L.E.K.

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Developing a Total Supply Chain Carbon Strategy – How Retailers and Consumer Goods Companies Can Cut Costs and Increase Revenue While Improving the Environment

Large companies have major opportunities to reduce their carbon footprint – particularly those that have influence over other companies in their supply chain. Doing so can dramatically reduce costs as well as position products and services to be more attractive to customers who are looking to make more environmentally sensitive purchases. By showing consumers that they are proactively addressing the challenges of global warming, companies can differentiate themselves from competitors that either do not have a carbon reduction strategy or that do not back up their carbon reduction goals with action.

In this issue of *Executive Insights*, we explore the unique opportunity retailer and consumer goods companies have to reduce carbon emissions across their supply chains and offer insights into how to evaluate and prioritize alternative carbon strategies.

With the growing awareness of global warming's long-term impact, consumers and the companies they buy from are beginning to reshape their perceptions, expectations and ways of doing business. Increasing numbers of consumers are altering their buying behavior to take into account how their choices impact the environment, purchasing such environmentally friendly products as hybrid cars and compact fluorescent light bulbs. Likewise, many companies are taking steps to reduce their carbon footprint – the emissions of carbon dioxide that arise from their supply chain, including raw materials, production processes, logistics and administrative facilities.

Significantly reducing carbon emissions requires a comprehensive view of the supply chain. This means examining the entire sequence of activities through which raw material or finished product is obtained, produced, packaged, and delivered to customers. It may even mean extending the concept of the supply chain further downstream and advising customers on how the way they use products or services can impact total carbon emissions.

Before developing a carbon reduction strategy, though, business leaders must first understand the importance of global warming generally and carbon emissions specifically in terms of their operations, customer preferences, and the changing regulatory and economic landscape. They must then weigh the long-term commercial and environmental benefits of reducing their carbon footprint against the costs to their companies and, ultimately, their shareholders.

Developing a Total Supply Chain Carbon Strategy was written by **Joanna Gremouti,** Vice President in L.E.K.'s London office. Please contact L.E.K. at energy@lek.com for additional information.

Why Develop a Carbon Reduction Strategy?

A growing number of companies – Walmart, DuPont, FedEx and General Electric among them – are paying serious attention to global warming and how their operations contribute to it. Many are offering consumers "environmentally friendly" products. Home Depot says such "green products" will represent 12% of its store products by 2009.[1] British grocer Tesco announced early in 2007 that it will invest $1 billion over the next five years to stimulate sales of energy-efficient products by cutting their prices and will halve the energy used in its stores.[2]

Many customers are willing to pay more for carbon-friendly products and services. Some 60% of U.S. consumers now recognize the importance of global warming, and 19% feel strongly enough to alter their purchasing habits in ways that address the problem.[3] Worldwide sales of voluntary offsets – counterbalancing one's carbon emissions by paying for emissions reductions elsewhere – grew from $6 million in 2004 to $110 million in 2006.[4] In fact, more than 60 websites now sell carbon offsets to U.S. consumers. Furthermore, in 2005, nearly a half-million U.S. households paid on average 25% more for electricity from renewable sources – 26% more households than in 2004.[5]

To be sure, most consumers today are not willing to pay a premium for an environmentally friendly option. However, differentiating a product by its perceived environmental impact can sway the purchase decision. Consider hybrid cars. Several studies show that, over their average working life, most hybrid cars are not economically viable for consumers: The savings in gasoline purchases are erased by the higher sticker price. Despite this fact, in the U.S. alone, the value of hybrids sold in 2006 (about $5 billion) jumped 28% over the previous year.[6]

In addition to shifting market dynamics, regulatory action is also compelling businesses to adopt strategies that take carbon emissions into account. With increasing pressure on governments to address global warming, several states are moving ahead with emissions regulations rulings and legislation. California, the state with the greatest number of automobiles, passed a law that will cut carbon dioxide emissions from cars starting in 2009. Eleven other states have or will soon enact similar regulations. The state of New York is also spearheading efforts to shore up regulations on power plant emissions.

Both the U.S. Senate and House of Representatives are moving quickly to pass global warming legislation, and the U.S. Supreme Court has recently ruled against the Environmental Protection Agency's refusal to regulate automobile greenhouse emissions. These actions collectively suggest that reducing carbon emissions may not be voluntary in the not too distant future.

