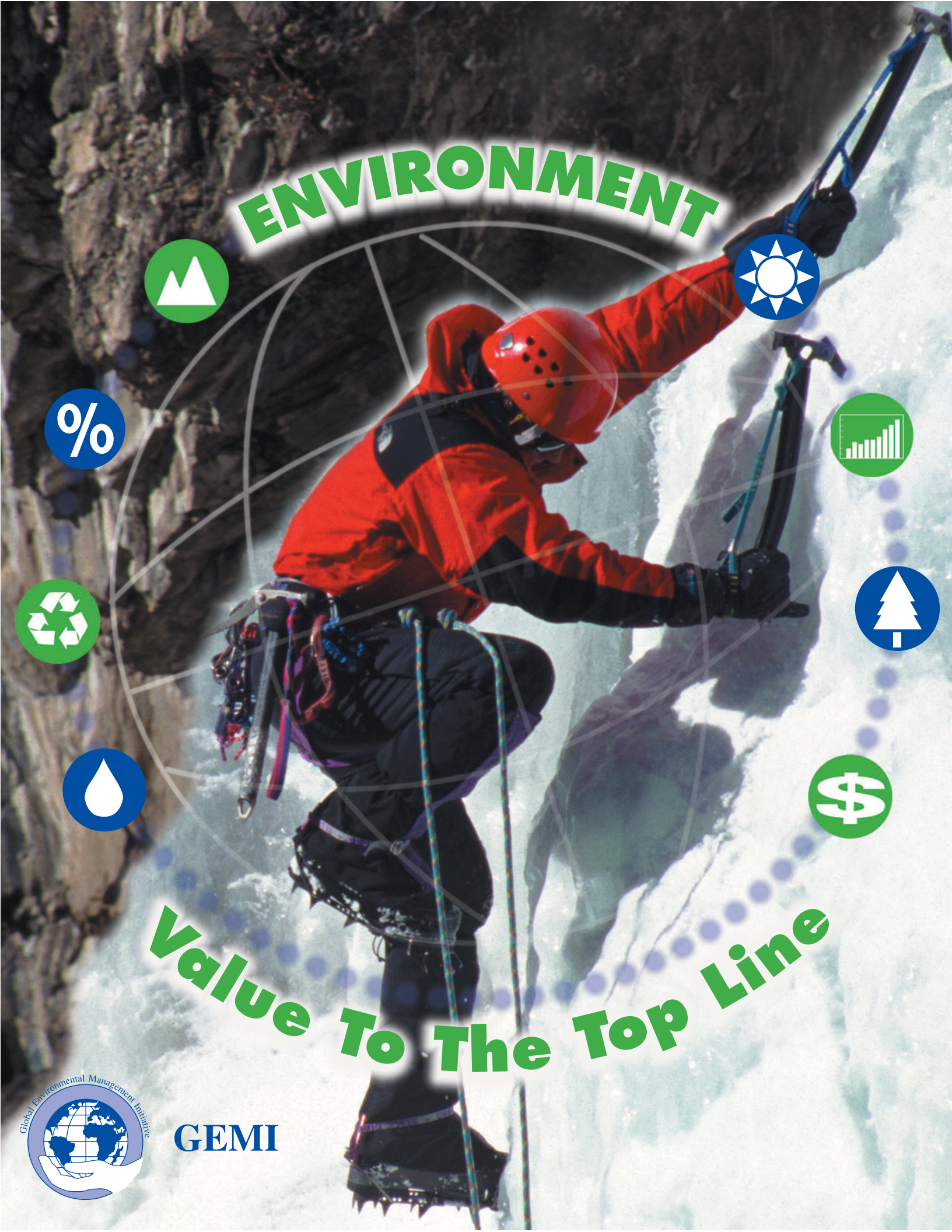
ENVIRONMENT
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Value To The Top Line
Global Environmental Management Initiative
GEMI

Preface

November 2001

Over the past thirty years, the evolution of the environmental professional has progressed across a landscape of changing business realities. In the 1960s and 1970s, the first real understanding of the environmental impacts of business and industry meant a call to action throughout the business world. Environmental departments were put in place to respond to growing requirements and expectations for how companies addressed environmental challenges.

In the 1980s and 1990s, globalization changed the focus not only of environmental functions, but also of the businesses in which environmental professionals operate on a daily basis. As we all looked to new locations and international activities, we learned a great deal about cultural differences and other factors that presented multinational corporations with both tremendous opportunities and challenges.

Now, in the 21st century, we are faced with new challenges and an even newer set of ever changing business realities. The world of "instant information" that we all operate within means consumers, shareholders and the general public have constant access to information and knowledge. This new paradigm of instantly available information permeates the business world and sets new and every increasing expectations for how we do business related to both shareholders and stakeholders.

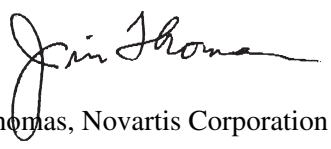
We are continuously challenged for information on how we are meeting the changing expectations of our customers, consumers, shareholders and other outside stakeholders. While some might view these challenges as a burden we prefer to view them as a business opportunity. As we work together through these evolving and expanding environmental management challenges we must harness global information relative to what we do and channel and communicate that knowledge to our customers and consumers so they understand our commitment to improving the environment, while at the same time improving the top and bottom lines of the companies that we represent. By addressing these important crosscutting issues, we have the opportunity to differentiate our companies by creating real value to our businesses.

Two years ago, GEMI developed a report, *Environment: Value to Business*. This document was GEMI's first attempt at a publication that addressed the linkage of environmental and business objectives. *EVTB* focused on the "bottom line" initiatives that we all work on to reduce costs and minimize the environmental impacts of our businesses.

This new document, *Environment: Value to the Top Line*, is a follow-up to GEMI's *EVTB* report and focuses on top line initiatives to increase business value. This report is rich with case studies of companies who have implemented successful projects linking environmental and business objectives. It has been designed to help identify new processes and ways of thinking about the role of environmental initiatives vis-à-vis broader business objectives.

We believe the document you are about to read will engage you. It may change the way you do your job. And, we hope that it changes how you perceive your role within your corporation or business unit. This document, like all other GEMI documents and reports, has the goal of helping "Business Help Business Achieve Environmental Excellence." It is our hope that this document and the other GEMI publications will help you minimize the environmental impacts of your business, maximize the business opportunities, and add value to your company within what you do each day.

Ben R. Jordan, Coca-Cola North America



Jim Thomas, Novartis Corporation

Co-Chairs of GEMI's Environment: Value to the Top Line Work Group

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As part of the initial phase of this project, exploratory meetings were held at Harvard University and at the University of North Carolina (UNC). Professor John Spengler was instrumental in organizing the meeting at Harvard, which involved the participation of both Harvard and MIT faculty members, and Professor Stuart Hart hosted the UNC meeting.

During the course of the project, Don Doering from World Resources Institute, Katherine O'Dea from Business for Social Responsibility (now with Nantucket Conservation Foundation), and Gwen Ruta from the Alliance for Environmental Innovation reviewed and commented on the draft document and participated in a meeting of the EVTL Work Group to provide further input on the draft document and to exchange views on how companies can realize environmental top line value.

Table of Contents

INTRODUCTION

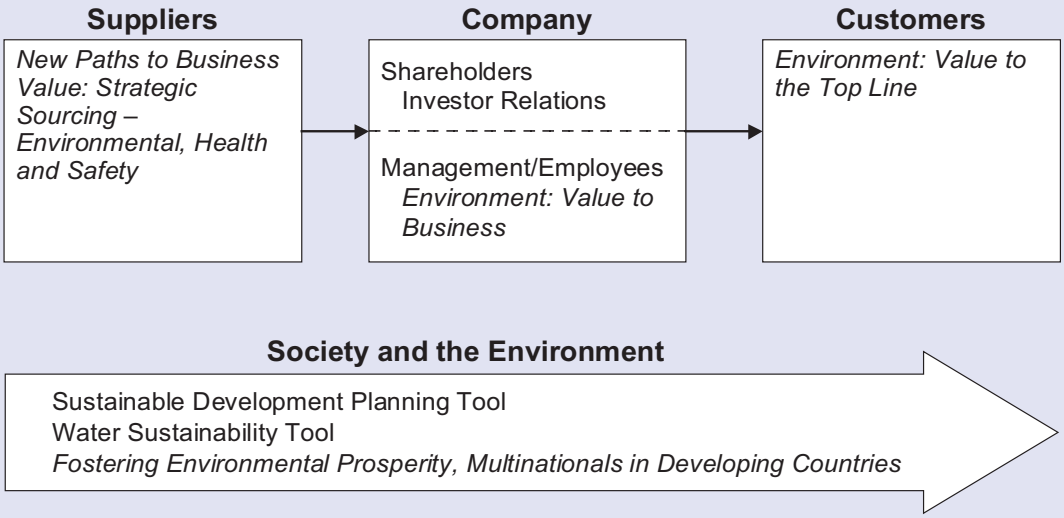
Environment: Value to the Top Line builds upon the work of an earlier GEMI primer, *Environment: Value to Business*. The central theme of *Environment: Value to Business* was the strong connection between environmental activities and business value. Companies have made great strides in finding ways for environmental considerations to deliver operational or bottom line value: reduced operating cost, increased resource efficiency, and improved time to market. This bottom line value was the main subject of *Environment: Value to Business*. Top line value or revenue growth was introduced, but explored to a lesser degree. GEMI believes it is timely to examine top line value more comprehensively. That is the purpose of *Environment: Value to the Top Line*. It fits well into the growing universe of GEMI reports and publications dedicated to exploring the business value of environmental activities throughout the distribution chain and in connection with a company's role with respect to society and the environment.

New Paths to Business Value: Strategic Sourcing–Environment, Health and Safety, published in 2001, focuses on a company's relationships with its suppliers and addresses in considerable depth the value that environmental, health, and safety considerations play in procurement decisions. A new effort is currently underway which focuses on shareholders and their representatives in the investment community. *Environment: Value to Business*, published in 1998, focuses on what management and others in the company can do to deliver environmental business value. This publication, *Environment: Value to the Top Line*, focuses on opportunities arising from a company's relationships with its customers. And two publications currently in process focus on a company's relationship to society and the environment. One of these publications is aimed at developing a tool to help companies plan how to address sustainable development. The other focuses on one particular aspect of sustainable development, water sustainability, and seeks to develop a tool to integrate water-related environmental, social, and economic considerations with business strategies and plans. Figure 1 illustrates some of these recently published and in-process publications.

Environment: Value to the Top Line is intended to provide inspiration and ideas for senior managers, including product and business development managers, business process owners, regional managers, environmental managers, investor relations staff, and senior executives.

> *"We're talking about commerce and profits. Those are the means we can use to bring the power of the modern global market to bear on improving human lives while safeguarding the global environmental commons."*
> *Chad Holliday, Chairman and CEO, The DuPont Company*

Figure 1. Recently Published and In-Process GEMI Publications on Environmental Business Value



Source: The Boston Environmental Group

However, it will also be of interest to a broader audience, such as members of non-government organizations (NGOs) and other stakeholders of the business community. This document has several purposes:

- Create awareness among senior business managers that environmental considerations can provide top line business value.
- Provide concrete examples of how companies have achieved top line value through environmental initiatives.
- Illustrate different pathways to top line value.
- Provide tools and ideas for action to companies starting down the path of exploring top line value.
- Serve as the basis for communication and collaboration between business managers and environmental professionals in achieving top line value.

Top Line

The term "top line" refers to what is represented by the top line of an operating or income statement: *sales*. It has also come to mean other aspects of value closely associated with generating sales.

For purposes of this document, top line value will consist of the following elements:

- *Revenues or sales*—represent the clearest form of top line value.
- *Market share growth*—all other things being equal (e.g., stable market, stable pricing, stable industry structure), when a firm's market share grows, so do its revenues.
- *Share price*—an outcome rather than a driver of revenue growth, but a good measure of predicted future revenues.
- *Enhanced Brand*—an improvement in how the characteristics of a firm relevant to a customer's buying decision are perceived by the customer.

"Once, there was a belief that quality costs money. This myth has been dispelled. Among many companies there is a similar myth that Environmental, Health, and Safety (EHS) excellence costs money. However, many companies are discovering that EHS excellence is actually a competitive advantage. And eventually, EHS excellence will be necessary for our very survival."
Christopher B. Galvin, Chairman and Chief Executive Officer, and Robert L. Growney, President and Chief Operating Officer, Motorola, Inc.

Strategic Business Concepts

This document will explore several strategic business concepts:

- *Value*—what buyers are willing to pay. Competitive value comes from offering lower prices than competitors do for equivalent benefits or providing greater benefits that more than offset a higher price.
- *Differentiation*—creation of unique product attributes that the customer cares about.
- *Brand image*—how a customer perceives the attributes of the source of the goods or services of interest to the customer.

Top Line Framework

Different companies that have different core strengths, competitive environments, strategies, and cultures will take different paths to realize top line value from environmental considerations. The Top Line Framework takes this into account. It is a tool for understanding the business reasons why there can be different pathways for achieving environmental top line value.

According to insightful business authorities such as Michael Treacy and Fred Wiersema in *The Discipline of Market Leaders*[1], successful companies choose one of three aspects of customer value—i.e., best total cost, best product, best total solution—and then optimize their organization around that aspect. Choosing one type of customer value on which to focus does not mean ignoring the other two. It only means that an organization's processes, information systems, culture, management systems, and organizational structure are particularly suited to deliver that type of value.

[1] Treacy, Michael and Fred Wiersema, *The Discipline of Market Leaders,* Addison-Wesley, 1995.

"Beyond operational excellence, our Health, Safety, and Environmental performance also plays a vital role in contributing to innovation and the sustainable growth of our business. We believe that the biggest contribution that we at Novartis can make to sustainable development is through the positive health and environmental benefits of our products."
Dr. Daniel Vasella, Chairman and Chief Executive Officer, Novartis AG

Organizations that focus on providing best total cost tend to develop a core strength in cost leadership. Organizations that choose to focus on providing the best product tend to develop a core strength in product innovation. And organizations that focus on providing the best total solution tend to develop a core strength in customer intimacy. The relationship between environmental considerations and cost leadership was explored in depth in *Environment: Value to Business*. In comparison, this document explores the relationship between environmental considerations and a company's core strengths in product leadership and customer intimacy—strengths that are closely connected to top line value:

- *Product leadership* involves offering products of superior performance. The value proposition to customers is that they receive the best product. Continued success involves continuous innovation. The basis for competition is not price—rather, it is product performance.
- *Customer intimacy* involves delivering what specific customers desire. Companies with a customer-intimacy focus cultivate relationships. The value proposition to customers is that they receive the best solution for their specific needs. Success typically involves providing a high level of support to help customers achieve optimum results from the products they buy.

