Eco-Advantage Strategies and Supply Chain Effects

## **Eco-Advantage Strategies and Supply Chain Effects**

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This article explores the environmental trends and forces that shape daily operational practices of supply chains. In addition to a list of compelling reasons for applying sustainability strategies, various environmental assessments are suggested to minimize the risks of possible negative impacts before incorporating these strategies. Potential benefits as well as the management of costs and risks of practicing sustainability in businesses are discussed. Finally, five competitive environmental strategies are presented. The first four strategies are based on combinations of higher or lower costs with environmental focus on processes or products. The fifth strategy is based on the concept of Blue Ocean Strategy. Strategies four and five have long-term sustainable focus, and require re-design and reimagine by the entire supply chain. These strategies could help businesses gain competitive advantages and achieve effective differentiations.

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### I. INTRODUCTION

Corporate environmentalism is rapidly changing the way organizations conduct The unavoidable truth is that few business. companies will escape the green wave affecting nearly every industry around world - which presents opportunities, as well as risks. Consequently, executives feel a great deal of pressure from stakeholders and question what they can, or should be doing to develop environmental, social, and sustainability practices. Companies that find the best solutions will rise above the competition.

Sustainability is more than just a public relations exercise and transformation of the concept into a core business practice can be most challenging. The Report of the World Commission on Environment and Development (1987), also known as the *Brundtland Report*, offers the most commonly accepted definition of sustainability: "the development that meets the needs of the present without compromising the

ability of future generations to meet their own needs." This definition translated into business terms suggests sustainability is: "the ability of firms to satisfy the economic needs (private shareholders profits) without compromising nature and the needs of current and future generations (public benefits)" (Orsato, 2009, p. 207). Current economic norms demand sustainable business practices as a necessary part of doing business and has become a minimal entry level barrier in many markets (e.g. forest industry). Therefore, it is crucial to apply the proper approach to obtain positive returns on eco-investments.

This article explores the environmental trends and forces that shape daily operational practices affecting the profitability of supply chains, and the challenges in managing the benefits, down-side costs, and risks of incorporating these pressures into various strategies needed to gain a competitive advantage.

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### II. TRENDS AND FORCES

Forces behind the *green wave* are real and growing because: 1) limited natural resources (e.g. energy, clean water and air, forests, and food supply) could restrict business operations by threatening the planet's wellbeing, 2) lean thinking in manufacturing and service businesses

implies eliminating waste and minimizing resources used for producing goods or providing services (Mollenkoph et al., 2010), and 3) an increasing number of stakeholders are concerned about the environment. These drivers are shifting market dynamics causing businesses to incorporate sustainability strategies into their business models for a number of reasons (Fig. 1).

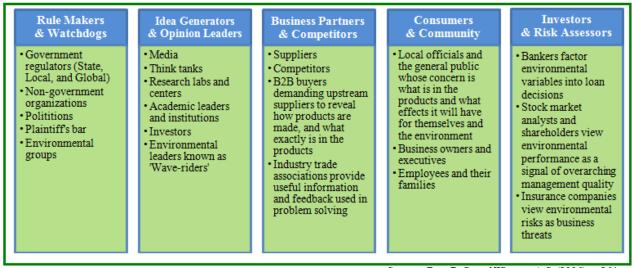
Reduce costs	By using fewer resources, more efficient processes, and minimizing or eliminating waste
Satisfy customer needs	Customers, partners, and other B2B clients have begun to request the use of environmentally friendly practices
Preserve resources	• Raw materials used to produce products may become limited
Enhance reputation	Shows an environmental commitment which helps gain an improved market position and stakeholder trust
Keep up with regulations and standards	As voluntary actions become mandatory and benefits from tax incentives help to offset the costs
Differentiate products	Increases loyalty of current customers and attracts new consumer groups
Attract and retain quality employees	<ul> <li>Increases a company's ability to innovate and outpace the competition</li> </ul>
Meet stakeholder expectation	Voluntary actions are becoming mandatory
Exploit new opportunities	Using sustainable business practices to create a competitive advantage
Obtain capital investment	Banks and investors are looking for good management practices when evaluating companies' exposure to environmental risk
Value-based concern for environmental stewardship	Many executives feel it is simply the right thing to do by avoiding the encroachment of natural resources