Investors, too, are taking notice of the issue, concerned about the risks to public companies that are not planning for carbon emission regulations. A number of major institutional investors (including CalPERS) and asset managers (such as Merrill Lynch) are calling on the U.S. Securities and Exchange Commission to clarify what public companies should disclose to investors about their climate-change initiatives. Investors believe companies that are big carbon emitters could have major business liabilities in the future and want to assess the potential economic impact.

[1] *M. Barbaro, "Home Depot to Display an Environmental Label," The New York Times, April 17, 2007.*

[2] *"Green Tesco Lands in Orange," Convenience Store News, May 17 ,2007.*

[3] *Lippincott Mercer study, "Serving the Climate-Change-Conscious Consumer," May 2006.*

[4] *According to ICF International, as mentioned in a Boston Globe article by Beth Daley, "Carbon confusion," March 12, 2007.*

[5] *According to the National Renewable Energy Laboratory's "Trends in Utility Green Pricing Programs," 2005. At the end of 2005, more than 455,500 U.S. customers were participating in utility green power programs. On average, they paid a premium of 2.36 cents per kWh. The average price to non-green residential customers of power that year was 9.45 cents per kWh, according to the Energy Information Administration.*

[6] *Nationwide Auto Registration data compiled by R. L. Polk & Co.*

The Retail and Consumer Goods Opportunity

With the environmental and commercial benefits of reducing carbon dioxide emissions becoming clearer and regulations more likely, many large companies have formulated carbon-reduction plans and set them in motion. Power generators, oil refiners, chemical companies and iron and steel manufacturers – among the biggest carbon emitters – for years have been reducing energy consumption and investing in technologies that reduce pollution. But reducing carbon emissions in such "smokestack" industries alone will not slow or reverse global warming. In fact, L.E.K. can demonstrate that "non-heavy" industries – retailing and consumer products in particular – are uniquely positioned to have a very significant impact on overall carbon emissions, reduce costs, and create new growth opportunities.

The Carbon Trust, a private company launched and funded by the UK government to help businesses and consumers curb carbon emissions, has focused on companies (and consumers) at the end of the supply chain. Retail chains are "carbon aggregators" because they are positioned at the end of an often lengthy supply chain. Carbon emissions are aggregated along the supply chain as raw foods and materials are converted to consumables ready for purchase. Importantly, the Carbon Trust has found that consumer usage of many products and services generates higher carbon emissions than their actual production. It cites automobiles and clothing (from the electricity used in washing, drying and ironing clothes) as two prime examples.[7]

Consumers, though, are not the primary source of problems related to carbon emissions. As Carbon Trust's findings suggest, it is up to businesses to create products and services that can be used in ways that reduce carbon emissions. This is particularly true for retailers and their suppliers, the consumer product companies. Given their position within the supply chain, arguably many of them exert greater influence over total carbon emissions than most other industries. Furthermore, retailers are just one step from consumers and thus can influence their purchase and usage behavior. As a result, by influencing market demand, they can shape how goods and services are produced and delivered.

The world's largest retailer, Walmart, realizes that it is a major carbon aggregator. It has announced ambitious plans to use its influence in the supply chain to improve the environment. If, for example,the company drives customers to purchase high-definition TV sets whose supply chains produce the smallest carbon footprint, many HDTV manufacturers – and their suppliers – will fall in line to meet the expectations of Walmart's massive block of consumers.

The Importance of Pinpointing Potential

Despite the pressures and opportunities to make them succeed, many carbon-reduction programs fall short of their goals. For instance, one food retailer believed that curtailing its use of air freight to import vegetables from other countries would reduce its carbon emissions. After comparing the carbon footprint of its traditional supply chain against that of sourcing the vegetables from local greenhouses,however, it became clear that the greenhouses were actually consuming more energy (and emitting more carbon) than the air freight vendors.

