

BEYOND REGULATION

Exporters and Voluntary Environmental Measures

Robert Kerr

Aaron Cosbey, International Institute for Sustainable Development

Ron Yachnin, The Conference Board of Canada

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**INTERNATIONAL INSTITUTE FOR
SUSTAINABLE DEVELOPMENT**

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**CANADIAN
ENVIRONMENTAL TECHNOLOGY
ADVANCEMENT CORPORATION -
WEST**



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Foreword

The International Institute for Sustainable Development is pleased to contribute to this timely analysis by publishing and distributing the results. The research has been conducted independently under the direction of the International Trade Advisory Committee (ITAC) Task Force on Trade and Environment, and has important connections to our ongoing work in at least two specific areas.

IISD's Business Program focuses on finding solutions for businesses concerned about their role in sustainable development. The types of voluntary initiatives analyzed here offer a tempting potential: mechanisms that are more flexible and cost-effective, which at the same time achieve environmental improvement. Case studies of the experience of Canadian and foreign firms with voluntary initiatives help us to more clearly characterize that potential.

The analysis goes further than previous work on voluntary initiatives by asking the question: what is the impact of such arrangements on the competitiveness of Canadian firms? This is a key area of interest for IISD's Trade Program, which seeks to ensure that trade and trade policies help to promote sustainable development. This book focuses on current developments in international trade policies and rules, assessing the threats and opportunities for Canadian firms in the use of voluntary initiatives by Canadians and by their competitors.

As the results of this research show, voluntary initiatives for environmental improvement are not a panacea. Like any regulatory or management tools, they need to be intelligently employed to achieve their full potential. We are confident that this work will help to achieve that potential; it is an important first step in determining where and how voluntary initiatives should be used in Canada to achieve the "win-win" outcome of increased competitiveness and environmental improvement.

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Table of Abbreviations

3P	Pollution Prevention Pays, a 3M program
ARET	Accelerated Reduction/Elimination of Toxics
CCPA	Canadian Chemical Producers' Association
CFC	chlorofluorocarbon
CPPA	Canadian Pulp and Paper Association
CSA	Canadian Standards Association
EMA	environmental management agreement
EMS	environmental management system
EPA	Environmental Protection Agency
EPDS	Environmental Profile Data Sheet
EU	European Union
GATT	General Agreement on Tariffs and Trade
GDP	gross domestic product
GHG	greenhouse gas
ISO	International Organization for Standardization
MEA	multilateral environmental agreement
NGO	non-government organization
ODS	ozone depleting substance
OECD	Organization for Economic Cooperation and Development
PCB	polychlorinated biphenyl
PPM	process and production methods
PVC	polyvinyl chloride
SME	small and medium size enterprise
SPS	sanitary and phytosanitary (issues of quarantine and public health)
UNCTAD	United Nations Conference on Trade and Development
UV	ultra-violet
VCR	Voluntary Challenge and Registry
VNRI	voluntary and non-regulatory initiative
VOC	volatile organic compound
WTO	World Trade Organization
WWF	World Wildlife Fund

Preface

This report explores how voluntary and non-regulatory approaches could be used more extensively in Canada to foster increased international competitiveness while simultaneously achieving environmental objectives.

Two trends stand out as significant over the last decade in their effects on the way business is done around the world. One is increasing globalization in which rates of growth in international trade are consistently outstripping growth in global product. With trade barriers rapidly falling and liberalization proceeding apace in developed and developing countries alike, many domestic industries are finding they have no choice but to become competitive at the international level.

The other is increasing concern worldwide for the environment, and the plethora of resulting domestic, international and non-governmental measures which impact on the conduct of business. At the international level, since the 1992 Rio Summit, numerous environmental agreements have been made. Multilateral agreements on forestry, chemical safety and biosafety are also in process. At the national level, environmental technical regulations have mushroomed. As well, non-governmental actions ranging from environmental labels to consumer boycotts have had an important impact on Canada's export markets.

