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Building a Green Supply Chain:

Social Responsibility for Fun and Profit

March 2008

~ Underwritten, in Part, by ~

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Executive Summary

Globalization, increasing environmental compliance requirements, and supply chain cost pressures are driving the need for improved sustainability and Corporate Social Responsibility (CSR) programs and solutions in all areas of supply chain management. From environmentally friendly packaging to carbon-footprint reducing network design and logistics, "going green" has moved beyond buzzword status to become a business imperative that can lower costs and provide a competitive advantage in the marketplace. This report provides a roadmap to green best practices that Best-in-Class organizations are leveraging today to reduce overall supply chain costs, limit environmental impact, and increase competitive advantage. By providing the business case to support the responsibly driven supply chain, this report bridges the gap between good green intentions and sustainable enterprise excellence.

Research Benchmark

Aberdeen's Research Benchmarks provide an in-depth and comprehensive look into process, procedure, methodologies, and technologies with best practice identification and actionable recommendations

Best-in-Class Performance

The business case for green initiatives hinges on the ability to literally turn green to gold by impacting both top and bottom lines. As a result, Aberdeen used four key cost-related criteria to distinguish Best-in-Class companies from Industry Average and Laggard organizations:

- **Transportation and Logistics Costs** -- The Best-in-Class achieved a **2%** decrease in their overall logistics and transport costs, versus 1% increase for Industry Average, and a 4% increase for Laggards.
- **Energy Costs** -- Best-in-Class companies achieved a **6%** decrease in energy costs, versus no change for Industry Average and a 7% increase for Laggards.
- **Operations and Facilities Costs** -- The Best-in-Class achieved a **2%** decrease in the cost of operations and facilities, versus no change for Industry Average and a 4% increase for Laggards.
- **Supply Costs** -- The Best-in-Class achieved a decrease of **2%** in supply costs, versus no change for Industry Average and a 6% increase for Laggards.

"Our cross-docking with customers has improved to increase fleet usage and reduce waiting times. We also have a variety of green initiatives in the factory. Employee service has improved awareness and started changing habits"

~ VP Procurement, Tier 1 Consumer Food Products Company

Competitive Maturity Assessment

Survey results show that the firms enjoying Best-in-Class performance shared several common characteristics, including:

- Best-in-Class companies deploy technology solutions and sustainability services in support of green initiatives to both enable improvements and track results. By leveraging technology, firms have a superior ability to verify compliance and continuously improve operational performance.

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- Best-in-Class companies have identified an executive leader for their green supply chain initiatives, and communicate progress regularly to both internal and external stakeholders. This builds commitment and collaboration, socializes progress, and contributes to competitive advantage.
- Best-in-Class companies have clearly identified the main benefits to their organization and track performance regularly. In particular, energy usage and logistics/transportation costs are tracked by 97%.

Required Actions

In addition to the specific recommendations in Chapter Three of this report, to achieve Best-in-Class performance, companies must:

- **Assign executive-level responsibility** for green supply chain initiatives, and ideally for all enterprise-wide green/sustainability programs. Executive sponsorship will ensure cross-functional vision and coordination, and direct focus on both strategic and tactical objectives.
- **Establish clear metrics and track green performance** in a variety of areas. "You can't improve what you don't measure", so performance management is a key area in which to focus your efforts. Green performance tracking must include the ability to gather the appropriate data from across the enterprise, present a single view of all green/sustainability metrics, and provide line managers with visibility and analytic tools to manage the green drivers in their functional areas of responsibility.
- **Move more aggressively to embrace technology enablers**. Whether your green initiative is focused on greening functional areas like supply chain network design, warehouse management, transportation/logistics, or asset management; compliance areas like waste disposal/recycling/reuse, regulatory reporting, health and safety, or supplier certification; or energy natural resource consumption, explore the use of technology to provide the tools and visibility necessary to effectively identify and manage green processes.
- **Adopt a life-cycle approach** to key process areas. Carbon footprint modeling and tracking is an example of an area that can align well with overall enterprise objectives of lowering carbon emissions while preparing for new carbon reporting regulations that are already in place in some markets. Understanding the end to end impact of green supply chain strategies and decisions will provide additional opportunities for using green criteria to lower overall costs and improve competitive advantage.

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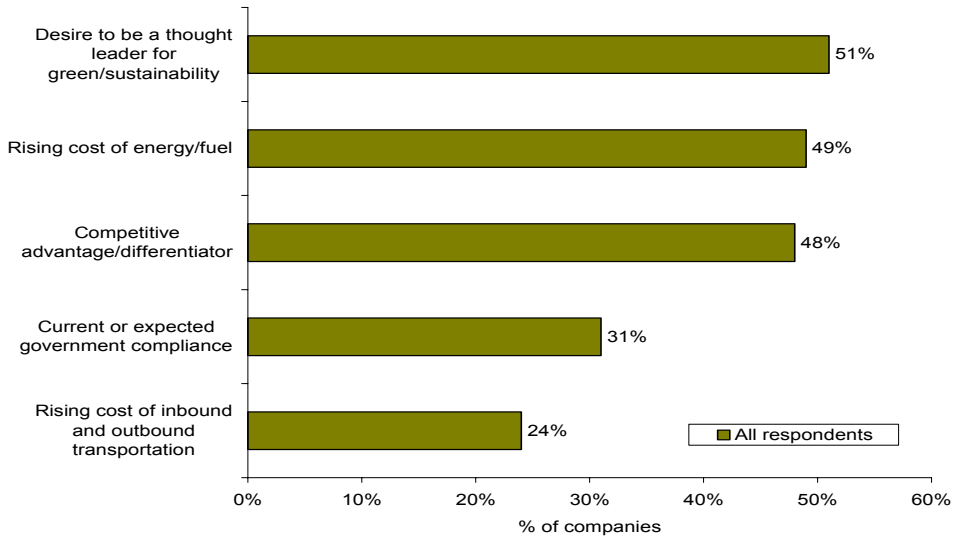
Chapter One: Benchmarking the Best-in-Class

Green Fields: Business Process Transformation

As companies struggle to contain supply chain costs, meet customer demands, and comply with an ever-mounting array of compliance mandates, the intense pressure to *simultaneously* enhance brand visibility and value by being perceived as socially responsible, has never been greater. All along the supply chain, costs are skyrocketing and competition is intensifying. As a result, firms world-wide are looking to *re-imagine* the global business landscape, overhaul key internal processes, and transform their own organizational cultures -- all via Corporate Social Responsibility (CSR) and sustainability initiatives -- popularly glossed as "green."

Though firms take on green agendas for disparate reasons, Aberdeen research has revealed that many do so for motivations both strategic and tactical: in order to drive down energy costs (49%), gain a competitive advantage (48%), and comply with regulations (31%). Significantly, a survey of over 330 firms of all sizes from the consumer, process, discrete, hi-tech, and other industries revealed that the top reason for a green supply chain initiative is that companies desire to be Thought Leaders on the topic of sustainability (51%). In addition to the demonstrable benefits to the bottom line, companies are seeking to win a preferred position against their competitors, and be perceived in the global market as leaders among other "good corporate citizens" (Figure 1).

Figure 1: Top Five Pressures Driving the Green Supply Chain



Source: Aberdeen Group, March 2008

Fast Facts

- √ **87%** of companies have either redesigned all or key parts of their supply chain or plan to redesign all or key parts of their supply chain to align with sustainability goals
- √ **56%** of companies have had a green supply chain initiative for 2 years or less

Green Glossary

Corporate Social Responsibility (CSR) posits that firms have a responsibility to be social and environmental stewards and that having a positive impact on society and the planet is as important as profit.

Green refers to practices, processes, and products that have a minimal impact on the health of the ecosystem. The emphasis is on non-hazardous, recyclable, reusable, and energy efficient products and processes.

Sustainability ensures the ability to meet present needs and profits, today, without compromising the ability to meet them tomorrow.

Triple Bottom Line (TBL) determines that business has positive impacts on the three P's: people, profit, and planet and is a standard framework for CSR agendas.

