

A Practical Guide to Green Sourcing

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Environmental responsibility is no longer just a regulatory burden. It has become a business imperative. Soaring energy and commodities costs are pushing companies to pursue options to reduce costs. A host of products and solutions are available to save energy, water and waste—and many more are on the way. And at no time has there been more interest from consumers and governments in companies operating in ways that protect the environment and respect human health and safety.

As a consequence, many senior executives are looking to their supply chains to deliver the breakthrough results needed to meet these expectations. In fact, supply chains in general and “green” sourcing in particular are quickly becoming the primary focal points for improving profitability while building a company’s green credentials.

Green sourcing can help in two important ways. It can help companies improve their financial results, allowing them meet their cost reduction goals while also boosting revenues. It can also contribute to a better public image and reputation with the company’s stakeholders.

With those plus-points in mind, Deloitte has developed a green strategic sourcing process for enterprises to consider in their efforts to pursue green sourcing opportunities to achieve their margin improvement goals. Our objective with this article is to present a comprehensive approach that is specific, actionable, and measurable in terms of achieving financial objectives. We firmly believe that green sourcing does not call for adoption of entirely new processes; it can easily leverage existing sourcing techniques to capitalize on an expanded set of opportunities. Our six-step approach, depicted in Exhibit 1, is a comprehensive process for enhancing sourcing savings by taking advantage of environmental factors.

Before we start walking through the six-step approach to green sourcing, it is worth looking in more detail at the long-term benefits of such an approach.

Environmental responsibility has become a business imperative—and many senior executives are looking to their supply chains to deliver the “green” results their organizations now need to deliver. By adopting the six-step strategic sourcing process outlined here, companies can more easily go green while improving profitability.



Meeting (and beating) Cost Reduction Goals

In most companies, the sourcing and procurement departments are charged by senior management with reducing costs; the green component can be a catalyst that can help renew and expand the cost reduction effort while facilitating cooperation among internal stakeholders. Green sourcing is not just about finding new environmentally friendly technologies or increasing the use of recyclable materials. It can also help drive cost reductions in a variety of ways including product content substitution, waste reduction, and lower usage.

A comprehensive green sourcing effort should also assess how a company fundamentally uses sourceable items either internally, in its own operations, or in its products and services. As costs of commodity items like steel, electricity, and fossil fuels continue to increase, properly designed green sourcing efforts should explore ways to significantly reduce—or in some cases eliminate—the need for these types of commodities in a variety of sourcing categories. One immediate example: A forward-thinking office supplies company recently implemented a system-wide energy management and retrofit program for its internal lighting needs. This initiative cut electricity costs per square foot by about 12 percent and yielded millions of dollars in associated electricity cost savings.

Another important cost lever in green sourcing is considering waste reduction opportunities. This includes everything from energy and water to packaging and transportation. A great example of this is the redesigned milk jug introduced recently by leading grocery retailers. Using the new jug, with more rectangular dimensions and a square base, cuts the associated water consumption of the jugs by 60-70 percent compared to earlier jug designs because the new design doesn't require the use of milk crates. Milk crates typically become filthy during use due to spillage and other natural factors; thus, they are usually hosed down before re-use, consuming thousands of gallons of water. The new design also reduces fuel costs: Since crates are no longer used, they also do not have to be transported back to the dairy plant or farm distribution point for future shipments. Furthermore, the new jugs

