagement audit their suppliers. Industry coalitions enhance the efficiency of supply chain sustainability by consolidating sustainability efforts around common issues and forms of engagement. The EICC's VAP is an example of an industry coalition tool designed to streamline communication efforts and increase consistency.

Finally, interview respondents explained customers rely on incentives to enforce sustainable business operations in the supply chain. Specifically, customers that reward sustainability efforts with supplier contracts wield the most enforcement power. Once supplier relationships are established, customers' concern for supply chain continuity limits the extent to which they can enforce implementation of their policies. To incentivize continual improvement from suppliers, customers must incorporate sustainability performance into evaluation metrics used to determine the status of ongoing supplier relationships. Managers we interviewed explained the 'business scorecard' to be useful in quantitatively communicating the importance of SSCM in purchase agreements.

Defining, communicating, and enforcing sustainability concerns up the supply chain will remain challenges for the Industry. Many companies are taking actions to address these challenges, but their degree of complexity and magnitude reveal they require continual attention. The increase in regulations that expand customers' SSCM responsibilities suggests these challenges, and efforts required to address them, will continue going forward.

4 – Taking Action

Predicting the evolution of SSCM is a daunting prospect because the issue set is complex and rapidly changing. Based on our conversations, we have developed the ideas below exploring what might be expected and offering some prescriptions as to how companies can manage risks and capture opportunities through SSCM practices.

What IT Companies Can Expect

Transparency will be the Order of the Day

Recent regulations, such as the California Transparency in Supply Chains Act and Dodd-Frank Section 1502, have increased transparency requirements around conflict minerals while large companies, like Intel and Dell, are requiring GHG emissions disclosure from suppliers. This trend toward disclosure requirements on issues that were previously considered externalized will continue.

In this age of the internet, social media, and camera-phones, violations of national and international regulations will quickly be discovered, documented, and exposed. This risk will further push organizations to increase scrutiny of their vendors.

Greater transparency may reveal a host of as-yet-unforeseen issues and companies should expect to become increasingly responsible for the actions of their domestic and overseas suppliers. As a result, companies will attempt to mitigate the associated risks (see *Our Recommendations* below).

Sustainability Oriented Product Labeling will Increase, and Become Increasingly Important

In July of 2012, AT&T launched a proprietary eco-label for its mobile devices.[1] This is not the first of such efforts; in fact the Ecolabel Index lists over 430 product ranking programs.[2] The proliferation of these labels represents a growing belief that individual consumers will increasingly incorporate the environmental and social impacts of producing a product (as well as impacts throughout its lifecycle) when making purchasing decisions. In trying to leverage this trend, major companies will increasingly engage their vendors and rank them on performance.[3]

Product certifications such as EPEAT will become more important to both individual consumers and enterprise buyers. As explored in Chapter 1, EPEAT is currently used by a large and expanding base of companies, universities, and government agencies in dozens of countries. Driven by a variety of factors, these organizations will continue to integrate EPEAT and other certifications into purchasing decisions. Suppliers will need to alter their products and operations to achieve such certifications and win this business.

Self-Assessment Questionnaires (SAQs) and Audits will Become More Common

As regulators become more interested in managing transparency, companies can expect to receive more SAQs about the sustainability of their operations and supply chains. These SAQs will likely ask about actions further up the supply chain, including those of Tier II & III suppliers.

At the same time, second and third-party audits will become more common as the reputational and business consequences of poor SSCM become more serious. Internationally standardized certifications, such as those developed by ISO, may eventually displace the need for second-party audits. However, in the near future, expect more companies to begin auditing their suppliers on sustainability issues.

Media and NGO Scrutiny will Increase, though this Can be an Asset

Third-party industry observers such as the media and NGO community will pay increasing attention to sustainability in the Industry's supply chain. Greenpeace, for instance, is now on the fifth iteration of its Cool IT Leaderboard and continues to expand the base of companies reviewed.[4] Recently, the NGO has also gone beyond ranking electronics manufacturers to reviewing the operating practices of cloud service providers such as Amazon and Facebook. We expect campaigns such as this to become more prevalent, and companies across the Industry's value chain can expect the sustainability of their operating practices to be scrutinized.

Attention from NGOs or the media can also be used as an asset. After receiving negative publicity from Greenpeace, for example, Facebook successfully partnered with the organization to develop a plan for its data centers to be powered by renewable energy. Engaging would-be whistle-blowers to improve performance will continue to be a great option to generate positive business results and good publicity.

Improved Sustainability Management will Lead to More Efficient Production and Logistics

Attention to cost management in the supply chain is not a new phenomenon. As previously explored, supply chain managers often focus on lean operations as essential to their job function. However, some companies are already leveraging green initiatives as a means to identify further cost reduction opportunities. HP, for instance, saved 1.7 million metric tons of carbon (nearly the equivalent of the company's entire carbon footprint from its own operations) and millions of dollars by engaging its vendors to switch from single use wood pallets to reusable plastic pallets.[5] Packaging and logistics represent attractive areas of cost saving opportunity and we expect more companies to pursue cost savings by reducing waste in these areas.

Our Recommendations

To effectively manage and capitalize on the trends explored above and throughout this document, our team recommends that your company considers the following:

Assign Accountability for Sustainable Supply Chain Management

As SSCM becomes more important to long term business outcomes, assigning ownership of this issue set is critical. Chapter 3 explored differing approaches, which include dedicated sustainability departments as well as housing sustainability within supply chain management.

