

Accounting for Sustainability



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Green Accounting: creating a monetary value for environmental factors and factoring sustainability costs into financial results

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Abstract:

This paper reports on a study of how, in a changing world, the environment is more than ever playing a bigger role in corporations and their strategies. Incorporating environmental strategy into a company's business strategy can evolve the company's reputation and competitive advantage as well as profit the earth and the corporation. This paper's main focus is on putting a monetary value on something as intangible as the environment and its benefits and how that value has helped companies focus on their environmental policies and programs. This paper also touches upon the topic of how green initiatives can help a company increase their bottom line using Green Accounting. It is important to understand the role the environment plays on stakeholders and how creating sustainable practices will have a significant impact on how green initiatives should be treated. Businesses and governments need to understand both how to value environmental costs and benefits, such as pollution, emissions and waste and how stakeholders value environmental goods that have no monetary market price.

In this paper I will argue that by encouraging companies to account for their carbon emissions, water disclosure and waste management and more specifically how putting those values into quantitative data will help companies realize a competitive advantage and perhaps an additional profit. This paper will strive to explain and understand the effects of the green culture on big corporations and the effects it has on the structure and success of the companies that implement green initiatives. The study is innately and invariably linked to the development of sustainability initiatives with special emphasis on managerial accounting practices such as management control systems and also on current environmental economic tools. This paper is

based on individual research. I approached this question by using both primary and secondary sources, using literature from journalistic perspectives to exploratory research in order to fully support and argue the value of social responsibility. In the conclusion of this paper I will discuss examples of companies who are currently practicing good environmental policies and how this behavior has become central to the facilitation of impacting the business strategy and the relationships of their stakeholders.

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Accounting for Sustainability:

Green Accounting: factoring environmental costs into financial results

*A two-sided argument on how environmental accounting will path the way to a more sustainable future
and also help companies represent their competitive advantage*

1. Introduction

The world that we live in is now seeing a shift in environmental policies taking place. We are living through a transformation in every sphere of life, from religion to politics to human behavior and most importantly in environmental trends. The role of the environment of a business' operations has evolved drastically. This century we have seen a change in the way we value the environment and how that value is affecting institutions and its stakeholders. How can we transform the way seven billion people live to conform to the limits of our finite planet?

One of the primary issues faced by corporations today is the environmental position a firm should take and how much action, if any at all, should a corporation undertake in becoming more "green". Companies are creating green programs that reduce waste, preserve the environment and reduce pollutants as well as testing energy efficient cooling and heating system, as they become more and more conscious of their impact on the environment.¹ On top of all those green initiatives and goals, it is equally as important to accurately report and quantify the changes and effects being made. However, putting a financial number on an

¹ Jick, Todd, and Maury Peiperl. "Module 5 Leading Change: The Personal Side." *Managing Change: Cases and Concepts*. Boston ;: McGraw-Hill/Irwin, 2003. 416-33. Print.

impact that is intangible is difficult as it is; putting a monetary value on something that doesn't have a market place and is highly subjective in nature is even more challenging.

Sustainability reporting is a key element in understanding the impact and effect of environmental programs within corporations. Green accounting or environmental accounting at the corporate level is defined as "the identification and monetary measurement of the traditional private internal costs that directly affect the bottom line of the balance sheet."² With monetary numbers, the benefits and costs of a going green can be more clearly seen and also help corporations pay more attention to the impact it can make or is making.

2. Why go green?

According to a PRI and UNEP Finance Initiative report, \$6.6 trillion of environmental damage is caused by humans every year, and in 2008 approximately one-third of that was caused by the actions of the world's 3000 largest publicly traded companies.³ Recognizing this fact, many have begun to call on investors to leverage their power over firms to induce more environmentally responsible behavior. In the article, "The Sustainability Imperative," Lubin and Esty argue that the emergence of sustainability on the business agenda is a "megatrend" comparable to other mega changes such as globalization and the emergence of the information

² "Green Accounting as the Path to a Sustainable Future | GreenBiz.com." *Green Business News, Resources, and Sustainability Career Tools | GreenBiz.com*. The European Commission, 27 Apr. 2011. Web. 07 Nov. 2011. <<http://www.greenbiz.com/blog/2011/04/27/green-accounting-path-sustainable-future>>.

³ *Universal Ownership*. 2010. UNEP Finance Initiative and PRI. Edited by Adam Garfunkel.

society.⁴ “Managers can no longer afford to ignore sustainability as a central factor in their companies’ long- term competitiveness.”⁵

In a changing world that has seen increasing trends in becoming more sustainable and also more conscious of one’s carbon footprint, going green can be a great competitive advantage for companies and it can also attract positive buzz for a company’s reputation. “High-quality sustainability reporting can be a competitive advantage”⁶ and it is also an effective way to communicate these advantages to various stakeholders. Companies may perceive sustainability as an opportunity for “green PR” in which they can also gain significant opportunities for business growth, innovation, and organizational change.⁷

There is a conception that balancing financial performance and corporate sustainability is a challenge in which there exists a trade-off between what’s “good for the business” and what’s “good for the environment and society.” Many corporations view sustainability and corporate social responsibility as an extraneous cost in a cost-cutting, competitive economic environment.⁸ However, there are also strong financial rationales for investors to make a shift towards more green, or sustainable, investment practices on top of just environmental perseverance.⁹ According to the same PRI/UNEP Finance Initiative report, more than 50% of earnings in a standard, non-sustainably invested portfolio could be at risk from environmental

⁴ Lubin, David A., and Daniel C. Esty. 2010. “The Sustainability Imperative.” *The Harvard Business Review* (May): 42-50.

⁵ Ibid. pg 44

⁶ PriceWaterhouseCoopers. *Communicating Your Competitive Advantage*. Delaware: PriceWaterhouseCoopers, 2011. Print.

⁷ Busco, Cristiano, Mark L. Frigo, Emilia L. Leon, and Angelo Riccaboni. "Cleaning Up." *Strategic Finance* July 2010: 29-37. Web. 28 Oct. 2011.

⁸ Ibid

⁹ Robins, Nick and Cary Krosinsky. 2009. “After the Credit Crunch.” *Journal of International Public Policy Research*.

impacts in the not too distant future.¹⁰ Perhaps the greatest threat to economic activity in the next century is climate change, which poses a threat to an enormous range of activities and industries in the economy.

