Promoting Change in the Costa Rican Business Sector

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July 6, 2005

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Dear Dr. Nowalski:

Enclosed is our report entitled Promoting Change in the Costa Rican Business Sector. It was written at the International Center for Sustainable Human Development during the period of May 16 through July 6, 2005. Preliminary work was completed in Worcester, Massachusetts, from March 15 to May 3, prior to our arrival in Costa Rica. Additional copies of this report are being submitted simultaneously to Professors Gerstenfeld and Vernon-Gerstenfeld for evaluation. Upon faculty review, the original copy of this report will be catalogued in the Gordon Library of Worcester Polytechnic Institute. We thank you, Mr. Blandino, and Ms. Orantes for your devotion and time throughout our project, as your support has been greatly appreciated.

Sincerely,

Donna Davidson

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Report Submitted to:

Professor Arthur Gerstenfeld
Professor Susan Vernon-Gerstenfeld

Costa Rica, Project Center

By

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Chairman, Dr. Jorge Nowalski

International Center for Sustainable Human Development

PROMOTING CHANGE IN THE COSTA RICAN BUSINESS SECTOR

July 6, 2005

ABSTRACT

This report, prepared for the International Center for Sustainable Human Development (CIDH) of Costa Rica, includes a review of Corporate Social Responsibility, Sustainable Development, Cleaner Production, and Eco-Efficiency, as well as case studies on companies engaging in these practices. We have recommended the Balanced Scorecard with a thorough explanation of its potential as a managerial tool. With guidance from CIDH, companies could implement this tool to accurately record measurements and evaluations for the programs reviewed. We have provided CIDH with information for the development of a training module and recommended three seminars targeted at small and medium-sized enterprises. Educating companies on the importance of Sustainable Development as a vital part of Corporate Social Responsibility, would positively impact Costa Rica both socially and economically.

AUTHORSHIP PAGE

Each group member, Donna Davidson, Lauren MacMath, and Caitlyn Ramig, has contributed equivalent efforts throughout the development of this project. All members have spent parallel time researching, writing, and analyzing the data reported in each chapter.

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As the global population steadily increases, the amounts of clean air and water are decreasing, and the environment is being destroyed. The current total of 6.4 billion people is expected to exceed 8 billion by 2030, with a majority of the growth coming from developing countries. With this increasing global population comes a greater consumption of resources, an increase in waste production, and an ever-present demand for sustainable development to support the current and future generations.

In the early 1970s, the United Nations (UN) began to realize the growing need for companies to take responsibility for their actions and environmental impacts, and sought change. By developing the idea of sustainable development, the UN began to raise awareness of the need for companies to act in a socially responsible way. This idea was later adapted into a Corporate Social Responsibility (CSR) program, which came about as the World Bank Institute's response to the Millennium Goals of the UN. Specifically, this CSR program is a partnership of corporations working together to help maintain awareness of the environment and act responsibly in society to conserve resources for a sustainable future.

In being socially responsible, it is also important to follow the practices of Cleaner Production (CP) and Eco-Efficiency (EE). These programs focus on maximizing production while producing the least amount of waste, and as a result, reducing the amount of pollutants released into the environment. As concerned citizens, it is necessary to encourage companies to implement practices that maximize efficiency of resources while embracing similar practices in daily routines.

The business sector in Costa Rica is composed of about eighty-five percent small and medium-sized enterprises (SMEs). This large percentage reinforces the need for nonprofit organizations like CIDH (Centro Internacional para el Desarrollo Humano) to dedicate themselves to educating the SME private sector about Corporate Social Responsibility, Cleaner Production, and Eco-Efficiency. Although large and multinational corporations following the practices of these programs have the potential to make a large, positive impact, these large companies are often much more difficult for non-profit organizations to reach. Also, due to corporate control over the practices of international divisions of a company, it is hard for non-profit organizations to produce change within these large corporations. By transforming the business approach of small and medium-sized enterprises in Costa Rica to more sustainable practices, it would vastly improve the sustainable development of the country. Over time, the practices can be shared with other countries with similar developing conditions.

To gain a broader understanding of practices that are already being used by companies working toward goals of Corporate Social Responsibility, Cleaner Production, and Eco-Efficiency, we have developed case studies of four different companies in Costa Rica. We reviewed two hotels in the SME business sector, Finca Rosa Blanca Country Inn and Hotel Punta Islita, as well as Intel and AMANCO, two companies characterized in the large and multinational corporation sector. We interviewed high-level managers from each of the businesses and created case studies that include the missions and visions of the company, motivation for following these practices, current practices, and future plans. In addition, we reviewed two case

studies previously completed by CEGESTI, a non-profit consultant company, on the practices of Corporate Social Responsibility.

While analyzing these case studies, we have found that actions toward Corporate Social Responsibility, Cleaner Production, and Eco-Efficiency advance a company towards sustainability, as well as positively affect the business in a number of ways. We have also discovered that the best practices to be implemented will be unique for each company based on their individual needs and goals. Through our research we found that sound management structures were a key to success. Once companies identify their specific needs, put these new practices in place, and organize each aspect of their business, we feel they will experience beneficial changes.

After researching various management tools, we have determined that the Balanced Scorecard proves to be the most practical managerial tool to administer throughout a company to organize and distribute the current business practices of Corporate Social Responsibility, Sustainable Development, Cleaner Production, and Eco-Efficiency. The Balanced Scorecard allows a company to keep track of all aspects of their organization from finance to internal business to customer and stakeholder satisfaction and lastly to learning and growth. Similar tools that we have researched seem to be lacking the ability to tie in all aspects of the business, both internally and externally. The additional tools studied do not provide one unified and readily available map of the company's goals and objectives that can be given to each individual employee to monitor progress in carrying out these goals.

After thoroughly analyzing the concepts and weighing the benefits of Corporate Social Responsibility, Sustainable Development, Cleaner Production, and

Eco-Efficiency, it is our recommendation that these programs, along with the Balanced Scorecard, should be strongly promoted by non-governmental organizations such as CIDH. Through the use of seminars and training modules, the practices of these programs can be taught to companies in an effort to expand participation.

Our recommendation to CIDH is to create three separate seminars providing specific information on how to implement the aforementioned practices. After speaking with CIDH, we have determined that their previously planned four day module training should be maintained for the fourth module to which we are contributing. Each of the three seminars should be given throughout the four, eight hour days. Consultants from CIDH will be teaching high-level managers from small and medium-sized enterprises.

The first seminar should include the specific details of Sustainable Development as it relates to Corporate Social Responsibility, providing information on employee opportunities, community involvement, and transparency. The second seminar should focus on Cleaner Production and Eco-Efficiency and should outline the process for developing an Eco-Efficiency Profile. This profile allows companies to monitor and record measurements such as the amount of waste produced, which would result in more efficient methods of production. Lastly, we have determined that the third seminar should provide companies with specific information about the Balanced Scorecard. Not only should companies be given an overview of the tool, but they should also be provided support in developing and implementing the Balanced Scorecard within their business.

Based on our research, Corporate Social Responsibility, Cleaner Production, and Eco-Efficiency are very beneficial and valuable practices. We have found that companies are not solely responsible in contributing to a sustainable future. Through personal practices such as recycling and conserving energy and water, everyone can join the effort to work toward a sustainable future. If adopted by companies, and also on a personal level within the global population, our data confirms that there would be countless benefits, both economically and socially. The basic quality of life for everyone would be greatly improved, providing more people with drinkable water, financial support, education, and a clean environment. Companies would also benefit in numerous ways, helping to support the economy. If non-profit organizations such as CIDH could promote more widespread participation in the practices of Corporate Social Responsibility, Sustainable Development, Cleaner Production, and Eco-Efficiency in Costa Rica, the social implications would be endless.

CHAPTER I. INTRODUCTION

As a growing global population, we are undermining our clean air and water, as well as limiting the amount of healthy environments. The current total of 6.4 billion people is expected to exceed 8 billion by 2030, with a majority of the growth coming from developing countries (Total Midyear Population for the World, 2004). With the increasing global population comes a greater consumption of resources and an ever-present demand for sustainable development to support the current and future generations.

Our environment is greatly impacted by pollution through unrefined production procedures. One can hardly deny the existence of pollution when, for example, there is a measured 23 million metric tons of total carbon dioxide emissions from energy use and cement manufacturing in the world (Carbon Emissions from Energy Use and Cement Manufacturing, 2003). Toxic pollutants enter our environment on a daily basis and lead to health concerns and the depletion of biodiversity. Manufacturing companies, which are responsible for a large majority of the toxic pollution, are resisting the importance of programs such as Cleaner Production (CP), Eco–Efficiency, and Corporate Social Responsibility (CSR), which are discussed further in the following chapter.

There are organizations, governmental laws, and company policy plans dedicated to the practices of Cleaner Production and Eco-Efficiency, proactive approaches to reducing pollution. The goal of our research was to understand why there are still so many stakeholders of the world who have yet to join that effort. The World Bank Institute, a well-known agency of the UN, has been recognized for its

valiant efforts to promote Cleaner Production and Eco-efficiency. Through their Corporate Governance and Corporate Social Responsibility Program, the World Bank Institute has created a worldwide partnership defined by action plans for and a commitment to reducing pollution in order to contribute to sustainable development while maintaining profits and growth. The analysis of the research conducted will demonstrate the further necessity for the promotion of these methods specifically in Costa Rica.

Along with these approaches for cleaning up the environment and acting more socially responsible, every company places great emphasis on financial aspects. Eco–Efficiency places equal stress on the environmental and economic factors of business. It emphasizes that by adopting eco-efficient practices, companies can work towards sustainability and save money by maximizing production, while creating as little waste as possible. In 2001, the AMANCO Corporation began working towards sustainability by following an eco-efficient strategy, and they were able to save over $900,000 in their first year (Amanco, 2001). This is just one example of how these practices can be beneficial for the company and can help to improve the sustainability of the world.

CIDH, The Center for International Human Development located in San Jose, Costa Rica, is a partner in promoting Corporate Social Responsibility. The expressed goal of the CSR partnership is to be socially responsible while sharing with others the action plans which have enabled this responsibility. Through funding from the World Bank Institute, CIDH plans to utilize this research and analysis of Sustainable

Development and its importance in Corporate Social Responsibility to develop a training module for educating Costa Rican enterprises. In the next chapter we will discuss these programs, as well as a variety of managerial tools that can help companies create action plans for participating in Cleaner Production, Eco–Efficiency, and Corporate Social Responsibility. We have heavily considered the application of the Balanced Scorecard (BSC). This tool provides companies with a continuous assessment of what the Balanced Scorecard Collaborative believes are the key areas of business: customer and stakeholder satisfaction, finances, internal business, and learning and growth (The Balanced Scorecard Homepage, 2005). This potential tool, which Costa Rican businesses can easily use, would focus on company performance and allow the companies to cooperate and remain competitive together. If these companies would be willing to make changes to work toward adopting cleaner production and maximum eco-efficiency, they would have a greater chance of being characterized as corporately responsible, as is shown later in the Background and Literature Review Chapter. These ideas are shared by Chairman and CEO of AT&T, who believes that companies that take the necessary steps to join and participate in the Corporate Social Responsibility Program will be rewarded, while those that do not will fall behind (CSR Main, 2005).

To analyze the importance of Corporate Social Responsibility and Sustainable Development through Cleaner Production and Eco-Efficiency, we have created case studies of successful businesses in Costa Rica including AMANCO, Intel, Finca Rosa Blanca Country Inn, and Hotel Punta Islita. We used these studies to assess how current Costa Rican businesses have adopted Cleaner Production and Eco–Efficiency

and observe what their benefits have been. We have also studied how the different businesses use the specific tool or a version of the Balanced Scorecard. Our analysis of this research delineates the advantages of methods of business management such as the practices of advocating Cleaner Production and Eco-Efficiency. The final conclusions drawn will demonstrate what causes companies to make socially responsible changes in their business, offer methods to educate companies about Cleaner Production and eco-efficient practices, and emphasize the financial benefits of these programs as a way to encourage other companies to contribute to Sustainable Development.

Chapter II. BACKGROUND AND LITERATURE REVIEW

As the world advances into the future, exciting and innovative new industries and technologies are developing. Many corporations around the world are expanding, and the business world is flourishing in many regions. However, as exciting as this may be, there are also many consequences. These new developments only add to the worsening problems of pollution and negative environmental impacts that are endangering the earth, not only for corporations, but for the entire population. From a business standpoint, if corporations, both locally and internationally, do not recognize the impact that these innovations and developments are having on the environment, there may not be much of a future left.

In the early 1970s, the UN began to realize the growing need for companies to take responsibility for their actions and environmental impacts and sought change. First developing the idea of sustainable development, as will be discussed later, the UN began to raise awareness of the need for companies to act in a socially responsible way. In response to the Millennium Goals of the UN, the World Bank Institute adapted the idea of sustainable development to further promote cooperation, calling the new program Corporate Social Responsibility. The program is a partnership of corporations working together to help maintain awareness of the environment and act responsibly in society. This is backed by the idea that corporations have an obligation to respect the basic rights of humans.

As corporations work to become sustainable, part of their responsibility to society is also to maintain clean and eco-efficient practices. Cleaner Production is an approach to managing that focuses mainly on trying to reduce wastes while creating

products that have the least amount of environmental impact. An important aspect of Cleaner Production is the concept of Eco-Efficiency, which is defined as creating more goods and better services while using minimum resources, and producing less wastes and pollution.

To enable companies to participate efficiently in these beneficial programs, the assistance of a managerial tool such as the Balanced Scorecard is needed. Such a tool allows companies to measure and assess performance levels of every aspect of their organization, as well as cater to the need for social responsibility and cleaner production as they implement objectives to do so.

In this chapter, we will further discuss and review information about these concepts as they have related to the goal of our project. We begin with a detailed examination of Sustainable Development, including the ideas and reasoning behind it. This is followed by a discussion of Corporate Social Responsibility as a program to help corporations follow through with their obligations to society. We then move on to Cleaner Production, providing a detailed look at the need for such an approach to managing that helps to keep the environment clean, while companies maintain their social responsibility. Furthermore, we focus on the importance of Eco-Efficiency within business practices. Lastly, we have introduced the Balanced Scorecard, as well as a few alternatives, as managerial tools that can be implemented by corporations to help them effectively carry out these responsibilities and programs.

SUSTAINABLE DEVELOPMENT

When the United Nations Conference on the Human Environment met in 1972, they created a declaration whose concepts have evolved into what is now known as Sustainable Development. The Secretary-General of the United Nations and his representatives, including representatives from 113 states, about 14 specialized agencies, and numerous international nongovernmental organizations, along with observers from several intergovernmental organizations, participated in the conference. This conference commenced the continuing quest for companies to share common ground and principles to protect and further the human environment. Throughout the declaration, they continually mention social development and economic development as interdependent concepts. It proclaims that only people, "the most beloved of all worldly things", have the power to enact significant changes. The last proclamation states that no person, company, or organization is free from accountability. The declaration also requests that everyone recognize the responsibility that they have to themselves, their contemporaries, as well as to their posterity. The document they produced, The Declaration of UN Conference on the Human Environment, was the beginning of a worldwide trend toward what is now known as "sustainable development" (Stockholm, 1972).

In 1987 at the World Commission on Environment & Development, commonly known as the Brundtland Commission after the chairman who ran it, sustainable development was given its current definition. The definition, as listed in the Brundtland Report, states that sustainable development involves the satisfaction of the needs of all people without affecting the ability of future generations to do so

as well. These needs include basic things such as food, water, shelter, clothing, and jobs, as well as opportunities and resources to seek a better life. The report also emphasizes that sustainable development is not a single identifiable state; rather it is a balancing of the current use of resources, direction of investments, technological developments, and institutional changes with the future need for them (Report of the World Commission, 1987). With the idea of sustainable development clearly defined and justified, it became an identifiable global concern that would continue as a goal for present and future generations.

This goal to globally provide sustainable development was furthered through the United Nations Conference on Environment and Development in June 1992 in Rio de Janeiro. There were 172 governments present, as well as 2,400 nongovernmental organizations. Of the 172 governments, 108 of the governmental representatives were serving as heads of state or government. The conference served as a follow-up to the United Nations Conference on the Human Environment discussed earlier and produced even more pertinent documents. Such documents as Agenda 21 and the Rio Declaration continue to be the driving support for many current programs and organizations including the United Nations Division for Sustainable Development. The summit's main purpose was to encourage change in attitudes and policies toward economics, environment, and society.

The summit has since influenced all the following UN conferences because of the comprehensive nature of the goals for sustainable development as established in Agenda 21 and the Rio Declaration (Earth Summit, 1997). Agenda 21 is an extensive plan that emphasizes that sustainable development must be a global effort. It

specifies roughly forty different issues that need to be addressed for a sustainable future. The Rio Declaration calls upon all states to create a global partnership to encourage equality, cooperation, and accountability among states. Agenda 21 and the Rio Declaration are documents that have the unique ability to make a global impact because of the global involvement in their conception (Agenda 21, 2004).

Ten years later, in 2002, when the United Nations had the Johannesburg Summit on Sustainable Development, although it seemed that many governments and organizations were actually working toward achieving goals based on the issues of sustainable development, there had been little improvement. Therefore, the agenda of this meeting was similar to those of conferences before it. It seemed that although the companies were working towards their own goals to create more efficient production, there were few solutions to the issues of sustainable development that could be measured globally. As a result, at the Johannesburg Summit, more was produced than just declarations and agendas. Before its end, there were over 300 partnerships which involved mutual commitments and treaties between governments and nongovernmental organizations (United Nations, 2003).

Later in 2002, the UN Commission on Sustainable Development was created to ensure forward progress. The commission reinforced all the aforementioned declarations and agreements, in addition to one not previously mentioned, the United Nations Millennium Declaration. The Millennium Declaration document does not directly follow the progression of the sustainable development summits because it is a comprehensive declaration that involves all member states which participate in multiple United Nations Programmes. The Declaration details the Millennium

Development Goals, states targets for each goal, and offers indicators of achievement for each. The goals ultimately address the need for global sustainable development.

CORPORATE SOCIAL RESPONSIBILITY

When it first arose in the United States in the late 1800s, the notion of corporate social responsibility was what state governments used to explain the regulations that they enforced to protect public interest. Later in the 1960s and 1970s, Corporate Social Responsibility (CSR), as a newly defined business perspective, became a topic of public debate. This new perspective became a means of public jurisdiction over the expanding and the increasing number of multinational corporations. It suggested that companies have ethical and financial obligations to preserve and restore damage they have done to the environment and the communities external to their everyday business operations (Mah, 2005). Though never having one specific definition, Corporate Social Responsibility remained a guiding principle for business management.

To support the United Nation's Millennium Development Goals, the World Bank Institute created many programs to directly address them. In January of 2000, Mr. Wolfensohn, the president of the World Bank Group, introduced the Corporate Governance and Corporate Social Responsibility program to focus on Millennium Development Goal 8: Develop a global partnership for development (Corporate Governance, 2005). This program expounded the simple CSR principle to be not just a business management perspective, but a plan for actions, a tool for competitiveness, and a framework for implementation.

Mission and Objectives

The mission of the Corporate Social Responsibility program is to support countries in their relations with corporations in order to further communicate the importance of sustainable development. The CSR Program recognizes the opportunity to offer further education and distribute valuable resources by utilizing the global technology available. The program subsists through partners, stakeholder groups, private sector, governments, civil societies, academia, and student groups who share this mission (Corporate Governance, 2005).