During this period of unparalleled trade growth and unprecedented efforts to protect the environment, there has been a growing realization by experts and by leaders in industry and some government departments that traditional regulatory tools alone are not adequate. First, the job of environmental protection is tougher than anticipated. Second, there are tasks for which the tools were never designed, such as addressing the need to substantially reduce resource throughput. Third, in an era of deficit fighting and government downsizing, the expense and inefficiency of the regulatory approach have become issues. Fourth, an increasing number of companies have discovered that proactive environmental management makes good business sense. Finally, the prescriptive nature and lack of flexibility of the regulatory approach have not allowed business adequate opportunity to develop innovative, effective and efficient means to achieve environmental goals.

These developments have led to a growing interest, particularly in Europe, but also in North America, in non-regulatory tools for environmental protection. One group of tools includes economic instruments, such as green taxes and market-based schemes, such as emissions trading. There is also interest in a range of non-regulatory approaches that are not economic instruments. These approaches are referred to in this report as "voluntary and non-regulatory initiatives" or VNRI's.¹ Of the broad and evolving range of VNRI's, this report focuses primarily on voluntary challenges, environmental management systems, codes of practice, environmental labeling² and negotiated agreements.

While some work has been done to understand the effectiveness of VNRI's in achieving environmental objectives, little has been done to understand their relationships to trade competitiveness. For example, what impacts will ISO 14001 have on Canada's auto parts industry? And how do environmental labels affect export prospects?

Because of the importance of trade to the Canadian economy, especially the trade in products involving significant environmental issues, the International Trade Advisory Committee (ITAC) Task Force on Trade and Environment considers it necessary to better understand how VNRI affect trade competitiveness.

This report is timely. During the next several years there will be considerable development of VNRI and other policy tools as Canada and its trading partners come to grips with protocols on climate change, persistent organic pollutants and other issues, and as consumer demand in Canada's export markets continues to "green."

This report is primarily intended for policy-makers, corporate managers responsible for international marketing and for environment, business association leaders and representatives of civil society with an interest in trade and environment.

The report builds upon and complements the work of The Conference Board of Canada's Business and the Environment Research Program and the New Directions Group.³ Using case studies, interviews, and a literature survey of Canadian and foreign experience, the report examines emerging environmental and related risks and opportunities to the export performance of Canadian industry, identifies trade implications of a range of VNRI and assesses the nature and significance of their impacts on trade.

Joe Lukacs,

Voluntary Initiatives Subcommittee Co-Chair, CETAC-WEST

Jim Leslie,

Voluntary Initiatives Subcommittee Co-Chair, IISD

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1. The exclusion of economic instruments from the definition of VNRI is somewhat arbitrary but is consistent with the work of the New Directions Group and The Conference Board of Canada.
 2. This report uses "eco-label" and "environmental label" interchangeably; however, labeling experts suggest the former be used to indicate a "seal of approval" and the latter be used generically.
 3. The New Directions Group has been providing an informal forum to bring progressive businesses and environmental organizations together to discuss significant issues since 1990.

Executive Summary

Highlights

- Although most Canadian companies perceive environmental issues as trade risks, there are considerable opportunities for those companies that are greening production.
- Environmental issues are sometimes used as protectionist measures as traditional trade barriers are dismantled.
- Environmental issues will continue to move back up through the supply chain from the products to the processes behind them and to the management of natural resources.
- Europe is playing a very influential role in addressing issues, developing solutions and linking environmental issues to trade.
- In spite of growing pressure, the World Trade Organization is unlikely to allow governments to discriminate among imports based on process and production methods for at least five years.
- The large government procurement market (typically 10 to 15 per cent of GDP) may be increasingly linked to environmental performance criteria specified in VNRI.
- With environmental laissez-faire not an option, industry prefers VNRI rather than more regulations.
- VNRI, if well designed and properly utilized, can help cut costs, increase market share and create new market opportunities.
- Some developed countries are creating a competitive advantage by aggressively developing new and improved voluntary and non-regulatory initiatives (VNRI).
- Negotiated agreements, including covenants, appear to be very effective in achieving environmental objectives and may even enhance trade competitiveness.
- Many environmental groups are strongly opposed to VNRI and insist on strong regulations and enforcement.
- Stakeholders want VNRI that are more efficient, quantitative and verifiable.
- VNRI development, for the purposes of trade competitiveness, should focus on internationally recognized approaches and mutual recognition by foreign schemes.
- Canada should build on its extensive experience and expertise with VNRI.

