

Competitive Environmental Strategies: WHEN DOES IT PAY TO BE GREEN?

Renato J. Orsato

Progressive corporations have invested in increasingly ambitious sustainability initiatives. While environmental investments are welcome by society, managers need to identify the circumstances favoring the generation of both public benefits *and* corporate profits. For some firms, better utilization of resources may pay-off as environment-related investments. For others, obtaining ISO 14001 certification or having some eco-labeled products can eventually be the best way of pursuing competitive advantage. This article presents a framework for categorizing generic types of competitive environmental strategies, a classification scheme that can help managers optimize the economic return on environmental investments and transform these investments into sources of competitive advantage.

Business and the Environment: Beyond the “Free Lunch” Debate

The 1990s were marked by a heated debate in the field of Business and the Environment around “whether it pays to be green.”¹ According to the proponents of the “free lunch,” “double dividend,” and “win-win hypothesis,” there are extensive opportunities for business to profit from environmental investments.² According to Reinhardt, however, the debate needs to move away from the grand topic of “whether or not” corporations can offset the costs of environmental investments to the question of “when” it is possible to do so.³

The author would like to thank the referees for their insights and comments, which greatly improved this article. The feedback of Peter Wells, Chris Ryan, Dexter Dunphy, Jaako Kuisma, and Francesco Zingales, as well as the PhD and Master candidates of the International Institute for Industrial Environmental Economics (IIIEE), Lund University, Sweden, was also crucial throughout the development of the article.

In Reinhardt's view, "environmental policy, like other aspects of corporate strategy, needs to be based in the economic fundamentals of the business: the structure of the industry in which the business operates, its position within that structure, and its organizational capabilities."⁴ Other academics have also confirmed this proposition.⁵ Profit generation from investments in cleaner technologies might make business sense in certain circumstances, but not in all.

The identification of such circumstances also relates to the quest for competitive advantage. For quite some time, some academics and practitioners have claimed that environment-related investments can become sources of competitive advantage.⁶ A correlation between these two aspects would obviously motivate companies to go beyond mere legal compliance, and industrial competition would itself promote more ecologically sustainable practices.

In 2001, Christine Rosen, the chief editor of a *California Management Review Symposium on Environmental Strategy and Competitive Advantage*,⁷ stated that the transition from compliance-based to strategic environmental management

Renato J. Orsato is Senior Research Fellow at INSEAD Business in Society (IBiS) Research Centre, INSEAD, Fontainebleau, France, and Visiting Professor at the School of Management (ICAN Research Centre), University of Technology, Sydney (UTS), Australia.
<renato.orsato@insead.edu>

was still in its early stages. Three years later, several articles in *CMR* emphasized the strategic importance of proactive environmental management.⁸ Although these studies certainly represent a step forward, the relationship between product recovery (the theme of these articles) and competitive advantage was not addressed. In the light of

these developments, managers confronted with a vast array of pro-environment cases may wonder how can they prioritize green investments.

While most companies are expected to become "better citizens," in each industry only a few will be able to transform environmental investments into sources of competitive advantage. In line with Porter, this requires a clear strategy: "the creation of a unique and valuable position, involving a different set of activities."⁹ The identification of sources of competitive advantage requires one to make a clear distinction between products/services and organizational processes. The broader debate about the "real" sources of competitive advantage is between the two leading schools: Michael Porter's positioning school and the resource-based view of the firm.¹⁰

Sources of Competitive Advantage: Firm Positioning or Capabilities?

In 1980, Michael Porter identified two generic types of competitive advantage, *low cost* and *differentiation*.¹¹ According to Porter, a firm can—through efficient use of labor and capital—obtain competitive advantage by selling products or services with the lowest cost in its industry. On the other hand, a firm can use differentiation strategies to create unique features for its products (e.g., aesthetics, performance) or its services (e.g., using new technologies for customer support). This peculiarity is crucial for advancing the theorization

and practice of competitive environmental management, and for the broader debate about “real” sources of competitive advantage between the two leading schools: Michael Porter’s “Positioning School” and the “Resource-Based View” of the firm.¹²

According to the Resource-Based View of the firm, competitive advantage should not be seen as a function of industrial structure but as resulting from the ability of firms to use resources, which are heterogeneously distributed across competing firms and tend to be stable over time.¹³ When compared with the Porter’s “positioning” perspective, the Resource-Based View does not constrain the choices available to firms to the structure of the industry. Rather, it considers competitive advantage as resulting from the capabilities of firms to acquire and manage resources, such as technical capabilities, ownership of intellectual property, brand leadership, financial capabilities, and organizational structure and culture—all of which can be deployed to serve the goal of creating competitive advantage around environmental innovation. In other words, the Resource-Based View highlights the influence (internal) organizational processes exert on competitiveness.¹⁴ This explains the suggestion by academics and consultants since the early days of the “pays to be green” debate that the certification of environmental management systems (EMS) would generate competitive advantage.

The ISO 14000 series of EMS certification followed the footsteps of the ISO 9000 series of Total Quality Management (TQM). Emerging in the 1980s, the TQM movement highlighted the influence organizational processes exert on the overall competitiveness of the firm.¹⁵ During the 1980s and 1990s, quality-oriented management enhanced the competitiveness of an impressive number of corporations worldwide. By identifying the ultimate sources of quality problems, firms reduced or eliminated trade-offs between costs and quality. Companies that pursued zero defects and continuous improvements of organizational processes have improved the quality of products and services at the same time that costs were reduced. Since products and services of enhanced quality (and reduced costs) have a better chance to succeed in the marketplace, such practices obviously influenced their competitiveness.