The main objective is to prove that indifference is not part of a sustainable future and that sustainability is ultimately linked to competitive success (Corporate Governance, 2005). The goal for all partners is the same, but the objectives vary. For countries and government officials, the main objective includes providing a political environment that supports socially responsible principles. For companies, the main objective is to make adjustments that foster Corporate Social Responsibility. Their commitment as a partner in Corporate Social Responsibility will be visible to other governments, companies, and individuals through their identified objectives to make and share effective action-plans for Sustainable Development.

A Tool for Competitiveness

According to Daniel J Tschopp, the current reporting methods for public notification of socially responsible behavior are either underused or lacking in substance (2005). The CSR program allows partners to work together to create action

plans and toolkits that establish standards upon which companies can evaluate their behavior in order to compare themselves to others. The success of the CSR Program is a testament to the previous statement that the current reporting methods are insufficient. The new Corporate Social Responsibility program provides substance and value in social responsibility reporting, which was lacking in other programs. Hugh Morgan, the Chief Executive Officer of WMC Ltd. believes there is value in reporting and that the transparency of it reinforces a positive reputation of the corporate entity (CSR Main Concepts, 2005).

Simply gaining the reputation that accompanies being a CSR partner proves to be advantageous. The value of reputation has greatly increased with the advent of a more ethically conscious consumer market (CSR Main Concepts, 2005). With the creation of the Dow Jones Sustainability Indexes (DJSI), in August 1999, companies were forced to accept being measured on their inclusion or exclusion of "a business approach to create long-term shareholder value by embracing opportunities and managing risks deriving from economic, environmental, and social developments" (Jackson, 2004). In 1996, the Shell Group faced major criticism after environmental and human rights offenses. These offenses damaged their reputation, but intelligent management was able to allay potential disaster (Dunphy, Griffiths, & Benn, 2003). They responded proactively rather than reactively. Porter and van der Linde believe that companies who act promptly and recognize the opportunity for innovation will gain worthwhile competitive advantages (2003).

The Framework

In order to incorporate Corporate Social Responsibility in an effective manner, the World Bank Institute proposes a general framework to break down the elements. Referred to as the CSR Diamond, their framework identifies four main elements: rule of law; regulation, competition, and standards; complementary CSR institutions; and internal corporate structures and policies. Three surrounding influences which affect all the elements are globalization, crises and changes in the political and macroeconomic environment, and the government (CSR Diamond, 2005). This framework is most helpful in identifying areas that can be measured, however, further break down and value needs to be added to such a framework in order to use it for competitive analysis.

As evidenced through the expansion of CSR partnerships, more and more companies and organizations are devising or adopting frameworks that support competitive analysis. Though the frameworks may be different in terminology, they are all comparable and conclude that the value currently assessed by companies is far below what PricewaterhouseCoopers has, in Figure 1, identified as the sustainable business value. Through the implementation of competitive analysis frameworks, such as the Balanced Scorecard, which will be discussed later in this chapter, progress is being made to improve internal and external performance to foster sustainable development.

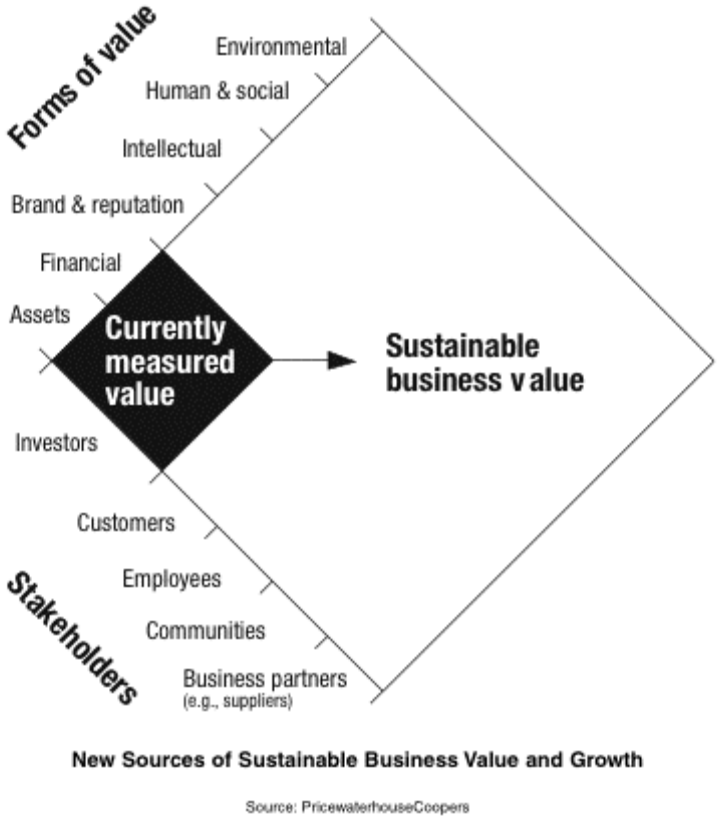


Figure 1: New Sources of Sustainable Business Value and Growth
(Source: Jackson, 2004)

CLEANER PRODUCTION

Cleaner Production (CP) describes a preventative approach to environmental management. The concept behind this approach is to produce goods with the minimum environmental impact possible (Cleaner Production, 2004). While notably improving industrial efficiency, profitability, and competitiveness, CP protects the environment, the consumer, and the worker. Cleaner Production is not merely a treatment to resolve the impact of pollution on the environment, but it is a technique focused on the prevention of pollution before the initial occurrence (Cleaner Production, 2004). Cleaner Production involves conserving raw materials, water, and

energy, as well as eliminating toxic materials to reduce the impacts that are causing harm to humans and the environment. Participation in Cleaner Production practices is a necessary step in the process of becoming a partner dedicated to Corporate Social Responsibility.

Assessment in Industries

Businesses are able to become aware of the processes that work or those that fail through the positive and negative reactions of the rest of the business world. They can easily recognize things such as ventures that have been beneficial and hazards that are impacting them adversely. The company creates its behavior and methods of action based on these conditions. As previously mentioned, the Balanced Scorecard is a method to evaluate companies and display their successful procedures as well as those that need improvement. It is through the Balanced Scorecard that companies may become aware of and measure their environmental impact. Any size corporation could use a tool such as this, as even small and medium-sized enterprises (SMEs) affect the environment with their share of pollution, waste, and other unsustainable practices. Many small businesses do not consider that their environmental impact plays a significant role in the amount of pollution in the world. What they need to realize is that collectively, the pollution of each small business adds up and is indeed contributing to a large share of pollution into the environment. To raise awareness and motivate appropriate action for maintaining Cleaner Production proves to be a challenge. However, once a company recognizes the need

for Cleaner Production, there are five phases of methodology to help achieve appropriate practices, as shown in Figure 2 (Cleaner Production, 2004).

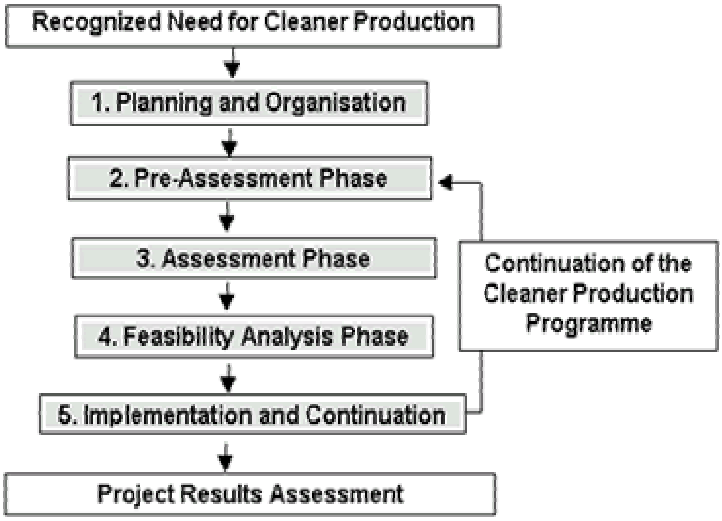


Figure 2: Five Phase Cleaner Production Methodology
(Source: www.uneptie.org, retrieved March 22, 2005)

According to the United Nations Environment Programme, a company needs an organized approach in order to identify, evaluate, and implement Cleaner Production. With the collaboration of management commitment, employee involvement, and cost awareness, companies develop the first phase. Researchers conduct studies on the materials, technology, and the operating practices used during the assessment stage in order to make logic decisions on CP resolutions. Feasibility studies are then conducted to ensure the outcome of environmental improvement. In the last phase, the practical prevention measures are implemented and a continuation of monitoring and evaluating then proceeds. By maintaining Cleaner Production practices, a company may also be characterized as corporately responsible (Management tools for Cleaner Production, 2003).

Cleaner Production in Practice

Companies that execute corporate responsibility strategies experience success in various aspects (Corporate Environmental Reporting Websites, 2000). For example, the IBM Corporation, a firm strongly committed to CSR and their Environmental Management System, has accomplished Cleaner Production in a variety of measures. In doing so, the company has developed a product recycling service. In 2002, they handled more than 51,000 metric tons of end-of-life equipment and product waste and only sent 2.92 percent of the materials collected to landfills (Environmental Protection, IBM Full Report, 2002). In the same year, IBM saved 311 million kilowatt hours of electricity. Substantial progress was also made in regards to the total hazardous waste they produced, as it decreased by 75.7 percent from 1997 to 2002, and was decreased by 94 percent since 1987 (Environmental Protection, IBM Full Report, 2002). Such improvement explains why IBM received the Vermont Governor's Award for Excellence in Pollution Prevention (Environment, 2005), and why in the three years that *Training Magazine* has ranked the top 100 corporate programs, IBM was the only corporation to make the top five each year (Environmental Protection, IBM Full Report, 2002).

The first annual Global 100 Most Sustainable Corporations in the World was revealed during the World Economic Forum in Davos, Switzerland on January 28, 2005. Sustainable corporations are defined as those that produce overall positive impacts on society and the environment. Toyota, the fourth-largest automaker in the world; Alcoa, the world's leading producer of primary aluminum; and BP, one of the world's largest energy companies; ranked as the top three of the one-hundred

selected for exceptional sustainability practices by scoring the highest ratings overall (The Global 100 Most Sustainable Corporations in the World, 2005). With the invention of the hybrid vehicle, Toyota has made a strong commitment to environmental management (Environment, 2005). Alcoa has developed greenhouse gas emissions reduction programs as well as hydropower projects (Greenhouse Gases and Climate Change, 2005). BP has distinguished itself as a leader in resource and energy efficiency, climate change risk abatement, waste reduction and recycling, and overall environmental impact (BP: Environment and Society, 2005). All three of these companies demonstrate success in Cleaner Production procedures.

Despite the success of the previously discussed companies, other enterprises complain of several constraints limiting their participation in the effort of promoting CP. For instance, financial, economic, policy-related, organizational, technical, and conceptual elements are those which companies feel are keeping them from joining the approach to better the environment (Cleaner Production, 2004). From limited equipment, to lack of enforcement and funding of resources, there lie major problems for many companies.

In contrast to some companies' narrow outlook to seek the long-term advantages of CP, Alcoa expects its efforts to create environmental and energy cost savings of $100 million by 2006 (The Global 100 Most Sustainable Corporations in the World, 2005). IBM also had similar profitable results with total worldwide environmental expenses for the year 2002 at $118.8 million, while the corporation's estimated environmental savings and cost avoidance worldwide was $238.4 million for the same year (Environmental Protection, IBM Full Report, 2002). Furthermore,

Dow Chemical Company, one of the world's leading chemical manufacturers with sales in 1990 of $19.7 billion and operations in thirty-two countries, demonstrates the power of Cleaner Production with their Waste Reduction Always Pays (WRAP) program (Schmidheiny, 1992). The program focuses on pollution prevention, and mainly waste reduction. With numerous successful results of the program, a team at Dow's Western Division saved the corporation $8 million annually from reduced raw material use and lower environmental and labor costs (Schmidheiny, 1992).

Conversely, as compared to large corporations such as Alcoa and IBM, small and medium-sized enterprises are not yet fully effective participants in Cleaner Production strategies. The majority of SMEs in developing countries continue to regard environmental issues as a threat and a cost rather than as a potential investment and opportunity (Hillary, 2000). According to Jonathan Hobbs, Executive Director of the Business Council for Sustainable Development, practices in Cleaner Production programs indicate that twenty percent reductions in pollution can be achieved with low or no cost measures in most SMEs. A further ten to twenty percent can then be achieved with minor investments and pay-back periods of less than six months (Hillary, 2000). Therefore, based on this information, one can conclude that Cleaner Production proves to be a beneficial and profitable method.

ECO-EFFICIENCY

Eco-Efficiency is a concept that was introduced by the World Business Council for Sustainable Development (WBCSD) in 1992 to bring together both the economic and ecological aspects of business to help better business and the

environment. In bringing economics and ecology together, the goal of Eco-Efficiency is to increase the amount of goods and services produced, while decreasing the amount of materials and resources consumed and the impact on the environment. This relationship of economy and ecology yields the ratio in Equation 1.

$$eco-efficiency = \frac{product\ or\ service\ value}{environmental\ influence}$$

Equation 1: Eco-Efficiency Ratio

Eco-efficiency has three main objectives; reducing the consumption of resources, reducing the impact on nature, and increasing product or service value. The plan for improving eco-efficiency helps businesses to better meet the demand of their consumers while decreasing their environmental influence to contribute to a more sustainable future.

Eco-efficiency is in essence an extension of the concepts encompassed by Corporate Social Responsibility and Cleaner Production, which contribute to Sustainable Development. It calls upon all individuals, companies, and organizations to make changes as recommended by the action points. Also, the emphasis of eco-efficiency on streamlining business practices to consume less while producing less waste coincides with Cleaner Production.

To help companies understand how to become eco-efficient and assess their level of efficiency over time, the World Business Council for Sustainable Development created a flexible framework. They tested this framework with companies in fifteen countries that represent ten different industrial sectors. It is not a rigid framework, but a common approach to eco-efficiency measurement which

offers guidelines to implement it as well as communicate the findings both internally and externally.

In addition to the framework, the WBCSD has specified twelve key action points, which will later be discussed in further detail, to provide an eco-efficient future. The action points cover everyone from business personnel, to government leaders, to the average consumer. They recommend actions that can be taken by each to foster and attain eco-efficiency for a sustainable future.

Measuring Eco-Efficiency

The framework for an eco-efficiency profile, as previously mentioned, is a flexible, generally applicable structure with guidelines for developing an eco-efficiency plan. It also provides guidance for implementing the plan as well as guidance for disclosing it to both internal and external stakeholders. The overall framework consists of universal definitions, principles, and indicators separated into general applicable and business specific categories.

The indicators for eco-efficiency represent the principles laid out by the WBCSD. The principles are means for ensuring the scientific support, environmental relevance, accuracy, usefulness, validity, and transparency of eco-efficiency profiling and reporting. The generally applicable indicators are separated into two categories, one for economy and one for ecology. The economic indicator category evaluates product or service value according to the amount of goods produced or services provided and the net sales of the goods or services. The ecological indicator category evaluates the environmental influence during product or service creation.

The environmental influence is measured according to the amount of energy, materials, and water consumed and the levels of greenhouse gas and other ozone-affecting substance emissions. These generally applicable indicators are concerns for all businesses regardless of their industrial sector. They represent global concerns for the conservation of resources and provision of sustainable development.

The business specific indicators evaluate the environmental influence of products and services while they are in use. The measurement framework offers guidance for selecting those indicators so that they too represent the principles of eco-efficiency. Other indicators that are currently business specific include additional financial indicators, measurements of acidification emissions to the air, and measurements of the total waste production. With further development of globally accepted measurements for these indicators, they could become generally applicable.

According to Cowe, author of *Measuring Eco-Efficiency: A Guide to Reporting Company Performance,* for the World Business Council for Sustainable Development, once companies have evaluated all the indicators for their eco-efficiency profile, they need to further explain the context of the information provided. They must state any limitations that existed while choosing their business specific indicators and the scope of the information provided so that the reader will have an accurate perception of the profile. Cowe also states that the overall eco-efficiency profile should be organized in five sections: organizational profile, value profile, environmental profile, eco-efficiency ratios, and methodological information. The organizational profile should provide basic information about the size, divisions, and industrial sector of the company. The value and environmental profiles should

include information about the various indicators. The eco-efficiency ratios should include the figures necessary to make calculations according to Equation 1. The last section, the methodological information, should provide information about what approach was used to select the indicators and to find the necessary information as well as any limitations of the data. This eco-efficiency profile can help companies to view their current status, monitor progress from year to year, and can provide outsiders insight into the intentions and methods of the business (Cowe, 2000). For a full example of an Eco-Efficiency profile refer to Appendix G.

Action Points

The World Business Council for Sustainable Development has developed twelve key action points that will lead to an eco-efficient future, which include measures that everyone should take, from business personnel, to government leaders, to the average consumer (Lehni, 2001).

Markus Lehni, of the World Business Council for Sustainable Development and author of *Eco-efficiency: Creating More Value with Less Impact,* believes that as a business leader, in order to heed eco-efficient success, one should integrate eco-efficiency into every aspect of their business strategy, including operational, product innovation, and marketing strategies. According to the WBCSD, business leaders should openly report the company's sustainability and eco-efficiency performance to their stakeholders. In an effort to encourage eco-efficient practices throughout all employees' work procedures, business personnel should support policy measures which reward eco-efficiency.

The WBCSD feels that governmental leaders can take action by setting broad eco-efficiency targets and conversions criteria for sustainable development, as well as incorporating policy measures to strengthen eco-efficiency in their own system. Examples include eliminating subsidies, internalizing externalities, and effecting shifts in tax policy. Another step towards an eco-efficient future for governmental leaders is noted as working towards altering international policy rules and systems for trade, as well as financial transactions, to support higher resource productivity and emissions reduction, as well as improvements for the underprivileged.

Financial analysts and investors need to recognize and reward eco-efficiency and sustainability as investment criteria, which according to the World Business Council for Sustainable Development, will help the analysts and the investors as well as the environment. This will also assist eco-efficient and sustainable leading companies in communicating their progress and related business benefits to financial markets. Financial analysts can aim towards an eco-efficient future by also promoting and using assessment tools and sustainability ratings to support the markets and to help widen the familiarity of the benefits of eco-efficient practices.

The average consumer can help the progress of an eco-friendly future as well. By preferring eco-efficient and more sustainable products and services, as well as supporting political measures to create the framework conditions which reward these practices, they can contribute to these practices.

Lastly, an important action point for an eco-efficient future is for educators to include the concepts of eco-efficiency and sustainability in high school and university curricula and to build the theories into research and development programs to ensure

the growth of the attentiveness of these basic principles of advancing the world towards Cleaner Production (Lehni, 2001).

THE BALANCED SCORECARD

The Balanced Scorecard (BSC) is a managerial tool intended to improve companies' performance both within their own organization, as well as on a broader level. It is as a set of guidelines for corporations to follow and apply to their own organization in order to improve the efficiency of their business practices. The guidelines, which include assessing and maintaining a balance of key areas, can be adapted to fit each company's own basic needs.