To take it one step further, going green, preserving the environment, reducing pollutants and more importantly how this social conscience act, will save companies money. As Brigham McNaughton, a Senior Associate, at the Sustainable Business Solutions department at PricewaterhouseCoopers said, "Investors will invest in your company if you have a good reputation which extends to not only brand name but environmental responsibility. It also makes it easier to get capital from investors/banks,"¹¹ when talking about ethical investing.

Businesses around the world are beginning to wake up to the imperative of climate change and other environmental concerns.¹² However, assuming that companies will go green based on these factors is a highly optimistic view. But if companies can somehow put a monetary value of these changes, they might be more inclined to implement sustainability schemes.

3. Valuation of ecosystem services

In the field of environmental economics, valuing biodiversity and ecosystem services plays an important role in aiming to incorporate environmental and natural resource values to traditional economic models and can also help businesses visually see the change or damage

¹⁰ *Universal Ownership*. 2010. UNEP Finance Initiative and PRI. Edited by Adam Garfunkel.

¹¹ McNaughton, Brigham. "PwC Environmental Consultant." Telephone interview. 16 Nov. 2011.

¹² Lubin, David A., and Daniel C. Esty. 2010. "The Sustainability Imperative." *The Harvard Business Review* (May): 42-50.

they are causing.¹³ At its simplest, environmental economics puts a value on environmental goods and services, to allow practitioners and corporations to discern the costs versus benefits of a policy action or business transaction which impacts the environment. At its most complex, practitioners and policy makers have attempted to use the techniques of environmental economics to estimate the total global value of all goods and services provided by the environment.¹⁴ However, there has been much controversy over putting a single value on such an intangible product such as the environment and its services.

Valuing the impacts of human actions and future undertaken projects on the environment is a significant feature of the cost-benefit analysis. The cost-benefits analysis emerged from welfare economics as a practical application of the decision-making rule.¹⁵ The fundamentals of environmental valuation is believes that all decisions should be made in such a way that human utility is maximized. In this system, the environment holds no inherent value. Instead, its worth comes from its ability to bestow utility on people, present and future. The mainstream of environmental economics works under the assumptions that benefits are anything that increases human welfare and costs are anything that decreases human welfare.¹⁶

The guiding principle in economics is the creation of markets and prices which lead to allocative efficiency. Difficulties arise as most environmental goods and services are not traded on the market. For example, there is no market for clean air although its continued quality plays

¹³ Hanley, N. Shogren, J.F. and White, B. (2001) *Introduction to Environmental Economics*, Oxford University Press

¹⁴ Costanza, Robert, Ralph D'Arge, Rudolf De Groot, Stephen Farber, Monica Grasso, Bruce Hannon, Karin Limburg, Shahid Naeem, Robert V. O'Neill, Jose Paruelo, Robert G. Raskin, Paul Sutton, and Marjan Van Den Belt. 1997. The value of the world's ecosystem services and natural capital. *Nature* 387.6630 (May): 253-60.

¹⁵ Hanley, N. Shogren, J.F. and White, B. (2001) *Introduction to Environmental Economics*, Oxford University Press

¹⁶ Lopez, R. and Toman, M.A. (Eds) *Economic Development & Environmental Sustainability: New Policy Options*.

an important role in consumer well-being. If a consumer's well being is reduced by air-pollution and this cost is not factored into market prices nor there any compensation action then this is an externality. Many natural resources are public goods with no property rights and no exclusivity, and are therefore difficult, if not impossible, to incorporate into markets.¹⁷

Inherent in the removal of environmental externalities is the assumption that we can use the tools of economics to determine a representative price for the value of environmental goods and services, or at least a marginal cost for the loss of an incremental amount of them. Placing a good empirical value on environmental wealth would also be a good indicator and a valuable warning for biodiversity decline. However, for the concept of the measurements to be valid, environmental and man-made assets must be correctly valued. "Each asset price must be representative of its true marginal contribution to welfare over time." The price of environmental assets should increase as they become scarcer in comparison to man-made assets.¹⁸ "The general point is that the fewer close substitutes a species has in terms of its ecosystem functions; the more damaging is its loss."¹⁹

In order to put a price on environmental services, accountants and managers must commodify them, by integrating environmental services as inputs into consumer utility functions. By doing so, corporations can quantify their damage to society and the environment and it can also enable them to track the progress they are making when they implement sustainability programs. "Green accounts are a vital part of corporate social responsibility and can help with decision making and triple bottom line profitability. Essentially an organization

¹⁷ Hanley, N. Shogren, J.F. and White, B. (2001) *Introduction to Environmental Economics*, Oxford University Press

¹⁸ Lopez, R. and Toman, M.A. (Eds) *Economic Development & Environmental Sustainability: New Policy Options*.

¹⁹ Hanley, N. Shogren, J.F. and White, B. (2001) *Introduction to Environmental Economics*, Oxford University Press

needs to compare the costs of avoiding or preventing environmental damage against the cost of remedial activities.”²⁰ A common system is to place environmental benefits into three categories that can further be broken down into sub-categories. The three categories include: use value (direct use and indirect use), option value and non-use value (altruistic, bequest and existence). The total economic value (or economic cost) is therefore the sum of these three values aggregated.²¹

Economists have a variety of techniques with which they try to estimate these values. This includes stated preferences techniques, revealed preference methods and direct payments. Stated preferences are intended actions that result from consumers’ expressed intent. This includes the contingent valuation (CV) method and choice modeling. On the other hand, revealed preference methods result indirectly from observations of consumer behavior as this approach attempts to infer the value people place on the environment from their behavior in markets for related goods. The actual behavior of consumers can be accounted for through the travel cost method, hedonic price method and avertive expenditures/defensive behavior.²²

Among the most common stated preference approaches is the contingent valuation (CV) method. The CV method is based on surveys in which the public is directly questioned about their willingness to pay (WTP) or willingness to accept (WTA) for certain hypothetical changes in environmental quality.²³ “Economic value really only has any meaning when it is defined over a

²⁰ "Green Accounting as the Path to a Sustainable Future | GreenBiz.com." *Green Business News, Resources, and Sustainability Career Tools | GreenBiz.com*. The European Commission, 27 Apr. 2011. Web. 07 Nov. 2011. <<http://www.greenbiz.com/blog/2011/04/27/green-accounting-path-sustainable-future>>.

²¹ Hanley, N. Shogren, J.F. and White, B. (2001) *Introduction to Environmental Economics*, Oxford University Press

²² Ibid.