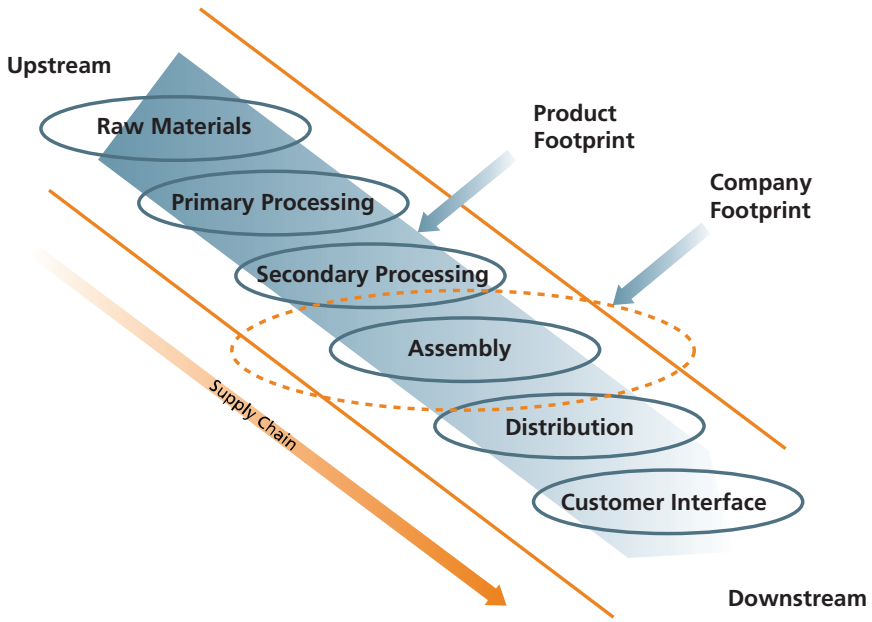
Examples like this illustrate how reducing carbon emissions in one part of the supply chain can actually increase carbon emissions in another. Many companies make this mistake by identifying their utility providers as the biggest emitters of carbon. Pinpointing the areas of greatest opportunity, then, is crucial. Walmart, for example, estimates that changing product packaging will reduce carbon dioxide emissions by 667,000 metric tons. The company predicts that less packaging will also cut almost $11 billion in costs for itself and its suppliers.[8]

[7] *"The carbon emissions generated in all that we consume," the Carbon Trust, published in January 2006.*

[8] *From Walmart press release dated Sept. 22, 2006, and Walmart website, www.walmartfacts.com.*

Figure 1

A Company's Carbon Footprint ≠ The Footprint of a Company's Products



Identifying the carbon reduction opportunities with the greatest impact is difficult because the supply chains for most retailers and consumer goods manufacturers are extremely complex. In fact, most companies are part of multiple supply chains, and each line of business typically offers a variety of products or services. Figure 1 illustrates how a company's carbon footprint extends beyond just its products, encompassing the entire supply chain. As a result, many areas require individual and collective carbon impact assessments.

Companies need a thorough and systematic approach to developing their carbon reduction strategy, one that looks at the total supply chain and:

- Focuses on the greatest internal carbon-reduction opportunities
- Identifies any larger opportunities outside the company, domestically and globally
- Clarifies a company's potential costs and benefits
- Provides clear guidance as to which processes and sources to change so that companies and their suppliers can reduce their carbon footprint

In the following section, we discuss how to develop a plan to prioritize where in the supply chain to reduce carbon, understand the implications of doing so, determine the key factors in achieving those reductions, and leverage the potential branding opportunities.

Creating an Effective Carbon Reduction Strategy

L.E.K. Consulting has developed a three-step approach to mapping a company's carbon footprint and, consequently, prioritizing reduction initiatives (*see Figure 2*):

Figure 2

Three Steps to Mapping a Company's Carbon Footprint

Determine the Scope of the Carbon Reduction Initiative

The first step of an effective carbon reduction strategy is to scope the project carefully. Managers should identify the main lines of business and the supply chain activities of focus. For example, a retailer may sell food, clothing and electronics, each of which has a very different end-to-end supply chain. The company then needs to decide which supply chains and activities to assess.

Each of the supply chains targeted for analysis then needs to be defined at a high level. This involves disaggregating the chain into the six to 10 key activities that compose it. We broke down the supply chain of a leading food retailer into five main areas: raw materials, manufacturing, distribution, home usage and disposal. Each main activity was further broken down into subprocesses. For example, the raw materials activity included meat-rearing, growing, and other processes.