The main idea behind the tool is the balancing of key areas, which include: customer and stakeholder satisfaction, finances, internal business, and learning and growth aspects of the organization. This ensures that the needs of each area of the company are met. According to Niven, the author of *Balanced Scorecard: Step by Step for Government and Non-Profit Agencies* and a noted speaker on the subjects of Performance Management and the Balanced Scorecard, the scorecard was originally developed to help companies be able to determine and monitor other areas that would balance financial aspects and lead to success in the future (2003). Financial and non-financial indicators are assessed to improve company performance and lead to higher profitability. By assessing customer and stakeholder satisfaction, as well as communicating with other members of the organization, each separate part of the company can help to improve the organization, as they are all aligned within the same set of guidelines and can voice their demands. The four basic indicators allow

measurement of an organization's progress towards achieving specific objectives, while at the same time measuring how they are staying focused on their long term goals (The Balanced Scorecard Homepage, 2005).

With the application of the Balanced Scorecard, companies can use this tool as a means of communication, not only internally but also externally. They can use the tool to communicate with their own employees and stakeholders, but they can also interact with other organizations to share the results of their company analysis. This comparative method of business can help companies become aware of potential new methods that may already be improving other corporations. The Madison Paper Company of Illinois originally implemented the tool to help their company move forward into the future with an efficient method in place. After only six months of use, Kevin Kuliga, the President for Madison Paper Company, remarked that "it doubles as a management tool for me and my team as well as a communication tool for our entire company" (The Balanced Scorecard Collaborative, 2005). This broad level of communication provides companies the opportunity to oversee each part of their corporation in greater detail.

The Framework

According to Mr. Kent Smack, a consultant for The Balanced Scorecard Collaborative, the Balanced Scorecard is an efficient method of management because it provides clearly defined objectives, and also develops Strategy Maps that companies can readily follow (Personal communication, April 8, 2005). These maps may be as simple as a power point presentation, and can then be accessed whenever

necessary to keep companies on track and constantly improving their performance. Within each map is a list of objectives, initiatives, action plans, and targets. Objectives are determined based on the needs of the company. Once they are determined, each of the objectives are listed and clearly drawn out for easy interpretation. Each objective is then assigned an initiative or action plan which is then given a measurement, a group of workers, and a budget if necessary. The groups then work to achieve their target result, and meet regularly to discuss progress or issues that may come up. The scorecard is checked on a daily to weekly basis to monitor progress towards the given objectives, and is also reviewed annually to make any necessary changes.

Dr. Thomas Lynch, Vice President of the IT Division of Worcester Polytechnic Institute, implemented the Balanced Scorecard system into the IT Division at the school, and strongly supports the use of the Balanced Scorecard and specifically these strategy maps (Personal communication, April 18, 2005). According to Dr. Lynch, each member of the division benefits from the use of strategy maps, as they provide clarification on areas that may need improvement and also allow sharper progress measurements. With the Balanced Scorecard system in place, they were able to receive employee input on the objectives they believe should be included, and this involvement, according to Dr. Lynch, proved to boost employee enthusiasm. The division has just recently begun using the BSC method and Dr. Lynch could not provide any specific examples of areas that had been changed and improved due to the Balanced Scorecard use. However, he did state that the system has greatly improved internal relations as well as provides the division as a whole a

more effective way to work towards their visions and goals. For the complete interviews with Mr. Kent Smack and Dr. Thomas Lynch, refer to Appendices E and C respectively.

The Four Main Sections

Each of the areas of the Balanced Scorecard, customer and stakeholder satisfaction, finances, internal business, and learning and growth, cover basic aspects of a corporation. These aspects are then equally assessed, which allows companies to monitor performance and determine which area needs attention. According to Mr. Kent Smack, these areas are all assessed through objectivity. Specific objectives are developed for each of the areas, and once in place, the aforementioned strategy maps are developed as a means to follow through.

Perhaps the area of main concern for many companies is the financial aspect. The use of the Balanced Scorecard allows companies to demonstrate how effectively they are providing services that balance efficiency with "cost consciousness" (Niven, 2003). There are key areas to consider, such as revenue enhancement and financial systems. According to Niven, having good financial systems in place will not only increase credibility, but can also prevent overspending (2003). Smack recommends for the financial aspect that companies should clearly list measurable objectives such as "grow revenue fifteen percent by the end of the year". This provides targets that can then be easily monitored and worked toward to help improve finances. Applying strong tools and objectives for financial performance can greatly contribute to improving profitability. For example, Cigna Insurance attributes its profitability

success to the use of the Balanced Scorecard and the improvements made as a result of use. Cigna was losing one million dollars a day in 1993 before adopting the BSC. With this system in place they jumped to the top quartile of profitability in their industry in just two years (How to Use, 2005).

Customer and stakeholder satisfaction is also a key perspective that plays a large part in the overall development of a company. If the customer believes that an organization is not performing to the best of its ability, then the person will be much less likely to support that company. Therefore, companies must consider their targeted consumers and decide how they want to appeal to the consumer before they can implement strategy to do so. Satisfaction can be measured in a variety of ways, however, the most common type of measurement is through surveys and questionnaires. Not only are customers questioned, but employees are also included in stakeholder satisfaction. Employees must believe in the corporation they are working for to remain dedicated to the practices of the company. They also have basic rights to be treated fairly as employees and part of a company's social responsibility should be to maintain quality work conditions for their employees.

Wal Mart is an organization that is highly concerned with customer satisfaction and strategically monitors performance. The organization demonstrates what Niven refers to as "Operational Excellence" as they are completely aware that their goal is to focus on "convenience and low price" (2003). Having a planned goal and target customer, the Wal Mart Corporation can then efficiently appeal to the price conscious consumer. With customer satisfaction as one of the main perspectives

included in the BSC, companies are not able to overlook their own target consumers, leading to more satisfied customers and in turn, better business performance.

The internal organization of a company also proves to be pertinent in the success of a business. Not only is it important to meet customer and stakeholder expectations, but a company needs to make sure that their internal processes are also running efficiently (The Balanced Scorecard Homepage, 2005). This aspect of the Balanced Scorecard is used to maintain focus on internal functioning, while still balancing the other key areas to ensure better performance. Niven suggests some internal areas that organizations should focus on are quality, innovation, partnering, marketing, and fundraising (2003). In monitoring internal processes, any areas that may need improvement will become evident, and any clear problems can then be worked out. While reviewing the internal structure and function of their company, the customer's needs and expectations should be kept in mind. In doing this, the company can determine if their processes are functioning to meet those standards (Niven, 2003).

Quality functioning of an organization is not only dependent on the internal processes in place, but also on the employees that are putting those processes to use. According to the Balanced Scorecard Collaborative, learning and growth is an area that goes hand in hand with employee standards. Employees must be up to date with the functioning of the company, and must be able to efficiently adapt to the changes and growth within the organization. Not only does learning and growth apply to the company as a whole, as it develops and implements new strategies for bettering their business, but the employees also must develop with the company.

To ensure that employees are working to the best of their ability, WPI's Dr. Lynch feels that it is important for them to be involved in the process of company growth. This creates enthusiasm and better cooperation. Using the Balanced Scorecard technique, companies can assess employment efficiency, skills, and habits. They can adjust the aspects of the review based on individual company needs and can determine which employees are the most effective. The developers of the Balanced Scorecard believe that internal processes can only be kept running smoothly if the correct levels of skill and motivation are behind them (The Balanced Scorecard Homepage, 2005).

Some Alternatives

There are also other managerial tools that are available to corporations, and some of these tools share similar ideas to those of the Balanced Scorecard. Six Sigma is an assessment system that serves mainly as a problem solving tool. The driving strategy behind Six Sigma is the focus on delivering products that are free of defects (What is Six Sigma?, 2005). Because of its ability to work out product defects, General Electric is more then satisfied with their use of Six Sigma stating that "Six Sigma has changed the DNA of GE — it is now the way we work — in everything we do and in every product we design" (Making Customers Feel Six Sigma, 2005). According to iSix Sigma, a consultant company for the use of Six Sigma, the methodology behind this system is data driven to point out any problems, which can then be fixed by the most skilled employees available. The data is monitored continuously to eliminate as many defects as possible and as a result, companies that

use the Six Sigma tool strive for products that are as close to perfect as possible (What is Six Sigma?, *iSix Sigma*, 2005).

Total Quality Management is another comparable management methodology and was developed before the BSC in the 1980s. It provides a similar idea, in that it emphasizes the need for companies to focus on internal processes. This emphasized attention on internal processes potentially results in more efficient performance by the employees, and in turn better overall performance (Niven 2003).

Another alternative to the Balanced Scorecard is the International Organization for Standardization, otherwise known as the ISO series. This system contains series, the 9000 and the 14000 series, which may be implemented as managerial tools. These are also focused on assessing different aspects of a company to ensure better performance. The 9000 series is mainly concerned with quality management, while the 14000 series is primarily concerned with environmental management (ISO 9000 and ISO 14000 in plain language, 2005). The 9000 series more specifically deals with customer satisfaction. It is a set of guidelines for corporations to follow that assesses the performance of the company based on how the customer will be impacted. This is similar to the idea of the 14000 series, but instead of the impact on the customer, the environmental impact is the main focus. Other similar alternatives that focus solely on environmental issues are the AA1000 developed by the Institute for Social and Ethical Accountability, and the SA800 from Social Accountability International.

Perhaps one of the closest methods of comparison to the Balanced Scorecard is the Management by Objectives (MBO) system. This is a traditional approach to

management that is based on the idea that companies should create a list of objectives by which they would operate. By creating these objectives, the company can work towards their overall goals. Objectives for the company's internal performance are put in place at the corporate level, and are then broken down and eventually assigned to each individual employee. Progress is monitored and evaluated, and employees that have achieved their goals are then given some sort of a reward as an initiative to promote further employee involvement. This managerial method focuses mainly on manager and employee efficiency to improve business performance (Management by Objectives, 2005).

The idea of improving business performance by monitoring and assessing both managers and employees is an idea also represented in the Balanced Scorecard. Some, however, feel that MBO does a good enough job at monitoring company performance, and that there is not a strong need for the BSC system.

Workforce Planning Manager for the East New England District of UPS William Walters stated that he feels the Balanced Scorecard does not bring much to the company that the MBO system did not already include (Personal communication, April 19, 2005). However, he then went on to state that others in different areas of the company feel very strongly that the Balanced Scorecard is the better method. Perhaps it can be inferred that the MBO seemed to provide the same type of assessments, according to Mr. Walters, because he works specifically within the workforce area of the company. Since the main focus of the Management by Objectives method is on the employee and management performance to carry out specific objectives, due to his position, he would also be specifically focused on these

areas of the Balanced Scorecard, paying little attention to the environmental aspects. The complete interview with Mr. Walters can be found in Appendix D.

The Madison Paper Company, of Illinois and part of the Myllykoski North America Corporation, promotes the Balanced Scorecard technique over the others. This smaller company division implemented the BSC before any other parts of the corporation. After witnessing the results that this tool had on the smaller company, Myllykoski CEO Robert Olah began implementing the Balanced Scorecard at the corporate level. Based on their use, his belief is that "by aligning our top 150 managers to the results tracked in the scorecard I think we will be able to drive even greater results in the future" (The Balanced Scorecard Collaborative, 2005).

How the Tools Compare

One of the main differences between each of these managerial tools is that the Balanced Scorecard seems to be the only one that sets guidelines for balancing financial perspectives as well as non-financial perspectives to help achieve business goals. Although some may cover some of the same principles, they do not seem to maintain a strategic development of each aspect of the organization. Each of the other reviewed methods seem to fall short of the Balanced Scorecard in that they do not provide a way for corporations to both improve performance and lead to social responsibility. Other tools involve reviewing company processes that lead to more satisfied customers, but the BSC implements the tool as high as the corporate level and as far down as each individual employee to ensure that every goal of the company is being met. According to Balanced Scorecard Collaborative Consultant

Kent Smack, the Balanced Scorecard works in companies as a "family tree of scorecards." He believes that it is this complete comprehensive strategy of the Balanced Scorecard that the alternatives seem to be lacking.

The ISO series, SA800 and AA1000 all seem to have the customer and environmental needs in focus. Total Quality Management, Six Sigma, and Management by Objectives all seem to place an importance on the quality of internal processes and employee performance. However, none of these tools offer a unified system that monitors the performance of the company as a whole, bringing all of these aspects together. The Balanced Scorecard provides companies with one strategy map, complete with all areas of concern that can easily be reviewed. Although the ISO series and MBO may cover more aspects of an organization then Six Sigma or TQM, these still do not seem to assess every aspect of the key areas of business as easily or completely as the Balanced Scorecard. Although it is hard to measure something as broad as environmental impact, the Balanced Scorecard seems to be the only tool that allows constant consideration and monitoring of specific objectives put in place to regulate these impacts.

Many companies such as the Madison Paper Company state their testimonials and share their positive feelings toward the BSC, yet many do not make public their specific implementation techniques. This makes it difficult to draw direct conclusions that their successes are directly based on the implementation of the Balanced Scorecard. However, based on their countless positive remarks, one can easily assume that it plays a large role.

With features that allow monitoring of all areas of business, which many alternative methods are lacking, it can be inferred that the Balanced Scorecard is an efficient method to help companies meet their performance goals. If given the proper commitment, the Balanced Scorecard system could be useful not only for improving overall performance, but for helping companies maintain much needed sustainable development, Cleaner Production, Eco-Efficiency, and Corporate Social Responsibility. By implementing objectives based on the ideas and practices of these programs, companies can maintain competitiveness, not only to improve their own quality of business, but to improve the quality of the earth.

Chapter III. METHODOLOGY

The goal of our project was to contribute pertinent information to the development of a training module on Cleaner Production and Corporate Social Responsibility to help bring these programs to Costa Rica. The training module includes Cleaner Production and Eco-Efficiency as necessary facets of Corporate Social Responsibility. The module also introduces the potential effectiveness of the Balanced Scorecard as a comprehensive tool to simultaneously assess all areas of business while helping managers and stakeholders to see the bigger picture.

Our liaison provided us with the four companies whom they felt follow good sustainability practices. The companies we studied were AMANCO, a company manufacturing PVC tubing; Finca Rosa Blanca Country Inn, a hotel and coffee plantation; Hotel Punta Islita, a luxury hotel; and Intel, a company specializing in technology advancements. First, we developed broad questions on corporate social responsibility and sustainable practices that applied to all the companies, which are listed in Appendix F. Then, prior to interviewing each company, we investigated their websites and any additional published information in order to add any more questions on the procedures of the specific business.

We then interviewed each of the companies to discuss with a high level manager what their current environmental policies, practices, and goals for sustainable development were. AMANCO was the first company to be visited for an interview with Business Analyst Dr. Roberto Vargas. Next we interviewed the owner of Finca Rosa Blanca Country Inn, Glenn Jampol, to discuss their current practices regarding the hotel, as well as his coffee plantation. We then interviewed Eduardo

Villafranca, the Managing Director of Punta Islita. The final interviews were with Mary Helen Bialas, the Academic Relations Manager, Gabriela Llobert, the General Manager of Corporate Relations, and Anibal Alterno, Environmental Engineer, all of Intel Costa Rica. We had a list of open-ended questions to guide us through each interview, which were discussed in a conversational manner. Our questions focused on how Cleaner Production, Eco-Efficiency, and Corporate Social Responsibility played a part in the company's usual performance and also how the companies monitored their practices. We were informed of methods already in effect and also of any that would be able to fit into their overall business plan in the future.

After collecting data from each of the companies, we reviewed our results. We constructed case studies that outlined each company's sustainability and eco-efficiency implementations, current methods, and future plans. In addition, we studied case studies previously developed by CEGESTI, an organization specializing in Sustainable Development, to examine the patterns and trends of the structures of the case studies. We also used the CEGESTI case studies as further reference of companies successfully following sustainability practices. We then created a similar structure for the outline of our case studies and organized our collected information based on this outline. For each of the case studies, we determined consistent qualitative and quantitative measurements, such as number of employees, size, services, waste production, and sustainability practices, to compare all the companies. While reviewing sustainability practices we looked for things such as efficiency within their daily performance, and also their efforts to reduce their environmental impact and to improve the community. This information helped us to identify areas

that needed improvement and those that seemed to be successful for the companies. We then evaluated the implementation of the Balanced Scorecard as some companies we studied were currently using the tool. We weighed the advantages and disadvantages of the scorecard in comparison to other managerial tools in an effort to determine the best suited tool to organize sustainability practices.

We were then able to use the case studies to develop an in-depth analysis for each of the businesses. It is with these analyses that we have developed a focus for our proposal to CIDH of seminars to include in their training module. We have provided the information to include in their module to consult different companies to direct the focus of their performance toward the practices of Cleaner Production, Eco-Efficiency, and Corporate Social Responsibility.

Our final task was to make recommendations to further the efforts to promote Cleaner Production, Eco-Efficiency, and Corporate Social Responsibility.

Chapter IV. RESULTS

We have formulated the data we have collected through research and interviews as case studies. Below are the four case studies that we have developed. Also, we have included two case studies, Panavisión and CONETSA, from CEGESTI, which we have used to compliment our own case studies for a more thorough analysis.

CASE STUDY - FINCA ROSA BLANCA COUNTRY INN

General Profile

Location: Santa Barbara de Heredia, Costa Rica

Number of Locations: One

Number of Employees: Eighteen; A daily ratio of one staff member per every two guests

Products or Services Rendered: Boutique hotel and coffee plantation

General Information: Finca Rosa Blanca has the highest rating in Costa Rica for sustainable tourism and cultivates its own organic coffee on its twenty acre organic coffee farm for the use of the hotel guests. The inn offers a master

suite, three junior suites, two villas, and three standard double rooms. Finca Rosa Blanca provides the guests with recreation and relaxation facilities, such as a pool with a waterfall, jacuzzi, library, and over 300 fruit trees.

Goals, Mission, Vision: *"To leave the minimum possible trace of [our] existence."*

Current Standards, Certifications, and Management Systems

Owner Glenn Jampol began his sustainability practices in 1987 during the construction of the hotel, though on a very limited level. He was not yet trained as an environmentalist but used common sense to avoid causing major harm to his surroundings by not cutting down a large amount of trees and not throwing garbage into a river. Later becoming a partner in the Certification for Sustainable Tourism (CST) program, a program encouraging Ecological and Sustainable Tourism in Costa Rica, Finca Rosa Blanca began their quest of becoming one of the most sustainable hotels in the world as defined by their high score rated by the CST guidelines. The CST Program was developed by the Sustainability Programs Department of the Costa Rica Tourist Board and the Costa Rica National Accreditation Commission. The program evaluates tourism companies in the four following aspects, physical-biological parameters; infrastructure and services; external clients; and socio-economic environment. The hotel carefully follows the CST Evaluation Guidelines, which consist of an evaluation questionnaire and recommended practices. They are then measured according to a system of levels ranging from zero to five. Hotel Finca Rosa Blanca has been awarded the maximum five green leaves which means that at least ninety-five percent of the established conditions of the guidelines are fulfilled.

Each employee of the hotel is trained in their sustainability program. Details of these practices are discussed in the following section.