Not surprisingly, some academics and practitioners assumed that TQM principles could be transplanted to the management of corporate environmental and social responsibility—from which the term Total Responsibility Management (TRM) is slowly emerging.¹⁶ In certain circumstances, the certification of a firm’s EMS, for instance, would not only be a systematic way of managing risks, but would also have the potential to become a source of competitive advantage.¹⁷ In the words of Sandra Waddock and Charles Bodwell: “responsibility management approaches can potentially provide for a solid basis of competitive advantage, especially for early movers.”¹⁸

Today, there is little room to question the benefits of adopting TQM principles, especially for corporations operating in highly competitive industries. While it is difficult to identify circumstances in which companies *would not* benefit from investing in quality, it is reasonable to expect that such benefits vary

significantly between firms and industries. Here lies the main similarity between quality and environmental issues in business: for most companies, environmental investments can generate some gains, even if marginal. However, because the levels of economic benefits depend on a wide array of variables, ranging from internal capabilities to the structure of the industry, they will influence the competitive position of firms differently.

Although similarities exist, the fundamental difference between “quality” and “environment” is very seldom acknowledged. Quality improvements can be transferred from organizational processes to the products and services bought by consumers. This “embeddedness” allows quality to become a *private profit*. Environmental protection, on the other hand, is a *public good* and therefore cannot be (directly) transferred to products and services. From the point of view of consumer, environmental protection is about harming (or being harmed) less, rather than receiving more value for the purchase. Those who expected that the ISO 14000 series would have the same effect the ISO 9000 had on firms’ competitiveness fail to recognize this fundamental difference.

Nonetheless, this difference does not eliminate the potential firms have to profit from environmental investments. The reason lies in the growing importance “intangibles” have in the success of businesses.¹⁹ Even though the quality and environmental attributes of products and services are mostly intangibles, many of the values of quality relate more directly to their intrinsic characteristics or performance (the fuel economy of a car, for instance). The value of environmental and social responsibility is less objective because it depends on a set of consumer perceptions that relate only indirectly to intrinsic features of products or services (the impact of the fossil fuel consumed by a car on global warming). However, even if indirectly, consumers are increasingly expressing the value they attribute to environmental protection through shopping behavior. As ecological and social responsibility become increasingly important issues for society, consumers value the way organizations manage their production processes and supporting activities.²⁰ As the following sections show, an increasing number of clients value *how* organizations manage their processes independently on the quality or performance of products and services sold by them.

Generic Types of Competitive Environmental Strategies

The first step towards an answer to “When does it pay to be green?” requires the classification of environment-related investments according to their potential to become sources of competitive advantage.²¹ The framework presented in Figure 1 helps decouple the elements involved in competitive environmental management.²² This decoupling is fundamental for the identification of specific conditions in which corporate environmental strategies may improve the competitiveness of the firm.

The quadrants of Figure 1 represent a typology of specialized environmental strategies that corporations may adopt. The structure of the industry in which a firm operates, its position within that industry, the types of markets the

FIGURE 1. Generic Competitive Environmental Strategies

company serves, and its capabilities will suggest the appropriate competitive focus (organizational processes or products/services) and the potential source of competitive advantage (cost or differentiation) for a firm. The distinction between organizational processes and products/services is possible only because the four strategies can work independently. For instance, by being the first to certify its environmental management system, a firm may differentiate itself from competitors, while its products or services do not present any environmental features. Conversely, a firm may decide to sell products with eco-labels but not explore the green features of its organizational processes.

The framework has a subtle but very important facet. By their very nature, organizational processes are sets of interlinked activities, which are difficult to separate in practice. On the other hand, it is easier to identify and isolate a product or a service. In this framework, organizational processes tend to have a more encompassing scope than products or services. In other words, it is possible to use the framework to define a strategy for a single product or a portfolio of products/services. While it is possible to do the same with a set of organizational processes, such as a specialized production line, more often they refer to a manufacturing facility or the even the entire corporation.

The divisions between the four generic strategies are not rigid. They represent a stylized typology that makes it easier to identify where the competitive focus of environmental strategies might be hidden. However, even if the framework allows some “plasticity,” it reduces the current lack of clarity about the influence environmental investments have on competitive advantage. Because the distinction between competitive advantage based on processes

and products/services is indeed a tricky one, most managers tend to pursue more than one environmental strategy simultaneously. If these environmental strategies are not aligned, especially with the overall business strategy, firms may be wasting precious resources.

Strategy 1: Eco-Efficiency

In the early 1990s, Porter reemphasized that productivity is the key element for companies to gain competitiveness.²³ Organizations should be able to transform costs into profits by identifying concealed opportunities for innovation, leading to more efficient organizational systems. In later work, Porter and Claas van der Linde asserted that companies should promote resource productivity in the form of materials savings, increases in process yields, and better utilization of by-products—because waste consists, fundamentally, of an inefficient use of resources.²⁴ In their view, companies would only need to find hidden opportunities to profit from environmental investments and eventually transform such investments into sources of competitive advantage.

By the end of the 1990s, Amory Lovins, Hunter Lovins, and Paul Hawken readdressed resource productivity issues from a more technical perspective.²⁵ They demonstrated that by using eco-design and eco-efficiency measures, the potential of a new set of business practices to enhance resource productivity is so considerable that a new economic system may emerge from its application. The authors substantiate their argument by presenting examples of corporations that are increasing the productivity of natural resources, shifting to biologically inspired production models, moving to a solutions-based business model, and reinvesting in natural capital. Such practices would promote what the authors call “Natural Capitalism,” where regulatory and market mechanisms eventually succeed in making organizations internalize environmental costs.