²³ Ibid.

change.” Willingness to pay is the value of an environmental resource that can be measured in terms of people’s willingness to sacrifice their income and pay to keep the asset. In the case of corporations, this will measure the surplus consumers are willing to pay for a product or service that is produced using better environmental standards. Willingness to accept is based around the same principal, except reversed, and measures the minimum compensation a consumer would accept to go without it.²⁴ The CV method is a good method for assessing the non-use value of the natural environment. However, some of its challenges are imbedded in the flaws of its design and the nature of biases in people. It is challenging to fully make a scenario sufficiently understandable to a consumer and it is tempting for consumers to overstate their WTP for a feel-good factor or understate their WTP if they think their answer will influence how much they would actually get charged, therefore free-riding. Additionally, “it is highly unlikely that values will account for the complex web of interdependencies between species since these are too complex for most people to appreciate during the course of a brief contingent valuation interview.”²⁵

Another valuation technique is direct payments, also known as payments for environmental services (PES). PES aims to translate external, non-market values of the environment into real financial incentives.²⁶ Pattanayak et al. defines PES as “voluntary transaction between at least one buyer and at least one seller in which payments are

²⁴ Lopez, R. and Toman, M.A. (Eds) *Economic Development & Environmental Sustainability: New Policy Options*.

²⁵ Hanley, N. Shogren, J.F. and White, B. (2001) *Introduction to Environmental Economics*, Oxford University Press

²⁶ Engel, S. Pagiola, S. and Wunder, S. (2008) “Designing Payments for Environmental Services in Theory and Practice: An Overview of the Issues”, *Ecological Economics*, 65(4): 663-674.

conditional on maintaining an ecosystem use that provides well defined ecosystem services.”²⁷

The PES program follows the Coase theorem that socially suboptimal situations can be resolved through voluntary market transactions if transaction costs are low and property rights are well defined.²⁸ PES is used to internalize externalities. For example, landowners receive few benefits from forest conservation compared to the potential benefits of logging. However, deforestation imposes an externality on other groups such as downstream populations who don’t receive benefits of water filtration and globally people suffer from reduced carbon storage. Paying the landowners gives them an incentive to preserve the land. However, some pitfalls of PES are that the payments need to be set at the correct level, not too high or too low, otherwise this can lead to social inefficiency. There is also a lack of additionality or “money for nothing” which is likely if payments are very low.²⁹ The third problem is of leakage which refers to the displacement of damaging activity outside of the PES protected area. There is also a lack of permanence as critics argue that changes in external conditions, such as timber values, mean PES can’t deliver environmental services indefinitely. The Coasean theorem, however, suggests this isn’t a problem as parties can renegotiate.³⁰

These valuations techniques help arrest the process of facilitating the role of accountants in valuing environmental services. However, there are a number of difficulties attached to them. While they are a good use for valuing sustainable projects these techniques are used on smaller scale projects and simply combining the cumulative sums from these

²⁷ Pattanayak, S.K., Wunder, S. and Ferraro, P.J. (2010) “Show Me the Money: Do Payments Supply Environmental Services in Developing Countries?” *Review of Environmental Economics and Policy*, 4(2): 254–274.

²⁸ Ibid.

²⁹ Ibid.

³⁰ Engel, S. Pagiola, S. and Wunder, S. (2008) “Designing Payments for Environmental Services in Theory and Practice: An Overview of the Issues”, *Ecological Economics*, 65(4): 663–674.

numbers will not give a comprehensive number on valuing the environment as a whole, as these techniques have not valued all possible environmental projects and policy actions. Assessment of the environmental value of corporations' actions, however, seems like a minor task when compared with attempts to establish the sum value of all ecosystem goods and services, worldwide, the task undertaken by the Stern Review, TEEB as well as Contanza et al.

In the groundbreaking work "The Value of The World's Ecosystem Services and Natural Capital," by Contanza et al., we see a compilation of studies which estimate marginal values of ecosystem services in order to obtain a global estimate of the value of ecosystem services.³¹ The article drew from studies of seventeen ecosystem services per unit of eighteen different biomes, then multiplied the per unit value of each biome by its global dominance. By merging the biome data, they concluded that the total biosphere worth is approximately \$33 trillion per year.³² This result was important as the total value of global ecosystem services significantly outweighed aggregate traditional economic output, of approximately \$18 trillion per year, measured by global GNP (Gross National Product).³³

Responses to the paper varied extremely. Some praised the work while others found fault in its methodology. Ayres (1998), for example, finds fault in Costanza et al.'s use of the price-quantity product (PQP), stating that while it may be true that consumer surplus is larger than aggregate economic activity, it is logically impossible for the same to be true of PQP, and argues that this has confused the issue of the value of environmental services with the question

³¹ Hanley, N. Shogren, J.F. and White, B. (2001) *Introduction to Environmental Economics*, Oxford University Press

³² Costanza, Robert, Ralph D'Arge, Rudolf De Groot, Stephen Farber, Monica Grasso, Bruce Hannon, Karin Limburg, Shahid Naeem, Robert V. O'Neill, Jose Paruelo, Robert G. Raskin, Paul Sutton, and Marjan Van Den Belt. 1997. The value of the world's ecosystem services and natural capital. *Nature* 387.6630 (May): 253-60.

³³ Ibid.

of how much we should pay to maintain them. Ayres (1998) explains that the value of ecosystem services is the cost that would be paid to maintain ecosystem services in a steady state, a state of equilibrium. When using the PQP model to value ecosystem services, one must simply find the cost of bringing their use into a sustainable state and keeping it there. “A number of economists have questioned the more technical aspects—for example, what is indicated by estimates that mix together replacement costs and willingness-to-pay damage components, the extent of double-counting, and the intimation that this aggregation of disparate component estimates can be meaningfully compared with a measure of value-added economic activity like GDP.”³⁴

The Stern Review is a similar scholarly report which puts a value on global climate change damage. One of its downfalls is that the report does not consider any policy alternatives other than its own abatement strategy and doing nothing. This raises serious questions about the reliability of the report’s policy recommendation.³⁵ Conversely, the 2010 The Economics of Ecosystems and Biodiversity (TEEB) review illustrates “the process of analyzing the global economic benefit of biological diversity, the costs of the loss of biodiversity and the failure to take protective measures versus the costs of effective conservation,” but without putting a monetary value on it.³⁶ It argues the point of how much further we need to go to impute

³⁴ Toman, Michael. 1998. Why not to calculate the value of the world’s ecosystem services and natural capital. *Ecological Economics* 25.1 (April): 57-60.

³⁵ Stern, N. (2006) *The Stern Review*, HM Treasury, London.