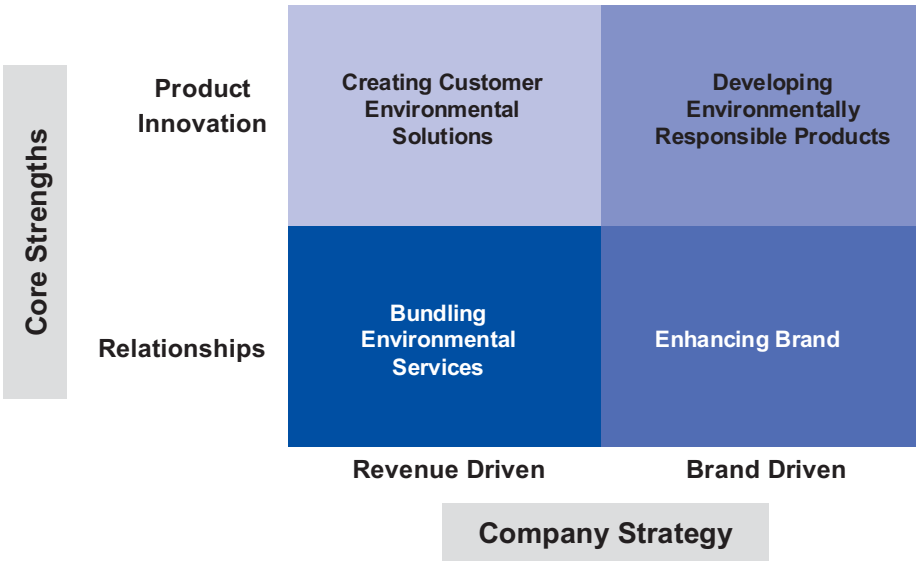
The other dimension of the Top Line Framework suggests that just as companies choose their core strengths, they also choose one of two basic strategies for producing top line value:

- A *revenue-driven* strategy seeks immediate revenue gains by extracting a price premium for products.
- A *brand-driven* strategy seeks increases in market share by enhancing customer brand awareness, consideration, and preference.

The Top Line Framework explores the implications of these two dimensions—core strengths and company strategy—for delivering environmental top line value (Figure 2).

The Framework presents a set of simple ways to categorize the business situation of companies so as to allow us to explore how environmental value can be provided to the top line. The Framework serves as the organizing principle for exploring the case studies in this document.

Figure 2. Top Line Framework



Chapter 1 deals with companies whose strategy is to realize immediate revenue gains and whose core strength is product innovation. These companies are inclined to develop products that solve their customers' environmental problems by either lowering customer environmental costs or increasing customer environmental benefits. Examples include the chemical company that develops additives optimized for use in low emissions paints, or the agricultural products company with a herbicide that promotes conservation tillage, thereby conserving soil for farmers and reducing their energy costs.

Chapter 2 deals with companies whose strategy is to grow market share through promotion of brand image and whose strength is in product innovation. These companies tend to develop environmentally responsible products—products or services that are produced with, or whose use involves, less environmental impact than those of competitors. For example, the power company that produces electricity through renewable means, or the office furniture manufacturer that produces an office chair made of recycled materials and designed to be particularly durable.

Chapter 3 deals with companies whose strategy is brand driven and whose strength is in customer and other stakeholder relationships. These companies tend to promote environmental initiatives as a way of enhancing their brand. An example of this is the large oil company that has moved to triple-bottom-line public reporting and has innovated stakeholder outreach approaches.

> *"At Georgia-Pacific, superior environmental performance provides benefits to our company, customers, and shareholders. In addition to adding value, our commitment to environmental, health, and safety excellence helps create a competitive edge for our company."*
> *A. D. "Pete" Correll, CEO, Georgia-Pacific Corporation*

"At Bristol-Myers Squibb, we are reaching out to others around the world to join us in creating bold, new approaches to improving public health while achieving economic growth and environmental protection."
Charles A. Heimbold, Jr., Chairman of the Board and Peter R. Dolan, President and CEO, Bristol-Myers Squibb Company

Chapter 4 deals with companies whose strategy is immediate revenue driven and whose strength is in relationships. These companies tend to find ways to bundle environmental services with their products, or replace products with services, as a way to provide the best total solution to customers. This added value creates the potential to realize a price premium. Examples include the health care company that helps its hospital customers to minimize their infectious and solid waste, or the paint producer that shifts from selling paint to car companies to selling painted cars and sharing in the cost savings.

What happens when a company attempts an initiative not suited to its strategy and core strengths? For example, what happens when a company driven by immediate revenue gains tries to develop environmentally responsible products? It will tend to seek a price premium and then be disappointed at lackluster sales. What happens when a product-focused company tries to bundle services with its products? It will market its services as if they are products and end up missing out on providing what the customer is looking for, i.e., a customized solution.

Chapter 5 sets forth steps for companies to consider as they move ahead with initiatives to realize environmental top line value.

Value Chain

Throughout this document, a business tool called the "Value Chain" is used to shed light on how companies have gone about implementing environmental approaches to deliver top line value (Figure 3). The Value Chain is a basic business tool created by Harvard Business School Professor Michael Porter. In his book, *Competitive Advantage*[1], Porter shows how to use the Value Chain to help analyze a company's value-creating activities systematically in order to understand costs and potential sources of differentiation. A company gains competitive advantage by performing these strategic activities better than or at a lower cost than its competitors.

Figure 3: Value Chain

Source: The Boston Environmental Group

[1] Porter, Michael, *Competitive Advantage*, New York, The Free Press, 1985.

Typical links in the Value Chain include:

- *R&D/Investment*—activities associated with the design of new products or services, or the acquisition of businesses, products, or technologies;

- *Raw Materials Sourcing*—activities associated with procuring, receiving, and storing raw materials and other inputs, such as energy and water;

- *Manufacturing/Service Delivery*—activities associated with transforming inputs into the final product or service form, and outbound logistics;

- *Marketing*—activities associated with providing the means by which buyers can purchase a product and enticing them to do so;

- *Customer Service*—activities associated with providing service to enhance the value of the product; and

- *End of Life*—activities associated with managing a product at the end of its useful life.

We will use the Value Chain to examine how environmental considerations contribute to value creation in the different activities of the company. This document focuses on one link of the Value Chain at a time. However, it is recognized that several activities of the Value Chain are often interrelated and that the focus on one link at a time is for illustrative purposes.

CHAPTER 1:

Creating Customer Environmental Solutions

One of the clearest ways to realize top line value from the environment is to identify customer needs associated with the environment, which the customer would be willing to pay to address. Perhaps the customer is experiencing heavy environmental costs associated with regulatory compliance or the expectations of the marketplace. Or perhaps the industrial customer perceives an opportunity to realize value by positioning its products to address the environmental needs of its own customers. Companies whose strategy is to realize immediate revenue gains and whose core strength is product innovation are particularly well positioned to realize the top line value associated with providing environmental solutions to customers. This chapter explores how two customer-directed companies have realized top line value through different paths. DuPont developed products to address the needs of industrial customers, including reducing their environmental impacts, while Electrolux's innovations focused on meeting the needs of household consumers.

Companies whose strategy is to realize immediate revenue gains and whose core strength is product innovation are well positioned to realize the top line value associated with providing environmental solutions to customers.

DuPont's Solution Dyed Nylon

Challenge: How to develop new manufacturing and operations capabilities to address customer' needs, including reduction of environmental impacts

"The environmental and operational properties of solution dyed nylon, along with the improved color-fastness of the fiber, helped us capture 50 percent of the high-end commercial market."

Mark Ryan, Manager, Environmental Initiatives, Commercial Flooring Group, DuPont

DuPont has learned that meeting a customer's product performance needs, and addressing environmental impacts, can create top line opportunities—as DuPont puts it, "increased shareholder value added." Increasing shareholder value added while decreasing environmental footprint is central to DuPont's vision for "sustainable growth."

Understanding Customer Needs

DuPont carpet fibers are typically tufted by carpet manufacturers into carpet and rugs for use in homes, commercial buildings, automobiles, and other types of transportation vehicles. Until the late 1980s, nylon carpet fibers were made in a white dyeable form. In the dyeing process, yarn or carpet was given its color by using a combination of water, dyes and heat. This dyeing process created several operational and environmental challenges for carpet mills. The process required a significant amount of energy because the fibers needed to be heated with steam and additional heat was required to dry the fibers after they were dyed. In addition, this process generated a substantial amount of waste water.

DuPont recognized that it could supply its customers with a fiber that could be tufted into a carpet—without the commonly applied processing steps of twisting, heat setting, or dyeing. In addition these fibers had improved colorfastness and stain resistance. In essence, DuPont capitalized on a business opportunity by providing customers with improved product performance, while at the same time reducing their environmental impacts.

DuPont capitalized on a business opportunity by providing customers with improved product performance, while at the same time reducing their environmental impacts.

Creating a Business Opportunity

In response to customer needs, DuPont developed and patented a "solution dyed nylon" fiber. In the manufacturing process, DuPont added natural or synthetic pigments to impart color to the melted nylon polymer. Solution dyed nylon was attractive to DuPont customers because it had both operational and environmental benefits. Since the mills did not have to run their own dyeing process, they incurred lower processing expenses and did not have to invest capital in dyeing equipment.

In addition, the solution dyeing process created a fiber that had better fading resistance than conventionally dyed fiber because the pigments were inherently more stable to light and oxidation processes than regular carpet dyes. From an environmental standpoint, the effects associated with the dyeing process were eliminated—the mills had significantly less waste water and had decreased water and energy (heat) usage. It is also important to recognize that the burden was not just simply shifted elsewhere. DuPont extruded solution dyed nylon without higher energy to the process, and with excellent product yields.

Operations Challenges

Although DuPont's solution dyed nylon was clearly an attractive product, customers were initially concerned about the limited number of color choices available. A mill could buy one type of white dyeable yarn, which would then yield thousands of shades of color for many different carpet styles. With solution dyed nylon, the mill's choices were limited to the colors in stock. As a result, DuPont had to develop many color options, predict color trends, and set up color manufacturing forecast charts that could anticipate the future needs of its customers. It was also necessary to keep expanding the color choices to keep up with the growing demand for styling flexibility. DuPont started with about 24 colors and currently has more than 120 colors available. This required the development of a system for keeping so many different fiber colors in inventory. Another customer-focused innovation was the establishment of an advanced quick-ship inventory process. By adding these operations management capabilities to its new solution dying technology, DuPont was able to deliver a high value package to its customers, which DuPont's competitors could not match.

Another Win-Win Situation

The solution dyeing method was a win-win situation, and an excellent example of "sustainable growth" in action. The customer received a better product (improved color fastness and stain resistance) and was able to improve its environmental footprint. The environmental and operational benefits of the product, along with the improved colorfastness of the fiber, helped DuPont capture 50 percent of the high-end carpet fiber market. In fact, the advantages of the solution dyed fiber are great enough that they earn a premium price in the marketplace.

Key Learning: Sustainable Development

Sustainable development is a term that many in business have trouble understanding. Although there is nothing particularly difficult to understand about the concept of balancing the needs of present generations against the needs of future generations, it is clear that the basic definition of sustainability was developed without the specific needs of the business audience in mind. Many business people need to have some sense of how a concept can be put into action before they can incorporate the concept into their mental model of the world. Accordingly, some companies have adopted their own definitions of sustainable development. For example, there is a growing base of companies that talk about sustainable development in terms of the "triple bottom line," i.e., environmental impact, economic development, and social well-being. Yet others have moved away from the term and substituted a term that has greater meaning within their organizations. One such company is DuPont.

DuPont. For DuPont, the term "sustainable development" had far less meaning for business people than the concept of "sustainable growth." Business people saw sustainable development as, at best, a static end-state. It was clear that the fundamental mind-set of the business was "if you are not growing, you are dead." Accordingly, DuPont settled upon the idea of sustainable growth. Executives at DuPont are quick to point out, however, that the kind of growth envisioned is not old economy growth. It does not involve the use of greater resources and the production of more chemicals. Rather, it involves growth in shareholder and societal value while at the same time decreasing the amount of resources consumed. And this fits DuPont's overall strategy of emphasizing high-technology and less resource-intensive businesses. Another important aspect of sustainable growth for DuPont is to reach markets in the developing world—markets where it may not currently be present. This will involve new business models and new partnerships with stakeholders—all of which will ensure that DuPont's overall business is sustainable, the whole point behind the idea of sustainable growth.

But whatever the definition used, environmental top line initiatives are only one of the possible pathways a company might choose in pursuing a strategy around sustainable development. Many companies choose a pathway that is more bottom line focused, often called eco-efficiency. Yet others choose to focus on relationships with stakeholders, based on a belief that this will protect their license to operate.

It should be noted that two other GEMI Work Groups are developing tools and other materials for companies interested in further pursuing sustainable development. Accordingly, the focus of the top line tools in this publication is on environmental top line initiatives, while acknowledging the relevance of environmental initiatives to a company's sustainability strategy.

Electrolux's Green Range Products

Challenge: How to develop environmentally sound products even though the most significant environmental impacts occur during product use — and therefore out of Electrolux's Control

"The Green Range calculations for our European white goods are impressive. In 1999, our products with the best environmental results—Green Range products—accounted for 21 percent of sales and 31 percent of gross margin. This represents an important proof that environmental work generates profitability. This year we are sharpening the Green Range product criteria even further to ensure greater environmental efficiencies."

Karl Edsjo, Environmental Marketing Manager, Electrolux

Integrating Business and Environmental Strategies

The Electrolux Group, a $14 billion global company headquartered in Sweden, has a strong engineering and product innovation tradition. It is the world's largest producer of powered appliances for kitchen, cleaning, and outdoor use—with 40 percent of its sales in North America and 50 percent in Europe. Products include refrigerators, washing machines, vacuum cleaners, and lawn mowers. Long before its competitors, Electrolux understood that the environment was a potentially important strategic issue. This was particularly true in Europe, where the environmental performance of products was often a key differentiator. Understanding that customer expectations for environmentally sound products could affect buying decisions, Electrolux integrated into its business strategy the goal of becoming the industry leader in environmentally sound, innovative products.

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Disappointing Discovery Leads to an Important Understanding

A life cycle analysis indicated that the greatest environmental impacts—largely energy and water consumption—of Electrolux products occurred during product use. At first, this was a disappointing discovery since the greatest determinant of environmental performance—the consumer's use of the product—took place outside of Electrolux's direct control. But Electrolux quickly recognized that it could use its core strengths in product development and customer understanding to create environmentally sound products that would be attractive to consumers. It believed that consumers would understand that products with good environmental performance—energy efficiency, water efficiency, recyclability—did not have to be a cost or a luxury, but could actually be a way of saving money for the customer.

For example, a life cycle assessment of a washing machine showed that almost 80 percent of the total environmental impact comes from water, energy, and detergent consumption during the use of the machine. A similar analysis of the total cost of the entire life cycle of the machine shows that the cost of water, energy, and detergent consumption exceeds the initial purchase price. Thus, the customer choosing an appliance with high environmental performance builds long-term savings.

Electrolux could use its core strengths in product development and customer understanding to create environmentally sound products that would be attractive to consumers.

These insights led to the development of a line of products called the "Green Range," which were differentiated by their environmental soundness—primarily resource efficiency and the ability to reduce energy, water, and detergent cost to the consumer. Such products included the lowest noise-generating and water-consuming dishwasher on the market; a solar-powered lawnmower; and a PVC-free, low-noise, energy-efficient clothes dryer.

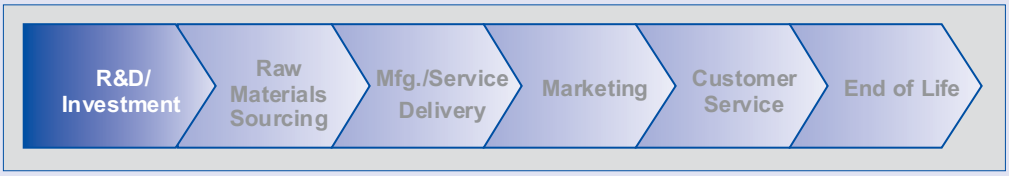
To help ensure that its products were environmentally superior to competitive products, Electrolux developed an effective approach to measure the environmental performance of its products. Products that are environmental leaders in their product markets—as determined by specific parameters—are considered products within the Green Range. For example, parameters for refrigerators include energy consumption, noise level, insulation material, and refrigerants. Electrolux sought input from different functions within the company when developing these parameters.

Similarly, Electrolux drew on a combination of product development, marketing, and environmental expertise to develop design criteria for products within the Green Range. But it was clear that product development had the lead role. Electrolux wanted to ensure that the Green Range was recognized as a mainstream business initiative rather than an initiative driven largely by environmental staff.

