MNCs and Environmental Management

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* Please note: To facilitate using each of the Investigations as stand-alone documents, each section has been assigned separate page numbering.

INTRODUCTION

This project entails an initial investigation of environmental practices by multinational corporations with their headquarters or having significant operations in the Pacific Northwest. Because many MNCs operating in the Pacific Northwest region have been recognized for their proactive stance towards environmental management, including Weyerhaeuser and Nike, our region provides an excellent center for conducting this project.

This document includes five Investigations of the environmental practices of the following companies: Hewlett-Packard, Intel, Nike, Starbucks, and Weyerhaueser. Each Investigation follows the same basic format:

I. Company Profile

II. Management of Overseas Environmental Issues, including managerial and operational considerations

III. Overseas Environmental Issues

IV. Future Plans and Issues, including managerial and operational considerations

Each of these Investigations provides information on how the MNC is approaching management of environmental issues, in particular relation to its overseas operations. These Investigations can serve as reading supplements in courses such as International Business, International Marketing, Managing Multinational Corporations, and Global Business Strategy. Three Exercises were developed for illustrative purposes to show how

the Investigations can be used to assign related research projects to students. In addition, a Glossary of Terminology and Organizations was developed and included with Investigations to provide faculty and students with a resource for understanding the concepts and terms in the Investigations and to pursue further research into a particular area of interest pertaining to the intersection of environmental management and international business. Finally, a comprehensive Bibliography with over 80 references was also developed. The Bibliography includes academic and practitioner articles as well as books relevant to the field of environmental management.

All of the enclosed material is available on my website for use by NIBEN faculty:

http://www.sba.pdx.edu/faculty/scottm/SMAccess/csanchor.html

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MNCs and Environmental Management:

HEWLETT PACKARD CORPORATION

I. Company Profile

Hewlett Packard, headquarted in Palo Alto, California, is a leading technology solutions provider for consumers and businesses with market leadership in fault-tolerant servers, UNIX® servers, Linux servers, Windows® servers, storage solutions, management software, imaging and printing and PCs. With more than 65,000 professionals worldwide and $4 billion annual R&D investment, HP focuses on three key areas of invention: intelligent, connected access devices, infrastructure solutions and applications that can be delivered over networks as Web services. The company's products include personal computers, servers, storage products, printers and other peripherals. HP was ranked number 13 in the Fortune 500 list in 2000. Hewlett-Packard has presence in the Americas, Europe and 17 countries across the Asia-Pacific region.

II. Management of Overseas Environmental Issues

A. Management issues

Reporting structures, systems, and certifications

HP has a corporate environmental policy that all of its managers and staff at all manufacturing facilities are required to follow. This policy incorporates principles of pollution prevention, resource conservation, legal compliance and performance measurement in order to manage environmental impact of its operations. HP has recently acquired Compaq, and although the company is working on the transition process, the current HP policy also encompasses Compaq's operations.

Most of HP's manufacturing facilities have an Environmental, Health and Safety manager on staff who is responsible for implementing corporate policy as well as manage on site situations. At the corporate level, HP has an Environmental, Health and Safety Management unit, which is responsible for identifying the company's significant environmental aspects, recommends improvement objectives to management, establishes company-wide standards for environmental practices, and manages audit and assurance procedures that verify implementation of the standards.

HP has a code of conduct for its suppliers. HP's oversight of its suppliers relies on a TQRDC-SER (Technology, Quality, Responsiveness, Delivery, Cost and Social and Environmental Responsibility) supplier management system. The code of conduct requires that suppliers comply with all national laws and regulations of the country it is operating within. It also requires that supplier products adhere to HP product specifications and applicable laws and regulations regarding product chemical content and labeling for recycling and disposal. Supplier operations have to obtain all necessary environmental permits and registrations, meet reporting requirements, as well as responsibly manage hazardous waste disposal and manage and monitor industrial air emissions and wastewater. If a supplier identifies that it cannot meet the requirements of the supplier code it can agree to an audit and monitor system to help it achieve compliance.

HP is one of the first global businesses to achieve company-wide certification of its worldwide manufacturing operations to ISO 14001. HP has obtained company wide ISO 14001 certification for its worldwide manufacturing facilities. HP operations audited in the ISO registration process include the global headquarters in Palo Alto, California, and the manufacturing operations in Boise, Idaho; Corvallis, Oregon; San Diego and

Roseville, California; Aguadilla, Puerto Rico; Dublin, Ireland; Isle D'Abeau, France; Barcelona, Spain; Herrenberg, Germany; and three operations in Singapore. This operations will audited by Bureau Veritas Quality International, an independent auditor of quality and environmental management systems.

Product design and stewardship

A significant issue for HP is the environmental impact of its technology products. As regulatory pressures increase regarding product and packaging take back and recycling, energy efficient products, and disposal of electronic waste, HP's interest in developing environmentally friendly products also increases. For example, in June 2001, the European Union adopted the Waste Electrical and Electronic Equipment (WEEE) Directive, which requires manufacturers doing business in Western Europe to be fully responsible for the cleanup of obsolete equipment. HP has had to respond to this regulatory development in a number of ways, encompassing issues such as product design, recycling networks, and waste disposal.

HP has established a product stewardship organization responsible for recommending design for environment (DfE) products with low environmental impact, providing information on product environmental impact, and documentation for eco-labels. The organization is also responsible for awareness of the most current end-of-life solutions and product take back programs.

HP has product end-of-life return programs for its own and other manufacturers' hardware. As of the end of 2001, HP has processes over 4 millions pounds of computer related products through its worldwide recycling centers each month. HP charges $13 to $34 (U.S.) for each item it recycles, using the fees to pay for the recycling program. Initially, the company determines which computers still work and can be repaired for

resale. Precious metals are harvested and the plastic pieces - reduced to the size of nickels - are sent to a smelter to be turned into energy. Even the dust from the crushing is sent to a smelter. Every part of the computer is sent to a place where it can be reused, so nothing ends up in landfills. In 2002, Hewlett-Packard extended its recycling program into Canada. The company hopes that Canadians will be willing to pay a small fee - ranging from $20 to $52, depending on product type and quantity - to make sure the obsolete equipment is properly refurbished for charities or recycled in an environmentally friendly fashion. In addition, for the last ten years, HP has offered a laser inkjet supplies return and recycle program to more than 88% of its laser inkjet supplier market. Since 1991, HP has recycled over 31.4 million cartridge.

Currently many of HP's printing, imaging and computing products qualify for the German Blue Angel eco label, which is based on product design, energy consumption, noise and ease of disassembly criteria. All eligible monochrome LaserJet printers introduced since November 1997 meet Blue Angel criteria. Four models of HP's inkjet printers (HP2000C, DeskJet 990C, 970C, 950C and 930C) are the first and only inkjet printers on the world market to receive Blue Angel eco-labels. Energy Star®, which has recently been adopted by the European Union, is a voluntary energy efficiency program sponsored by the U.S. Environmental Protection Agency. HP has over 300 models of HP office products which are ENERGY STAR® qualified.

B. Operational issues (reduce, reuse, recycle)

Raw materials

HP has eliminated all manufacturing process uses of chlorofluorocarbons (CFCs), HBFCs, halons, 1,1,1 trichloroethane (TCA), carbon tetrachloride and methyl bromide.

HP also requires that suppliers circumvent the use of these harmful chemicals in their manufacturing processes.

Manufacturing emissions and waste

HP's most urgent manufacturing issues are energy consumption, chemical emissions, and hazardous and non-hazardous waste generation. HP continues to work on the reduction of its chemical emissions. Since 1987 HP has submitted annual "Toxic Release Inventory" (TRI) reports to the U.S. Environmental Protection Agency reporting the quantities of certain chemicals "released" to the environment through direct emissions, or transfers to off-site facilities from HP's U.S. facilities. Initially done as a compliance obligation, HP has since expanded its measurement and tracking of emissions of TRI listed chemicals to its major manufacturing plants elsewhere in the world. In 2000, HP's emissions to air of toxic release inventory (TRI) chemicals accounted for only 0.2% of the total emissions. Of total discharges, 99.8% were by-product of the wastewater transfer process to municipal wastewater treatment facilities and off-site transfers for recycling, treatment or incineration. HP's landfill diversion of hazardous waste efforts have resulted in a 99.5% landfill diversion rate worldwide in 2000. Furthermore, HP is a voluntary signatory to the Memorandum of Understanding between the Semiconductor Industry Association and the US Environmental Protection Agency to reduce emissions of PFCs.

HP also has environmental remediation issues from its past manufacturing operations, such as groundwater and soil. These issues continue to be assessed and managed regularly. At some sites groundwater monitoring and groundwater remediation takes place. HP also utilizes a waste-vendor audit program that ensures waste is sent to responsible third party waste management vendors to avoid future liability incidents.

III. Overseas Environmental Issues

This section highlights the regulatory and competitive pressures in Japan's electronics industry. Japan's government and electronic firms have proactively pursued environmental initiatives over the past decade. Because HP must remain competitive in Japan in order to remain globally competitive, it is important to look in-depth at the regulatory and competitive pressures in Japan associated with environmental impact in the electronics industry.