EXHIBIT 1

Six-Step Strategic Green Sourcing Process

Traditional Six-Step Sourcing Methodology	Traditional Focus Areas		Green Focus Areas	Elements to Consider Sustainable Sourcing
Step 1 Assess Opportunity	Spend Analysis focuses primarily on materials and logistics costs		Spend Analysis encompasses direct and indirect environmental costs	<ul style="list-style-type: none"> • Environmental Regulations
Step 2 Assess Internal Supply Chain	Specification focused, map current process, identify process opportunities		Spec Review considers industry's most environmentally sound products and services	<ul style="list-style-type: none"> • Direct Energy Cost Reduction (Energy Efficiency of Sourceable Items)
Step 3 Assess Supply Market	Identify potential sources of supply, perform supplier assessments/comparisons		Supply base includes vendors who specialize in more efficient, sustainable products	<ul style="list-style-type: none"> • Indirect Energy Cost Reduction (Reduce Packaging to Reduce Transportation Costs)
Step 4 Develop Sourcing Strategy	Confirm scope, determine desired outcomes, brainstorm process enhancement		Sustainability considerations are specified in the RFP document	<ul style="list-style-type: none"> • Substitutes of Commodity Items with Sustainable Equivalents
Step 5 Implement Strategy	Develop/implement supplier solicitation strategy, conduct supplier negotiation, award contract		Bid analysis quantifies cost/benefits of sustainability attributes	<ul style="list-style-type: none"> • Reduced Water Consumption
Step 6 Institutionalize Strategy	Transition to new process, develop supplier relationships, implement operation changes, monitor/report performance		Sustainability attributes closely tracked and audited	<ul style="list-style-type: none"> • Sourcing Materials with Higher Recycled Content

have the unexpected benefit of fitting better in modern home refrigerator doors and allow retailers to fit more of them in their in-store coolers. Breakthrough results like the new milk jug can result from comprehensive partnerships between users and their suppliers working to find innovative solutions.

It is important to note that the companies that are best at applying green sourcing are those that approach the process as an enterprise-wide initiative rather than a program focused purely on sourcing and procurement. Successful initiatives draw from the knowledge and experience of an industry's thought leaders and internal experts across various departments. For example, one telecommunications manufacturer has a green supply chain structure that ties together development, sourcing, and recycling goals. The manufacturer also has a green audit plan that audits not only procured material quality, but also suppliers' adherence to the green criteria set forth by the company.

In addition, it's important to observe that not all green cost savings opportunities are created equal. Each industry and each company has certain green opportunities that have greater potential than others. For financial services firms, for instance, green IT can yield huge savings because estimates indicate that approximately 75 percent of their carbon footprint comes from their data centers.¹ Thus, optimizing the financial firms' computer hardware and associated operating processes can have

both direct and indirect cost savings and a significant environmental impact.

A Direct Impact on Revenues

A recent supply chain survey by Florida International University revealed that working with suppliers is the dominant form of external green efforts.² However, there are three key areas where green sourcing opportunities can drive top-line revenue. The first case is often turning waste products into sources of revenue. One example: A leading beverage manufacturer operates a recycling subsidiary that sources used aluminum cans from a wide array of suppliers. The subsidiary actually processes more aluminum cans than are used in the company's own products, consequently developing a strong secondary revenue stream for the company.

In other cases, green sourcing credentials can help establish entirely new lines of business to serve environmentally conscious customers—corporate consumers as well as individuals. In the cleaning-products aisle of any major supermarket or discount store, shoppers will find numerous options of “green” cleaning products from a variety of consumer products companies. These products typically use natural ingredients in lieu of chemicals, and many are in concentrated amounts to reduce overall packaging costs. These days, many major software and financial services companies require their direct marketing mass-mail vendors to adopt green practices and use environmentally friendly paper.³

Modifying Traditional Sourcing for Green Sourcing



Green sourcing also becomes essential for companies interested in winning high-profile deals. In many of these situations, green sourcing is the “table stakes” for participating in the process itself. For example, the organizers of the 2008 U.S. Democratic National Convention (DNC) stipulated very stringent green procurement regulations for the convention’s food suppliers. Exact figures aren’t available, but it’s very likely that the suppliers that could source food from local and organic farms won the majority of the DNC’s business.⁴

For their part, logistics suppliers may find business opportunities coming directly to them as a result of this trend. A recent survey by eyefortransport revealed that 20 percent of companies surveyed relied primarily on their logistics partners to help green their supply chains, while 50 percent expected to see a return on their green logistics investments in 2008.⁵ Recently, a large automobile manufacturer embarked on a systematic plan to green its logistics/distribution network. The automaker analyzed the shipping modes, locations, and overall efficiency of its distribution network both for parts and finished automobiles. By increasing its use of rail transport-

ation for parts, consolidating shipments in fewer ports, and partnering with its logistics providers to increase fuel efficiency for both marine and road transportation, the company reduced its overall distribution-related CO2 emissions by several thousand tons per year.

