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Green Procurement: Good Environmental Stories for North Americans

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- Municipality of Kolding, Denmark Green Purchasing
- Interface Inc. Global Flooring Systems
- Cargill Dow LLC
- The Marine Stewardship Council

Names and contact information are provided at the bottom of each success story in section 3.

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Executive Summary

Many organizations worldwide are making an effort to purchase products and services that are less harmful to local and global environments. Both public and private sector organizations in North America are implementing purchasing practices that include environmental (and social) considerations—green procurement. These activities are part of a broader movement toward more sustainable forms of production and consumption.

Trends and Approaches

Internationally, government procurement markets in 1997 accounted for 5–18% of GDP within OECD member countries.[1] In North America, governments (all levels) spent US$3 trillion out of the total US$11 trillion economy in 2002, according to *The Economist*. Because of their significant buying power, governments have realized that public green procurement practices can:

- improve environmental performance of the public authorities themselves
- reduce the consumption of materials, resources and energy
- stimulate business development and new product/service markets
- stimulate "green" and innovative product development

Governments are realizing the benefits of green procurement practices such as cost savings from reduced energy consumption, resource use, and material management. They also reap more qualitative benefits such as improved image and achieving policy/program objectives. The awareness of these opportunities is a key factor driving the growth of green procurement at all levels of government.

Leading private sector organizations have also demonstrated significant movement towards greening procurement practices. Many private firms are working to improve the environmental performance of their operations and products and green procurement has been a logical extension of this work. Similar to public buyers, private sector organizations have in the last two decades adopted green procurement practices for specific products (e.g., recycled-content office paper, renewable energy, paints, cleaners, etc.), but are also looking at the materials, substances and chemicals they purchase that go into the products and services they provide. This supply chain approach looks beyond the company's "gates" in an ongoing effort to reduce costs and risk. Leading companies are using life-cycle assessment and material tracking tools to identify materials, substances and chemicals in their products that pose significant environmental, health and safety risks and re-design their products to reduce or eliminate such materials. In the private sector green procurement is seen as a means towards improving their products and operations from environmental perspective to reduce risk, total cost of ownership and improve supply chain performance.

Despite differences in emphasis, green procurement activities in both the public and private sectors take four main approaches:

- Procuring eco-labeled products or services
- In-house product/service evaluations
- Third-party product/service evaluations
- Supply chain initiatives

These approaches are often initiated within administrative, procurement, environmental or operational departments of governments and private firms. Public green procurement activities often rely on

[1] Organisation for Economic Co-Operation and Development. 2002. <http://www.oecd.org>.

established product standards, labels and certifications that declare the environmental attributes or performance of the product. Driven by bottom-line performance, leading private sector firms see green procurement as a logical part of effective purchasing and supply chain management practices. Private companies often use in-house and third-party evaluations to make informed green procurement decisions. Private businesses however are reluctant to establish green procurement activities unless there are clearly demonstrated business benefits for themselves and/or their customers.

Benefits of Green Procurement

The collection of success stories in Section 3 of this paper illustrate that green procurement initiatives in North America are underway at various levels of government as well as in private businesses. The success stories illustrate the business rationale and tangible benefits for public and private organizations to establish green procurement activities. These include:

- Cost avoidance—lower waste management fees, lower hazardous material management fees, less time and costs for reporting;
- Savings from conserving energy, water, fuel and other resources;
- Easier compliance with environmental regulations;
- Demonstration of due diligence;
- Reduced risk of accidents, reduced liability and lower health and safety costs;
- Support of environmental/sustainability strategy and vision;
- Improved image, brand and goodwill;
- Improved employee and community health through cleaner air and water, less demand for landfill and less demand for resources; and
- Increased shareholder values.

While there are a number of other quantifiable benefits measured from green procurement, cost savings and risk reduction are perhaps the most universal across all types of industries and organizations. Qualitative benefits such as improved image, brand or ability to meet policy commitments is another key benefit and is of note in a business and public sector climate that is increasingly influenced by the public, nongovernmental organizations and employees that are well informed and educated around the environmental and social issues related to products and services. How both public and private sector organizations measure these benefits varies. They often quantify direct costs savings, environmental benefits, money spent or estimate hidden or indirect savings. Section 4 of this paper discusses these measurement techniques, while also presenting arguments for why green procurement is important for both public and private sector organizations today. This discussion is followed by key challenges that may hinder the further adoption of green procurement in North America.

Conclusions

Green procurement is here to stay. The success stories cited in this paper and other sources illustrate the specific benefits and opportunities of green procurement in North America. A range of resources and organizations exist to assist both the public and private sector in adopting green procurement practices. Green procurement practices often vary and depend on the service, product, resource, material, substance or commodity being purchased. Integrating environmental, health and safety aspects of products/services into the procurement process (and weighting them accordingly), alongside the traditional criteria of cost, quality, safety and technical performance continues to be the major challenge with both public and private sector organizations. While several challenges remain, they continue to be identified and addressed. Importantly, international trade agreements will not pose serious barriers to green procurement in North America.[2]

[2] Early, J. 2003. *Green Procurement in Trade Policy. 19 p.* Montreal: CEC.

1 Introduction

The Commission for Environmental Cooperation (CEC) is involved in a trinational network of organizations that plays a coordinating role to help bring together the different groups involved in green procurement in North America, called the North American Green Purchasing Initiative (NAGPI). These groups comprise the whole chain, from manufacturers, suppliers and distributors, institutional purchasers, standards/certification organizations to the information multipliers. NAGPI's goal is to better our shared North American environment through green procurement. Its role is to:

- Compile and maintain list of ongoing green purchasing activities.
- Track the efforts of NAGPI members and others working on environmental purchasing issues to avoid unintended duplication of effort.
- Create a unified voice and a protocol to engage manufacturers, purchasers, politicians, reporters, and the general public when a unified voice benefits all NAGPI members.
- Facilitate development of common marketing language beneficial to all.
- Develop and maintain resource database (e.g., training modules, speakers, trainers, speakers, etc.)
- Host quarterly conference calls among NAGPI members to discuss relevant topics.
- Launch coordinated campaigns to improve the performance of specific commodity areas.
- Identify research needs—such as the need to better quantify environmental benefits of green purchasing—and seek funding together to address those needs.

The purpose of this review paper is to briefly summarize the trends and approaches to green procurement used by both the public and private sector in North America. It also provides a series of success stories from public and private sector organizations and outlines several business benefits (the business case) of green procurement practices.[3]

This paper is based on insight and stories from NAGPI members and from several existing works on green procurement. References and contact information are provided throughout, in attempt to foster further exchange of experiences and cooperation.

[3] For clarity, the term green procurement will be used throughout the proposal. In practice, eco-purchasing, green purchasing, environmentally preferable purchasing, and buying green are also used.

2 Trends and Approaches

Many organizations worldwide are making an effort to purchase products and services that are less harmful to local and global environments. These activities are part of a broader movement toward more sustainable production and consumption in both the public and private sectors.

Public Sector

Internationally, government procurement markets in 1997 accounted for 5–18% of GDP within OECD member countries.[4] Because of their significant buying power, governments have realized that public green procurement practices can:

- improve environmental performance of the public authorities themselves;
- reduce the consumption of materials, resources and energy;
- stimulate business development and new product/service markets; and
- stimulate "green" and innovative product development.

In a recent set of recommendations, the OECD Council is urging governments to introduce appropriate policies; establish procedures for product identification; provide relevant information and technical support; and evaluate progress in the area of public green procurement.[5]

In North America, governments (on all levels) spent US$3 trillion out of the total US$11 trillion economy in 2002, according to *The Economist*. In Canada, the federal government is the largest single buyer in the country, spending C$11.6 billion on products and services annually.[6] In the US, the federal government purchases more than US$200 billion in goods and services each year.[7] When the amounts are aggregated, US federal, state and local governments spend more than $385 billion, equal to one of every five dollars spent in the US economy every year.[8]

These figures illustrate the potential influence governments have over economic markets and over the environmental and social performance of companies operating in those markets. Recognizing this influence and in response to a number of factors, many North American government agencies are implementing purchasing practices that include environmental (and social) considerations—green procurement.

Evolution

Requirements for greening government procurement practices have evolved significantly in North America over the past two decades. In 1993, US President Bill Clinton signed Executive Order 12873 requiring all federal facilities to purchase Energy Star™-certified computers, printers and monitors. Many US state and municipal governments have since followed suit by establishing further executive orders, bills and legislation. For example, New York State Governor's Executive Order No. 111, "Green and Clean State Buildings and Vehicles," sets forth targets for energy efficiency and alternative fuel vehicles, which will require aggressive purchasing choices. Executive Order 13101, entitled "Greening the Government Through Waste Prevention, Recycling and Federal Acquisition," also requires

[4] Organisation for Economic Co-Operation and Development. 2002. <http://www.oecd.org>.
[5] Organisation for Economic Co-Operation and Development. *Recommendation of the Council on Improving the Environmental Performance of Public Procurement.* <http://www.oecd.org>. 2002.
[6] Environment Canada. 1998. *Towards Greener Government Procurement: An Environment Canada case study*. Environment Canada Corporate Services, Administration Directorate.
[7] US EPA. 1999. *Environmentally Preferable Purchasing: Painting the town green—Aberdeen Proving Ground's Paint Pilot Project*. EPA742-R-99-005.
[8] Case, S., cited in: *The Environmental Magazine*. 2002. "Harnessing the Procurement Power of Governments, Hospitals, Colleges and Corporations to Protect the Environment." 8 November 2002. Online: <http://www.enn.com/news.enn-stories/2002/11/110802/s_48684.asp>.

"Environmentally Preferable Purchasing" at federal facilities in the US.[9] Requirements that will effect both contracting and procurement of products and services are also contained within other broad pieces of legislation, such as the US Clean Air Act and Canada's legislation on Sustainable Development Strategies for all federal departments.

Mexico has initiated a federal government green procurement program.[10] The government of Mexico City, like many other governments and municipalities, is also developing EMS as a tool to reduce environmental impacts from its management and operational activities (resource consumption, emission of air pollutants, wastewater and waste generation) and, over the longer term, as a tool that enables government to include environmental criteria in urban planning (to achieve sustainable development). Development of the EMS includes a focus on the city government's procurement of equipment used for public lighting, construction, maintenance of highways and streets and management of green areas (chemicals, pesticides, fertilizers, etc.).[11]

Either prior to these types of requirements or as a result of them, governments have instituted green procurement programs for buying certain products (recycled-content paper), staying in "green" hotels and using "environmental" language in contracts, to name a few. Eco-labels such as Energy Star, Green Seal and Environmental Choice have become more prominent means of communicating environmental attributes of products to individual consumers and to institutional buyers and in 1998 the International Organization for Standardization set standards on environmental labels for products/services around the globe (ISO 14020 on the Environmental Principles of Environmental Labels and Declarations). To help buyers understand these labels and set environmental purchasing criteria, a number of organizations have been established to promote networking among purchasing officers (such as Governments Incorporating Procurement Policies to Eliminate Refuse, "Buy It Green" Network, Center for a New American Dream, etc.).

Several of these programs benefit from supportive mayors, governors or senior decision-makers, but in general, many of North America's green procurement efforts are bottom-up, initiated by administrative divisions or environmental departments of governments and private firms. Regardless of the program, a key element of green procurement is about understanding tradeoffs and balancing purchasing criteria such as cost, quality, performance and safety with the environmental attributes of products or services.

Governments not only recognize their position of influence, their responsibility to demonstrate environmental performance and their ability to promote environmentally preferable products; they are also connecting the benefits of green procurement to their fiscal responsibilities, job creation efforts and goals for community health and welfare.[12] The awareness of these opportunities is a key factor driving the growth of green procurement in government agencies.

Private Sector

Leading private sector organizations have also demonstrated significant movement towards greening procurement practices. As one of many examples, Home Depot (with a procurement volume of US$40 billion globally each year) has programs to procure and sell environmentally preferable products.[13] Many

[9] Among other things, EO 13101 requires agencies to "comply with executive branch policies for the acquisition and use of environmentally preferable products and services and implement cost-effective procurement preference programs favoring the purchase of these products and services."

[10] Mohninger, B. 1999. Approaches for Green Procurement in the Government of Jamaica (Draft). Prepared for the ENACT Programme, 27 September 1999, Canada.

[11] Sistema de AdministraciónAmbiental, Environmental Management System in Mexico City Government. Online: <http://www.sma.df.gob.mx/saa/antecedentes_ingles.htm>.

[12] Kerr, R. Personal Communication. 13 December 2002.

[13] Annette Vershuren, President Home Depot Canada. Presentation at Linking Sustainable Development to Shareholder Value, Toronto, December 2002.

private firms are working to improve the environmental performance of their operations and products and green procurement has been a logical extension of this work. Similar to public buyers, private sector organizations have in the last two decades adopted green procurement practices for specific products (e.g., recycled-content office paper, renewable energy, paints, cleaners, etc.), with a few others have developed green procurement policies that cover a wider range of products, services and environmental issues. As the business benefits of these efforts become better known, green procurement is continuing to grow in the private sector.

For manufacturing and process-oriented firms, such as DaimlerChrysler, green procurement practices look at the materials, substances and chemicals in the products and services they provide. Subsequently, this approach looks beyond the company's "gates" to include the materials, substances and chemicals its suppliers use. In ongoing efforts to reduce costs, leading companies use life-cycle assessment and material tracking tools to identify materials, substances and chemicals in their products that pose significant environmental, health and safety risks and re-design their products to reduce or eliminate such materials. Often, the risk of using a material of concern is associated with quantifiable costs to the company (e.g., NPRI reporting costs), its suppliers (e.g., special handling and transport costs), the user (e.g., costs for protective equipment and training) or end-of-life processor (e.g., hazardous waste disposal costs).[14] Leading companies have been able to capitalize on reducing these risks to reduce costs and achieve business benefits.