JAPAN: Japan has a number of government and partly governmental organizations involved in the protection of the environment. In 1975, Japan and U.S. signed an Agreement on Cooperation in Environmental Protection. In 1993, President Clinton and Prime Minister Miyazawa launched the Common Agenda under the U.S.-Japan Framework for a New Economic Partnership. This turned out as one of the world's most successful partnerships in addressing critical global challenges in diverse areas such as health and population, environment, narcotic drugs trafficking, technology, and economic development. Under the partnership, both countries are currently developing new cooperative actions regarding global warming, and the protection of the tropospheric and stratospheric ozone layers. Other historical matters that the cooperation has worked on would be low-level radiation matters and risk assessment and management related to human exposure to ultraviolet radiation.

The Japan Electronics and Information Technology Industries Association has decided to place labels on personal computers starting September 2001, rating their impact on the environment. Because the recycling of PCs owned by individuals in Japan is set to become mandatory in 2002, environmental awareness among Japanese

consumers is growing. The association expects buyers to be guided by the so-called PC Green Labels.

The labels will rate PCs according to 41 criteria, including energy-saving and recyclability. Desktop PCs will carry a label if they include at least 50 percent recycled materials by weight and consume 15-watts or less power. The inclusion of instruction manuals made from at least 70 per cent recycled paper will also be indicated. Twenty-five domestic and overseas PC makers, including HP, are expected to participate in the labeling system.

In addition to the eco-labeling initiative, nine major Japanese electronics companies plan to establish a set of common environmental standards for their materials suppliers by spring 2002. Sony, Canon, NEC, Hitachi, Fujitsu, Toshiba, Sharp, Ricoh, and NTT have all reportedly signed onto the plan, which could give it enough critical mass to become the industry standard for Japan. These Japanese companies have started discussions aimed at unifying their green procurement standards, in order to be able to develop environmentally responsible products more quickly, and get them to market faster. Hitachi now requires suppliers to meet 1380 criteria for each chemical it uses, and the other companies have their own equally complex but entirely different systems. Sharp has 105 criteria for each material, Ricoh has 84, and Canon has 52.

In 2001, NEC, a major competitor to HP in a variety of electronics products, was acknowledged as "Japan's most environmentally-friendly corporation". The company was ranked as such (among 260 major international corporations) by the Nihon Keizai Shimbun and Nikkei Sangyo Shimbun. In the same year, NEC won the Environmental Action Grand Prix 1st prize from the Mainichi Shimbun. NEC is surpassing its targeted 50% reduction in industrial landfill waste (from 1991 levels) and is now pursuing an 80%

reduction. Worldwide, 14 of NEC's operations have gained the international environmental standard ISO4001 certification.

IV. Future Plans and Issues

A. Management issues

Product design and stewardship

HP has created the Design-for-Environment (DfE) team, which is to help facilitate maximizing the environmentally related aspects products, processes and facilities. HP's product stewards and product designers determine and recommend company-wide programs to improve environmental performance through DfE initiatives. The DfE team has set guidelines with recommendations for product designers, which include the elimination of the polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) flame-retardants where applicable, identification of environmental impact during product life and changes in design that would significantly reduce this impact, the reduction of material use in products, and standardized plastic resin use. DfE guidelines also ask that products be designed in such a way that encourages and helps consumers use energy resources responsibly as well as alleviate consumer waste burden. HP also seeks to design products that facilitate easier disassembly and recycling. HP would like to implement ISO 11469 plastics labeling standard.

Hewlett-Packard is participating in a Young Talent program. The program encourages students to work on innovative technological ideas and pursue the best of ideas. In 2002, the second-place awardee invented an inexpensive power converter that maximizes the amount of convertible energy absorbed by a solar panel. The system is supposed to provide the impetus for solar power in rural areas where simple, inexpensive energy sources are in high demand.

B. Operational issues

Manufacturing emissions and waste

Hewlett-Packard has a goal to reduce PFC emission by 10% by 2005. Also, HP is working on an ink cartridge recycling model which would recycle 65% of the cartridge weight. Recyclable parts would be purified into raw materials to be reused in other manufacturing industries thus reducing waste.

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MNCS AND ENVIRONMENTAL MANAGEMENT:

INTEL CORPORATION

I. Company Profile

Headquarted in Santa Clara, California, Intel Corporation is the world's largest maker of semiconductor chips. Through various levels of integration, Intel creates advanced computing and communications systems for its customers. Major products include microprocessors, chipsets, boards, networking and communications products. Established in 1968, Intel employs over 80,000 people in Europe, Asia, Africa, the Americas and the Middle East. In total the company has 45 offices worldwide.

II. Management of Overseas Environmental Issues

A. Management issues

Reporting structures, systems, and certifications

Intel has a single Environmental Health and Safety (EH&S) policy worldwide. Every facility and supplier adheres to and reports based on this policy, even in cases where local environmental standards are less restrictive than corporate policy. In cases where local regulation is more stringent than Intel's EHS policy, Intel complies with the local policy. Rigid local environmental standards do not preclude Intel from operating in any country. According to Intel, from a competitive standpoint, it is best to operate where other semiconductor firms cannot.

Intel has an environmental health and safety manager and environmental health and safety staff at every manufacturing facility. The staff is responsible for implementing corporate initiatives and policy, as well as assessing on-site issues relevant to the local

regulations and environment. Intel also has regional EHS managers for Asia, Middle East, Africa and Europe, as well as an environmental manager and vice president at its headquarters.

Intel performs nearly all its own manufacturing, only contracting out the manufacture of small circuit board pieces. Intel management believes that this gives the company an advantage in assuring better quality, but also allows it to better monitor implementation of corporate policy, assess and deal with site specific issues, monitor and audit suppliers, and address other environmental issues.

Suppliers are expected to adhere to Intel's EHS and human safety standards, as well as comply with all local laws and regulations regarding EHS. Intel's policies, procedures and guidelines are built into the business contract with suppliers. An audit program is set so that supplier performance is regularly monitored and evaluated. If suppliers are not in compliance corrective action is taken. Since 1993, Intel has also held annual Supplier Days, at which more than 700 leading suppliers gather to discuss Intel's expectations, including those for EHS.

Intel's Ireland site has been ISO 14001 certified since 1996. In 2001, beta tests for registration were conducted at the company's manufacturing facilities in China, Arizona and Costa Rica. Because of Intel's existing environmental management system, Intel has been able to register its beta test sites in as little as six weeks, compared to the typical implementation time of up to one year.

Product design and stewardship

One of Intel's priority issues is waste management. Intel has been devoting significant efforts to create a new packaging design that is environmentally friendlier and generates less waste. The new packaging design will save an estimated 320,000 lbs of

plastic and 270,000 lbs of corrugated packaging annually. Intel's Reseller Products Group (RPG) is working on redesigning the packaging for Intel's boxed Intel Celeron processor products. The new design will prevent the disposal of more than 1.3 million pounds of packaging materials worldwide annually.

In terms of product design, Intel is developing the Instantly Available Personal Computer (IAPC) technology. The IAPC technology will allow a PC to power down to a "sleep" mode of 5 watts or less when not in use and then become fully operational again in less than 10 seconds. The use of this technology in PCs will lead to annual energy savings of 71% compared to existing systems.

B. Operational issues (reduce, reuse, recycle)

Manufacturing emissions and waste

The very nature of the semiconductor industry and its manufacturing processes raises environmental concerns and challenges inherent to the industry. Water, which is used in the chip rinsing process of manufacturing, is a huge issue for Intel. On both the corporate level, as well as at the local level, water conservation is being addressed. Large wafer processing has been improved to be more cost efficient, but also to reduce water use on a worldwide scale. Individual sites work to meet their specific water use issues, especially in regions that have been typically under water shortage such as the Middle East and Southwestern region of the United States. In 2001, approximately 2.5 billion gallons of Intel's total water came from on-site, reused sources.

Semiconductor production leads to the emission of perfluorocarbon (PFC), a gas thought to contribute to global climate change. The World Semiconductor Council (WSC) agreed on a common international guideline for reducing PFC emissions by 10 percent in 2010 against base years set for each of the industry associations in the U.S.,

Japan, Korea and Taiwan. Base years for the U.S. Semiconductor Industry, the European Semiconductor Industry Association, and the Japan Electronics and Information Technology Industries Association will be 1995. The Korea Semiconductor Industry Association agreed to 1997; the Taiwan Semiconductor Association agreed to 1998. For more than six year, Intel has been applying Design for Environment strategies to PFC use and emission reduction. Intel continues to work to meet its worldwide voluntary agreement to reduce perfluorocarbon (PFC) use and emissions and in 2001, its global PFC emissions were reduced 10% per unit of production compared to the previous year. To achieve the 2010 goal, PFC emissions will need to be reduced 95% per silicon wafer.

Intel sells scrap wafers to the solar industry, which recycles them into solar cells. These cells convert solar energy into electricity, thereby providing a reliable, renewable energy source. Since 1999, local solar plants have converted 3 million Intel wafers into 2.4 million solar cells. These cells, in turn, have the capacity to generate approximately 11.4 million kilowatt-hours of emission-free power each year. Producing a similar amount of energy with fossil fuels would generate more than 11,000 tons of greenhouse gases per year.