³⁶ TEEB (2010a) *The Economics of Ecosystems and Biodiversity: Mainstreaming the Economics of Nature: A Synthesis of the Approach, Conclusions and Recommendations of TEEB*.

reliable values to changes in natural capital therefore justifying why it cannot come up with a global value.³⁷

However what are some of the pitfalls of having a monetary value? A monetary value does not take into account the need for prioritization between sustainability actions and can lead to the impression that every environmental policy is of equal worth.³⁸ Additionally, as scarcity increases, this will also increase the value of ecosystem service.³⁹ Some critics “believe most sincerely that monetising the environment is merely a further step in global degradation of the human spirit, let alone the natural world.”⁴⁰ The environment is priceless. As Costanza et al. first acknowledged, the value of the environment is infinite, in that they have no substitute, but a value of infinity is just as useless as a value of zero. Ultimately though, if we continue to use the method espoused by all these authors, it can be inferred that any improvements to the methodology used in these models will not change the fundamental result that the value of ecosystem services exceeds that derived from the traditional economy.

The practice, known as environmental valuation, is a complicated and controversial field. Some argue that putting a price on environmental services is inherently wrong, while others hold to the fact that it is the only practical way to help mitigate the exploitation of the global environment. But what else besides a monetary value can provide the same powerful account for conservation? While price estimates are far from perfected, the default is to treat unvalued

³⁷ Lopez, R. and Toman, M.A. (Eds) *Economic Development & Environmental Sustainability: New Policy Options*.

³⁸ Costanza, Robert, Ralph D'Arge, Rudolf De Groot, Stephen Farber, Monica Grasso, Bruce Hannon, Karin Limburg, Shahid Naeem, Robert V. O'Neill, Jose Paruelo, Robert G. Raskin, Paul Sutton, and Marjan Van Den Belt. 1997. The value of the world's ecosystem services and natural capital. *Nature* 387.6630 (May): 253-60.

³⁹ El Serafy, Salah. 1998. Pricing the invaluable: the value of the world's ecosystem services and natural capital. *Ecological Economics* 25.1 (April): 25-27.

⁴⁰ Lopez, R. and Toman, M.A. (Eds) *Economic Development & Environmental Sustainability: New Policy Options*.

environmental services with a price of zero. This would lead to rampant and unsustainable overuse.⁴¹ Given this, it makes sense to try to determine working values for ecosystem services and is especially useful to coerce multinational corporations into paying more attention to the damages of their transactions.

4. Green Accounting

Putting a monetary value on the environment is rendered useless for corporations without coordinating it with green accounting. Environmental accounting should be used as a tool for environmental accountants to highlight the costs and benefits of the natural environment. Green accounting emphasizes both the contribution of natural resources to economic well-being and the costs imposed by pollution or resource degradation.⁴² Corporations should make financial decisions by comparing private and social costs to the private and social benefits using the framework of green accounting. Additionally, in terms of products, a firm can use the life-cycle assessment (LCA) to make better-informed decisions centered around calculating the environmental impacts at every stage of the product's life. This ranges from raw materials through to production, distribution and final disposal or recycling.⁴³

⁴¹ Cornell, Sarah. 2010. Valuing ecosystem benefits in a dynamic world. *Climate Research* 22 (June): 1-12.

⁴² "Environmental Accounting: What's It All About." Web. 1 Dec. 2011.
<<http://www.mekonginfo.org/assets/midocs/0003568-environment-environmental-accounting-what-s-it-all-about.pdf>>.

⁴³ "Environment - Environmental Technologies Action Plan." *EUROPA - European Commission - Homepage*. Web. 28 Nov. 2011. <http://ec.europa.eu/environment/etap/inaction/showcases/eu/703_en.html>.

PwC's point of view: Enterprise risk management should include an evaluation of sustainability risks up and down the value chain

Often facing a diverse set of competing risks, companies need to understand the associated financial materiality to prioritize and inform the level of investment to mitigate their sustainability risks.



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Fundamental and vital to green accounting is sustainability reporting. Sustainability reporting encourages firms to present their carbon footprint or environmental impact to their stakeholders. What makes this reporting significant is putting a value to the impact of their environmental progress or damage.

“An effective green balance sheet should include all internal and external cost categories, such as health problems for workers, emissions and pollution of air, land or water, degradation of the natural environment and depletion of finite resources. Internal and external benefits should also be calculated and quantified using monetary measures. These could include savings from new cleaner technologies resulting in lower pollution and better health, new markets and substitution of raw materials or production processes.”⁴⁴

Green cost accounting helps firms identify and allocate the cost of going green to each batch, department or line. The problem most firms face is that relevant costs may be hidden and buried under general administrative accounts. “When sustainability is viewed as a cost

⁴⁴ PriceWaterhouseCoopers. *Sustainability Risk Management*. Delaware: PriceWaterhouseCoopers, 2011. Print.

⁴⁵ "Environment - Environmental Technologies Action Plan." *EUROPA - European Commission - Homepage*. Web. 28 Nov. 2011. <http://ec.europa.eu/environment/etap/inaction/showcases/eu/703_en.html>.

center or lacks alignment with corporate strategy, the business underperforms and material risks go unaddressed.”⁴⁶ Breaking down environmental spending will help separate costs to the company’s products or processes. Northeast Utilities, an environmental group, has furthered green cost accounting by estimating the savings not only in direct costs but also in management time reduced, regulatory compliance burden lifted and other indirect costs avoided. Using end of the year reports, they tabulate their findings and savings in a report titled, “Earning Our Keep.” They are not alone in releasing data about their sustainability savings. Corporations are now factoring the risks of climate change and environmental change into their management systems and accounting practices. All of this has led to pressures pushing corporations to release data about their carbon emissions.⁴⁷

A similar effort at reporting is the Carbon Disclosure Project (CDP), which compels companies to disclose their carbon emissions through annual reporting on a separate Sustainability Report. The Carbon Disclosure Project is an independent, not-for-profit organization that collects and combines key corporate climate change information in the largest database in the world.⁴⁸ More than 3,000 organizations from approximately 60 plus countries worldwide measure and disclose their greenhouse gas emissions, water use and climate change strategies through CDP. The information is then used for financial and policy decision-making purposes.⁴⁹ The Carbon Disclosure Project allows investors, stakeholders and organizations to compare and benchmark companies against each other, identifying the climate change leaders

⁴⁶ PriceWaterhouseCoopers. *Sustainability Risk Management*. Delaware: PriceWaterhouseCoopers, 2011. Print.