Objectives and Scope

The International Trade Advisory Committee Task Force on Trade and Environment commissioned this research project with three objectives:

1. To identify the trade implications of a range of non-regulatory initiatives and to assess the nature and significance of trade impacts.
2. To examine emerging environmental and related risks to the export performance of Canadian industry.
3. To identify opportunities to apply non-regulatory approaches to mitigate these risks and enhance Canada's competitive positioning.

The report considers trade through the lens of Canadian exporters facing risks and opportunities in their foreign markets. It also considers the ability to obtain investment capital to support export activities.

The report deals with a range of voluntary and non-regulatory environmental initiatives (VNRI), but excludes corporate environmental reporting, economic instruments and, of course, purely regulatory initiatives.

The report addresses environmental issues, with limited reference to human rights and other social issues, which can also have significant impacts on trade. The scope of the analysis focuses on the experiences of Canadian industry but includes several interesting developments in Europe and the US. The research covers a wide range of primary and secondary industries with significant export activity, including a brief exploration of an export-oriented service sector (tourism). The research deliberately does not describe how to develop VNRI. Nor does it go into depth regarding the effectiveness of the VNRI in achieving environmental objectives, even though such effectiveness is a critical factor in deciding which protection tools to use.

Approach

The research included a literature search, numerous interviews and a number of case studies. The literature search covered a review of trade developments, emerging environmental issues and voluntary and non-regulatory approaches. The project team conducted interviews with numerous representatives from government and the private sector.

Developments in Trade and Environment

There are three ways in which environmental concerns in foreign markets can affect trade:

1. Import Restrictions

Foreign governments may restrict imports on environmental grounds provided that the restrictions also apply equally to domestically produced goods. The WTO permits such restrictions based on product characteristics, but generally forbids restrictions based on how a product is produced. At present it is unclear to what extent WTO rules will allow governments to restrict imports in complying with environmental agreements like the Kyoto Protocol.

Restrictions based on product characteristics, such as packaging and labeling laws, are GATT-legal, and common. These can be prohibitively expensive for exporters if they vary greatly from one jurisdiction to another. There is a trend toward the use of restrictions based on sanitary and phytosanitary (SPS) concerns—issues of quarantine and public health—which appear likely to continue as traditional trade barriers are dismantled.

2. Market Pressures

Purchasers may put pressure on suppliers to adopt voluntary trade measures—including eco-labels and certifications of good practice (such as ISO 14001), transmitting green concerns up the supply chain. Conforming with such measures is generally seen as a way to remain in the market or to improve market share. An area to watch here is the linking of government procurement—typically 10 to 15 per cent of a country's GDP—to the foreign supplier's participation in some voluntary scheme such as ISO 14001, or a purchasing-country eco-label.

MacMillan Bloedel's clear-cutting practices in B.C. led to a boycott of some of its products in Europe.

3. Opportunities

Every environmentally-related risk to competitiveness is an opportunity to those firms that are greening production—an opportunity to achieve win-win solutions which improve the environment and are good for market share. Where trade rules at the international level allow for discrimination on the basis of environmental performance, as in the potential case of green government procurement, for example, foreign suppliers who are participating in VNRI stand to gain an edge. Similarly, participants in VNRI might be accorded special treatment by foreign eco-labels, foreign regulators, or other foreign standard-setting bodies. Also, good environmental management can yield bottom-line benefits, further enhancing competitiveness.

TransAlta's stand on sustainable development contributed to its success in securing investments in New Zealand.

Canadian exporters will not be simply handed such opportunities, but will have to work for them. Canadian government and industry will have to ensure that any new trade rules in the trade-environment nexus do not allow scope for unfair protection of purchasing country industries. And they may have to argue that their participation in VNRI should be recognized as equivalent to environmental criteria being set in their export markets. This may be hard work, but the possibilities for increased competitiveness through environmental VNRI are real and worth pursuing.