"Environmental features and considerations are built right into the design process."
Karl Edsjo, Environmental Marketing Manager, Electrolux

For many consumers, the attraction of the products was clear. They saved the consumer money, in the form of lower operating cost, and their use resulted in less of a burden on the environment than competing products. But for other consumers the idea of paying a higher initial cost in order to achieve significant cost savings over the lifetime of the product's use was not a familiar mode of shopping. To deal with this issue, Electrolux tries to make it easier for the consumer to understand the total value of the Green Range products. A website has been developed for use in the home and the retail location that enables consumers to compare the efficiency and operating cost of a product in the Green Range versus competing products or the product the consumer is currently using (www.electrolux.com/node1001.asp). The tool makes the idea of "payback" clear.

Value Chain: The R&D Link



The R&D link of the value chain can significantly affect all other links. Leading companies understand that R&D is most effective when it takes the company's entire value chain into account. Then products are designed efficiently and without the need for the rework that often happens when considerations such as environmental functionality are only taken into account well into the design process, or even after the product has been manufactured.

Eastman Kodak. Eastman Kodak has a robust process to integrate health, safety, and environmental (HSE) considerations into its product commercialization process. Value creation is the driving force. Through an approach called "Design for Environment" (DfE), Kodak finds ways to consider environmental and other essential design criteria early in the product development process so that the product design is optimized for these criteria. Opportunities to optimize unit manufacturing costs are realized through DfE techniques such as the use of common construction materials and the recycling or remanufacturing of parts. Also, by considering customer HSE issues at the conceptual design stage, the R&D team can identify product differentiation opportunities. For example, Kodak developed a filtration device for film processors that succeeded in capturing significant market share from its competitors in the European market by virtue of its reduced water usage.

Like many other companies that have DfE processes in place, Kodak has wrestled with how to use the tool of life cycle analysis (LCA) appropriately. LCA is a quantitative tool that allows a company to take stock of the environmental impacts associated with its products, such as energy usage, water usage, emissions to the environment, and so on. At one point, companies used LCA to position their products as greener than those of competitors. It soon became clear, however, that there were inherent limitations associated with LCAs. No matter how detailed the LCA, it still could not answer the question of how to compare different kinds of impacts. What was worse: consuming a gallon of water or releasing a pound of CO_2 into the atmosphere? Consumers became confused with the claims of conflicting LCAs. So, LCA lost its value as a product differentiator. Moreover, a thorough LCA was a relatively expensive proposition that companies were reluctant to incur without the likelihood of a payback. For a period of time LCA fell into disuse. More recently, however, companies like Kodak are realizing that some form of LCA has enormous value in making better business decisions. No longer intended as a product differentiator, a new form of LCA is being used to make product design and manufacturing decisions that will reduce the product's impact and save cost. These new LCAs are more streamlined than their predecessors and less costly to undertake.

Electrolux. Electrolux builds environmental considerations into the product development process early in the process. The product R&D process at Electrolux is called the Integrated Product Development Process (IPDP).

A formal system called the Environmental Change Program was developed to track environmental issues and to integrate them as early as possible into the IPDP. Also, eco-design handbooks were developed for most product lines and used during IPDP to ensure that the right questions are asked and the right factors considered in product development. The product development process had to be sensitive to the fact that not all product innovation needed to integrate environmental considerations in the same way. Some product innovations:

- Turned out to be incremental in nature, such as improving energy performance or reducing water consumption by fine-tuning existing technologies and materials.

- Involved the redesign of existing products to include new technologies, such as vacuum technology for refrigerator insulation panels and catalytic technology for two-stroke engines for chain saws and lawn mowers.

- Involved rethinking existing product concepts and developing new concepts, such as automatic solar-powered lawnmowers and the replacement of solvent-based dry cleaning machines with aqueous-based machines.

The end result of early consideration of environmental factors into product design is Electrolux's highly successful Green Range products, which year after year grow in profitability and market share.

Hewlett-Packard. Environmental criteria is also integrated effectively into the product development process in the electronics industry. For example, Hewlett-Packard's DfE approach involves environmental stewards on every design team to identify design opportunities based on their understanding of customer environmental needs and expectations. Design teams follow DfE guidelines that provide criteria to help reduce environmental impact throughout the product's life cycle. Considerations included in these guidelines include: increasing the use of recycled materials in packaging; using molded-in colors and finishes instead of paint; minimizing product energy consumption; reducing packaging materials; and facilitating recycling and disassembly through plastics labeling and snap/unsnap fitting of parts.

The Hewlett-Packard DfE process is business driven. Its goal is to develop competitive products, not necessarily "green" products, and to develop those products in a way that does not lengthen product-development time. As a result, Hewlett-Packard has strong buy-in from design engineers and the manufacturing and marketing functions. Each new generation of computing and imaging products takes less energy to operate and uses safer and fewer materials.

Engelhard. For Engelhard, designing products to solve its customers' environmental problems is an essential part of doing business. Engelhard makes emissions control products for manufacturing facilities, power plants, cars, buses, trucks and airplanes. Environmental considerations are seamlessly incorporated into the new product development process. For example, Engelhard recently designed a catalyst coating system, PremAir™. When applied to a car's radiator, PremAir™ turns it into a smog fighter by converting incoming ozone into oxygen. People can clean the air as they drive. For an automobile company, this could be a differentiating feature valued by some of its customers. But Engelhard designers understood that most car buyers, while feeling good about driving a car that cleans the air rather than polluting it, would probably not be willing to pay extra for the catalytic-coated radiator.

By moving from a precious-metal catalyst to a base-metal catalyst, Engelhard was able to reduce the price of PremAir™ to less than $50 per vehicle—while also enabling automakers to get LEVII emissions credits in California. Volvo was the first company to jump at the chance to install this new technology in its vehicles when it added the system to its S80 sedan in early 2000. Volvo intends to use PremAir™ on all upcoming models. Nissan is also using the system now.

Market Success for Green Range Products

The Green Range concept challenged the common understanding that green products cost more to sell and are less profitable than the average products. Green Range products have been a market success. Driven by the combination of enhanced environmental profiles and the ability to reduce consumer operating costs during product use by over 50 percent, Green Range products accounted for 21 percent of Electrolux's total sales and 31 percent of gross margin during 1999. These products are also an environmental success, at least 50 percent more energy efficient than others on the market and 80 percent recyclable. As a result of the success of Green Range products, Electrolux has learned how to innovate in new ways. Recently, the company began experimenting with selling functionality, not products. Electrolux has a pilot project to charge customers per wash, instead of having customers buy a washing machine and electricity. This is expected to stimulate demand as consumers become more aware of the operating cost of washing machines.

"We have to communicate the efficiency aspect as part of the quality of the product. We have to treat the environmental features of the product as a quality mark."
Karl Edsjo, Environmental Marketing Manager, Electrolux

According to Per Grunewald, former Senior Vice President for Environmental Affairs, "The Group's environmental work is now almost fully integrated into the business processes, and responsibility lies with the business sectors." The ultimate purpose of Electrolux's strategy is to create shareholder value, based on sustainable competitive advantages and in response to the growing expectations of its customers. Electrolux sees its task as making life more convenient for consumers. And Electrolux is doing this by supplying innovative products with improved performance, greater functionality, and attractive user-friendly design. Electrolux already has a number of environmentally leading products. Virtually all of its new products provide not only better environmental performance, but also lower operating costs for the consumer.

Key Learning: Business-Based Metrics

The ability to quantify performance and then track progress over time gives substance to otherwise vague claims of environmental and business value associated with a product or service.

Electrolux. Being able to characterize the environmental performance of its products in quantitative terms was critical to Electrolux's ability to position its products as environmentally sound and beneficial. As it developed its metrics, Electrolux made sure that these metrics were integrated as much as possible into existing business measurement systems, were designed by representatives from different business functions, and covered the full product life cycle.

Electrolux developed four categories of metrics associated with its environmental products. (1) Green Range and (2) Fleet Average are product-related metrics. The (3) Recycling Index is a metric focusing on the end of life of the products. And (4) Site Measurements are production related metrics.

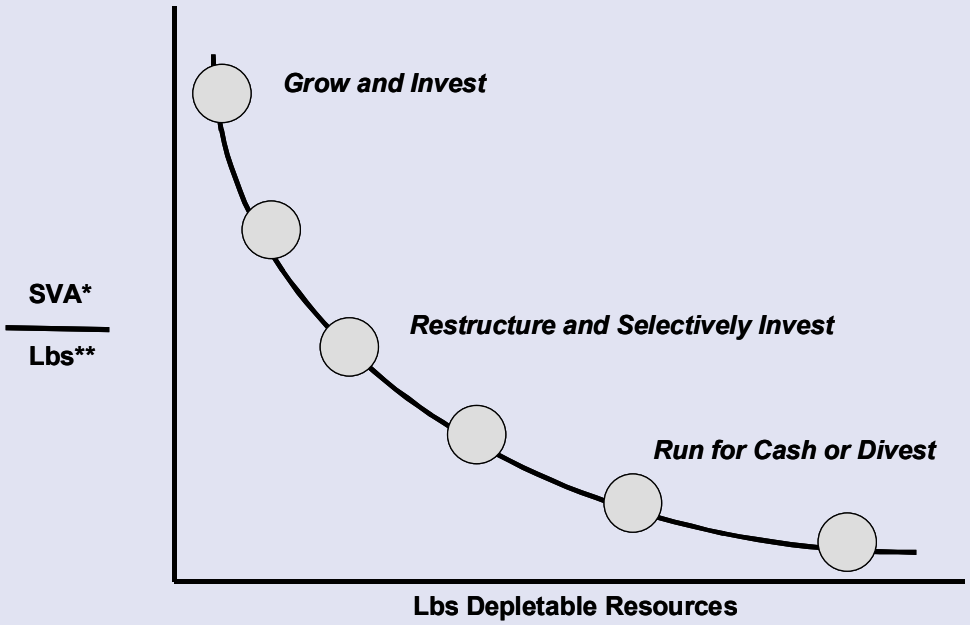
Green Range products are those that exhibit high environmental qualities by considering their environmental impact, consumer environmental concerns and competitiveness, and functional and regulatory requirements. Green Range criteria may include energy efficiency, noise level, washing efficiency (for washing machines), water consumption, and so on. When developing the Green Range criteria, Electrolux had to balance different needs within the company. Marketing people wanted lower demands and adaptation to different markets; R&D people wanted tougher standards. The discussions involved in striking the right balance were key to gaining internal support for the end result. In the end, environmental criteria became mainstreamed into the company's core business processes.

The Fleet Average measures the average environmental performance (energy and water consumption, emissions, etc.) of Electrolux's entire product line in a product category, such as refrigerators or washing machines. The Fleet Average is used internally to monitor progress on the overall environmental performance of its product lines.

Production-related metrics such as energy consumption, CO_2 emissions at the company's manufacturing sites, energy costs, and water consumption are viewed relative to the standard business metric of added value—the difference between total manufacturing costs and direct material costs. The added-value denominator allows Electrolux to take into account changes in production, thus making it possible to develop year-to-year comparisons.

Electrolux's measurement system is not finished. Since Green Range indicators are sensitive to changes in market conditions, there is ongoing monitoring and adjusting needed. And the criteria are dynamic. Thus, to stay competitive Electrolux must constantly develop and sell products with improved efficiency.

Figure 4. Integrating Environmental and Shareholder Values at DuPont



**Shareholder Value Added*
***Using depletable pounds (Lbs) as a surrogate for environmental footprint*

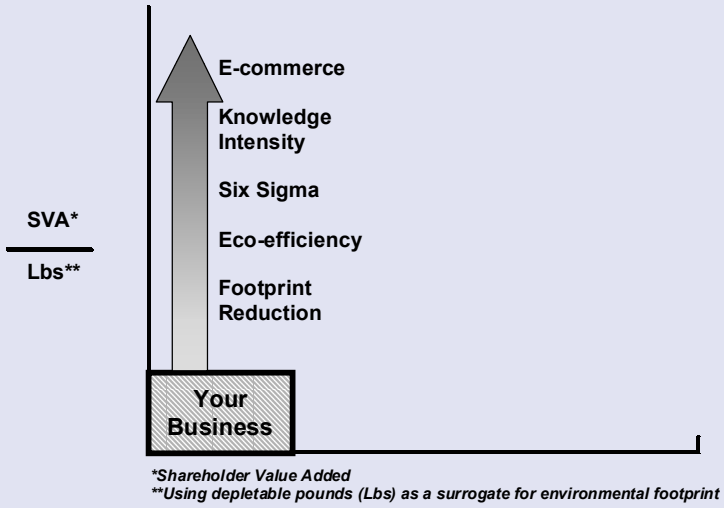
Source: DuPont

DuPont. In a similar vein, DuPont has developed business-based metrics to track and influence progress toward sustainable growth. One metric, depicted in Figure 4, looks at how each of DuPont's products or businesses provides shareholder value added (SVA) per pound of depletable resources —where SVA is after-tax operating income minus the cost of capital. The metric of "pounds (lbs) of depletable resources" is used as a surrogate for "environmental footprint" because DuPont believes that businesses with high use of depletable forms of raw materials and energy tend to produce high levels of waste and emissions.

The SVA metric is used to help make strategic decisions. Those products or businesses that provide high SVA per pound, yet use the smallest amount of depletable resources, should be grown or targeted for investment. Those that provide low SVA per pound and use the highest amount of depletable resources are the ones that should look for creative new approaches, be run for cash, or divested.

DuPont also uses the SVA metric to influence the practices its businesses employ in seeking sustainable growth. For example, Figure 5 shows the practices available to DuPont's businesses to achieve greater SVA per pound of depletable resources. This metric makes it clear to the businesses that they must consider pathways to creating greater value using less "stuff" if they want to grow their businesses for the long term.

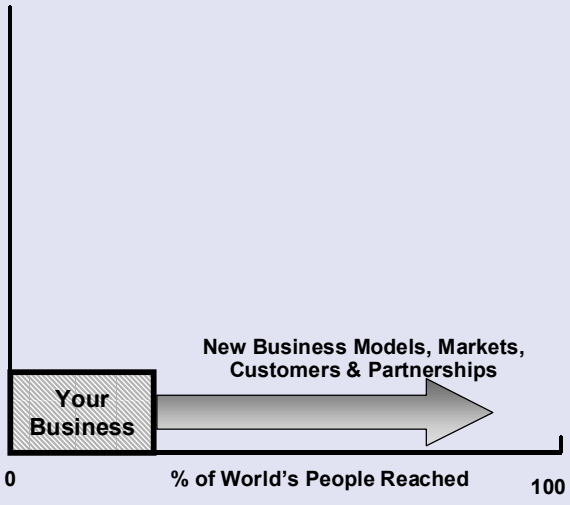
Figure 5. DuPont's Pathway to Increased SVA per Pound of Depletable Resources



Source: DuPont

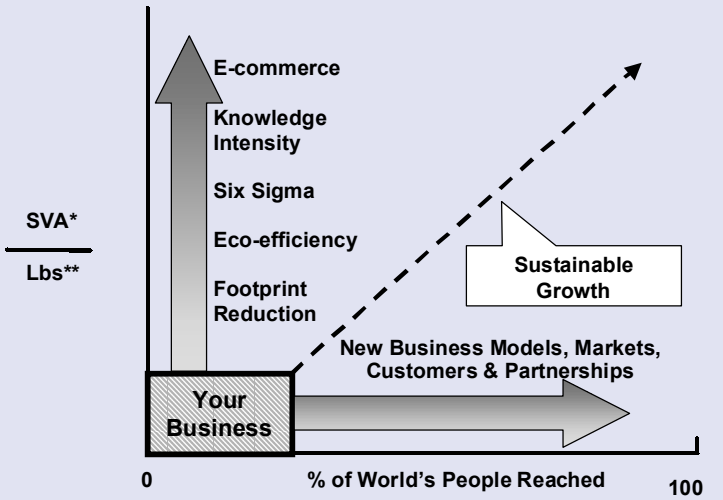
Figure 6 shows the businesses that new business models, markets, customers and partnerships are needed to reach a greater percentage of the world's population with DuPont's products and services. Figure 7 combines these two insights to show the businesses that the greater the SVA per pound of depletable resources and percentage of the world's people reached, the greater a business's sustainable growth.