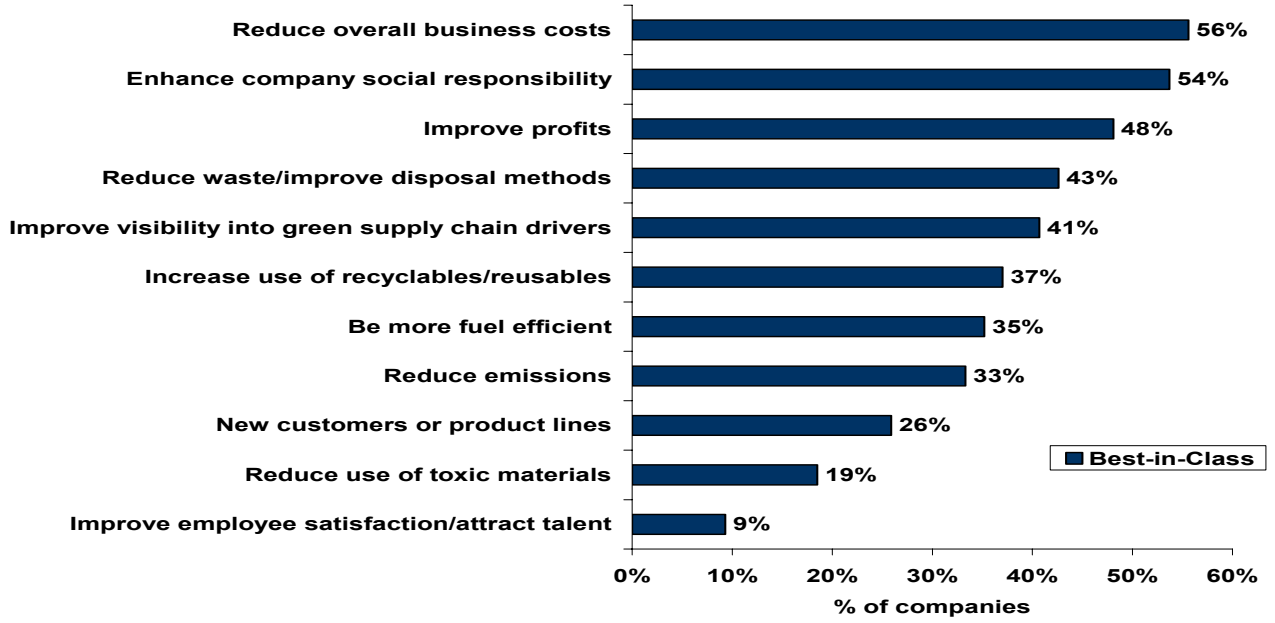
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CSR, sustainability, and green programs have historically been focused mainly on public relations and stakeholder influencing. While a few companies were seriously involved in promoting and implementing programs to improve their environmental and social impact, many invested small amounts in market-facing programs in order to be perceived as green - giving rise to the term "green washing." Based on Aberdeen's findings however, companies have clearly identified goals they hope to achieve as a result of their green/sustainability initiatives (Figure 2). Further, these goals are not limited to one or two obvious "green-wash" areas, but span the supply chain in terms of coverage and impact, from the broad objective of reducing overall business costs, to specific goals for visibility into green supply chain drivers, and identifying new customers and/or product lines.

"Sustainability is emerging as a key driver for us along with cost and product innovation."

~ VP of Supply Chain, Mid-size Specialty Chemical Company

Figure 2: Best-in-Class Goals for Sustainability Initiatives



Source: Aberdeen Group, March 2008

Finally, loudly touted and poorly implemented and managed green initiatives can hurt an organization's brand image as well as both top and bottom line results. Compounded by a market saturated by buzz words and pressure to green, an alarming number of firms take on initiatives with too little knowledge, no holistic vision, and too little support. As a result, Aberdeen research has found that the majority of companies are overwhelmingly unprepared to reap the environmental, social, and economic benefits earned by those with well-planned and well-executed sustainability initiatives.

The Maturity Class Framework

Aberdeen used four key performance criteria to distinguish the Best-in-Class from Industry Average and Laggard organizations. Table 1 provides a framework with which companies can benchmark themselves and identify in which category they fall.

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Table 1: Top Performers Earn Best-in-Class Status

Definition of Maturity Class	Mean Class Performance
Best-in-Class: Top 20% of aggregate performance scorers	▪ 6% decrease in energy costs, on average in one year ▪ 2% decrease in supply costs, on average in one year ▪ 2% decrease in facilities/operations costs, on average in one year ▪ 2% decrease in logistics/transport costs, on average in one year
Industry Average: Middle 50% of aggregate performance scorers	▪ 0% increase in energy costs, on average in one year ▪ 0% increase in supply costs on average in one year ▪ 0% increase in facilities/operations costs, on average in one year ▪ 1% increase in logistics/transport costs, on average in one year
Laggard: Bottom 30% of aggregate performance scorers	▪ 7% increase in energy costs, on average in one year ▪ 6% increase in supply costs, on average in one year ▪ 4% increase in facilities/operations costs, on average in one year ▪ 4% increase in logistics/transport costs, on average in one year

Source: Aberdeen Group, March 2008

The Best-in-Class PACE Model

Driving measurable benefits from green supply chain initiatives requires a combination of strategic actions, organizational capabilities, and enabling technologies. Best-in-Class companies have identified both strategic (thought leadership) and tactical (cost reduction) drivers that come together in the form of competitive advantage in the marketplace (Table 2).

Table 2: The Best-in-Class PACE Framework

Pressures	Actions	Capabilities	Enablers
▪ Competitive Advantage/Differentiator	▪ Redesign key aspects of logistics/transport system ▪ Focus on emission/carbon footprint reduction strategies ▪ Redesign procurement/sourcing strategy ▪ Improve waste/disposal mgmt. (recycling. reuse, reverse logistics etc.)	▪ Executive-level responsibility for company-wide green performance ▪ Carbon footprint tracking & modeling ▪ Materials and/or equipment lifecycle approach ▪ Green-oriented EHS/EMS tracking/analytics ▪ Role-based visibility into green performance	▪ Sustainable transport/logistic services ▪ Role-based green dashboards ▪ Waste/disposal tracking/analytics ▪ Sustainability consultants/Systems Integrators ▪ Video conferencing ▪ Sustainable/efficient assets

Source: Aberdeen Group, March 2008

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Best-in-Class Strategies: Learning from the Green Avant-Garde

As we have seen, Best-in-Class companies have identified both strategic and tactical goals across the supply chain as a result of the pressures driving their green efforts. Similar findings were identified by Aberdeen in its January, 2008 report, the *Supply Chain Executive's Strategic Agenda 2008*. In that report, corporate-wide green initiatives were highlighted as helping to drive supply chain transformation in network design, logistics mix, collaboration initiatives, energy consumption, waste reduction and overall supply management.

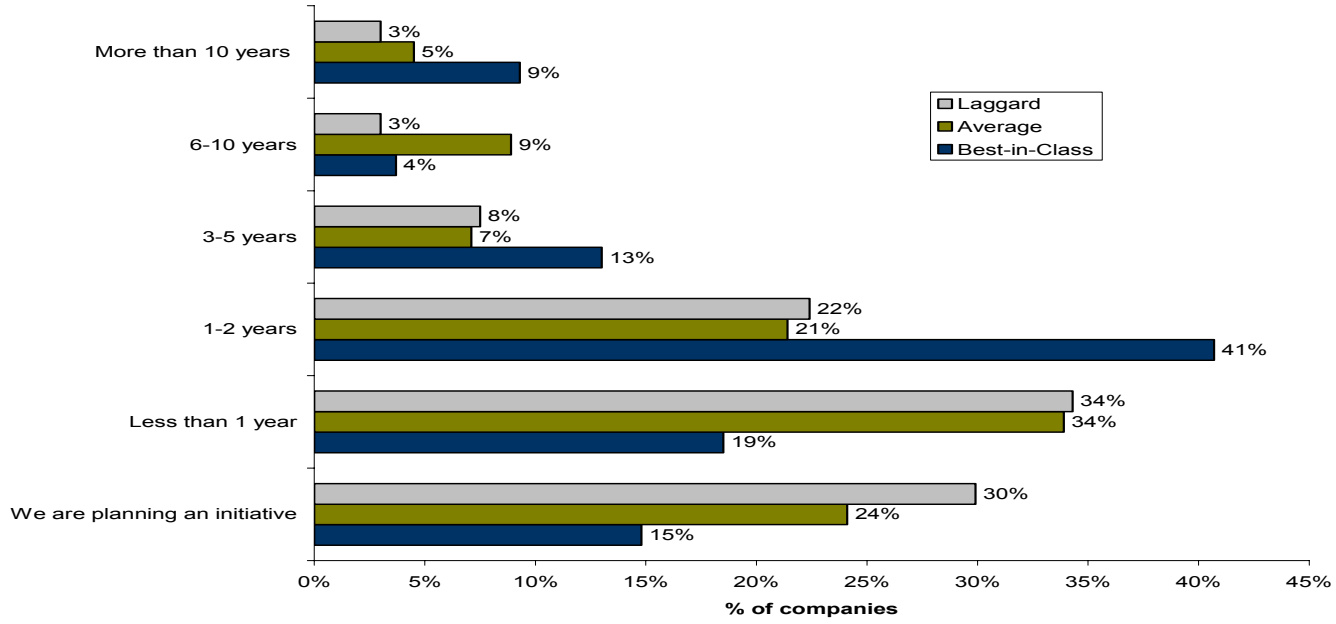
Again in this research, green and sustainability objectives have been identified by Best-in-Class respondents as key drivers of their intent to begin or continue to redesign their supply chains around green goals.