The upshot? Many companies simply cannot afford not to consider environmental responsibility in their business practices.

Translating Strategy into Execution

Given the potential revenue and cost benefits of greening efforts, it is important to understand how to translate green sourcing strategy into successful tactical steps. We view strategic sourcing in general as a six-step process that starts with understanding the sourcing opportunity and concludes with the ongoing monitoring of the awarded supplier. To transform the traditional strategic sourcing process into a green strategic sourcing process, each of the six steps must be modified to incorporate an environmental focus. Each major process step has core green sub-steps that are modified, as shown in Exhibit 2. Here is a walkthrough of the modified steps:

Step 1: Assess the Opportunity

Your organization may have multiple opportunities; recognizing and understanding those opportunities is essential to prioritizing them. This phase consists of understanding the spend in a given category. Traditional analysis consists of documenting usage and inventory as well as understanding any materials, logistics, and maintenance costs associated with the category. To engage in a green sourcing process, all relevant costs need to be taken into account. The five most common areas include: electricity and other energy costs; disposal and recycling; packaging; commodity substitution (alternative materials to replace materials such as steel or plastic); and water (or other related resources). These costs are identified and incorporated into the spend analysis in this step.

Often, these costs are not clearly defined or docu-

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mented. In many cases, the team needs to investigate how to quantify these costs. It is not uncommon to benchmark against public data or to develop quantitative models that generate cost estimates based on a set of widely accepted inputs. Take the example of electrical equipment purchases. Quantitative models calculate a user's total electrical load and apply the appropriate dollars-per-kilowatt-hour rates to understand annual energy costs for the baseline equipment. These estimating models are used later in the process to compare vendor offerings and facilitate the negotiation process and final selection.

Prioritizing the opportunities correctly can drive greater savings earlier in the process. At Deloitte, we helped a company create a model to systematically prioritize hundreds of annual indirect sourcing bids while maintaining constant levels of staff utilization. Prior to introducing the process, we helped them identify some categories with high savings potential that they had initially given lower priority. As a result of using the new model, the company was able to properly address the categories with the highest potential savings and criticality to the organization. One example of the model's impact involved moving what had formerly been a low-priority category ahead in the scheduling process. This gave the company the opportunity to realize over \$5 million in savings six months before the sourcing event was

originally scheduled to begin for the category. This kind of prioritization can help direct a green sourcing process where it will likely have the most impact on the company's financial statements and cost reduction goals.

Step 2: Engage Internal Supply Chain Stakeholders

Success in green sourcing relies on understanding the business requirements, product specifications, and internal stakeholder perspectives inherent in the supply chain. Sustainable sourcing means comparing your organization's product specs to the latest industry offerings in terms of efficiency, technology, and sustainability. Ensuring that your organization's specs for a particular category reflect the industry's latest offerings can help you capture significant benefits from energy efficiency, reduction in packaging material, commodity substitutes, and so forth.

Collaboration with product or service development can help set realistic green goals. The goal of generating no waste becomes a cross-functional supply chain effort that relies heavily on finding and developing the right suppliers. In some instances, technology and business trends affect and direct a company's sourcing efforts. For instance, with per-unit computer data storage costs a thousandth of what they were a decade ago, companies are storing more and more data so that server farms are becoming the highest energy users in information-intensive firms.⁶

Fundamental to this assessment step is the need to define system specs in performance terms rather than product-related terms. Dimensional considerations such as length and weight are defined as flexibly as possible, which means collaborating with the most important internal supply chain stakeholders such as design, engineering, sales, and finance. Performance specs can then be better aligned to comparing products across vendor offerings. An example of this is LED lighting, where different manufacturers have varied electricity requirements even in the same application. Minute variations in energy consumption can add up when large LED clusters are operated over long periods of time.