Figure 6. DuPont's Pathway to Reaching a Greater Percentage of the World's Population



Source: DuPont

Figure 7. DuPont's Business Approach to Sustainable Growth



*Shareholder Value Added
**Using depletable pounds (Lbs) as a surrogate for environmental footprint

Source: DuPont

CHAPTER 2:

Developing Environmentally Responsible Products

Developing solutions to customers' environmental problems is not the only pathway to top line value for a company with strength in product innovation. Another pathway that is particularly well suited to companies whose strategies involve enhancement of the value of their brands is the development of environmentally responsible products. These are products or services that are produced with, or whose use involves, less environmental impact than those of competitors—characteristics that can provide the basis for differentiation versus the products of competitors. This chapter explores how two companies, Koch Industries and Cargill Dow, have differentiated their products by virtue of their environmental characteristics.

Companies whose strategy is to grow market share through promotion of brand image and whose strength is in product innovation tend to develop environmentally responsible products.

Branding Koch Petroleum Group's Blue Planet™ Gasoline

Challenge: How to use environmental characteristics to differentiate a commodity product

"Blue Planet gasoline is a straightforward green product initiative. The theory of the experiment is: Will consumers tend to prefer gasoline that is environmentally friendly so long as they do not have to sacrifice quality and it is priced the same as non-Blue Planet gasoline?"

Luis del Valle, Performance Fuels Manager, Koch Petroleum Group LP

The Genesis of Blue Planet™

Historically, gasoline in the Twin Cities market (Minneapolis and St. Paul, Minnesota)—like in most other North American markets—has been purchased on the basis of price, and to a lesser degree, for convenience. In other words, consumers have treated it as a commodity. It is difficult to gain market share and grow revenue in a commodity market. But Koch Petroleum Group developed an idea to gain market share by turning this commodity into a differentiated product. And the main difference was the product's environmental characteristics.

Koch Petroleum Group, an oil refining and marketing company of Koch Industries[1], operates one of the largest pipeline systems in North America, as well as two refineries. Together its two refineries, one near Minneapolis/St. Paul, Minnesota, and the other in Corpus Christi, Texas, process 580,000 barrels of crude oil per day. Although Koch is the largest refiner in Minnesota and produces most gasoline consumed there, it is not a household name. Koch does not sell the gasoline it produces directly to consumers. Instead, it sells it to all types of commercial customers—branded and unbranded wholesalers (jobbers), major oil companies, convenience store chains, and large fleets.

In 1998, Koch recognized that a new U.S. Environmental Protection Agency (EPA) standard could trigger a potentially significant competitive advantage for Koch. EPA's new Clean Air Act standard required low-sulfur gasoline (80 ppm maximum) to be effective January 1, 2006–resulting in reduced tailpipe emissions by 10-20 percent. Currently, gasoline in the United States averages 300 ppm.

Because Koch processed high-sulfur Canadian crude, it had made a strategically important decision in the mid-1990s to develop the capability to remove more sulfur than needed in its Minnesota refinery–and sell the by-product for other uses. As a result, Koch saw an opportunity to be the first company to introduce an environmentally friendly gasoline into the Twin Cities market and meet EPA's low-sulfur standard six years before the mandated date.

"At Koch, our initial challenge was to determine whether gasoline consumers would shift buying patterns from their regular brand of choice to an environmentally friendly gasoline. If so, it would mean increased market share as well as financial gain for Koch."
Luis del Valle, Performance Fuels Manager, Koch Petroleum Group LP

[1] Koch Industries owns a diverse group of companies engaged in trading, investments, and operations around the world. It has interest in nearly all phases of the oil and gas industry, as well as businesses focused on chemicals, plastics, energy services, asphalt products, metals and mineral services, ranching, financial services, and ventures.

Value Chain: Manufacturing/Service Delivery

Sometimes, an asset or capability in one link in the value chain needs to be combined with capabilities residing in other links of the value chain. Koch's strategic decision to develop a refinery with advanced sulfur removal capabilities created an asset in the manufacturing link of its value chain. But at first, even though Koch had the ability to produce low sulfur gasoline at slightly greater cost than normal gasoline, it had no compelling business reason to do so. The asset only became fully realized when combined with the marketing idea to brand the product and the distribution capability to keep the product segregated from conventional gasoline. Koch had to employ the full value chain in order to capitalize on a unique and strategic capability residing in one part of the value chain.

Koch's objective was to increase market share close to its refinery by developing an environmentally friendly gasoline as attractive to consumers as their regular brands, with no compromise to quality, performance, or cost. This was the genesis of Koch's Blue Planet™ gasoline.

Characteristics of the Minnesota Gasoline Market

Minnesota is a unique gasoline market, isolated from the bigger multi-player markets of the East, West, and Gulf coasts, as well as Chicago, Illinois. Research shows that the Minnesota consumer is more conscious than other consumers (except in California) about the outdoors and the environment.

In 1998, Holiday had a market share in the Twin Cities in the high single digits, but wanted to increase that to double digits.

From its Minnesota refinery, Koch sold gasoline to the Twin Cities and into surrounding states through a series of pipelines—either company owned or common carrier. Other refineries in Illinois and Oklahoma also shipped gasoline by common-carrier pipelines into these local markets. Gasoline customers included independent convenience store operators (e.g., Holiday Stationstores), branded retailers (e.g., Mobil, Shell), and end users. The return on gasoline is better closer to the refinery because of reduced shipping costs. Koch sought ways to increase market share in the Twin Cities area.

One of Koch's main customers was Holiday Stationstores. Holiday was a family-owned convenience store business, with about 300 locations across 11 northern U.S. states. Virtually all of these stores sold gasoline, but consumers did not typically know that the gasoline was usually Koch fuel. In 1998, Holiday had a market share in the Twin Cities in the high single digits, but wanted to increase that to double digits.

Two other retailers in the area, Amoco and Marathon-Ashland's SuperAmerica, each had about 20 percent of the market share. Holiday's long-term goal was to move from third to first place in the Twin Cities gasoline market share.

Critical Choices for Koch

To introduce low-sulfur gasoline into the Twin Cities market, Koch had to address several critical challenges:

- *Producing the product cost-effectively.* A key part of Koch's strategy was that the product needed to be priced competitively with conventional gasoline. In order for Koch to realize top line advantage, its costs for producing Blue Planet™ gasoline and getting it to market could not be significantly more than costs for conventional gasoline.

- *Finding the right distribution channel.* Typical distribution channels involved sending the product through pipelines and terminal tanks where it would be commingled with conventional gasolines, thereby eliminating its distinctive qualities.

- *Building the brand.* Koch had no expertise in brand marketing, yet a branded product was essential to the success of the strategy.

- *Motivating the consumer.* Gasoline consumers were used to buying on the basis of price and convenience. The question was how to get them to drive by a more convenient location in order to purchase Blue Planet™ gasoline.

In order for this initiative to be sustainable, the product had to be produced and brought to market cost-effectively.

Producing the Product Cost-Effectively

Depending on the refinery, there is an incremental cost to produce low-sulfur gasoline. Capital expense is a big part, but so is the operating expense because a refinery uses a lot of energy to remove the sulfur. Estimates indicate that the refining industry will make a $2-4 billion investment to get to the required low-sulfur level by 2006. EPA estimates the incremental cost (both capital and operating) at 5 cents per gallon. Higher manufacturing costs will be reflected at the pump. California gasoline has been low-sulfur since 1997 and prices there are 10 to 25 cents higher.

Unlike California, Minnesota regulations did not require low-sulfur gasoline. In order for this initiative to be sustainable, the product had to be produced and brought to market cost-effectively.

To address this challenge, Koch did two things. First, it decided to gradually convert its production capacity to low-sulfur over a few years, rather than convert all at once. Second, it realized that if it sold the product close to the refinery, the lower transportation costs would balance out the higher costs of producing the gasoline.

"We were approached by Koch Petroleum several years ago with the idea. The more we talked about it, the more we warmed to it. Marketing surveys and focus groups showed us that if you have a low-sulfur product that reduces emissions and keeps the same power and performance, consumers would be receptive."
Ed Hoffman, Director, Petroleum Marketing, Holiday Superstores

So it focused its efforts on selling the product and gaining market share only in the Twin Cities area.

Finding the Right Distribution Channel

Koch's traditional distribution infrastructure was designed for conventional (fungible) gasoline. Sending Blue Planet™ gasoline through the traditional distribution channels would contaminate it as it commingled with high-sulfur gasoline from other refineries. This would cause it to lose any value it originally possessed by virtue of its low-sulfur content. Moreover, since Koch was a wholesaler, it did not own or operate its own retail distribution channels.

The solution to this problem involved finding a retailer willing to buy its supply exclusively. This would enable retail storage tanks to be dedicated to Blue Planet™ gasoline and thereby maintain its distinctive low-sulfur qualities. Holiday Stationstores turned out to be the retailer who saw the competitive opportunity Blue Planet™ gasoline offered and acted upon it.

Holiday is a state-of-the-art convenience store with strong ties to the outdoors and environmental issues–stemming from its roots in the sporting goods business. In addition, Holiday's stores have good locations–the single-most important characteristic for success in the convenience business. Holiday immediately saw that the environmental advantages of Blue Planet™ were a natural fit for Holiday's outdoors image.

Holiday entered into an exclusive agreement with Koch in promoting the new brand in the Twin Cities market. The agreement stipulates that Blue Planet™ is a differentiated gasoline and that Holiday will not commingle it. Trucks pick up the gasoline at Koch refineries and ship it to Holiday storage terminals and stores in the Twin Cities area. Through Koch's quality-assurance program, Koch takes samples and audits at the pump. In addition, the American Lung Association of Minnesota does third-party testing to ensure that the pump gasoline has the low-sulfur characteristics associated with Blue Planet™ gasoline.

Building the Blue Planet™ Brand

Creating a branded gasoline was essential for the success of the differentiation strategy.

Koch realized that although it had no experience in brand marketing, creating a branded gasoline was essential for the success of the differentiation strategy. Koch quickly formed a brand marketing group, hiring key individuals from other organizations more experienced with brand marketing. The mission of the group was to lead the Blue Planet™ project and work with the other parts of the organization, including refinery operations, sales, finance, and public affairs. Koch also understood the value of integrating the brand marketing message and expenditures with its corporate public sector programs, thereby strengthening its messages.

Consumer research indicated a fairly high level of interest in an environmentally friendly gasoline among Twin Cities' motorists—as long as they did not have to pay more or lower their performance expectations. Thus, Koch tagged Blue Planet™ as earth friendly so as to effectively communicate the product's environmental benefits to the consumer.

Together, Koch and Holiday launched Blue Planet™ gasoline on September 22, 1999. Having listened to focus groups, Koch initiated a soft branding campaign. The advertising and public-awareness initiative developed the theme "Cleaner Air is in Your Power" through TV spots, radio, billboard, and magazines to highlight the environmental benefits, and also to illustrate that there was no loss of performance. It stressed how the gasoline met the EPA mandate years ahead of time–the first in the nation to offer low-sulfur in all three grades.

EPA's low-sulfur standard played a big role in the success of Blue Planet™ gasoline because it substantiated Koch's claim that a low-sulfur gasoline is earth friendly. In fact, Koch waited until the EPA officially proposed the 80 ppm standard before launching Blue Planet™. This helped increase the public's overall awareness of the benefit of low-sulfur gasoline, plus it provided an irrefutable sulfur limit.

"The challenge is to motivate people to act on their environmental beliefs. People are willing to say yes to the idea, but less willing to take action."
Ed Hoffman, Director, Petroleum Marketing, Holiday Superstores

Motivating the Consumer

In the Twin Cities area, Holiday's two main competitors have between them 330 retail gasoline locations. Holiday has only 117 locations. A typical consumer would likely encounter a SuperAmerica or Amoco location before coming across a Holiday location. So Koch and Holiday had to motivate the consumer to drive past a Holiday competitor to reach a Holiday store.

It was clear from focus groups that Blue Planet™ gasoline would be well regarded by consumers because it is an environmentally friendly product that reduces emissions, maintains performance, and does not increase cost. But a favorable view of a product is no guarantee that a sale will be made.

In order to ensure that consumers would align their purchasing decisions with their beliefs, Koch and Holiday first made sure that any lingering concerns that consumers might have about the product were addressed. Focus groups indicated that consumers were concerned that "environmentally friendly" would translate into a gasoline with lower performance. Koch and Holiday worked hard to send a strong message to prove to consumers that the gasoline involved no loss of power or fuel efficiency performance.

Though consumer research indicated that most people would be willing to pay a premium of 1 to 3 cents per gallon for an environmentally friendly fuel, Holiday believed it was important to keep the price competitive.

How to price the gasoline was another important decision. Gasoline pricing is transparent—consumers can look across the street to see how the competition is pricing gasoline. On any given day in the Twin Cities, prices for the three main brands are similar. Though consumer research indicated that most people would be willing to pay a premium of 1 to 3 cents per gallon for an environmentally friendly fuel, Holiday believed it was important to keep the price competitive. That way, consumers could make the right environmental choice without paying more for it.

Finally, as an additional incentive to get consumers to drive past competitors' locations and try the product, a number of cross promotions were used. If a customer filled up with Blue Planet™ gasoline, they got a free bottle of Coca-Cola or a discount at the Science Museum. At the same time, they were given a brochure about the environmental benefits of the gasoline. Also, to encourage customer loyalty, frequent buyer cards were initiated.

Results Show Strong Promise

Luis del Valle, Performance Fuels Manager at Koch Petroleum Group, said, "The top-line experiment we have going on here is not unlike how other product categories tested consumers' interest in green products over the years. Some consumer packaged-goods manufacturers tried it, and failed. We believe it will work in gasoline and for Koch and Holiday—because we have certain competitive advantages and also because it is a win-win situation for the consumer, the retailer, the refiner, and the environment."

Both Koch and Holiday believe that Blue Planet™ had a successful first year–and they celebrated "One Year of Cleaner Air" in 2000. Progress can be measured in a variety of ways:

- In the period immediately after the introduction of Blue Planet™ gasoline, Holiday's market share increased.
- The combined aided and unaided awareness among consumers of Blue Planet™ is more than 55 percent.
- More than 50 percent of Holiday gasoline buyers believe they can make a difference for the environment (compared to 34 percent overall). Approximately 20 percent of Holiday's customers cited "product better for air" as a reason for their purchase, versus 2 to 3 percent for competitors' products.

Key Learning: Stakeholder Engagement

Stakeholder engagement is the process of reaching out beyond the boundaries of one's own company to establish a dialogue with external stakeholders, such as communities, non-governmental organizations (NGOs), religious organizations and universities, for the purpose of understanding their concerns, addressing these concerns, and informing management's thinking, strategy and plans. For example, for well over a decade, the chemical industry in North America has extensively used community advisory panels as a means of promoting better communication and understanding between chemical plants and their neighbors. This mechanism, advanced by the chemical industry's Responsible Care® initiative, has been so successful that its use has migrated to a number of other industries. Another form of stakeholder engagement is practiced by companies such as DuPont, Ford, Shell, and Unilever, who hold sessions with stakeholders to obtain guidance in setting corporate environmental policy and strategy.