Cleaner Production, Eco-Efficiency, Corporate Social Responsibility, and Sustainable Development Practices

The practices taking place at Finca Rosa Blanca follow the principles of Cleaner Production, Eco-Efficiency, Corporate Social Responsibility, and Sustainable Development. Jampol is aware of the aspects of each of the programs as well as the value and importance of enforcing them. Cleaner Production and Eco-Efficiency are both illustrated through the hotel's recycling and regeneration system, in which they recycle all of their non-organic waste products and have a complete recycling zone. The hotel also recycles their organic wastes from the kitchen, ashes from the fireplace, earth from the property and sometimes adds calcium to neutralize the acids where they have composting procedures using horse manure to produce a natural fertilizer. They are careful to follow out the recycling practices far from the hotel to prevent any odors from entering the hotel itself. There are specific workers

designated to carrying out the recycling procedures, though the kitchen workers and guests are also encouraged to participate in the recycling efforts. There are recycling bins on the hotels grounds as well as literature in each guest room so the guests can learn about how Finca Rosa Blanca values its sustainability practices. They also promote eco-efficiency by having an ionization swimming pool which does not need chlorine or chemicals to clean the water; organic vegetable garden where they feed and fertilize their plants and coffee directly; and solar heating panels to heat the water.

Jampol also implements sustainable practices on the coffee plantation. Jampol focuses on agro-tourism while producing "sustainable coffee" on his twenty acre organic coffee farm. The only waste created in the coffee field is the coffee husk which is spread out throughout the field to decompose. The coffee husk can cause a significant amount of pollution, hence, the caution they take to break down correctly and spread evenly through field. To manage this field suitably, electricity, water, bathrooms, and showers are provided for the workers. Fair wages and safety equipment to ensure proper health conditions are also part of Jampol's sustainability program.

Also proving to be an active partner in the Corporate Social Responsibility program, the hotel encourages its guests to participate in their recycling efforts as well as educate them by showing them how their sustainable products function.

Another example of the business being characterized as corporately responsible is shown through Jampol's willingness to address his knowledge of the concepts by visiting local schools to educate the children of the community for free.

Partners

Although, they do not receive any support from the government or other political organizations, Hotel Finca Rosa Blanca has important relations with NGO's such as CIDH, CEGESTI, and the Rainforest Alliance, an international non-profit organization dedicated to the conservation of tropical forest, as well as alliances with other SMEs joining the effort. Sharing ideas with these enterprises is important to Jampol, as he wants to increase the knowledge of these practices throughout the country.

Future Plans

Jampol wants other SMEs of Costa Rica to join the effort of widespread participation in the programs of Corporate Social Responsibility, Eco-Efficiency, and Sustainable Development. He also hopes to spread the agro-tourism concept. Through educating the employees and guests, Jampol hopes they will value the importance of sustainability throughout their everyday lives and spread the desire for guests to stay in other "sustainable hotels." He plans to continue visiting the local schools to

educate the children in hopes that they will later follow these practices in their own career.

CASE STUDY – HOTEL PUNTA ISLITA

General Profile

Location: Playa Islita, Guanacaste

Number of Locations: One

Number of Employees: 160

Products or Services Rendered: Luxury Hotel and Spa

General Information: The hotel consists of forty-five habitations for guests, varying in size. They also offer many various facilities, such as a gym, internet access, various recreational activities, and a gift shop. They are a member of and recognized by Small Luxurious Hotels of the World for their lavish accommodations.

Mission and Vision:

Mission

"As members of the Punta Islita family, our mission is to ensure that our guests enjoy a unique vacation experience in an environment of natural beauty and shared social responsibility by focusing on the integrally-oriented services that we provide daily in our dual role as workers and leaders."

Vision

"We have undertaken a serious commitment to promote the integral and sustainable progress of our community by adhering to a vision of excellence and contributing to a social and cultural development model that harmonizes with nature."

Current Standards, Certifications, and Management Systems

According to Mr. Eduardo Villafranca, Managing Director at the hotel, Punta Islita began their sustainability practices in 1994 when they realized the desperate need to help the surrounding community. They wanted to make a difference in the lives of those around them and decided that the first step to do so was to provide job opportunities for the people of the local community. Villafranca stated that they had a choice when determining who to hire, they could either hire from outside of the surrounding communities to bring in more experienced workers, or hire those residents that lived near by. They chose to bring in employees from neighboring towns to support the local community members by establishing a workforce within the area. They also provided training for their employees to help them better understand the practices of the sustainability model.

Hotel Punta Islita has also received several recognitions for their efforts in the practices of sustainable development. For example, they have been recognized by the

Organization of American States (OAS) as a strong example of a symbiotic tourism-community development model; acknowledged by the Japanese International Cooperation Agency for its efforts toward ecological preservation and community development; and also have been awarded the Certificate of Socially Responsible Conduct in the Hotel Industry by the International Master of Tourism Program of the University of Las Palmas de Gran Canaria, Spain.

To ensure that the sustainability practices are carried out, the hotel has developed a management system that Villafranca refers to as a "matrix" of their practices. This matrix lists the hotels management objectives and provides information of how the practices should be carried out. It is given to the managers of each division of workers. To create open lines of communication between the managers and employees of Hotel Punta Islita, small group meetings are also held weekly to discuss the performance and operations of the hotel and their programs.

Cleaner Production, Eco-Efficiency, Corporate Social Responsibility, and Sustainable Development Practices

By creating a workforce within the surrounding communities, the hotel hoped to create many opportunities for the local residents, while also instilling them with a similar sense of commitment to sustainability and environmental protection. They offer various beneficial programs for their employees such as schooling and language classes as well as transportation for their workers to aid in bettering their opportunities.

Within the rest of the community, Hotel Punta Islita offers many programs to promote education, talent, and success. The Villafranca & Zurcher Foundation was created to help with the development of programs, such as daycare and educational classes for the youth of Islita including English language, health education, and balanced nutrition. Also, a large area of focus for the hotel is the community's artistic talents. They began with the Women Artisans of the Papaturro Tree. This was a group of women that were being abused by their husbands and had no money to raise their family. By developing a local art gallery, the hotel has provided the women with a market for their art so that they can earn a living as well as further their own talents and abilities. There is also a group of artists referred to as the Bosque Mar Artists. These artists take the drift wood from the beach and create various souvenirs such as figurines and jewelry boxes to be sold in the hotel's gift shop. By collecting the driftwood, the Bosque Mar Artists contribute to the cleanliness and health of the beach. These ideas have since then grown into many different artistic classes, including art classes for children so that they can develop their talents at a young age. Villafranca believes that the hotel is helping the community because these programs not only provide the surrounding community a

means of financial support, but something that they can learn and grow from and also boost their self-esteem.

Hotel Punta Islita has also developed many projects to help preserve the environment. They have designated a large amount of their own surrounding land to become a biological preserve to help protect the environment. They have also created various foundations to aid in the protection of wildlife. The Camaronal Beach Foundation is one example, as this foundation works to preserve the beach habitat and to protect the sea turtles that inhabit the beach. The hotel is also involved in Project Blue Flag, which is a project designed to help protect and preserve the conditions at the local beaches.

Although the hotel makes strong efforts to promote their sustainability practices with their employees and the surrounding community, they also make their sustainability practices known to their guests. In addition to displaying the local artwork throughout the entire hotel, they provide each room with a small description of their practices. Along with the description is an explanation of how the guests are invited to donate to the program if they so choose. Each room is also equipped with separate labeled containers for different types of wastes and bottles, allowing guests to recycle during their stay.

Partners

The sustainability practices of Hotel Punta Islita were developed as internal practices. As previously stated, these practices were created with the intention of bettering the quality of life for the communities around them. They are recognized by various organizations for their efforts, but all of the programs are funded by the Villafranca & Zurcher Foundation within the hotel.

They encourage all of their employees and residents of the surrounding communities to carry out the sustainability practices within their everyday life and also encourage the hotel guests to participate as much as possible.

Future Plans

The owners of the hotel want to continue all of their sustainability practices and programs in the future. Villafranca stated that the hotel also plans to implement the Balanced Scorecard as a new management tool. The owners feel that they have been very successful so far in their efforts to improve the quality of life for the local residents and will continue to work towards encouraging others to participate in their activities. They intend to develop even more foundations and projects to preserve the neighboring communities and environments.

CASE STUDY – AMANCO

General Profile

Location: Belen, Costa Rica

Number of Locations: Two plants in Costa Rica

Number of Employees: 300 - 400 at each location

Products or Services Rendered: PVC tubing production and construction work

General Information: AMANCO is part of the Nueva Group, which is also a part of the World Business Council for Sustainable Development.

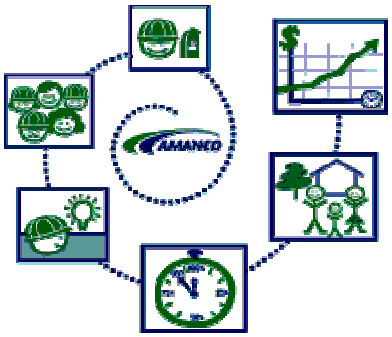
Mission and Vision:

AMANCO's vision is to be a well known leader in the practices of Eco-Efficiency and Corporate Social Responsibility, allowing them to help improve the quality of life for the general public.

Part of AMANCO's mission is the Triple Result strategy. This technique blends economics, social responsibility, and environmental impact to create the best and most efficient operational results possible.

Current Standards, Certifications, and Management Systems

In the late 1990's, AMANCO's leaders decided that there was a great need for community improvement. According to AMANCO Business Analyst Dr. Roberto Vargas, they decided that they wanted to help better the quality of life for their surrounding neighborhood, and to help protect the environment in whatever ways that they could. They began to implement the sustainability practices of Corporate Social Responsibility and Eco-Efficiency to ensure that they were doing their part to help the worsening situation of pollution and poverty. They provided employees with information about the new practices, and began to enforce the changes. AMANCO feels that they too are part of the community in which everything is connected, and it is their job to make sure they are acting responsibly.



AMANCO managed to save large amounts as a result of their eco-efficient practices. The first few years brought annual savings of nearly $900,000, which grew to millions of dollars in savings in recent years. They also have made vast savings on energy, wastes, and water usage. As a result of implementing eco-efficient strategies, AMANCO experiences a thirty percent reduction in energy usage, sixty percent reduction in water usage, and sixty-five percent reduction of waste production annually.

AMANCO, at the Belen location, is currently ISO 9000 certified, and is in the process of becoming ISO 14000, and OHSAS 18000 certified to maintain their practices within quality management, environmental impact, and employee health

standards. They have also developed the Balanced Scorecard managerial tool to monitor their progress in various areas of their corporation such as human resources, social and environmental management, internal processes and technology, customer satisfaction, and finances. The company's balanced scorecard is structured as a strategy map that outlines each of the main aspects of the company, as well as their goals and objectives. This allows them to constantly measure their progress in achieving their goals. Also, to ensure that all of the plants are following the same eco-efficient methods, the coordinator of security and eco-efficiency visits each of the AMANCO plants regularly.

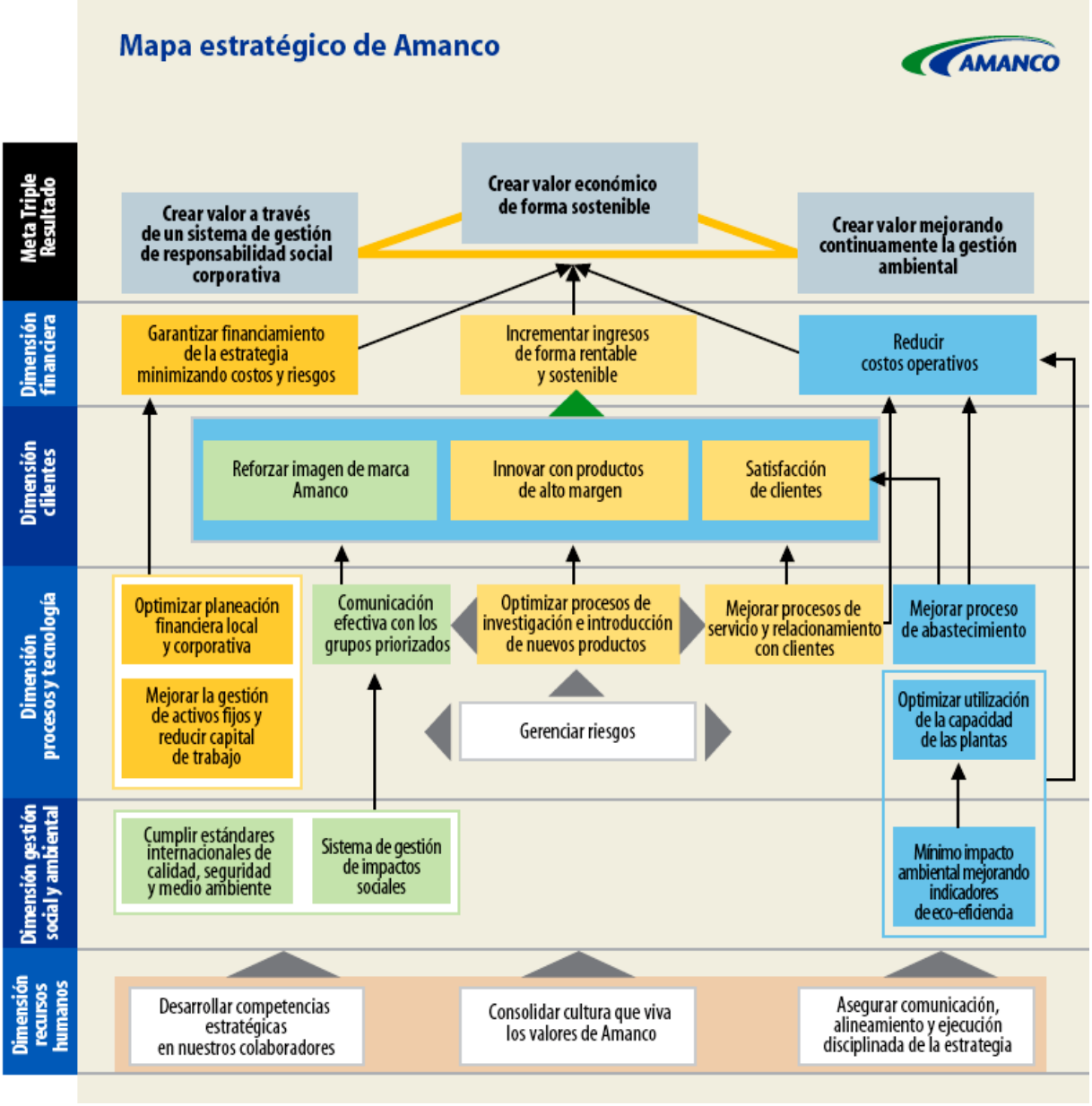


Figure 3: AMANCO's Balanced Scorecard
(Source: http://www.amanco.com)

Cleaner Production, Eco-Efficiency, Corporate Social Responsibility, and Sustainable Development Practices

With adoption of eco-efficient and sustainability practices, AMANCO made some structural changes to aid in the improvement of the company's operations.

They merged the positions of Executive President and General Director in order to better the integration of strategic vision and operational management. They also reorganized the human resources department. In relation to the production materials used by AMANCO, the company monitors the effects of materials in use and does not use any that will endanger the lives of their employees. For example, the company stopped using metal weights because of the health dangers involved with usage and instead began to use organic bases.

Within the community AMANCO participates in various programs to help improve the quality of life for the residents. They feel that clean water is a basic human right and everyone should have access to it. To help promote this idea, AMANCO, along with the ULTEC Company, developed the program "Agua en Escuela", or "Water in School." This program was created to provide local students with clean, drinkable water.

Another way in which AMANCO continues to act responsibly within the community is by helping to construct much needed housing. AMANCO works with Habitat for Humanity to provide housing to deserving families, and also participates in various other similar community development projects such as helping to construct much needed bathrooms in impoverished areas.

AMANCO also regularly works to reduce their environmental impact. They efficiently monitor their eco-efficient indicators such as energy usage, water usage, waste production, and accident frequency.

Partners

All of AMANCO's sustainability practices are internal programs. According to AMANCO Business Analyst Dr. Roberto Vargas, they originally began their efforts because they felt that they had a responsibility to help maintain the quality of life within the surrounding community. They are part of the Nueva Group, a very large enterprise with similar plants throughout many areas of Central and South Americas, all of which claim to be doing their part to remain socially responsible.

Future Plans

AMANCO plans to gain ISO 14000 and OHSAS 18000 certifications later this year. Renovations are necessary to be in compliance with OHSAS 18000 health standards, and are currently in process.

In the future, AMANCO will continue their current practices with respect to the community and the environment. They also hope to expand their efforts further.

CASE STUDY - INTEL

General Profile

Location: Heredia, Costa Rica

Number of Locations: One in Costa Rica

Number of Employees: 2,090

Products or Services Rendered: Silicon component assembly and testing

General Information: Founded in 1968, Intel is now the world's largest designer and producer of silicon microchips and computing technology. Intel strives to educate people, empower people to improve their capabilities, and provide people with valuable connections. The plant in Costa Rica was initiated in March 1998, as a manufacturing center, and it has since become a distribution hub to Latin America, Asia, Europe, and the United States.

Mission: *"Do a great job for our customers, employees, and stockholders by being the preeminent building block supplier to the worldwide digital economy."*

Values: *"Our values are at the heart of everything we do." - Customer Orientation, Results Orientation, Risk Taking, Great Place to Work, Quality, Discipline*

Objectives: *Extend silicon leadership and manufacturing capability.*

Deliver architectural innovation for platforms.

Pursue worldwide opportunities.

Current Standards, Certifications, and Management Systems

At Intel, all policies, procedures, and standards implemented during the initiation of the Costa Rican plant cascaded from the corporate office. Compliance with all national and international standards is part of the foundation of the Intel Corporation. According to Anibal Alterno, an Environmental Engineer at Intel, the standards applied at every Intel plant represent the highest that exist internationally. These standards are often higher than the host countries, but are necessary for sustainable development in any country. In Costa Rica, Intel found that some of the laws and standards were weak, so they maintained their corporate standards which are largely representative of those of the United States.

The Intel Costa Rica sustainable development practices are all part of the environmental management system which is regulated by their ISO 14001 Certification. This certification allows for continuous assessment of their environmental impact. In addition, Intel Costa Rica is assessed by corporate standards every three years, by an international ISO representative every three years, by internal employees with help from the Ministry of Health and the Ministry of the Environment periodically, and by a consultant from the Ministry of the Environment quarterly.

There is no specific tool used by Intel Costa Rica to measure the overall implications of their environmental impact, but as part of the environmental management system, they use indicators to track their performance. The indicators measure things such as waste generation, water consumption, waste water efficiency, energy use, emissions production, and fuel consumption. Tracking those indicators is what Anibal Alterno finds helpful to observe trends and make any necessary changes in their practices.

Recently, Intel Costa Rica received the Corporate Excellence award from the Department of United States. Companies that are based in the United States but operate abroad are eligible. This award recognizes their commitment to their corporate policies. It shows that when going abroad Intel Costa Rica did not lower standards in order to make bigger profits; rather they implemented plans to improve the local community and environment while maintaining the highest standards of operation.

Cleaner Production, Eco-Efficiency, Corporate Social Responsibility, and Sustainable Development Practices

Before the Costa Rican assembly and test plant was built in 1998, Intel strongly considered their impact on the local sustainable development. Intel has a general policy of operation to always consider the environmental, health, and safety concerns. Intel as a corporation strives to have minimal environmental impact anywhere they build a plant, so in Costa Rica they found the primary concerns to be water and electricity consumption. According to Gabriela Llobert, General Manager

of Corporate Relations, it was assumed when building the Costa Rican plant that there would be environmentally protective plans put into action from the beginning. Also, as part of Intel's underlying goal to "always do the right thing," they have educated and reached out to the local communities from the start.