Source: Weybrecht (2010), p. 22-25

FIGURE 1. Most Compelling Reasons for Integrating Sustainability Strategies into Business Models

Corporate success calls for the proper management of a wide range of relationships on the business playing field. Fig. 2 covers five categories of core stakeholders who monitor, exert significant influence on business activities, and frequently apply pressure on companies to improve sustainable management practices. Successful firms often regularly reach out to these groups to get advance warning of upcoming issues which may bring new opportunities and keep risks at a minimum.

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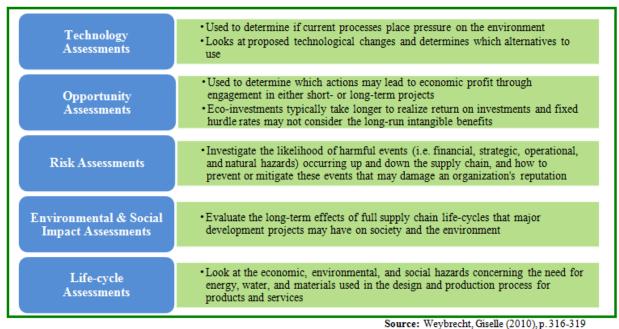
Source: Esty, D. C. and Winston, A. S. (2006), p. 264

FIGURE 2. Five Categories of Core Stakeholders

As a result of pressures from stakeholders, many companies are beginning to perform various assessments prior to the start of projects to determine the design, scale, and location of investments to prevent or minimize the likelihood of negative events (Fig. 3).

Environmental assessments, such as those listed in Fig. 3, lead to opportunities to cut waste and costs, as well as lower overall business risk.

This approach helps businesses make better decisions in supply chain processes that undoubtedly improve profitability over the long-run. For instance, although it may be difficult to track, exploring a company's carbon footprint through the use of a life-cycle assessment helps to improve the entire supply chain system, rather than its single parts. Creating better products and



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FIGURE 3. Environmental Assessmen

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processes also calls for management to challenge the way things have always been done by requiring supply chains to do more with less to preserve natural resources and use cleaner production processes.

As shown in Fig. 4, raw materials are converted into finished products and distributed to consumers. After usage, products are recycled and reused in the form of raw materials that reduce waste through a re-design and reprocess imagining before being sent consumers for new usage. Companies have learned that re-imagining and re-designing entire supply chains is profitable and effectively reduces both environmental and social impacts. For example, Hewlett Packard has redesigned many of its products by replacing adhesives with snap-in features that make disassembly and recycling easier (Weybrecht 2010, p.227).

The rising cost of energy and other commodities necessary for production is one of

the biggest drivers of the environmental focus on supply chain activities (Esty & Winston, 2006, p.16). With energy prices at an all time high, conservation efforts and energy efficient investments are becoming more attractive in nearly all industries around the world. Energy efficient production has become a major source and strategic advantage for large energy users such as heavy manufacturers, for example. As the energy picture continues to create new competitive pressures for supply chains to address the demands of stakeholders and society, companies selling a promise to improve the energy efficiency of their goods and services will claim a larger share of the market. Still, the most important issues for a company to address will depend on its specific circumstances concerning the industry and its challenges, and whether consumers are willing to pay the price for sustainability.