Issues Affecting Trade

Environmental and related issues have had major impacts on trade and can be expected to continue to do so. Consider Canadian fur, dolphin-free tuna, Canadian paper products in Europe and electricity export efforts to the USA.

The issues that affect trade range from relatively simple environmental concerns, such as product disposal, to very complex social issues, like human rights. The hot issues today, namely, human, plant and animal health, present serious trade concerns for companies dealing in agricultural and wood products. Confusing the issues, however, are influential protectionist interests who occasionally use popular public policy goals, like environmental health, to build regulatory shelters from foreign competitors.

Canfor has developed life-cycle assessment processes and practices estimating the potential environmental impact of a product throughout its entire life cycle from harvesting to shipping.

As some markets take a more holistic view of products and their impacts, environmental issues are being pushed decisively up the supply chain to manufacturing processes and raw material extraction. Reinforcing this development are consumers and institutional purchasers who want verifiable information on the entire life cycle impact of products, like pulp and paper.

The importance of environment varies among societies, leading to disputes about the severity of the problems and what should be done about them. Facing serious environmental issues, yet wealthy enough to address them, Europe is setting tough policies and standards for the environmental performance of many products and processes. While some companies are reacting defensively to trade-environment issues, others see the benefits of making environment an integral part of their strategy and are developing vastly superior products.

Depending on its approach, Canada faces both risks and opportunities associated primarily with concerns over greenhouse gas emissions, overall corporate environmental management and resource stewardship in its export markets.

Voluntary and Non-Regulatory Initiatives

Until recently, legislation and regulations have been the principal, and often sole, environmental policy tools. Faced with increasingly complex environmental problems, strapped for resources and seeing the economic payoffs of good environmental management, many organizations have begun to develop other tools. Such tools include financial incentives, emissions trading schemes and a broad range of voluntary and non-regulatory initiatives (VNRIs). In most cases such tools are not used individually, but in conjunction with other mechanisms, including regulations.

A VNRI can be defined as a commitment not required by legislation, agreed to by one or more organizations and applied in a consistent manner to influence or benchmark behaviour.¹ Types of VNRI include:

- voluntary challenges (e.g., Canada's Voluntary Challenge and Registry Program)
- standards (e.g., ISO 14001 environmental management system)
- codes of practice (e.g., Responsible Care[®])
- environmental labeling (e.g., Environmental Choice Program) and
- negotiated agreements (e.g., Dutch covenants).

In addition there are innumerable unilateral actions undertaken voluntarily by companies, governments and other organizations to improve environmental performance.

Although most companies and some government departments support the development of VNRI for reasons of flexibility and efficiency, environmental groups have serious concerns about their effectiveness in protecting the environment. In general, however, there is considerable interest in developing improved policy tools, of which VNRI are likely to play a prominent role.

Linkages Between Trade and Voluntary and Non-Regulatory Initiatives

The key linkages between trade and VNRI are in the areas of market share, costs and market opportunities. Some VNRI, for example voluntary challenges, have had negligible effects on export performance due to their limited geographic scope and issues of credibility. However, VNRI with verifiable performance criteria and international recognition, such as some eco-labeling schemes, can help enhance market share. VNRI that allow the participants flexibility, such as codes of practice and negotiated agreements, can boost trade competitiveness by cutting costs.

Dutch government and industry both acknowledge that the demanding covenant process has not hurt Dutch trade competitiveness. Some companies that have developed their own in-house codes of practice have been able to generate new international market opportunities. For VNRI to have positive impacts on trade competitiveness, the important factors are flexibility, credibility and international recognition.

For VNRI to have positive impacts on trade competitiveness, the important factors are flexibility, credibility and international recognition.

Enhanced trade competitiveness, in addition to better environmental performance, is certainly one of the factors behind the interest in ISO 14001 and some eco-labeling schemes. Concerned that environmental management performance will be used as a trade barrier by developed countries, many companies, especially those in smaller trading nations, are getting certified to ISO 14001. Rather than seeking certification, a number of Canadian

companies are benchmarking their systems against ISO 14001. The impact of ISO 14001 on trade competitiveness will depend on the extent of its adoption and acceptance as an international standard, both of which will likely depend on its effectiveness in protecting the environment.