In addition, private sector companies face increasing public scrutiny. Information on the original source of products (such as coffee and fish) and services has become increasingly available to NGOs, consumers and voters. A more educated supply chain is also serving to drive the elimination of specific substances or materials within products (e.g., mercury from lamp switches in automobiles, brominated flame retardants from electronic equipment, lead from paint, etc.). Another factor, specifically driving product-oriented companies to look at their procurement of components, materials, substances and chemicals, is the changing regulatory landscape. New voluntary agreements and formal regulations increasingly focus on "extended producer responsibility," where manufacturers may be held responsible for the products they sell when those products reach the end of their useful life. This expanded notion of responsibility is also expanding the concept of product liability and risk.[15]

Given potential cost savings, increasing scrutiny from the public and extended producer (or product) responsibility, leading private sector connect green procurement to financial performance. Informed purchasing decisions that consider the environmental attributes of products and services procured can benefit business by reducing risk, liability and costs and improving operational efficiency, product quality, product performance and supply chain management. To further this, the CEC is working to clarify the connections among risk reductions, cost reductions and reduced financial risks. The intent is to enable financial institutions to calculate the full value of companies with environmental programs and initiatives when assembling their lending portfolios. Specifically, the CEC project focuses on two areas to understand the interrelation between finance and environment: 1) How environmental information affects financial markets; and 2) What are the investment opportunities in the environmental "sector."

Summary

Organizations (both public and private) are recognizing that green purchasing has financial benefits and offers significant opportunities to reduce their risks.[16] Thus, the materials, resources, substances, components, products or services that are "environmentally preferable" can provide important business value. In a competitive environment with increased outsourcing, regulations, risks, and market pressure,

[14] Rowlege, Barton, Brady. 1999. *Mapping the Journey*. London: Greenleaf, 182–183.
[15] European Directives on automobiles (ELV Directive), waste electronics (WEEE Directive) and hazardous substance use in electronics (RoHS Directive), and a proposed EuE Directive are indicators of this change.
[16] Global Environmental Management Initiative. 2001. *New Paths to Business Value: Strategic Sourcing—Environment, Health and Safety.* Washington, DC.

leading companies are seeking products and services that are environmentally preferable. In turn, they are also seeking allies in suppliers that are committed to improving their own environmental, health and safety performance.

A more extensive discussion of drivers is provided in section **4 Business Case**.

Approaches to Green Procurement in North America

Green procurement programs in the public and private sectors can range greatly in scope; from programs that focus on purchasing one product with a single environmental attribute[17] (e.g., paper with recycled content) to programs driven by a policy on purchasing a range of products, materials, substances that are evaluated against numerous environmental attributes (e.g., toxicity, energy consumption, reporting requirements, storage and handling costs, etc). In general, there are several key approaches to green procurement taken by both public and private sector organizations:

- **Procuring "eco-labeled" products or services.** Programs such as Energy Star, Green Seal, Blue Angel, Eco-Mark, and LEED™ have been established to assist organizations in procurement decision-making. Although these eco-labeled products tend to be consumer commodity goods such as office supplies, cleaners and paints, many organizations procure eco-labeled or certified products/services as a simple first step towards green procurement. For instance, the state of Massachusetts incorporated Green Seal criteria for cleaners into its requests for proposals. In Canada (Environmental Choice) and the US (Green Seal), labels originally centered on consumer products have evolved to focus on the business-to-business procurement of products and services.

- **In-house product/service evaluations**. Organizations, particularly in specialized areas (such as metals, chemical, services, substances), develop tools, procedures, standards and restrictions/bans for evaluating or screening the environmental performance of the goods or materials they purchase. These organizations combine specific regulatory requirements, safety, health, functionality and other existing product criteria in their evaluations. This approach allows flexibility for the organization to develop its own criteria based on its needs or the requirements of its customers.[18] These types of programs may also include eco-labeled products. For instance, The Washington State Office of Procurement developed their own standard contract for environmentally preferred cleaners, together with the Department of Ecology.[19] The state of California is working on a guide for developing its own criteria for determining "environmentally preferable."[20]

- **Third-party product/service evaluation.** With this approach, an organization relies on a third-party to evaluate the products or services. For example, the Canadian firm Terra Choice evaluates and rates golf courses, marinas and hotels against a green leaf standard (more leaves indicate better environmental performance in that business category). This approach relies on the transparency and credibility of the third-party's methods and procedures. Manufacturers often require third-party testing of materials or products in order to meet requirements set by customers (e.g., Volatile Organic Compound emissions of building and furniture materials).

- **Supply chain initiatives.** This entails a combination of the approaches described above, but with the long-term vision of "greening the supply chain" to achieve operational efficiency, risk

[17] See Appendix 1 for a list of environmental attributes of products and the rationale for considering them in purchasing decisions.
[18] See New York City Transit Success Story.
[19] PPRC. 1999. *Sustainability and Green Procurement: Getting Down to Brass Tacks*. Pacific Northwest Pollution Prevention Resource Center. Online: <http://www.pprc.org/pprc/pubs/newlets/news1199.html>.
[20] Weissman, A. Personal Communication. 3 December 2002.

reduction and cost savings. Partnering programs and evaluation of a suppliers facilities and operations against a government or industry standard are typically part of these initiatives. Less attention is given to evaluating the environmental performance of the actual products or services being procured—instead organizations expect suppliers to identify means to improve performance, develop alternatives and present these as options (as part of supplier-customer interaction) with the objective of improving the overall supply chain. For example, by working directly with its suppliers, Interface Inc. has been able to remove listed (toxic) substances from the product chain, install chlorofluorocarbon-free (CFC-free) heating, ventilation and air conditioning (HVAC) systems at Interface facilities (before the technology was available on the market) and eliminate unnecessary transportation steps during carpet production, among others.

Activities Outside North America

There are some observable differences in the green procurement approaches of other regions. In Europe, eco-labels have been more visible than in North America. As a result, there are currently more environmentally preferable products available to consumers and institutional purchasers. These range from organic foods (integrated with non-organic foods in supermarkets) to automobiles and power generators with eco-labels (specifically, type III labels or environmental product declarations).

In a Green Paper on Integrated Product Policy (IPP), adopted in February 2001, the European Commission presents ideas to strengthen product-focused environmental policies and to grow the market for greener products. The Green Paper recognizes the potential for public procurement (12 percent of GDP in the European Community) to stimulate demand for greener products. It recommends examining the EC's public procurement laws to give preference to environmentally friendly products. The IPP also recommends the EC work to exchange experience among procurement authorities.[21]

Future Trends

Less than ten years ago in North America, green procurement hit a downward trend as consumers lost confidence in the movement. A few cases of "green washing," a lack of quality information for consumers and the absence of clear rules for evaluating products and purchases are some of the reasons given for that downturn.[22] Many companies were making "environmental" claims, but there was little verification and claims were not easy to compare among products. Today however, better information and processes for comparing products and buying green have led to a gain in momentum in North America. For example, architects and engineers are increasingly specifying Forestry Stewardship Council (FSC) certified wood products, as well as using energy simulation modeling tools to inform heating and ventilation design and component specification. Government employees seek out "green lodging" on business travel and consumers look for fairly traded organic coffee. Some predict that environmental performance information of products will be one of the main topics in the environmental community over the coming five years.

The main trends in green procurement appear to be:

- **Further integration into decision-making.** Perhaps the most important trend, in terms of effective purchasing, is the move toward green procurement programs that are part of decision-making processes in government and industry. While many organizations have yet to initiate green procurement programs, those that have done so are now bringing green considerations directly into general contracting and product specifications. New York City Transit, for example, now integrates environmental criteria into the contracting and project specifications for all stages of their capital projects.

[21] European Commission. 2001. *How has the Commission developed IPP so far?* Online: <http://www.europa.eu.int/comm/environment/ipp/2001developments.htm>.
[22] Case, S. 2002. Personal Communication. 25 November 2002.

- **Alignment along the supply chain.** Organizations are seeking allies in suppliers that are committed to improving their own environmental performance. Organizations are increasingly asking of their suppliers "what can you do to improve my performance?" In some sectors, suppliers must have an Environmental Management System certified to ISO 14001, in order to be considered for contracts. Making these requests (or demands) of suppliers can require significant purchasing power. To achieve this, smaller private sector organizations are beginning to aggregate their purchasing power and standardize their supply-chain requests. The Bank of America helped form a group of private and public paper buyers into the Recycled Paper Coalition, in order to have a large number of buyers with the same environmental criteria and requirements.[23]

- **Organizational branding.** Building on product-specific eco-labels, some organizations are aligning themselves with existing labels. This differentiates them in the market place and supports their brand (and also supports the label itself). For instance, Whole Foods, a food market in the US, stocks fish certified by the Marine Stewardship Council (MSC). In another approach, companies are associating their brand with environmentally preferable products. Some well-recognized examples are the Body Shop and BP.[24] Another example is the President's Choice line of organic products for Loblaws, a supermarket chain in Canada.

- **Consideration of total cost of ownership.** Organizations are becoming aware of the overall, total cost benefits of environmentally preferable products and services. Some organizations have moved away from using first cost as the primary purchasing criteria. To do this, more comprehensive tools are being used, such as life-cycle assessment and total life-cycle costing techniques. New York City Transit requires its architecture and engineering contractors to conduct life-cycle costing and energy use modeling to optimize the building's performance over its full lifespan.

- **Increasing global effects.** Increasing globalization will continue to effect green procurement activities. Environmentally aware consumers and organizations in one region are affecting the production and supply in other regions of the world. For example, European publishers demand environmental information on newsprint they purchase from Canadian pulp and paper manufactures. In the late 1990s, a coalition of groups successfully threatened an international boycott against companies who were harvesting trees in Canada's Great Bear Rainforest in the province of British Columbia.

- **Broadening buyer and consumer concerns.** Public and businesses awareness around environmental matters is broadening to touch upon issues such as animal welfare, food safety, human rights, labor, and fair trade/social justice. In response, organizations are developing and partnering to create a wide range of voluntary standards on these matters. According to OECD,[25] this trend reflects the fact that some consumers are looking to establish lasting relationships with businesses that consistently behave in an ethical manner across the whole range of issues that arise in their business.

- **Broadening awareness outside public sector.** Other organizations are becoming aware of and adopting green procurement practices outside of the public, government sector. For example, there is increasing involvement from Universities in North America. It is also anticipated that

[23] PPRC. 1999. *Sustainability and Green Procurement: Getting Down to Brass Tacks*. Pacific Northwest Pollution Prevention Resource Center. Online: http://www.pprc.org/pprc/pubs/newlets/news1199.html

[24] Organisation for Economic Co-Operation and Development. 2002. *Recommendation of the Council on Improving the Environmental Performance of Public Procurement.* <http://www.oecd.org>.

[25] Salmon, G. 2002. *Voluntary Sustainability Standards and Labels (VSSLs): The Case for Fostering Them*. Background paper for the Roundtable on Sustainable Development meeting on 6 December 2002 at OECD Paris.

private sector organizations such as large retailers (Home Depot, Target, Walmart) will continue to expand the application of environmental and social criteria in their purchasing and supplier management programs.

- **Reduce labeling confusion.** For instance, Germany (one of the initial leaders in product eco-labeling) now reports up to 1,000 product labels currently competing in the German marketplace.[26] This can confuse consumers and procurement professionals and undermine established eco-labels such as the Blue Angel. While the United States has only 25 major eco-labels, the fragmentation may be a contributing factor to low growth/uptake of labels in the United States. Such concerns have led to widespread recognition of the need for technical equivalency between labeling organizations and countries. While little progress has been made so far in this area, such agreements could reduce the number of labels, reduce the costs of promoting labels into new markets, improve the credibility of labeling, and eliminate technical barriers to trade.[27]

- **Increasing emphasis on design.** The European Union's draft End-Use Equipment directive would require manufacturers to report on the extent to which they have integrated environmental considerations into product design processes. This may indicate a trend away from the current regulatory focus on product performance attributes towards the performance of the organization or company supplying or producing the product. This may make it more difficult for purchasing professionals to identify environmentally preferable products.

- **Moving from green to sustainable.** As mentioned previously, the concerns of buyers and consumers is broadening beyond environmental issues to include the social performance connected with products, services and organizations. As a result, this evolution is occurring within organizations, as they expand environmental strategies and programs to sustainability strategies, sustainability reporting, sustainable design, etc. It is unclear how this evolution will affect procurement programs or their definitions of environmentally preferable.

Trade And Green Procurement

The CEC group on "Green Procurement in Trade Policy" commissioned are report to explore possible barriers to "green" procurement arising from the international agreements that discipline trade in goods and services. Agreements included the Uruguay Round Agreements, the North American Free Trade Agreement (NAFTA) and the Free Trade Area of the Americas (FTAA), which is in the process of negotiation.[28] The report describes the important operational provisions of the World Trade Organization (WTO) Government Procurement Agreement (GPA) and the NAFTA Chapter 10 Agreement on Public Procurement, and explores the likely limits of the FTAA procurement agreement. It also describes the standards disciplines relevant to defining "green" products, and procurement policies and practices relating to food.

Overall, this report concludes that there are no serious barriers to "green" procurement in those agreements. It does find that standards disciplines could be used in some circumstances to challenge standards pertaining to particularly controversial products, such as non-transgenic corn. This would most likely happen not in the context of procurement per se, but in situations where particular standards could be determined to effectively prevent or deny market access, whether they are the subject of procurement

[26] Organisation for Economic Co-Operation and Development. 2002. *Recommendation of the Council on Improving the Environmental Performance of Public Procurement.* <http://www.oecd.org>.
[27] Salmon, G. 2002. *Voluntary Sustainability Standards and Labels (VSSLs): The Case for Fostering Them*. Background paper for the Roundtable on Sustainable Development meeting on 6 December 2002, at OECD, Paris.
[28] Early, J. 2003. *Green Procurement in Trade Policy. 19 p.* Montreal: CEC.

or not. This report also notes that standards equivalence will be a growing challenge as eco-labels proliferate and green purchasing programs become broader and more widely used.