Although the defenders of double dividends show the immense potential of profiting from eco-innovations, this potential depends on the context in which the firm is embedded as well as on its capabilities. In Figure 1, such distinction becomes clearer. Firms that need to concomitantly reduce the cost and the environmental impact of organizational processes should focus on Strategy 1—Eco-Efficiency.²⁶ Since cost reduction is crucial, however, most companies working on eco-efficiency strategies do so without much fanfare. For instance, most small and medium enterprises may simply not have enough resources to pay for EMS certification. However, financial constraints may not detract them from implementing a much simpler and less bureaucratic EMS than the ones using the guidelines of ISO 14001. Firms supplying a relatively small number of other firms may choose to avoid the costs of EMS certification and instead invite their clients to audit their systems. Overall, firms focusing on Strategy 1 will develop capabilities to continuously increase the productivity of their organizational processes while decreasing the environmental impact and the costs associated with them.

Through the reconfiguration of industrial systems, such strategies and practices can be pushed beyond the physical borders of firms. From the perspec-

tive of industrial ecology,²⁷ individual manufacturing processes are seen as parts of broader industrial systems, which should be optimized according to the ecological principles of efficiency. In practical terms, waste, by-products, and energy from one firm can feed processes in another, forming “closed-loop systems.” The application of industrial ecology requires not just an interdependent flow of materials, processes, and energy inside an industrial cluster, but also entails new forms of collaboration between member firms. Even though the complexities involved in the design and implementation of closed-loop systems limit their diffusion, collaborative schemes in the USA, the Netherlands, UK, Sweden, and Australia are showing positive results.²⁸

In general terms, eco-efficiency practices can generate some level of savings in virtually every firm. Particular circumstances will result in some being rewarded more than others. Preliminary empirical evidence suggest that eco-efficiency strategies have greater potential to generate competitive advantage in firms that supply industrial markets, face relatively high levels of processing costs, and generate wastes and/or by-products. Many firms in the food and beverage industries fall into this category. In such circumstances, since final consumers may not pay for environmental protection, the focus on an eco-efficiency strategy simply makes business sense. By humbly working towards eco-efficiency within the firm as well beyond its own borders, process-intensive firms will be saving money while decreasing the environmental impact of their processes.

Strategy 2: Beyond Compliance Leadership

Some companies not only want to increase the efficiency of their organizational processes, but they also want customers and the general public to acknowledge their efforts. They are willing, for instance, to spend money in the certification of their EMS, subscribe to business codes of environmental management,²⁹ and invest in unprofitable environmental improvements. They are also willing to pay to publicize these efforts.

The adoption of schemes such as the CERES Principles, the Global Compact, or the Global Reporting Initiative can eventually differentiate corporations from competitors as well as produce some positive outcomes for the firm.³⁰ Corporate image, for instance, might be enhanced, influencing a positive public opinion about organizational practices.

For companies supplying products or services to other corporations (industrial markets), beyond compliance practices such as a certified EMS have a clear value for the client organization. When automakers Ford, General Motors, and Toyota announced in 1999 that they would require their suppliers to certify their EMS according to ISO 14001, the first ones to obtain certification certainly had an advantage.³¹ EMS certification represented a first-mover advantage for a relatively short period; by 2002, it became a mere “license to operate” in the industry. Nonetheless, as in almost every sphere of management, competitive advantage is indeed obtained in a relatively short window of opportunity. As firms within an industry adopt more ambitious practices, the beyond compliance

frontier moves further, and what once was a differentiator (such as a certified EMS) becomes a “normal” and non-competitive practice. In Scandinavia, for instance, where practically all dairy producers hold ISO 14001 certification, beyond compliance is moving towards more demanding issues, such as voluntary standards for animal rights. In this case, beyond compliance leadership requires firms to develop competences in ethics and animal welfare.

Organizational processes that go beyond compliance might exert indirect influence on the image of a firm and eventually affect the shopping behavior of consumers. The decision by Shell to dump the Brent Spar oilrig in the North Sea created a clear image problem that resulted in European consumers boycotting their products.³² The Brent Spar case showed that the Shell’s environmental performance was becoming increasingly important to stakeholders, which contributed to a change in Shell’s rig disposal policy as well as its communication strategy. The company now considers environmental reporting an essential communication tool to address such concerns. By pursuing a strategy based on voluntary standards of environmental excellence, Shell has demonstrated leadership among companies that have significantly improved the image consumers and shareholders have about their operations.³³

Yet, the Brent Spar case also showed that consumer response to organizational practices is more prone to happen around a specific concern. In order to respond to a particular environmental matter that relates to production processes, the public needs to be “sensitized.” Among the multitude of variables influencing consumer behavior, environmental concerns become important to consumers when a charismatic leader or a controversial event mobilizes public opinion.³⁴

Strategy 3: Eco-Branding

Marketing differentiation based on the environmental attributes of products constitutes the most straightforward strategy of the four presented in Figure 1. Today, ecology-oriented products and services represent a defined market niche explored by firms worldwide. In Sweden, where consumer environmental awareness is remarkably high, one of largest retailer of food and domestic products developed a creative way of differentiating a portfolio of eco-products. Coop Sverige,³⁵ the owner of 373 Konsum (city supermarkets with a clear orientation towards ecological excellence) and 43 Forum hypermarkets, created an ecological brand, Änglamark, to communicate the image of environmental responsibility of food and domestic products (from 20 products in 1991 to 309 products in 2004).³⁶ Änglamark sales increased from approximately \$3.3 million in 1991 to \$44 million in 2004.

In broad terms, “a firm differentiates itself from its competitors when it provides something unique that is valuable to buyers beyond simply offering a low price.”³⁷ Environmental differentiation is not for all.