Linking government procurement to VNRI, such as eco-labels, could present a significant trade barrier to some suppliers, but an opportunity to others. Even though their impacts on market share are not clear, eco-labels will likely have increasing significance for trade, as they become more popular. This likelihood underscores the importance, from a trade perspective, of working on mutual recognition, equivalence and global guidelines and principles. Eco-labeling schemes need to incorporate transparency and accessibility if they are to avoid becoming trade barriers for foreign suppliers.

The demand by international purchasers for more hard data to substantiate environmental performance and the need for more cost-effective tools are driving innovation in VNRI development.

Conclusions and Recommendations

While it is true that Canada faces risks as environmental issues become increasingly linked to trade, there are also a growing number of trade opportunities for savvy exporters who are recognized for greening their products and processes.

Canada could gain a competitive edge with VNRI if the country took advantage of some existing strengths; for example, its effective use of stakeholder consultations. Moreover, Canada should evaluate the benefits to both trade competitiveness and environment of a comprehensive long-term strategy to “green” Canada’s reputation as an exporter. Canada should invest in VNRI that allow industry and government to be more efficient. Canada should develop VNRI that are credible, quantitative and verifiable. Canada should also explore greater use of negotiated agreements, similar to the Dutch covenant process, and should work toward increased mutual recognition of VNRI with its trading partners.

Canadian industry should ensure that it is in the forefront in the development, implementation and promotion of effective tools that have international relevance. Finally, Canada should assess in detail the emerging risks and opportunities for a number of industry sectors and determine how VNRI could be used to enhance their trade competitiveness. This research is a first step in that direction.

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1. Office of Consumer Affairs, Industry Canada, *Voluntary Codes: A Guide for Their Development and Use*. Ottawa: Industry Canada, 1998. The definition used here is condensed from the original version.

1. Introduction

The purpose of this report is to determine how voluntary and non-regulatory approaches can be used in Canada to achieve environmental objectives while fostering increased trade competitiveness. Concurrent with the growing role of international trade has been increasing awareness of environmental issues. As with social issues, environmental issues have become significant factors in trade disputes. Likewise, trade is having significant impacts on the environment.

Facing increasingly complex environmental challenges on a global scale, society is developing additional tools, including voluntary and non-regulatory approaches, to complement regulatory and fiscal tools.

This report examines recent developments in international trade and investment and the environmental issues that affect them. It describes and assesses the major voluntary and non-regulatory initiatives taken in Canada and internationally and analyzes their actual and potential effects on export and investment competitiveness.

The Role of Trade in the Canadian Economy

Trade is increasingly important to the Canadian economy. Total exports in the manufacturing sector increased from \$117 billion in 1990 to \$220 billion in 1995, growing at a compounded annual growth rate of 11 per cent, far exceeding the growth of the economy. The compounded average annual growth rate of total exports for Canada was nearly 10 per cent over the 1990-95 period. According to the IMF, Canada places seventh in the world in total exports.

Over 60 per cent of the value of Canada's production is exported and exports account for about one-third of Canada's GDP. Although not depending on foreign trade to the extent of nations like the Netherlands, where exports account for 53 per cent of GDP, the Canadian economy is becoming more export-based.

Over 60 per cent of the value of Canada's production is exported and exports account for about one-third of Canada's GDP.

Although still very important, resource-based products no longer dominate Canada's exports.

The largest industry sector, transportation equipment, accounts for \$71 billion. The second largest, electric and electronic equipment, exports over \$20 billion in total. Other important industry sectors include machinery and chemicals.

The trend globally is to increase trade by opening up economies and reducing the barriers to trade and investment. Because of the benefits of increased efficiency and the attendant wealth it creates, trade is viewed by many governments and international agencies as a powerful tool in the transition to sustainable development. However, free trade has its detractors, in Canada and elsewhere, who note the decrease in self-reliance, the increased pressure on the environment due to growth and the inequitable distribution of its benefits within

and between countries. Critics of growing international trade include a variety of civil society organizations and academics. In spite of the criticisms, it seems safe to say that international trade will continue to grow in importance over the next few decades.