3 Success Stories

Numerous examples of green procurement programs at all levels of public and private organizations exist in North America. This section highlights eight programs in various stages of maturity, covering different products or services from a range of public and private organizations. The success stories in this section illustrate the processes that some government agencies and private companies have used to integrate green procurement into their existing business practices and to highlight the quantitative benefits achieved (e.g., dollars saved, revenue generated, etc.).

Five of the organizations highlighted conduct in-house product/service evaluations—an approach described previously in section 2 Trends and Approaches. These are:

- US Department of Defense, Aberdeen Proving Ground
- Center for a New American Dream, Cleaning Product Working Group
- Anheuser-Busch Environmental Procurement
- New York City Transit, Department of Capital Program Management
- Municipality of Kolding, Denmark, Green Purchasing

Using several different practices, these five organizations evaluate the products/services they purchase using procedures or standards that they have developed (most often based around existing eco-label criteria or standards, such as Green Seal). The procedures or standards combine specific regulatory requirements, safety, health, functionality and other existing product criteria with criteria to determine the environmental performance of their purchase.

Two of the organizations highlighted illustrate an approach that focuses on the full supply chain and product value chain:

- Interface Inc., Global Flooring Systems
- Cargill Dow LLC

Although these two companies are very different, both have a long-term vision to continuously "green" the supply chain, providing products that offer superior value to customers and do not contain materials of concern, among other performance attributes.

A third type of green procurement—procuring "eco-labeled" products or services—is demonstrated by the story from the Marine Stewardship Council. It illustrates the challenges and opportunities that can accompany establishing a new product label to communicate environmental performance to retailers, distributors and consumers.

Semarnat—Sustainable Management Program, Procurement of Supplies with Low Environmental Impact

The Secretariat of Environment and Natural Resources (*Secretaría de Medio Ambiente y Recursos Naturales*—Semarnat) carries on the Sustainable Management Program (*Programa de Administración Sustentable*), the main purpose of which is to decrease the negative environmental impact of our day-to-day activities at the workplace. The principal lines of action are: electrical energy savings, rational water use, responsible usage of paper, and sound waste management. Appropriate paper usage includes so-called "green purchases."

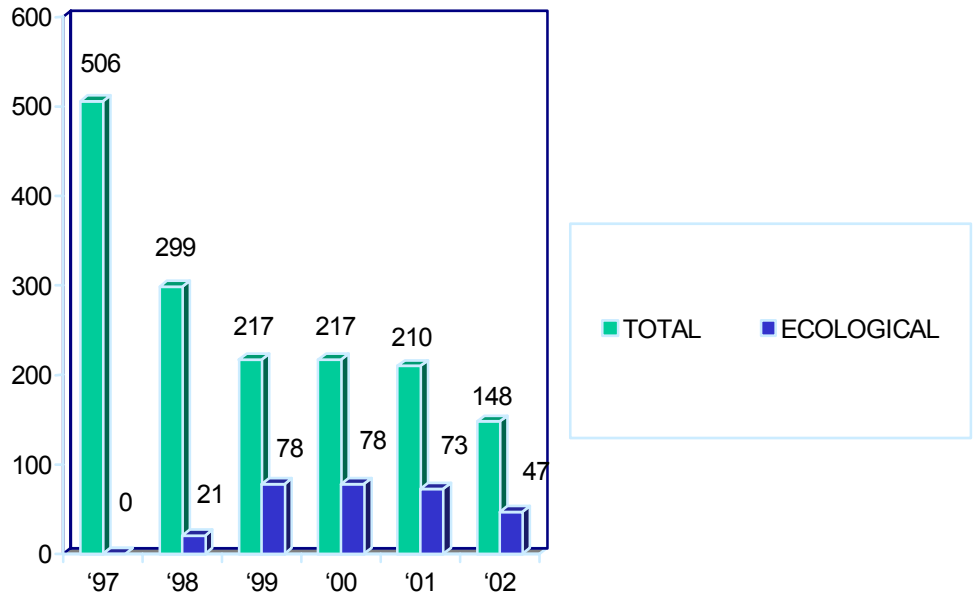
"Green Purchase" Criteria

The main focus in assessing whether or not to procure an item is its life cycle. Supplies with recycled, recyclable and/or biodegradable components are preferred, and products negatively affecting the ozone layer—principally aerosols and Styrofoam™ [extruded polystyrene foam]—are to be avoided. We seek items with a longer life cycle, as compared to conventional supplies. Suppliers are asked to deliver supplies in bulk or without excessive packaging.

Description of Activities

Efforts to procure environmentally friendly supplies began in 1997, when the list of office supplies contained 506 items, none of which was ecological. In that same year, we studied the environmental impact of the supplies acquired, and it was suggested that we acquire alternative items with lesser environmental impact. Thus, we began an objective assessment of the list of supplies, purging it to acquire only the items that were truly needed.

In 1999, the list was reduced to 299 item types, 21 of which were procured under environmental criteria. These amounts and proportions remained the same in 2000, and in 2001 the list was further reduced to 210, including 73 ecological supplies. By 2002 the list was even further reduced to 147 types of items, with 47 ecological types. The proportion of ecological supplies, with respect to all stationery items listed, ranges between 32% and 35%.



Review of Office Supply Procurement

The study—conducted by a private firm for the former Secretariat of Environment, Natural Resources and Fisheries, which reduced the original list of 506 items to 299 items, including ecological supplies—consisted of:

a) A series of interviews with the persons involved in the procurement and distribution processes;
b) Visits to the places where the products were kept;
c) Information compilation;
d) Product assessment and analysis based on the environment impact criteria of supply, transportation, useful life, potential for reuse and recycling, and the inputs, manufacturing, and end use thereof.

Legal Procedures for Office Supply Procurement

In Mexico, the provisions of the Law of Public-Sector Acquisitions, Leases and Services (*Ley de Adquisiciones, Arrendamientos y Servicios del Sector Público*) must be observed with care. A key provision is that calls for bids must be published in the Federal Official Gazette (*Diario Oficial de la Federación*) in order for interested businesses to submit their proposals.

One strategy to ensure the participation of businesses offering supplies with low environmental impact is to request specific lots of ecological items. In addition to describing technical specifications, the material to be delivered must conform to samples of proven quality and functionality.

Types of Ecological Supplies

The list of office supplies includes the following ecological types: (a) paper and cardboard products, such as recycled bond paper, notebooks, writing pads, folders, envelopes, binders, separators, and desk supplies such as paperclip holders, pencil holders, card folders, magazine racks, slide holders and file cabinets; and (b) writing instruments, such as water-based markers and ink-free pencils.

Other Related Matters

It is not only office supplies that are acquired using environmental criteria. We also have a photocopying system that uses cards with a preauthorized number of copies in order to control the number of copies made by the various administrative units.

We have also acquired energy-saving light bulbs to reduce electricity consumption and the negative environmental impacts from air pollution.

Obstacles to "Green Purchases"

The Sustainable Management Program has identified various factors inhibiting the growth of "green purchases," such as the shortage of products, the nonexistence of special industry incentives, and a lack of investment in such area. Therefore, the production of ecological products is practically an artisan craft. For this reason, at times prices for ecological items cannot compete with those of conventional supplies.

Consumers may feel uninformed because there is no certification agency to vouch for the origin and quality of supplies, so as to call them "environmentally friendly."

It was not easy at first for the staff to accept ecological supplies, as they were accustomed to using colored, laminated and excessively coated supplies. However, once the ecological benefits of simplified presentations and the origin and end use of the components were made clear, the products were accepted without hesitation.

Lessons Learned

We are aware of the market power of increasing the demand for ecological products. Due to the quantities required by a government agency such as Semarnat, businesses have begun to increase the supply of ecological items.

With these procurement policies geared toward environmentally friendly supplies, Semarnat staff members have strengthened their sense of belonging to the institution, finding consistency between the objectives, goals and daily tasks of the Secretariat of Environment and the use of ecological supplies at the office.

Current Status and Outlook

At present, actions with respect to "green purchases" are the most solid under the Sustainable Management Program. As the office supply procurement contracts are made for one year, during that period we watch the performance of materials procured. For the next year, we assess the items to be excluded, added or replaced with conventional supplies. We expect the proportion of environmentally friendly items to increase in future acquisitions, with respect to the quantities of conventional items.

We hope to serve as an example for other departments in increasing the demand for such items, thereby augmenting their supply. By doing so, we will contribute to the preservation and improvement of the country's environmental quality and natural resources, through the materials used in government offices.

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US Department of Defense, Aberdeen Proving Ground

Main Overall Message

The US Department of Army's Aberdeen Proving Ground (APG) now has a policy to purchase environmentally preferable paint.[29] As part of its overall pollution prevention strategy, APG worked closely with a third-party, nongovernmental environmental standards organization to examine its paint purchases and to identify the multiple environmental attributes relevant when purchasing paint. Today, APG purchases environmentally preferable paint that costs on average $1.76 less per gallon and saves APG the costs of reporting, handling, storing and disposing paint with hazardous substances.[30]

The Process

APG's approach to identify and minimize the adverse environmental impacts associated with its purchase of paints[31] is one of APG's several pollution prevention initiatives. APG began examining pollution prevention opportunities associated with the use of paint in order to generate costs savings, address air quality issues and conform to several relevant Executive Orders. APG uses a large quantity of paints annually and it recognized this as an opportunity to substantially reduce its hazardous materials handling and disposal costs.

APG worked to deplete existing stocks in a cost-effective, environmentally responsible manner. When purchasing new paints, APG was able to reduce the number of paints purchased and to establish standards that minimize environmental hazards, such as VOC emissions. This plan for environmentally preferable purchasing was developed in cooperation with Green Seal, a nongovernmental organization that had set environmental standards for paints. Green Seal also evaluated the paint inventory against the standard and developed a plan for marketing APG's new EPP program

The Products or Services

Before implementing its new plans for disposal and purchasing, APG used or stored 2,200 different paints and coatings—565 of which were architectural and anticorrosion paints for maintenance of APG's 2,100 buildings. The remaining paints and coatings were used on military equipment (spray paints, reflective paints or specialty paints). In addition, many of the paints stored at the installation were outdated or no longer needed.

The Results

With the new environmentally preferable purchasing plan and paint standards in place, APG has reduced the number of architectural and anticorrosion paints from 565 to 73 types that meet both environmental and performance standards.

On average, paints that meet APG's standards cost $1.76 less per gallon, according to a review of prices for compliant and noncompliant paints from APG's three most frequent suppliers. The installation purchases an average of 300 gallons of paint each month and calculates monthly savings of $528. APG continues to expand this list of paints and estimates that the new paint purchasing process will save $60,000 each year. It estimates that costs of developing the purchasing plan and paint standards were recovered within 1.5 years.

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[29] As defined by Executive Order 13101, *Greening the Government Through Waste Prevention, Recycling and Federal Acquisition.*

[30] Information is drawn from a report by the US EPA. 1999. *Environmentally Preferable Purchasing: Painting the Town Green—Aberdeen Proving Ground's Paint Pilot Project*. EPA742-R-99-005.

[31] Including interior and exterior architectural and anticorrosion paints.

The installation also saves $25,000 each year because it does not have to dispose of unused paint, classified as hazardous waste. With the new standards, APG procures paints that do not generate hazardous wastes and do not require hazardous solvents for cleaning paintbrushes and equipment. Additional money is saved on the administrative side, as the installation only has to track 73 paints (as opposed to 565) and reporting on hazardous materials is no longer needed (i.e., the 73 paints are not hazardous materials, as the previous paints were).

Lessons Learned

In a report by the US EPA, a number of key lessons came from APG's experience:

- Paints that meet APG's standards for environmentally preferable paint are less expensive.
- Using an existing, nongovernmental environmental standards organization can make environmentally preferable purchasing easier. In this case, Green Seal provided not only the environmental standard, but also evaluated the paint inventory against the standard and developed a plan for marketing the new EPP program.
- Companies will reformulate products to meet new standards, especially if the purchasing power is great enough.[32]
- It is important to verify environmental attribute claims. Aberdeen Proving Ground found that many of the VOC levels that manufacturers claimed for their products were significantly inaccurate.
- Environmental champions are important, and Robert Solyan, Director of Pollution Prevention, championed Aberdeen Proving Ground's EPP program.
- Persistence is important. For example, the program's champion had to persist, not only in implementing the program, but also in such technical issues as obtaining sample paints from manufactures, etc.
- EPP is a natural part of any pollution prevention strategy.

Current Status and Program Future

To further reduce storage costs, APG has a "just-in-time" purchasing approach for paints. It has calculated that previous discounts for high volume purchases were less than the costs to dispose unused and expired paints.

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[32] In other success stories, organizations with limited purchasing power have banded with other organizations in order to increase their ability to influence products and environmental performance criteria.

Center for a New American Dream—Cleaning Products Working Group

Main Overall Message

The Center for a New American Dream's Procurement Strategies Program works with institutional purchasers to raise awareness of environmental purchasing, train decision makers, and build consensus around environmental standards to make it easier to buy "green." In October 2001, the Center began focusing on institutional cleaning products, a $150 billion (US) cleaning industry with significant environmental and human health impacts.

Prior to launching the Center's work group, numerous purchasers had attempted to use their purchasing specifications to define environmentally preferable cleaners. With more than 50 definitions being used by different purchasers across the United States, there was no national consensus defining "green" cleaners. The plethora of competing standards, specifications, and recommendations was the biggest challenge for supply managers. They could not be sure how to best select safer products. In addition, manufacturers were not sure how to reformulate products to ensure they were meeting their customers' needs.

The lack of clarity on the issue prevented purchasers from buying safer cleaning products and manufacturers from selling them. To resolve this issue, the Center for a New American Dream convened a group of influential purchasers, many of whom were the first to define and purchase more environmentally preferable cleaners. Through a year-long, consensus-based process, the Center facilitated a common set of environmental specifications that all of the work group members could agree to and promise to use in future solicitations.

As a result, dozens of US cleaning products are being certified against the new consensus standard and growing numbers of purchasers are referring to the standard when purchasing cleaning products.