Environmental Practices

Intel Costa Rica has specific practices for continuously improving their efficiency, managing their waste disposal, treating their water, minimizing their electricity consumption, and controlling their emissions production. In addition to these practices, Intel Costa Rica hired a local law firm to provide them with weekly updates on changes or new publications of requirements. This assures their compliance with local laws and standards.

As is necessary to maintain competitiveness in their markets, Intel is continuously designing new technologies and products. While creating these, they also focus on the processes and materials used to make the products. This focus, which is embedded in the design process helps to ensure more efficient use of resources in production, the use of less contaminating resources, and a lower production of waste. Using these practices, Intel Costa Rica has therefore been able to decrease their overall impact on the surrounding environment.

One major concern in the foundation of Intel Costa Rica was the handling and disposal of regular and hazardous wastes. The non-hazardous waste is collected and either recycled, reused, or disposed. Wastes that can be recycled are donated to local schools and communities. Local communities sell the recyclables and are able to use the money for energy bills, student lunches, renovations, or any other necessities.

Intel recycles about seventy percent of all their waste, and this recycling program provides jobs for forty to fifty people. Gabriela Llobert further specified that the hazardous waste is a more concerning situation. Costa Rica lacks the facilities to handle hazardous waste in any capacity. Intel, therefore, arranged a bilateral agreement between the Costa Rican and United States governments through the BASEL Convention in order the ship the waste internationally for proper handling. As a result of this agreement, any Costa Rican company can ship hazardous waste to the United States to avoid contamination of the local environment.

Intel Costa Rica also has a water management system that has been implemented from their foundation. Seventy-five percent of the water is used for cooling machines in their production processes and the other twenty-five percent is for personal consumption. Although the Intel plant receives their water from the local municipality, the water must be improved by several levels of purity before it can be used in their processes. Because of this, the Intel Costa Rica water treatment plant has about ninety-eight to ninety-nine percent organic removal efficiency. This allows any waste water treated to then go directly into the river. As a result of the highly efficient treatment process, the water is often cleaner than the river that it deposited into. The industrial waste water produced that has a low chemical concentration can go directly into the river without treatment. However, the industrial waste water with a high chemical concentration, along with the municipal waste water, must go back through the water treatment plant before being released into the river.

As one of the top five electricity consumers in Costa Rica, Alterno expressed that Intel is mindful of the potential for high environmental impact. However,

because ninety percent of all electricity is produced in hydroelectric plants, the impact is considerably low. Hydroelectric power is a clean technology with a much lower emissions impact than other fuel consuming methods. On the corporate level, Intel has a goal to reduce energy consumption by four percent every year. Intel Costa Rica is constantly searching for ways to help achieve this goal.

Another area of corporate concern is contaminating air emissions. At Intel Costa Rica however, air emissions is the area of least concern. The only emission of concern is from the alcohol used in cleaning processes. To measure the emissions Intel uses a mass-balance approach. This means that the emissions total they calculate is the worst-case scenario. Actual emissions would be less due to residue left on rags from the cleaning and emissions cleaned through the building ventilation. Unless more contaminating processes are implemented, emissions treatment is not necessary.

Sharing Environmental Practices

Aside from the internal environmental practices of Intel Costa Rica, Intel has many programs that educate students and communities about environmental consciousness. A program called "Let's Save Our Planet," allows Intel to contribute to sustainable development by teaching others about it. Through their own employee volunteers, Intel visits

elementary and high schools for a series of sessions that explain the importance or preserving the environment by conserving resources and recycling. The program also encourages students to share this knowledge with others.

Intel also often donates computers and electronic equipment to local schools. In donating the computers, they acknowledged that the eventual waste from donated computers should be of their concern. Therefore, Intel arranged for the computers to be returned once they are no longer useable so they can be shipped to the United States for proper disposal in the correct facilities.

Occupational Health and Safety

Intel believes that part of having good environmental practices is ensuring the safety and health of employees. It is important that employees feel secure and comfortable in their working environment for them to yield high levels of productivity. In 2001, Intel Costa Rica received the Global Prize of Employment Health from the INS (Instituto Nacional Seguridad – National Institute of Security).

Other programs at Intel Costa Rica which ensure employee safety include precautions in construction sites, safe walking conditions throughout the facilities, safeguards against work-related accidents, and high controls in areas with potential electrical danger.

Partners

When planning the plant in Costa Rica, Intel worked with nearly all the ministries of the government to set up their initial business operations and outreach activities. Before building, they had to verify that there would not be a large environmental impact. Now, Intel continues to work with the ministries to comply with regulations and enhance their outreach programs.

Intel also works with numerous non-profit, non-governmental organizations in Costa Rica on a daily basis. When planning their various outreach programs and activities, they work with these companies to have lasting impacts on local communities.

Future Plans

Part of the Intel corporate philosophy and their ISO14001 Certification, is always to strive for continuous improvement. Every year, Intel sets corporate goals for reducing their water consumption, energy consumption, waste production, emissions production. Intel will continue to improve the eco-efficiency of their processes as they design and produce new technologies and products in order to remain competitive in their markets in pursuit of their overall corporate mission.

Intel Costa Rica shares the corporate goals, but has some local plans as well. Both Alterno and Llobert expressed that Intel will continue their water conservation, energy conservation, waste management, and environmental outreach programs in the community. They will continue to work with the government and nongovernmental organizations to continue to improve environmental practices and promote

environmental awareness throughout Costa Rican schools and communities. One specific plan nearing implementation is an electronic waste collection. After investigating the methods of collecting and managing electronic waste for several years, a plan for implementation has been carefully constructed and will be initiated in late 2005.

The following two case studies were obtained from CEGESTI. With limited time to conduct interviews, we have studied these case studies in order to make a more thorough analysis of companies that are following sustainability practices.

Sustainable Development in Central America and the Dominican Republic

Company: **INDUSTRIAS PANAVISIÓN S.A.**
Country: Honduras
Project: Program TMF: Poverty reduction and environmental improvement. An integral, sustainable development strategy.
Year: 2005

THE COMPANY

Industrias Panavisión S.A., was founded in 1969 and is located in San Pedro Sula, Honduras. It makes office furniture. Currently, Industrias Panavisión S.A, has a production plant, an exhibition room, sales offices in Tegucigalpa, local distributors and distributors for various Central American countries.
The conquered prestige – achieved through time-, joint with the strategy of offering products, which balance price and quality, has been the base of the company's success.
The company now handles approximately 90 permanent operative, and 80 administrative employees.

MISION

Provide our clients with office furniture through the distribution of prestigious brands, and the making of basic lines, modern and functional metallic office furniture - showing total commitment to quality with our products and services constantly exceeding our clients', employees, shareholders, suppliers and the community's expectations.

PRODUCTS

The commercial name of the products is IPSA and its main articles are:

- Desks
- Archives
- Book shelves
- Cupboards
- Waiting chairs
- Executive chairs
- Slotted shelving
- Lockers
- Modules
- Modular Divisions

PROJECT DESCRIPTION

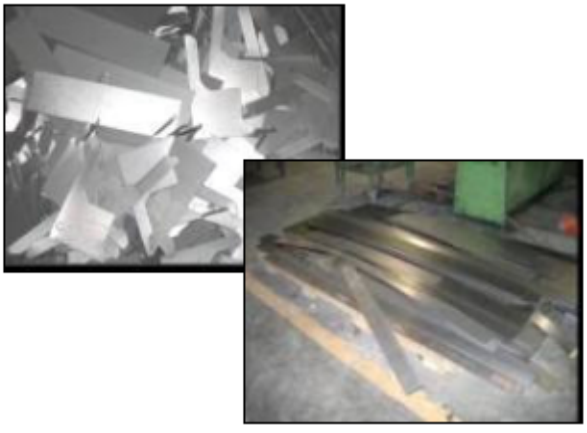
The methodology to implement the Sustainability Strategy in the company started with the conceptualizing of the sustainable development system –at which stage an internal and external organizational analysis took place to determine its sustainability profile, as well as its options for improvement in the environmental, economic and social dimensions.

Later on, a sustainability strategic work frame was established; it comprises the organization's strategy – which includes Mission, Vision, organizational values, strategic objectives in the three mentioned dimensions, and the company's commitment to sustainable development.

Based on the strategic work frame, the action plans were defined in each dimension; and the monitoring mechanisms and indicators were established to guarantee the fulfillment of the established strategic objectives.

Later on, training and technical assistance were provided to support the company in implementing the action plans. This way, it was intended to fulfill the transfer of knowledge to the organization; also, the follow up oriented towards the achievement of the expected results was developed.

MAIN OBTAINED RESULTS

Starting diagnosis	Achieved Improvements
ECONOMIC DIMENSION	
- Need to establish a plan to monitor the different company strategic aspects.	- A strategic plan and the indicators to follow up established objectives in terms of finances, clientele, processes, and learning and growing.
- Need to carry out an analysis of its productive process which will enable them to identify options to reduce productions costs.  	- An efficiency productiveness analysis was done to determine opportunities to improve the productions of the Secretarial Desk. This was done through the analysis and design of a Variability Model – to identify bottlenecks, and processes with critical resources. This grants information to the company which enables it to administer and optimize inventories, as well as the use of human-machine resources in each work station. - The analysis and design of an economic lot model for a family of products was done. It will enable the company to get the production line programming organized. - An analysis of the previous year's sales was done to identify trends which will permit future projections to support production programming decisions and to establish an inter-relation between the Sales and the Production departments. - A Continuous Improvement Plan was established to allow the implementation of activities for a higher efficiency in its production.
ENVIROMENTAL DIMENTION	
Expenditure of Metal Sheets	
- Need to maximize the use of metal sheets used in the production of furniture. 	- An improvement action plan to diminish metal sheets expenditure was established. The following options were established as priorities options: ✓ Personnel training in the use of molds, parts, and equipment. ✓ Design revision and checks use. ✓ Programming to sharpen dies. ✓ Programming of preventive maintenance of stipplers and table stipplers. ✓ Updating of cutting maps. ✓ Revision of the cutting machine operator's profile. ✓ Sheets and tips timely substitution. ✓ Maximize the sheet use by optimizing the distribution of the pieces and the sheet size. ✓ Definition of the policy for making special furniture.
- Lack of indicators to monitor sheet waste due to cut and dieing.	- It was possible to account at the beginning of the Project that that there was a 4% (in weight) of sheets wasted due to the cutting process, and a 14% (in weight) of waste in the dieing process.

LPG (Liquefied petroleum gas) consumption

- Need to improve the LPG use required in the production process.

- Lack of indicators to monitor LPG expenditure in the process area.

- Some measures have been implemented to help the better use of LPG expenditure (like the following):

  - ✓ An analysis of the type of thermostat used was done and a technician advised to change to another system.
  - ✓ A weekly inspection of the thermostat system was implemented, as well as valves to adjust the entrance of gas and air.
  - ✓ Research is being done on the different types of insulation for the continuous painting process in the steps of highest temperature.
  - ✓ The heater of one of the tubs was adjusted to another to take advantage of the remaining heat.
  - ✓ The lightning in the paint application cabin was improved.

- An improvement action plan was established to decrease the LPG expenditure. The following were established as priorities options to improve:

  - ✓ Personnel training in the adjustment of valves which access gas and air into the system.
  - ✓ Analysis of the combustion in the system.
  - ✓ Improvement in the water curtains system to insolate heat at the entrances and exits of the processes.
  - ✓ Evaluation of the option to re-use hot air from the ovens with the highest temperatures into the lower temperature ones.

- It was possible to account that at the beginning of the project, an area of 0.24 gal_{LPG}/m^2 was used.

Production of Residual Materials

- Lack of data and tools to estimate the cost of Production of Residual Materials

- A cost analysis of the Production of Residual Materials was done, coming up with the following annual cost estimates:
  - Solid Waste: US$ 50,053
  - Emissions: US$ 59,695
  - **Production of Residual Materials Total Cost: USD $ 109,750**

SOCIAL DIMENTION	
Health and Occupational Safety	
- There is no risk and accident monitoring	- A tool was designed to identify risks present in the work area. It was validated in the Production and Maintenance areas. Situations, which may cause any harm to personnel's health or company's property, were identified. Furthermore, the place where danger originates, the equipment, tools and materials involved in the activity is detailed.
- Some of the found aspects – in terms of health and occupational safety – are the following: ✓ Emergency exit locked with a padlock.  ✓ Welders do not wear protection goggles.  ✓ Paint dust in contact with the operators' skin. 	- An Implementing Health and Occupational Safety Actions Plans was designed to eliminate or decrease accident risk. The plan details the requirements to carry out the improvements, the responsible personnel, and the implementation date. Some of the established improvements have been implemented. - The implementation of some of the recommended measures has started to diminish the accident risk and work-related illnesses in the company – such as the use of protection for welders, and adequate attire for the operators of the painting chamber.  

Social Internal and External Projection	
- Company's efforts to contribute with safe operating conditions are not disclose ed, nor are familiar development of its employees to strengthen the internal and external imagine 	- An Internal and External and External Communication Plan was designed to verify the actions' implementation and control while having a double purpose: to disclose set up actions and their implementation, and to facilitate the follow up by employees and the administration. This will strengthen employees' identification with the company. 
- Little contract control with suppliers and subcontractors.	- It was proposed to communicate the company's demand for suppliers to comply with legal requirements, as well as the establishment and implementation of services contracts with subcontractors.
- Few opportunities to grow in the company. Few opportunities to be trained.	- A group of employees was trained on the topic of Social Responsibility, Social Management and Change Management.
- There is no plan for technical training or schooling which influences the low literacy rate among the laborers, and low technical literacy in middle ranks. 	- An Action Plan was set up which takes the following into account ✓ Develop a training program aiming at professionalizing positions in the company, and in the areas to develop strategic competences. ✓ Development and implementation of a company's Code of Ethics. ✓ Create a support committee for social, cultural and sport activities under the supervision of the company's administration. ✓ Keep statistical track of the main personnel rotation causes. ✓ Periodically apply a work climate survey, and develop an improvement plan according to its results. ✓ Develop a social projection program towards employees (comprehensive training , training in diverse topics to improve living conditions)

PHRASE BY ROBERTO PANAYOTTI
General MANAGER

"Definitely the process has been a struggle; it is invaluable. What we have learnt during these months will allow us to improve our productive efficiency. The concept of Cleaner Production will allow us to save an incredible amount of money. In regards to occupational health, we learnt to identify the plant's risks, and to set priorities in the process to deal with each risk and so to decrease the level of accidents and illnesses present in the company.
Strategic planning has helped me a lot as manager to have a conceptual framework which allows me to wrap up all ideas, and ensure that all areas are oriented towards the same goal.
The help in the economic dimension has been of great help as it was identified that one of the main problems was the large quantity of inventories in the process, and of finished product. So we have entered an analysis process of the production variability to be able to improve our productive processes.

We have achieved having a more conscious company towards community where we work. We have become aware of the importance that employees have to have a successful business.

The world is changing, and the consumers' conscious regarding the purchase of products from companies, which are social and environmentally oriented, will define the future of world commerce. And in Honduras, we cannot be left behind; our companies have to be oriented towards this line because we have to create an awareness among our employees, and be able to offer these concepts to our clients."

Sustainable Development in Central America and the Dominican Republic

COMPANY: **CONCRETOS ETERNA S.A. (CONETSA)**

COUNTRY: Honduras

PROJECT: Program TMF: Poverty reduction and environmental improvement. An integral, sustainable development strategy.

YEAR: 2005

THE COMPANY

Concretos Eterna S.A. (CONETSA), founded in 1997, is located in San Pedro Sula, Honduras. It is part f the IESSA Group where CONETSA provides concrete, piping and construction blocks – as a supplier for the Eterna Group.

Currently, the company operates with a permanent staff of 300 employees.

PURPOSE

To be the leading company in making and commercializing of products for the construction industry in Honduras, mainly in concrete products, and with a positioned leadership in:

- *Products quality and trustworthiness*
- *Costumer service with an emphasis on timely deliveries*

Our major commitments are:

- *Social responsibility*
- *Continuous improvement in our performance*
- *Clients' requirements satisfaction*
- *Compliance with legal requirements and technical rules*

Our Human Resources are our strength. Our values are: honesty and respect to our fellow people.

PRODUCTS

The main company products are:

- Pre-mixed concrete
- Blocks
- Concrete piping
- Concrete pre-made products

Furthermore, commercializing of ceramics started to increase products diversity and becoming a new opportunity for the company.

PROJECT DESCRIPTION

The methodology to implement the Sustainability Strategy in the company started with the conceptualizing of the sustainable development system –at which stage an internal and external organizational analysis took place to determine its sustainability profile, as well as its options for improvement in the environmental, economic and social dimensions.

Later on, a sustainability strategic work frame was established; it comprises the organization's strategy – which includes Mission, Vision, organizational values, strategic objectives in the three mentioned dimensions, and the company's commitment to sustainable development.

Based on the strategic work frame, the action plans were defined in each dimension; and the monitoring mechanisms and indicators were established to guarantee the fulfillment of the established strategic objectives.
Later on, training and technical assistance were provided to support the company in implementing the action plans. This way, it was intended to fulfill the transfer of knowledge to the organization; also, the follow up oriented towards the achievement of the expected results was developed.

MAIN OBTAINED RESULTS

<table>
<tr><th>Starting diagnosis</th><th>Achieved Improvements</th></tr>
<tr><th colspan="2">ECONOMIC DIMENSION</th></tr>
<tr><td colspan="2">In the case that the company implements the recommended improvements, it has been estimated that an annual saving of USD $17,400.00 could be achieved. Activities were developed at the piping factory. The detail of each of the following proposals, and their estimation of savings will be explained as follows:</td></tr>
<tr><td>- Need to establish a plan which allows monitoring of the different strategic company's plan in social and environmental terms.

- Need to identify options to improve the production process flow.

- Need to define a strategy for each of the company's business units in terms of their productive efficiency.</td><td>- Strategic objectives in social and environmental terms were set up as to allow the establishment of indicators for results monitoring.

- Training was provided for some of the operational personnel on concepts and tools in Process Engineering.

- A revision of the pipes distribution plant was done, and some adjustments were made.

- The botlenecks within the process were identified – specifically analyzed – and actions to improve them set up as to save on the following items:

- An analysis was made to assess the man-machine mixing process, and it was determined that the company could save up to USD $1,600.00 per/year if the suggestions regarding labour and process efficiency were implemented.

- An improvement plan – based on the problems diagnosed – was designed to lead the company to achieve annual savings and production improvements of up to USD $ 4,000 in the folding process and the metal plates welding, as well as USD $11,900 in the filling operation.

- A company's portfolio analysis was made, and their products were identified using the BCG (Boston Consulting Group) classification.</td></tr>
</table>

ENVIRONMENTAL DIMENSION

If the amount of money saved in the first five months since the application of the environmental measures is calculated yearly, it is estimated that the company will save **USD $4,500**. Activities were developed in the concrete making process. The detail of each of the following proposals, and their estimation of savings will be explained as follows:

1. Aggregates Management

- Important losses in the aggregates in the carrying process, and vibrations in the transporting belt.

- Lack of indicators to monitor aggregates losses.

- Jamming and splashing of materials in ten of the mixing trucks due to the hopper's size.

- Adequate haulage practices were established and operators were instructed in the proper handling of the aggregates to avoid leakage.

- Guidelines were given for the design of a Maintenance Program, both for the loader and the aggregates transporting system.

- It was estimated that 53.4 m^3 of aggregates/24 days are lost. This becomes annual losses of USD $3,700.