Evaluate at a High Level the Carbon Emissions Across the Supply Chain

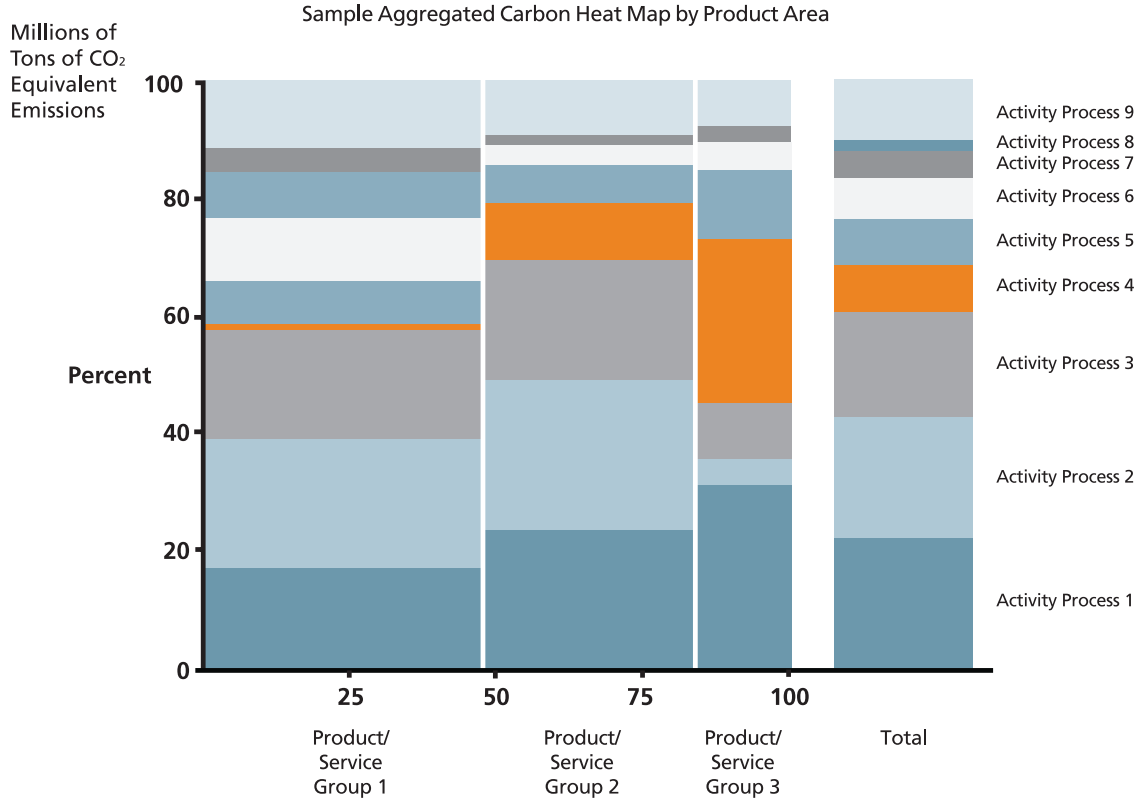
The next step is to make a high-level estimate of the carbon emissions across each process in the supply chain for a complete product portfolio. Those conducting the assessment must strike a balance between seeing the big picture (making carbon estimates at a high level) and providing enough detail for a meaningful analysis.

L.E.K. helped the same food retailer – with over 6,000 unique products – develop an aggregation methodology for its products and processes in order to estimate the carbon footprint of all its products, identify the carbon-intensive process activities across the supply chain, and prioritize its carbon-reduction effort. We identified the key carbon drivers and classified the products according to these drivers, thereby reducing the complexity of the analysis while producing meaningful results.

This type of evaluation produces an aggregated "heat map" for each line of business by product or service and by supply chain activity (*See Figure 3*). A heat map allows the company to identify quickly the "hot spots" for carbon emissions. It does not provide explicit advice on exactly what processes or subprocesses to focus on in any supply chain activity. Instead, it is a directional tool that helps decision makers understand where in a large and complex supply chain to focus their efforts.

Figure 3

Sample Aggregated Carbon Heat Map by Product Area



Determine the Costs and Benefits of Carbon-Reduction Opportunities

The heat map will point to the greatest carbon-reduction opportunities. Not all of them will be economically viable, however. The operational complexities and thus the investments in some opportunities may far outweigh the financial benefits to an organization in terms of cost reductions and/or projected revenue increases. Of course, the opportunities with the highest impact are those with the greatest financial returns (the highest net present value) and the most significant environmental benefits (the greatest carbon savings).