The principal value of stakeholder engagement is that it helps maintain a company's "license to operate." But, as the Koch story illustrates, it can also do more. Koch found that engagement with the American Lung Association of Minnesota (ALAMN) led to top line value because it recognized an opportunity to promote the *interests* of its stakeholder. Koch formed a working relationship with ALAMN based on mutual interest that can best be described as a partnership. ALAMN saw in Blue Planet™ gasoline a product that would help further its core mission of promoting healthy air, healthy people and healthy lungs. Koch saw in ALAMN an independent, well-respected organization whose recommendation of Blue Planet™ gasoline would help boost consumer confidence in the claims Koch was making about the environmental soundness of the product. ALAMN in fact conducted independent sampling and testing of the sulfur content of Blue Planet™ gasoline and then publicly recognized Blue Planet™ gasoline as a clean air fuel choice.

Some stakeholder organizations are recognizing that an important pathway to environmental progress lies in developing a working relationship with business. The environmental organization, Environmental Defense, along with the Pew Charitable Trusts, established the Alliance for Environmental Innovation, which seeks to establish partnerships with businesses and that foster initiatives aimed at delivering both environmental and business value.

Gwen Ruta, Director of the Alliance for Environmental Innovation, was one of the reviewers of this report during its formative stages. Ms. Ruta offered the following point of view on stakeholder-business partnerships:

> *Introducing new perspectives is one way to jumpstart creative corporate thinking. In the environmental arena, companies like Bristol-Myers Squibb, FedEx, and others have partnered with the Alliance for Environmental Innovation on projects that improve both environmental and business performance. By bringing the expertise and perspective of environmental scientists and economists at the Alliance together with the business skills of major corporations, Alliance partnerships have shown that environmental considerations can be a differentiator.*

For example, the Alliance worked with UPS to redesign overnight packaging by reducing material usage, incorporating recycled content and eliminating bleached paper. The project saved trees and reduced pollution and also cut UPS's packaging costs. Beyond that, the reusable shipping envelope and improved packaging also resonate with UPS's customers and are featured in a new advertising campaign.

The improvements were later replicated by their competition – confirming their business value – but not before UPS captured the first-mover advantage and helped their customers act on environmental concerns while maintaining price and service.

Gwen Ruta, Director, Alliance for Environmental Innovation

- Blue Planet™ gasoline has been recognized by the American Lung Association of Minnesota (ALAMN) as a product whose use will result in better air quality. ALAMN conducted independent testing of the sulfur content of Blue Planet™ and found it to be below the 80 ppm maximum of the year 2006 regulatory requirement.

Moreover, Koch's entire Minnesota organization (including union workers) has renewed pride in the product they produce and in the company. Koch is learning that superior environmental performance and commercial success can be closely aligned. In addition, the Blue Planet™ success has piqued the interest of refiners and gasoline marketers in other cities throughout the United States. As a result, Koch recently expanded its clean fuels initiative to four major cities in Texas.

Cargill Dow's Successful Venture with Polylactide

Challenge: How to develop differentiated, environmentally sound products that can command a price premium in the market

"A new polymer like polylactide has not been developed at this scale, and with this much potential, in almost 50 years. There is a reason for that: the technological complexities as well as the challenges of creating a differentiated product in the marketplace. The task was monumental—but with a highly rewarding outcome."

Patrick Gruber, Vice President of Technology and Chief Technology Officer, Cargill Dow

Green products have had difficulty moving into mainstream markets—which is not surprising since consumers are typically asked to trade off performance against greenness. Or if the performance of the green product is equal to that of the non-green product, consumers are often asked to pay a higher price, which they are not usually willing to do.

Agricultural giant Cargill Incorporated and The Dow Chemical Company formed a 50-50 joint venture in 1997, Cargill Dow LLC, and created a way to overcome the performance-price obstacle. Through this venture, they developed a polymer from corn sugar, polylactide (PLA), which performs better than competing polymer products, while also delivering strong environmental attributes. PLA can be used to make packaging materials, such as films, rigid thermoformed containers, and coated papers and boards, largely for use as food containers or wraps. Another major use for PLA is as fibers for applications such as clothing, upholstery, and carpet tiles.

This Cargill Dow venture developed a polymer from corn sugar, polylactide, which performs better than competing polymer products, while also delivering strong environmental attributes.

Based on patented technology to produce Nature Works™ PLA, microorganisms transform the sugar from corn into lactic acid, which is then chemically linked into chains of plastic. By many definitions, this polymer is a classic green product:

- Made from renewable input.
- Requires less fossil fuel resources than making plastic from oil.
- Is biodegradable and recyclable.

However, most customers will not buy a product on the basis of its environmental features alone. Instead, the combination of performance differences and greenness enables Cargill Dow to position PLA against competitive products.

"It has been a roller coaster ride the whole way through PLA development. But we were lucky to be in the right place at the right time. At first, the business supporting us could afford to invest in what was a somewhat risky but promising initiative. Later, as things tightened up, we attracted the right partner to help ensure success."
Patrick Gruber, Vice President of Technology and Chief Technology Officer, Cargill Dow

Cargill Dow wanted to capture a niche market for the product, based on performance differentiation. The intent was to create market share by selling PLA to customers who wanted to expand their businesses—rather than by displacing current polymer market share held by competitors. Once the PLA product was established in its niche, management's objective was to broaden its market by leveraging PLA's environmental attributes. Thus, the product's environmental attributes would provide Cargill Dow's customers with an additional facet by which to differentiate their own products—sometimes a key component for growth.

Looking for Growth Opportunities

In the late 1980s, Ray Micek, then President of Cargill's Corn Milling Division, was seeking growth opportunities outside the sweeteners area. Cargill wanted to develop a corn-sugar-based product that could achieve rapid, profitable growth. The company's choice at the time was either to create a commodity product to compete with existing products, or to develop an entirely new product or product category in the marketplace. Developing an entirely new product seemed risky and costly. In contrast, PLA, a corn-sugar-based polymer that looked and behaved like other existing polymers, was price competitive and had environmental attributes that showed promise.

Environmental considerations were of growing interest to customers as they worried about solid waste in the late 1980s. So, considering the waste management issues of the future, Cargill understood that any new polymer product had to fit into the waste management options available in different regions of the world, now and in the future. Additionally, Cargill had a fundamental recognition that renewable resource-based products could be more efficient in fossil consumption than petrochemical-based products. Cargill also recognized that any energy and resource efficiencies it could gain would further contribute to cost competitiveness.

PLA had not been attractive commercially because there were no efficient, economical manufacturing processes nor did the properties of the PLA lend themselves to large-scale commercial application. Cargill recognized that these problems could be overcome by starting with renewable resources, using fermentation and bioprocessing.

Patrick Gruber is Cargill Dow's Vice President of Technology and the company's Chief Technology Officer. Throughout his career, he has developed new products from renewable resources for industrial markets, food markets, or animal feed. Much of his time has been spent on developing PLA.

According to Gruber, "Early on in PLA's development, we knew that environmental attributes were secondary to business characteristics, such as product functionality and affordability." Because of that, for example, Cargill chose not to develop a starch-based product, despite the fact that the company was in the starch business. At that time, the company Novon was promoting packaging products made from destructured starch, which was then processed and molded into shapes. "We weighed that approach too," says Gruber, "but because starch is moisture-sensitive, we could not make a packaging material without modifying it so substantially that it was no longer starch." Another choice was to modify the starch or encase it in another material, but then it is no longer starch, no longer natural, and it loses its environmental attributes. "We deselected starch on that basis and because of its limited performance range," said Gruber.

Because PLA was biodegradable and could be composted, the marketplace was interested. So much so that customers along the value chain provided input and advice on how to make PLA an even stronger product. As a result, Cargill began to explore how to manufacture PLA at less cost and how to modify it to increase its performance.

Polylactide is the only commercially viable polymer to combine performance and cost benefits with environmental attributes.

Tackling Challenges Along the Way

The challenges to Cargill were formidable: technical complexities, the need to capture the interest of packaging manufacturers in the environmental attributes of the product, and the ongoing quest for a right partner. However, now confident that PLA was a highly promising technology, Cargill moved ahead to develop its market niche by understanding the technical and environmental complexities, understanding the global marketplace, and building success on product attributes.

Technical and Environmental Complexities

Cargill developed the PLA technology and holds a large number of patents for PLA. The chemistry of PLA is new to the chemical industry. It is water-based, not petrochemical-based, and it is a reactive product that depolymerizes unless you know how to overcome those problems. Dextrose is turned into lactic acid (a food additive) using a fermentation process. The monomer lactide is formed through a special condensation process. The monomer lactide is then purified through vacuum distillation and polymerized, resulting in PLA. The result is the only commercially viable polymer to combine performance and cost benefits with environmental attributes.

Key Learning: New Business Models

Sometimes you need to take the business outside the existing organization in order to achieve success. Neither Cargill nor Dow alone could have readily created success around PLA—and it was unlikely that PLA would have been developed under the roof of a traditional chemical company. Cargill had a great idea and the right technology, and Dow's marketing capability brought the product to life in the marketplace.

Starting in the late 1980s, Cargill started to explore joint-relationship opportunities to help move PLA into the marketplace. The general timeline of those activities follows:

- Cargill and Dow first explored joint opportunities around PLA as early as 1988, but could not identify a way to work together.
- Discussions followed between Cargill and many interested large chemical companies, but the potential partners thought PLA would never be cost-effective.
- Cargill then partnered with Polysar, though that arrangement was short-lived.
- Later, one interested polymer company wanted to take over the product and move it into the marketplace. But by then, with extensive investments already made in the product, and a solid understanding of the product's chemistry and economics, Cargill was not interested in another company taking over the process.

Not dissuaded, Cargill continued down a path alone to develop customers and applications in order to strengthen PLA's portfolio. They had good access to end users, but no access to direct customers for the product, namely the direct converter that manufactures the packaging material. In fact, Cargill had little understanding of the converting companies or their business. However, during this time, Cargill had prototype products that generated enough interest to keep the PLA initiative alive. The primary market interest was rooted in the fact that PLA was derived from renewable resources and was environmentally friendly and cost competitive.

It was clear to Cargill's management that they needed a partner company with access to the marketplace—that is, to the converters. So Cargill started working with Dow again in 1996 and formed the Cargill Dow joint venture in 1997. Not only did Dow bring a depth of understanding about the marketplace, it also had a very deep bench of scientists who had special experience and techniques in the polymer area.

Says Cargill Dow's Patrick Gruber, "Today we are in an advantageous position since we can draw upon both Cargill and Dow for resources and bench depth, yet we also have people thinking independently about what is best for Cargill Dow."

Other companies have worked on developing a new business model within their existing organization. For example, the carpet manufacturer Interface, well known for its commitment to sustainable development, says that redesigning commerce is one of its key steps to sustainability. By "redesigning commerce", Interface means that it will seek to define its business around activities that add more value to the customer, while at the same time reducing their environmental impact. One way to do this is to substitute services for products. For some of its customers, Interface does not sell carpet, it provides carpet services—installing carpeting, maintaining it, replacing worn sections, and then taking it back at the end of its life for recycling.

"People think of Cargill as a grain-trading company, but we are really a processing company." According to Gruber, "We took approaches that a chemical company might not. For example, one of the problems with traditional polymers is that they have residual monomers that are not recognized as safe. Because the residual monomer is lactic acid, a natural food ingredient, customers around the world recognize it as safe. Today, our 'generally recognized as safe' position is widely accepted and differentiates our product with customers across the world."

Additional safety issues for PLA concerned issues surrounding corn and genetically modified organisms (GMOs). "Our product is made from corn sugar at the moment, though it is just the sugar we are after. Testing shows that we have no DNA from GMOs in our product, nor in our process technology," said Gruber. Despite that, there are a few customer segments that are the most environmentally sensitive, such as organic dairies, which will not risk using PLA in case it is anywhere near or touches GMOs. Cargill Dow is experimenting with alternative feedstocks for the future, which may actually reduce the cost of the product tremendously.

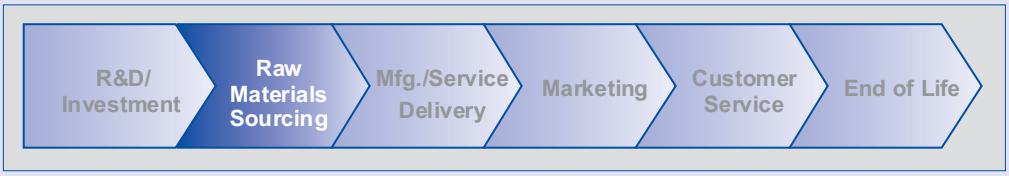
Some PLA technological issues are environmental by nature. Though the production of PLA requires fewer fossil resources than competitive products, it requires less energy and emits less greenhouse gases during manufacturing compared to the plastics and polymers it would replace. However, PLA production is still in its infancy and scientists and engineers continue to refine the process, developing new production methods and finding more efficient ways to generate energy. And according to Patrick Gruber, "We have a great story when it comes to CO_2 and energy. We are trying to conserve carbon. The carbohydrate cost is the most expensive item in the product. So why waste it? The net effect of our approach is that we strive for efficiency in our use of carbon. In the future, I think we will be able to replace all fossil resource used in PLA. We will use biomass for both the source of the sugars and the process fuel."

Understanding the Global Marketplace

PLA is differentiated in the U.S. marketplace because it is developed from renewable resources. The marketplace in Europe is very different as is the environmental situation where the focus is on landfills. European consumers have been educated for almost a generation about environmental issues, and plastics and packaging are considered harmful to the environment. The U.S. market is not as concerned about environmental issues when it comes to packaging materials and their performance. And the fact that PLA is made from renewable resources and has the properties that are like a synthetic product but it is made from a natural product is an attractive message to consumers. In Japan, the PLA position is strengthened because it is developed from corn.

"It is essential to be able to work with folks downstream because that is where all the benefits are—with the end-use manufacture. So all the benefits—technical and emotional—are all around the package and how it can be used. The way that end-users could possibly use PLA as a packaging material is to make them feel better internally (through a reduction of chemical use or improvement in their life cycle inventory) always in combination with some technical performance advantage."
Patrick Gruber, Vice President of Technology and Chief Technology Officer, Cargill Dow

Value Chain: Raw Materials Sourcing



Cargill Dow. Cargill Dow's choice of raw materials makes a difference to its customers. The fact that PLA is made from a renewable resource, such as corn stalks, is attractive to clothing manufacturers. They can then market this as a product feature, along with PLA's moisture management and wicking properties, silky feel, and easy care to segments of their market for which environmental features are a differentiator.

Bristol-Myers Squibb. Bristol-Myers Squibb Company also believes its choice of raw materials will make a difference to its customers. Bristol-Myers Squibb was chosen by the National Cancer Institute to be the commercial developer of TAXOL® (paclitaxel) injection in 1991. At that time, the drug was manufactured from the bark of a rare species of yew tree found in the U.S. Pacific Northwest. Unfortunately, removing the bark killed the tree. Because the Pacific yew grows within the habitat of the Spotted Owl, environmental groups felt that harvesting the bark also threatened the home of a federally protected and endangered species. In addition, projected demand for this widely used anti-cancer drug far exceeded the potential supply available from tree bark. Moreover, the company had concerns about the dependability and consistency of bark supply. As a result of these factors, Bristol-Myers Squibb decided to find an alternative source of paclitaxel for commercial production.

Based on the commitment of senior management to achieving this goal and millions of dollars poured into research and development, in 1994, Bristol-Myers Squibb received U.S. approval for a semisynthetic form of the drug made from cultivated yew shrub twigs and needles.

Three major benefits resulted from this initiative. First, by using cultivated shrubs instead of tree bark as the source, trees are unharmed when harvesting the raw material. This not only protects the yew tree, it also greatly increases the long-term supply of available raw material. The semisynthetic process requires far less raw material than the original process, and the twigs and needles are often collected from the ground.