- From the implemented measures to decrease aggregates losses, and accumulated saving of USD $875 was achieved between October and February 2004. Therefore, an average of 60% of the monthly base line register ceased being wasted – producing savings for USD $2,300 with these measures.

- The hoppers in two trucks were modified – producing annual savings of USD $580. by reducing the waiting time for filling (from 0.97 min/m^3 in December to 0.70 min/m^3 in January.

2. Cement Management	
- Ignorance regarding the actual weight of cement delivered by the supplier.	- Monthly scale calibration certificates will be requested to the suppliers.
- Cement loss due to wind when loading the trucks.	- A search for technologies was made in order to avoid cement loss during truck filling, as well as retain small particles before they escape into the atmosphere. They now have quotes from some suppliers.
- Cement losses due to the silo's filling system. 	- A check system was implemented as to advise when the silo is filled – eliminating the loss of cement due to overflow. This will generate an economic saving, and will result in a working environment less loaded of cement particles.
3. Water and Electricity Consumption by Pumping	
- Lack of indicators to monitor water consumption to fill the trucks.	- It was possible to estimate that water expenditure per trip, per truck is 0.79 m^3.
- The closing devise for the hose used to wash the trucks during the filling is not near the operator resulting in water waste.	- Rapid hose closing devices were implemented, and adequate practices by the operator were established; such as: closing hoses which are not being used, and not letting water tanks overflow.
	- With these measures, water consumption was decreased to 0.33 m^3/trip resulting in a saving of 60% of the registered base line consumption.
- High electricity expenditure due to the water pumping system from the well.	- With implemented measures to save water and the good practices for its use, it is estimated that the company may reach annual savings of close to USD $1,400 in electrical expenditure for water pumping.
- Need to search for an alternative to using sprinklers to control the temperature of sun exposed gravel. These sprinklers are used 80% of the time during the day shift. 	- A sheltered structure was built to protect the gravel. This avoids excessive water use to lower the material's temperature. 

4. Production of Residual Materials	
- Lack of data and tools to estimate the cost of production of residual materials	- An analysis of production of residual materials cost was done estimating the following annual cost data: ✓ Wastewaters: USD $1,908 ✓ Solid waste: USD $3,738 ✓ Emissions: USD $856 ✓ Others (Hours of mixers use, rental of an additional loader, opportunity to sell aggregates) : USD $9,383 ✓ **Production of Residual Materials total cost: US$ 15,885**
5. Fuel Consumption	
- Significant expenditure of fuel (diesel) during the filling of the mixing trucks (they have to be running).	- By reducing the waiting time for trucks while being filled, an annual saving of USD $195,00 in fuel was achieved. - 
SOCIAL DIMENTION	
Health and Occupational Safety	
- There is no adequate risks and accidents monitoring. 	- A tool to identify risks in the work area was designed. The tool was validated in the pre-mixed concrete plant. Situations, which may cause harm to the personnel's health or the company's assets, were identified. Moreover, it details the place where the danger originates, the equipment, tools and materials involved in the activity. Hazards were ranked based on their risk level taking into account their occurrence rate, their severity, and exposition. - An implementing Health Actions and Occupational Safety plan was designed as to eliminate or diminish accident risks. The plan details requirements to perform improvement actions, the personnel responsible for it, and the implementation date.
Internal and External Social Projection	
- Low process systematization to guarantee high performance and identification with the company. Internal communication within the company is weak and so is the sense of belonging of the employees towards company's objectives.	- A designed Communication Plan was set up to verify implementation and actions control with a double purpose: disclose proposed actions and their implementation, and facilitate the follow up by employees and the managerial staff. This will reinforce employees' identification with the company. - An action plan was designed to comprehend the following: ✓ Develop a methodology to assess performance ✓ Prepare and develop technical training programs for key personnel

	✓ Internally disclose the organization's central values. ✓ Develop a personal motivation and incentive policy as well as benefits for personnel. ✓ Disclose activities which benefit personnel.
- Little control on contracts for suppliers and subcontractors.	- Guidelines were established to prevent operational risks in the frame of contracts and demands for compliance with legal requirements by suppliers.
- The company's social projection is not taken advantage of as a shaping element for internal and external image.	- A group of employees was trained on topics of Social Responsibility, Social Management and Change Management. - Guidelines were established to set up a donations plan for non-profit organizations. - Policies for human resources hiring were set up. These intend to favor people from the community. - The accomplished results regarding the scholarships for employees plan were disclosed.

PHRASE BY DAVID DOMÍNGUEZ
Production Manager

"At CONETSA we believe in Sustainable Development as a tool which enables us to be more competitive, and which makes us more responsible and opened in a globalized world. This has allowed us to decrease costs, and benefit our employees and community. We have decreased: emissions into the air, process by-products, and we have implemented improvements to save water. Everything learnt will be implemented on the other plants we have - since we believe in Sustainable Development."

CONETSA
CONCRETOS ETERNA, S. A.

Buitenlandse Zaken

CEGESTI
Certificado
ISO 9001:2000

CADEAL
Centro Asesor para el Desarrollo Económico, Empresarial, Ambiental y Local

Chapter V. ANALYSIS OF RESULTS

While analyzing our results, we have found that actions toward Corporate Social Responsibility, Cleaner Production, and Eco-Efficiency advance a company towards sustainability, as well as positively affect the business in a number of ways. We have also discovered that the best practices to be implemented would be unique for each company based on their individual needs and goals. Through our research we found that sound management structures were a key to success. Once companies identify their specific needs and organize the many aspects of their business, we feel that they would experience beneficial changes.

Large and Multinational Corporation Influences

In conducting our research, we found that it was difficult to obtain useful information from large, often multinational, corporations. Many of these companies do not feel it necessary to work with outside organizations because they have already implemented many practices that they feel are sustainable. They believe that having these sustainable practices makes them corporately responsible. Large and multinational corporations, however, are misunderstanding a vital part of Corporate Social Responsibility which is transparency. For example, at both AMANCO and Intel, they seemed to be reluctant to offer specific details about their programs and practices in the interviews. They need to be informed that participating in these programs and building strong sharing partnerships, has a great potential to help their business in the future. Companies that participate in these practices can share information with one another, and rather than "stealing secrets", can gain knowledge

of successful practices. By sharing their practices, they are also increasing their impact on global sustainable development.

Both AMANCO and Intel referred us to their published sustainability report when we asked for further information on their programs. However, these reports lacked specific details relating to the company's practices or changes due to implementation of these programs, and mainly spoke of their high reputation or beneficial results. In addition, the practices most discussed in the reports were their community outreach programs. These practices were also what the companies were best able and most willing to share a great deal about in interviews. More thorough sustainability reports would further contribute to their transparency and improve the competitive markets of their business.

Upon analysis of the information we were able to obtain, we observed that the programs implemented did prove to be beneficial for companies, but we could not provide detailed examples of what processes or methods could be improved. Many large and multinational corporations have employees hired internally to improve existing and to create new sustainability processes. Because of this, they seem to feel it is unnecessary to share the details with outside organizations. They are willing to work with non-profit organizations, but primarily in relations to community outreach activities.

Due to the superiority of corporate management in large and multinational corporations, it is difficult for non-profit organizations to invoke change in local manufacturing plants and offices. Because there are fewer opportunities to effect

change in large and multinational corporations, non-profit organizations will find their time and effort much more valued among small and medium-sized enterprises.

Small and Medium-Sized Enterprises

We find that small and medium-sized enterprises, which represent eighty-five percent of the Costa Rican business sector, to be accessible companies in which non-profit organizations can make a difference. We have analyzed the impacts CEGESTI has on SMEs, whom they consult about eco-efficient and corporatly responsible practices. It is through their actions that we have realized that SMEs are a better target than large and multinational corporations for nonprofit organizations. Andrea Shum, a consultant for CEGESTI, informed us that when they approach the companies that they plan to work with, most of them have strong interests, however, they lack the money to implement new practices. Hence, it is extremely important for non-profit organizations to promote training for these businesses to help them achieve sustainability goals.

While studying businesses with successful sustainability practices we have noted improvements within their overall performance and customer satisfaction. The strong reputation earned by both Finca Rosa Blanca Country Inn and Hotel Punta Islita through their sustainability and eco-efficient programs are vital aspects that add to their company's success. Both hotels are active within the community to help educate the local population, in everything from language and art classes to how to recycle, and also to help improve their quality of life. Therefore, we have realized that

becoming a partner in these programs results in benefits that are both internal and external, as the company, as well as the community and environment, greatly benefit.

Management and the Balanced Scorecard

An important focus of our analysis of each company has been their management systems. We believe that the Balanced Scorecard proves to be the most practical managerial tool to administer throughout a company to organize and distribute the current business practices of Corporate Social Responsibility, Sustainable Development, Cleaner Production, and Eco-Efficiency.

The Balanced Scorecard allows a company to keep track of all aspects of their organization from finance to internal business to customer and stakeholder satisfaction and lastly learning and growth. Similar tools that we have researched seem to be lacking the ability to tie in all aspects of the business as well as the community. The additional tools studied do not provide one unified and readily available map of the company's goals and objectives that can be given to each individual employee to monitor progress in carrying out these goals. Other managerial tools reviewed require various lengthy certification processes. Some managers that have already gained certification have expressed that these alternate processes are often more paperwork than physical implementation and fail to organize the information for easy interpretation as efficiently as the Balanced Scorecard.

During our research, we found that companies already using the Balanced Scorecard were more then satisfied with its success in helping everyone in the

company carry out organizational goals and objectives to improve overall performance. Therefore, we feel that the Balanced Scorecard serves as a proficient tool for communication within a company, of which all interviewees stressed the importance. Once in place, the Balanced Scorecard will help organize the practices of Corporate Social Responsibility, Cleaner Production, and Eco-Efficiency, and provide each employee with an overall understanding of each aspect of the business. With every member of the company aware of the practices and goals of the business, regular communication would be much easier and efficient.

Based on our research we feel that Corporate Social Responsibility, Cleaner Production, and Eco-Efficiency are very beneficial and valuable practices. If adopted by companies, and also on a personal level within the global population, we believe that the basic quality of life for everyone would be greatly improved.

Social Implications

Based on our research we feel that Corporate Social Responsibility, Cleaner Production, and Eco-Efficiency are very beneficial and valuable practices. We have found that companies are not solely responsible in contributing to a sustainable future. Through personal practices such as simple recycling and conservation of energy and water usage, everyone can join the effort to work toward a sustainable future. If adopted by companies, and also on a personal level within the global population, our data confirms that there would be countless benefits, both economically and socially. The basic quality of life for everyone would be greatly improved, providing more people with drinkable water, financial support, education,

and a clean environment. Companies would also benefit in numerous ways, helping to support the economy. If non-profit organizations such as CIDH could promote more widespread participation in the practices of Corporate Social Responsibility, Sustainable Development, Cleaner Production, and Eco-Efficiency in Costa Rica, the social implications would be endless.

Chapter VI. CONCLUSIONS AND RECOMMENDATIONS

After thoroughly analyzing the concepts and weighing the benefits of Corporate Social Responsibility, Sustainable Development, Cleaner Production, and Eco-Efficiency, it is our recommendation that these programs, along with the Balanced Scorecard, should be strongly promoted by non-governmental organizations such as CIDH. Through the use of seminars as part of a fourth training module, the specific practices of these programs can be taught to companies in an effort to expand participation.

Our recommendation to CIDH is to approach the small and medium-sized enterprises throughout Costa Rica to develop a partnership in which they closely work to administer training in the areas of corporate social responsibility and sustainable development.

Within the initial meetings, CIDH should introduce their objectives and goals in consulting the company, and also present the companies with potential benefits to provide them motivation to participate. Likewise, once the company has agreed to receive the training, they should clearly state any new values and missions they hope to gain as a result of the mentoring. CIDH should guide the companies through a cost-benefit analysis of the company's practices to prove that the changes will bring financial savings.

The seminars we are recommending should provide companies with specific information on how to implement practices in order to participate in the aforementioned programs. We have included a detailed curriculum for each of the seminars with the topics Sustainable Development; Cleaner Production and Eco-

Efficiency; and The Balanced Scorecard. After speaking with CIDH, we have determined that their previously planned four day module training should be maintained for the fourth module to which we are contributing. Each of the three seminars should be given throughout the four, eight hour days. Consultants from CIDH will be teaching high-level managers from small and medium-sized enterprises.

The first seminar should include the specific details of Sustainable Development as it relates to Corporate Social Responsibility. It should provide information that companies need to consider when they begin developing their goals and objectives, such as employee opportunities, community involvement, and transparency. For the full outline of this seminar refer to Appendix I.

We have determined that the second seminar should focus on the socially responsible practices of Cleaner Production and Eco-Efficiency and should outline the process for developing an Eco-Efficiency Profile. This Eco-Efficiency Profile allows companies to monitor and record measurements such as the amount of waste produced, resulting in more efficient methods of production. During the course of our research, a common problem that we encountered was that companies could not provide us with definite figures for variables such as amount of energy consumed, amount of wastes they produced, or the amount of materials used. If companies develop a quantitative method to do so, such as creating an Eco-Efficiency Profile, it would allow accurate determination of the processes that work best or those that need to be changed. Further details of this seminar can be found in Appendix J.

Lastly, we have concluded that the third seminar should provide companies with specific information about the Balanced Scorecard and how it can be used to help companies maintain their sustainability and corporate responsibility practices. Not only should they be given a thorough overview of the tool and how it compares to other managerial methods, but they should also be provided support in developing and implementing the Balanced Scorecard within their business. The Balanced Scorecard seminar, as we recommend it, is thoroughly explained in Appendix K.

To promote change in the Costa Rican business sector, it is our recommendation to CIDH to teach small and medium-sized enterprises the value and methods of these practices and the managerial tool the Balanced Scorecard. These enterprises have the potential to greatly impact country and lead to more widespread participation.

APPENDIX A

CIDH

The Centro Internacional para el Desarrollo Humano (CIDH; The Center for International Human Development), founded in 1997, is a non-governmental and multidisciplinary organization in San José, Costa Rica funded by the World Bank Institute. CIDH specializes in advocating sustainable development through the promotion of social dialogue, applied research, and academic exchange. Working with international agencies such as the World Bank Institute, the United Nations Development Programme, and the Inter-American Development Bank, CIDH reaches for its goal to help individuals and organizations develop the skills they need in order to play a key role in the development process. A few examples of programs they have dedicated their efforts to are the *Labor Union Freedom, Collective Bargaining, and Labor Relations in Central America;* the *Multinational Enterprises in Costa Rica toward the New Millennium: A Social Balance;* and *Program on Competitiveness and Quality of Life (CQL)*.

Offering three study abroad programs, CIDH fosters analysis, workshops, and seminars regarding the challenges that Central America faces. Through these conferences and consultancies, CIDH introduces the companies to the concept of Corporate Social Responsibility with in-depth modules of such practices. CIDH works regionally supporting the growth of society, entrepreneurs, and political networks by carrying out research projects to accomplish their own objectives.

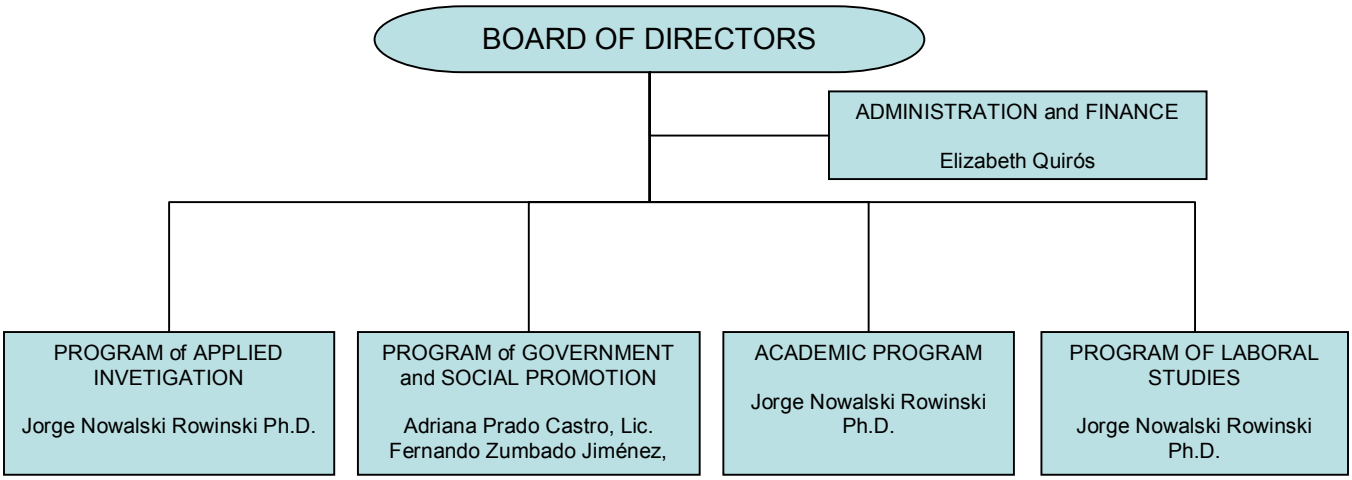
CIDH's Objectives

CIDH's objectives include facilitating analysis on Sustainable Human Development. By promoting discussion on reoccurring topics relevant to sustainability, CIDH hopes to gain links between a company's socially responsible practices and their success in order to strengthen current relations and create new relationships with more companies.

Implementing training modules in five different CSR aspects, CIDH works to contribute to the empowerment of social, governmental, and non-governmental organizations through continuing education to companies unaware of the importance or hesitant to make changes toward taking action in such practices. CIDH reaches to promote regional dialogue and also facilitates cooperation on a worldwide level. Other objectives consist of creating a documentation center for scholars, researchers, social organizations, and individuals to access information on Sustainable Human Development as well as offering undergraduate and graduate academic programs. In addition, CIDH aims to promote the Sustainable Human Development vision through the media with the publication of books, magazines, and teaching materials. (http://www.cidh.ac.cr/about/)

With both technical and educational assistance through a highly professional team of colleagues, many with doctoral and master's degrees, CIDH aims to make a difference in the corporate world of Costa Rica.

CIDH Organization



APPENDIX B

CEGESTI

CEGESTI (Centro de Gestión Technológica e Informática Industrial) is a private, non-profit organization dedicated to furthering social and economic development by supporting sustainable competitiveness in the private sectors in Central America and the Caribbean. They provide their clients with consultancy services, training, and research information that help explain the latest methodologies and encourage further innovative development. They have worked with about 150 multilateral and bilateral organizations, government organizations, non-government organizations, companies, universities, and private investors since they were founded in 1990.

CEGESTI approaches companies to educate them of the programs and benefits of Corporate Social Responsibility, Sustainable Development, Cleaner Production, and Eco-Efficiency. They administer an eight month process of training in these areas. The first step is meeting with the company to define their strategy, mission, and goals. Throughout their training, they focus on the four areas including system standards; environment; finance and organization; and Corporate Social Responsibility. They have three sessions to agree on the Cleaner Production practices they would like to improve such as: environment, economic, and social aspects; specifically productive efficiency, health and safety, and waste production. CEGESTI records each business's results and growth by implementing the Balanced Scorecard.

The CEGESTI organization is comprised of engineering, science, business, and research professionals with a multitude of nationalities. The wide variety of experience provides more well-rounded information and services to their clients.