Intel is highly committed to customer product recycling and reuse initiative. In 2001, Intel recycled 35% of the regulated waste and 42% of the solid waste in non-U.S. facilities. The chip manufacturing company is also involved in STRUT – Students Recycling Used Technology – program, which recycles and reuses computer parts. Intel is also affiliated with the Electronic Industries Alliance (EIA) and the International Association of Electronics Recyclers.

Incoming and outgoing logistics

One of the most difficult issues for Intel's environmental practices overseas is the lack of infrastructure in developing countries. Where infrastructure to handle aspects of manufacturing such as waste processing and disposal, lead processing, or recycling, does not exist, Intel then must invest in an infrastructure to manage these phases of operations. In the case of China and the Philippines, where there is no means to process and dispose of waste, Intel ships all of its waste to the United States to be processed, recycled, or disposed of. Also, some markets will not use products containing certain chemical or products processed with specific chemicals, while other have other concerns or no concerns at all. Meeting varying environmental regulations in a highly competitive industry presents many challenges. Ireland and Costa Rica have the most stringent environmental laws and regulations among all the countries that Intel manufactures in. Complying with these laws is integral to Intel's environmental commitment. However, challenges arise as strict regulation bans use of particular chemicals, which are a part of the manufacturing process. Intel management advocates a staged approach to regulation of chemical use and emissions. Rather than initiate a total ban, Intel encourages governments to consider restricted use prior to a total ban, providing an opportunity to continue manufacturing until a suitable alternative is created that will comply with an eventual total ban.

III. Overseas Environmental Issues

This section highlights the development of environmental regulation relevant to Intel and the overall global semiconductor industry in the European Union, China, Israel, and Philippines. Intel maintains manufacturing facilities in each of these countries and it

must stay abreast of changes in environmental regulations in each country in order to stay in compliance.

EUROPEAN UNION: In June 2001, the European Union adopted the Waste Electrical and Electronic Equipment (WEEE) Directive, which requires manufacturers doing business in Western Europe to be fully responsible for the cleanup of obsolete equipment. The American Electronics Association (AEA), of which Intel is a member, lobbied against the directive, claiming that it may break international laws of the World Trade Organization. The AEA successfully delayed the proposed end date for the phase-out of toxins under the directive from 2004 to 2007. In a response to these regulatory developments in the European Union, specifically the restriction on products containing lead, Intel has been putting a lot of effort into its lead free solutions program. Intel chips contain a minimal amount of lead and in order to create a lead free product, Intel is expending a large amount of time and energy. Intel views the environmental impact of lead in semiconductors to be quite low, and the resources dedicated to address this issue could be better used to address other environmental issues such as the production of greenhouse gases or efficient water process, which have a much greater environmental impact. However, Intel management understands that the worldwide regulatory trend is moving towards a ban on lead, and Intel is responding accordingly - in 2001, the company successfully introduced three lead-free products.

CHINA: China's State Environmental Protection Agency (SEPA) is working together with the U.S. Environmental Protection Agency (EPA) to lay the groundwork for improvement in China's environmental policy. Together they are working on the development of air quality, industrial pollution and energy efficiency monitoring mechanisms. Chinese regulators are attempting to create policy and a regulatory system,

including pollution prevention and energy efficiency standards applicable to specific industries, including the semiconductor industry. China is currently working to prepare for the implementation of the Kyoto Protocol's Clean Development Mechanism (CDM), which is to provide low cost steps to greatly reduce greenhouse gas emissions.

Intel has over 20 operations in China, including R&D and manufacturing facilities. Intel's Shanghai facility was its first Asian site to be audited under the company's registration for ISO 14001. This site passed the audit and Intel intends to audit the remaining operations over the next few years.

ISRAEL: Israel is located in a semi-arid climate with low quantities of rainfall (12 to 24 inches per year) and a high demand for water from farmers. Crop irrigation in the Negev desert receives 53% of the country's water allocation. Most of Israel's current legislation addresses water use and reuse, water pollution prevention of fresh water and sea water, the collection and disposal of solid waste, and hazardous waste. Currently Israel's hazardous waste policy is set up as a licensing system for businesses.

Intel's Fab 18 in Israel is a world leader in water conservation. Fab 18 supports the agricultural demand by returning 1.2 million cubic meters of water to irrigation systems each year. The Fab is continuing to improve its recycling efforts by adding a step in its water-cleaning process to support higher recovery from its reverse osmosis process. In addition, Intel's Israel site implemented an electronic device and toner cartridge recycling campaign. Employees brought computer products from their homes to the site for recycling. Intel employees also participated in a forest renovation project, in which they helped with cleaning, painting and road restoration.

PHILLIPINES: The Environmental agency of the Philippines has set mandates regarding toxic and hazardous waste, which provides regulation for the restricted use of a

list of chemicals as well as developing research concerning substances that are thought to be harmful. The Philippines is also working on formulating an air quality management system and a water quality management system.

Intel's Philippines site made significant progress on hazardous waste minimization and solid waste recycling. In a regional effort with Malaysia and Chain, the site saved $1.7 million in 2001 reducing epoxy and molding compound waste by an estimated 10,000 kilograms. The site exceeded recycling targets by identifying a local supplier to recycle solid waste. This program has resulted in a recycling rate of 60% in the Cavite facility and 37% in the Makati facility.

IV. Future Plans and Issues

A. Management issues

Reporting structures, systems, and certifications

In 2001, Intel announced that it will register all of its semiconductor manufacturing facilities under ISO 14001.

Product design and stewardship

Intel's long term plans focus on water conservation, chemical use and greenhouse gas emissions, and development of lead free products. Intel has created an environmental team of engineers centered on the theme of Design for Environment. This team is assigned the task of designing products and processes that meet current and future environmental goals. According to Gary Niekerk, Environmental Health and Safety External Affairs Manager, will rely on product design stages to establish future environmental improvement goals, then work on the design processes to reach these goals. The advantage of this approach is the ability to work goals into the process, as

opposed to developing a process and then attempting to adjust it once in place to meet new goals or restrictions.

Auditing and management

Recently, the U.S. Environmental Protection Agency (EPA) agreed to spend $100,000 on the first large-scale study of birth-defect rates among chip workers. Chip manufacturing companies refused to cooperate and provide personnel records for the study. However, unpredictable results might come out of the research and Intel along with other companies might be facing substantial liability claims and new compliance requirements.

B. Operational issues

Manufacturing emissions and waste

The use of chemicals, which is standard in semiconductor manufacturing, has become increasingly urgent for Intel. The use of lead in electronic products has become a worldwide concern. Small amounts of lead have commonly been used in electronic products for many years. Lead is found throughout electronic components, component packaging, printed circuit boards (PCBs), and products. Intel estimates that approximately 90% of all electronic components contain some amount of lead. In response to these concerns Intel has created the Lead Free Solutions initiative, which is responsible for developing a means to produce electronic products that do not contain lead

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MNC'S AND ENVIRONMENTAL MANAGEMENT:

NIKE CORPORATION

I. Company Profile

An apparel and equipment company with 900 manufacturing facilities worldwide, Nike operates on six continents. The company's worldwide headquarters is located in Beaverton, Oregon. Nike owns facilities in Oregon, Tennessee, North Carolina and the Netherlands, and operates leased facilities for 15 NikeTowns, over 70 Nike Factory Stores and over 100 sales and administrative offices and employees more than 50,000 people. Nike is the largest sports and fitness company in the world.

II. Management of Overseas Environmental Issues

A. Management issues

Reporting structures, systems, and certifications

Nike currently has a team of 60 people at its worldwide headquarters and in the field that is responsible for managing Nike's supply chain factories and contracted manufacturing facilities. Nike operates with regards to its Code of Conduct, Leadership Code and Standards known as MESH (Management, Environmental, Health and Safety), and local compliance. This environmental team will increase to an estimated 80 people by the end of 2002. The team is responsible for monitoring of contracted facilities. There are four regional areas of operations: North Asia, South Asia, Europe, Middle East and Africa, and the Americas. Nike also has functional units, which set standards, infrastructure management, and protocol for Nike's Environmental, Health and Safety

systems. At the corporate level, Nike has a Vice President of Compliance. Together, the environmental teams, functional units, and Vice President of Compliance are responsible for 900 facilities worldwide.

In order to facilitate understanding and implementation of its standards, Nike introduced factory-wide training and education programs to its facilities. Nike also prints its codes and regulations in languages of the countries where its operations are located so that non-English speaking employees have access to the information.

Nike expects that its contracted facilities apply and adhere to Nike policy and regulation regarding Management, Health, Safety and Environment (MESH) and monitors their facilities to ensure compliance. One of the challenges of requiring contractors to adhere to Nike's code of conduct in regards to environmental practices is the lack of infrastructure that exists in some developing countries. Serious challenges confront Nike when requiring a contractor to responsibly dispose of hazardous waste when there is no infrastructure in the country that can handle hazardous waste disposal. Contractors do not have a means to dispose responsibly and therefore do not comply with Nike standards. Sometimes it is also the case that local regulations are of a lower standard and so contractors are operating legally by the country's standards but are not adhering to Nike's standards.