Second, the company's new process uses material from European yew trees instead of the Pacific yew. As a result, the ecosystem of the endangered Spotted Owl is not compromised.

Third, over the past few years, Bristol-Myers Squibb Company has searched around the world for renewable sources of paclitaxel. In 1997, the company received approval to collect needles and twigs from shrubs growing in public and private gardens. Using cultivated shrubs improves the consistency and quality of the raw material.

Although the semisynthetic manufacturing process is a significant environmental improvement, Bristol-Myers Squibb Company continues to devote resources to develop processes that are more reliable and even more environmentally friendly.

Studies are currently underway to biologically produce paclitaxel from plant cell cultures via fermentation, similar to the way penicillin is produced. This process has the potential to produce the same high quality material while eliminating dependence on a naturally occurring source and the inherent risks associated with any plant harvesting, such as natural disasters or blight.

Bristol-Myers Squibb is now facing competition with generic versions of TAXOL, and it believes that physicians and other health care providers will appreciate the more environmentally favorable source from which its product is derived. Its ongoing research to find innovative means to produce this drug could favorably affect sales, particularly if the sources of supply available to competing companies become less reliable and ultimately more costly.

Environmental considerations associated with raw materials sourcing are present in other industries as well. Home Depot and Lowe's, the world's largest home improvement retailers, are phasing out the purchase of wood products from endangered forests. They are giving preference to products certified by independent certifiers, such as the Forest Stewardship Council, as derived from responsibly managed forests. Likewise, IKEA is phasing out purchases of products from unknown sources of wood to ensure that the furniture it sells does not contain wood from old growth forests.

Building Success on Product Attributes

Critical to its success was Cargill Dow's ability to understand the customers' value chain by first identifying target-market segments where PLA had a chance for delivering customers reasonable value. The challenge was to identify the segment players and, looking upstream and down, who else plays in those segments. In the packaging area, for example, it is not very common to work with both the converter and the end-user. Cargill Dow had to identify customers willing to work across the value chain. According to Gruber, "We looked for the most senior, open-minded packaging executives with decision-making authority who were willing to work with us. Working downstream with the manufacturers was important, because that's where all the benefits were." Identifying customers interested in environmental attributes was important. "The trickier part," said Gruber, "is how to get consumers to care. Nobody buys a product for the package; they buy it for the product. What has to be the driver, absent a clear technical performance or price advantage, is a fairly deep commitment to improving their life cycle inventory."

"We looked for the most senior, open-minded packaging executives with decision-making authority who were willing to work with us."
Patrick Gruber, Vice President of Technology and Chief Technology Officer, Cargill Dow

Gruber stated, "Most of our customers' choices are driven by both performance and the environment, but heavily weighted by performance. Though we believe that the environmental attributes provide us more latitude toward what we want to achieve." Certain PLA differentiating attributes attract customers, such as heat-sealing properties, clarity of color and glossiness, and its ability to retain folds. In the fiber area, PLA competes with synthetic materials, such as nylon, because it has a soft and silky feel that is beneficial for comfortable clothing. Because it has the performance characteristics of a man-made product, half of Cargill Dow's market is geared toward fibers.

Environmental attribute are delivered "free of charge" to the customer along side the performance characteristics.

Customers are willing to pay premium prices for these attributes over conventional commodity-based products. For these reasons, Cargill Dow's business model is built upon PLA's performance attributes. The environmental attributes—renewable resources, biodegradability—are not necessarily differentiating right now, but Cargill Dow believes that could change in the future as customers become more interested in paying for those attributes. Right now, environmental attributes are delivered "free of charge" to the customer along side the performance characteristics.

Focus groups helped Cargill Dow quantify the environmental benefits for customers. "We are quite sure that there is a strong emotional appeal with consumers. The fact that PLA is made from corn plays well to some populations. Another population is interested in our life cycle inventory data as compared to other polymers," said Gruber. Consequently, Cargill Dow has to collect its own raw data in the agricultural area because the data tend to be poor or nonexistent.

The same is true for electricity data. But these data are important for a company like Cargill Dow that is communicating about its reduced environmental footprint, together with higher performance and cost-effectiveness. "That's the message we convey to the converters and end users—it is driving our business development. Companies with aggressive growth plans that want to add new production capacity and want to differentiate themselves are the best companies for us to work with." Everyone Cargill Dow works with falls into this category.

The task was monumental—but with a highly rewarding outcome.

Cargill Dow's semi-commercial facility for PLA production has about 10 million pounds of capacity. Today that capacity is sold out, with future orders in line through 2002 based on customers' sales projections. It is now building a large scale manufacturing plant with an annual capacity of 300 million pounds of PLA. This plant is expected to be operational by the end of 2001. Cargill Dow has additional plants on the drawing board and expects production to increase to 1 billion pounds per year by the end of the decade.

Looking Back

Patrick Gruber looks back on the PLA development process as a kind of "roller coaster." Fortunately, the team behind the product was in the right place at the right time. There was risk involved, but there was also money to provide development support. Even so, according to Gruber, "we were on the verge of going under as a business many times. A new polymer like PLA has not been developed at this scale, and with this much potential, in almost 50 years. There is a reason for that: the technological complexities as well as the challenges of creating a differentiated product in the marketplace. The task was monumental—but with a highly rewarding outcome."

Key Learning: The New Generation of Green Products

The Koch and Cargill Dow stories make clear that today's environmentally responsible products are not like yesterday's green products. Yesterday's green products often required consumers to trade off performance versus an environmental benefit that was not directly realized by them. On top of this, consumers were asked to pay more for the privilege. And manufacturers had difficulty in remaining credible about their claims of reduced environmental impact in the face of competing life cycle analyses and other complicated environmental impact evaluation methodologies that only served to confuse consumers. In the end, it turned out that consumers were not really willing to pay more for such products.

Today's environmentally responsible products, such as Koch's Blue Planet™ gasoline, do not attempt to extract a price premium or require any trade-offs by the consumer. The goal is to make it easy for the consumer to do the right thing. When all else is even, environmental benefit should tip the balance.

A number of manufacturers are marketing products that could be called environmentally responsible for which no price premium is sought. The environmental characteristics are simply part of the overall feature set. For example, Ford is developing a group of products that are positioned to be environmentally responsible: TH!NK is Ford's newest brand and will consist of a full line of battery and fuel cell powered vehicles. Ford has committed to produce a hybrid-electric powered 40 mpg (city) sport utility vehicle by 2003. And the Ford Focus is manufactured with recycled content and designed to be 85 percent recyclable.

But when one has a product with multiple differentiated features such as Cargill Dow's PLA, then it may be possible to charge a price premium. However, it should be understood that if the customer is asked to pay more than for competing products, the price premium should be based on the improved functionality of the product to the user, versus an indirect environmental benefit.

Similarly, Herman Miller, Inc. has produced the award winning Aeron office chair, which is made from recycled materials, designed to last a long time, and with parts that get the most wear easily replaced and recycled. It is a premium priced chair, but the premium comes from its comfort and visual appeal, rather than its environmental characteristics.

Likewise, Nike sells a tank-top shirt for long distance runners which is made from recycled soda bottles, uses 40 percent less energy to manufacture than other similar shirts, and keeps runners cooler than conventional running shirts. Again, the price premium sought for the shirt reflects its superior functionality, not its environmental benefits.

There are cases where the improved functionality takes the form of a direct environmental benefit to the customer, such as with the DuPont Commercial Flooring and Electrolux products. But we have narrowly defined "environmentally responsible" products as those that provide only an indirect benefit to the customer.

There are also a small set of companies, such as Tom's of Maine, Stonyfield Farm and Patagonia, that position all that they do as "green" and seek to reach a sector of consumers for whom the environmental characteristics of both the product and the company are major buying factors. In these niche markets, a price premium may be possible.

CHAPTER 3:

Enhancing Brand

Companies whose strength is in customer and other stakeholder relationships seek to develop the loyalty of their stakeholders. These stakeholders are not necessarily interested in product innovation. Rather, they want to deal with a company that is responsive to their concerns, whose values are consistent with their values and that seeks to deliver total value to their customers. Where the strategy of these companies is oriented towards enhancing the strength of their brand, we find that a pathway involving promotion of environmental initiatives is a particularly effective means of realizing this strategy. This chapter explores how BP has employed environmental initiatives to enhance its brand image.

Companies whose strategy is brand driven and whose strength is in customer and other stakeholder relationships tend to promote environmental initiatives as a way of enhancing their brand.

BP's New Global Brand Drives Growth and Innovation

Challenge: How to integrate environmental initiatives into an overall business strategy of creating a distinctive brand

"Our purpose is to be one of the world's great companies. We want to be distinctive in terms of innovation. We want to be distinctively progressive. We want to produce and deliver products and services in a way that meets our aspiration to be a progressive and responsible company."

Lord Browne, Chief Executive, British Petroleum

Responding to the Global Market

In July 2000, BP p.l.c. unveiled a new, unified global brand that followed a $120 billion series of mergers and acquisitions, bringing together the former British Petroleum, Amoco Corporation, Atlantic Richfield, and Burmah Castrol, thus creating a combined group with a market value of more than $200 billion. The new logo—a vibrant sunburst of green, white, and yellow—is intended to exemplify dynamic energy in all its forms, from oil and gas to solar. BP is focused on enhancing its new brand—the distinctive way BP is perceived by its customers. It believes that the strength of its brand opens doors with consumers and thus will lead to superior growth. This distinctiveness underlies BP's overall strategy—sustainable double-digit growth in underlying earnings of at least 10 percent per year. BP's environmental initiatives have also become part of its strategy of distinctiveness and growth.

The reorganization of BP was but one of many seen in the recent past. According to Lord Browne, Group Chief Executive of BP, these reorganizations are "…about companies responding to change and positioning for growth—creating global enterprises with the reach and the skills to take advantage of all the opportunities that are opening up worldwide and establishing a network of activities which can capture and spread learning."

Changes in the world are changing the activities within global companies. Ten years ago, natural gas accounted for less than 15 percent of BP's business. Today it is 40 percent and growing. In the future, other fuels will need to supplement oil and gas and BP is rapidly developing a business in renewables such as solar and hydrogen. "We want to be distinctive in terms of the care we give to the environment," says Browne. "That means reducing our emissions of carbon dioxide, using our technology to demonstrate that it is possible to produce and consume our products without destroying the environment, and it means giving customers a new choice of clean fuels—without lead or sulfur or benzene—so that we can demonstrate that it is possible for people to have mobility without destroying the quality of the air they are breathing."

"To flourish in the next century we will have to pay far greater attention to what the world is saying about the consequences of what we are doing. This means we have to be more aware. We have to reach out. We have to be more accountable. And we have to be more transparent."
Dr. Andrew Mackenzie, Group Vice President, Technology, BP p.l.c.

While many of these initiatives may, in time, be adopted by others in the industry, BP believes that by leading the way it will obtain "first mover" advantage. That is, customers and other stakeholders will associate the BP brand with environmental leadership and therefore view the brand more favorably. Down the road this enhanced brand image could translate into increased sales at the pump. But even more immediately, it could enable BP to gain critical exploration rights in emerging markets. According to Dick Olver, BP Chief Executive, Exploration and Production, "Reputation is critical for access to upstream assets."

At BP, specific emissions targets are as precise and mandatory as any internal financial target and are included in all managers' performance contracts.

Global Climate Change Initiatives

BP's strategy calls for continued extension of its already considerable global reach. With this increase in global reach comes an increase in global and environmental effects. As a result, BP is focusing on global climate change initiatives. In May 1997, Lord Browne delivered his first major speech on global climate change at Stanford University and stated that the company had a responsibility to take action. In September 1998, BP announced its goal of reducing greenhouse gas emissions by 10 percent from 1990 levels by the year 2010. BP's commitment was both aspirational and inspirational. Internal and external stakeholders took notice.

This emission reduction target now includes emissions from both Amoco and ARCO operations. Says Rodney Chase, Deputy Group Chief Executive, "It is a demanding target. It represents a reduction of some 30 million tons over the period to 2010 on a business-as-usual projection. It is equivalent to taking 7,000,000 cars off the road. This is also a target upon which BP careers can be won and lost." At BP, specific emissions targets are as precise and mandatory as any internal financial target and are included in all managers' performance contracts.

BP measures progress toward this target by aggregating the share of greenhouse gases emitted directly from operations where it has equity. It includes emissions from contractor operations regardless of whether it operates the facility. In 1999, keeping with its commitment to have its emissions reductions measured and verified by external observers, BP engaged a consortium consisting of KPMG, DNV, and ICF to audit its reported greenhouse gas emissions. The audit was the first of its kind for a major corporation and another step at differentiating itself from other companies to its internal and external stakeholders. In 1999, the equity share of BP's direct greenhouse emissions was 79.8 million tons. This was a four percent reduction from 1998 emissions and just one percent above its 1990 emissions (before the acquisitions of Amoco, ARCO, and Burmah Castrol). As a result of the audit, BP is improving aspects of its data management such as developing more detailed guidance to the business units on methane emissions calculations.

At the end of year 2000, BP had delivered an emissions reduction of five percent and identified at least another five percent that is deliverable over the next three years.

Another aspect of BP's climate change strategy was the launching of the world's first emissions trading system to point the way to cost-effective emissions reduction. On January 4, 2000, BP's emissions trading system commenced operation. The purpose of the trading system is to ensure that BP succeeds in meeting its greenhouse gas emission reduction target on time and at minimum cost. The trading system is founded on a "cap and trade" concept, where an emissions cap, or allocation, is established for each business unit based on its emissions level in 1998, the base year. Thus, each business unit has a fixed number of annual allowances to emit greenhouse gases. Those business units needing to exceed their allocation can only do so through purchasing additional allowances from business units who are prepared to emit less. Costs and revenues from any trade flows through the business unit's reporting process and affects its overall performance.

Since then, nearly five million tons of CO_2 have been traded at an average price of $13 per ton. The trading system now covers every BP operation around the world. According to Rodney Chase, "Our trading system provides a particular incentive for business units to find unexpected ways of reducing their own emissions. All evidence to date confirms our view that this will encourage more ingenious solutions than could ever be provided under the threat of government taxes or regulations."

"All evidence to date confirms our view that this will encourage more ingenious solutions than could ever be provided under the threat of government taxes or regulations."

BP's distinctiveness has also encouraged staff innovation. For example, reducing and eliminating flaring was one of the first things BP staff suggested when Lord Browne appealed for ideas on BP's climate change policy. Hydrocarbon flaring accounts for millions of dollars worth of hydrocarbon losses each year and is a source of pollution in oil refineries. A system has been developed to identify and eliminate the sources of flaring at BP's Toledo, Ohio refinery. Flow meters were installed throughout the refinery to monitor the hundreds of possible flaring sources. Computer software was then developed to enable refinery personnel to check the meters continuously. Now, as soon as a leak is discovered, it can be fixed. As a result, the Toledo refinery has reduced its greenhouse gas emissions by more than 5,500 tons per year and saved over $4,000 a day. The flare flow monitoring system was awarded the Ohio Governor's Award for Outstanding Achievement in Pollution Prevention.

Yet another ingredient in BP's aspirational growth plans and climate change initiatives is its commitment to solar energy. Solar energy derived from photovoltaics is a prime energy source that is nearly infinite and produces no emissions.