In fact, companies of every size and industry have begun, or are planning to begin, green supply chain initiatives. Leading the charge, are Best-in-Class companies who are twice as likely as all others to have a program that is 1-2 years old. (Figure 3)

"We recently hired our first sustainability manager. We are excited to have someone 100% focused on the sustainability initiative. We set our foundation in 2008 and then implement additional positive changes in 2009 and beyond."

~ CFO of a Tier Two Apparel Company

Figure 3: How Long Have you had a Green Initiative?



Source: Aberdeen Group, March 2008

Companies have taken a variety of approaches to the green-oriented redesign of their supply chains for example, they apply their green initiative to the entire supply chain, or they have begun with key elements such as supply chain network design, transportation/logistics, warehouse management, Environment/Health/Safety (EHS), or Enterprise Asset Management (EAM) (Figure 4).

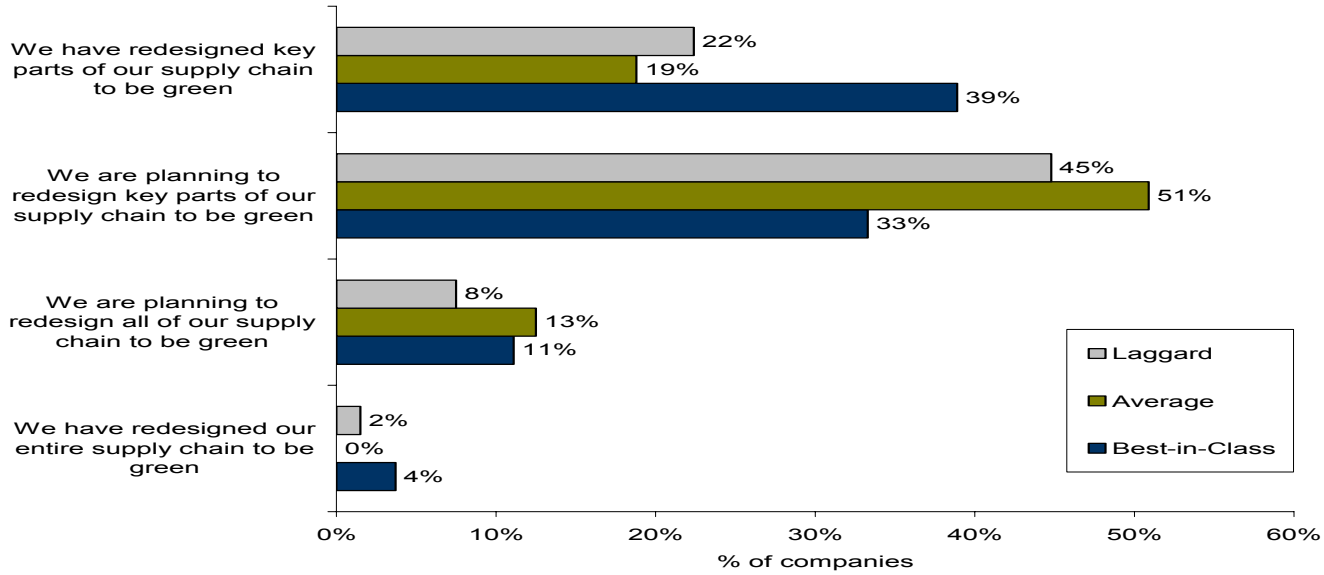
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Two dynamics of particular interest are shown in the chart below. First, Best-in-Class companies have taken the lead in redesigning key parts of their supply chains, with 39% having completed some portion of sustainability-focused redesign. Industry Average and Laggard companies are playing catch-up in the "planning to redesign" category. The second dynamic illustrated is the clear preference to redesign the supply chain by focusing on key elements. A benefit of this phased approach is reduced complexity and improved time to value.

"We are just starting to implement some small programs like ways to reduce the impact of travelling, looking into buying recycled and efficient office supplies and lighting. We want to focus on reducing our emissions, overall"

~ Supply Chain Manager, North American Retailer

Figure 4: Scope of Green Supply Chain Redesign



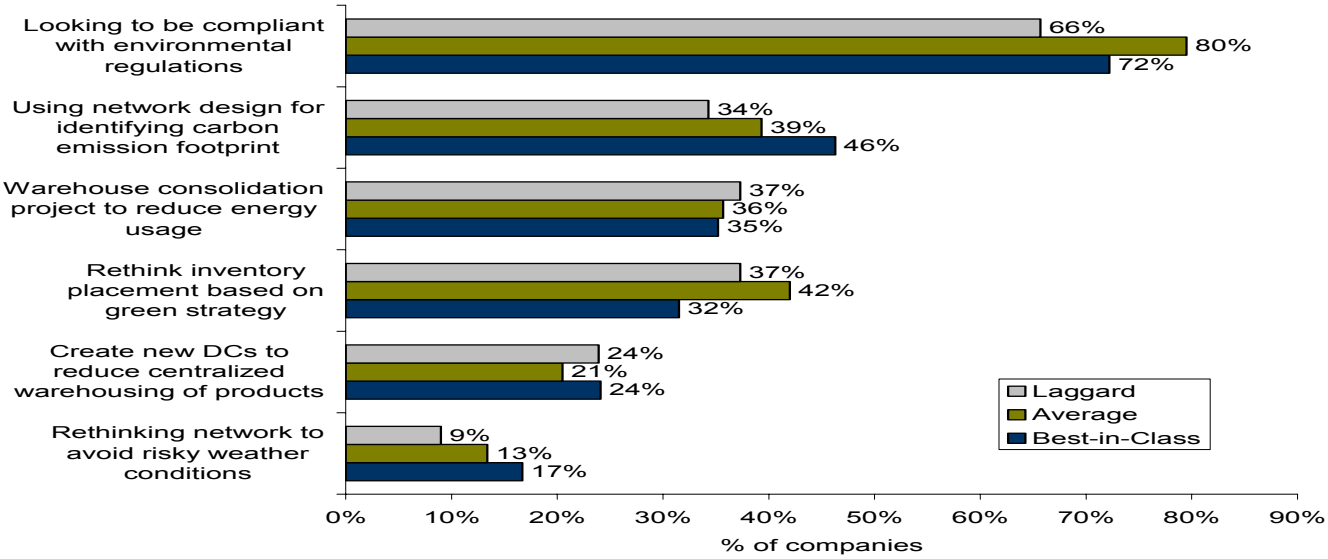
Source: Aberdeen Group, March 2008

Within these green redesign initiatives, companies are pursuing a variety of functional objectives based upon the unique requirements of their industry, their markets, and their company. Figure 5 presents six key redesign objectives of survey respondents.