Logistics is another potential driver of green sourcing activity. According to one recent survey, more than 70 percent responded that green issues will become more important in their logistics processes in the next three years. Public relations and fuel bills were the leading drivers.⁷ The Florida International University survey noted the importance of following the corporate responsibility agenda and being mindful of the public relations impact of green sourcing programs.

Once all the internal supply chain opportunities have been identified, managers can construct a robust baseline spend model. The model that quantifies costs and savings has to be comprehensive enough to include all potential costs, both initial and ongoing costs. For example in an equipment category, the baseline model would include not just the initial price of the equipment as in traditional sourcing, but also energy, disposal, recycling, and maintenance costs.

Step 3: Assess the Supply Base

Embarking on a sustainable sourcing process requires engaging new and existing vendors. As in traditional sourcing, the company needs to understand the vendor capabilities, constraints, and product offerings. To formalize the process, the team can issue a Request for Information (RFI) with sections that cite green opportunities, including possible commodity substitutions and new manufacturing processes.

A perfect example is concrete that uses fly ash, a byproduct from coal-fired power plants. Fly ash can be substituted for Portland cement in ready-mix concrete or concrete block to produce a stronger and lighter product with reduced water consumption.⁸ Fly ash substitution helped reduce one company's exposure to volatile and rapidly increasing prices for cement. At the same time, the reduced weight of the block lowered the transportation costs to the company's new facilities. The company was also able to establish a specification incorporating fly ash for all new construction sites to follow.

Fly ash substitution also has the indirect benefit of reducing the environmental impact of cement production, which accounts for about 7-8 percent of the total CO₂ emitted annually from human activity worldwide.⁹ At the same time, newer types of prefabricated concrete walls can potentially be used to trap CO₂ emissions permanently, and will likely be the focus of a sourcing initiative in the future with that objective in mind. There is an additional benefit because CO₂ accelerates the concrete curing process, which normally takes several days to complete.¹⁰ Understanding these opportunities through deep engagement with the vendor base can increase the potential for better results later on.

A potential twist in the assessment of green solutions from suppliers is that less-established vendors can often be the best potential sources. These vendors—usually smaller than the typical companies being considered—can be critical sources of insight into the latest technologies, methods, and production processes. As such, they can often drive further cost savings and improvements in environmental impact.

In one recent case in which a company needed refrigeration solutions, specific questions related to energy usage and lighting revealed great benefits from advances in motors and lighting technology from all the major refrigeration vendors. The results revealed that in some cases, the smallest vendors had developed equipment solutions incorporating better operating performance. In fact, the energy efficiency of their solutions often exceeded that available from the larger, more established vendors that the company had relied upon previously. By engaging these smaller vendors more thoroughly later in the process, the company was able to get much better sourcing results than if its sourcing process had relied only on the largest providers.

Step 4: Develop the Sourcing Strategy

This is perhaps the most critical step because it depends on the quality of the information gathered, and it will likely determine the outcome, implementation, and ongoing success of the process. It is important that the strategy can readily be translated into action and that it is directly related to the company's overall sustainability goals.

The core aspect of this step is establishing the quantitative and qualitative criteria that will be used to evaluate the sourcing process. For opportunities such as energy, disposal, water usage, and so forth, prototypical models need to be developed in order to properly analyze the associated costs and benefits. The inputs required for these analyses can be solicited from suppliers as part of their bids. The time needed to perform these analyses should also be included in the project plan. For more qualitative areas, such as supplier diversity programs and labor policies, the relevant questions and evaluation criteria need to be codified for use later in the process when discussing these areas with the company's stakeholders.

Once all of the green opportunities have been identified, these considerations should be clearly communicated in the bid or the Request for Proposals (RFP) document to increase the likelihood that supplier proposals will address the organization's goals. At this time, it is important that the internal stakeholder groups identified in Step 2 provide feedback on the green opportunities so that all business requirements are identified and addressed. Note that the potential sources of items should not be focused purely externally when there is potential to insource the raw materials for manufacturing. One apparel company we know of has implemented a program to collect its used shirts and other garments from its customers and recycle these clothing items in its new products. Solutions such as this have given the

company several raw material options while lessening its dependence on key materials suppliers.