The Process

The Center for a New American Dream's work group included many of the government purchasers who first attempted to define and purchase more environmentally preferable cleaning products—Massachusetts; Santa Monica, California; King County, Washington; Minnesota; Seattle, Washington; Pacific Northwest National Laboratory; and others. Each of the work group members joined with slightly different existing definitions of what constituted a green cleaning product. As a result, the group's initial focus was comparing the existing definitions and specifications for safer cleaning products.

After extensive analysis and discussion, the group realized that their existing specifications were describing remarkably similar products using very different approaches. Some specifications, for example, relied on extensive lists of prohibited chemicals while others prohibited the same chemicals by referencing a specific toxicity test. This recognition allowed the group to begin developing purchasing criteria they could all endorse.

As discussions continued, it became increasingly obvious that Green Seal's existing standard for environmentally preferable institutional cleaners incorporated everyone's concerns. Green Seal <http://www.greenseal.org> is a nonprofit environmental standards organization based in Washington, DC. Its institutional cleaning products standard (GS-37) was developed in an open, consensus-based process that included environmentalists, government officials, end users, and industry representatives. GS-37 was already the basis of several successful purchases, including those by Pennsylvania, the US Department of Interior, and several military bases.

While GS-37 forms the basis of the new purchasing criteria, there are important differences. Green Seal's standard only covers general purpose, bathroom, and glass cleaners. The Center for a New American Dream's new purchasing criteria also cover carpet cleaners, disinfectants, floor care, and hand soaps. Because GS-37 does not cover these products, the work group (with the help of outside technical experts) extrapolated the Green Seal standard as appropriate and applied it where possible to the new product categories. As a result, the new criteria cover about 90 to 95 percent of all institutional cleaning product needs.

The new criteria include specifications for:

- Toxicity
- Carcinogens and reproductive toxins
- Skin and eye irritation
- Skin sensitization
- Combustibility
- Smog, ozone, and indoor air quality
- Aquatic toxicity
- Eutrophication
- Aquatic biodegradability
- Concentrates
- Fragrances
- Prohibited chemicals

Several industry experts have suggested that what is most important about the new criteria is the number of people who have promised to use it. Massachusetts was the first to issue a contract based on the criteria, but Minnesota and Santa Monica, California, are using exactly the same environmental criteria. They expect to release their request for bids within the next few months. The other work group members and numerous other supply managers across the country are also planning to incorporate the criteria into upcoming purchases.

The Products or Services

The institutional cleaning industry contributes $150 billion annually to the US economy. It also uses 5 billion pounds of chemicals, many of which are known hazards to human health and the environment. In fact, 127 janitors died in the United States between 1993 and 2001 as a result of the cleaning products they were using.[33] While deaths are rare, many institutional cleaning products traditionally contain chemicals associated with cancer, reproductive disorders, respiratory ailments, eye or skin irritation, and other human health issues. They also can include toxic materials that adversely affect water quality, plant and animal life, and accumulate in the environment with potentially harmful consequences.

Indoor air pollution, for example, which is linked in part to cleaning product exposure, is ranked among the United State's top five environmental risks. According to the US Environmental Protection Agency, indoor air pollution can be from twice as high to 100 times higher than outdoor levels. This is particularly alarming because most people spend as much as 90 percent of their time indoors.[34] Improving indoor air quality through better ventilation, better cleaning, and the use of safer cleaning products, for example, could improve worker productivity between 0.5 and 5 percent, an annual productivity gain of $30 billion to $150 billion.[35]

Switching to more environmentally preferable cleaners would also significantly reduce the human health impacts on the 3 million janitors working every day to keep US buildings clean. This is particularly important because janitorial workers experience relatively high injury rates due to the toxic chemicals found in cleaning products.[36] The chemicals can cause headaches, asthma, burns, permanent eye damage, major organ damage, and cancer. Based on workers' compensation data from Washington State, six out of

[33] <http://stats.bls.gov/iif/oshwc/cfoi/cftb0149.pdf>.
[34] <http://www.epa.gov/iaq/pubs/insidest.html>.
[35] <http://www.informinc.org/cleanforhealth.php>.
[36] <http://www.informinc.org/cleanforhealth.php>.

100 janitors are injured on the job by cleaning chemicals every year, at a cost of $725 in medical expenses and lost time per reported injury.[37]

The Results

As a result of the Center for a New American Dream's work group, purchasers across the country are now referring to a single set of environmental criteria to define environmentally preferable cleaning products. Growing numbers of manufacturers are developing and certifying that their products meet the new criteria. It is hoped that these more environmentally preferable cleaning products will soon dominate the market and become the industry standard.

Several of the Center's work group members are already planning ways to further strengthen the purchasing specifications so that the cleaning products industry becomes one of continual environmental improvement

Lessons Learned

In addition to a nationwide, consensus-based set of environmental criteria that purchasers across North American can use to buy safer cleaning products, the most important lesson learned is the power of consensus. While all of the purchasers involved with the project wanted to buy more environmentally preferable cleaning products, their slightly different definitions were the biggest obstacle. By working together in a collaborative effort, facilitated by an outside group like the Center for a New American Dream, the participants were able to maintain incredibly stringent environmental requirements without sacrificing price or performance. In fact, their nationwide consensus on the environmental criteria is actually helping to reduce cost and improve performance of the products now that manufacturers have a clearer understanding of their customers' needs.

Current Status and Program Future

The Center for a New American Dream maintains a website to keep interested purchasers informed about the most recent developments. Visit <http://www.newdream.org/procure/ products/cleaners.html> for a copy of the criteria, a list of products meeting the criteria, additional background information on the project, and other useful information.

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[37] <http://www.westp2net.org/Janitorial/jp4.htm>.

Anheuser-Busch Environmental Procurement

Main Overall Message

Anheuser-Busch has environmental procurement efforts on a range of products and services, including packaging, operating equipment, energy, and products for equipment cleaning.[38]

Background
Anheuser-Busch Companies, Inc., is the world's largest brewer, with more than 80 production, entertainment, and service facilities, more than 23,000 employees, and yearly gross sales of more than $15.5 billion. In operation since 1852, Anheuser-Busch has led the brewing industry in sales since 1957. Worldwide, Budweiser is brewed in more than 10 countries and distributed in more than 80.

The Process

Anheuser-Busch has adopted a multi-attribute perspective to evaluate and select products. When examining alternative cleaning products for its parts washing operations Anheuser-Busch, developed a spreadsheet to compare products based on several factors, including effectiveness, pH, flashpoint, price, and whether the product was solvent- or water-based. All products must meet both financial and environmental performance measures. Because of this multi-faceted approach, Anheuser-Busch often identifies products it might otherwise not have considered, under more traditional evaluation procedures. This initiative has also contributed to a 72 percent reduction in hazardous waste produced since 1991.

Supplier Certification

Anheuser-Busch's Supplier Certification program includes an Environmental Health and Safety (EHS) standard that assists suppliers in minimizing their environmental impact, as specified in the company's EHS Management System requirements. Under this standard, Anheuser-Busch evaluates the management systems of key suppliers and advocates EHS improvements that do not compromise the quality, cost, or safety of Anheuser-Busch products.

Anheuser-Busch spends the largest portion of purchasing dollars on packaging. As a result, packaging suppliers were the first to undergo formal supplier review. The Supplier Certification program works in conjunction with Anheuser-Busch's quality assurance program, to inform packaging suppliers about quality issues, defects, and training. The supplier certification approach is being considered for other key suppliers outside the packaging area.

The Products or Services

Anheuser-Busch dedicates much time and attention to every aspect of its product—including packaging—in order to ensure quality and meet consumer needs. In an effort to reduce the amount of material in packaging, the company has implemented many successful initiatives to lightweight aluminum cans and glass bottles. Reduced packaging mass means reduced consumption of both raw materials and energy to transport packaging and products. In addition, new packaging and packaging changes are evaluated for environmental impacts. In one initiative, Anheuser-Busch worked with suppliers to set a standard for the colors and plastic resins used in the plastic strapping that binds shipments coming in to Anheuser-Busch breweries. Without a standard, Anheuser-Busch had been unable to recycle the plastic strapping it received, because no single type or color of plastic was received in enough volume. Anheuser-Busch realized that it was essentially purchasing the strapping, as well as the intended product, and exerted its

[38] This information was updated by Anheuser-Busch in February 2003, and is originally based on a 1999 report from the US EPA called *Environmentally Preferable Purchasing Program—Private Sector Pioneers: How Companies are Incorporating Environmentally Preferable Purchasing*. June 1999.

influence to establish two, color-coded, single resin plastics that suppliers agreed to use for all strapping materials. Anheuser-Busch is now able to recycle virtually all strapping coming into its plants.

The Results

As a result of its cooperation with suppliers to lightweight aluminum cans and glass bottles, Anheuser-Busch saves more than 250 million pounds of aluminum and 800 million pounds of glass annually. Initiatives to decrease packaging weights create great energy savings up and down the supply chain, from: raw material extraction, container production, transportation of containers to breweries and transportation of finished goods. The initiative with suppliers to develop standards for plastic strapping has increased Anheuser-Busch's recycling rate, decreased volumes of waste and reduced costs for waste disposal. The company now recycles more than 1,000 tons of plastic strapping each year.

Anheuser-Busch has installed an innovative wastewater treatment technology which it calls a bio-energy recovery system, that saves dollars in wastewater treatment costs, lowers energy consumption and reduces the pollution associated with electricity generation that would otherwise be required to operate more traditional treatment approaches.

Bio-Energy Recovery System

Anheuser-Busch is the world's largest operator of Bio-Energy Recovery Systems (BERS). Breweries, like many food plants, can exert a large demand upon a community's wastewater treatment system because of the high organic load in brewery wastewater. BERS is a method of pre-treating the wastewater anaerobically (in the absence of oxygen) and capturing biogas (methane) before discharging to the local sewer system. The recovered biogas is burned for fuel at the brewery, providing 10 percent or more of the on-site fuel needs. BERS converts the waste in the water into fuel. BERS provides a number of important environmental benefits. Pre-treating wastewater in this fashion reduces its strength (organic load) by up to 90 percent. The decreased organic load in the wastewater, in turn, places a smaller demand on community wastewater treatment facilities, which cuts down on their electricity requirements. The resulting air quality benefits include substantial reductions (75 percent or more) in emissions of carbon dioxide, carbon monoxide, nitrogen oxides, and sulfur dioxide. In addition, the quantity of biosolids generated is reduced by about fifty percent compared to traditional wastewater treatment methods. Biosolids resulting from anaerobic digestion grow very slowly—rather than being a disposal burden anaerobic biosolids have a market value as seed stock in new BERS projects.

Anheuser-Busch uses BERS to treat brewery wastewater at 8 of its 12 breweries in the United States and at its two international breweries in Mortlake, UK, and Wuhan, China. At Mortlake, the company worked with the water utility to install BERS as part of the local wastewater treatment facility. Thames Water owns and operates the enhanced facility, while Anheuser-Busch provides ongoing technical support as needed. In Wuhan, Anheuser-Busch operates its BERS to treat brewery wastewater, much as it does in the US.

Lessons Learned

- Initiatives have to create value for the company and cannot adversely impact quality requirements.
- Partnering with suppliers can save dollars and lower environmental impacts.
- Some of these initiatives are long-term, so patience is required.
- Purchasing is key to every initiative, must be a joint effort with several internal groups and the supplier and cannot be a stand-alone environmental effort.
- Where possible, environmental concerns are integrated into existing quality assurance programs.
- Early successes can create a pathway to address other environmental issues.

Current Status and Program Future

Anheuser-Busch continues to work with suppliers on environmental issues, including evaluating packaging for lower environmental impacts.

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New York City Transit, Department of Capital Program Management

Main Overall Message

The Department of Capital Program Management (CPM) of New York City Transit has a Design for Environment Initiative that has led it to integrate environmental considerations into procedures for engineering, design, contracting, specification and procurement. As a major contractor of goods and services, CPM is extending environmental requirements across its supply chain through contracts for building design, construction, demolition, waste management and commissioning.

NYCT Background

New York City began operating its first official subway in 1904. Today, NYCT operates the largest bus fleet in North America, with 5,086 buses, making 45,550 trips per day totaling 171 million kilometers, per year. The subway system is no less impressive with an annual power consumption of 1.8 billion kilowatt hours. The whole system moves 7.2 million people every single workday or about 2 billion New Yorkers per year. The Department of Capital Program Management (CPM) within New York City Transit (NYCT) has responsibility for the design, construction and rehabilitation of infrastructure associated with the bus and subway transit systems. CPM's 1,600 engineers, architects, planners and designers currently manage a total budget of 10.4 billion USD (2000–2004). This infrastructure includes: stations, maintenance shops, elevated lines and subway track, communication, power and signaling systems.

The Process

CPM is including environment in its Project Delivery Process alongside customer satisfaction, quality, budget, safety, and schedule. This began with small, pilot-scale initiatives and is now an integrated part of all new construction and renovation projects. Specifically, CPM aims to improve performance in six main environmental areas, through the engineering and procurement of buildings and infrastructure:

- Increasing Energy Efficiency
- Enhancing Indoor Environmental Quality
- Conserving Materials and Resources
- Optimizing Operations and Maintenance
- Conserving Water and Site Management
- Managing Wastes and Recycling

These six areas form the basis for a set of checklists and guidelines that direct CPM project managers and contractors to propose specific "green" design features for all capital projects. CPM then selects design features that improve the environmental and economic performance of the building or system being designed or procured.

The Products or Services

In order to improve building performance and effectively "green" design, CPM procures numerous products and services, including:

- Photovoltaic panels and translucent building integrated photovoltaics
- Fuel cell technologies
- Rainwater washing systems for subway car and bus maintenance facilities (using rainwater and recycled wash water and pre-treating effluent prior to discharge to city water system)
- Natural day-lighting and energy efficient lighting fixtures with timers and sensors
- Sustainably managed forest products, low embodied energy materials, low Volatile Organic Compound materials, high recycled content materials and other environmentally preferable building materials
- Waste management practices for demolition and construction projects that plan for recovery, reuse and recycling
- Paint booths with VOC abatement systems

The Results

As a result of its initiatives, CPM expects to surpass New York Governor's Executive Order 111, "Green and Clean State Buildings and Vehicles." The Order outlines targets for energy efficiency improvements, procurement of Energy Star products, and targets for renewable energy. One example of green design features, implemented with measured results is the procurement of alternative energy technologies—both photovoltaic systems and fuel cells.