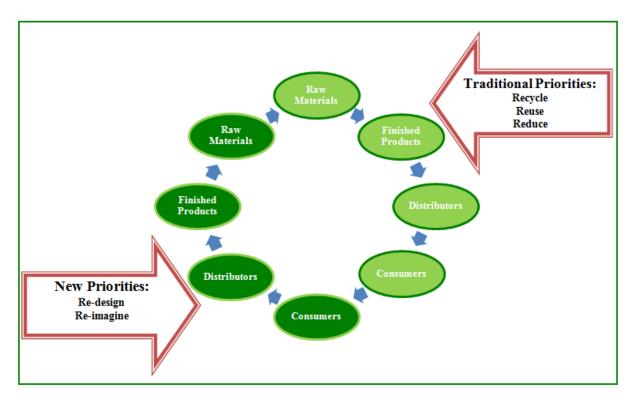
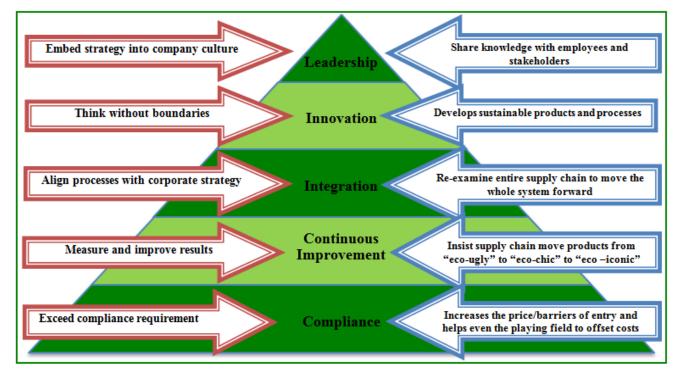


Figure 4. Ideal Path for the Basic Green Supply Chain

## III. POTENTIAL BENEFITS OF PRACTICING SUSTAINABILITY

In addition to the reasons companies incorporate sustainability strategies into business models, multiple benefits can occur when positive changes in one area spill over into others. For instance, effective environmental

management practices create intangible outcomes such as enhanced reputations, improved management of downside risks affecting costs, and other synergies contributing to a competitive advantage. This concept can be further explained by considering the challenges associated with the development of a framework for a sustainable supply chain (Fig. 5).



Source: Esty and Winston (2006) and Weybrecht (2010)

FIGURE 5. Sustainable Supply Chain Framework and Challenges

As illustrated in Fig. 5, a well built sustainable framework begins at the top where the strongest impact a leader can have is to walk the talk as a means to embed strategy into the company's culture by sharing knowledge with employees and stakeholders. Second, thinking outside the box helps to develop processes by using innovative ways to meet the demand for a growing number of sustainable products. Third, integrating corporate strategy into the way everyone performs work, up and down the entire supply chain, creates an alignment that moves the whole system forward. It is through this shared responsibility of firms involved in the supply

chain that markets and products may be reexamined. Next, through the process of continuous improvement and supplier engagement, supply chains may begin to effectively move green products and services "eco-ugly (ugly, over-priced, performance, unsavory yet eco-friendly versions of the 'real thing') to eco-chic (eco-friendly stuff that actually looks as nice and cool as the less sustainable originals) to eco-iconic (Weybrecht, 2010, p. 214)." In fact, products are now being made more sustainable without consumers noticing. Finally, companies are now going above and beyond government compliance

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requirements. For instance, although traditionally companies have resisted regulation, many are now pushing for tougher regulation as a means to even the playing field. This act helps to discourage lower cost competitors and offset the cost of sustainable operations – which actually raises the price of entry within an industry. Additionally, businesses are looking to work with other companies who voluntarily adhere to International Organization of Standardization (ISO) such as ISO 14001 environmental management systems standards.

Organizations that do not participate in sustainable miss practices the upside opportunities that are increasingly shaped by environmental forces. For example, investors look for strong environmental management practices because missteps can destroy an organization's reputation and negatively affect the value of the company (e.g. Exxon Valdez in 1989 and BP Deepwater Horizon (Gulf of accident of Mexico) 2010). Although environmental reputations can potentially define entire industries, it is equally important for managers to recognize when it does not pay to be green. Conditional limits should be determined based on the market conditions, demand for the product/service of a specific target market, the likelihood of long-term profitability, and other potential benefits.