The Role of Trade in Corporate Performance

Trade is becoming increasingly important for more industries and companies. While Canadian firms are building exports, foreign competitors are increasing their share of the already small Canadian market. The growth in the number and importance of global products and brands is yielding substantial profit opportunities and encouraging increased trading. Also, international trade agreements are stimulating trade by lowering tariffs and other barriers to trade and investment. The result is a more attractive international marketplace with compelling opportunities for increased profits.

Failure to trade in a growing international market would lead to diminished market share and influence for many Canadian companies. For some companies it could lead to a loss of leadership in the market, with unfavourable impacts on profitability. Increased sales permit companies to win economies of scale in purchasing, manufacturing and other functions. Trade allows a “window on the world” to better understand a broad range of developments, including product design and process technology.

Trade is essential to many resource-based commodity industries in Canada, such as grains, gas, oil, minerals, metals, lumber and pulp, because of the size of the supply relative to domestic demand. For instance, Canada’s pulp and paper industry exports over 80 per cent of its production. Diminished trade competitiveness by the major players would quickly result in poor financial performance.

Manufacturers of higher value-added goods (e.g., telecommunications equipment) which supply large global markets, are increasingly dependent on sales outside Canada, partly because the investments in technology require sales volumes far greater than any domestic market can support.

The Importance of Environment

“...the environment provides economic services not formally accounted for—at least as valuable as, and probably much more valuable than, those provided by markets.” – The High-Level Advisory Group on the Environment to the Secretary-General of the OECD, November 25, 1997.

There is a slowly growing realization that the environment provides humans with valuable services in addition to tangible resources. Some of the services include the ozone shield against UV rays, climate regulation and the purification of air and water.

Canadians are beginning to realize that the economy is built on and depends on the environment. Canada’s resource-based industries are particularly dependent on a continuing supply of fish, wood and wood fibre, falling water, agricultural soils, minerals, oil and gas. Disruption of supply can be catastrophic, both economically and socially. Examples include the fisheries on Canada’s east and west coasts, and perhaps parts of Canada’s forest industry.

The linkages between environment, economy and social well-being have been the subject of considerable study for almost two decades. The concept of sustainable development is written into numerous government and business strategies around the world. Of particular interest is the importance of environmental health to economic development. The theory is that a robust economy depends on an ecologically-sound environment, and that an environment under stress will not support a healthy economy over the long term. Examples of sick environments and economies include parts of Eastern Europe and sub-Saharan countries. Advanced economies, such as Scandinavia and the Netherlands, have made considerable investments in restoring and protecting their environments and in encouraging the transition of their economies to more sustainable forms of production and consumption. There is a conscious struggle to maintain or improve the environmental health of urban areas worldwide because of the linkages between environment, human health and economic vitality.

Environmental Issues

Because of growing pressure on the environment and increased information about environmental conditions, in particular suspected linkages between environmental health and human health, the list of issues of concern grows longer.

Although this report is concerned primarily with environmental issues, it also deals with some social issues that are related to international trade. Effective decision-making on economic, environmental and social issues must take into account their mutual linkages.

Environmental Performance and Trade Competitiveness

Prior to the late 1980s, the predominant business view held that environment was a cost to be dealt with only to the extent required by law. Very few business people saw a positive correlation between environmental performance and financial performance. Today, although far from being mainstream, there are corporate leaders who have demonstrated that superior environmental performance can be consistent with strong financial performance. More importantly, there are a growing number of business people who are convinced that the survival of the corporate sector depends on it playing a proactive role in solving environmental and social problems. If the private sector is to be an effective player in a transition to sustainable development, good environmental performance must be consistent with enhanced profit opportunities. Progress on the internalization of environmental and social costs and the elimination of market-distorting subsidies are essential.