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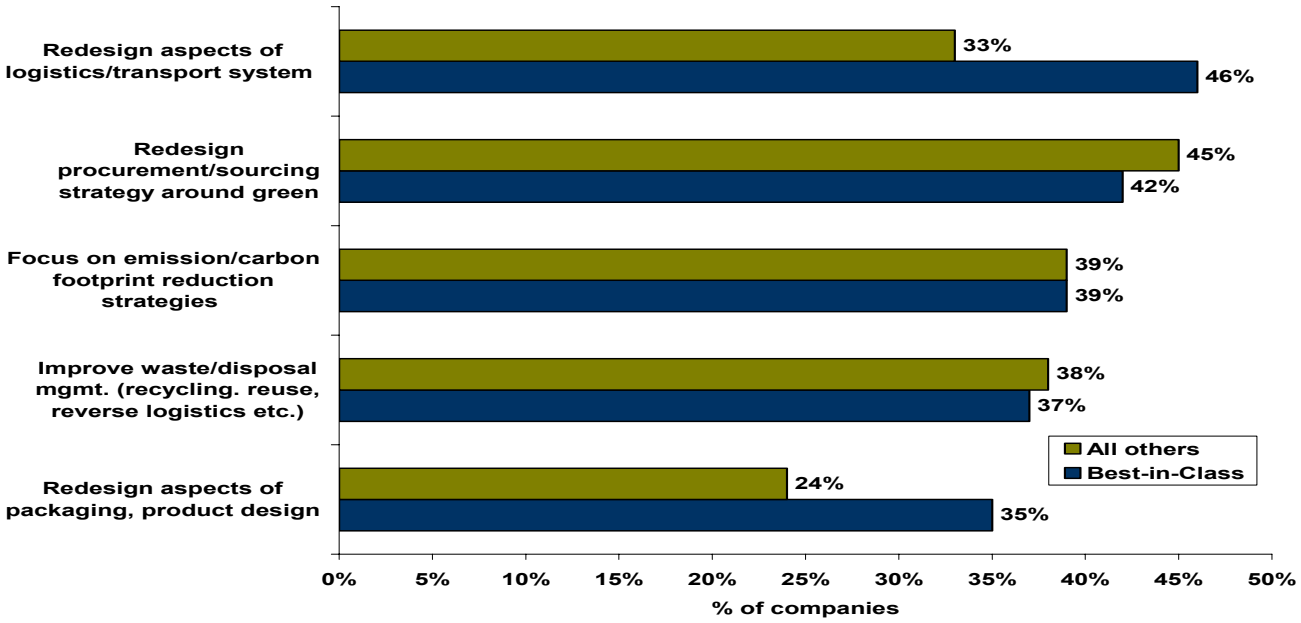
Figure 5: Focus of Green Supply Chain Redesign



Source: Aberdeen Group, March 2008

As part of these redesign imperatives, companies are implementing supply chain strategies around major process and technology improvement areas (Figure 6).

Figure 6: Top Five Strategic Actions to Green the Supply Chain



Source: Aberdeen Group, March 2008

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Aberdeen Insights - Strategy

Highlighting the strategic expectations of Best-in-Class respondents, 48% identified "Improve Profits" to be among the top 3 goals for their green supply chain program. This clearly demonstrates that sustainability has moved beyond execution-level responsibility for compliance, recycling and reuse, and into the executive suite where market growth, product development and competitive advantage are the objectives of corporate growth.

For those respondents that indicated that Improve Profits was a key objective, we asked how they expected to realize those improvements. The following were the results:

- 58% expect competitive edge / brand differentiation
- 52% expect to become a preferred supplier
- 45% expect increased market exposure
- 39% expect to expand their customer base
- 22% expect to expand their product base
- 19% expect to up-sell

Green supply chain initiatives among the Best-in-Class appear unique in this combination of top-line and bottom-line goals and objectives.

In the next chapter, we will see what the top performers are doing to achieve these gains.

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Chapter Two: Benchmarking Requirements for Success

The selection of the right mix of process, organization, technology and performance elements plays a crucial role in the ability to turn these strategies into savings and profit. The following case study illustrates this balance.

Cisco Drives End-to-End Environmental Responsibility within their Supply Chain

Cisco Systems, Inc. is a worldwide leader in networking for the Internet. Cisco hardware, software, and service offerings are used to create Internet solutions that allow individuals, companies, and countries to increase productivity, improve customer satisfaction and strengthen competitive advantage. Cisco's mission is to ensure that all their products can be sourced, built and sold anywhere, anytime in a socially responsible manner.

What is meant by being socially responsible for Cisco?

- Being environmentally responsible
- Ensuring worker health and safety
- Workers treated with respect and dignity
- Managing a diverse supplier base
- Ensuring ethical behavior and intellectual property protection

Link to Cisco's code of conduct:
http://www.cisco.com/legal/Cisco_Supplier_Code_of_Conduct.pdf

What does being 'environmentally responsible' mean for Cisco?

Cisco's perspective is that compliance is just the starting point. The realization was made that being environmentally responsible has to be embedded within the DNA and the business processes of the company. Given that Cisco outsources 95% of their manufacturing, their green supply chain agenda is driven by working with partners to reduce the "5 impacters:"

- Carbon footprint
- Energy use/availability
- Water use/availability and quality
- Land use/waste management
- Hazardous materials management

continued

Fast Facts

- √ **72%** of Best-in-Class companies report an improvement in total amount of energy usage as a result of their green initiative
- √ Only **5%** of Laggard companies report decreased material costs as a result of their green initiative

"Green is not thought of as a 'compliance' issue at Cisco. Green is now embedded in the DNA of our company and is part of our daily collaboration with partners. Our EcoBoard, which consists of executives from multiple divisions within Cisco including engineering, government affairs, marketing, supply chain and customer services, ensures green collaboration worldwide. Not in order to comply, but because it's the right thing to do."

~ Edna M. Conway, Sr. Director of Advanced Compliance and Social Responsibility, Global Supply Chain Management at Cisco

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Cisco Drives End-to-End Environmental Responsibility within their Supply Chain

What are some of the ways by which Cisco is being environmentally responsible?

Though there are several more examples, two approaches are being discussed here:

End to end focus – there is an eco-board within Cisco consisting of executives from supply chain, services, marketing, press release, manufacturing, engineering, facility operations which meet regularly to brainstorm on approaches for being environmentally responsible within their functional areas as well as across their functional areas. This provides an incubator for innovative ideas to be developed and implemented.

Travel reduction - One means of reducing carbons and energy usage, is moving away from physical travel using new technology platforms. Cisco TelePresence alone is projected to enable Cisco to reduce air travel (in the Cisco Supply Chain organization) approx. 26% in 2008 compared to this past year as TelePresence systems are installed at Cisco and partner manufacturing sites and major suppliers.

The combination of clear, overall program definitions, structures and organizational approach is a common thread across Best-in-Class companies. Further, creating green/sustainability initiatives that are self-sustaining and evolutionary drives future benefits through continued innovation and cross-functional growth.

Competitive Assessment

The aggregated performance of surveyed companies based on key performance indicators determined whether they ranked as Best-in-Class, Industry Average, or Laggard. In addition to having common performance levels, each class also shared characteristics in five key categories: (1) **process** (the ability to detect and respond to changing conditions without placing additional burdens on the organization); (2) **organization** (corporate focus and collaboration among stakeholders); (3) **data** (contextualizing data and exposing it to key stakeholders); (4) **technology** (the selection of appropriate tools and intelligent deployment of those tools); and (5) **performance management** (the ability of the organization to measure the benefits of technology deployment and use the results to improve key processes further). These characteristics (identified in Table 3) serve as a guideline for best practices, and correlate directly with Best-in-Class performance across the key metrics.

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Table 3: The Competitive Framework

	Best-in-Class	Average	Laggards
Process	Equipment and materials life-cycle approach		
	50%	32%	26%
	Equipment and Materials end-of-life handling (reverse logistics)		
	43%	25%	20%
	Carbon Footprint tracking and modeling		
	30%	18%	15%
Organization	Executive-level responsibility for company-wide green performance		
	67%	38%	33%
	Communicate progress, challenges, and successes to **external** stakeholders yearly or more often		
	72%	57%	53%
	Communicate progress, challenges, and successes to **internal** stakeholders quarterly or more often		
	72%	60%	59%
Performance Management	Track green performance in terms of energy usage		
	97%	77%	75%
	Track green performance in terms of changes in logistics/transport costs		
	97%	87%	67%
Knowledge	Internal education and training initiatives around company's sustainability mission		
	44%	29%	22%
Technology Enablers	Role-based green dashboards		
	19%	11%	9%
	Sustainable/efficient assets		
	24%	14%	10%
	Waste disposal/tracking/analytics		
	32%	21%	17%
	Sustainable transport/logistics		
	66%	52%	44%

Source: Aberdeen Group, March 2008

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Fujitsu's Global Green Leadership

Goal. Fujitsu, a global manufacturer of electronics, software, and hardware is determined to help solve global environmental issues and exceed required compliance mandates by developing "Super Green Products" and adopting aggressive green standards as part of a comprehensive implementation of its CSR agenda.