Step 5: Implement the Sourcing Strategy

Bid evaluation starts once the bid responses from vendors have been gathered. The evaluation criteria and quantitative models generated in Step 4 should help pinpoint the optimal selection of vendors and products for each business requirement. The evaluation process must not fixate only on the initial cost, but on the total cost of ownership for the items in the bid. In a recent client example, the energy-efficient equipment proposed to the company cost \$X per unit more than less-efficient models. But over its productive life, the saving from the equipment's lower energy costs would be three times the purchase price increment, with an estimated 20 percent saving in the carbon footprint. In this example, the best result came from using a cost model that evaluated the total cost (equipment + energy), rather than just the equipment cost.

More generally, relevant green opportunities such as energy efficiency or waste reduction need to be modeled and then incorporated into the sourcing analysis to make it as comprehensive as possible and facilitate an effective vendor selection process that supports the organization's needs. Depending upon the category, qualitative criteria should also be evaluated according to the metrics developed in Step 4. In cases where the purchase decision affects diverse stakeholders across the organization, developing an evaluation scorecard and engaging in a stakeholders meeting can help ensure that the final sourcing decision incorporates the qualitative and quantitative criteria with input from all important players. For example, it can be a significant challenge to communicate across language barriers, time zones, and varying levels of understanding of the process when involved in global sourcing activities with stakeholders outside of the headquarters location. Clearly identifying and explaining the evaluation criteria is essential to getting the support of diverse stakeholders in the green sourcing process.

Step 6: Institutionalize the Sourcing Strategy

Once you've selected the vendor and contracts have been finalized, the procurement process can begin. The sourcing and procurement department needs to define a set of metrics against which the supplier will be measured for the contract's duration. Typically, these metrics are based on performance, delivery, compliance with established pricing, and similar factors. Setting these metrics can be challenging and will take time. When establish-

ing metrics in a green sourcing process, it is vital that the company's sustainability goals and the results of the sourcing process are both considered.

The Florida International University survey indicates that metrics to measure green effectiveness can be used in key areas such as packaging, energy usage, hazardous materials, and recycling. For example, total kilowatt-hours used per year, percentage of paper or wood products sourced from sustainable forests, percentages of recycled material, total greenhouse gas emissions per mile are among the types of quantitative metrics that can measure the effectiveness of a green sourcing program and supplier performance. To capture the green benefits, any supplier scorecard or metrics system will need to include all of the green opportunities that were evaluated in Step 5 to facilitate the monitoring of vendor performance and evaluation of whether the expected savings are realized.

The sourcing organization must also develop a broader and systematic survey to measure how well the key business practices of its suppliers align with the company's sustainability goals. Leading computer manufacturers, for instance, have developed surveys that require their suppliers to read the manufacturer's overall sustainability and corporate responsibility goals and promise to adhere to those objectives while agreeing to periodic audits and regular reporting on their environmental impact and related initiatives. It is crucial to regularly monitor the activities of supply chain members.

Toward a Green Bottom Line

Achieving sourcing results that save money and benefit the environment is not an either/or proposition. In fact, taking care of the environment can be very good business.

Green sourcing is not a new process. It is an evolution of what is considered traditional strategic sourcing. The key is to take an expanded view of any green sourcing project, thinking of it in terms of the complexity of information and the time it will take to work through the sourcing process. Throughout this process, keep in mind these four essentials of green sourcing.

1. Green sourcing requires modifications to the traditional sourcing process.
2. Sustainability must be evaluated with a wider range of internal stakeholders such as designers and engineers and marketers.
3. Visualizing and capturing green sourcing savings often involves greater complexity and longer payback periods than sourcing teams are used to.
4. Green sourcing requires a variety of analysis tech-

niques that emphasize data-driven modeling of the costs and benefits of energy use, waste reduction, and so forth.

Greater volumes of information mean more data collected and more complex analyses for the sourcing organization. To help make those challenges more manageable, sourcing teams can benefit by using “e-sourcing” tools, which can help collect, organize, and analyze the data submitted by vendors, and optimization tools, which can allow the sourcing teams to capture, understand, and exploit the opportunities presented by environmental considerations. (See sidebar on “A Word on E-Sourcing Tools.”)