## 3.1. The Management of Downside Cost and Risks

Sustainability practices are becoming a cost of doing business and inaction in this area can lead to increased costs and loss of revenue. This suggests that eventually, companies that do not take steps toward using sustainable management practices may be forced out of business (Weybrecht, 2010, p. 356). The business risks of not using environmentally friendly practices can range from becoming the eco-activists to environmental of boycotting – both of which can be damaging to a company's profitability reputation. and Additionally, companies claiming to have sustainable practices but are clearly underperforming, risk being accused of greenwashing, which can negatively affect brand value, stock price, sales, and customer loyalty (Etsy & Winston, 2006, p.319). This contributes to the plethora of confusing sustainability messages consumers receive, offering so many choices that they've actually become bogged down with green fatigue, making it difficult to interpret packaging claims (Weybrecht, 2010, p. 212-213).

One of the biggest reasons businesses do not participate in sustainability programs is cost. Similar to any business investment, profitability of environmental investments is conditional on the specific circumstances of the firm. Looking broadly at the full supply chain and trade-offs between costs (gains and losses), benefits (tangible and intangible), and impacts (short- and long-run implications) along the entire supply chain helps. Evidence clearly indicates that while many programs may cost more in the short-run, savings can often be enjoyed in the long-run (Weybrecht, 2010, p. 345). In addition, intangible benefits such as enhanced reputation and brand image, as well as improved community support and employee morale, should be considered.

Traditionally, green products have been more costly than conventional options and consumers have resisted paying premium prices; however, in the future, the opposite is likely to be true. As product hurdles affecting product performance and convenience are improved, the demand will likely go up, increasing the economy of scale, thus allowing prices to drop. Eventually, after this shift occurs, eco-products will capture a larger market share because consumers will resist paying premium prices for conventional products.

## IV. COMPETITIVE ENVIRONMENTAL STRATEGIES

Competitive Environmental Strategies (CES) offer companies of all sizes, a range of

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new and different approaches to break away from the competition. CES often distinguishes between green as a commitment (using noncompetitive strategies) and core competence (using competitive strategies). Non-competitive strategies allow companies to collaborate on issues they do not usually differentiate on. In contrast, competitive strategies often involve tough choices and frequently result in a zero-sum game where one organization's gain is another's loss. Generally speaking, the basis of strategy is in finding, exploiting, and protecting sources of competitive advantage. According to Michael Porter, companies need to have a clear strategy to obtain a competitive advantage by "creating a unique and valuable position, involving a different set of activities" (Orsato, 2009, p. 27). The concept of competitive positioning involves a trade-off where companies may pursue either a low cost or product differentiation strategy. However, using the Resource Based View (RBV) competitive focus, a the company distinguishes between what firms produce (products and services) and how they produce it (organizational processes) without constraint of choices available (Orsato, 2009, p. 28). Together these concepts determine different sources of competitive advantage that can be applied to the internal processes to improve operational effectiveness. However, operational effectiveness efforts, such as reducing cost or exposure to risk, are not considered to be strategies; instead, they are a necessary part of conducting daily business.

The scope of corporate environmentalism can be explained where certain business strategies can either benefit the environment through public benefits, or business through private profits. Within this realm, if an organization's strategy generally provides a winwin for business and the environment, then it pays to be green. However, if a company only pursues opportunities without concern for the environment, it would be working toward an unsustainable business model.

of environmental The pressures sustainability have never been greater and some of the world's largest companies are now requiring suppliers to track their carbon footprints as a means to strengthen entire supply chains. Through systematic use of the supply chain frameworks, managers can define and prioritize areas in need of action to optimize processes and the economic return on ecoinvestments. Typically, supply chains mainly focus on creating value by converting raw materials into products using various processes or activities. However, effective management of both up- and downstream activities can become critical components of CES that can further enhance the competitive position and reputation of companies by focusing on collaboration between the procurement, manufacturing (design and treatment), and the consumption of green finished products.