Strategy. Fujitsu is in the process of integrating a stringent sustainability component into relevant aspects of its operations, facilities, services, and product development, globally. Areas such as IT, manufacturing, operations, facilities, logistics, and product development are managed according to intensive guidelines that go beyond meeting governmental and industry-specific regulations and guidelines such as RoHS / WEEE and JGPSSI. In addition to requiring that all enterprise and supplier processes meet or exceed governmentally mandated compliance requirements, Fujitsu also conducts secondary controls and certifications in an effort to guarantee adherence to green standards across the entire enterprise. Fujitsu owns its own recycling plants, is intensely invested in eco-design research, and uses alternative energy sources such as hydrogen fuel cells, in select facilities such as on its Sunnyvale, California campus. Barbara Self, speaking on behalf of Fujitsu's global environmental initiatives states, "[our goal is to] make every action green."

Knowledge management. For every employee across the entire global organization, Fujitsu instituted a multilingual and mandatory green education initiative to educate its internal stakeholders about environmental issues, stewardship goals, and company green policy. The education consists of workshops with some 50 pages of course materials as well as exams and quizzes, and is intended to be completed by all 161,000 employees in the Fujitsu Group.

Benefits. Fujitsu's level of oversight into its green compliance standards at all levels of the company is having increasingly positive effects on:

- Enhancing awareness of global environmental issues
- Ensuring complex compliance requirements
- Reducing risk and liability
- Reducing waste
- Reducing emissions and pollution Reducing the use of energy and natural resources
- Reducing operational costs
- Improving shareholder value

continued

"At Fujitsu, our goal is to make every action green."

~ Barbara Self

Fujitsu

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Fujitsu's Global Green Leadership

In December 2007, Fujitsu announced the Green Policy Innovation project, which seeks to achieve a cumulative reduction of 7 million tons of carbon dioxide from fiscal 2007 through fiscal 2010 by developing energy-efficient products and services for its customers. The project focuses on the development of energy-saving IT infrastructure like servers and storage equipment, and the development of a range of new services intended to help customers reduce their CO2 output.

Capabilities and Enablers

Based on the findings of the competitive framework and interviews with end users, Aberdeen's analysis of the Best-in-Class demonstrates that there are common approaches that result in superior performance across green supply chain initiatives. In particular, green/sustainability initiatives combine elements of traditional supply chain optimization with new concerns around current and future regulatory compliance, centralized green performance management, end-to-end life-cycle process management and other environmental drivers.

Process Management

Best-in-Class firms have adopted a holistic, life-cycle approach to green supply chain programs and their key elements such as materials and equipment, and are approximately twice as likely as laggard companies to commit to related processes such as reverse logistics. Further, the Best-in-Class engage in carbon footprint tracking and modeling, a key capability that creates the bridge between environmentally responsible impact reduction on the ecosystem, and cost centers such as operations and transport.

Best-in-Class companies are also twice as likely as all others to have visibility into energy usage, and thus lower their total energy consumption in key areas such as warehouses and distribution centers. Additionally, improved reuse and recycling strategies allow Best-in-Class to report the ability to significantly decrease disposal costs: nearly 3 times as likely as all others.

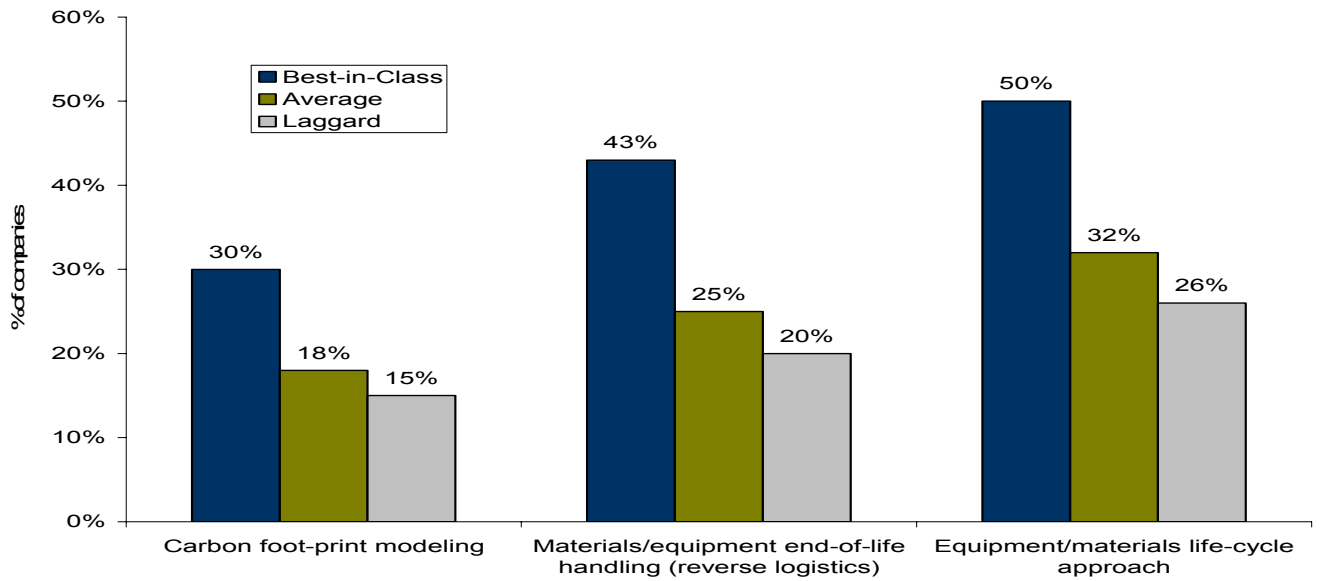
Lastly, Aberdeen found that companies of all types have identified key process areas for their initial green strategies. These areas include: transportation/logistics, sourcing/procurement, emissions/carbon footprint reduction, waste disposal/recycling/reuse, packaging/product design.

Fast Facts

- √ **70%** of Best-in-Class firms have improved their visibility into energy usage compared to **40%** of all others.
- √ **33%** of Best-in-Class firms have decreased disposal and waste management costs compared to **10%** of all others.
- √ 30% of the Best-in-Class use Green performance targets and scorecards for trading partners compared to 18% of all others
- √ 32% of the Best in Class have real-time visibility into supply chain processes and costs compared to 15% of all others

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Figure 7: Process Capabilities/Enablers by Maturity Class



Source: Aberdeen Group, March 2008

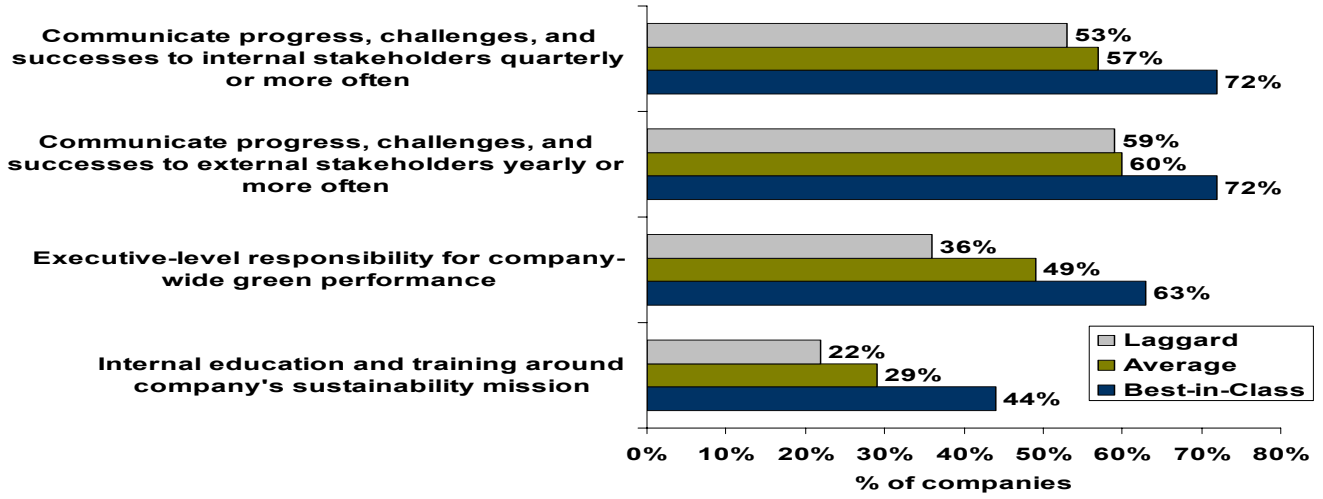
Organization Management

The importance of having executive-level responsibility for company-wide corporate social responsibility/ sustainability vision and performance cannot be over-emphasized. Best-in-Class companies are twice as likely to have an executive responsible for company-wide green performance. The resulting rise of the Corporate Sustainability Officer (CSO) is driving both internal and external focus on these programs. CSO's are becoming more common in large enterprises initially, with this responsibility falling to the COO or similar C-level executive in medium to small companies.