BP plans to grow its solar company to a billion dollar business by 2007 and is growing by almost 30 percent per year. BP Solar, the world's leading manufacturer and marketer of solar photovoltaic technology, has doubled its production capacity in the last two years with manufacturing operations in the U.S., Spain, India, and Australia. Says Rodney Chase, "We are in no doubt…that solar power will be a major contributor to global energy supply this century. The superior application of new technology, such as BP's thin film technologies, is perhaps the only enduring source of competitive advantage left for companies like BP. In the context of climate change, technology has a crucial role in helping not only to reduce our emissions and those of our customers, but also to develop new products and services which our customers require and want." The increasing importance of solar as an energy source to BP further exploits BP's distinctiveness—and further enhances its brand.

"We are in no doubt, and we need no persuading, that solar power will be a major contributor to global energy supply this century."

Growing the Retail Market

It is in retail operations where one has direct contact with the consumer. And it is BP's retail business where its brand represents the company's distinctiveness in the eyes of the consumer. BP serves approximately 10 million customers a day. Its aim is to use its service stations as the basis on which to build a significant retailing presence. Not surprisingly, BP's retail strategy is to leverage its advantaged real estate and strong market positions in order to significantly grow its retail business—and become a great retailer. And in growing the business, it is responding to customers' demand for more convenience.

As part of its commitment to promote efficient technologies and grow its solar business, BP is installing solar panels on the roofs of new BP Connect state-of-the-art retail sites to demonstrate to customers that solar energy is an important form of renewable energy that is available to everyone. Each canopy roof above the fuel islands will be fitted with solar panels to capture the sunlight and convert it into electricity with no gases or noise emitted into the environment. The solar canopy protects consumers from the elements and allows daylight to shine through to create a bright, open, and friendly environment. All the electrical requirements for refueling and canopy lighting of the site will generally be met by the converted energy from the sun.

"BP Connect is the physical manifestation of BP's core values—to be environmentally-responsible, innovative, progressive, and performance-driven." Ross Pillari, Group Vice President, BP p.l.c.

BP Connect was modeled in response to consumer needs. The retail sites have features such as high-quality fresh foods and e-kiosks to allow customers free Internet access to weather updates, directions, and traffic reports. The first U.S. station opened in January 2001 in Indianapolis, Indiana. The store prominently features BP's new global brand—and is truly a distinctive service station. BP has improved its retail store sales per site per month by 11 percent since 1998 and by 2003 sales per site are projected to be 40 percent higher than in 1998.

Results

BP executives are quick to discount any suggestion that BP's recent superior financial performance (e.g., FY 2000 earnings increase of 105 percent over FY 1999) is tied to its environmental initiatives. Rather, the benefits of its environmental activities are seen as long term and associated with building up the consumer's perception of the brand. It may be too early to tell how BP's environmental initiatives have translated into earnings growth and enhanced brand strength.

The benefits of BP's environmental activities are seen as long term and associated with building up the consumer's perception of the brand.

There is a strong current within BP that fully subscribes to Browne's philosophy that the company will "do well by doing good." This point of view is echoed by Duncan Blake, BP Brand Manager, who says, "There is a belief within BP that environmental and social responsibility is not only good to do, but will also benefit the business. It will reap benefits in the long run." In some markets, BP is quickly becoming distinctive in the consumer's mind. In the United Kingdom, for example, market research shows a significant gap between BP and its nearest competitor in terms of consumer perception of environmental friendliness—not surprising because it was in the United Kingdom that BP was quick to introduce cleaner fuels.

BP also believes that its environmental stance will help it in its relations with governments. Overall reputation and environmental track record are key elements to obtaining exploration and production rights. They are essential to protect BP's "license to grow." BP has also seen a significant increase in employee pride and morale, spurring innovation and boosting the company's recruiting efforts by attracting talented engineers and managers.

"The values of the new BP are summed up in our brand: innovative, performance driven, environmental leadership and above all progressive, always looking for things which can and should be improved."
Lord Browne, Chief Executive, BP p.l.c.

Key Learning: Top Management Vision

The recent history of BP and Ford, two very large multinational companies, illustrates how the environmental vision of one person at the top of the management ladder can cause a profound change on the direction being taken by the company. BP's Lord Browne and Ford's William Ford have taken companies with solid but unremarkable environmental agendas and launched them into leadership positions.

BP. Browne was responsible for deciding that BP would be the first major oil company to publicly take a stand that global warming required precautionary action before the nature of the threat was proven. The reaction from the outside world was almost overwhelmingly favorable. The internal reaction from within BP was initially less so. Many applauded the step and asked, "What took us so long?" Others either did not believe Browne's commitment would be put into practice or think it was possible to meet aggressive financial objectives while also reducing greenhouse gas emissions. But Browne pushed the organization forward. He required that business units reduce greenhouse gas emissions by 10 percent (from 1990 levels by 2010) and put in place an internal emissions trading system to encourage business units to reduce emissions as efficiently as possible. Browne reinforced the message at management meetings, through speeches, and through each business unit leader's performance contract. Now BP managers know that Browne is serious. Environmental objectives are being managed just like other important business objectives. And BP is putting substance behind its statements.

Ford. At Ford, the vision and commitment for its corporate citizenship strategy is coming from the top: the Chairman of the Board. Bill Ford, long a proponent of environmental responsibility, has become an active and visible champion of the need to address sustainability. He sees it as both a threat and a major opportunity. It is now the company's strategic objective to become a leader in corporate citizenship. Under Bill Ford's leadership, the company has undertaken a number of high profile initiatives. The company withdrew from an industry lobbying group working in opposition to the Kyoto Protocol, issued a corporate citizenship report that included acknowledgement of the issues associated with the company's reliance on sales of high emissions sport utility vehicles, and undertook the environmental renovation of the 80-year old Rouge Complex into a model of 21st century sustainable manufacturing, with a goal not just to ensure the plant reduces harm to the environment, but to make it a positive contributor to the environment. It is also developing a hybrid-electric sport utility vehicle, and making significant investments in electric and fuel cell technologies.

Bill Ford has been particularly keen on ensuring that the company engages in dialogue with stakeholder groups, such as Friends of the Earth, Greenpeace, and Oxfam. These sessions are opportunities to help form Ford's strategy in a way that will deliver the greatest business, environmental, and societal value. In a speech to Greenpeace, Bill Ford discussed several options for addressing global warming that the company was considering as part of its long-term strategy. He said, "You can be sure that our response will meet at least these criteria: it will generate shareholder value, it will be the most aggressive market-focused response in the auto industry and it will offer real gains for our customers and the planet. In this race, we intend to get out front and stay."

CHAPTER 4:

Bundling Environmental Services

For companies whose strength is in their relationships with stakeholders, yet whose strategy calls for a focus on immediate revenues more than brand enhancement, a productive pathway for realizing top line value could involve bundling environmental services with their products. This leverages the ability to provide the best total solution to customers, thereby creating the potential to realize a price premium or other immediate top line advantage, such as protection of market share. This chapter sets forth how two companies, Ashland Specialty Chemical and DuPont Canada, have found ways to realize top line value through bundling services with products or replacing products with services.

Companies whose strategy is immediate revenue driven and whose strength is in relationships tend to find ways to bundle environmental services with their products, or replace products with services, as a way to provide the best total solution to customers.

Ashland Specialty Chemical's Total Chemical Management Business

Challenge: How to leverage environmental expertise to enhance the value of products

"Once on site with a customer, we began to see how we could help reduce hazardous waste, recycle materials, and replace products. We had years of experience in managing our own operations with those important goals in sight, so we could readily transfer that experience and learning to our customers' sites."

Mike Pregent, Business Director, Fab Services, Ashland Specialty Chemicals

Capitalizing on Company Experience

In the chemical marketplace, some companies differentiate themselves by delivering the best total solution to their customers. Ashland Chemical's Total Chemical Management business (part of the Specialty Chemical Company's Electronic Chemicals business) is a successful example of how to bundle services for a total-solution package. Ashland's success stems from a set of factors:

- In-depth understanding of the business up and down the value chain
- High-quality customer service abilities
- Cost-effective solutions that reduce customers expenses
- A solid understanding of how best to work with customers on site
- In-depth understanding of environmental, waste, and safety issues
- The ability to bundle a set of high-value chemical management services.

The objective was to deliver a value-added, total package of goods and services to a particularly demanding customer base.

Ashland has been providing chemical management services since 1990. The idea was new then, spawned by the growing semiconductor industry's need to outsource the management of chemicals. Semiconductor manufacture and purification depends on electronic chemicals, representing a wide range of extremely pure chemicals for the production of chips and hard drives. Ashland's work in the semiconductor industry was launched with work for Motorola: the semiconductor manufacturer was developing chips and asked Ashland to take responsibility for all issues related to the chemicals used in manufacturing those chips, even down to the maintenance of the equipment that handles the chemicals on site. Essentially, Ashland took ownership of all the chemical systems associated with the chip manufacture.

To excel, Ashland's Total Chemical Management group leveraged its expertise in chemical management, including the management of environmental and safety issues.

"We were using the GE model—finding greater customer value and business opportunity in the servicing of the product…and working on a partnership relationship with customers who did not have the same expertise we did with chemicals." John Harris, Program Manager, EH&S Planning & Development, Ashland

The objective was to deliver a value-added, total package of goods and services to a particularly demanding customer base—semiconductor manufacturers—for whom chemical management was not a core competency. As Ashland excelled at total chemical management, service became the product. Today, companies can purchase the service on a stand-alone basis—i.e., without purchasing chemicals from Ashland. In effect, Ashland capitalized on a growing trend for outsourcing, in this case helping its semiconductor customers to increase their effectiveness and efficiencies in managing chemicals.

Knowing How You Excel

Motorola chose Ashland to manage its chemicals because it was already using Ashland products. Ashland manufactured chemicals, tested them, and had the expertise to manage them for other companies—and that led to discussions with Motorola about what more Ashland could provide. Ashland built a warehouse in Austin, Texas to support Motorola's chip business, essentially helping to manage Motorola's supply chain. And included in Ashland's knowledge and services package for Motorola was environmental expertise. To reduce the use of chemicals, for example, Ashland worked with Motorola to get more wafers through the manufacturing facility with the same amount of chemicals, or with more wafers and less chemicals. Recycling chemistries, product replacement, and reuse opportunities are also examples of what Ashland brings its customers based on its own experience as well as a solid understanding about how other companies use chemical products.

To reduce the use of chemicals, Ashland worked with Motorola to get more wafers through the manufacturing facility with the same amount of chemicals, or with more wafers and less chemicals.

At a given semiconductor chip manufacturing facility, Ashland typically manages from 500,000 to 1,000,000 lbs/month of chemicals. The three largest products used in the semiconductor industry, by volume of chemicals used, are typically sulfuric acid, hydrogen peroxide, and developer products. These include chemicals produced by Ashland and other chemical manufacturers. In some customer agreements, Ashland's Total Chemical Management business is responsible for the customer's supply chain. Ashland purchases all chemicals from vendors, stores them locally for just-in-time delivery service, receives them at the customer's manufacturing site, stores them on site, and hooks up the chemicals to the dispensing units that are tied into the equipment. There may be anywhere from 15 to 65 systems at any one facility—and Ashland manages all the equipment, plumbing, and valves. Ashland is responsible for system purity, preventive maintenance, technical support to improve processes, and managing all issues around environmental, health, and safety compliance. Included are Material Safety Data Sheet (MSDS) reporting, risk reduction, engineering design, and emergency response plans and implementation.

For example, the customer handles permitting requirements, but Ashland provides information for reporting requirements. In many instances, Ashland is also involved in designing the processing facilities. This enables the Total Chemical Management staff to incorporate processes for segregating materials and increasing efficiencies.

Ashland's Total Chemical Management group puts employees at customers' facilities—on average 15-16 Ashland employees at each site. However, there may be as many as 35+ at some sites. They include process technicians who are trained by Ashland to handle chemicals and the chemical dispensing systems, and lab chemists on site at some of the facilities. Typically, the employees have engineering or, in some cases, chemistry backgrounds.

According to Mike Pregent, business manager for the Total Chemical Management business, "Environmental issues were not in our initial focus, but once on site with a customer, we began to see how we could help reduce hazardous waste, recycle materials, and replace products. We had years of experience in managing our own operations with those kinds of goals in sight, so we could readily transfer that experience and learning to our customers' sites. It became a natural, and important, ingredient of our Total Chemical Management portfolio for our customers."

Environmental issues were not in our initial focus, but once on site with a customer, we began to see how we could help reduce hazardous waste, recycle materials, and replace products.

Measuring Success

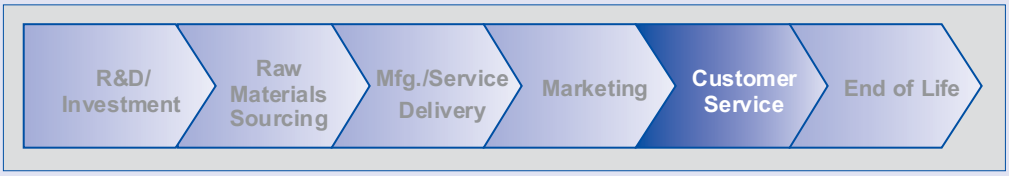
Revenues for Ashland's Total Chemical Management group have grown in each of the last three years since it was formed (i.e., 10 percent, 15 percent, and 20 percent), and projected to grow at 30 percent in the current year. This growth in bundled services includes more work at existing customers' sites and new work for new customers. Chemical sales are tracked separately and not included in these growth rates.

The service business requires laser like focus and very high levels of quality of service. Today, Ashland holds its own people to a set of standards that are considered higher than its customers' employees. As some companies are starting to exit the chemical management business because of a range of issues, Ashland is continuing to excel. It has key ingredients for success: a good product portfolio, the ability to service customers worldwide, and an excellent reputation for quality.

"Those companies that are in a highly dynamic marketplace are focusing more and more on their core competencies. Those areas that are not core competencies, they will outsource," according to Ashland's John Harris, Program Manager, EH&S Planning & Development.

"Our success is based on customer focus and quality. We work with our customers to show how we can improve their performance."
John Harris, Program Manager, EH&S Planning & Development, Ashland

Value Chain: Customer Service



Ashland. The Ashland story is a good example of leveraging the environment in the customer service link of the value chain. One of the functions of Ashland's Total Chemical Management business is to work with customers to use chemicals more effectively to improve operating performance, reduce costs, and minimize regulatory burdens. How that is done varies from customer to customer because it is based on the nature of the operations and the chemicals that are used. For one customer, Ashland recycles or reuses a tank truck of sulfuric acid about every week and a half, and about the same amount of isopropyl alcohol. Both of these chemicals are used in the wafer cleaning processes. "When we were first on the site," according to Ashland's Mike Pregent, "all the sulfuric acid went down the drain to their industrial waste treatment system and mixed in with everything else. Over time, we kept advising the customer to segregate waste materials; then we could collect them and find a customer to sell them to. That was a complete win/win situation."

Total Chemical Management has halved the consumption of both sulfuric acid and hydrogen peroxide in a couple of other customer locations. "If you can keep the chemicals clean, processing more wafers through the same chemicals, then you can reduce consumption," said Pregent. Because Ashland works with extremely complex chemical processes, some customers are reluctant to change. However, as Ashland continues to share data with customers about what reduction can be effected, they begin to understand the possibilities for extensive benefits.

Bristol-Myers Squibb. Bristol-Myers Squibb presents another instance of leveraging the environment in the customer service link of the value chain. Many of Bristol-Myers Squibb's customers are professionals at hospitals who are concerned about the EHS risks posed by pharmaceuticals and other products sold by the health care industry. In order to address these customer needs and promote its brand, Bristol-Myers Squibb sponsors conferences for hospital purchasing, facilities, and EHS professionals aimed at providing access to tools and best practices around reducing, recycling, and managing health care waste.

Ashland is also trying to figure out ways to bring the capabilities of its EHS organization as a value-added service to Ashland customers.