Our team recommends a dedicated sustainability professional with operating experience be made responsible for SSCM as a formal part of his/her job, rather than as a voluntary exercise or objective. Additionally, it is important that your executive team empower this manager with the authority to develop and enforce an SSC policy. Otherwise, more time will be spent reaching agreement on each issue that comes up than managing key issues on the basis of a recognized policy.

Finally, additional value can be realized by integrating SSCM efforts with a broader corporate sustainability program focused on achieving cost savings in your own operations as well as engaging key stakeholders on sustainability.

Define Your Position through a Policy

Formalize your views on SSCM by developing an SSC policy. This policy should codify:

- **WHO** – The scope of your policy. The scope might include suppliers in a specific tier of your supply chain or above a certain scale; in terms of organization size or value of business conducted.

- **WHAT** – The requirements your company expects suppliers to comply with. These may include:
  - » Legal and regulatory compliance
  - » Commitments to continuous improvement
  - » Conflict mineral management
  - » Environment, health, and safety management systems
  - » Appropriate levels of transparency
  - » Sustainability commitments such as carbon footprint reduction

- **WHY** – The benefits or implications of complying (or not complying) with your SSC policy. This could range from a basic preference for compliant suppliers to more attractive benefits for compliance, as well as consequences for failure to comply.

- **HOW** – The outreach suppliers should expect from your organization. This outreach ranges from SAQs to audits and partnerships for improvement. Suppliers should be aware of how they will be engaged and how your company is willing to help them comply.

In developing your organization's policy, we recommend referencing the EICC standards, which provide a useful and broadly accepted starting point. Be sure to keep your policy up to date by setting a protocol for regularly reviewing and revising it.

Map Your Supply Chain for Risks and Opportunities

Develop a clear and complete map of your company's supply chain to help identify where attention is most needed in implementing and monitoring SSCM efforts. A good map can also help you to understand weak points in your supply chain and enhance its overall resiliency.

Realize Cost Savings through Improved Packaging and Logistics

Beyond helping suppliers to reduce their energy use, sustainability is a great lens to help identify waste across your supply chain, which can result in cost savings for your own organization. For example, survey respondent Cricket Wireless leveraged a packaging redesign to significantly reduce the size of its handset packaging and save over 50 percent on its overseas shipping and fuel costs.

As explored above, large customers, like Wal-Mart and Dell, now expect vendors to measure and mitigate elements of their environmental footprints, including supplier requirements for reducing packaging. SSCM initiatives should be leveraged also in logistics such as route planning and mode/mix. Retailer US Foods saved over $30 million between 2008 and 2010 through such efforts. When mapping your supply chain, we suggest involving operations experts from across your organization, as well as consultants with expertise in best management practices to actively seek opportunities for similar cost savings.

Engage

Choose the appropriate forums to join the Industry's dialogue and stay abreast of best practices. As explored throughout this document, the EICC is a 'big tent' initiative with a broad membership base and a wide variety of tools to assist companies in sustainable supply chain management and supplier engagement. Companies active in information communications technology (ICT) should also consider joining GeSI, which focuses on sustainable supply chain management as well as other areas of green ICT.

There are many other efforts which bring together diverse groups of companies to focus on sustainability broadly or industry-specific problems. The former can be of value as an opportunity to collaborate with customers or other important stakeholders while the latter is of use as such groups may address an issue pertinent to your organization. Examples of both types of initiatives are included in the table below.

Leading Electronics and IT Initiatives	
EICC®	GeSI GLOBAL e-SUSTAINABILITY INITIATIVE
Broad Corporate Sustainability Forums	**Issue Specific Organizations**
CORPORATE ECOFORUM — Forging Next Practice in Corporate Sustainability	BASEL CONVENTION
the green grid® — get connected to efficient IT	StEP — SOLVING THE E-WASTE PROBLEM
Ceres	FAIR LABOR ASSOCIATION™
World Business Council for Sustainable Development	

Conclusion

This paper has sought to shed light on a complex and increasingly critical issue set for the Industry. Effective sustainability management across the supply chain is critical to winning and retaining business, as well as to maintaining a positive public image. Understanding why electronics and IT companies should focus on sustainable supply chains, the issues of greatest importance, and approaches to managing them, positions managers to navigate a new risk class and potentially capture new opportunities.

We are encouraged by the accomplishments of leaders across the sector, many of whom kindly agreed to speak with us in the course of this study. Their actions, both in their own operations and through cross industry collaboration, support more resilient supply chains with greater social accountability and smaller environmental footprints.

Appendix A: Corporate Respondents

ACTIVISION BLIZZARD

Akamai

AMD Smarter Choice

APPLIED MATERIALS®

at&t

AVAYA

CISCO

citigroup

cricket communications

DELL

ebay

EMC² where information lives®

ERICSSON

facebook

HEWLETT® PACKARD

IBM

intel

MOTOROLA SOLUTIONS

ORACLE®

RIM

Sabre

SanDisk STORE YOUR WORLD IN OURS™

SONY

Sprint

STMicroelectronics

SUNGARD®

TREND MICRO

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MALK
Sustainability Partners

Endnotes

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