Another major area in which Best-in-Class companies excel is in their communication with both internal and external stakeholders of the initiatives. Best-in-Class companies are 20-30% more likely to communicate program progress, challenges and successes to all constituencies. The ability to get company-wide support is linked to the ability to communicate the vision, goals, challenges, and successes of the initiatives and Best-in-class firms understand this. External stakeholders include shareholders, customers, suppliers, etc. It is crucial to communicate to these constituencies as well. This is a key area where the foundation for competitive advantage is built (Figure 8).

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Figure 8: Organization/ Knowledge Capabilities/Enablers by Class



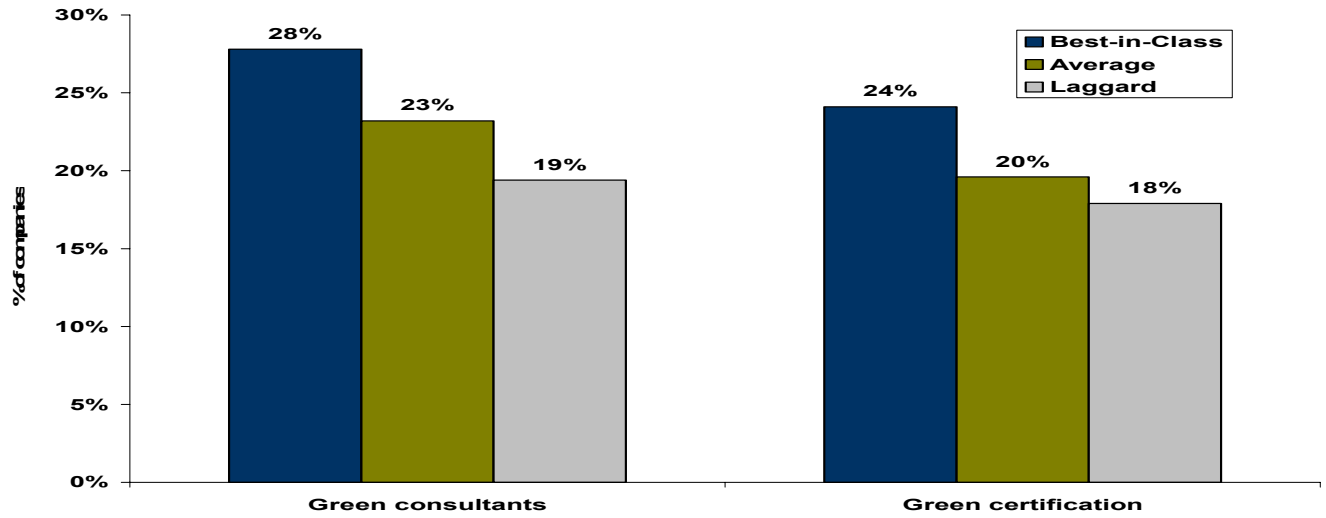
Source: Aberdeen Group, March 2008

Knowledge Management

Enterprise-wide commitment to green supply chain initiatives comes from a broad-based knowledge of the program and its impact on the person, the company, and the planet. Best-in-Class companies go to great lengths to educate and train their staff, and to invest in recruiting the expertise to make this happen successfully (Figure 8). Aberdeen's research shows that companies are eager to learn from the experts to understand what parts of their business they should target for these initiatives, and how to prioritize the opportunities for improvement. As a result, they are looking to professional services providers, solutions vendors, and 3rd party research and industry organizations who have experience with green strategies and processes (Figure 9).

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Figure 9: Usage of Green Consultants and Level of Green Certification by Class



Source: Aberdeen Group, Month 2008

Technology - Opportunities to Accelerate Benefits

Technology accelerates green supply chain program benefits by providing tools to automate business process areas, integrate cross-functional process components, and effectively identify, quantify, track, and report on key sustainability drivers. In addition, technology enables process capabilities that might not otherwise be achievable, such as the use of anti-idling technology to reduce fuel consumption, or alternative energy sources to light, heat and operate distribution facilities and warehouses.

In addition, the management, consolidation, and analysis of massive amounts of complex data are a critical component of successful green/sustainability programs. This enables communication of key information to the appropriate stakeholders, especially for large, global enterprises or complex organizations.

Best-in-Class companies are 30% more likely than all others to use sustainable transport and logistics technology, and 70% more likely to use solutions such as EAM to effectively manage asset life-cycles (Figure 10).

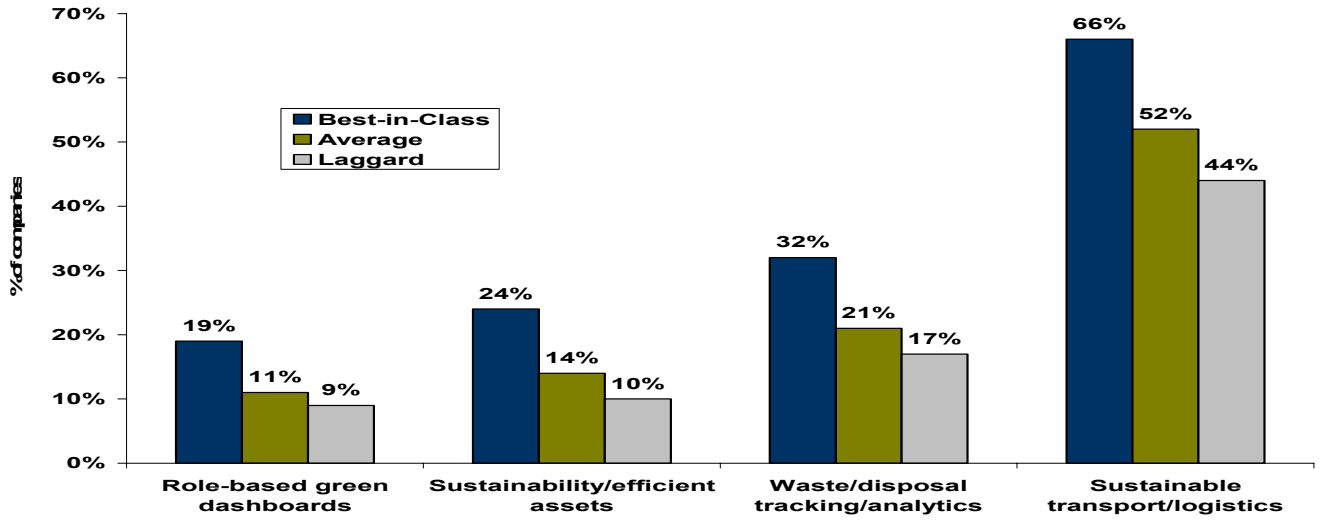
Best-in-Class companies are also combining green additions to traditional supply chain capabilities, like including green criteria in supply chain network design or adding social responsibility elements to vendor selection, with other solution areas that have normally been outside the supply chain footprint like Environment, Health, Safety (EHS) and energy tracking. The intersection of these solutions is providing new ways to improve green visibility and manage green/sustainability drivers across the supply chain.

"The efforts applying cleaner production techniques with customers and suppliers results in a more efficient use of resources, lower costs and improved relationships with all parties involved. The carbon and ecological footprint were reduced for customers, suppliers and ourselves. Next we need a Sustainable Balanced Scorecard, on several topics depending on the stakeholders."