CPM and contractors have designed NYCT's Corona Subway Car Maintenance Shop to draw power from a roof-mounted photovoltaic (PV) system. The PV system will generate 100 kW of power from the sun, and will prevent more than 180,000 pounds (81,650 kg) of CO_2 emissions each year (180,000 lbs is the amount of CO_2 emitted from driving 225,000 miles (362,000 km) in a car and it would require nearly 25 acres (101 km^2) of trees to absorb this amount of CO_2). The Shop will also draw a portion of its power from a 200 kW fuel cell system, annually avoiding 40,000 lbs (18,100 kg) of pollutants that cause acid rain and smog and 2.4 million pounds (1.1 million kg) of CO_2 emissions.

Photovoltaic systems have been incorporated into several other NYCT buildings. These designs not only avoid pollution and help NYCT meet environmental performance measures, they also stimulate markets for alternative energy technologies and help to pioneer contracts with utility suppliers for mixing energy from the grid with that from alternative generating systems.

Construction on projects with these green design features will begin in the next two to five years. Thus, CPM has yet to measure the economic benefits. CPM does note that contractors are enthusiastically taking up the opportunity to generate green design solutions and features that address the six key environmental areas. In the meantime, CPM is working on metrics that will measure and communicate the dollar-value of its environmental improvements (e.g., the relationship between natural ventilation or day-lighting to workforce efficiency, health of workers and riders, etc.) in order to generate a solid business case for sustainable design and design for environment for NYCT as a whole.

NYCT expects that its Initiative will:

- Reduce the total life-cycle costs of buildings, systems and infrastructure.
- Improve worker health and safety by specifying environmentally preferable products and materials that contain less or no hazardous materials, thereby reducing exposure problems and safety concerns.
- Reduce liability and costs of insurance, handing and reporting by utilizing fewer hazardous materials.
- Demonstrate leadership within New York City and the state to stakeholders, customers, suppliers and employees.

Lessons Learned

CPM has recognized that a number of key factors were crucial to the initiatives' success:

- Understanding, upfront, the key challenges facing the Initiative Team, stakeholders and CPM staff is important in gaining commitment and changing processes and procedures. Understanding staff and management motivation is seen as equally important to simplify existing decision-making processes and provide simple tools.
- Guidelines and principles that address multiple criteria and apply at early stages in the conceptual design stage of capital projects are preferable. If included at this stage in a capital project, green design features will become requirements for the subsequent stages of the project (i.e., Preliminary Design, Detailed Design and Construction); and,
- Measuring and tracking performance of long-term capital projects that involve multiple contractors, departments and elements (e.g., buildings, systems, track, tunnels etc.) is vital to ensuring that design concepts are ultimately realized.

Integrating design-for-environment into NYCT and CPM operations is still evolving. So far, CPM has brought design features into several key projects (including subway and bus maintenance shops, subway and intermodal stations, painting systems etc.) that will not only reduce their environmental impacts, but also reduce long-term operating costs, improve staff productivity and reduce risks.

Current Status and Program Future

CPM continues to develop its contracting and procurement policies, working with contractors and suppliers, but also with other departments of NYCT and the Metropolitan Transportation Authority. It is currently working to ensure that the environmental principles are applied in early capital planning stages prior to the allocation of the four-year improvement budgets.

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Green Purchasing in the Municipality of Kolding, Denmark

Main Overall Message

Since 1998, the Municipality of Kolding, Denmark, has implemented a green purchasing strategy to ensure that its purchasing actions meet its environmental management goals. By designing a series of questionnaires for various product groups and integrating them into calls for tenders, purchasing officers are able to easily assess the environmental suitability of a given product or service.

The Municipality of Kolding

The Municipality of Kolding (population 62,000) has a great deal of buying power. With approximately 6,000 employees, the municipality is the single-largest business in the region. On an annual basis, the municipality buys goods and services totaling €131.6 million.

The municipality is responsible for a wide variety of programs including teaching, childcare, the care of elderly and handicapped people, and waste collection. In addition, the municipality handles traffic control, environment protection, planning, administration, and tax collection.

The Process

In the Municipality of Kolding, calls for tenders are supplemented with environmental questionnaires, developed by the Departments of Logistics and Environment. The questionnaires contain different kinds of questions relating to the business of the supplier (e.g., environmental management), the product itself (e.g., whether it contains environmentally hazardous substances), product packaging, and the environmental impacts from the use of the product.

The questions are formulated so that positive answers indicate positive environmental performance. All positive answers require additional documentation. Every product group includes mandatory questions, which, if answered in the negative, immediately exclude the bidder from the tendering process. All other questions provide a basis for comparing the environmental standards of the products offered through the use of a scoring system. Environmental performance is assessed on par with price, quality, and level of service.

The Products

The program covers commonly used product groups including food, office supplies, cleaning products, textiles, and computer equipment, as well as specialized products such as toys and medical supplies.

The Results

In the first year of the program, Kolding introduced environmental questionnaires for 25% of its calls for tenders. In May 2001, 70% of the framework agreements (which cover commonly used products) were supplemented by environmental questionnaires.

In 2000, the Municipality of Kolding purchased goods and services totalling €131.5 million. Of this total, the Municipality of Kolding purchased €7.15 million of products and services within framework agreements. Of these purchases, €4.40 million worth of green products were purchased.

Lessons Learned

- Suppliers reacted positively to the environmental questionnaire and easily met the new environmental requirements.
- It is a myth that the range of green products available on the market is insufficient and that such products are overly expensive. With the exception of organic food, additional costs can be addressed by centralizing procurement activities.
- There is a lack of available information regarding the contents and manufacturing processes of some products.

- In order to comply with the World Trade Organization's *Government Procurement Agreement* and European Union legislation on free market and equal opportunities, when designing calls for tenders with environmental criteria, municipalities cannot request that products have an ecolabel (such as the Nordic Swan or the EU flower). Instead, a municipality may specify environmental requirements similar or identical to those required by an ecolabel. Additionally, requirements regarding the product's production process rather than the product itself may not be allowed in some cases.

Current Status and Program Future

By 2002, Kolding was to have integrated environmental requirements into 100% of its framework agreements.

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Interface Inc. Global Flooring Systems—Working with Suppliers to find Solutions

Main Overall Message

Interface Inc., a global flooring company, conducts life-cycle assessments on several of its products. The results of these assessments have lead Interface to work closely with suppliers to reduce and eliminate several of the main environmental impacts associated with flooring systems. In Canada, the company has saved $10.7 million between 1995 and 2002 (and $120 million worldwide during the same period), attributed to life-cycle assessments, energy conservation, management of regulated compounds, toxic compound and other materials, and similar efforts that are integrated with decision-making and operations. Interface uses ecometrics (measuring inputs against outputs to identify amounts and types of waste) to reduce waste and thus generate savings. Data for *ecometrics* are found in accounting statistics and recorded per unit product per year. Interface Canada's objective is to reduce the amount of energy and materials used in all areas. Overall, Interface and its suppliers have improved quality, performance and saved money.

The Process

Interface recognized that designing flooring systems to reduce environmental impacts in a manner that is integrated with economic and product performance poses major opportunities to reduce waste and thus improve the company's overall performance. For instance, by reducing waste, Interface avoids buying "unnecessary" materials, reduces costs for managing and processing wastes and reduces the amount of energy going into each product (i.e., by reducing the number of materials used). Interface selects highly performing products and supplies, in order to achieve these benefits and savings. Based on its life-cycle studies, Interface knows which materials it does not want in the flooring systems, so it works with suppliers to pre-select and pre-approve materials that it procures, enforcing tight quality and performance specifications. As a result, Interface is always looking at the core requirements of the products and flooring systems to find solutions that improve product performance, reduce payback periods, minimize the number of materials and are environmentally responsible.

As part of Interface's integrated approach, it is logical that the company engages suppliers to procure "greener" products and services. In procuring materials for its flooring systems, Interface includes environmental considerations along with quality, performance and purchase price. Interface also works directly with its suppliers to develop economically and environmentally preferable solutions. For example, Interface wanted to update its HVAC system with CFC-free equipment. No such technology was yet on the market and so the company contacted an HVAC system manufacturer and worked with them to speed up the technological development of a CFC-free system.

A major challenge for Interface's green procurement efforts has been the lack of data on the environmental performance of the products it purchases. While some of the company's suppliers have environmental management systems, very few suppliers had data on the products they sell (e.g., embodied energy), nor policies on energy, procurement or environmental performance. In addition to the lack of data, Interface recognizes that determining whether one product is ultimately more environmentally responsible than another is a major challenge. For example, a product may have more recycled content but a shorter life span and thus have to be replaced more often. The company points to eco-labels as an important tool in overcoming these challenges, along with life-cycle assessments and effective techniques for life-cycle costing.

The Products or Services

Reviewing its financial data, Interface recognized that it used nine NPRI[39]-listed substances in the flooring products and this was adding cost to the operations. These costs included:

- Costs of purchasing the substances
- Costs for contingency, liability and associated risks
- Costs to handle the substances (e.g., protective equipment)
- Storage costs and reporting/tracking costs
- Costs to train employees on the use of NPRI listed substances.

To reduce, and eventually eliminate, the use of these substances, Interface Flooring Technology Design Group worked to remove certain smoke and flame retarding substances that were listed on the NPRI. Next, the company engaged its suppliers of resin and plastisizer to consider changing their product specifications (i.e., to reduce the flammability of the substance by reducing the quantity of flammable substance in the product and increasing the relative amount of non-flammable substances). Interface engaged suppliers by explaining that it would offer them more business if they could find a way to reduce or eliminate flame-retardants. In competition for Interface's business, suppliers developed a new resin, which not only addressed the flame retardant issues, but also used less energy, improved performance in comparison with the previous formulations and reduced variability in the supplied product (effectively reducing the amount of off-spec product, i.e., waste). As a result of these types of efforts and work with suppliers, all NPRI listed substances were removed from the flooring products. Interface's approach is to consider the supplier's mills and Interface's mills as one mill, in order to optimize points for change and improvement and to generate solutions that Interface calls "win-win."

The Results

Interface effectively eliminated a number of costs associated with the use of NPRI listed substances. The direct savings have been estimated at US$1,326,000 per year, though these savings are integrated in all calculations.

With respect to searching for a new HVAC system, Interface encouraged its supplier to speed up development of a CFC-free HVAC system. The system cost Interface 7.5 percent more than it would have paid for a traditional HVAC system. However, Interface measured an overall return on its investment. For instance, Interface might normally pay $100,000.00 for 30 seconds of advertising time on television, but because of its environmental initiatives, CNN profiled the company in a 30-minute documentary. Interface's work to eliminate NPRI-listed flame retardants, its procurement of a CFC-free HVAC system and many other similar accomplishments have also led to coverage on CBC television, the Discovery Channel and in national news papers and magazines in Canada and the US—all at no direct cost to the company.

To measure the results of its procurement efforts, Interface calculates *ecometrics* per unit product per year using its existing financial data on energy use, materials purchased, landfill costs, etc. The *ecometrics* help Interface to:

- Identify changes to the product or process that will generate significant savings for the business (e.g., by reducing the amount of waste generated, handled and disposed; and by reducing the use of NPRI-listed substances) and
- To measure the savings generated by various design decisions (e.g., decision to use raw materials that generate less waste to landfill).

Interface notes that it is important to measure per unit product, so that a year of poor production does not appear as a year of better environmental performance.

[39] National Pollutant Release Inventory (NPRI).

Interface also cites benefits for its suppliers as they work with the company in developing solutions and technologies that perform better, reduce raw material use, reduce waste and reduce handling of listed substances. Interface customers also benefit from flooring with longer life spans, better quality and performance, fewer toxic substances and lower overall cost.

Lessons Learned

As suppliers do not always have the data and metrics that facilitate decision-making, Interface has learned to communicate its expectations transparently and to solicit input and ideas from its suppliers. Working with suppliers has lead to innovative solutions (e.g., carpet without flame retardants and early adoption of a CFC-free HVAC system).

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Cargill Dow LLC Design and Green Procurement

Main Overall Message

Cargill Dow LLC has launched a new business that will make it the global leader in manufacturing polymers from annually renewable resources. Committed to meeting today's needs for packaging, films, fibers and chemical intermediates while at the same time ensuring the earth's ability to meet the needs of future generations, Cargill Dow has embraced sustainability as its model for success. Cargill Dow adopts the model of sustainability that recognizes the "triple bottom line" of economic, environmental and social sustainability measurement.

Background
Cargill Dow LLC is a global, stand-alone organization created as a joint venture of Cargill, Inc. and the Dow Chemical Companies. The company headquarters are in Minneapolis, Minnesota, USA, with offices in Naarden, The Netherlands, and Tokyo, Japan. Cargill Dow employs approximately 300 people worldwide. In the USA, Cargill Dow has more than 110 patents issued and 400 are owned worldwide. Cargill Dow is the world's only commercial scale plant for the manufacture of polylactide polymer from corn dextrose, with capacity for 300,000,000 lbs./year.

Cargill Dow's signature product, NatureWorks™ Polylactide (PLA), is now manufactured at a unique commercial facility in Blair, Nebraska, and represents a market for the equivalent of more than $30 million worth of corn from the US Midwest. As a producer with capacity to manufacture some 300 million pounds of NatureWorks™ PLA polymer each year, Cargill Dow also constitutes a new source of green raw materials for the fabrics, packaging and films industries. Together, Cargill Dow and its customers constitute an opportunity to displace millions of gallons of imported petroleum currently used in the manufacture of synthetic materials.