Firms that intend to generate competitive advantage from strategies based on eco-branding need to observe three basic pre-requisites: consumers must be willing to pay for the costs of ecological differentiation; reliable information

about product's environmental performance must be available to the consumer; and the differentiation should be difficult to be imitated by competitors.³⁸

Consumers need to perceive a clear benefit for their purchase. In the case of industrial markets, the benefits are normally translated into cost savings, better performance of the product, and a cost reduction of risk management. For instance, equipment and machinery that consume less energy and reprocess by-products might reduce the costs of operation for the client. The vendor can explore these ecological attributes commercially (less environmental impact) that result in gains during product use. In case the company is not working in a price-sensitive market, a price premium can be obtained. In consumer markets, the attributes associated with the products allow companies to charge higher prices for eco-branded or eco-labeled products. Hence, in both cases—industrial and consumer markets—it is essential that the consumer is willing to pay for ecological differentiation.

Credible information is the second pre-requisite for environmental product differentiation. Scandinavian countries, in particular, constitute a demonstration case of the increasing importance of eco-labeling. In Sweden, more than 3,200 products use the "KRAV" eco-label for organically grown food as a way to differentiate themselves from competitors.³⁹ Corporations are able to charge between 10% to 100% higher prices than similar products that are not certified by KRAV.⁴⁰ The fact that KRAV is accredited by the International Federation of Organic Agriculture Movements and is controlled by the Swedish Board of Agriculture confers a high degree of credibility to products with this label. This credibility was the rationale for Änglamark food products.

The third requirement for environmental product differentiation involves barriers to imitation. If product environmental differentiation is to be successful, environmental innovation should not be easily replicated. The innovative marketing strategy of the Swedish supermarket chain characterizes this point. Although competitors could easily replicate most products sold through Änglamark, imitating the eco-brand is impractical.

Strategy 4: Environmental Cost Leadership

Obtaining a price premium for ecologically oriented products may be the natural solution for many companies. After all, if "being green" costs more, a differentiation strategy is the only way out for the company to pay off ecological investments. This is acceptable when niche markets are readily available for them to obtain price premiums, but what about the vast majority of markets with reduced scope for differentiation? Does this mean that products or services that can only compete on price will never be able to offset environmental investments?

Take the packaging industry as an example. Although there is some scope for differentiation, competition is heavily based on price. Regulatory measures, such as post-consumer taxes, have been on the rise in developed countries and are only expected to be higher in the coming decades. In other words, packaging material will have to be competitive on price *and* environmental performance.

The combination of low margins with the saturation of mature markets in many industrialized countries increases rivalry and places packaging manufacturers under extreme pressure to reduce costs. Add to this reality an increasingly demanding customer and a constant tightening of environmental regulations. For firms operating in such a context, focusing on radical product innovation, such as material substitution and dematerialization, makes more business sense than focusing on incremental process innovation.

One such case is Ecolean, a relatively young packaging manufacturer. Ecolean started its operation in 1997 in Helsingborg in southern Sweden. The company has representatives in 20 (mainly developing) countries, having grown an average of 50% per year since it was founded. In 2004, Ecolean sold 250 million units of packaging, generating around \$30 million in revenues.⁴¹ Ecolean's main products are filling systems and stand-up pouches for liquid foodstuffs, which predominantly are sold to developing countries. In both western and eastern markets, Ecolean supplies wrapping films for butter in France and the UK; for sausages in UK; form-fill seal foils and films for dip sauces in portion packs for McDonald's outlets in the UK, Scandinavia, and Russia; and flow-pack films for potato chips in Sweden. A total of 2,000 tons of such packaging films was sold during 2005.

What explains the impressive growth of Ecolean is a clear Environmental Cost strategy. On average, Ecolean packaging not only costs 25% less than competitors', but also presents the lowest environmental impact. This is possible because Ecolean adopted a radically new proposal for packaging. Between 40 and 60% of traditional "plastic" (polyolefins—high density polyethylene and polypropylene) used in packaging was substituted by calcium carbonate (most commonly known as "chalk" or "lime") as raw material. Besides being one of the most abundant minerals in the earth's crust, calcium carbonate does not present any toxicity—the reason for the FDA (Federal Drug Administration) to classify it as "GRAS" (General Recognized As Safe for human beings).⁴²

The environmental advantages of substituting polyolefins (HDPE and PP) with chalk are many. A life cycle analysis concluded that the environmental impact of Ecolean products is substantially lower than that of competing materials during all phases of the product life cycle.⁴³ Besides, the use of calcium carbonate results in Ecolean packaging being degradable under certain conditions (it needs to be exposed to light). However, since most solid waste in developing countries (the main market for Ecolean products) is landfilled or incinerated, the company does not make any claims in this respect, nor does it make claims about the additional benefits of Ecolean packaging when incinerated (the calcium carbonate reduces the acidity of fumes).

Since Ecolean is less damaging than other products, one may wonder why the company is not more aggressive about marketing the environmental attributes of its products. The answer is quite simple: because the clients would not pay for it. Although clients consider the environmental features of Ecolean products a "good thing," the product has first and foremost to fulfill "function requirements" at a very competitive price. Nevertheless, such a narrow view

might change as oil prices grow and post-consumer waste regulations become more demanding. Government representatives in China, for instance—where Ecolean installed a new factory in 2001—are extremely interested in the product because of its lower dependence on petrochemicals and the abundance of calcium carbonate in Chinese soil. The environmental attributes of the packaging are slowly giving Ecolean a first mover advantage. Of course, competitors can eventually copy this innovation in material substitution. However, since Ecolean also manufactures and sells “filling machines” for its own stand-up pouch (which has been patented), it has acquired substantial competences in the use of the new raw material.