~ COO, Tier Two Industrial Manufacturer

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Figure 10: Technology Capabilities/Enablers by Class



Source: Aberdeen Group, March 2008

Performance Management

Best-in-Class success is inextricably tied to a robust commitment to the tracking and measuring of a series of key supply chain cost metrics including energy usage and transportation / logistics activities. By tracking energy usage and changes, Best-in-Class visibility into the impact of their green initiatives on these important cost categories is significantly increased. Best-in-Class companies are 25% more likely than all others to effectively monitor performance in the key cost areas of energy consumption and transportation/logistics among others.

Best-in-Class companies then combine performance management monitoring strategies with technologies discussed earlier for green dashboards and functional reporting. The result is their ability to not only effectively track, manage and report on green performance, but to provide credible verification of their sustainable and corporate social responsibility programs for stakeholders, customers and trading partners.

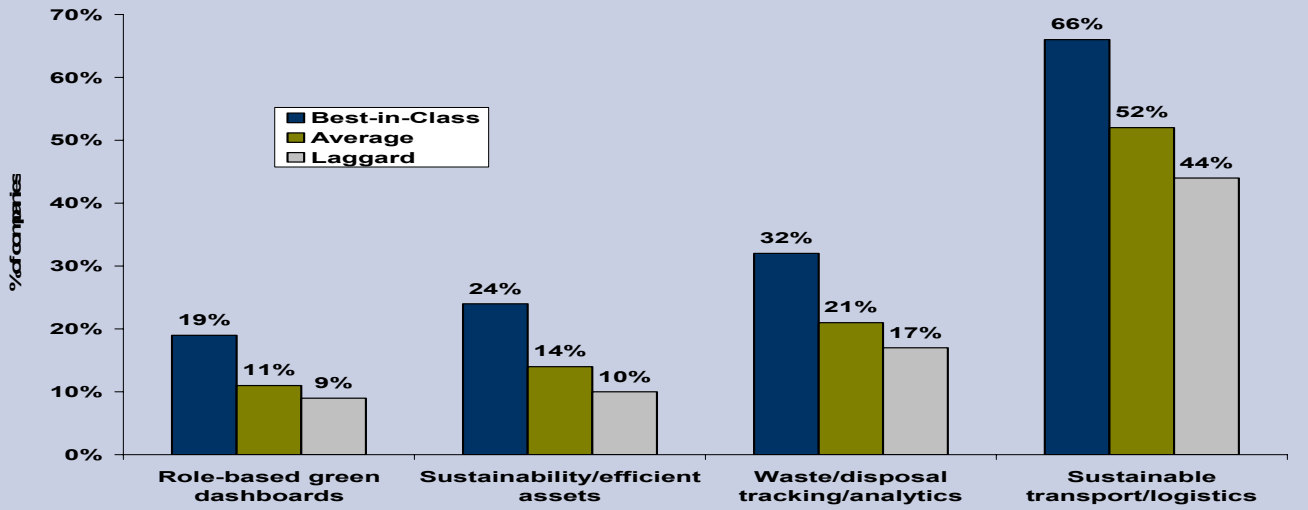
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Aberdeen Insights — What Does it All Mean?...Tools & Results

Green Supply Chain success is measured across a variety of metrics based upon the complexity and sophistication of the supply chain, the goals and objectives of the enterprise, and the maturity of the program. A sample of key metrics from Aberdeen's research shows that BIC companies are twice as likely as all others to improve their total energy usage, and nearly 3 times as likely to decrease disposal and waste management costs (Figure 11).

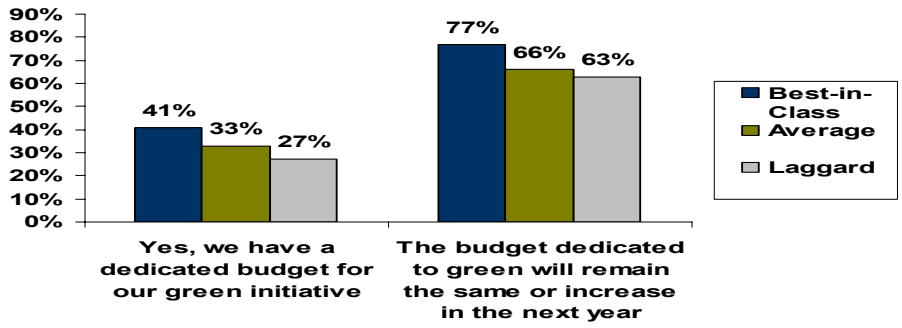
Figure 11: Sample Results of Green SCM Initiatives



Source: Aberdeen Group, March 2008

As part of these green/sustainability initiatives, companies have budgets (Figure 12), but are still unsure about where to begin and how to prioritize their investments. Fully 43% of Best-in-Class, and 68% of All Others, rate their top challenge to success as: "We don't know enough about available solutions and services, or don't know where to start." 58% of respondents are actively seeking advice and guidance from solution and service providers.

Figure 12: Green SCM Budgets



Source: Aberdeen Group, March 2008

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Chapter Three: Required Actions: Learning from the Green Avant-garde

Whether a company is trying to move its green Supply Chain performance from Laggard to Industry Average, or Industry Average to Best-in-Class, the following actions will help clarify the necessary performance improvements:

Laggard Steps to Success

- **Assign executive-level responsibility** for green supply chain initiatives, and ideally for all enterprise-wide green/sustainability programs. Laggards are less than 1/2 as likely as Best-in-Class companies to have any central point of coordination and management for CSR, sustainability or green. Without an executive champion, initiatives take longer to implement and are less likely to yield the anticipated results. The green supply chain executive must have overall responsibility for delivering on the project objectives, and as a result must also either have the authority to remove internal roadblocks, or be a peer of the other executives affected by the program.
- **Establish clear metrics and track green performance** in a variety of areas. Best-in-Class companies are 50% more likely to define, track and report key program metrics. "You can't improve what you don't measure", so performance management is a key area on which to focus efforts. Metrics should align with the process areas and objectives of an initiative, but common elements to monitor are energy usage and logistics/transport costs. If there is a method with which to gather the data, cleanse it, and present it in a simple, easy to understand format, it is then possible to optimize these parts of the business, and use that experience to define and track other relevant measurements.
- **Engage the use of technology and services** as part of the green supply chain initiative. Best-in-Class companies are more than twice as likely as Laggards to use key types of technology to enable their green programs. If it is not clear where to begin, engage with a sustainability support/service provider to assist with program selection and prioritization. Once areas of opportunity are understood, determine if the solution providers already engaged with your company, offer modules or elements to support the company's green requirements or seek stand-alone solutions that can collaborate with your present IT structure. This affords standard integration to other sources of data within the solution, and will speed the time value for those parts of the overall program.

Fast Facts

- √ **44%** of the Best-in-Class would like to manage their green initiative with an integrated IT solution compared to **38%** of all others
- √ **32%** of the Best-in-Class currently use or plan to implement sustainability modules of their ERP solution to help manage their green initiative compared to **21%** of all others
- √ **35%** of the Best-in-Class currently use or plan to implement stand-alone sustainability management solutions compared to **25%** of all others

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Industry Average Steps to Success

- **Centralize responsibility** for all enterprise-wide green and sustainability initiatives. Industry Average companies are 1/2 as likely as Best-in-Class companies to have a single senior executive responsible for all green programs. While there may be a qualified internal candidate, consider going outside to find an executive with experience in dealing with external factors like compliance and reporting, as well as internal issues of cross-functional alignment, identification of areas of opportunity, and the ability to effectively prioritize competing alternatives. Taking an end-to-end approach will speed benefit achievement and help drive visibility throughout the organization.
- **Adopt a life-cycle approach** to key process areas. Best-in-Class companies are nearly twice as likely as Industry Average to engage in some combination of targeted process management areas. Carbon footprint modeling and tracking is an example of an area that can align well with overall enterprise objectives of lowering carbon emissions while preparing you for new carbon reporting regulations that are already in place in some markets, and may be common in the not too distant future. Equipment and materials also have a life-cycle with a green process element. Put processes and standards in place that consider lifetime power consumption, maintenance schedules that optimize efficiency rather than longevity, and asset retirement that considers reuse, recycling, and proper disposal.
- **Implement internal training and education** around the company's green/sustainability mission. Industry Average companies are only two thirds as likely to have effective internal education programs as Best-in-Class. Ensuring internal alignment around program goals objectives requires that everyone understands not only their role, but the CSR position and commitment of the entire company. This will help to eliminate passive/aggressive roadblocks and speed time to value.