The Process

The first element of Cargill Dow's clean procurement strategy lies in good design. Cargill Dow's PLA manufacturing process was designed from its inception to be environmentally friendly—green. Dextrose made from feed-grade corn is fermented into lactic acid, which in turn is processed into a polymer product that performs on a par with or better than petroleum-based materials. NatureWorks™ PLA does not contain toxic heavy metals, suspected endocrine disrupters or other raw materials of significant environmental concern. Of course, farming may release some of these substances into the environment. Sustainable agriculture practices (and markets for products so produced), which Cargill Dow is working to support, seem a key strategy for addressing these issues.

The second element of Cargill Dow's green procurement strategy involves engaging raw material suppliers in the process of environmental accountability. As a new business founded on a new technology not fully commercialized, Cargill Dow recognizes that it must offer superior value in a product that is today more expensive than petroleum-based competitors. The NatureWorks™ PLA value proposition is centered on sustainability, and especially, environmental superiority. As a result, in addition to ensuring that the process of making PLA is environmentally superior, Cargill Dow carefully calculates the Life-cycle Inventory for its product.

The third element of Cargill Dow's green procurement strategy stems from the recognition that NatureWorks™ PLA is itself a raw material for a wide range of ultimate commercial and consumer products, from film wraps and food packaging containers to a full range of apparel and textile products. Cargill Dow carefully measures and publicly reports its Life-cycle Impacts. In order to preserve the environmental integrity—the "greenness"—of NatureWorks™ PLA, Cargill Dow imposes requirements

on customers related to the kinds of uses that can be made of PLA and to the kinds of substances and materials that can be combined with NatureWorks™ PLA to make subsequent products.

A key component of Cargill Dow's sustainability strategy is its Sustainable Feedstocks Program. Derived entirely from an annually renewable agricultural crop—corn—the sustainability of NatureWorks™ PLA ultimately reflects the sustainability of agriculture. Cargill Dow is joining with Sustainable Agriculture experts to develop systems and standards for further improving agriculture practices to yield sustainability benefits at the "cradle" stage of the NatureWorks™ PLA supply chain.

Cargill Dow has created a Source Offset Program to create a platform for a transition to greater reliance on sustainably produced agricultural feedstocks in the very near future. The Source Offset Program gives customers the option to extend the reach of their NatureWorks™ PLA purchases by sourcing specialty feedstock corn (the corn is eventually milled into dextrose and Cargill Dow uses the dextrose to produce PLA polymers). Founded on principles commonly understood under the concept of green procurement, Cargill Dow's Source Offset Program takes inspiration from the marketplace to create a new family of complementary products to deliver even more powerful options to customers. The Source Offset Program empowers customers to support GM-free agriculture, to support the transition to organic farming and, in 2003, to support more sustainable agriculture through an effort called "The Third Crop Network." The program operates much like an electricity green pricing programs, and gives customers the opportunity to directly change the way agriculture is conducted in the United States—at a rate equivalent to about 1 acre (4.05 m^2) for every 3,000 lbs. (1361 kg) of NatureWorks™ PLA utilized.

The Products or Services

- NatureWorks™ PLA is fundamentally about substituting annually renewable agricultural feedstocks for finite petroleum raw materials for polymers.
- Cargill Dow is creating markets for more sustainably produced agricultural products.
- Cargill Dow is creating industries based on the more effective utilization of agricultural biomass feedstocks.
- Cargill Dow is committed to greater utilization of "green" energy, including wind power for electricity and biomass for thermal energy requirements.
- Cargill Dow is helping raw material suppliers to realize the benefits of life-cycle analysis of their products and services.
- Cargill Dow is helping customers realize the benefits of expanding green procurement markets by ensuring that the environmental integrity of NatureWorks™ PLA products are not compromised through the use of dangerous or environmentally damaging substances.

The Results

NatureWorks™ PLA delivers equivalent or superior performance in fibers, film, and packaging applications with 30–50% less greenhouse gas emissions than comparable petroleum-based materials. NatureWorks™ PLA contains no toxic chemicals or heavy metals, and poses no threat to the ozone layer or to human health. Cargill Dow's PLA business creates new opportunities for farmers, agricultural communities, and the fibers and packaging industries supported by customers. Please visit <http://www.cargilldow.com> for more detailed information.

Lessons Learned

Cargill Dow does not consider its products as part of a linear value chain from raw material to finished product and ultimate disposal. Instead, Cargill Dow views its products as part of a cyclic materials system and thus, the company recognizes that opportunities for greening the supply chain run "up," "down" and also "sideways" on the traditional supply chain.

Cargill Dow's NatureWorks™ PLA product represents the first large-scale bioindustrial raw material for synthetic fibers and plastics applications. Much work remains to be done to create the full panoply of supporting technologies and systems. However, Cargill Dow's efforts to date demonstrate a significant opportunity to create markets for improved sustainability performance in markets and products—fibers, packaging, films and chemical intermediates—where such options simply did not exist even a few years ago. Moreover, the success of NatureWorks™ PLA to date suggests a real opportunity to link customer sustainability preferences directly to agricultural practices.

Current Status and Program Future

Cargill Dow is also developing the technology to facilitate a transition to biomass sources. That is, instead of relying on fermentable sugars from the kernels of the corn, Cargill Dow will develop technology to utilize cellulose in the stalks and husks of corn and other crops. Today these stalks and stems and other materials are commonly considered "agricultural residues," and yield little value to farmers. Utilization of biomass feedstocks means Cargill Dow will have an exciting opportunity to "green" its energy supply by using the lignin naturally occurring in biomass as a source for thermal energy. Farmers who produce biomass feedstocks under sustainable agricultural production standards and for conversion into Cargill Dow's PLA polymer will simultaneously be producing more valuable and sustainable grain crops for food and feed markets. Cargill Dow sees itself having a vital role in facilitating markets for more sustainable, greener grain crops that will in turn enable other companies to green their supply chains more economically than otherwise possible.

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Marine Stewardship Council's Ecolabeling of Seafood

Main Overall Message

The world catch of wild fish for human consumption increased from 20 to 95 million tons between 1950 and 2000. As a result, there is an increasing demand to exploit known fish stocks as well as find and develop new stocks. However, it is generally agreed that fish stocks worldwide have declined in the past several decades.

In response to these pressures, the World Wildlife Fund (WWF) teamed up with Unilever, the multinational corporation, to create the Marine Stewardship Council (MSC) in 1997 (which then became independent in 1999). The MSC has developed a logo to tell consumers that their purchase supports well-managed and sustainable fisheries and has not contributed to the environmental problem of overfishing. Seven fisheries have been certified worldwide since 2000 and there are now 131 MSC-labeled product lines on sale in 10 countries.

Although the MSC certification program is relatively young (2000), distributors, supermarkets and producers have realized some initial benefits. This case study will highlight these briefly.[40]

The Process

MSC is a nonprofit, nongovernmental, international organization established to promote sustainable fisheries and responsible fishing practices worldwide. The goal of the MSC is to provide a market-based set of incentives for better management of the world's fisheries to achieve sustainable seafood production. Only products from fisheries certified to the MSC's environmental standard can display the MSC logo. This environmental standard recognizes that a sustainable fishery should be based upon environmentally responsible fishing practices which maintain the biodiversity, productivity and ecological processes of the marine environment in which the fishery is based. The standard is composed of three principles:

Principle 1:
A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.
Principle 2:
Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.
Principle 3:
The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.

The Products or Services

The MSC promotes equal access to its certification program irrespective of the size, scale, type location or intensity of the fishery. To date, seven fisheries have been certified:

[40] Much of this case study is drawn from *Early Indications of Market Impacts from the Marine Stewardship Council's Ecolabeling of Seafood.* Cathy A. Roheim, Department of Environmental and Natural Resource Economics, University of Rhode Island, USA.

- Western Australian Rock Lobster
- Alaskan Salmon (US)
- Thames Herring (UK)
- Burry Inlet Cockles (UK)
- New Zealand Hoki
- South West Mackerel handline fishery (UK)
- Loch Torridon Nephrops Creel Fishery (UK)

Seven other fisheries are currently undergoing assessments in the United States, Canada, South Africa, Mexico, Chile and the North Sea.

The Results

Some of the largest supermarket corporations around the world are supporting the MSC program, carrying MSC-labeled product in their stores and doing major promotions of these seafood products. The foodservice sector has also begun adopting MSC-labeled seafood products. The Unilever Corporation is involved in selling MSC-labeled seafood (New Zealand hoki and Alaska salmon under their Iglo brand in Continental Europe and New Zealand hoki under their Birds Eye brand in the UK and the Republic of Ireland).

Supermarkets

In the US, **Whole Foods Market** is the nation's leading natural foods grocer, currently selling MSC-labelled products in more than 130 stores nationwide. Whole Foods' vice president, Ms. Margaret Wittenberg, is quoted in the MSC annual report for 2001/2002 as stating, "We applaud the MSC certification program, as it gives our customers confidence that purchasing seafood from certified sustainable fisheries will not contribute to overfishing or the harming of marine ecosystems." Certain MSC-labeled products are also available in Wild Oats supermarkets, through *Norm Thompson* holiday catalogs, from SeaBear, Vital Choice Seafoods and Wildcatch.

Delhaize, a supermarket chain based in Belgium, has the third-largest number of supermarkets in New England (**Hannaford Brothers**) with 86 stores and 9% of the market. Delhaize sells many environmentally responsible products in the US and in Belgium (117 supermarkets, 183 affiliated supermarkets and 148 smaller neighborhood grocery stores). Delhaize currently have three MSC-labeled product lines (two for Alaska salmon and one of New Zealand hoki). The chain also carries Forest Stewardship Council (FSC)-labeled wood products, organic and fair trade products. Eighty-five percent of Delhaize's product turnover comes from abroad, predominately in the US.

Two leading supermarket chains in the UK, Tesco and **Sainsburys**, competed to become the first to have the newly-certified products on their shelves. Sainsburys, the UK's largest fish retailer, was an early supporter of the MSC and the first UK supermarket to stock MSC-labeled seafood products. Turnover in MSC-certified fish increased by 25% last year. A recent article in *Green Futures*[41] reported that Sainsburys is helping test the market for sustainable tuna (which comprises 4% of Sainsburys' fresh fish sales) and is funding research on the potential to certify commercially-exploited species (yellowfin and skipjack tuna) in the Pacific region. Marks and Spencer currently sells three MSC-labeled products (breaded NewZealand hoki, smoked Alaska salmon and fresh Southwest mackerel), but do not stock cockles and herring because they believe that there are no customers for this type of product.

Food Service Sector

In the foodservice sector, there has been a growing interest in the MSC program. For example, in the UK, restaurants of the Little Chef chain display the MSC logo to highlight their New Zealand hoki meal option.

[41] *Green Futures.* November/December 2002, pg. 50.

Current Status and Program Future

Market effects of the MSC program include:

- Increased interest from retailers and restaurateurs in carrying MSC-labeled seafood products;
- Creation of new brands for these products such as 'Fish for Life' by Youngs Bluecrest;
- Penetration by products into markets previously unavailable to them;
- Increases in prices and market shares; and
- Improvement in the reputation of the fisheries overall.

Major markets for the products are in developed regions such as Australia/New Zealand, North America and Europe, but certification of sustainable fisheries is ongoing in developed and developing nations. Programs have emerged to provide funding for the certification process of developing nations' fisheries. The future market for MSC-labeled seafood products looks bright, particularly as more products from certified fisheries becomes available.

In summary, consumer access to MSC-certified products is growing. Many seafood buyers for grocery corporations have indicated that they look forward to when there is a wider choice of MSC-certified products available so that they can increase the range of offerings to their customers. To this point it appears that there is receptiveness of the MSC products in the market, which bodes very well for the future of certified seafood.

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4 The Business Case

This section outlines the main drivers and business case for private and public sector organizations to implement green procurement. Examples are drawn from section **3 Success Stories**, case studies published by the US EPA, Center for a New American Dream (CNAD), International Council for Local Environmental Initiatives (ICLEI), Consumer's Choice Council and information from the Product Sustainability Roundtable.[42] Information was also gathered through interviews with representatives from the above organizations and several private sector companies.

The Business Value for Organizations

In general governments and private companies cite these benefits of green procurement practices:

- Cost avoidance—lower waste management fees, lower hazardous material management fees, less time and costs for reporting;
- Savings from conserving energy, water, fuel and other resources;
- Easier compliance with environmental regulations;
- Demonstration of due diligence;
- Reduced risk of accidents, reduced liability and lower health and safety costs;
- Support of environmental/sustainability strategy and vision;
- Improved image, brand and goodwill; and
- Improved employee and community health through cleaner air and water, less demand for landfill and less demand for resources.

Measuring and communicating these benefits can provide significant incentive for organizations (public or private) to adopt green procurement practices.

Cost avoidance

The procurement of environmentally preferable products can lower waste management fees, lower hazardous material management fees, reduced spending on pollution prevention. For example:

- The **US Department of Defense's** Aberdeen Proving Ground now purchases environmentally preferable paint that costs $1.76 less per gallon. In addition, APG saves the costs of reporting, handling, storing and disposing unused paint as a "hazardous material."
- **Lee County's** Fleet Management Department in Florida, USA, no longer generates hazardous waste by purchasing alternative vehicle fluids and cleaners. The county saved $16,800 each year by eliminating hazardous waste disposal fees (this amount is equivalent to approximately $1400 saved per vehicle managed).
- The **Port of Seattle**, for example, cleaned up procurement procedures for aviation maintenance materials by eliminating products without Material Safety Data Sheets and dropping redundant chemicals. As a result, dangerous waste disposal costs were cut 90 percent in two years.
- **Bank of America's** green procurement program in 1997 reduced the number of vendors it dealt with and while also reducing paper consumption. The latter initiative is credited with savings estimated at $14 million in 1999.

[42] The Product Sustainability Roundtable (PSRT) is a North American and European forum for corporate leaders in sustainability, managed by Five Winds International. The Roundtable represents a broad spectrum of organizations throughout the industrial supply chain, enabling the exploration of practical approaches to implementing sustainable strategies.