Within the context of international trade, the environment-competitiveness relationship works in two broad ways: First, environmental concerns can be the basis for excluding a good or service from a country. This can happen via government-mandated environmental regulations or standards, including those adopted under multilateral environmental agreements, or via regulations aimed at protecting consumer

There are a growing number of business people who are convinced that the survival of the corporate sector depends on it playing a proactive role in solving environmental and social problems.

health and safety. It might also result from consumer actions and boycotts on issues of environment or social justice that work their way back up the supply chain. Secondly, environmental concerns can be the basis for a firm expanding its share in foreign markets. This can be the result of a firm's decision to market itself as environmentally preferable to its competitors, whether through improved products, eco-labels, certification such as ISO 14001 and other methods. It can also be the result, intended or not, of a firm becoming more efficient through investments in environmental improvements that yield economic benefits.

The connections between environmental performance and trade became apparent when interest groups took actions to restrict the trade of companies they considered poor environmental performers. Greenpeace inspired a boycott against MacMillan Bloedel's paper in the UK because of the company's forestry practices in Canada. German consumers cut up their Exxon credit cards after the Exxon Valdez went on the rocks in Alaska. Europeans campaigned against Shell when it proposed to sink the Brent Spar oil rig in the North Sea and are presently campaigning against Shell's Nigerian operations and against fur because of Canadian trapping practices. The Forest Stewardship Council is persuading retailers to sell only FSC-certified wood. Some German pulp and paper buyers are requesting Environmental Performance Data Sheets as a condition of supply. And some industrial purchasers are encouraging their suppliers to get "ISO 14001 certified." In effect, there is a trend toward making environmental performance a more important condition of supply.

Voluntary and Non-Regulatory Initiatives

Traditionally, government, in its role of providing environmental protection, has relied heavily on legislation and regulation, with the principal target being the private sector. Partly in search of more efficient means, government, industry and civil society have begun to experiment with other approaches to environmental protection, including market-based instruments, fiscal instruments and a range of voluntary and non-regulatory initiatives (VNRIs), such as covenants, eco-labeling and environmental management systems. These voluntary and non-regulatory initiatives are the focal point of this report.

"There is broad recognition by both governments and business around the world that the regulatory command and control approaches of the past have imposed high compliance costs for both parties." – Michael Phelps, Chairman and CEO, Westcoast Energy Inc.

This report explores the linkages between VNRIs and trade competitiveness, specifically the effects of VNRIs on export and investment competitiveness. By analyzing a number of case studies from Canada and abroad, it tries to determine where VNRIs can be effective, both in achieving environmental objectives and in enhancing the trade competitiveness of Canadian companies.

2. Developments in Trade and Environment

Environmental concerns in foreign markets can impact on the competitiveness of firms exporting to those markets in three key ways. First, those concerns may find voice in foreign government regulations which restrict imports on the basis of environmental demands. Second, purchasers may demand that their purchases, or the exporting producers, conform to eco-labels or environmentally-based certification schemes. Purchasing firms may demand that suppliers be certified as environmentally conscientious, through an Environmental Management System (EMS), such as ISO 14001 or similar schemes. Third, firms can, by their efforts to “green” their products or operations, create niche export markets with concerned consumers, or protect their existing market share.

This section begins by focusing on the first two types of linkages—on environmental concerns as a potential barrier to trade. It examines what can and cannot be done under current trade rules, and it looks at the trends that will shape the future of the nexus linking trade, environment and competitiveness. Following the framework outlined above, it looks first at government regulations which might restrict trade on environmental grounds, and then at non-mandatory demands for the firm’s participation in environmental labeling schemes or environmental management systems.

It then looks at the third linkage mentioned above, noting that the threat of environmental concern in export markets represents at the same time an opportunity for environmentally conscious suppliers. It finishes with a look at future trends, including the significance of regional trading agreements.

Government (Technical) Regulations

A key distinction in standards is between those set on the basis of how a product is produced (process and production method, or PPM standards), and those set on the basis of some physical attribute of the product itself (product standards).¹ The former might, for example, restrict the import of automobiles produced in a particularly polluting way, whereas the latter might restrict the import of any not equipped with catalytic converters.