The road to world-class green sourcing really starts by understanding the opportunity. One of the best ways to prepare for that is to create cross-functional teams—

including internal stakeholders such as R&D, manufacturing, sales, finance and marketing together with external stakeholders such as vendors and customers—in order to review all of a company’s potential green sourcing opportunities.

You’ll be surprised by the size and scope of the green opportunities you discover that can benefit your organization while helping to protect the environment. ☻☻

Note: As used in this article, “Deloitte” means Deloitte Consulting LLP, a subsidiary of Deloitte LLP. Please see www.deloitte.com/us/about for a detailed description of the legal structure of Deloitte LLP and its subsidiaries.

Sources

- 1 O’Donnell, Anthony. Power Down—In the face of reduced energy availability, cost challenges and consumer pressure to be good corporate citizens, insurers are greening their data centers through server virtualization. *Insurance + Technology*. July 1, 2008.
- 2 The State of Green Supply Chain Management. Florida International University—Ryder Center for Supply Chain. Miami, FL : ARC, 2008. Green Supply Chain Forum 2008.
- 3 Deutsch, Claudia H. Direct Mail Tries to Go Green. No, Really. *New York Times*. July 23, 2008.
- 4 National Post. Marx goes local. *National Post*. May 21, 2008.
- 5 eyefortransport. Green Transportation and Logistic Report. s.l. : July, 2008.
- 6 ALTS. Historical Notes about the Cost of Hard Drive Storage Costs. A Little Technology Shoppe. [Online] www.alts.net/ns1625/winchest.html; Matt’s Computer Trends. Hard Disks - Historical Pricing. Matt’s Computer Trends. [Online] www.mattscomputer-trends.com/harddiskdata.html
- 7 eyefortransport. Green Transportation and Logistic Report. s.l. : July, 2008.
- 8 American Coal Council and Coal Ash Association. Coal Ash Fact Sheet. s.l. : The American Coal Ash Association’s (ACAA).
- 9 Ulm, Franz-Josef. Green Concrete: Nanoengineered materials could reduce greenhouse-gas emissions. *Technology Review*. July 2007.
- 10 Hamilton, Tyler. A Concrete Fix to Global Warming: A new process stores carbon dioxide in precast concrete. *Technology Review*. July 23, 2008.

A Word on E-Sourcing Tools

Green sourcing should capture more data than is typically encountered in traditional strategic sourcing. In addition to price, terms and service levels, additional data should be gathered on supplier certifications, energy, waste, recycling, disposal, and other relevant areas. Therefore, the information management requirements increase substantially. This additional information can grow in size to become several times larger than what a traditional sourcing process would have produced.

Successful management of this additional data requires appropriate tools. In essence, there are two types of tools that most organizations need to fully capture the benefits of green sourcing. These are e-sourcing and optimization tools.

E-sourcing tools can systematically enhance the performance of the sourcing cycle at the enterprise level. They can automate the administrative aspects of the sourcing process. They can free employees to take a more strategic view of their work. Related to green sourcing, these tools can help in the capture, organization, and coordination of the larger set of green data during the RFP process. By running the process online, vendors can ask questions which can then be clearly documented; data can be shared seamlessly between multiple parties and used later to create contracts and manage vendors and purchasing on an ongoing basis.

Optimization tools help companies understand and exploit complexity. In green sourcing, this calls for understanding and minimizing costs over the entire project lifecycle. Our experience finds that just adding energy as a component to your total cost model significantly increases the model’s complexity. When you add tier pricing and other discount options, as well as global market factors and strategic considerations, the number of variables under consideration increases substantially depending on the number of constraints.

In such situations, advanced optimization tools are useful because the size and complexity of the typical problem make it difficult to find the best solution by using the features of basic spreadsheet programs or relying only on managerial experience. The tools help managers to find balanced solutions that take into account qualitative factors while understanding the cost tradeoffs of the different options.