Savings from conserving energy, water, fuel and other resources

Energy, water and resource efficient products, buildings and vehicles and can significantly reduce utility bills and operating costs. For example:

- **Multnomah County** in Oregon, USA, reduced its annual power consumption and saved $335,000 on its electric bill—equivalent to 15 percent of the County's electricity bill—by replacing outdated technology with energy-efficient equipment, including Energy Star products.
- **Interface Inc**. has used life-cycle studies and supply-chain communication to enhance performance of its product, improve material efficiency and reduce operational costs.
- **New York City Transit** estimates an annual savings of $60,000 by installing photovoltaics on its Stillwell Avenue intermodal terminal and thus avoiding purchase of energy from the grid.

Easier compliance with environmental regulations

Environmentally preferable products, processes or services that utilize less toxic and hazardous materials or reduce harmful emissions, can help organizations avoid expensive local permitting applications or environmental approvals from local/regional governments. This is of particular relevance to organizations with process, manufacturing or service facilities. For example:

- **Canyon Creek Cabinet Co**. avoided the costs of applying for and attaining a "Title V" air operating permit by switching to a water-borne finishing system for the cabinets.[43]
- **Daimler Chrysler's** life-cycle management and full cost tracking of materials and substances have resulted in an estimated cost avoidance and savings of $22M while avoiding sending 400 tons of waste to landfill.[44]

Reduced risk of accidents, reduced liability and lower health and safety costs

Companies who use environmentally preferable products, materials or substances can improve worker health and safety while also reducing health risks and liability. Organizations can also reduce costs by avoiding listed (toxic) substances, thus eliminating reporting, training, handling, storing and disposal requirements.

For example:

- **Cape May County** in New Jersey, USA, saved $45,000 by reducing its use of chemical insecticides and herbicides. Potential savings also exist for reducing the use of many pesticides.
- **The Center for a New American Dream**, citing statistics from **INFORM** and the **Western Regional Pollution Prevention Network**, reports that improving indoor air quality through, for example, better ventilation, better cleaning, and the use of safer cleaning products, could improve worker productivity between 0.5 and 5 percent, an annual productivity gain of $30 billion to $150 billion.[45] Also, workers' compensation data from Washington State indicate that six out of 100 janitors are injured on the job by cleaning chemicals every year at a cost of $725 in medical expenses and lost time per reported injury.[46]

Support of environmental/sustainability strategy and vision

Governments have used green procurement as part of their role to promote environmentally responsible products and services. Private organizations see green procurement as a means of improving both environmental and social performance. For example:

- **New York City Transit** has adopted the "Sixth Pillar of Performance" in their Department of Capital Program Management to demonstrate environmental leadership within the public and private sector in New York State.

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[43] PPRC. 1999. *Sustainability & Green Procurement: Getting down to brass tacks*. Pacific Northwest Pollution Prevention Resource Center. Online: <http://www.pprc.org/pprc/pubs/newlets/news1199.html>.

[44] Rowlege, Barton, Brady. 1999. *Mapping the Journey*. Greenleaf, London, pp 182–183.

[45] <http://www.informinc.org/cleanforhealth.php>.

[46] <http://www.westp2net.org/Janitorial/jp4.htm>.

- **The Municipality of Kolding, Denmark** has purchased €4.40 million worth of green products, which amounts to 30% of money spent on purchasing in 2000.

Improved image, brand and goodwill

Organizations that have eliminated listed (toxic) substances from their products and production, such as Interface, may also benefit from positive coverage in the media and strengthen cooperative relations with suppliers in developing alternatives.

- **Interface Flooring** was profiled on CNN, CBC and in a number of magazines and newspapers in Canada and the US, due to the company's environmental and supply-chain efforts.
- A small chain of **Midas** auto repair shops in Seattle has green buying as part of its customer satisfaction strategy.[47] As a result, the shops have replaced hazardous vehicle fluids and cleaners with less hazardous substitutes.

Improved worker and community health through cleaner air and water, less demand for landfill and less demand for resources

High indoor air quality can improve worker productivity. For example:

- In the **Pentagon**, enhanced indoor air quality is expected to increase worker productivity by 6 percent and thus save $72 million dollars per year.[48]
- **SARI** (French building manager) has recently partnered with **Carrier** to implement new UV/PCO air conditioning systems that improve indoor air quality. SARI anticipates improvements in tenant satisfaction and worker productivity.

How Benefits are Measured

There are increasing pressures to measure and report the success of green procurement programs. Within the organization, this pressure is more likely to be from purchasing groups themselves rather than from senior management. These groups want to quantify and track the benefits in order to be able to continue and expand the green procurement programs. There are several methods currently being used to measure benefits of green procurement:

- **Measuring direct cost savings.** It is possible to measure the cost savings from green procurement using traditional financial data. For instance, traditional costing data on energy (manufacturing or operational), landfilling, raw materials purchased, money spent on paper or office equipment, and for hauling waste. Procuring products that will increase or decrease any of these factors should be reflected in financial reporting. The Bank of America established baselines for measuring decreases in paper consumption and increases in the use of recycled-content paper.

- **Estimating environmental benefits.** Some organizations, such as New York City Transit, use publicly available data sources to estimate the environmental benefits/savings of their green procurement efforts (e.g., kg of CO_2 emissions avoided). Other measures include tons of waste diverted from landfill, number of listed (toxic) substances eliminated and reduction in water consumption.

- **Reporting dollars spent. S**ome organizations are reporting "dollars spent" as a measure of green procurement: i.e., dollars spent on green energy, recycled content paper or environmentally

[47] The shops are run by Scott Mafune, as cited in a report by PPRC. 1999. *Sustainability and Green Procurement: Getting Down to Brass Tacks*. Pacific Northwest Pollution Prevention Resource Center. Online: <http://www.pprc.org/pprc/pubs/newlets/news1199.html>.

[48] US EPA. 1999. Online: <http://www.epa.gov/oppt/epp>. Or: PPRC. 1999. *Sustainability and Green Procurement: Getting Down to Brass Tacks*. Pacific Northwest Pollution Prevention Resource Center. Online: <http://www.pprc.org/pprc/pubs/newlets/news1199.html>.

preferable paint (e.g., Aberdeen Proving Ground and Municipality of Kolding). These may be documented in reports so they may be tracked on a regular basis. There are two challenges with this method:

- First, data are not easy to obtain. For many public and private sector organizations, purchasing is decentralized amongst several operations or departments, making it difficult to collect aggregate data around product specific purchases (e.g., dollars spent on paper).
- Secondly, dollars spent cannot easily be translated into quantitative environmental or economic benefits to the organization or the community in which it operates. The dollars spent figure, however, can be used to measure the "green procurement" percentage of overall purchases by an organization.

- **Estimating hidden costs and potential savings.** Total cost of ownership and life-cycle costing tools provide a means towards estimating potential benefits (e.g., reporting, material handling, disposal), however, purchasing departments are often ill equipped to conduct such calculations. These calculations often require an in-depth knowledge of the products being procured and how they are used and disposed of.

Why Now?

There are a number of reasons why green procurement should continue to be promoted within North America:

- **Stimulating new product and service innovation for the markets of the 21st century.** There is growing activity in organizations to identify and address environmental impacts of their products and processes. Leading companies are seeking out opportunities for innovation, product improvement and process efficiency to increase customer satisfaction, shareholder value and open new markets. Efforts to create new, innovative products and services with reduced environmental impacts (and markets for environmentally responsible products and services) can be stimulated by widespread green procurement activities.

- **The number of environmentally preferable products and services are increasing.** Ecolabels, national-level standards, multi-country initiatives (e.g., the Nordic Swan and the Euro-Flower) and global initiatives (such as the Forestry Stewardship and the Marine Stewardship Councils) have made it easier to start green procurement initiatives.[49] Ecolabeled products simplify purchasing decisions for consumers and organizations that want to purchase products of a verified environmental performance standard.

- **Opportunities for collaboration.** Many private sector organizations are working to improve the environmental performance of their products and services and are defining environmental and sustainability strategies of their own. In this stage of development and learning, governments can work with suppliers to understand environmental impacts, align environmental priorities and influence each other's programs by sharing experiences, information and improving the overall supply chain performance.

- **Interest by the investment community and lenders.** The investment community is becoming increasingly interested in the environmental and social performance of companies (e.g., Dow Jones Sustainability Index and fund managers). A number of rating schemes to evaluate this performance include green procurement criteria. Other stakeholders such as communities, customers, advocacy groups and shareholders are pressuring governments and private firms for

[49] Organisation for Economic Co-Operation and Development. 2002. *Recommendation of the Council on Improving the Environmental Performance of Public Procurement.* <http://www.oecd.org>.

environmentally responsible decision-making. This pressure is increasing as more information becomes available and awareness of environmental issues increases. Along with the high risks of earning poor public opinion and a bad reputation, public and private organizations are increasingly aware that the definitions of product liability and risk are expanding.

- **Avoiding future regulations.** Green procurement is a proactive means of stimulating sustainable production and consumption. An alternative to this proactive, "self-policing" approach is often regulation of procurement practices. Regulation is more costly for organizations and less flexible than self-directed programs. Overall, regulatory means can be slower and less effective in stimulating environmentally and socially aware purchasing, and growing the market for green products.

Challenges

Several challenges exist for public and private sector organizations in implementing and stimulating green procurement programs in North America:

- **Mis-informed advocacy groups.** One important challenge to green procurement as a whole is that well-intentioned environmental groups may not understand the full picture and will send conflicting messages. This can lead to frustration on the part of procurers and undermine the effort. There appears to be a need to facilitate communication among environmental groups to ensure that their advocacy efforts send a consistent message to procurement officers (i.e., education on what *is* an environmentally preferable car, paper, etc.).[50]

- **Lack of clear definitions.** Many procurement professionals and their organizations are still unaware, uncertain or struggling to define the term "environmentally preferable." This becomes particularly difficult when organizations need to balance multiple environmental attributes in their decision-making.

- **Integration into management systems.** Decentralized organizations require consistent management systems to ensure consistent application of environmental initiatives. Many green procurement activities in the public sector have been bottom-up, initiated by small groups or individuals. Integrating green procurement activities within a quality or environmental management system can help ensure objectives, targets and measurement procedures are established throughout an organization.

- **Educating marketing and sales professionals.** For companies who are selling and marketing green products, educating sales people about the environmental attributes of a product or services is a challenge. This is especially important in industries with high employee turnover. Stimulating customer demand for environmentally preferable products is key, but if employees are not actively communicating this information, much opportunity to raise consumer awareness is lost.

- **Potential barriers to trade.** Globalization and international trade issues pose potential barriers to establishing procurement programs for both governments and private firms. Eco-labels have in the past, and likely in the future, will be discussed as a "barrier to trade" issue. There have been instances where eco-labeling has been designed to support certain products within specific markets (e.g., the overwhelming demand by consumers in the UK for labeling of GMO foods). As a result, labeling organizations tend to use clear, science based, environmental criteria when establishing their programs. For instance, the Municipality of Kolding, Denmark, cannot request that products have an ecolabel (such as the Nordic Swan or the EU flower) when designing calls for tenders with environmental criteria. This is because such requests would not comply with the

[50] Case, S. 2002. Personal Communication. 25 November 2002.

World Trade Organization's *Government Procurement Agreement* and European Union legislation on free market and equal opportunities. Instead, municipalities can specify environmental requirements similar or identical to those required by an ecolabel. It is important to note a recent report by the CEC group on "Green Procurement in Trade Policy" which concludes that agreements such as the Uruguay Round Agreements, the North American Free Trade Agreement (NAFTA) and the Free Trade Area of the Americas (FTAA) do not pose serious barriers to green procurement in North America.[51]

- **Changing the first cost mindset.** A key challenge identified by many public and private sector organizations is changing behavior with the purchasing departments. In many instances, procurement is based on established supplier relationships, personal or brand preferences. First cost as the prime decision factor in purchasing. Many public sector organizations do not have purchasing practices that factor in total cost of ownership, or full life-cycle costs of the organization. Providing information and tools that will change these behaviors to favor environmentally preferable products will be key to overcoming the status quo.

- **Insufficient and incomparable environmental information.** There is often not enough environmental information available on certain products (e.g., Interface requires information on embodied energy of supplied materials, which most suppliers do not have). Making this information available in a manner that is relevant to procurement officers, procurement specifications and their decision-making processes is a further challenge. For instance, the Bank of America had to work hard to convince a standards-setting committee for the financial industry to accept recycled paper for checks and other encoded banking documents.[52]

[51] Early, J. 2003. *Green Procurement in Trade Policy. 19 p.* Montreal: CEC

[52] PPRC. 1999. *Sustainability and Green Procurement: Getting Down to Brass Tacks*. Pacific Northwest Pollution Prevention Resource Center. Online: <http://www.pprc.org/pprc/pubs/newlets/news1199.html>.

5 Conclusions

Through the collection of the success stories, information gathered through interviews with various private and public organizations, and publications, it was noted that green procurement initiatives in North America are underway at various levels of government as well as in private businesses. Governments are realizing the benefits of green procurement practices such as cost savings from reduced energy consumption, resource use, and material management. They also reap more qualitative benefits such as improved image and achieving policy/program objectives. In the private sector green procurement is seen as a means towards improving their products and operations from environmental perspective to reduce risk, total cost of ownership and improve supply chain performance. Despite the slight differences in benefits, green procurement activities in both the public and private sectors take four main approaches:

- Procuring eco-labeled products or services
- In-house product/service evaluations
- Third-party product/service evaluations
- Supply chain initiatives

It was also noted that these approaches are often initiated from the bottom-up within administrative, procurement, environmental or operational departments of governments and private firms. Green procurement activities in both the public and private sector often rely on established product standards, labels and certifications that declare the environmental attributes or performance of the product. While the information provided by product labels and certifications is much better than it was a decade ago—when they were primarily focused on individual consumers—there is potential for confusion as the number of labels on individual products increases. Clarification and harmonization of labeling standards and claims between national governments, labeling and standards organizations are seen as an important opportunity to promote further adoption of green procurement by government purchasers.