"We have a 12 member Sustainability Team that meets once a month. This team is broken into 3 parts: Environmental waste, Energy, and emerging issues."

~ Supply Chain Manager, North American Consumer Package Goods Company

Best-in-Class Steps to Success

- **Create the role of CSO** and give him/her the budget, responsibility and authority to marshal resources enterprise-wide. Recruit externally for candidates that have a demonstrated track record in defining, prioritizing, and managing CSR, sustainability, and green projects in companies of similar size, and who can point to success. The CSO will be as much an external facing CSR spokesperson for the enterprise as he/she is and internal lightning rod for ideas, goal setting, and execution. Expect the CSO to raise visibility in the marketplace around green initiatives, and to help drive the competitive advantage (48%) and thought leadership (51%) objectives of your organization.

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- **Move more aggressively to embrace technology enablers**. Best-in Class companies are still as low as 19% in their adoption of some enablers. For these companies, providing a single common view of the overall enterprise CSR/Sustainability/Green initiatives, including the green supply chain, through a Green Dashboard will help to highlight both successes and opportunities for improvement. More granular metrics can then be presented in the role-based portals of the individual users and managers as appropriate. Ultimately, select green metrics and the supporting proof points should be made available externally to key stakeholders. This will help to drive thought leadership and competitive advantage through market visibility into the "greenness" of the brand, and through qualification for preferred supplier programs. Conversely, green dashboards can also consolidate supplier's green performance, and become and extended supplier relationship management tool. Metrics can also be used.

Aberdeen Insights — Summary

Our Green Supply Chain research has shown a surprisingly rich tapestry of initiatives, approaches, priorities, solutions and services. There are nearly as many ways to begin a green program as there are companies. Yet there has emerged a common set of success criteria across industries, markets and segments that represent today's Best-in-Class. Green initiatives are as much a change in organizational culture as they are about process transformation. Accordingly, education and communication are as important as process and technology. The juxtaposition of Best-in-Class survey respondents who have begun or are planning to begin projects (>70%) with those who are actively looking for help with their projects (43%) demonstrates the speed with which this market is moving, as well as the need for guidance. To be successful, companies must be holistic, thorough, and quantitative in their approach.

In addition, the most successful companies track, analyze and report results internally and externally, at regular intervals.

Implementing an effective CSR / sustainability agenda involves multiple steps, processes and measures. The value of researching the wide array of approaches and options will greatly improve the chances for green success. Initiatives should ideally be:

- **Comprehensive**. A deep understanding of the company definition of its Triple Bottom Line (TBL) is essential. Philosophical and practical clarity will aid the success of implementation.
- **Collaborative**. Working collaboratively, internally and externally, allows a superior level of visibility, innovation, and agility in addressing issues that may compromise the goals of an initiative.
- **Controlled**. Executive-level oversight of overall enterprise sustainability objectives combined with clear performance metrics and tracking will allow the company to understand its challenges and successes.
- **Communicated**. Education and communication are essential to stimulate internal and external stakeholder interest and support. Aligning the brand publicly with a real commitment to sustainability efforts can also boost brand value.

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Appendix A: Research Methodology

Between February and March 2008, Aberdeen examined the implementation, management, and outcomes of [335] enterprises with green/sustainability initiatives.

Aberdeen supplemented this online survey effort with telephone interviews with select survey respondents, gathering additional information on green agenda strategies, experiences, and results.

Responding enterprises included the following:

- *Job title / function:* The research sample included respondents with the following job titles: manager (36%); director (21%); staff (7%); Consultant (8%); senior management (23%).
- *Industry:* The research sample included respondents from various industries including: Transportation/logistics (15%), Hi-Tech/Software (11%), Food and Beverage (11%), Consumer Durables, Electronics, and Packaged Goods (15%), Distribution (7%), Automotive (7%), Public Sector and Education (12%), Aerospace and Defense (6%), Retail
- *Geography:* The majority of respondents (59%) were from the Americas. Remaining respondents were from the Asia-Pacific region (16%), Europe (17%), and Africa/Middle East (8%).
- *Company size:* Forty-two percent (42%) of respondents were from large enterprises (annual revenues above US $1 billion); twenty-six percent (26%) were from midsize enterprises (annual revenues between $50 million and $1 billion); and thirty-two percent (32%) of respondents were from small businesses (annual revenues of $50 million or less).
- *Headcount:* Forty-four percent (44%) of respondents were from large enterprises (headcount between 1 and 99 employees); thirty-one percent (31%) were from midsize enterprises (headcount between 100 and 999 employees); and twenty-five percent (25%) of respondents were from small businesses (headcount greater than 1,000 employees).

Solution providers recognized as sponsors were solicited after the fact and had no substantive influence on the direction of this report. Their sponsorship has made it possible for Aberdeen Group to make these findings available to readers at no charge.

Study Focus

Responding supply chain executives completed an online survey that included questions designed to determine the following:

√ The main green supply chain drivers, and identify specific areas of opportunity

√ The structure and effectiveness of existing green supply chain initiatives

√ Current and planned use of technology to aid green operational activities

√ The benefits, if any, that have been derived from green supply chain programs

The study aimed to identify emerging best practices for green / sustainability practices and technology usage across the supply chain], and to provide a framework by which readers could assess their own management capabilities.

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Table 4: The PACE Framework Key

Overview
Aberdeen applies a methodology to benchmark research that evaluates the business pressures, actions, capabilities, and enablers (PACE) that indicate corporate behavior in specific business processes. These terms are defined as follows: **Pressures —** external forces that impact an organization's market position, competitiveness, or business operations (e.g., economic, political and regulatory, technology, changing customer preferences, competitive) **Actions —** the strategic approaches that an organization takes in response to industry pressures (e.g., align the corporate business model to leverage industry opportunities, such as product / service strategy, target markets, financial strategy, go-to-market, and sales strategy) **Capabilities —** the business process competencies required to execute corporate strategy (e.g., skilled people, brand, market positioning, viable products / services, ecosystem partners, financing) **Enablers —** the key functionality of technology solutions required to support the organization's enabling business practices (e.g., development platform, applications, network connectivity, user interface, training and support, partner interfaces, data cleansing, and management)

Source: Aberdeen Group, March 2008

Table 5: The Competitive Framework Key

Overview	
The Aberdeen Competitive Framework defines enterprises as falling into one of the following three levels of practices and performance: **Best-in-Class (20%) —** Practices that are the best currently being employed and are significantly superior to the Industry Average, and result in the top industry performance. **Industry Average (50%) —** Practices that represent the average or norm, and result in average industry performance. **Laggards (30%) —** Practices that are significantly behind the average of the industry, and result in below average performance.	In the following categories: **Process —** What is the scope of process standardization? What is the efficiency and effectiveness of this process? **Organization —** How is your company currently organized to manage and optimize this particular process? **Knowledge —** What visibility do you have into key data and intelligence required to manage this process? **Technology —** What level of automation have you used to support this process? How is this automation integrated and aligned? **Performance —** What do you measure? How frequently? What's your actual performance?

Source: Aberdeen Group, March 2008

Table 6: The Relationship Between PACE and the Competitive Framework

PACE and the Competitive Framework – How They Interact
Aberdeen research indicates that companies that identify the most influential pressures and take the most transformational and effective actions are most likely to achieve superior performance. The level of competitive performance that a company achieves is strongly determined by the PACE choices that they make and how well they execute those decisions.

Source: Aberdeen Group, March 2008

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Appendix B: Related Aberdeen Research

Related Aberdeen research that forms a companion or reference to this report include:

- *Green Initiatives: Lowering Costs and Increasing Efficiency in the Data Center;* January 2008
- *Green Marketing: Leveraging Customer Data to Reduce Direct Mail Waste;* February 2008
- From Green Hype to Sustainable Action: The 2008 Green Agenda; February 2008
- *Green Strategies Help Control Costs and Increase Efficiency*; February 2008
- *Customer Data Management: For Direct Marketers, It's the Key to Going Green;* November 2007
- *EMC Expands its Green Portfolio, Brings SSD Storage to the Enterprise Level*; January 2008
- *Sustainable Travel: Reduce Your Carbon Footprint*; November 2007
- *Reducing Retail Waste: How Customer Data Quality Spurs Greener Marketing*; December 2007
- *The 2008 Aberdeen Report;* March 2008

Information on these and any other Aberdeen publications can be found at www.aberdeen.com.

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