⁴⁷ Esty, Daniel C., and Andrew S. Winston. *Green to Gold: How Smart Companies Use Environmental Strategy to Innovate, Create Value, and Build Competitive Advantage*. New Haven [Conn.: Yale UP, 2006. Print.

⁴⁸ "What We Do." *Carbon Disclosure Project*. 2009. Web. 6 Nov. 2011. <<https://www.cdproject.net/en-US/WhatWeDo/Pages/overview.aspx>>.

⁴⁹ Ibid.

and laggards. Appendix 1 shows a list of S&P 500 companies, compiled from the CDP, ranked on the Carbon Disclosure Leadership Index in which the companies are given an index number or a score based on their carbon disclosure.⁵⁰ The Carbon Disclosure Leadership Index scores were calculated according to a standardized methodology developed in conjunction with Pricewaterhouse Coopers. A company is awarded points not based on the actual amount of emissions, as that does not affect the score, but based on if it reports its greenhouse gas emissions and how well a company responds to each question asked in the measures methodology.⁵¹

The Carbon Disclosure Project also has broken down reports based on countries and continents or even industry. The same principle and methodology of scoring is used for the CDP Worldwide Global 500 largest companies. Institutional investors, purchasing organizations and government bodies have been known to use this data for corporate relationships and engagement and to integrate it in critical investment reproductions and products. Since its inception the companies choosing to disclose environmental information about their company has grown tenfold.⁵²

⁵⁰ "Programs." *Carbon Disclosure Project*. 2009. Web. 6 Nov. 2011. <<https://www.cdproject.net/en-US/Programs/Pages/overview.aspx>>.

⁵¹ "US Results." *Carbon Disclosure Project*. 2009. Web. 6 Nov. 2011. <<https://www.cdproject.net/en-US/Results/Pages/leadership-index-2009.aspx>>.

⁵² Ibid.



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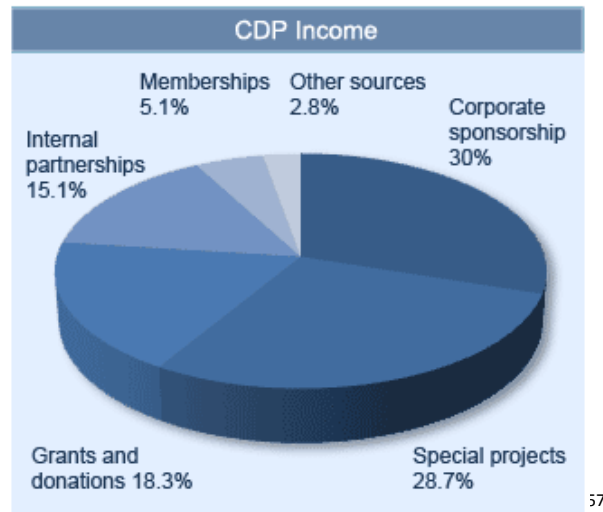
As Pinkse and Kolk explain, “CDP represents an effort to develop standardized reporting procedures for companies concerning their climate-related activities, in a form intended to complement annual financial accounts and provide information relevant to investors relating to business risks and opportunities from climate change.”⁵⁴ By the end of 2006, the “CDP had mobilized 155 institutional investors with over \$31 trillion to pressure companies especially from the world’s leading 500 companies to disclose their carbon impact.”⁵⁵ This is a very important shift, and as “the cumulative effect of these initiatives is that climate change has steadily acquired enormous investment significance and companies are being forced to respond.”⁵⁶

⁵³ Ibid.

⁵⁴ Pinkse, Jonatan, and Ans Kolk. 2009. *International Business and Global Climate Change*. Abingdon, Oxon: Routledge. Print. page 83

⁵⁵ Okereke, Chuckumerije. 2007. “An Exploration of Motivations, Drivers and Barriers to Carbon Management: The UK FTSE 100.” *European Management Journal* Vol. 25 No. 6, 475-486. Page 482

⁵⁶ Ibid.



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The CDP is not the only organization that ranks companies. The same theme is also explored in the Franco-German Ministerial Council Report in December 2010. That report stressed the importance and value in assessing a shift in measuring economic production to measure people's well-being as I described in the earlier section.⁵⁸ In the book *Green to Gold*, the authors also outlined what they call the top 50 "WaveRiders" broken down by International companies and U.S. companies. WaveRiders are identified company leaders in creating green initiatives.

⁵⁷ "Programs." *Carbon Disclosure Project*. 2009. Web. 6 Nov. 2011. <<https://www.cdproject.net/en-US/Programs/Pages/overview.aspx>>.

⁵⁸ "Environment - Environmental Technologies Action Plan." *EUROPA - European Commission - Homepage*. Web. 28 Nov. 2011. <http://ec.europa.eu/environment/etap/inaction/showcases/eu/703_en.html>.

Top 50 WaveRiders		
	United States	International
1	Johnson & Johnson	BP
2	Baxter	Shell
3	DuPont	Toyota
4	3M	Lafarge
5	Hewlett-Packard	Sony
6	Interface	Unilever
7	Nike	BASF
8	Dow	ABB
9	Procter & Gamble	Novo Nordisk
10	SC Johnson	Stora Enso
11	Kodak	Philips
12	Ford	Bayer
13	IBM	Holcim
14	Starbucks	STMicroelectronics
15	Intel	Alcan
16	Xerox	Electrolux
17	McDonald's	Suncor
18	GM	Norsk Hydro
19	Ben & Jerry's	Henkel
20	Patagonia	Siemens
21	International Paper	Swiss Re
22	Alcoa	AstraZeneca
23	Bristol-Myers Squibb	Novozymes
24	Dell	IKEA
25	United Technologies	Ricoh

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On the whole, the Carbon Disclosure Project and similar efforts give profound weight in laying the groundwork for future climate agreements. The issue of monitoring and enforcement of carbon emissions has been a persistent sticking point in recent climate negotiations, and any effort to boost the ability of corporations to accurately measure and report their carbon emissions is surely a welcome relief.

⁵⁹ Esty, Daniel C., and Andrew S. Winston. *Green to Gold: How Smart Companies Use Environmental Strategy to Innovate, Create Value, and Build Competitive Advantage*. New Haven [Conn.: Yale UP, 2006. Print.