In the private sector, green procurement trends are somewhat different. Driven by bottom-line performance, leading private sector firms are finding green procurement initiatives are a logical part of effective purchasing and supply chain management practices. Private businesses tend to use in-house and third-party evaluations along with supply chain initiatives in their green procurement activities. Measuring total cost of ownership is enabling businesses to work with their suppliers to optimize product and operational performance, build secure buyer-supplier relationships an improve supply chain performance. Private businesses however are reluctant to establish green procurement activities unless there are clearly demonstrated business benefits for themselves and/or their customers.

The success stories cited in this paper and other green procurement resources attest to the clear business reasons and tangible benefits for public and private organizations to establish green procurement activities. Many organizations have achieved either monetary savings or avoided costs related to the purchasing, using, handling and disposing of specific products. While there are a number of other quantifiable benefits measured from green procurement, cost savings and risk reduction are perhaps the most universal across all types of industries and organizations. Other organizations have achieved more qualitative benefits such as improved image, brand or ability to meet policy commitments. This is of note in business and public sector climate that is increasingly influenced by the public, nongovernmental organizations and employees that are well informed and educated around the environmental and social issues related to products and services.

Effective communication of benefits using terminology that governments and private businesses understand is important for continued growth of green procurement activities in North America. Specifically, documented cost avoidance and cost savings achieved by specific programs are crucial to

breaking down the "first cost" mindset of procurement practitioners. In the private sector, the potential to reduce the frequency/severity of accidents, reduce liability and material handling and disposal costs are important benefits to communicate. The interviews and success stories indicated that organizations tend to use four key ways of measuring the results and benefits of green procurement programs: measuring direct cost savings; estimating environmental benefits; reporting dollars spent; estimating hidden costs and potential savings. Tracking and measuring of green procurement activities and benefits is an area for further emphasis at various levels of government and within the private sector.

The interviews and success stories revealed several common challenges for procurement practitioners and organizations supporting/promoting green procurement. Among these, four key challenges are common to both public and private sector organizations:

- Overcoming the "first cost" mindset and shifting towards a total cost of ownership view that includes purchase, use, handling, storage, transport and disposal costs;
- There is often insufficient information on the environmental performance of procured products to use in purchasing decisions;
- There is a lack of proper integration of green procurement activities into existing management systems (environmental, quality, etc.) often resulting in isolated green procurement initiatives; and
- "Environmentally preferable" or labeled products can potentially be seen to create barriers to international trade.

There are several areas that need further attention in the coming years to continue fostering green procurement within North America:

- Continuing education and awareness on the business case, success stories and best practices for green procurement, including networking between practitioners, domestic and international government agencies, and between private and public sector organizations.
- Promoting, adopting and expanding existing product/service standards and procurement criteria among government procurement practitioners.
- Further international cooperation to share standards and procurement criteria between labeling and standards organizations. This would help to promote mutual recognition and equivalency of labels and standards.
- Explore and focus education and discussion on how to "green" procurement activities can be integrated into existing environmental and quality management systems by private and public sector organizations.
- Providing simple tracking and measurement techniques to quantify and help communicate the benefits of green procurement activities. There is a need for measuring and reporting that enables products and services to be compared and enables private and institutional investors, as well as the banks and insurance agencies, to use the information.

In summary, there are many success stories that describe specific benefits and opportunities of green procurement in North America. A range of resources and organizations exists to assist both the public and private sector in adopting green procurement practices. Such practices often vary, and depend on the service, product, resource, material, substance or commodity being purchased. Integrating environmental, health and safety aspects of products/services into the procurement process (and weighting them accordingly), alongside the traditional criteria of cost, quality, safety and technical performance continues to be the major challenge with both public and private sector organizations.

Appendix I Environmental Attributes of Products

Several key environmental attributes of products are outlined in the table below. In addition to this table, information on environmental attributes can be found in an EPP Guide from the US EPA entitled *The EPA's Final Guidance on Environmentally Preferable Purchasing*., Appendix B (available online at <http://www.epa.gov/oppt/epp/guidance/finalguidanceappx.htm#> AppendixB).

Environmental Attribute	Rationale & Benefits
Toxic material and hazardous substance content	Reducing or eliminating such content in the product/service or its maintenance can significantly reduce risks for workers, customers and end-of-life processors (e.g., reprocesses, dismantlers, etc.).
Biodegradability	The ability of the product or its component parts to biodegrade can affect the health of local or regional ecosystems. Considering biodegradability can lead to reduced risk and liability while reducing waste handling and/or treatment costs.
Recyclability	How readily the product, its components, or materials can be recycled can affect opportunities for recovering value inherent to the products materials, components and substances. Recyclability also affects how easily hazardous or toxic materials can be collected at end-of-life.[53]
Recycled/renewable material content	Including recycled or renewable materials in components or products can save resources, cut costs, meet customer demands, and allow certain organizations to gain tax rebates.[54]
Emissions to air, land and water	Specifying materials, substances or chemicals with lower emissions can help reduce the capital costs associated with pollution prevention equipment, reduce health and safety risks and costs, provide opportunities to sell emissions credits, and improve the local and global environment. Other benefits include reduced permitting and compliance costs.
Waste associated with product/service	Minimizing the waste generated during processing, production, maintenance, operations and end-of-life can help reduce waste hauling, land filling and pollution prevention costs.
Energy consumption	Optimizing or minimizing energy consumption during the use, maintenance, operational and end-of-life stages can provide savings for the customer and service organizations.
Resource and/or land use	Efficient resource and sustainable land-use practices directly affect the security of supply, the organization's license to operate, community relations and brand image.

[53] It is important to note that there is debate over how recyclability can actually be assessed, measured or quantified.
[54] The State of Missouri provides tax rebates to companies selling products that contain a certain percentage of recycled materials.

Appendix II Green Procurement Programs in North America

The Commission for Environmental Cooperation of North America (CEC) is involved in a trinational network of organizations that plays a coordinating role to help bring together the different groups involved in green procurement in North America, called the North American Green Purchasing Initiative (NAGPI). As one small part of their work, NAGPI is beginning to compile a list of organizations that have green procurement programs and organizations that support green procurement initiatives. The list should serve as a resource for green procurement practitioners and advocates.

Private Sector Organizations

Organization	*Program Name and Type*	*Contact Information and Web Site*
Staples	Environmental Paper Procurement Policy	Owen Davis Public Relations +1 (508) 253-8468 <http://www.staples.com/products/centers/recycle/>
Home Depot	Wood certified under Forestry Stewardship Council	<www.homedepot.com/environment/forestry>
Starbucks	Commitment to Origins, Purchasing certified coffee	<http://www.starbucks.com/aboutus/origins.asp>
Ikea	The IKEA Way on Purchasing Home Furnishing Products	prco@memo.ikea.com <http://www.ikea.com/about_ikea/code_of_conduct/suppliers.asp>
Aveda	Purchase bio-industrial products using Standard for Sustainable Agriculture (by Institute for Agriculture and Trade Policy)	Mary Tkach mtkach@aveda.com
Cargill Dow LLC	Purchase bio-industrial products using Standard for Sustainable Agriculture (by Institute for Agriculture and Trade Policy)	Karl Rabago karl_rabago@cargilldow.com

International and Federal Government Programs

Governmental Organization	*Program Name and Type*	*Contact Information and Web Site*	*Other Notes*
World Bank	Environmentally and Socially Responsible Procurement	Maureen Moore tel. (202) 473-6518 mmoore@worldbank.org	
US Dept of Army's Aberdeen Proving Ground	Environmentally Preferable Purchasing—Paint	US EPA EPP Program epp.pilot@epa.gov	
Yellowstone & Grand Teton National Parks	Environmentally Preferable Janitorial Products		
US EPA Office of Administration & Resource Mgmt.	EPP Goals for 2005 and 2010, within Executive Order 13101	Terry Grist Office of Solid Waste – MISWD Marjorie Buchanan OARM – FMSD	Includes goals for purchasing environmentally preferable building materials, office and janitorial supplies, electronics, fleets, power and others
Mexican Coffee Growers	Certified Organic, Certified Fair Trade or Shade Grown Coffee	Willem J. Boot Boot Coffee Consulting and Training wboot@bootcoffee.com Armando Bartra Instituto Maya circo@laneta.apc.org	Most certified coffee producers in Mexico are organized in cooperatives
Environment Canada	Environment Canada's Green Purchasing Policy	<http://www.ec.gc.ca/eog-oeg/greener_procurement/Greener_Procurement.htm>	

State and Local Government Programs

Governmental Organization	*Program Name and Type*	*Contact Information and Web Site*	*Other Notes*
State of California, Dept. of General Services, Procurement Division	Green Procurement Project	Earl Santee tel. (916) 375-4423 Earl.Santee@dgs.ca.gov	Establishing comprehensive program of EPP
Commonwealth of Pennsylvania, Department of Environmental Protection	Green Lodging Program	Libby Dodson tel. (717) 772-8907 ldodson@state.pa.us <http://www.dep.state.pa.us/dep/deputate/pollprev/industry/hotels/default.htm>	24 hotel properties have been certified by Green Seal for employee travel and meetings
Commonwealth of Virginia, Department of Environmental Quality	Environmental Lodging	Tom Griffin tel. (804) 698-4545 rtgriffin@deq.state.va.us <http://www.deq.state.va.us/p2/lodging/>	Showcases 20 hotels and provides an audit of several of them
Vermont Agency for Natural Resources	Vermont Green Hotels Program	<http://www.vtgreenhotels.org/>	Lists numerous properties that meet program's standards
Commonwealth of Massachusetts	Environmentally Preferable Products Procurement Program	Marcia Deegler Operational Services Division (617) 720-3356 <http://www.state.ma.us/osd/enviro/enviro.htm>	
California Dept of General Services & California Integrated Waste Mgmt Board.	State Agency Buy Recycled Campaign	State Agency Buy Recycled Campaign (916) 341-6483 sabrc@ciwmb.ca.gov	Joint effort to implement law requiring state agencies and legislature to purchase products with recycled content
Oregon State Government, Dept of Administrative Services	Executive Order EO-00-07 on Development of a State Strategy Promoting Sustainability in Internal State Government Operations	Cam Birnie Transportation, Purchasing and Print Services Division, Dept of Admin Services (503) 378-4643 Cam.Birnie@state.or.us	EO includes actions to purchase electrical energy from renewable resources such as wind, solar, geothermal and biomass
State of Wisconsin, Bureau of Procurement	Vendor Net System, “buy recycled only” paper policy	David Radisewitz Bureau of Procurement (608) 266-2313 david.radisewitz@doa.state.wi.us <http://vendornet.state.wi.us/vendornet/recycle/index.asp>	Includes state agencies and university campuses

Governmental Organization	*Program Name and Type*	*Contact Information and Web Site*	*Other Notes*
City of Toronto		Lou Pagano, Purchasing and Materials Mgmt Division City of Toronto lpagano@toronto.ca	
Phoenix, Arizona	Hazardous Materials Purchasing Program	<http://www.ci.phoenix.az.us/P2/index.html>	
New York City, New York	Good Wood Legislation (Int. No. 108) for NY City Agencies	Ned Daly Consumer's Choice Council (202) 785-1950 daly@attglobal.net	Covers building materials
New York City, New York	NYC Wastele$$, Environmental Preferable Purchasing	<http://www.nycwasteless.org/gov/epp.html>	
City of Santa Monica, California	Purchasing Policies and Ordinances	Environmental Programs Division at (310) 458-2255	Cover several products and services
City of Chicago, Illinois and Local Government Power Alliance	Purchasing Clean Power		City will purchase 20% of power (80MW) from renewable sources by 2006
King County, Washington	Environmental Purchasing Program	Eric Nelson King County Procurement and Contract Services (206) 263-4278 eric.nelson@metrokc.gov <http://www.metrokc.gov/procure/green/>	Covers several product categories
Lee County, Florida, Fleet Management Department	Identifying and locating products to replace petroleum-based cleaners and certain automotive fluids	Dale L. Nottingham Lee County Environmental Services Division (941) 479-8126 nottingd@bocc.co.lee.fl.us	No formal green procurement policy, but growing interest among county departments
Cape May County, New Jersey	Integrated Pest Management	Harry E. Kehr Dept. of Facilities and Services (609) 465-1296	Saved nearly $45,000 by reducing chemical usage
Multnomah County, Oregon Department of Environmental Services	Multnomah County Energy Conservation Program, purchasing energy efficient equipment	Amy Joslin Multnomah County Dept of Environmental Services (503) 248-3322 amy.m.joslin@co.multnomah.or.us	No formal green procurement requirements, but encouraged by county board and financial returns
Colgate University, New York	Colgate University Green Purchasing	Barbara Walker Purchasing Dept (315) 228-7474 bwalker@mail.colgate.edu	

Governmental Organization	*Program Name and Type*	*Contact Information and Web Site*	*Other Notes*
		<http://offices.colgate.edu/purchasing/green_purchas.htm>	

Organizations Supporting Green Procurement Programs

Organization	*Program Name and Type*	*Contact Information and Web Site*
Pacific Northwest Pollution Prevention Resource Center	Topical Report on Environmental Purchasing, November 2002	http://www.pprc.org/pprc/pubs/topics/envpurch.html
Center for a New American Dream	Procurement Strategies Program	http://www.newdream.org/procure
National Association of Counties	Pollution Prevention Programs: Environmentally Preferable Purchasing	http://www.naco.org/programs/environ/pollution/purchas.cfm
National Pollution Prevention Roundtable's Environmentally Preferable Purchasing Workgroup		http://www.p2.org/workgroup/epp/
US Environmental Protection Agency	Comprehensive Procurement Guidelines Program	http://www.epa.gov/cpg
Green Seal		http://www.greenseal.org
Consumer's Choice Council		http://www.consumerscouncil.org
US Environmental Protection Agency and US Department of Energy	Environmentally Preferable Purchasing Program	http://www.epa.gov/oppt/epp
Institute for Agriculture and Trade Policy (IATP)	Sustainable Agriculture Certification Program for Bio-industrial Products	jkeinschmit@iatp.org http://www.iatp.org Newsletters (free) on procurement issues available at: http://www.iatp.org/listarchive, link to "market power"