Although Ecolean is an instructive example of environmental cost leadership strategy, the need for radical innovations in product design partially explains the relative scarcity of such firms. Nonetheless, when the innovation is extended to the “revenue basis” of the firm, and there is a large number under development, they have the potential not only to become a source of competitive advantage, but also to revolutionize industries. They fall under the category of “product-service systems.”⁴⁴ By shifting from selling products to selling the function provided by them (service), some firms can reduce both economic costs *and* environmental impacts.

The case of Chemical Management Services (CMS) is also instructive in this respect. CMS emerged out of the need factories have to manage large amounts of chemicals used in manufacturing, maintenance, and cleaning of equipment as well as their associated environmental impact. By reducing the use of chemicals, factories can reduce costs, emissions, and the exposure to liability. The Chemical Strategies Partnership, a non-profit organization based in San Francisco, California, has been promoting CMS.⁴⁵ Among several cases studies presented by the Partnership is the example of the “Pay as Painted” contract between PPG, a supplier of chemical services, and the automaker Chrysler. PPG provides services for body surface preparation, treatment, and coating chemicals, and it owns the chemicals until they are used. Since PPG is not paid until the car is produced, it has a vested interest in reducing the amount of paint used in each car. According to the Partnership, Chrysler saved \$1 million after the first year and reduced volatile organic compounds emissions.⁴⁶ Again, since PPG is paid by the painted car instead of by the gallon of paint, the company is interested in the overall efficiency of the system. In other words, the reduction of consumption of chemicals is beneficial for both the supplier (PPG) and the client (Chrysler). Overall, this is expected to reduce both the costs of the product/service *and* its overall environmental impact.

Strategic Choices: Identifying Subtle Trade-Offs

The boundaries between the four possible strategies are hypothetical. In reality, there is an undeniable relationship between organizational processes and products/services. After all, products have to be produced in one way or another, and gains in process productivity can be transferred to products. Hence, if

interactions occur in reality, why should anyone consider the theoretical distinctions between processes and products/services as presented in here?

Although subtle, there are indeed very practical reasons to make such distinctions. Finding opportunities beyond the “low hanging fruit” requires a more detailed analysis of the elements involved in competitive environmental management. By definition, analysis refers to the breakdown of an issue into its components. In this case, the separation between processes and products/services allows for the identification of the trade-offs between the strategic choices available to managers. This is, according to Porter, a fundamental condition for strategy: a sustainable strategic position requires managers to choose between trade-offs—in the case of competitive environmental management, between the *strategic focus* on processes or products/services.⁴⁷

In the case of the distinction between Strategy 1 (eco-efficiency) and Strategy 4 (environmental cost leadership), since the optimization of an industrial process can contribute to the reduction of the final price of a product and increase its chance to compete in the marketplace, one could claim that any distinction between processes and products does not make any sense. This would be correct if eco-efficiencies in processes would be enough to make a product an environmental cost leader. However, this is rarely the case. Environmental cost leadership requires a firm to achieve both the lowest cost *and* the lowest environmental impact of the products in its category. As noted, substantial gains in process-oriented resource productivity are only part of the equation; it has to be matched with eco-design, product dematerialization, or new models of commercialization, such as Product Service Systems. In the case of Ecolean, the production processes were adapted to the use of the new material (calcium carbonate). Although Ecolean has good environmental practices during manufacturing, it does not have ISO 14001 certification simply because the clients would not pay any extra money for such certification. In this case, the reduction of both the final cost of the product and its environmental impact is almost entirely a result of product substitution, rather than eco-efficiency of processes. In other words, the competitive focus is on the product.

Some skeptics may not be convinced by this example. They could question whether every company working towards eco-efficiency is not prone to develop environmental cost products and, once again, make the division between Strategy 1 and Strategy 4 meaningless. Indeed, a firm may have competences to champion eco-efficiencies during production and eventually cut the final cost of its products. These products may, however, still present high levels of environmental impact and, therefore, would not be able to become environmental cost leaders. In fact, this is the case of the vast majority of mass volume producers today. Economies of scale in manufacturing have forced companies to optimize their systems of production and use similar processes for a wide range of products. In the automobile industry, for example, platform sharing became a common practice in the 1990s. Today, gains in process productivity will affect a wide range of car models, not just one. For such companies, focusing on the eco-efficiencies of the production processes is possibly the best strategic choice—at

least until they can develop a product/service that can become an environmental cost leader. By focusing on Strategy 1, the company will be able to transfer eco-efficiency gains to several products, increasing its overall competitiveness.

Considering that the ecological attributes of most eco-oriented products rely on their mode of production, an objection may be also raised for the distinction between Strategies 2 and 3. Many of the ecological attributes of Ånglamark products (Strategy 3), for instance, are located in their methods of production—more specifically, in the agricultural (e.g., organic food) or industrial (e.g., unbleached paper for coffee filters) production processes. When considering the purchase of a pack of wheat flour, the consumer is evaluating the intrinsic features of the flour, which has been influenced by its mode of production. However, there is obviously a close relationship between the characteristics of the products and the processes used in their production. Nonetheless, the consumer is not judging the organizational processes of the supermarkets that sell the product (in this case, Konsum and Forum). For consumers, it would make little difference if these organizations have the ISO 14001 certification. From this perspective, the distinction between the organizational processes and products is crucial for the optimization of environment-related investments made by Konsum and Forum.