5. The Sustainability Effect on Companies

The effect of the green culture on big corporations also plays a role in the effect on the structure and success of the company that has implemented green initiatives. KPMG, one of the Big Four accounting firms, illustrates how becoming sustainable has had a positive impact of the company. “Being a responsible corporate citizen is a key driver of KPMG’s business, affecting our relationships with clients, shaping the experiences of our people, and inspiring us to be a positive force in our communities,” says Kathy Hannan, KPMG national managing partner, diversity and corporate social responsibility.⁶⁰

The question then arises of how do companies grow and prosper while decreasing pollution and conserving natural resources?⁶¹ Environmental consideration should always be on a company’s strategy and often times it gets overlooked and progress down the list in priority. In the book *Green to Gold*, “WaveRiders” build a foundation for Eco-Advantage by reframing how everyone in the company looks at environmental issues. This new mindset is absolutely critical to managing eco-risks, driving innovation, and turning environmental pressures into competitive advantage. The ideal end result is that the Eco-Advantage Mindset is embedded in the companies’ business thinking and future strategies.⁶²

⁶⁰ Newquist, Caleb. "KPMG Is Overachieving in the Green Department « Going Concern: An Online Tabloid for Modern Accounting & Finance Professionals." *Going Concern: An Online Tabloid for Modern Accounting & Finance Professionals*. 21 July 2010. Web. 1 Dec. 2011. <<http://goingconcern.com/2010/07/kpmg-is-overachieving-in-the-green-department/>>.

⁶¹ Esty, Daniel C., and Andrew S. Winston. *Green to Gold: How Smart Companies Use Environmental Strategy to Innovate, Create Value, and Build Competitive Advantage*. New Haven [Conn.: Yale UP, 2006. Print.

⁶² Ibid.



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For example, Walmart, the world's largest retailer, perfectly exemplifies how a sustainability program has been a positive impact on their business. In 2007, Walmart launched its sustainability program, Sustainability 360. To many this came as a surprise. This turnaround seems to be a result of an epiphany on the part of former CEO Lee Scott.⁶⁴ Scott, who was strongly affected by Hurricane Katrina and its aftermath, became a staunch advocate of the need for actions to combat climate change, as well as a champion of the position that increased sustainability can make not just environmental, but also business sense.⁶⁵

Sustainability 360 set goals for operational efficiency, including a dramatic increase in freight fuel- efficiency, a move towards sustainably-sourced raw product inputs, zero waste

⁶³ Busco, Cristiano, Mark L. Frigo, Emilia L. Leon, and Angelo Riccaboni. "Cleaning Up." *Strategic Finance* July 2010: 29-37. Web. 28 Oct. 2011.

⁶⁴ Roner, Lisa. 2005. "Walmart - An Environmental Epiphany?" ClimateChangeCorp.com. 07 Dec. 2005. Web. 01 Dec. 2011. <<http://www.climatechangecorp.com/content.asp?ContentID=4009>>.

⁶⁵ Ibid.

created by stores, and stores and operations powered by 100% renewable energy sources.⁶⁶ While the time frame for this shift varies, the ways in which they see creating a more sustainable operation are remarkably similar.

So far, Walmart has increased the fuel-efficiency of its trucking fleet by 60% compared to a 2005 benchmark and has improved its “emissions/\$ sales” each year from 2005 to 2008 (Walmart 2010). It also has made significant gains in terms of the percentage of fish and wood products sourced from third-party accredited sustainable sources.⁶⁷ Additionally, many of its international subsidiaries have made important gains. For example, Walmart China has improved its water-use intensity.⁶⁸ Walmart have achieved many of their original goals, but they continue to set increasingly more ambitious ones. Walmart’s 2010 Sustainability report sets out targets which build on and accelerate their current efforts, including doubling shipping fleet efficiency by 2015, and reducing total GHG emissions in their global supply chain by 20 million metric tons by the same year.⁶⁹

In terms of environmental sustainability, “shareholder activism” has also played a big role, from public campaigns to dialogues between institutional investors and corporate executives, and even public shareholder resolutions that demand better performance.⁷⁰ A number of innovative organizations and stock indices have emerged to coordinate the efforts of institutional investors and amplify their impact, such as CERES, the UNEP Finance Initiative,

⁶⁶ WalMart. 2010. “WalMart Global Sustainability Report 2010.”

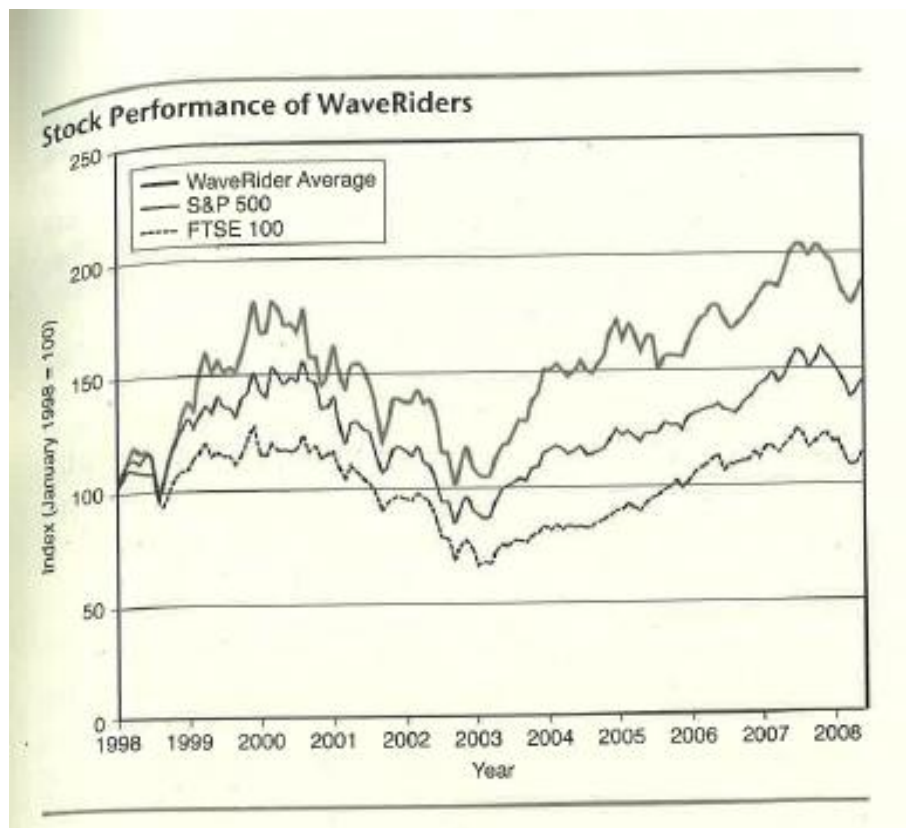
⁶⁷ Ibid.