CEGESTI's Values and Principles

As a company that measures its success according to the success of their clients, CEGESTI relies on specific values and principles to ensure consistent and thorough results. The following values and principles also ensure internal efficiency in their operations as well as good relations with other organizations and competitors.

- Search for excellence and continuous improvement of services.
- Satisfaction of clients' specific needs.
- Dynamism and motivation when moving towards action.
- Commitment to regional development.
- Creativity and innovation as the source of strength.
- Honesty, integrity and transparency in relations.
- Create and strengthen clients' internal abilities.

CEGESTI's Objectives

- Change critical competitiveness parameters.
- Introduce and apply new knowledge and methodologies.
- Foster and facilitate development proposals in the region.

APPENDIX C

Interview – April, 18, 2005 11:00AM – 12:10PM

Dr. Thomas J. Lynch II
Vice President for Information Technology and CIO
Vicki Lynn
Project Manager

The purpose of the meeting was to discuss with Dr. Lynch and Ms. Lynn the implementation of the Balanced Scorecard (BSC) within the IT Department at WPI.

Dr. Lynch began by explaining that they had approached the Balanced Scorecard Collaborative and requested a quote for their services. They were very expensive, so they hired Paul Niven. Niven has written several books on the BSC and is a consultant. They have since been implementing the BSC for the last one and a half years. Dr. Lynch and Ms. Lynn are part of the core management team, which includes eight upper level managers. There are multiple other teams who are in charge of each of the objectives and measures of the department's scorecard.

When they first started implementing the BSC they found it hard to connect the BSC to the strategy map and found it confusing. They began to find clarity when they began with their values. Their values helped them to determine what they stand for. Next, they identified their mission. The mission explained why they are here and what they are here to do. The next step down was their vision. Their vision explained where they were going within the division. After they identified their values, mission, and vision they were better able to see that the next step was identifying a strategy for where they were going.

The four main perspectives they identified were similar to the suggested BSC perspectives, but they were ordered differently to fit the division. For the IT division, they put their mission at the top as the main focus. The first perspective beneath it was stakeholder. The next two were employee learning and growth and business processes. Their bottom perspective was resources, which is comparable to the standard financial perspective. For these perspectives they identified fourteen objectives with initiatives and created measures for each of the initiatives. They are currently implementing six objectives. They believed that it was important to avoid attempting too many measures at once.

Dr. Lynch and Ms. Lynn then went on to explain how the employees were reacting to this new management strategy. They believed that although some employees were resistant at first, they have all come around. Implementing the BSC does require extra work and includes the measurement of individual employees, which can be intimidating. This created some hesitance, but as they continued to involve them in brainstorming sessions and management teams, the employees felt valued because they were able to help build the strategy. Dr. Lynch and Ms. Lynn put all the drafts, minutes, Q&As, strategy maps, and other pertinent documents on myWPI, the webpage of institute's community, for all the employees in the IT division to access. This helped them to feel more connected to the business of the entire management team. The core management team administers surveys often to assess the weaknesses and progress. The weakest points were determined to be communication and teamwork. Some means they took to improve this include a 5-point communication plan to encourage more of it, assigned seating at meetings to

keep everyone from just sitting next to their friends, and team sharing presentations to familiarize each other with their various jobs. Dr. Lynch and Ms. Lynn stressed that throughout the entire implementation they have been reinforcing the values, mission, and vision. They believe that all employees should know the values, mission, and vision of the company they work for.

Overall, Dr. Lynch and Ms. Lynn believed that everyone benefited from a clarified vision and sharper progress measurements. They found that it helped to build enthusiasm within the department. As the head manager, Tom feels that the BSC gives him a more confident vision for leadership. He was able to share the strategic map with the IT division as a story. His confidence in this story helped to build enthusiasm because it provided something for people to buy into, and it provided an opportunity for people in lower level positions to step up. This enthusiasm needs to be preserved; when new tasks arise, they must be taught and explained to the employees before they can be expected to do them.

They made a few suggestions for ways we could approach companies and for things of which we should be mindful. They suggested that we might want to challenge companies to explain why their current system works. We could challenge them to prove it and explain how they measure it. We could also ask several employees if they know the values, mission, and vision of the company. We should, however, be careful of the way in which we approach managers, employees, and companies, because priorities are different in many other countries.

The interview concluded with Dr. Lynch asking us to let him know what we find because he is interested to see how our project eventually works out. We agreed to update him and let him know if we discover anything that could be helpful to him.

APPENDIX D

Interview – April 19, 2005; 11:00am

Mr. William J. Walters
UPS Workforce Planning Manager
East New England District

The purpose of this interview was to collect data and knowledge of how UPS, a member of the Balanced Scorecard Hall of Fame, was implementing the Balanced Scorecard, changes they have made, and any new advances this has brought.

Mr. Walters has been with UPS for the last thirty years. He stated that they had been using a management tool, MBO (Management by Objectives), for twenty years and have converted, adopting the Balanced Scorecard five years ago.

He could not answer our question of how or why the BSC was adopted because it was done on the corporate level, whose headquarters are located in Atlanta, Georgia. There is then a regional office in Manhattan and finally seven districts within the New England region. Because of this, his district does not have much flexibility with developing the set up of the Balanced Scorecard because it is run on the corporate level.

Mr. Walters then explained their missions and values using the terminology "Defining what we are chasing and why we are chasing this." He told us their main goals are to increase productivity while decreasing costs.

In his department of Human Resources, the Balanced Scorecard was set up in a chart with different perspectives such as part-time staffing; workforce turnover; new hire turnover; student hire; recruitment cost; and standard deviation. He elaborated on the importance of student hires claiming that students are bright, energetic, and also

looking for the part-time positions that they aim to fulfill. With a history of WPI students and graduates employed at this division, he was not reluctant to explain how impressed he has been of the analytical thinking that most other students lack, that WPI students bring to the work force. He also clarified that the standard deviation perspective focuses on balancing minorities and females within the company.

He explained that with the Balanced Scorecard, they can provide the delivery personnel a daily operation report. This report measures productivity through areas such as number of paid hours, planned hours, pick up stops, delivery stops, and mileage driven.

He further explained that each department of the division has its own BSC and results are collected monthly from each team. He said that the statistics generally stay the same for twelve months and then alterations can be made annually on the objectives.

When asked about feedback from employees about the Balanced Scorecard, he informed us of their ERI (employee relation initiative) which gives the employees a chance to comment on how they are treated, how they feel about goals and objectives, and what they would like to see improvements on.

Mr. Walters stated, "Personally, I do not think the Balanced Scorecard brings anything to the company that MBO didn't". He then replied that he knows there are others who would boast about this tool. He did however mention that it does work and allows them to see what and how they are doing. He also told us of instances of support between the districts, where if one department is not meeting its goals, he approaches them asking what he can do to help. With the BSC pointing out

weaknesses, the bottom of the chain, characterized as “Most help needed,” is more likely to respond to his gestures of offering help and more training if approached in a positive manner.

APPENDIX E

Interview – April 8, 2005; 9:30am

Mr. Kent Smack
Balanced Scorecard Collaborative Consultant

The purpose of this interview was to gain a better understanding of the structure and methodology of the Balanced Scorecard, as used by the Balanced Scorecard Collaborative.

The interview began with a description by Donna of our project and of why any information provided by them would be helpful. Mr. Smack then gave a brief overview of the Balanced Scorecard Collaborative. From there, for a majority of the interview Mr. Smack simply went over the Balanced Scorecard Collaborative's method of creating and applying the Balanced Scorecard to companies. He provided a detailed description of strategy maps, which are the basic outline of a company's performance goals and initiatives. These maps can be presented to a company after careful planning and assessment of the company. Strategy maps can be as simple as a power point presentation, as long as they clearly outline the company's performance goals and provide a picture of what they need to be doing to carry out these maps.

Mr. Smack explained that the first step is for a company is to create objectives that they would like to fulfill. After these objectives are put in place, usually about 25 per Balanced Scorecard, the company then decides on targets that they would like to reach for each object. This provides them with a clearly stated aim that they can work toward. After these targets are developed, initiatives and action plans are created, as well as assignment of team member and budgets. These are assigned to

each objective and target. Each group is given a start and stop date to try to achieve these objectives, and the groups then meet on a regular basis to discuss progression. He explained that for a project such as ours, the strategy map objectives may be more focused on issues that relate to the company being more environmentally friendly, while still improving management practices.

According to Mr. Smack, the idea of the Balanced Scorecard is to involve everyone in the company and for them to all be on the same page. Mr. Smack used the idea of a "family tree of scorecards" to help everyone from the corporate level all the way down to each individual participant in the management system.

Mr. Smack explained that companies need good leadership to keep enforcing the ideas of the Balanced Scorecard. Also, the strategy map is important to leave with companies as a clear outlined method for them to follow so that they will continue to use the Balanced Scorecard once outside help is out of the picture. This is why a power point method works well, as it is all clearly laid out for them to see. These should then be refreshed annually to change any outdated or unnecessary objectives and to add necessary new ones.

The interview concluded with Donna thanking him for his time and assuring him that his help was greatly appreciated. Mr. Smack said he was happy to help and left his number in case we had further questions.

APPENDIX F

Cleaner Production and Eco – Efficiency Questions

- How long ago did you begin to implement sustainable development practices?

- What made you decide to do so?

- What steps did you take to begin?

- Did you encounter any difficulties when implementing these practices?

- How did these new practices affect your employees?

- In contrast with your efforts, not everyone is participating in the practices of these programs in order to help the environment. Who do you think are your most important partners or associates in helping with these practices?

- How do they help you?

- Do you receive any support from governmental or political organizations?

- Have you received any recognition or awards for your efforts?

- In your opinion, what aspects make your business sustainable, with respect to the environment? For example, what are your specific practices to remain a sustainable business?

- Whose job is it to carry out these practices? Is it a joint effort of all of the employees?

- What monitoring practices are in place for the aspects of your company that impact the environment such as wastes, the use of electricity, etc….? And with respect to the environment, what methods are being used in order to evaluate the results?

- How often are they checked?

- What have been the overall benefits from these practices, such as, for example, the savings that have resulted?

- Where do you see your company going in the future with these practices?

- What aspects about these practices do you feel you might change in the future?

APPENDIX G

Example Eco-Efficiency Profile

Taken from the WBCSD publication *Measuring Eco-Efficiency: A Guide to Reporting Company Performance* (Cowe, 2000, pg. 5)

Organization Profile

Company name: **Exemplis Inc.**
Business segments: Pharmaceuticals (list of primary products)
Report for: **Fiscal Year 1999**
System boundaries: includes all consolidated units of Exemplis Inc., excludes joint ventures and minority activities
Number of employees: 2,500
Internet: Website, hyperlink to web-based sustainability report
Contact for additional information: Name, telephone, e-mail address

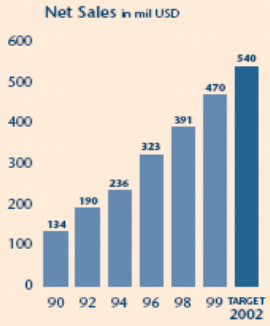
Methodological Information

ISO 14,031 was used to identify relevant aspects of our business activity and to select respective meaningful indicators.

Our data collection and use methodologies are available for review.

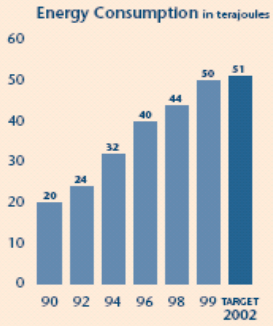
Value Profile

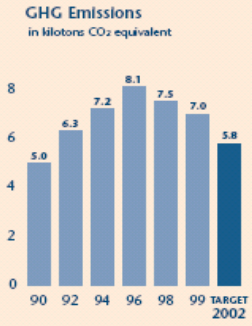
Mass of product sold = 300,000 kg
Net sales = 470 million USD
Value added = 220 million USD
Gross margin = 45 million USD
EBIT = 45 million USD



Environmental Profile

Energy consumed = 50,000 gigajoules
Material consumed = 4,500 tons
Water consumed = 60,000 m^3
GHG emissions = 7,000 tons CO_2 equiv.
ODS emissions = 25 tons CFC11 equiv.
Electricity consumed = 35,300 gigajoules
GHG from upstream electricity gen. = 4,600 tons CO_2 equiv.
Natural gas consumed = 11,500 gigajoules
Acidification emissions = 400 tons SO_2 equiv.
VOC emissions = 230 tons
COD effluents = 86 tons
Total waste = 1,450 tons
Waste to landfill = 650 tons

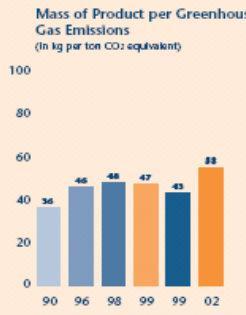


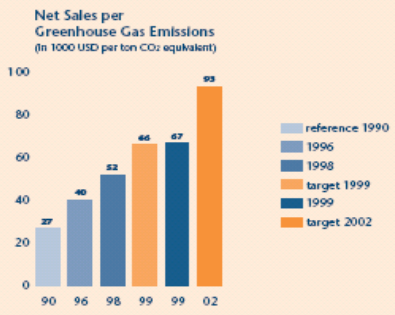


Eco-efficiency Ratios

Mass of product sold per:
Energy consumption = 6.0 kg per gigajoule
Material consumption = 66.7 kg per ton
GHG emissions = 42.9 kg per ton CO_2 equiv.

Net sales per:
Energy consumption = 9,400 USD per gigajoule
Material consumption = 104,000 USD per ton
GHG emissions = 67,100 USD per ton CO_2 equiv.





APPENDIX H

Eco-Efficiency Indicators – Generally Applicable
Taken from the WBCSD publication *Measuring Eco-Efficiency: A Guide to Reporting Company Performance* (Cowe, 2000, Appendix 1, pgs. 31-32)

CATEGORY	ASPECT	EXAMPLE INDICATOR
Product/Service Value	Volume	• Units (e.g. number) sold • Statistical Unit (e.g. averaged, indexed) • Employees (e.g. numbers, labor hours) • Space (e.g. in building management)
	Mass	• Quantity (e.g. kilograms) sold • Quantity (e.g. kilograms) produced
	Monetary	• Net Sales/Turnover • Gross Margin (Net Sales - Cost of Goods Sold) • Value Added (Net Sales - Costs of Goods Purchased) • Income / Earnings / Profits • Share Value • Liabilities (e.g. Insurance Costs) • Reserves / Provisions • Investments and Write-offs • Costs (e.g. Cost of Goods Sold, Production, Energy, Materials, Waste Disposal, Pollution Control)
	Function	• Product Performance (e.g. laundry loads washed, number of diapers used in a baby's life time) • Services Delivered (e.g. standard banking transactions) • Agricultural Yield (e.g. bushels harvested) • Agricultural Effectiveness (e.g. hectares treated) • Product Durability/Lifetime (e.g. vehicle miles traveled) • Transport Capacity (e.g. ton-kilometers, passenger-kilometers) Note: Function describes the functional value of a product/service to the end-user. As a result, they are highly specific and can only be used for individual products and services.
	Other Potentially Relevant Information	• Product Price • Market Share • Margins • Market Mix
Product/Service Creation Environmental Influence	Energy Consumption	• Gigajoules consumed • Fossil Fuel Type (e.g. gigajoules of coal, natural gas, fuel oil, etc.) • Source (e.g. gigajoules of renewable, non-renewable) • Emissions (e.g. tons of SOx, NOx, VOC, greenhouse gases)
	Materials Consumption	• Tons consumed • Type (e.g. tons of raw material, indirect/ancillary materials) • Source (e.g. tons of renewable, non-renewable, recycled, virgin, extraction rucksack) • Characteristics (e.g. tons of materials with certain environmental safety/risk characteristics)
	Natural Resource Consumption	• Tons consumed (e.g. water, wood, minerals) • Source (e.g. tons of renewable, non-renewable, m^3 of groundwater, fresh surface water, salt water) • Land Use (e.g. hectares of biodiversity/species conservation habitat) • Non-process Water (e.g. m^3 of utility, product consumption)

CATEGORY	ASPECT	EXAMPLE INDICATOR
	Non-product Output	• Before Treatment (e.g. tons of process material inputs minus tons of product output) • Techniques of Treatment (e.g. quantity to bio-treatment, incineration, landfill) • Releases to Land or Water After Treatment (e.g. quantity to on-site/ off-site treatment, quantity of hazardous/non-hazardous, quantity to surface water, underground injection, tons of effluent BOD5 and/or COD, tons of N&P nutrification emissions) • Air Emissions (e.g. tons of NO_2/NOx, SO_2/SOx acidification, greenhouse gases, ozone depleting substances, volatile organic compounds) • Priority Heavy Metals Releases (e.g. tons of releases) • Persistent, Bio-accumulative and Toxic Releases (e.g. tons of POPs releases)
	Unintended Events	• Accidental Releases (e.g. number of releases)
Product/Service Creation Environmental Influence	Product/Service	• Characteristics (e.g. recyclability, reusability, bio-degradability, durability safety/risk)
	Packaging Waste	• Tons sold • Source (e.g. virgin material, recycled)
	Energy Consumption	• Same as above for Product/Service Creation
	Emissions During Use and Disposal	• Releases to land, water and air from use and disposal

Eco Efficiency Indicators – Business Specific
Taken from the WBCSD publication *Measuring Eco-Efficiency: A Guide to Reporting Company Performance* (Cowe, 2000, Appendix 2, pgs. 33-34)

Some examples of business specific indicators are included in this appendix to help companies and provide some guidance based on the experience gained during the pilot exercise. The descriptions, measurement methods and data sources are taken from information provided by pilot companies. Many of them are used in these companies. Environmental business specific indicators can be identified in the following areas:

- **Indicators on emissions of individual or groups of gases and metals to air or water (e.g. VOC, SO_2, NOx, priority heavy metals)**
- **Environmental burden/effect indicators (e.g. eutrophication, photosmog, human toxicity):** Environmental burden/effect indicators are summary indicators for different gases or effluent substances that contribute to the same environmental burden or effect. Weighting factors (e.g. Heijungs et al. at Leiden University (1992); ICI: Environmental Burden, The ICI Approach, 1997; Responsible Care: Health Safety and Environmental Reporting Guidelines; CEFIC November 1998), with which individual gases or effluent substances contribute to environmental effects, have been developed for some indicators. In some regions (e.g. Europe) the weighting factor concept is used quite broadly.
- **Summary parameters for water effluents (e.g. Chemical oxygen demand (COD) and others):** Summary parameters for water effluents are also very common. However, water effluent substances are not relevant for all type of businesses, and therewith neither are such summary parameters. Those businesses for which it is relevant will have to choose between alternative parameters and measurement methods.
- **Indicators on particular fractions of waste or non-product output (e.g. waste to landfill)**
- **Product use indicators (e.g. product packaging, energy consumption during product use):** These types of indicators can often be defined along similar terms as the indicators for product creation, however with a scope relative to the product usage.
- **Indicators on aspects of upstream impacts emerging at operations of suppliers:** These types of indicators can often also be defined along similar terms as the indicators for product creation, however with a scope relative to the product's upstream value chain or usage.