Forty-five of Nike's 900 factories are footwear factories; the remainder are apparel factories. In recent years Nike has been interested in certifying its facilities under ISO 14001, but the aforementioned challenges of dealing with contracted facilities has made full implementation of the certification plan infeasible. The nature of the apparel business focuses on a continuous change; therefore, the majority of Nike's manufactured products are changing on a seasonal basis. The issue here is that implementation becomes

difficult when products and contracting sites are changing. As a result, most of Nike's significant initiatives are implemented in footwear factories, which are typically more stable, and Nike is currently working on an ISO 14001 certification plan for all its footwear factories.

Product design and stewardship

Nike has created a new logo for products that are sustainable and environmentally safe. Products like 100% PVC free and others that are considered to be of a proper sustainability level are awarded the logo.

One of Nike's most significant challenges is the use of sulphur hexaflouride (SF6) in the air bladder of its footwear lines. Nike has reduced the usage of SF6 by 68% from a peak of usage in 1997. Nike currently has a goal to eliminate 100% of SF6 from its products by the year 2003. Another product challenge has been the use of harmful chemical adhesives and mold removal solvents. Nike has begun the use of alternative water based adhesive in its product, reducing the use of harmful solvents by 88% since 1995, and has eliminated the use of 1.6 million gallons of solvent per year. Nike is in the process of creating a restricted manufacturing substance list to which its apparel contractors will adhere.

End product compliance standards out of Europe, as well as restricted substance lists, which require the absence or reduced presence of certain substances, have pushed Nike to phase out these substances in its products. Many of Nike's more pressing environmental issues relate to eliminating the use of harmful materials or chemical contents in its products. Nike has been managing a PVC phase out plan since 1998 and currently has a new line of footwear that is 100% PVC free. Nike is also working on

phasing out PVC from its equipment line, but this has been quite difficulty because Nike has less influence over its material suppliers for the equipment production.

Auditing and management

Nike's internal compliance team made up of 30 staff members is responsible for S.H.A.P.E. (Safety Health Attitude, People and Environment). The team continuously monitors and supervises Nike's sites and works with the ones that are not in compliance to improve operations.

In cases when contractors are not in compliance, i.e. when contractors are not meeting the specific requirements of Nike's code of conduct, the environmental team comes into play and manages remediation processes. Nike takes steps to work with non-compliant owners and managers to improve standards and change practices. Nike works together with the factory to create steps that will bring the factory into compliance, incorporating training, education and consultation. If the factory continues to violate policy, Nike can impose fines. If the problem persists, the factory can be put the site on formal probation, resulting in termination of its contract.

III. Overseas Environmental Issues

This section looks at the environmental conditions in two of the countries, Vietnam and Thailand, that Nike maintains subcontractor relationships for footwear production:

VIETNAM: Vietnam is one of the world's 10 top biodiversity centers, with 13,770 species of plants, more than 5,000 insects and 1,6000 species of other invertebrates. However, the over exploitation of biological resources is causing the country's wild animal population to diminish each year. In addition pollution problems are widespread. The safe water supply system meets only 47 percent of demand and only

between 20 to 40 percent of liquid waste is treated, causing a high degree of pollution to water sources.

International aid groups and the United Nations Development Program (UNDP) are working in a variety of ways to forestall and alleviate some of the more pressing environmental issues. The International Support Group for the Environment, whose members include eight Vietnamese government agencies, the governments of Australia, Canada, Denmark, the Netherlands, Sweden, and Switzerland, the Japan Bank for International Cooperation, the European Commission, the World Bank, and the World Wide Fund for Nature, is focusing on improving the effectiveness of aid programs for Vietnam's environment. The group is setting up a system to monitor all the environmental projects in the country and providing monthly updates. The United Nations Development Program is funding one of the projects underway in Vietnam. With $97,000 in funding, the project will enhance local communities' awareness about bio-diversity and agro-biodiversity conservation, and promote rational use of these resources.

Currently Nike sources 1 out of every 10 pairs of shoes from subcontractors in Vietnam. The local Vietnamese press has closely watched and reported on activities at Nike subcontractors' factories. The focus on the reporting has been primarily on working conditions. In response to criticisms by the local press, Nike hired Ernst & Young to investigate labor and environmental conditions at it shoe factories in Vietnam. Ernst & Young concluded that Nike was in compliance with its own code of conduct. However, Ernst & Young did find that workers at a factory near Ho Chi Minh City were exposed to carcinogens that exceeded local legal standards by 177 times in parts of the plant. Nike

quickly responded to this issue by improving employee training and providing safety equipment to all employees.

THAILAND: In 1961, Thailand's forest cover was about 27 million hectare or 53% of the whole country's area. In 1993, the remaining forest occupied only 13 million hectare or 26% of the country's area. In 1992, the government passed Enhancement and Conservation of National Environmental Quality Act. Three new environmental organizations were created in accordance to this law: the Office of Environmental Policy and Planning (OEPP), Pollution Control Department (PCD) and Department of Environmental Quality Promotion (DEQP). The new organizations are to promote effective implementation of policies, plans and strategies at both national and local levels as well as enforce laws and regulations.

In 1999, Thailand and the U.S. signed a memorandum of understanding (MOU) regarding environmental cooperation between the U.S. Environmental Protection Agency (EPA) and the Ministry of Science, Technology and Environment (MOSTE). The MOU describes a five-year framework for cooperation, which is focused on long-term institution building. Under the MOU, the priority needs of MOSTE will be met in accordance to a yearly a program plan. Air pollution, water quality management, chemical and waste management, environmental impact assessment and environmental enforcement activities will be covered in the training, information sharing and joint-research plan. During the first year, joint programs included water quality management modeling, training on efficient management of environmental impact assessments, and training on how to effectively enforce environmental cases against polluters.

The bulk of supplies Nike subcontracts to Thai manufacturers are athletic shoes, with the value of 2001 orders expected to rise to $350 million, $50 million higher than

the previous year's record turnover. As a result, Thai-made Nike shoes would represent 18 percent of Nike's overall shoes production it subcontracts to various countries worldwide, up from 8-10 percent last year. In Thailand, Nike relies on three sub-contract manufacturers: Pan Asia with 75 percent of the total, Saha Union with 15 percent and Rama Shoes with 10 percent. In addition, Nike opened a 100-million-baht factory in Rayong in 2001 to produce uppers for sports shoes. Although Nike faces labor condition criticisms similar to those confronted in Vietnam and other locations, there has been no reported concerns over the environmental impact of its contract manufacturers operations in Thailand.

IV. Future Plans and Issues

A. Management issues

Reporting structures, systems, and certifications

Nike is in the process of developing its Strategic Sourcing Initiative, which will track indirect spending, as well as build environmental language into Nike's proposals and contracts with suppliers.

Nike would like to improve its data collection with regards to environmental data. The company is currently trying to develop a metric system for its environmental data. This is crucial in its ability to report and measure its improvements. Although Nike currently has a Corporate Social Responsibility Report it does not have an external environmental report. The corporation is confident that the development of a metric system will facilitate the means to do so.

Internal and external monitoring and auditing of contractor compliance is an integral part of Nike's environmental management. Currently the company is working on a systematic review program, which would assess risk and liability at the local level.

Also, Nike requires that contractors adhere to its code of conduct and/or local law and regulations. It asks that the higher level of compliance be adhered to. However, it has become increasingly the case that contractors, during contract negotiations are hesitant to commit to investing resources in order to meet compliance requirements set by Nike's code of conduct. Nike's interest is to drive the cost of manufacturing down, which means that contractors need to manufacture at a competitive cost, but are also required to invest in equipment or processes in order to be compliant. Employees participating in the Environmental Health and Safety teams argue that these investments are actually more cost efficient in the end, as environmentally safe practices are in fact cost efficient. They are currently working to develop software, which would allow contractors to do the cost accounting and see the long term cost efficiency implications

Product design and stewardship

Nike is in the process of working on a financial structure, which would promote product design and stewardship.

B. Operational issues

Raw materials

Nike has become a member of the Certified Forest Products Council (CFPC) and is working with the CFPC to develop plans for responsible forest product purchasing. Nike would like to eliminate its use of paper and wood products originating from old growth or frontier forests, and instead give priority to purchasing paper and wood products from organizations certified by Forest Stewardship Council.

Manufacturing emissions and waste

Nike has joined a partnership with the World Wildlife Fund and the Center for Energy & Climate Solutions, and has committed to reducing its green house gases (GHG)

emissions worldwide as well as to measure its emissions from manufacturing and shipping operations worldwide. The partnership will help Nike develop viable actions that will reduce emissions of greenhouse gases as well as setting and reaching energy efficiency goals. Nike aims to reduce CO_2 emissions from business travel and Nike owned facilities and services 13 percent below 1998 levels by the end of 2005. Nike plans to reach this goal through energy conservation projects, the use of green power and community energy efficiency projects.

Nike also aims to create baselines for contracted footwear and apparel manufacturing facilities by the end of 2003, as well as develop a GHG emissions reduction strategy for these facilities by 2005. The company intends to develop a GHG reduction strategy for logistics.

Inbound and outbound logistics

Nike has joined the Clean Cargo Group Business for Social Responsibility (BSR), which is interested in improving environmental, social justice, and equity affairs. Nike has created a virtual logistic team to develop plans for sustainability. The team is examining CO_2 emissions by transportation, including transportation from distribution centers to retail customers. The team is also interested in consumption of distribution centers. Nike's interest is to create change in emissions from transportation.