The best way to gain an eco-advantage is to find opportunities that the competition has overlooked by focusing on where a particular product fits into the full value chain. Both upand downstream actions become important to reduce and eliminate every source of inefficiency within a green value chain. Furthermore, since the signing of the Kyoto Protocol on climate change, the collection of carbon credits has become one of the most important commodities since the turn of the century (Orsato, 2009, p 59). For example, larger companies such as Wal-Mart their suppliers to use balanced scorecards as a means to track their carbon footprint and monitor performance of the reduction of raw materials, packaging size, recycled materials, and energy usage - including the impacts of their suppliers' suppliers (Weybrecht, 2010, p. 201-202, and p. 356). Companies have begun selectively choosing suppliers with strong sustainability policies and practices built into their products and supply chains – and bypassing companies that do not.

The reduction of costs and proactively managing risks and uncertainty are smart strategies for all business models. However,

efficient management of costs and risks should not be confused with strategy, which by definition necessitates the need for companies to surpass rivals by being different. In light of this, it is unquestionable that there is a market for incorporating eco-logical practices into product design; although this aspect needs to be put into perspective because the approach companies use to manage supply chain activities either creates or destroys value. For instance, many managers previously believed an event occurring outside their portion of the supply chain was not their However responsibility. today, corporations such as Mattel, Inc. can attest that even small problems, with any one of their many suppliers, can tarnish a big brand quickly - in spite of having performed supplier audits and closely watching poor performing suppliers (Esty & Winston, 2006, p. 202).

When it comes to choosing a strategy, it takes just as much effort to make environmental

initiatives work as it does other projects; and they fail just as often. Turning risk into opportunity makes for a great strategy, nonetheless, six critical factors must be considered (Fig. 6).

Fig. 6 implies that not all customers want or will pay for eco-friendly products; and furthermore. that customers need persuasive reasons to buy such as price, quality, and service - before using green as a product attribute selling point (Esty & Winston, 2006, p. 129 & 298). However, the *Toyota Prius* is an exception to the rule of being unable to charge premium prices for a sustainable product. Toyota effectively focused on producing a product for a specific target market that was ready and willing to buy, as opposed to being resistant to change (Esty & Winston, 2006, p. 129 & 298). Nonetheless, if the *Toyota Prius*' quality were to fail, customers would not stay loyal to the brand.

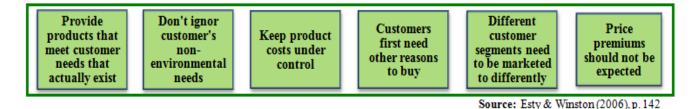


FIGURE 6. Critical Factors of Environmental Initiatives

environmental Clearly, strategy materialized as a critical point of competitive differentiation and soon, no company will be able profitability without factoring sustain environmental issues into its strategy (Esty & Winston, 2006, p. 282). The matrix in Fig. 7 illustrates five main CES strategies that involve tough choices and trade-offs between the upstream activity system (supply chain management) and the downstream activity system (product stewardship) activities. Each of these strategies focus on important choices concerning which eco-investments (inputs) companies should make, as well as how well the investment is aligned with the overall long-term objectives (outcomes) of the organization. business' particular position within an industry and the types of customers the company serves determines which strategy should be used. If a company wants to optimize Michael Porter's sources of competitive advantage, their choices are to use either a low cost or differentiation approach. If the company would like to optimize a RBV approach with a competitive focus on intangible sustainability, the appropriate choices organizational either processes products/services. The low cost oriented strategies shown above the arrow in Fig. 7 (Eco-Efficiency and Environmental Cost Leadership) are mainly concerned with creating synergies

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affecting the profitability of the organization. The differentiation strategies shown below the arrow in Fig. 7 (*Beyond Compliance Leadership* and *Eco-Branding*) are more profitable and concerned with intangibles such as an enhanced reputation which involve non-competitive, product stewardship activities, which include collection, dismantling, recycling, and reusing (Orsato, 2009, p. 128 & 198). In essence, the low

cost strategies are easier to carry out than the differentiation strategies. Finally, the newest market strategy (*Sustainable Value Innovation*) suggests to avoid the competition altogether by changing the nature of technology, production, and consumption. This innovative ecoinvestment approach has proven difficult for many executives for reasons to be discussed in the Strategy 5 section.