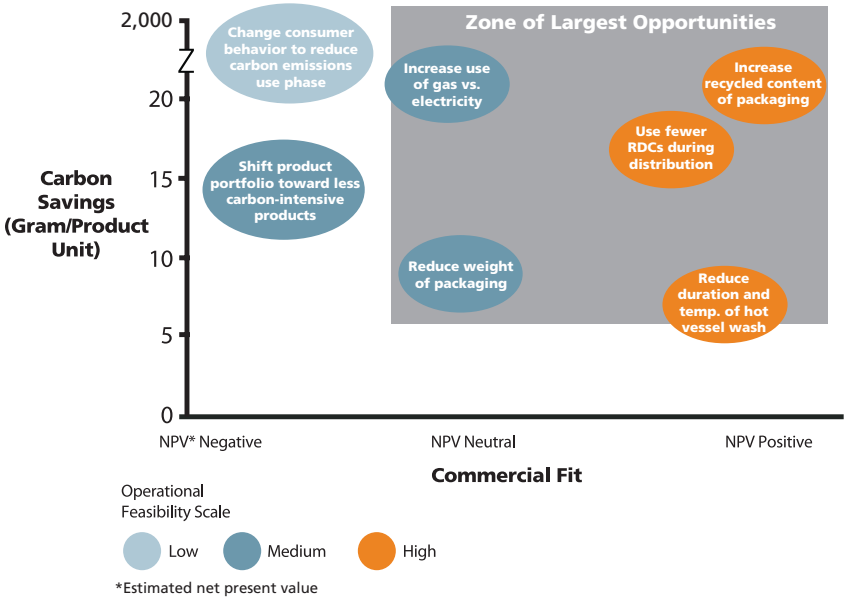
A "carbon calculator" gives business leaders a way to look at specific products and services in more detail to determine their:

- Actual carbon reduction potential
- Cost/benefits (the NPV, including cost savings from energy reduction and revenue increases offset by operational and capital expenditure investments)
- Operational feasibility

By mapping out the opportunities in a manner shown in Figure 4, managers can better see which opportunities they should pursue and which they would be better off deferring.

Figure 4

Sample Opportunity Identification Map
Change consumer behavior to reduce carbon emissions use phase



Taking an Integrated Approach to Carbon and Commercial Strategy

Many companies naturally place the responsibility for carbon reduction under the remit of their corporate responsibility departments. This is effective when the carbon strategy is aligned with the strategic goals and operations of the firm. However, despite aspirations to the contrary, carbon-reducing opportunities may not be justified or even possible given a company's current way of doing business. Furthermore, as discussed, a significant portion of a company's carbon footprint may in fact be produced by how its customers use its products, creating a situation in which even "green" companies are not actually environmentally friendly in the broadest sense. When a company's operations or customer behaviors are not aligned with its carbon goals, an integrated approach to carbon strategy is required, one that extends beyond corporate responsibility to commercial strategy, involving an organization's wider investment and marketing/communications strategies. By investment strategy, we mean understanding how to factor carbon emissions into investment decisions across all business units. This could include new technologies (e.g., renewable power) and assets (such as making a retailer's stores energy efficient). The investment strategy is crucial because without re-examining its investment criteria, a company is quite likely to perpetuate its carbon-increasing habits of the past.

The communication strategy must consider the implications of the carbon strategy on the brand and determine the messages for consumers. It must also shape the dialogue with other key stakeholders, including regulatory and other government agencies.

Retailers and consumer products manufacturers are well positioned to help consumers make informed "carbon-positive" choices. This is critical because consumers are – in fact or in perception – in many ways far removed from the sources of carbon emissions. They need to be informed and educated about where the greatest opportunities exist – especially those over which they have personal control.

When Boots, a major UK health and beauty retailer, mapped out its carbon footprint for shampoo products, it found that the majority of the emissions occurred when the shampoo user washed his or her hair. In addition to launching a new line of shampoos that will produce 20% less carbon, the company will be advising customers on how to reduce their own carbon footprint.

Good for Companies, Customers, Investors and the Environment

Retail and consumer goods companies are uniquely positioned to help reduce carbon emissions in the supply chain both upstream through their suppliers and downstream through their customers – not to mention within their own organizations. Given the benefits of doing so, business leaders should begin seriously assessing their carbon footprints and exploring ways to reduce overall emissions.

By taking a methodical and fact-based approach to quantifying the carbon released across their supply chains, understanding their carbon-reducing alternatives, and weighing the costs and benefits of various strategies, companies are likely to find surprising ways to cut costs and increase the consumer appeal of their offerings as they help stave off the predicted effects of global warming.