Nike's Sustainable Logistic team is also responsible for creating baselines for CO_2 emissions from transportation between manufacturing facilities and distribution centers by 2003. The team is examining supply chain processes to identify as many areas as possible to improve logistics efficiency. The goal is to design metrics that would allow the team to convert volumes of goods into actual CO2 emissions.

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MNCs AND ENVIRONMENTAL MANAGEMENT:

STARBUCKS CORPORATION

I. Company Profile

Starbucks is a #1 specialty coffee retailer in the United States. Worldwide, the company operates about 5,400 coffee shops in a variety of locations (office buildings, shopping centers, airport terminals, supermarkets). Outside of North America, Starbucks has 900 coffeehouses in 22 different markets. The first foreign coffee house was established in 1996 in Tokyo, Japan. By the end of 2001, the company will have approximately 400 stores in Japan, and a total of 815 stores in the Asia Pacific region. Starbucks has 32 stores in Britain, and over the last two years it has opened stores in Austria, Spain and Germany and has plans to expand into Greece and Italy. Stores in southern China and Macau are scheduled to open in late 2002. Starbucks is also exploring opportunities in Latin American, including in the countries of Argentina, Brazil, Chile, Colombia, Mexico, Peru, Puerto Rico and Venezuela.

At a Starbuck's retail coffee house customers can purchase coffee drinks and beans, pastries, and other food items and beverages, as well as mugs, coffeemakers, coffee grinders, and storage containers. The company also offers mail order and online shopping, sells its beans to restaurants, businesses, airlines, and hotels. Starbucks purchases its coffee beans from plantations in Africa, Southeast Asia, and the Americas. The company's objective is to make Starbucks the most recognized and respected coffee brand in the world.

II. Management of Overseas Environmental Issues

A. Management issues

Reporting structures, systems, and certifications

Starbucks foreign operations are organized in any of the following three ways: joint ventures, licenses, and company-owned operations. Starbucks operates the coffeehouses directly (or through a local subsidiary) or creates joint ventures with a company or group of individuals. This company or group develops and operates coffeehouses throughout a defined region.

Starbucks adopted its environmental mission in 1992. It has implemented is mission in four primary areas: environmental purchasing policies, waste reduction, energy conservation, and greenhouse gas emissions reduction. Starbucks employees are all trained about Starbucks environmental commitment. They are taught Starbucks core values, and they are continuously encouraged to think and act in respect to the environment. Starbucks has environmental policies and procedures in place that support the company's commitment to environmental preservation.

Starbucks also has a Green Team that develops and implements Starbucks initiatives. a group of partners from North America who serve as a link to the retail stores on environmental initiatives such as waste reduction, energy and water conservation. Team members also provide critical feedback on measures that help the company minimize its environmental impact.

Starbucks has high operating standards for its suppliers. Suppliers get a Starbucks Supplier Handbook, which contains Starbucks environmental policies and goals and encourages the suppliers to adhere to them. Furthermore, Starbucks asks suppliers to

eliminate over-engineered products, exercise energy conservation, minimize excessive packaging, incorporate paperless administrative system where possible, and maximize the efficiency of wood use in product design and construction projects.

Product design and stewardship

As one of Starbucks' major areas for environmental performance improvement, the company has been working on minimizing its impact on forests and reducing the use of pesticides and herbicides. The result of this effort was introduction of Shade Grown coffee. The coffee is grown without synthetic pesticides, herbicides, or fertilizers, which helps maintain a healthy environment and clean ground water. Furthermore, growing coffee under shade does not require cutting down forests. Tree branches shelter the coffee plants from the intense sun and rain of the tropics. At the same time, the "shelter" provides critical habitats for plants, insects, migratory birds, and mammals. Natural biodiversity controls pests; therefore, farmers do not need to use large amounts of chemical. More than 10 million hectares are currently being used for shade coffee production. Farmers growing coffee in the shade protect tropical forests and increase retention of soil nutrients and moisture.

Auditing and management

Starbucks continuously monitors compliance with its own standards and official regulations. Furthermore, the company or a third party contractors conduct audits to ensure suppliers compliance on an on-going basis. Suppliers' compliance is monitored from two perspectives: adherence to regulatory environments and environmentally conscious final disposal.

B. Operational issues (reduce, reuse, recycle)

Raw materials

In 1999, Starbucks introduced its first 100 percent organically grown coffee from Costa Rica. The farm produces Starbucks Costa Rica Organic, which was certified by EcoLogica, an organic certification organization in Costa Rica. EcoLogica evaluates a farm's procedures each year on a random and unannounced basis to ensure proper practices. Also, the certification organization draws samples and tests coffee periodically. In order to get certified, farms were required to commit to three years of soil testing followed by annual testing to retain certification as organic producers. Furthermore, to be sold as organic, the coffee beans must be processed in organically certified mills and roasting facilities after the harvest.

Starbucks offers hormone-free certified organic and soy milk options as alternatives to cow's milk to consumers. Interest groups, who argued that bovine growth hormones were safe, heavily attacked this step. At this point, alternatives to cow's milk are offered only in the North America market.

Manufacturing emissions and waste

Starbucks has created guidelines to buy environmentally friendly products from suppliers. The guidelines address post-consumer recycled materials, unbleached fiber content, and lead-free ink for the paper purchases, as well as energy efficiency, certified forest products, and minimal packaging. In order to reduce paper cup usage, Starbucks introduced discounted commuter mugs.

Starbucks is one of over 500 companies that joined Climate Wise, a program to voluntarily track and reduce greenhouse gas emissions. The company seeks both environmental and financial goals from participating in the program.

Product and waste disposal

Starbucks adopted a waste reduction policy based on the principles of "reduce, reuse, and recycle". The company exercises paperless administration systems whenever possible. Also, it designs facilities to maximize recycling efforts. In 1998, Starbucks started recycling coffee grounds from Starbucks coffee roasting and extract operations and transformed them into natural compost.

III. Overseas Environmental Issues

In terms of overseas environmental issues, Starbucks has paid closely attention to its foreign suppliers' methods of coffee bean production. This section, therefore, discusses the current circumstances in coffee plantations and the environmental and related social and economic issues confronting coffee bean production.

There are about twenty million people working on coffee plantations all around the world. The total area of worldwide plantations is more than twenty-six million acres (an area larger than Portugal). In one year, two pounds of beans are produced for every person on Earth, 20 percent of which is sold to the United States. Hundreds of thousands of small forest farmers in Latin America raise coffee for cash and food crops for subsistence. The coffee industry ranks among the few in the world in which third-party organizations are continuously addressing issues of sustainability including biodiversity, living wages, and chemical-free agriculture.

For the past several years, coffee countries have experienced deep crisis. Coffee prices are going down; farmers are abandoning their land and migrating toward urban areas to find menial work, or illegally migrating to more financially stable countries. Some farmers replace their coffee trees with coca, which draws them and their families into servitude to drug cartels. The fertility of their land is being destroyed. Others jump into industrialized, high-quantity production of low-quality coffee hybrids that grow in full sun and need high-chemical inputs and mechanized harvesting. Massive deforestation and population decline of migratory birds and other key species have come as a result of this agricultural shift. Fair Trade, shade grown, and certified organic programs are primarily meant to ameliorate these developments.

IV. Long Term Plans

A. Management issues

Product design and stewardship (customer recycling)

Starbucks is supporting Conservation International's (CI) Conservation Coffee™ program and providing resources to develop five new model projects in Latin America, Asia and Africa. Starbucks is planning on spending $200,000 a year for three years for the projects focused on preserving areas of high biodiversity. The successful start of the program has lead to the expansion of the partnership with CI, both in terms of resources allocated and the scope of the projects.

B. Operational issues (reduce, reuse, recycle)

Raw materials

The United States has no regulations regarding definition and labeling requirements of the genetically modified products, therefore Starbucks decided to adopt

the food labeling regulations set forth by the Australia/New Zealand Food Association (ANZFA). These newly enacted requirements are considered to be the most stringent labeling regulations in the world today. According to the regulations, all genetically modified materials require labeling. Exceptions are highly refined minor ingredients derived from genetically modified material, such as cornstarch, as long as these ingredients do not contain genetically modified protein. Without this protein, it is not possible to distinguish whether ingredients contain genetically modified materials or not. Starbucks committed to verifying the presence of the genetically modified protein whenever highly refined minor ingredients are being used in the products. Starbucks confirms that none of Starbucks' coffees or teas is derived from genetically modified materials. The company also claims to have no plans now or in future to purchase coffee or tea that is derived from genetically modified materials and is not planning to support genetically modified technology development.

Starbucks has worked out guidelines for its suppliers and a reward system for those who adhere to this policy. The new sourcing guidelines are based on a flexible point system that rewards performance in sustainable categories with financial incentives. Environmental impact is one of the 5 areas for which suppliers earn points. Those who qualify for 100 points will gain preferred supplier status, which would grant them a purchase priority over other offers. Due to the difficulties of making immediate changes in coffee origin countries, Starbucks will pilot the guidelines for the next two crop years. In the environmental section, Starbucks will measure suppliers' performance in soil management, water and energy conservation, forest and biodiversity conservation, pest management, waste management, etc.