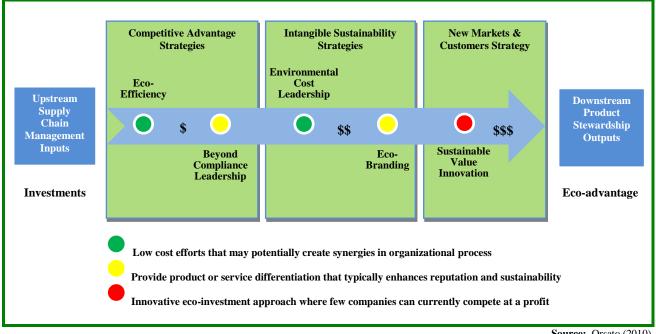


FIGURE 7. Competitive Environmental Focus Strategies

Source: Orsato (2010)

In choosing a strategy, managers have two primary choices when offering sustainable products: 1) they can make an existing product greener, or 2) they can develop entirely new products that suite customer needs in greener ways (Weybrecht, 2010, p.194). Each are based on a variety of different product options that customers want such as: higher quality or safety, lower prices or switching costs, products that make customers feel or look good, or having a lower environmental impact than conventional products. In light of these attributes, managers need to identify how to differentiate their companies by making specific choices about which eco-investment and strategy to pursue.

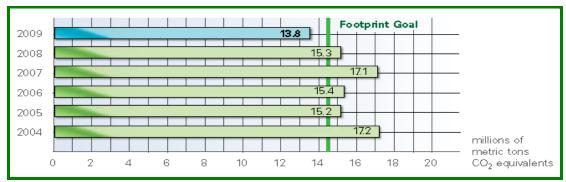
Each of the strategies shown in Fig. 7 is described in detail below.

## **4.1. Strategy 1: Eco-Efficiency**

The first strategy, *Eco-Efficiency*, is based on lowering B2B internal operational costs by cutting out all the things customers don't want. This approach is also known as *lean thinking* and can lead to significant improvements in how supply chain resources are utilized, as well as prompting innovative breakthroughs from the conversion of waste and by-products into new sources of revenues created by synergies (Orsato, 2009, p.45). Essentially, this approach is about

creating a lower environmental impact by doing more with less in hopes of generating carbon credits that can be traded, and is especially useful for industrial firms with high processing costs. Cutting waste makes good business sense and many companies are often surprised to discover how cost cutting efforts can spill over into other areas after having streamlined production and other processes. For example, according

DuPont's 2010 Sustainability Progress Report, the organization has made tremendous progress toward minimizing its global carbon footprint (measured as CO<sub>2</sub> equivalents) by reducing greenhouse gas emissions by 72% which saved over \$2 billion just from 1990 – 2005 alone. Moreover, DuPont is also looking to further reduce their carbon footprint by at least 15% from the base year of 2004 (Fig. 8).



Source: Dupont 2010 Sustainability Progress Report

FIGURE 8. Dupont's Goal to Reduce its Carbon Footprint

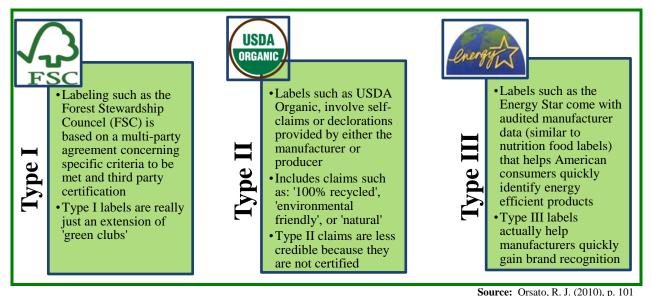
## 4.2. Strategy 2: Beyond Compliance Leadership