Finally, managers or academics may also question the distinction made between cost and differentiation of organizational processes (Strategies 1 and 2). They may argue that the work towards eco-efficiency can facilitate the development and reduce the implementation costs of an EMS. Conversely, a firm might use its ISO 14001 certification to differentiate from competitors, but the process of implementing the EMS might uncover potential areas in which an increase in resource productivity can be obtained.⁴⁸ If the strategic choices reinforce each other, what would be the reason to establish a distinction between competitive advantage based on cost (Strategy 1) or differentiation (Strategy 2) of organizational processes? None, if opportunities for “double dividends” were always prevalent. However, the reality is that EMS certification is costly and opportunities for cost savings are exceptions rather than the norm. Confronted with the trade-offs between the relatively higher costs associated with EMS certification (differentiation), and the focus on eco-efficiency of industrial processes (costs), managers will have to choose between Strategy 1 or Strategy 2. If the conditions for process-oriented differentiation are not available to the firm, the choice of focusing on eco-efficiency would emerge naturally from the analysis based on the framework.

Conclusion

Similar to the experience with TQM, proactive firms will do their best to reduce their environmental impact. However, if environmental issues are to be seen as business issues, then good corporate citizenship is not enough. If strategy is about “doing better by being different,” as Joan Magretta put it,⁴⁹ then an environmental strategy requires more than doing well. Managers will need to

identify the areas in which firms can focus their environmental efforts in the pursuit of competitive advantage. Fundamentally, they have to ask: Who is valuing my environmental investments?

Managers are increasingly being requested to base corporate environmental strategies on more solid justifications. In the past few years, they have also been bombarded with “stage models,” tools, techniques, schemes, standards, and demonstration cases of best environmental practices. Although awareness about environmental issues in business has certainly risen, managers have been left wondering what they should do first, and why. Should they invest in EMS certification? develop a life cycle analysis for a specific line of products? subscribe to an eco-label program? develop an eco-brand? Many do “a bit of everything” and spend precious resources without any sound rationale.

What managers need is a basis from which they can prioritize environmental investments. More broadly, they need to align these investments with the generic strategy of the company. The framework presented here can help managers to define and prioritize areas of organizational action, optimize the overall economic return on environmental investments, and transform these investments into sources of competitive advantage.

Notes

1. The debate was triggered by the publication of the article: Michael Porter, “America’s Green Strategy,” *Scientific American* (April 1991), p. 96. The early stages of the debate can be found in: Richard A. Clarke et al., “The Challenge of Going Green,” *Harvard Business Review*, 72/4 (July/August 1994): 37-50; Noah Walley and Bradley Whitehead, “It’s Not Easy Being Green,” *Harvard Business Review*, 72/3 (May/June 1994): 46-52. See also the most elaborated article of Michael Porter and Claas Van der Linde “Green and Competitive: Ending the Stalemate,” *Harvard Business Review*, 73/5 (September/October 1995): 120-133; and the subsequent criticism of Karen Palmer, Wallace Oates, and Paul Portney, “Tightening Environmental Standards: The Benefits-Cost or the No-Cost Paradigm?” *Journal of Economic Perspectives*, 9/4 (1995): 119-132.
2. In this article, the term “environmental investment” relates to a wide array of practices of firms aiming to reduce direct or indirect environmental impacts of organizational processes, as well as impacts associated with the entire life cycle of products or services.
3. Forest Reinhardt, “Environmental Product Differentiation: Implications for Corporate Strategy,” *California Management Review*, 40/4 (Summer 1998): 43-73.
4. Forest Reinhardt, “Market Failure and the Environmental Policies of Firms: Economic Rationales for ‘Beyond Compliance’ Behavior,” *Journal of Industrial Ecology*, 3/1 (1999): 9-21.
5. In the United States: Andrew King and Michael Lenox, “Does It Really Pay to be Green?” *Journal of Industrial Ecology*, 5 (2002): 105-117. In Europe: Marcus Wagner, “Does It Pay to be Eco-efficient in the European Energy Supply Industry?” *Zeitschrift für Energiewirtschaft*, (2003): 309-318; Marcus Wagner, Stefan Schaltegger, and Walter Wehrmeyer, “The Relationship Between Environmental and Economic Performance of Firms: What Does the Theory Propose and What Does the Empirical Evidence Tell Us?” *Corporate Environmental Management* (2003). More recently, Sharma and Aragon-Correa presented an overview of the influences of corporate environmental management in the competitiveness of firms. Sanjay Sharma and Alberto Aragon-Correa, *A Corporate Environmental Strategy and Competitive Advantage* (Cheltenham: Edward Elgar Publishing, 2005).
6. Benjamin Bonifant, Matthew Arnold, and Frederick Long, “Gaining Competitive Advantage Through Environmental Investments,” *Business Horizons*, 38/4 (July/August 1995): 37-47.
7. *California Management Review*, 43/3 (Spring 2001).
8. *California Management Review*, 46/2 (Winter 2004); Sharma and Aragon-Correa, op. cit.