Manufacturing emissions and waste

According to Starbucks last year's energy audit new energy conservation opportunities were identified in retail stores and manufacturing locations. Starbucks is working on integrating these measures into store design and operations. It is estimated that the new measures will reduce energy consumption by approximately 10%.

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MNCs AND ENVIRONMENTAL MANAGEMENT:

WEYERHAEUSER CORPORATION

I. Company Profile

Weyerhaeuser Corporation is one of the world's largest integrated forest products companies. Founded in 1900, Weyerhaeuser operates 166 manufacturing facilities and offices in 18 countries in North America, Asia, Australia, Europe and New Zealand. The company is engaged in the growing and harvesting of timber; the manufacture, distribution and sale of forest products; and real estate construction, development and related activities. A Fortune 200 company since 1956, Weyerhaeuser has been ranked No. 1 in the industry in terms of social responsibility for past 7 years.

In its foreign operations, Weyerhaeuser has long-term licensing rights on 32.6 million acres of publicly-owned forestland, and owns an additional 664,000 acres of private timberland (compared to 5.7 million acres of private working forests in the United States). The company also has joint ventures for 567,000 acres in Australia, New Zealand and Uruguay. In 1995, Weyerhaeuser Forestlands International (WFI) was founded to manage timberlands and manufacturing operations outside of North America.

II. Management of Overseas Environmental Issues

A. Management issues

Reporting structures, systems, and certifications

Every Weyerhaeuser manufacturing facility has an environmental manager on site. Most of the company's foreign manufacturing operations were established over the past 5 years and are in the process of implementing permanent reporting structures.

Because the foreign plants are stand-alone facilities, Weyerhaeuser's headquarters office exercises a direct line of accountability and the environmental manager reports directly to the plant's manager.

In Canada, however, where Weyerhaeuser does the most of its manufacturing, a separate corporate environmental structure has been established. Every plant has 1-2 on-site managers who report to an environmental division which overseas the all operations in Canada.

In 1997 Weyerhaeuser Corporation created and adopted an environmental management system (EMS). The EMS is a systematic approach to implementing and managing the company's environmental policies in all aspects of its business. A system of reliable, documented processes combines policy, planning, implementation, continuous improvement and management. The focus of Weyerhaeuser's EMS is placed on employees. A code of conduct is given to every new employee during the first level of training and everybody is obligated to know and understand the company's commitment to environmental management. Each employee is required to perform his/her job with consideration of environmental management at all times. Further stages of training establish a general awareness of the EMS policies, planning, etc., focus on specific environmental impacts the job is producing, and teach employees how to handle and operate equipment correctly. Personnel gets educated about specific inspection procedures regarding regulatory permits for air emissions and is told who to contact and how to react in case of a malfunction in the equipment.

Weyerhaeuser Corporation operates in compliance with North American environmental standards. In countries where applicable environmental laws are less

stringent than those in the United States and Canada, the company operates according to North American requirements.

The biggest challenge facing Weyerhaeuser in its overseas operations in not complying to environmental laws. The biggest challenge is to be aware and understand environmental laws. At the moment, the company's foreign manufacturing facilities are mainly in western and developed countries, making it significantly easier to be in compliance. Regulations in these countries tend to be fairly similar to regulations in the US. However, regulations in some developing countries can be quite different and might under frequent revision. In case of China, where Weyerhaeuser has partnership ventures, environmental standards are extremely aggressive for international investors. In Uruguay (Weyerhaeuser does not have a manufacturing facility in this country at the moment, but might be interested in establishing one) environmental regulations are even stricter.

Product design and stewardship

Weyerhaeuser focuses significant efforts on developing new forest management techniques. A joint venture between Weyerhaeuser and five First Nations groups Iisaak Resources Limited on the west coast of Vancouver Island was recognized by The World Wildlife Fund for linking networks of ecologically sensitive areas and First Nations cultural zones, safeguarding habitat, and setting aside valleys of pristine old-growth forests. The venture received an international honor for its outstanding environmental performance.

Since 1994, Weyerhaeuser has invested more than $10 million in effort to fit the caribou's needs in its Grande Prairie/Grand Cache Forest Management Agreement Area. The company received an Emerald Award from the Alberta Emerald Foundation for

creating new management practices. Wildlife Habitat Canada awarded Weyerhaeuser wildlife biologist, Luigi Morgantini, with a Forest Stewardship Recognition Program Award.

Weyerhaeuser is also continuously in search for new products that are more environmentally friendly. As a result of this effort, the company has introduced Cedarone, a line of western red cedar products and related services available across North America. Western red cedar products are advanced in that they do not require chemical preservatives and are a renewable resource.

Auditing and management

Weyerhaeuser is implementing its environmental policies through good operational structure and targeted audits. As an integral part of its environmental management system, Weyerhaeuser performs facility checks on a regular basis. The checks include monitoring and self-assessments of units, and measurements against where the company or operating units are and where they want to be in terms of environmental compliance and auditing. Upon completion of the checks, corrective action is undertaken if necessary. Management reviews finish the auditing process and at the same time establishes a baseline for the future “check”. The entire auditing and measurement process takes approximately one year.

B. Operational issues (reduce, reuse, recycle)

Manufacturing emissions and waste

Weyerhaeuser Corporation's wood panel plants generate a significant amount of waste in the form of sander dust that ends up in landfills. The corporation’s recovery

specialists discovered a method of recovering the waste that entails selling to customers who burn the dust for fuel.

Air emissions, like sulfur and nitrogen compounds, historically have been known as an unavoidable result of the mills operations. Over the past decade this environmental impact has been diminished through innovations in process technology. In total, the industry has reduced emissions by more than 90% and waste to landfill by 20 million tons per year through recycled paper programs and processes. Weyerhaeuser has installed devices that clean the air released by its mills. Since 1990, Weyerhaeuser cut the amount of total reduced sulfur escaping from its stacks by 62 percent. Currently, the company recycles or regenerates almost 98 percent of its bleached-kraft pulping chemicals and, across our pulp and paper system, the company supplies two-thirds of its own energy needs.

Product and waste disposal

In 1991, Weyerhaeuser Corporation established environmental remediation processes to reduce site risk and manage acquisitions and divestitures. So far, 17 remediation projects have been completed. In 2001, there were 52 active projects in the Canada (compared to 71 in the U.S.). Weyerhaeuser spent approximately $14 million in 2001 on environmental remediation of these sites. In terms of product recapturing, recycled wastepaper makes up 38 percent of the content of the company's core paper products, including containerboard, fine paper and newsprint.

III. Overseas Environmental Issues

North America's forests contain 15 percent (10 percent in Canada and 5 percent in the United States) of the Earth's forest cover. According to The United Nations Food and

Agriculture Organization's (FAO) State of the World's Forests 2001 report, North America's forests area grew by almost 10 million acres over the last decade.

In Canada forests cover 1 billion acres or 45 percent of the total land base. The greatest part of the forests area is unsuitable for agriculture. Therefore, only six percent of Canada's forest area has been converted to farms and cities. The total forest can be broken down to softwood (67 percent of the total forests), mixed wood (18 percent), and hardwoods (15 percent). Fifty-six percent of the forests are a part of timber production.

Australia is the third country in the world in terms of highest amount of forest per. The consumption of forest products in the country totals about 20 million cubic meters per year. According to the National Forest Inventory, the area of forests in Australia is increasing despite the increase in the wood consumption.

In Uganda the Forestry Department, private farmers and tea companies manage wood lots. Timber is primarily used for fuel and construction. Private individuals own most forestry nurseries. Demand for firewood and construction wood is continuously increasing in the country. Provided the exploitation continues at the current rate, all existing native forests will be depleted in ten years. In Uganda there are new forestry plantations being established that use Eucalyptus and other rapidly renewable wood.

The worldwide wood consumption can be broken down into: 54 per cent for cooking and heating fires; 28 per cent for saw mills; and 13 per cent for pulp and paper production. According to Forest Plantations on Cleared Agricultural Organization in Australia, the average worldwide consumption of wood will increase at an approximate rate of 1-2 per cent per year over the coming decades. The forecast does not include fuel wood. The wood consumption is supposed to reach 2.3 billion cubic meters by 2045;

pulpwood is expected to increase to 1.33 billion cubic meters. Engineered products, such as wood based panels and glue-laminated boards and beams, are more and more being substituted for solid wood products.

Under the Kyoto treaty regarding minimizing the global warming, signatory countries have agreed to reduce carbon emissions below 1990 levels. As a way to reach the target, Western European countries and Japan are considering paying poorer countries to keep their land under forests, which would absorb carbon from the atmosphere. For example, Japan could come to an agreement with Peru to help them financially maintain their rain forests. The amount of carbon absorbed by those trees would count as a credit on Japan's carbon-emission balance sheet.

In March 2002, the U.S. Department of Commerce imposed a 27% tariff on imported lumber products from Canada. As a result, the Canadian softwood lumber export sector (worth about $10 billion a year) is facing significant difficulties maintaining profitability. The U.S. Coalition for Fair Lumber Imports estimates that many Canadian mills can earn profits even with the 27.2% duty. It calculates that Canadian sawmills pay about 60% less for stumpage fees compared to their competitors in the United States. This difference is due to the fact that governments own 95% of forests in Canada, which announced a significant increase to the annual harvest, designed to cut the trees before they are destroyed by a plague of mountain pine beetles.