The second strategy, Beyond Compliance Leadership, is used when an organization would like to utilize its operations (or green internal processes) as a means to differentiate itself in the market by improving its external reputation, often by voluntarily joining green clubs (e.g. achieving ISO 14000 certification). As a result company's leadership and commitment to reduce the impact of its operations, firms using this strategy also profit from other intangible benefits such as favorable brand recognition and higher stock prices. Furthermore, these firms frequently influence industry standards and regulations, typically raise the price or barriers to entry, thereby forcing standards onto other companies. As a matter of fact, in some industries, a company's reputation is a license to operate and works to assure consumers, and other stakeholders, that the company has good environmental management practices by doing more than what is minimally required by law. Essentially, the reason so many companies join green clubs is because they offer a form of reputation insurance which helps to protect organizations from negative eco-activist attention. The main idea is that "good corporate reputations can hardly be built on what the company says about itself" (Orsato, 2009, p. 72). For instance, process certification such as International Organization for Standardization (ISO), or specifically ISO 14001, makes communicating to potential clients and buyers that a company's operations (or supply chain) are managed in accordance to best practice environmental standards - which carries more For example, when Coca-Cola's credibility. Dasani bottled water plant in India was shut down after nearby wells ran dry, Coca-Cola immediately took action to certify most of its factories by meeting ISO 14001 standards as a means to avoid further tarnishing the brand name and diffuse the situation (Gunther, 2008, p. 68).

## 4.3. Strategy 3: Eco-Branding

The third and most familiar B2C strategy, *Eco-Branding*, is used when an organization would like to differentiate its *green* products through the use of product labels as a means to:
1) obtain price premiums, and 2) assist with consumer choice when selecting products off retail shelves. However, in order to pull off charging a price premium, customers must be

willing to pay for the eco-differentiated brand. This is where *eco-branding* helps to inform consumers about certain environmental issues and works to increase the emotional appeal of products (Orsato, 2009, p. 202). Fig. 9 illustrates three types of *eco-labels* that help introduce consumers to easily recognizable branded products produced by environmental industry leaders.



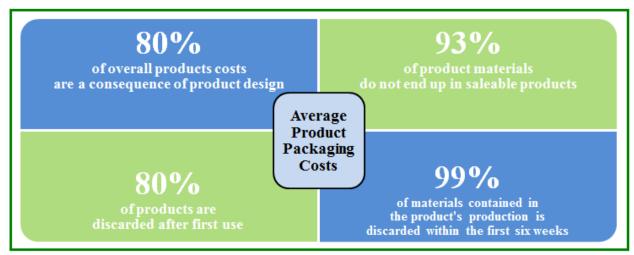
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FIGURE 9. Types of Eco-labels

The International Organization for Standardization considers *Type II* and *Type II* labels to be the only standard eco-labels, because *Type III* labels go beyond the other labeling schemes by requiring an independent third party to conduct a Life Cycle Assessment (LCA) concerning supply chain activities of the certified products (Orsato, 2009, p. 101-102). Finally, it is important to note that as more companies adopt the use of eco-labels, the competitive advantage from this form of differentiation will soon fade away.

# **4.4. Strategy 4:Environmental Cost** Leadership

The fourth strategy, *Environmental Cost Leadership*, is used when an organization would like to be the cheapest in the market, and also have the lowest environmental impact (Fig. 7). Companies with mature products and low profit margins have found that taking an *eco-design* approach has obvious advantages in reducing environmental and product cost concerning issues such as the weight or volume of the materials of products (Orsato, 2009, p. 124). Often, the first important step companies take is to dematerialize product packaging considering factual averages in this area (Fig. 10).