VALUE INDICATORS

INDICATOR	UNIT	POTENTIAL MEASUREMENT METHOD	POTENTIAL DATA SOURCE
EBIT Profit before interest expense and income tax	in USD, Euro, or Yen	International Accounting Standards Committee (IASC), Generally Accepted Accounting Principles (GAAP) e.g. at: www.aicpa.org	Financial reports Purchasing reports
Gross Margin Net sales minus costs of goods and services sold	in USD, Euro, or Yen	International Accounting Standards Committee (IASC), Generally Accepted Accounting Principles (GAAP) e.g. at: www.aicpa.org	Financial reports Purchasing reports
Value Added Net sales minus costs of goods and services purchased	in USD, Euro or Yen	International Accounting Standards Committee (IASC), Generally Accepted Accounting Principles (GAAP) e.g. at: www.aicpa.org	Financial reports Purchasing reports

ENVIRONMENTAL INFLUENCE INDICATORS

INDICATOR	UNIT	POTENTIAL MEASUREMENT METHOD	POTENTIAL DATA SOURCE
Priority Heavy Metals (PHM) Emissions to Surface Water Total aquatic release of sum of heavy metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn) and their compound to water	in metric tons of Cu equivalents	- Heavy Metals as defined in: Responsible Care: Health Safety and Environmental Reporting Guidelines, CEFIC November 1998, page 12 - Transformation factors: ibid Appendix 9, page 38	Water discharge reports EHS reports Estimation or calculation

INDICATOR	UNIT	POTENTIAL MEASUREMENT METHOD	POTENTIAL DATA SOURCE
Waste to Landfill Wastes from processes, treatments and packaging disposed of by landfill	in metric tons	Company specific method used to measure or track quantity (mass) of waste disposed of by landfill	Waste disposal reports EHS reports Estimation or calculation
Waste to Incineration Wastes from processes, treatments and packaging disposed of by incineration	in metric tons	Company specific method used to measure or track quantity (mass) of waste (as defined by applicable government authority) disposed of by incineration	Waste disposal reports EHS reports Estimation or calculation
Photochemical Oxidant Creation (POC) VOC (excluding methane) and NOx releases	in metric tons of VOC & NOx or Ethylene equivalents	- VOC as defined in Responsible Care: Health Safety and Environmental Reporting Guidelines, CEFIC November 1998, page 11 - Photochemical Oxidant Creation Potentials (POCP): Heijungs et al., CML University of Leiden, 1992 and Hauschild and Wenzel, Chapman & Hall, London, 1997	Plant surveys EHS reports Estimation or calculation
Eutrophication Emissions to Surface Water Total aquatic release of phosphorous and nitrogen compounds	in metric tons of phosphorus equivalents	Nutrification Potentials: Heijungs et al., CML University of Leiden, 1992	Plant surveys EHS reports Estimation or calculation
Chemical Oxygen Demand (COD) to Surface Water Total amount of oxygen required for the chemical oxidation of compounds in all water effluents	in metric tons of oxygen	COD as defined in: Responsible Care: Health Safety and Environmental Reporting Guidelines, CEFIC November 1998, page 12	Water discharge reports EHS reports Estimation or calculation
Packaging Packaging from purchased goods and for products	in metric tons	Company specific method used to measure or track packaging material amounts (mass)	Purchasing reports Waste disposal reports Estimation or calculation
GHG Emissions from Purchased Electricity GHG emissions released by the supplier of purchased electricity	in metric tons of CO_2 equivalents	- List of greenhouse gases: Kyoto Protocol, Annex A - Global Warming Potentials: IPCC, Climate Change 1995, Second Assessment Report - Transformation factors for fuels from fuel carbon content: e.g. Responsible Care: Health Safety and Environmental Reporting Guidelines, CEFIC November 1998, page 31f. GHG emissions released by supplier of purchased electricity are calculated/ estimated using specific knowledge of relevant electric supplier network.	Cost reports Estimations or calculations

APPENDIX I

Sustainable Development Seminar

We have determined that the first area of training for CIDH's fourth module should be Sustainable Development as it relates to Corporate Social Responsibility (CSR). The first three modules, previously created by CIDH, have dealt with the general idea and background of CSR. This fourth module should include information that companies will need to know in order to actually begin implementing these practices. This seminar should provide information on areas of business that companies need to consider when planning and creating their sustainable goals, objectives, and policies. The areas that we have determined to be the most important for this seminar, as explained below, are employee opportunities, community involvement, and transparency.

Employee Opportunities

Part of becoming socially responsible also includes ensuring that your employees are properly treated. This seminar should inform companies on the types of employee benefits that they need to take into consideration when implementing company practices. Some of these benefits may include fair wages, training on sustainability and efficiency practices, and proper safety conditions. Companies should be aware of the OHSAS 18000 certification that they could obtain to ensure the safety of their employees. This is an Occupational Health and Safety Management System developed as international standards based on the success of

systems already in place, such as the United States' Occupational Safety and Health Administration (OSHA) and the British Standard for Occupational Health and Safety Management Systems.

Community Involvement

Companies should also be aware of the fact that they too are part of the community, and have a responsibility to help reduce any negative impacts that they might bring to the area. There are numerous ways that businesses can help within the community. If companies were willing to train inexperienced workers, they could create a local workforce and provide greater support and opportunities for the communities in which they reside.

Education programs provided by a company can also greatly impact the community. Examples of successful programs already in place, such as Intel's "Lets Save the Plant" and Punta Islita's art and school programs, would help to reinforce this idea during the seminar. Also, companies can provide volunteers not just for education, but for needed tasks within the community, such as construction.

Transparency

Many companies are afraid of letting out too much information to the public and to other companies. However, they need to be informed that participating in these programs and building strong partnerships has a great potential to help their business in the future. Companies that participate in these practices can share

information with one another, and rather than "stealing secrets", can gain knowledge of successful practices.

Companies should also consider developing a sustainability report to remain transparent. Including this idea in the seminar will provide companies the information necessary to create such a report. If companies are willing to publish their practices so that the general public can see the types of beneficial programs that they are participating in, it will help to raise their reputation, and in turn, benefit their business.

APPENDIX J

Cleaner Production and Eco-Efficiency Seminar

We have determined that cleaner production and eco-efficiency should be included in the training module as a separate seminar. Following both of these practices not only allows a company to be socially responsible, but participating in these programs also helps the environment and benefits the company. Although there may be some initial expenses as a result of implementing these programs, there is the potential for many savings in the long run.

Cleaner Production

Cleaner Production is a preventative approach to environmental management focusing on producing goods with the minimum environmental impact. Companies must realize that Cleaner Production is not a treatment to resolve the impact of pollution but a technique to prevent pollution. Cleaner Production can involve conserving raw materials, water, and energy, and eliminating toxic materials to reduce the impacts that are causing harm to humans and the environment. Participation in Cleaner Production practices is a necessary step in the process of becoming a partner dedicated to Corporate Social Responsibility.

Many small businesses do not consider that their environmental impact plays a significant role in the amount of pollution in the world. What they need to realize is that collectively, the pollution of each small business adds up and is indeed contributing a large share of pollution into the environment.

Eco-Efficiency

Eco-Efficiency is a buzzword introduced by the World Business Council for Sustainable Development (WBCSD) in 1992. The new term Eco-Efficiency was to represent the combination of economic and ecological aspects of business. By combining the two aspects, companies can reap economic benefits while decreasing their negative ecological impact. According to the WBCSD, the goal of Eco-Efficiency is to increase the amount of goods and services produced, while decreasing the amount of materials and resources consumed and their impact on the environment. This goal will allow companies to better meet the demands of their customers. It also allows them to produce the goods at a lower cost by streamlining business practices to have a lesser impact on the environment.

The WBCSD developed a flexible framework that companies can use to measure their eco-efficiency, as well as a list of twelve key action points for everyone from the business executive to the average consumer. There should be a section within the seminar for an explanation of each.

Framework

The framework for measuring eco-efficiency produces measurement indicators for the quantification of different aspects which can be translated into an eco-efficiency profile, as well as offers guidance in disclosing the profile to internal and external stakeholders. The framework consists of universal definitions, principles, and indicators separated into general applicable and business specific categories. A full description of the Eco-Efficient indicators is provided in Appendix

H and an example of an Eco-Efficiency profile is supplied in Appendix G. Both Appendices are taken from the WBCSD publication *Measuring Eco-Efficiency: A Guide to Reporting Company Performance* (Cowe, 2000).

The framework for measuring Eco-Efficiency is divided into the following sections:

- Universal definitions and principles - ensure the scientific support, environmental relevance, accuracy, usefulness, validity, and transparency of eco-efficiency profiling and reporting.
- Generally applicable indicators - are separated into two categories, one for economic indicators and one for ecological indicators. The economic indicators evaluate product or service value according to the amount of goods produced or services provided and the net sales of the goods or services. The ecological indicator category evaluates the environmental influence during product or service creation.
- Business specific indicators - evaluate the environmental influence of products and services while they are in use. Guidelines for selecting these indicators are provided in the Eco-Efficiency measurement framework.

The complete Eco-Efficiency profile is divided into five sections:

- Organizational profile - provides basic information about the size, divisions, and industrial sector of the company.
- Value and environmental profiles - includes the various generally applicable and business specific indicators.

- Eco-Efficiency ratios - includes the quantitative information necessary to evaluate the following equation provided by the WBCSD:

$$eco-efficiency = \frac{product\ or\ service\ value}{environmental\ influence}.$$

- Methodological information - provides information about what approach was used to select the indicators and find the necessary information as well as any limitations of the data.

A complete profile would allow companies to monitor their progress and note trends in their eco-efficiency practices. It also allows other stakeholders to see the financial and environmental benefits of implementing sustainable practices.

Action Points

The twelve key action points to provide an eco-efficient future include measures that everyone should take, from business personnel, to government leaders, to the average consumer.

Twelve Key Action Points for and Eco-Efficient Future (Lehni, 2001)

Companies should integrate eco-efficiency in all areas of business relations. They should be told about the types of things that they can integrate in their company to become more efficient such as solar panels or recycling bins. More importantly, however, they need to learn and understand the reasoning behind eco-efficiency. The implementation of eco-efficient practices would be unique to each company, but all companies would benefit from suggestions on areas upon which they can focus to make improvements.

APPENDIX K

The Balanced Scorecard Seminar

During our research we investigated many different management systems. We weighed the advantages and disadvantages of many and have decided that the Balanced Scorecard is the best suited tool to allow complete monitoring of a business. We have determined that for CIDH's fourth seminar, not only should companies be given an overview of the tool, but they should also be provided support in developing and implementing the Balanced Scorecard within their business.

Background

Specifically, it is a managerial tool made up of four main sections, customer and stakeholder satisfaction, finances, internal business, and learning and growth. These sections can also be altered some, depending on the aspects that the company feels is important to include, such as environmental or social impacts. The company then develops specific goals and objectives for the practices that they would like to carry out within each of these aspects, including all of the company's goals for remaining sustainable and responsible.

These company aspects, goals, and objectives are then transformed into strategy maps. Each member of a company can be given their own copy of the map, which allows everyone to be on the same page with respect to the company's practices. This provides more efficient communication within the business, which each company that we reviewed felt was very important.

The Balanced Scorecard seems to be the only managerial tool that we have studied that provides a detailed outline of all company aspects and practices, both internally and externally. This tool also allows the most company input, as each business decides which aspects, goals, and objectives they would like to include in their strategy map.

Setup

We have determined that the most efficient way to ensure company participation in using this tool to organize their sustainability and socially responsible practices is for CIDH to help the companies create their own scorecard. Once their strategy map has been created, they will be much more likely to continue using the tool once training has been completed.

The companies should be provided with an example, such as AMANCO's well developed strategy map. This will allow them to see what types of aspects they may want to include, as well as provide an example of the organization of the map.

The companies should also be provided with information as to what types of practices they may want to include as a result of participating in sustainability practices. This can include things such as becoming ISO 9000 or 14000 certified, and also OHSAS 18000 certified. We have determined that the Balanced Scorecard is the best suited tool to help companies organize their practices within the programs of Corporate Social Responsibility and Sustainable Development; however, we have also determined that it is beneficial for companies to follow various other important international business standards, such as the previously mentioned ISO certifications,

which can be included within the balanced scorecard. We feel that a balance between various programs may help the company to include the best practices of each.

REFERENCES

AA 1000 - A standard for ethical performance, *Business Respect*. Retrieved April 14, 2005 from http://www.mallenbaker.net/csr/CSRfiles/AA1000.html.

About Social Accountability International*, Social Accountability International*. Retrieved April 14, 2005 from http://www.cepaa.org/AboutSAI/AboutSAI.htm.

About Toyota, (2005). *Toyota Motor Sales, U.S.A.* Retrieved March 22, 2005 from http://www.toyota.com/about/environment/index.html

Agenda 21. (2004). *United Nations Environment Programme.* Retrieved April 19, 2005 from http://www.un.org/esa/sustdev/documents/agenda21/index.htm

AMANCO, (2001). *Nueva Group.* Retrieved May 31, 2005 from http://www.amanco.com

The Balanced Scorecard Collaborative, (2005). Retrieved March 23, 2005 from http://www.bscol.com/

The Balanced Scorecard Home Page, (2005). *Office of Procurement and Assistance Management*. Retrieved March 23, 2005 from http://professionals.pr.doe.gov/ma5/MA-5Web.nsf/Business/Balanced+Scorecard?OpenDocument

The Balanced Scorecard Institute, (2005). Retrieved March 23, 2005 from http://www.balancedscorecard.org/

BP: Environment and Society, (2005). BP p.l.c. Retrieved March 22, 2005 from http://www.bp.com/sectiongenericarticle.do?categoryId=9002269&contentId=3072001

CEGESTI, (2005). Retrieved May 19, 2005 from http://www.cegesti.org

Carbon Emissions from energy use and cement manufacturing, 1850 to 2000, (2003). *World Resources Institute.* Retrieved April 24, 2005 from http://www.nationmaster.com/red/graph-T/env_co2_emi&int=-1

Cleaner Production, (2000). *The Centre for Environmental Informatics*. Retrieved March 22, 2005 from http://www.uneptie.org/pc/cp/understanding_cp/cp_industries.htm

Costa Rica - Environment: Pollution Problems in Eco- Paradise, (1999). *Inter Press Service English News Wire.* Retrieved April 24, 2005 from http://www.highbeam.com/library/doc0.asp?docid=1P1:23730855&refid=ink_ptd_np&skeyword=&teaser=

Cowe, Roger, (2000). *Measuring Eco-Efficiency: A Guide to Reporting Company Performance,* World Business Council for Sustainable Development. Switzerland: Atar Roto Press SA.

CSR Diamond. (2005). *The World Bank Group.* Retrieved March 17, 2004, from http://www.csrwbi.org, 2005, csr_diamond.pdf

CSR Main Concepts. (2005). *The World Bank Group.* Retrieved March 17, 2004, from http://info.worldbank.org/etools/docs/library/57527/csr_mainconcepts.pdf

Corporate Environmental Reporting Websites. (2000). Retrieved March 23, 2005 from http://cei.sunderland.ac.uk/envrep/corprep.htm

Dexter, D., Griffiths, A., & Benn, S. (2003). Organizational Change for Corporate Sustainability. New York, NY: Routledge.

Earth Summit. (1997). *United Nations.* Retrieved April 15, 2005 from http://www.un.org/geninfo/bp/enviro.html

Environment, (2005). IBM. Retrieved March 24, 2005 from http://www.ibm.com/ibm/environment/

Environment: Greenhouse Gases and Climate Change: What We Believe About Climate Change, (2005). *Alcoa*. Retrieved March 24, 2005 from http://www.alcoa.com/global/en/environment/climate_change/climate_overview.asp

IBM Full Report. (2002). Retrieved March 23, 2005 from ftp://ftp.software.ibm.com/annualreport/2002/IBM_CRR_Full_Report_02.pdf

The Global 100 Most Sustainable Corporations in the World, (2005). *Corporate Knights Inc.* Retrieved March 23, 2005 http://www.global100.org/2005/top3.asp

Hillary, R. (Contributing Editor), (2000). *Small and Medium-Sized Enterprises and the Environment, Business Imperatives*, Greenleaf Publishing, Sheffield, UK

How to Use the Balanced Scorecard, (2005). *CIO Magazine*. Retrieved March 24, 2005 from http://www.cio.com/archive/051502/scorecard.html

ISO 9000 and ISO 14000 in plain language*, International Organization for Standardization*. Retrieved April 14, 2005 from http://www.iso.org/iso/en/iso9000-14000/basics/general/basics_4.html.

Jackson, I. A., (2004). *Profits with Principles: Seven Strategies for Delivering Value with Values.* Westminster, MD: Doubleday Publishing, 2004.

Lehni, Markus, (October, 2001). *Eco-efficiency: Creating More Value with Less Impact.* World Business Council for Sustainable Development. Switzerland: Atar Roto Press SA.

Lorsch, J. W., *Smelling Like Smoke: Why Boards of Directors Need the Balanced Scorecard*, The Balanced Scorecard Report. September – October, 2002, p. 9.

Mah, A., (2004, April). *Uneasy Partnerships and Contradictions: Corporate Social and Environmental Responsibility*. Paper presented to the 3rd Annual Global Studies Association Conference, Brandeis University.

Making Customers Feel Six Sigma Quality, (2005). *General Electric.* Retrieved April 7,

2005 from http://www.ge.com/sixsigma/makingcustomers.html

Management by Objectives, (2005). *Business Coach.* Retrieved April 19, 2005 from http://www.1000ventures.com/business_guide/mgmt_mbo_main.html

Management Tools for Cleaner Production, (2003). *Hamner and Associates LLC.* Retrieved March 20, 2005 from

http://www.cleanerproduction.com/tools/ems.htm

Millenium Development Goals: About the Goals, (2004). *About the Goals*. Retrieved April 8, 2005 from

http://www.developmentgoals.org/About_the_goals.htm

Niven, P. R., (2003). *Balanced Scorecard: Step by Step for Government and Non-Profit Agencies*. Hoboken, New Jersey, John Wiley & Sons.

Report of the World Commission on the Environment and Development. (1987). *United Nations.* Retrieved April 15, 2005 from

*h*ttp://www.are.admin.ch/imperia/md/content/are/nachhaltigeentwicklung/brundtland_bericht.pdf

Schmidheiny, S., (1992). *Changing Course, A Global Business Perspective on Development and the Environment,* The MIT Press, Cambridge, Massachusetts; London, England

Stockholm 1972 – Declaration of the United Nations Conference on the Human Environment. (1972). *United Nations Environment Programme.* Retrieved April 19, 2005 from http://www.unep.org/Documents/Default.asp?DocumentID=97&ArticleID=1503

Total Midyear Population for the World: 1950-2050. (2004). *U.S. Census Bureau.* Retrieved April 25, 2005 from http://www.census.gov/ipc/www/worldpop.html

Tschopp, D. J. (2005). Corporate social responsibility: a comparison between the United States and the European Union. *Corporate Social Responsibility and Environmental Management*, *12*(1), 55-59.

United Nations. (2003). *United Nations Department of Economic and Social Affairs.* Retrieved April 19, 2005 from http://www.johannesburgsummit.org/html/whats_new/feature_story41.html

United Nations Division for Sustainable Development. (2005). *United Nations.* Retrieved April 15, 2005 from http://www.un.org/esa/sustdev/

What is Six Sigma?, (2005). *Breakthrough Management Group.* Retrieved April 6, 2005

from http://www.bmgi.com/what_is.html

What is Six Sigma?, (2005). *iSix Sigma*, Retrieved April 7, 2005 from http://www.isixsigma.com/sixsigma/six_sigma.asp