⁶⁸ Ibid.

⁶⁹ Ibid.

⁷⁰ Sparkes, Russell and Christopher J. Cowton. 2004. “The Maturing of Socially Responsible Investment: A Review of the Developing Link with Corporate Social Responsibility.” *Journal of Business Ethics* 52: 45-57.

FTSE4Good, the Dow Jones Sustainability series, The Institutional Investors Group on Climate Change (IIGCC) and the Carbon Disclosure Project (CDP). Below shows the stock performance of WaveRiders and the trend from years 1998 to 2008. The chart illustrates how sustainable companies have easily outperformed the major indices in the past 10 years. However, we must be wary of this result as the relative stock market success of the WaveRiders companies might not be because of its specific green focus. Correlation is not causation and the success can easily be attributed to a number of factors such as good management. Nevertheless, environmental performance is a powerful indicator of overall management quality, according to a number of studies.⁷¹



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⁷¹ Esty, Daniel C., and Andrew S. Winston. *Green to Gold: How Smart Companies Use Environmental Strategy to Innovate, Create Value, and Build Competitive Advantage*. New Haven [Conn.: Yale UP, 2006. Print.

⁷² Ibid.

6. How to get there

It is unrealistic for a company to reach ideal environmental status overnight. There are many steps required to get to the ideal state. It should be noted that zero pollution, waste or emissions is not the ideal level. Some amount of pollution and waste will be the most efficient for all of society as there is a tradeoff between societal costs and societal benefit. The ideal level should be dependent upon the industry and company. This leaves corporations the task of setting their ideal emissions level. Primarily, how much of it should they have? And, given that, how do they create policies that make that ideal emissions level a reality? As countries grow richer and stakeholders' pressures increases, the desire and ability to confront these challenges grow as well. The key is finding the environmental goals which ensure that environmental improvement starts now but also stimulates innovation. Market forces alone do not properly address either issue.⁷³ To accomplish this goal, a variety of companies have developed sustainable strategies broken down into smaller steps.

With new technology and the further evolution of it, each individual and organization has to adapt to improving their existing equipment. The sustainability programs are the product of the present environmental world in which we currently live in. Corporations are leading a life of building experimental and adaptive environmental strategies. For example, PriceWaterhouse Coopers has a whole external environmental consulting group dedicated to helping companies compile to regulations and improve overall green objectives. Below demonstrates PwC's sustainability goal for companies, illustrating risk versus opportunity. It shows sustainability

⁷³ "Taxation, Innovation and the Environment- Executive Summary." *OECD Green Growth Strategy* (2010). Print.

evolving from simply complying to governmental regulations to moving forward in green innovation to capture a strategic advantage.⁷⁴



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Below is Procter & Gamble Sustainability strategies categorized into five strategies: products, operations, social responsibility, employees and stakeholders, each exemplifying and outlining change.⁷⁶ Conversely, we must be cautious of broad statements such as “improve the environmental profile of P&G’s operations” which is vague and gives little direction for the employees to implement change.

⁷⁴ PriceWaterhouseCoopers. *Communicating Your Competitive Advantage*. Delaware: PriceWaterhouseCoopers, 2011. Print.

⁷⁵ Ibid.

⁷⁶ Busco, Cristiano, Mark L. Frigo, Emilia L. Leon, and Angelo Riccaboni. "Cleaning Up." *Strategic Finance* July 2010: 29-37. Web. 28 Oct. 2011.

Procter & Gamble Sustainability Strategies

Strategy 1—Products: Delight the consumer with sustainable innovations that improve the environmental profile of products. The related goal is to develop and market at least \$50 billion in cumulative sales of “sustainable innovation products,” which are products with a significantly reduced (more than 10%) environmental footprint vs. previous or alternative products.

Strategy 2—Operations: Improve the environmental profile of P&G’s operations. The related goal is to deliver an additional 20% reduction (per unit production) in CO₂ emissions, energy consumption, water consumption, and disposed waste from P&G plants, leading to a total reduction over the decade of at least 50%.

Strategy 3—Social Responsibility: Improve lives through P&G’s social responsibility programs. The related goal is to enable 300 million children to live, learn, and thrive; prevent 160 million days of disease; and save 20,000 lives by delivering four billion liters of clean water in P&G’s Children’s Safe Drinking Water program.

Strategy 4—Employees: Engage and equip all P&Gers to build sustainability thinking and practices into their everyday work.

Strategy 5—Stakeholders: Shape the future by working transparently with stakeholders to enable continued freedom to innovate in a responsible way.

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7. The Counter View

While this is a very optimistic view on the environment, we must be wary of some key factors. Debate remains as to whether this increased interest in issues of sustainability represents a change of heart on the part of business, a desire to be a better global corporate citizen, or whether it is simply ‘green-washing’ intended to hijack the sustainability agenda for financial reward and little meaningful environmental change. From this perspective this trend in business ideology and action could be viewed as either making small tactical moves in order to maintain the market share of a business in the global economy, or as deeper strategic action meant to transform the very system which has led to the environmental problems we now face. This is a very important distinction, as efforts by businesses should strive to be the latter of the two situations. The first option of ‘green-washing’ should to be viewed as a problem, not part

⁷⁷ Ibid.

of the solution. However, if this represents not just a shift in the tactics of business but instead a fundamental shift in the ideological foundations of some of the private sector's largest firms, then we are presented with a much more optimistic picture. Seen in this way, current changes can be viewed as a step towards a world in which "corporations, governments and even individual stakeholders work to accept shared visions, and future hopes for all members of the global community."⁷⁸

While projects like the Carbon Disclosure Project has the potential to be a driver of the corporate transition to environmental sustainability, the extent to which stakeholder pressure can drive significant environmental improvement remains up in the air. There are a number of factors that are contingent on this question. One factor is the way in which the financial system is geared towards short-term profits and therefore ignoring the long-term advantage of benefiting both the company and the environment. Another factored already mentioned in this paper is the possibility that going green requires more money and therefore cuts into profits when compared to simple doing nothing.

Sethi (2005) argues that the current fiduciary framework places sole emphasis on financial indicators. In finance we learn that the role of the manager is to increase shareholder wealth and the manager should not be concerned with social and environmental factors because the risk they pose is factored into the financial indicators they use through accounting systems which "already include long-term risk assessment through discounted present value of

⁷⁸ Byerly, Robin T. 2005. " Seeking global solutions for the common good: a new world order and corporate social responsibility." *Corporate social responsibility, accountability and governance : global perspectives*. Sheffield : Greenleaf, 2005. Print.

future flow of future earnings.”⁷⁹ Sethi (2005) makes a convincing argument that, in fact, the degree to which risk factors like environmental sustainability are factored into the current system is not close to sufficient.