Ashland has been working with some of its customers to share in the cost benefits that they help build for their clients. This "cost of ownership" approach is determined by how much money has been saved for the customer, and by contract sharing in the savings. The more money Ashland can save for its customers, the greater Ashland's share.

Ashland continues to look for other value-added services to provide its customers and grow its business. Recently, it acquired a parts cleaning and preventive maintenance service company and have integrated these services with the overall chemical management service business.

Key Learning: Understand the Customer Value Chain

One key reason for Ashland's success is that it has understood not only how to leverage environmental activities in its value chain, but also that it has done so through a deep understanding of its customers' value chains. Opportunities suggested by an environmental initiative will be unrealized unless a company fully appreciates the initiative's business value to its customer. And this appreciation comes from an understanding of the customer's value chain. Ashland analyzed each link of its customers' value chains—from procurement to receipt to use to end-of-life—and found ways to add value in each link, and then quantified the value (cost savings) provided.

For other companies, the value of their services will be based on a specific part of their customer's value chains. DuPont Canada's paint-related services are aimed at reducing cost and environmental problems in the manufacturing link of Ford's value chain. And energy companies like Duke Energy provide energy conservation and planning services to improve manufacturing efficiency as well as procurement optimization.

One of Coca-Cola's customer groups is the concessionaires who serve the 383 national parks and monuments. Through Coca-Cola's understanding of government procurement requirements, including environmental factors such as recycling, it helps concessionaires who are in the bidding process better manage the sales and marketing parts of their value chains by developing an approach to sustainability at a park or monument that could be the winning edge.

For college campuses that need to deal with solid waste issues and other aspects of the end-of-life link in the value chain, Coca-Cola not only shows up with vending machines, but with assistance in putting a recycling infrastructure in place. Other examples of addressing the end-of-life link are provided by DuPont Commercial Flooring, which recycles worn out carpeting through its Carpet Reclamation program; Nike, which recycles athletic shoes through its Reuse-A-Shoe program; and the many product take-back programs of electronics manufacturers such as Motorola, HP, Xerox, and Sony.

The combined group is called Ashland's Fab Services and provides a much broader set of services to the semiconductor industry. It is also trying to figure out ways to bring the capabilities of Ashland's EHS organization as a value-added service to the customer. Says Mike Pregent, "We are trying to see how our EHS people can help their EHS people to help their business."

DuPont Canada's New Model in Automotive Finishes

Challenge: How to deliver environmental and cost efficiencies by redefining how to relate to a key customer

"We are so intimately involved with the customer, so entrenched, it would be difficult for them to sever our relationship…Our people understand how the paint department is run as well as Ford does. So the value of what we are doing is to increase the barriers to entry by competitors and maintain our market share."

John Driscoll, Business Manager, Automotive Systems, DuPont Canada

"Our challenge is to do no harm while expanding the values delivered through our products and services to a broader range of stakeholders along our value chains. To do this while continuing to strive for our goal of 'zero'—zero injuries, emissions, and waste created in our processes—will take unrelenting dedication and innovation."
David Colcleugh, Chairman, President, and CEO, DuPont Canada

From "Materials and Energy" to "Knowledge and Service"

Currently, there are many initiatives spanning various DuPont business units that demonstrate DuPont's commitment to decreasing its environmental footprint and a recurring theme in many of these initiatives is that "less is more." In other words, by finding ways to reduce material use, creating closed-loop systems, turning waste streams into profitable businesses, and inventing new business relationships with its customers, the company can generate more revenue. DuPont understands that meeting these challenges requires creativity and innovation, and that solutions will come in the form of new processes, new products and compelling new business models.

For example, a recent project involving DuPont Canada's Automotive Finishes Group and the Ford Motor Company illustrates how turning a product into a combination of product and service can not only reduce environmental impact, but also can reduce customer cost and help entrench market share. This case clearly supports DuPont's commitment to strive to increase shareholder value in a way that is less materials and energy intensive and more knowledge and service intensive.

Redefining a Customer Relationship

Applying creative ideas to managing the issues of cost and environmental benefits is at the core of DuPont Canada's Safety, Health and Environment program. However, DuPont Canada took this principle one step further and developed a new business model that redefined its relationship with a key customer and provided numerous spin-off benefits for both corporations, as well as for the environment.

In 1996, DuPont was challenged to develop a new business model for the sale of paint to the automotive finishes department of Ford Motor Company's Oakville, Ontario assembly plant. The Ford Oakville assembly plant builds Ford Windstars at a rate of 75 vehicles per hour. In 2000, Ford built 280,000 units.

The finishes technology used at the plant is a high solids base coat and clear coat application. DuPont supplies the ground coat, primer systems, base coat and clear coat used in the process. In the past, it was a traditional provider-customer relationship—the more paint DuPont sold Ford, the more money DuPont made.

However, the plant identified a problem with its painting process; a significant amount of the paint supplied—one insider estimated 30 percent—never made it onto vehicles, going instead into air emissions or wastewater. That cost Ford money, both in wasted paint and in disposal costs. As DuPont and Ford examined the problem, they recognized that what Ford ultimately wanted was not a product (paint) but, rather, a service (painted cars). That change of conceptual framework set in motion a new relationship between the two companies.

Implementing a New Business Model

Once DuPont recognized that its customer relationship with Ford needed to be viewed differently, the company worked cooperatively with Ford to implement a new business model for the sale of paint to the automotive finishes department of Ford's Oakville assembly plant. DuPont Canada and Ford instituted a Cost Per Unit (CPU) program in which DuPont is paid based on the number of automobiles painted rather than on the amount of paint it sells. The new model was expected to cut the costs of the painting operation and reduce the overall environmental impact of the process.

Under the CPU program, DuPont is paid based on the number of vehicles produced at a guaranteed cost per unit. The contract between Ford and DuPont specifies the cost of paint per gallon and also calls for a specified amount of paint to be used per vehicle. Both amounts are negotiated every quarter. Therefore, under the CPU Program, DuPont becomes more profitable by helping Ford minimize, not maximize paint usage.

Rethinking Traditional Roles

To support this new business model and to ensure that expected efficiencies in the paint process were realized, DuPont needed to rethink their role in the finishes process. It became clear that it would be critical for DuPont employees to become intimate with Ford and the paint application and finishes processes.

Under the new system, DuPont has full-time, on site personnel working at Ford plants to identify opportunities to improve efficiency and eliminate wastes, essentially acting as process engineers. Instead of just supplying a product to meet a manufacturing specification, DuPont must take the time and effort to understand the real costs of the manufacturing process and what happens to its products after they reach the customer.

"Our people understand how the paint department is run as well as Ford does. By getting intimately involved with the equipment and understanding how it applies paint to their vehicles, we understand what saves money because we understand the process."
John Driscoll, Business Manager, Automotive Systems, DuPont Canada

As a result, Ford now relies not only on DuPont's technical paint expertise, but also on their application and systems expertise.

According to John Driscoll, Business Manager for DuPont Canada, "the CPU model forces you to think totally differently—it's not how much paint you sell any longer. You become intimately more involved in their process and get more involved with the customer. That's the ideal model. Less is more for us."

The CPU Program—A Win-Win Situation

The fundamental shift in mindset from payment per gallon of paint to payment per unit painted created a "win-win" situation for both companies.

DuPont

For DuPont Canada, the lower volumes of paint supplied to Ford under this new program have been offset by improved efficiencies in DuPont's own manufacturing processes. The new business model has forced DuPont to try and find ways to make the paint more efficiently and take costs out of their manufacturing process as well. As a result of the CPU program, DuPont's costs per normalized gallon have significantly decreased. In fact, DuPont's costs were reduced by 8 percent each of the first two years following implementation of the CPU program, and by 4.5 percent in the third year.

By becoming so intimately involved with the customer and the customer's processes, DuPont has become "entrenched" in Ford's manufacturing plants and is now seen as an invaluable resource.

In addition, DuPont has become the preferred paint supplier to Ford and has business in 11 of the 18 Ford North American plants and 50 percent of the volume. By becoming so intimately involved with the customer and the customer's processes, DuPont has become "entrenched" in Ford's manufacturing plants and is now seen as an invaluable resource. Implementation of the CPU Program has, for DuPont, increased the barriers to entry by competitors and helped it maintain its market share.

Ford

For Ford, manufacturing costs and volumes of waste have been reduced substantially through process improvements. Since the CPU program was implemented in 1996, Ford has realized cost savings of 35 to 40 percent in its finishing operation.

While the original driver of the CPU program was cost, Ford has also realized that the program provides environmental benefits as well. The company's emissions of volatile organic compounds (VOCs) released during the finishing process have been reduced by 50 percent. In addition, paint-use efficiency is up sharply, substantially cutting Ford's air and wastewater emissions.

MOVING FORWARD

Throughout *Environment: Value to the Top Line* we have emphasized that different companies have different strengths and needs, and should therefore take different pathways to realizing environmental top line value. However, while the pathways may be different, many of the steps along the way may be similar from company to company.

Thoughts on Moving Forward from World Resources Institute

Don Doering, Senior Associate, Management Institute for Environment and Business at the World Resources Institute (WRI), was one of the reviewers of this report during its formative stages. Dr. Doering offered the following point of view on moving forward with environmental top line initiatives:

GEMI's *Environment: Value to the Top Line* is an important addition to the GEMI library for environmental professionals. This new publication is another great sign that environment and its corporate champions are continuing to move toward the front and center of business strategy and action. Many cases presented here show an important transition from environmental management having a goal of "no harm" and to environmental leadership having a goal of shareholder and stakeholder value.

I was struck that almost every case reflects an expanded view that reframes product functionality and corporate capabilities within a "benefit chain" and that resulted in a new relationships. The leaders of these initiatives discarded old ideas of a linear supply chain or assumptions about industry roles and instead asked: "What is the environmental benefit of our product's function and our corporate expertise and are there customers of those benefits who may not be our traditional customers or business partners?" The answer to that question resulted in innovations such as selling services not materials, closer relationships with traditional customers, non-traditional alliances and new-to-the-world products.

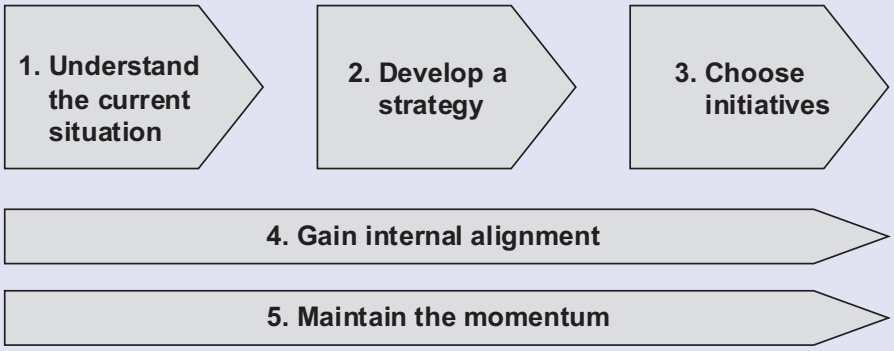
When I look at WRI's industry partners and the top-line cases that we use as examples, I can always find a business leader who created top-line growth by imaginatively and boldly creating novel relationships to share environmental benefits.

Moving forward always begins with one step – in the case of creating transformative value for your company. I think the first step should be a leap of originality and risk. Innovative change, not incremental change, creates leaps of shareholder value and competitive advantage. Increasing the financial and environmental value of your goods and services may require dramatic reinvention. A brainstorming and visioning process to align your team is a way to make your first move forward a leap!

Don Doering, Senior Associate, Management Institute for Environment and Business, World Resources Institute.

As companies consider how to move forward with environmental top line initiatives, they should consider the steps set forth in Figure 8, which contain ideas for action extracted from the key learnings and other insights in the preceding chapters.

Figure 8. Steps to Consider in Moving Forward



1. ***Understand the current situation.*** *Gain awareness of the context in which environmental top line value can be realized.*

   - Take stock of the company's core business strengths and strategy.
   - Identify the environmental aspects of the company's products and services in each link of the company's value chain.
   - Identify customer environmental challenges and how the company's products and services relate to these challenges.
   - Develop a business case for moving forward.

2. ***Develop a strategy.*** *Decide upon a strategy for creating environmental top line value that supports the company's business strategy and takes advantage of the company's strengths.*

   - Use the Top Line Framework (Figure 2) to develop a top line strategy that will be a best fit for the company.
   - Consider how the strategy will address sustainable development.
   - Determine whether any changes are needed to the existing business model to realize the strategy.
   - Develop an action plan to implement the strategy.

3. ***Choose initiatives.*** *Develop and implement initiatives that will bring the strategy to life.*

   - Consider how the company's existing products and services can be positioned to address the chosen strategy, using the case studies for inspiration.

- Examine each link of the value chain to identify potential initiatives, such as Cargill Dow's renewable raw material sourcing, which can create top line value.
- Identify potential strengths in each link of the value chain, which can be combined with capabilities in other parts of the value chain, such as how Koch's low sulfur manufacturing capability was combined with its marketing and distribution capability.
- If the strategy calls for developing a green product, be realistic about how the environmental soundness of the product fits into the overall set of differentiating features and benefits of the product. Do not assume that consumers will be willing to pay a price premium or accept performance trade offs.
- Examine customers' value chains to identify top line opportunities to solve customer environmental problems.
- Identify potential partnerships with stakeholders that will lead to top line value by promoting mutual interest.

4. ***Gain internal alignment.*** *The process of aligning the organization around the importance of taking action begins at the time the organization first develops an awareness of the context in which environmental top line value can be realized, and carries all the way through implementation of the top line strategy.*

   - Gain buy-in from top management.
   - Communicate the business case for moving forward.
   - Identify internal champions within the business who will move the top line initiative forward.
   - Start with pilot efforts to test the waters and generate early successes.
   - Communicate early successes.

5. ***Maintain the momentum.*** *Develop processes for maintaining the momentum of the top line initiatives.*

   - Create a Design for Environment (DfE) process to build environmental factors into new product design.
   - Develop business-based metrics of environmental top line success.
   - Develop an award and recognition program for ideas or projects that result in environmental top line value.
   - Integrate the environmental function with other business functions by enhancing its understanding of the other business functions and running itself more like a business.
   - Raise the capabilities of the customer service function to probe for and address customer environmental needs.

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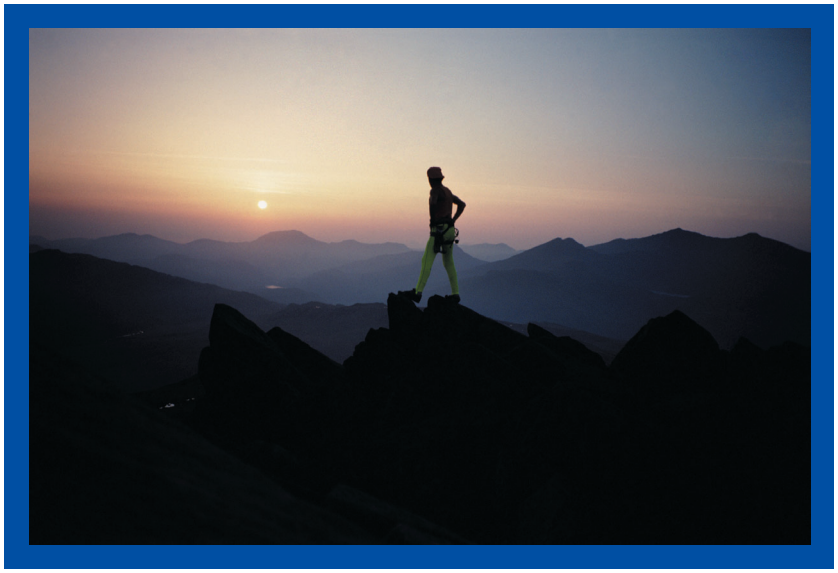

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