9. Michael Porter, "What Is Strategy?" *Harvard Business Review*, 74/6 (November/December 1996): 61-78
10. A generic overview of the various schools of strategic management is presented by Henry Mintzberg, Bruce Ahlstrand, and Joseph Lampel, *Strategy Safari: A Guided Tour through the Wilds of Strategic Management* (New York, NY: The Free Press, 1998).
11. Michael Porter, *Competitive Strategy: Techniques for Analyzing Industries and Competitors* (New York, NY: The Free Press, 1980).
12. Michael Porter, "Towards a Dynamic Theory of Strategy," *Strategic Management Journal*, 12 (1991): 95-117.
13. Work on the resource-based view of the firm in strategic management began with the articles of Birger Wernerfelt, "A Resource-Based View of the Firm," *Strategic Management Journal*, 5 (1984): 171-180; Richard Rumelt, "Toward a Strategic Theory of the Firm," in Robert Boyden Lamb, ed., *Competitive Strategic Management* (Englewood Cliffs, NJ: Prentice Hall, 1984); Jay Barney, "Strategic Factor Markets: Expectations, Luck, and Business Strategy," *Management Science*, 42 (1986): 1231-1241. A "situational" review of the resource-based view can be found in Jay Barney and William Hesterly, "Organizational Economics: Understanding the Relationship Between Organizations and Economic Analysis," in Stewart Clegg, Cynthia Hardy, and Walter Nord, eds., *Handbook of Organization Studies* (London: Sage, 1996), pp. 115-147.
14. The concept of *organizational processes* employed here encompasses both the activities of controlling manufacturing, *production*, or *industrial processes*, as well as generic *management processes*, which relate mainly—but are not limited to—(bureaucratic) activities performed by the various members of an organization. For an overview of classic organizational processes, see Richard Hall, *Organizations: Structures, Processes, and Outcomes* (Upper Saddle River: Prentice Hall, 1999).
15. The TQM movement was initiated by W. Edwards Deming and Joseph Juran, who spread the ideas of *defect prevention* through the control of production and business processes and the elimination of causes of major variations of quality in products or services commercialized by firms. Because of its practical and academic ramifications in the 1980s and first half of 1990s, TQM became one of the most influential management phenomena of the second half of the 20th century. During that period, a large number of handbooks and academic papers were published on the topic. Today, TQM principles and methods are part of the normal curriculum in management schools and textbooks. For an overview of quality and quality principles in management, see A. Blanton Godfrey and Joseph M. Juran, *Juran's Quality Handbook* (New York, NY: McGraw-Hill, 1998).
16. Sandra A. Waddock, Charles Bodwell, and Samuel B. Graves, "Responsibility: The New Business Imperative," *Academy of Management Executive*, 16/2 (2002): 132-148.
17. Michael Berry and Denis Rindinelli, "Proactive Corporate Environmental Management: A New Industrial Revolution," *Academy of Management Executive*, 12/2 (1998): 38-50; Reinhardt (1999), *op. cit.*
18. Sandra A. Waddock and Charles Bodwell, "Managing Responsibility: What Can Be Learned from the Quality Movement?" *California Management Review*, 47/1 (Fall 2004): 25-37.
19. Robert Kaplan and David Norton, *Strategy Maps* (Boston, MA: Harvard Business School Press, 2004); Robert Kaplan and David Norton, *The Strategy-Focused Organization* (Boston, MA: Harvard Business School Press, 2001). Research in this area has tried to link environment-related intangibles to the financial bottom line. See, for example, Frank Figge, Tobias Hann, Stefan Shaltegger, and Marcus Wagner, "The Sustainability Balanced Scorecard: Linking Sustainability Management to Business Strategy," *Business Strategy and the Environment*, 11 (2002): 269-284. See also Francesco Zingales, Anastasia O'Rourke, and Renato J. Orsato, "Environment and Socio-Related Scorecard: Exploration of Critical Issues," INSEAD working paper, 2002/47/CMER.
20. Magretta offers an excellent account of *value creation* in organizations. Joan Magretta, *What Management Is: How It Works and Why It's Everyone's Business* (London: Profile Books, 2003).
21. Data presented here have been drawn from extensive research in the automobile industry and developed by Orsato. Renato J. Orsato, "The Ecological Modernization of Industry: Developing Multi-disciplinary Research on Organization and Environment," doctoral dissertation, UTS, Sydney, Australia, 2001. Selected examples are also based on data collected during the period 1999-2004 as part of the action-research program at the International Institute for Industrial Environmental Economics (IIIEE).