IV. Future Plans and Issues

A. Management issues

Reporting structures, systems, and certifications

By the year 2005, Weyerhaeuser is committed to aligning all of its timberlands and manufacturing operations to the ISO 14001 environmental management system standard. With this goal ahead, the company is planning to put in place reliable processes for further improvement of environmental performance. ISO 14001 will enable the company to meet regulatory and stakeholder requirements in the years ahead. It will also help Weyerhaeuser Corporation achieve its environmental goals of practicing sustainable forestry, reducing pollution and conserving natural resources.

Weyerhaeuser selected ISO 14001, a voluntary, international environmental management standard, because it is best suited to the company's large-scale forestry and manufacturing units in the United States, Canada and the Southern Hemisphere. ISO 14001 requires proactive management and total employee involvement, similar to the ISO 9000 quality management system standard.
The management component, a strong commitment to environmental management, is already in place. Based on customer and other stakeholder requirements, each specific business determines the necessity of independent certification.

Auditing and management

Weyerhaeuser Corporation’s high hopes are set on its environmental management system. With the help of the well-organized EMS auditing system, environmental managers of the company are confident that it will be easy to identify new environmental opportunities and reduce environmental impacts.

B. Operational issues (reduce, reuse, recycle)

Raw materials

Weyerhaeuser Corporation is investigating the possibilities of using eucalyptus species for hardwood applications. First of all, such an opportunity would provide an alternative source of wood. Secondly, fiber can be grown in an economical and environmental friendly manner. And thirdly, eucalyptus provides amazing growth properties.

As a part of Weyerhaeuser's British Columbia Coastal Group's Forest Project, the corporation is working on designing an experimental approach towards the old-growth forest ecology of Coastal British Columbia. The initial stages of the project were already rewarded in 2001 for integrating sound ecological concepts and practices into its planning and operating procedures. Weyerhaeuser is still working on variable retention harvesting design.

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GLOSSARY OF ENVIRONMENTAL MANAGEMENT TERMINOLOGY AND ORGANIZATIONS

A

Agenda 21
A comprehensive plan of action to be taken globally, nationally and locally by organizations of the United Nations System, Governments, and Major Groups in every area in which human impacts on the environment. Agenda 21, the Rio Declaration on Environment and Development, and the Statement of principles for the Sustainable Management of Forests were adopted by more than 178 Governments at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janerio, Brazil, 3 to 14 June 1992.

Alliance for Environmental Innovation
The Alliance's multidisciplinary staff in Boston and Washington, D.C. works with private companies to implement innovative environmental strategies. The precedent for the Alliance was set by the ground-breaking partnership between Environmental Defense and McDonald's Corporation, which resulted in over 40 strategies for fast food companies to reduce waste and encourage recycling. In 1994, Environmental Defense and the Pew Charitable Trusts jointly established the Alliance for Environmental Innovation to continue to develop and replicate the success of this partnership approach. (http://www.environmentaldefense.org/alliance/).

B

Biomimcry
The essential idea of biomicry is that we can study nature's models and then imitate or take inspiration from these designs and processes to solve human problems, e.g., a solar cell inspired by a leaf. The ideas are best explained in *Biomimicry: Innovation Inspired by Nature*, written by Janine M. Benyus and published in1997 by William Morrow and Company, Inc. (http://www.biomimicry.org/)

Buy Recycled Business Alliance
A group of organizations committed to increasing the procurement of recycled content products through education and leadership by example. Supports and develops education and information programs that provide useful information to purchasers of recycled content products. Most importantly, every member leads by example. The Alliance was formed as an initiative of the National Recycling Coalition in 1992, in partnership with 25 major American businesses. Seed funds were provided by the U.S. Environmental Protection Agency. A formative meeting of representatives from 20 businesses was held in April 1992. After the successful meeting, a working group of businesses and industry representatives developed the plan that became the BRBA. The public launching of the BRBA took place at the NRC's Annual Congress & Exposition in the fall of 1992. (http://www.nrc-recycle.org/brba/About.htm)

C

Carbon dioxide equivalent
A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential (GWP). Carbon dioxide equivalents are commonly expressed as 'million metric tons of carbon dioxide equivalents (MMTCDE)'. The carbon dioxide equivalent or a gas is derived by multiplying the tons of the gas by the associated GWP. MMTCDE= million metric tons of a gas) * (GWP of the gas). For example, the GWP for methane is 21 and for nitrous oxide 310. This means that emissions of one million metric tons of methane and nitrous oxide respectively is equivalent to emissions of 21 and 310 million metric tons of carbon dioxide.

Centre for Economic and Social Studies on the Environment
Headquartered in Brussels, Belgium, the CESSE was created following the first United Nations Conference on human environment, which was held in Stockholm in 1972. It is made up of a multi-disciplinary research team which devotes its activities to the qualitative and quantitative evaluation of economic-environmental interactions. Research carried out concerns mainly the following fields: Energy and air pollution including climate change; Mobility, transport modes and their environmental impacts; Sustainable development; Economic instrument: taxes, tradable permits; Environmental management. (http://www.ulb.ac.be/ceese/english/indexuk.htm)

Coalition for Environmentally Responsible Economies (CERES)
CERES provides an innovative forum for activists and socially responsible investors to have honest, meaningful dialogue on corporations' environmental and social practices. The CERES Coalition is a network of over 80 organizations including: Environmental groups; Investors, advisors, and analysts representing over $300 billion in invested capital; Public interest and community groups. The 70-plus companies endorsing the CERES Principles include: Large companies and multinational corporations and small and medium-sized companies. (http://www.ceres.org/)

D

Design for Environment
Design for Environment (DfE) is the systematic integration of environmental considerations into product and process design. Because it offers new perspectives with a product and business focus, DfE can be a powerful tool to make your company more competitive and more innovative, as well as more environmentally responsible.

Dow Jones Sustainability Group Index
The Dow Jones Sustainability Indexes are focused on meeting the financial market's demands for: (1) Rational, consistent, flexible and, most importantly, investable indexes to benchmark the performance of investments in sustainability companies and funds; (2) Independent reliable indexes as a basis for derivatives and funds focused on sustainability companies. (http://www.sustainability-index.com/)

E

Eco-Audit
A management tool comprising a systematic, documented, periodic and objective evaluation of how well a project, organisation or equipment is performing with the aim of helping to safeguard the environment. The audit should facilitate management control of environmental practices and assess compliance with policy objectives and regulatory requirements.

Eco-efficiency
Performing business activities that create economic value while continuously reducing ecological impact and the use of resources. The essential premise of eco-efficiency is moving away from a compliance-focused, crisis-avoidance mentality and seeing good environmental and social performance as the essential foundation for the market and public. For more information, refer to *Eco-Efficiency: The Business Link to Sustainable Development*, published by MIT Press in 2000.

EcoNet
EcoNet is part of the Institute for Global Communications, a collection of on-line networks dedicated to linking activists to information and to one another. The site provides archives of environmental data and links to information found elsewhere on the Internet. (http://www.igc.org/igc/gateway/ecindex.html).

Environmental, Health and Safety (EH&S)
Organizations commonly establish a separate EH&S unit within their organizational structure to deal with environmental and employee safety issues. A good example is provided by 3M at http://www.3m.com/about3m/environment/index.jhtml.

Environmental Impact Assessment (EIA)
A technique used for identifying the environmental effects of development projects. As a result of the European Union's Directive 85/337/EEC (as amended 1997), this is now a legislative procedure to be applied to the assessment of the environmental effects of certain public and private projects that are likely to have significant effects on the environment. An EIA requires a scoping study to be undertaken in order to focus the assessment. This can be carried out in the field or as a desk study depending on the nature/scale of the project.

Environmental Management System (EMS)
An EMS is that part of the overall management system which includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining an organization's environmental policy. An effective environmental management system can help a company manage, measure and improve the environmental aspects of its operations. It can lead to more efficient compliance with mandatory and voluntary requirements. It can help an organization effect a culture change as environmental practices are incorporated into its overall operations.

Environmental Management and Auditing Scheme (EMAS)
EMAS was developed by the European Union. The first EMAS regulation was released in December 1990, and came into effect in January 1998. EMAS makes adherence to a formal environmental management system and auditing mandatory and requires that organizations make independently verifiable public statements regarding their environmental performance. For more information see, *ISO 14000: A guide to the new environmental standards*, by Tom Tibor, published in 1996 by Richard D. Irwin.

Environmental Programme for Europe
The first all-European conference of Environment Ministers, attended by ministers from all European countries (including the then Soviet Union) and the European Commission's Environment Commissioner, issued a call for a new Environmental Programme for Europe: a framework for the better co-ordination of national and international environmental efforts, setting priorities for restoring existing environmental damage and the prevention of future problems. That was under the auspices of the United Nations Commission for Europe (UNECE)

F

The Forest Stewardship Council
An international non-profit organization founded in 1993 to support environmentally appropriate, socially beneficial, and economically viable management of the world's forests. It is an association of Members consisting of a diverse group of representatives from environmental and social groups, the timber trade and the forestry profession, indigenous people's organizations, community forestry groups and forest product certification organizations from around the world. Membership is open to all who are involved in forestry or forest products and share its aims and objectives. (http://www.fscoax.org/).