8. Conclusion

There is no denying that sustainability programs are becoming more and more popular as companies are starting to see the benefit and correlation of helping the environment to its effect on the success of the business. With social consciousness expanding so rapidly and vastly there is no stopping the trend and pressure to coerce companies into applying green practices. There are so many valid reasons for a company to go green, ranging from increasing profits, developing a competitive advantage and even increasing stock price. However, in my opinion, these reasons are not strong enough. Putting a monetary value on the environment and more importantly a firm’s impact on it will help companies see the damages they are causing and the changes that they can make. Quantifying something intangible is no easy task but it seems to be the best way to make corporations pay attention to something that has taken a backseat next to driving profits and increasing the bottom line. However, those forms of innovation and strategies are just the beginning. They need to be implemented using green accounting and sustainability reporting. No longer confined to valueless boundaries, green accounting defines the potential of new green initiatives and its benefits.

The environment is both a product of this world and an architect of it. Each member and individual is given more power. As a single individual we have the power to shape our world

⁷⁹ Sethi, S. Prakash. 2005. “Investing in Socially Responsible Companies Is a Must for Public Pension Funds: Because There Is No Better Alternative.” *Journal of Business Ethics*, Vol. 56, No. 2 (Jan., 2005), pp. 99-129.

and map social responsibility among each other. However, "corporations have powers and attributes that render them perhaps more capable than any other entity, government or otherwise, in the world."⁸⁰ Whether this power will prove to foster improvements in global environmental standards remains to be seen. As corporations are the engines that will drive the economy's transition to a low-carbon future, pressuring corporate sustainability is a vital step in the journey to a more sustainable future.

⁸⁰ Byerly, Robin T. 2005. " Seeking global solutions for the common good: a new world order and corporate social responsibility." *Corporate social responsibility, accountability and governance : global perspectives*. Sheffield : Greenleaf, 2005. Print.

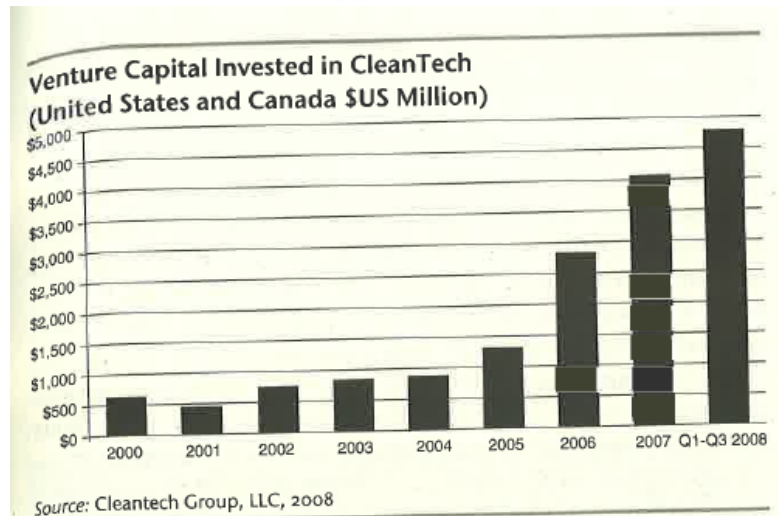
Appendix 1

Figure 12: 2011 S&P 500 Carbon Disclosure Leadership Index¹¹

Sector	Company name	2011 Carbon disclosure score	2010 Carbon disclosure score
Consumer Discretionary	News Corporation*	93	94
	Carnival*	88	80
	Tiffany & Co.	85	72
	Johnson Controls	83	87
	Wyndham Worldwide	83	-
Consumer Staples	PepsiCo	90	71
	Dean Foods*	89	91
	Clorox	87	73
	Kraft Foods	86	91
	Molson Coors Brewing	86	83
	Kellogg Company	85	67
	Wal-Mart Stores*	85	86
	Brown-Forman	84	83
	Philip Morris International	83	87
Energy	Spectra Energy*	96	94
	Hess*	91	90
	Chevron*	86	80
Financials	Bank of America	97	85
	Simon Property Group	96	78
	Allstate	89	75
	NYSE Euronext	89	80
	Hartford Financial Services*	88	82
	Marsh & McLennan	88	50
Financials	Comerica*	87	92
	Morgan Stanley	87	85
	State Street	84	81
	Goldman Sachs	83	62
	ProLogis	83	80
Health Care	Gilead Sciences	95	83
	Allergan*	83	80
Industrials	UPS	99	78
	Boeing*	92	86
	Lockheed Martin	90	76
	Eaton	87	78
	CSX	85	91
	Ryder System	83	68
	Cisco Systems*	98	92
Information Technology	salesforce.com	91	-
	Google	89	44
	EMC*	88	82
	Hewlett-Packard	84	66
	IBM*	83	85
Materials	Dow Chemical	95	80
	Praxair*	93	93
	Air Products & Chemicals*	92	81
	Ecolab	91	84
	Alcoa	88	77
	Newmont Mining	88	87
	Freeport-McMoRan	87	60
	Copper & Gold		
Utilities	Consolidated Edison*	96	96
	PG&E *	92	90
	Xcel Energy*	89	89
	Sempra Energy	87	62
	Entergy	85	76
	Pepco Holdings*	84	87

¹¹US Results." *Carbon Disclosure Project*. 2009. Web. 6 Nov. 2011. <<https://www.cdproject.net/en-US/Results/Pages/leadership-index-2009.aspx>>.

Appendix 2



environmental investments will be extremely large: A United Nations report indicates that money flowing into clean tech will be in the trillions over the next decade.

From solar cells to wind turbines to hydrogen vehicles, entrepreneurs are working to make their solution the energy source of the future. A diverse array of new global-scale renewable energy companies, such as Spain's Iberdrola and Endesa and India's Suzlon and Tata Power have begun to emerge. Like all new ventures, not all of these businesses will succeed. But some will profit mightily.

Esty, Daniel C., and Andrew S. Winston. *Green to Gold: How Smart Companies Use Environmental Strategy to Innovate, Create Value, and Build Competitive Advantage*. New Haven [Conn.: Yale UP, 2006. Print.

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