22. The framework should not be seen as a “stage model,” such as those presented by Hart and by Dunphy and Griffiths, among others. Stewart Hart, “Beyond Greening: Strategies for a Sustainable World,” *Harvard Business Review*, 75/1 (January/February, 1997): 66-76; Dexter Dunphy and Andrew Griffiths, *Sustainable Corporation: Organisational Renewal in Australia* (Frenchs Forest, Australia: Allen & Unwin, 1998). These stage models normally focus on the societal needs for more eco-friendly corporate behavior, rather than on principles of strategic management to guide corporate environmental strategies, as this article does. Stage models also presuppose that firms would go from *low* to *high* ambition strategies. For instance, the classic framework of Hunt and Auster specifies a five-stage development continuum ranging from organizations that address environmental concerns with band-aid solutions (beginners) to organizations that implement fully integrative systems (proactivists). They presuppose that almost every company can pass through those stages. In the framework presented here, on the other hand, there is no pathway from “low” to “high” strategies. The strategies do not present increasing degrees of complexity but rather are dependent on and, therefore, applicable to certain conditions. In this respect, the framework can be characterized as a “choice model” rather than a “stage model.” Charles Hunt and E. Auster, “Proactive Environmental Management: Avoiding the Toxic Trap,” *Sloan Management Review*, 31 (1990): 7-18.
23. Michael Porter, *The Competitive Advantage of Nations* (London: The MacMillan Press, 1990).
24. Porter and Van der Linde, *op. cit.*
25. Paul Hawken, Amory Lovins, and Hunter Lovins, *Natural Capitalism: The Next Industrial Revolution* (London: Earthscan, 1999). See also previous work on resource productivity developed by E. von Weizsäcker, Amory Lovins, and Hunter Lovins, *Factor Four: Doubling Wealth—Halving Resource Use* (Sydney: Allen & Unwin, 1997).
26. For a review of the concept of eco-efficiency, see Chris Ryan, *Digital Eco-sense: Sustainability and ICT—A New Terrain for Innovation* (Melbourne: Lab 3000, 2004). See also the special issue on “Eco-efficiency and Industrial Ecology” in the *Journal of Industrial Ecology*, 9/4 (Fall 2005).
27. A review of the main concepts and research areas of industrial ecology can be found in Frank den Hond, “Industrial Ecology: A Review,” *Regional Environmental Change*, 1/2 (2000): 60-69; More recent developments can be found in the *Journal of Industrial Ecology* or the bi-annual meeting of the International Society for Industrial Ecology (ISIE).
28. An analysis of potential for industrial ecosystems can be found in Catherine Hardy and Thomas E. Graedel, “Industrial Ecosystems as Food Webs,” *Journal of Industrial Ecology*, 6/1 (Winter 2002): 29-38. An example of industrial ecosystem project with partial success is the Landskrona project in Sweden. For details, see <www.iiiee.lu.se>.
29. Jennifer Nash and John Ehrenfeld, “Codes of Environmental Practice: Assessing Their Potential as a Tool for Change,” *Annual Review Energy Environment*, 22 (1997): 487-535.
30. CERES: <www.ceres.org>; Global Compact: <www.un.org/Depts/ptd/global.htm>; Global Reporting Initiative: <www.globalreporting.org/>.
31. Chad Nehrt, “Maintainability of First Mover Advantages when Environmental Regulations Differ Between Countries,” *Academy of Management Review*, 23/1 (1998): 77-97.
32. In 1995, Shell wanted to sink obsolete oil rigs in the North Sea but the subsequent outcry led by Greenpeace enticed consumers to boycott Shell petrol, resulting in a 60% downfall in sales in Germany alone. The pressure from consumers and the general public induced Shell to shift its strategy and the oil platform Brent Spar, instead of being sunk in deep-sea waters, was dismantled on land. See Lisa Dickson and Alistair McCulloch, “Shell, The Brent Spar and Greenpeace: A Doomed Tryst?” *Environmental Politics*, 5 (1996).
33. Ans Kolk, “Green Reporting,” *Harvard Business Review*, 78/1 (January/February 2000): 15-16.
34. A basic explanation of the role of “agency” in business-environment relationships is provided by Renato J. Orsato and Stewart R. Clegg, “The Political Ecology of Organizations: Toward a Framework for Analyzing Business-Environment Relationships,” *Organization and Environment*, 12/3 (1999): 263-279. See also Renato J. Orsato, Frank den Hond, and Stewart Clegg, “The Political Ecology of Automobile Recycling in Europe,” *Organization Studies*, 23/4 (2002): 639-665; Stewart Clegg, *Frameworks of Power* (London: Sage, 1989).
35. Coop Sverige is a subsidiary of Coop Norden, owned by the Swedish, Danish, and Norwegian consumer cooperatives.
36. Information about Änglamark (in Swedish) can be found at <www.anglamark.com>. See also Andrea Öström, “Environmental Differentiation and Competitiveness: The Case of the Food and Drink Industry,” IIIIEE Dissertations, Lund, Sweden, 2003. See also Renato J.

- Orsato and Andrea Öström, "Eco-branding: The Case of Änglamark," INSEAD Teaching Cases, 09/2005-5314.
37. Michael Porter, *Competitive Advantage: Creating and Sustaining Superior Performance* (London: Free Press, 1985), p. 120.
 38. Forest Reinhardt has previously articulated the specific conditions for successful ecological differentiation strategies. For this reason, the examples used in this section only intend to summarize the considerations that have been sufficiently elaborated elsewhere and eventually make it easier for those who are not so familiar with the pre-requisites of ecologically differentiation of products. See Reinhardt (1998), op. cit. See also Forest Reinhardt, "Bringing the Environment Down to Earth," *Harvard Business Review*, 77/4 (July/August 1999): 149-157; Reinhardt (1999), op. cit.
 39. *Kontrollföreningen För Ecologisk Odling*.
 40. For an overview of KRAV, and the general situation of organically grown cereals used for the production of bread in Sweden, see Pia Heidenmark, "Going Organic? A Comparative Study of Environmental Product Development Strategies along Two Swedish Bread Supply Chains," IIIIEE Dissertations, Lund, Sweden, 2000.
 41. Information supplied by Mr. Per Gustafsson (President Ecolean Group) and Mr. Per Gassner (Environmental and Product Director).
 42. 3.5×10^{17} tones well distributed around the planet.
 43. The life cycle analysis can be downloaded from the Ecolean web site: <www.ecolean.se>.
 44. Several examples of Product Service Systems can be found in Oksana Mont, "Product-Service Systems: Panacea or Myth?" doctoral dissertation IIIIEE, Lund, Sweden, 2004; Ryan, op. cit.
 45. <www.chemicalstrategies.org/>, March 2005.
 46. More details of the case can be found at <www.chemicalstrategies.org/case_studies.htm>.
 47. Porter (1996), op. cit.
 48. Charles Corbett and David Kirsh, "ISO 14000: An Agnostic's Report from the Front Line," *ISO 9000 + ISO 14000 News*, 2 (2000): 4-17. Richard Florida and Derek Davidson, "Gaining From Green Management: Environmental Management Systems Inside and Outside the Factory," *California Management Review*, 43/3 (Spring 2001): 64-85.
 49. Joan Magretta, *What Management Is: How It Works and Why It's Everyone's Business* (London: Profile Books, 2003)

Copyright of *California Management Review* is the property of *California Management Review* and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.