G

Genetically modified organisms
The modification of the genetic characteristics of a micro-organism, plant or animal by inserting a modified gene or a gene from another variety or species. Genetically modified organisms (GMOs) may be micro-organisms designed for use as biopesticides or seeds that have been altered genetically to give a plant better disease resistance or growth.

Global Environmental Management Initiative (GEMI)
A non-profit organization of leading companies dedicated to fostering environmental, health and safety excellence worldwide through the sharing of tools and information in order for business to help business achieve environmental excellence. Through the collaborative efforts of its members, GEMI also promotes a worldwide business ethic for environmental, health and safety management and sustainable development through example and leadership.(http://www.gemi.org/)

Global Reporting Initiative (GRI)
Seeks to make sustainability reporting as routine and credible as financial reporting in terms of comparability, rigor, and verifiability. Specifically, the GRI's goals are to: Elevate sustainability reporting practices worldwide to a level equivalent to financial reporting; Design, disseminate, and promote standardized reporting practices, core measurements, and customized, sector-specific measurements; Ensure a permanent and effective institutional host to support such reporting practices worldwide. (http://www.globalreporting.org/)

H

Hawken, Paul
Author of *Ecology of Commerce*, the groundbreaking book published by HarperBusiness in 1993, that is based on the premise that business is the only mechanism powerful enough to reverse global environmental and social degradation. In this book, Hawken outlines a series of economic strategies that can change the conventional wisdom among economists and environmentalists.

I

Industrial Ecology
Industrial ecology is an interdisciplinary framework for designing and operating industrial systems as living systems interdependent with natural systems. It seeks to balance environmental and economic performance within emerging understanding of local and global ecological constraints. Industrial Ecology encompasses a range of topics related to industry and the environment: material and energy flows studies ("industrial metabolism"); dematerialization and decarbonization; technological change and the environment; life cycle planning, design, and assessment; design for the environment; extended producer responsibility ("product stewardship")l eco-industrial parks ("industrial symbiosis"); product-oriented environmental policy; eco-efficiency. For more information see the International Student Committee on Industrial Ecology at http://environmental.gatech.edu/~indecol/.

International Institute for Industrial Environmental Economics (IIIEE)
Established at Lund University, the Insitute is founded on the firm conviction that a preventive approach to environmental problems is necessary for the perpetuation of conditions indispensible for life on this planet. The mission of the Institute is to contribute to the international advancement of sustainable development by conducting research at the forefront of issues pertaining to cleaner production, and to train present and future decision makers within all sectors of society in the formulation and implementation of preventive environmental strategies. (http://www.iiiee.lu.se/)

ISO 14000 Standards
The ISO 14000 standards were developed by the Technical Committee of International Organization for Standardization (ISO) to provide organizations worldwide with a common approach to environmental management. The ISO 14000 standards describe the basic elements of an effective environmental management system. These elements include creating an environmental policy, setting objectives and targets, implementing a program to achieve those

objectives, monitoring and measuring its effectiveness, correcting problems, and reviewing the system to improve it and overall environmental performance.

J

Japan Environmental Management Association for Industry
A public corporation established under the Ministry of International Trade and Industry (MITI) and engaging in the full spectrum of activities relating to management of the environment. It was launched in 1962 with the objective of helping to prevent industrial pollution. JEMAI has been researching measures to deal with global warming and other "hot" issues, promoting the international "Environmental Management" standards (ISO14000 series), registering environmental management system (EMS) auditors, promoting awareness of environmentally-friendly industrial activities, life cycle assessment (LCA) and new Eco-labels. (http://www.jemai.or.jp/index-e.asp)

K

L

Life-cycle Assessment (or Analysis) (LCA)
Systematic set of procedures for compiling and examining the inputs and outputs of materials and energy and the associated environmental impacts directly attributable to the functioning of a product or service system throughout its life cycle. Life cycle is defined as the consecutive and inter-linked stages of a product or service system, from the extraction of natural resources to the final disposal.

Lund University, The International Institute for Industrial Environmental Economics
The mission of the Institute, located at Lund University in Lund, Sweden, is to contribute to the international advancement of sustainable development by conducting research at the forefront of issues pertaining to cleaner production, and to educate present and future decision makers within all sectors of society in the formulation and implementation of preventive environmental strategies. The Institute is founded on the firm conviction that a preventive approach to environmental problems is necessary for the perpetuation of life on this planet. (http://www.lu.se/IIIEE/general/main.html)

M

N

Natural Resources Defense Council
NRDC uses law, science, and the support of more than 500,000 members nationwide to protect the planet's wildlife and wild places and to ensure a safe and healthy environment for all living things. (http://www.nrdc.org/)

Natural Step (The)
The Natural Step is an international organization that uses a science-based, systems framework to help organizations and communities understand and move towards sustainability. The Natural Step engages in training and consulting, research and development, and community outreach. Having worked for over a decade, The Natural Step has gained international recognition for its work. The Natural Step has nine offices around the world. (http://www.thenaturalstep.org/).

Net Impact: New Leaders for Better Business
A network of emerging business leaders committed to using the power of businessto create a better world. Through the central office and 50 local chapters, the network provides a portfolio of programs to help members broaden their business education, refine their leadership skills, and pursue their professional goals, while they build their network. (http://www.srb.org).

Non-renewable Resources
Minerals, oil, gas and coal. Their use as material and energy sources leads to depletion of the Earth's reserves and are characterized that they do not renew in human relevant periods.

O

Ozone-depleting substances
A compound that contributes to stratospheric ozone depletion. Ozone-depleting substances (ODS) include CFCs, HCFCs, halons, methyl bromide, carbon tetrachloride, and methyl chloroform. ODS are generally very stable in the troposphere and only degrade under intense ultraviolet light in the stratosphere. When they break down, they release chlorine or bromine atoms, which then deplete ozone.

P

Perfluorocarbon
Family of industrial gases included in the basket of six greenhouse gases (GHGs) covered by the Kyoto Protocol. Although total emissions are relatively small, PFCs are extremely potent GHGs, with 100-year global warming potential of between 6 500 and 9 200.

Product Stewardship
An environmental management strategy, whereby those who design, produce, sell, or use a given product, take responsibility for minimizing the product's environmental impact throughout all stages of the products' life cycle, in proportion to their ability to minimize those impacts

Q

R

Remediation
Cleanup or other methods used to remove or contain a toxic spill or hazardous materials from a site.

S

SustainableBusiness.com
Is an Internet community for businesses that integrate economic, and social and environmental concerns into their core strategy. This site's objective is to accelerate the spread of sustainable business practices by increasing market penetration of sustainable products, services, and the companies that produce them. SB.com covers the field as a whole, bringing together businesses from such diverse industries as renewable energy, organic products, social investing, green building and construction, and re-manufacturing.

Sustainable Development Research Institute
Located at the University of British Columbia, Vancouver, Canada, the SDRI encourages interdisciplinary collaboration among the faculty, departments and centres at UBC, as well as other institutes and programs undertaking sustainable development research in Canada and around the world. SDRI focuses on the production of applied, policy-relevant and interdisciplinary research. (http://www.sdri.ubc.ca/)

T

Tradable Permits
An economic policy instrument under which rights to discharge pollution or exploit resources can be exchanged through either a free or a controlled permit-market. Examples include Individual Transferable Quotas in fisheries, tradable depletion rights to mineral concessions and marketable discharge permits for water-borne effluents.

Triple-bottom Line
The mantra of sustainability is "economic, social and environmental welfare for current and future generations". Thus, sustainability goes beyond the traditional bottom line of profitability by establishing three criteria for business and economic success.

U

United Nation Cleaner Production Program
UNEP's Cleaner Production Activities began in response to UNEP's Governing Council Decision in 1989. From the beginning, UNEP has been providing leadership and encouraging partnerships to promote the concept of Cleaner Production on a worldwide scale.
(http://www.unepie.org/pc/cp/home.htm)

User-pays Principle
Variation of the polluter-pays principle that calls upon the user of a natural resource to bear the cost of running down natural capital.

V

W

Waste Stream
The total flow of solid waste from homes, businesses, institutions, and manufacturing plants that is recycled, burned, or disposed of in landfills, or segments thereof such as the 'residential waste stream' or the 'recyclable waste stream.'

Western Electronics Product Stewardship Initiative
Organize multi-stakeholder dialogues throughout the Western States, which engage manufacturers, suppliers, distributors, recyclers, non-profit organizations, government and consumers. Through a collaborative process the groups will explore product stewardship models, environmentally preferable purchasing and collection infrastructure. (http://www.recyclingadvocates.org/wepsi/index.htm)

World Business Council for Sustainable Development (WBCSD)
A coalition of 160 international companies united by a shared commitment to sustainable development via the three pillars of economic growth, ecological balance and social progress. Its mission is to provide business leadership as a catalyst for change toward sustainable development, and to promote the role of eco-efficiency, innovation and corporate social responsibility. (http://www.wbcsd.org/)

To access the Latin American chapter of the WBCSD, see http://www.sistema.itesm.mx/misc/bcsd-la/

X

Y

Z

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