Source: Weybrecht (2010), p. 224

FIGURE 10. Eco-design Potential of Product Packaging Costs

Many companies have discovered sustainable ways to lower supply chain costs by changing the design and materials of products, and working to reduce and eliminate unnecessary packaging (Weybrecht, 2010, p. 201-202). For example, a Swedish furniture retailer IKEA redesigned its packaging by making its boxes flatter and tighter fitting to optimize volume during transport. This adjustment allowed four more sofas to fit on delivery trucks and trains, in addition to lowering product costs environmental impacts (Esty & Winston, 2006, p. 113-114).

## 4.5. Strategy 5: Sustainable Value Innovation

The fifth, newest, and least common strategy, Sustainable Value Innovation (SVI), is used when an organization would like to compete in entirely new market spaces by defining how products are produced and consumed. This is an extended concept of the ultimate service that a product can deliver, and is similar to the Blue Ocean Strategy (BOS) where the goal is to compete in untapped market spaces by redefining how products and services are produced and consumed (Kim & Mauborgne, 2005). Business models that provide new value propositions such as environmentally friendly products or services, produced with lower economic costs and

environmental impacts, make it possible for companies to bypass industry competition while adding value for customers and contributing to the overall good of society. The problem is this strategy is not a good fit for all companies due to its difficulty in coordinating Tier 2 and Tier 3 suppliers (Orsato, p. 204-205). However, while eco-investments increase may competitiveness of firms and create new market places, clear strategy choices and tradeoffs become necessary. In other words, executives who effectively manage these environmental forces affecting business and society are better equipped to deliver fresh value propositions that create new market spaces and attract new customers. For example, Mobility Car Sharing approximately has 1,250 (MCS)throughout Switzerland, with 2,500 energy efficient vehicles accessible 24-hours day for rent by the hour. Members simply make their reservation via the internet, use their Mobility membership card to unlock the reserved vehicle, and drive away. These stations are located conveniently at bus and train stations that are easily accessible by foot or bike. The use of the MCS service has effectively reduced the number of cars on Switzerland's roads by over 18,000, which further eases parking accessibility and carbon emissions from a lighter demand for the manufacturing of vehicles.

### V. CLOSING REMARKS

Executives can no longer disregard the reasoning behind incorporating environmental practices into the core of business strategies. Despite the initial cost involved, future expenditures will pale in comparison as various pressures begin to negatively affect the image and profitability of non-conforming companies. Smart companies try to stay ahead of environmental and social demands, not only to keep financial and operational risks at a minimum, but to also profit from the opportunity environmental strategies present.

For each Competitive Environmental Strategy, executives should have a clear understanding of how well their ambitions match the firm's competencies. As suggested in Fig. 11, many companies focus on the traditional strategies that have been around for a while as a means to differentiate their products from the In other words, strategies 1-3 competition. mainly involve activities centered on Recycle, Reuse, and Reduce, which in a sense, represent the low-hanging fruit. However, as these practices become more common amongst competing companies in the near future, strategies 1-3 will no longer offer a competitive advantage.

Conversely, the harder task is to implement strategies 4 and 5, or the *new strategies*, which calls for companies to make tough choices that require entire supply chains to *re-design* and *re-imagine* products and services with a long-term sustainable focus. This suggests the difference between the *traditional* and *new strategies* lies in the value proposition itself, where companies with green value chains that effectively position themselves as *solution providers*, are likely to experience an *eco-advantage* over the competition.

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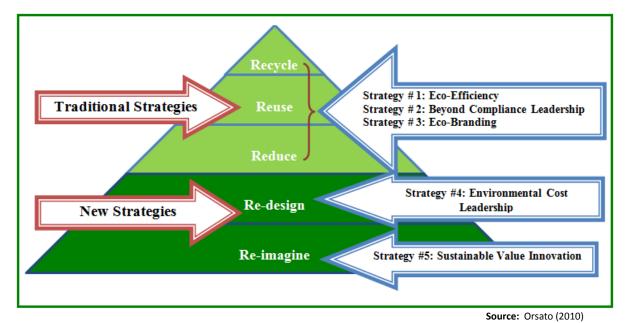


FIGURE 11. Focus of Traditional vs. New Strategies

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