PPM-Based Standards²

For a number of reasons, business is uncomfortable with governments enforcing this type of standard at the border. First, governments using PPM-based standards would have wide scope to unfairly protect their own domestic industries. For example, a country that relies heavily on nuclear energy might assess a pollution tax on the import of products manufactured with coal-fired energy. Second, the environmental conditions in the regulating country may be completely different than those in the supplier country, resulting in inappropriate demands for changes in PPMs. California might, for example, be concerned about local air quality given the pollution crisis it faces. But should its regulators demand that all imported goods be manufactured according to air emissions standards as strict as its own? A foreign supplier in an area with no air quality problems would likely balk at the suggestion.

For these reasons and others, government trade regulations that discriminate on the basis of PPMs are prohibited by the GATT (General Agreement on Tariffs and Trade). Goods which are indistinguishable at the border are considered alike no matter how they were produced, and must all receive the same regulatory treatment.³ A number of high profile trade-environment disputes in the GATT/World Trade Organization (WTO) have affirmed this principle of law, and the same basic principle of non-discrimination is fundamental to all the regional trading agreements as well.

It is unclear how long the WTO will be able to resist calls for some mechanism to distinguish "unfair" protection of domestic industries from PPM-based concerns such as environment and human rights.

For business, this means that there need be little worry at present that government regulations in their export markets will force them to "green" their processes of production. In the medium- to long-term, however, it is uncertain that this situation will hold. There is mounting pressure from environmentalists, animal rights activists, social justice non-government organizations (NGOs) and others to allow for PPM-based discrimination, since for them it is of central importance how a good is produced (e.g., with or without the use of chlorofluorocarbons

or CFCs as cleaning solvents). It is unclear how long the WTO will be able to resist calls for some mechanism to distinguish "unfair" protection of domestic industries from PPM-based concerns such as environment, human rights and animal welfare, which are not motivated by the beggar-thy-neighbour mercantilism the WTO is designed to prevent. And suggestions for change have recently come from figures prominently placed in the trade community.⁴ In any case, partly due to stiff resistance from developing country members, the WTO is unlikely to change its stance on PPMs in the next five years at least.

The special case of multilateral environmental agreements (MEAs) deserves mention here. Although they can do so, few MEAs actually sanction trade measures by their signatories as a way of advancing the treaties.⁵ This is a grey area of international law; without specifying the type of measure and the context, it is impossible to predict how an MEA-based trade measure would fare in a WTO dispute. But the WTO is undoubtedly grateful to have faced no such dispute yet, since the GATT has no greater legal force than an MEA, other things being equal. Say, for example, a signatory to the Kyoto Protocol imposed a tax on the carbon released in the production of domestic goods, and leveled the playing field by assessing "border tax adjustments" on the carbon released in the production of imported goods. If the suppliers complained to the WTO, the matter would be a political bombshell. Firms should be watchful of the possibilities of such legislation, enabled by the blossoming family of MEAs. And they should be ready for the fallout in the WTO if such a complaint is brought; one result might be an agreement on the "appropriate" use of PPMs in international trade.

Product Standards

Product standards are another story altogether, and there is a large body of trade-related government regulation based on a product's environmental characteristics. On the surface, conforming to such regulations may seem like a problem no different than complying with the preferences of any customer. But a proliferation of different national-level regulations is prohibitively difficult for foreign suppliers to handle, and many rules have the effect of favouring domestic producers. Germany's 1991 packaging waste legislation required responsible parties (often the retailers) to accept returned packaging. This meant that foreign firms had to negotiate agreements with Duales System Deutschland, the manager of the waste management system used by most retailers, and to manufacture their packaging in accordance with strict "Green Dot" criteria. A supplier for whom the German market was a small part of total exports might not find such arrangements worth the trouble and expense.

There is also a large body of law based on sanitary and phytosanitary (SPS) standards—standards used to protect the health of consumers and products of agriculture from contamination by foreign-introduced compounds or pests. With the lowering of tariff barriers, many charge, the proliferation of SPS-based trade bans represents the new face of protectionism. Both the Canadian government and farmed salmon industry, for example, complain that there is no scientific basis for the Australian ban on imports of Canadian salmon. Canada believes the sole reason for the ban is to protect the Tasmanian salmon industry.⁶ The general charge is harsh—many SPS-based regulations are undoubtedly motivated by public health concerns—but not entirely inaccurate. In any case, the end result of such a ban is loss of market share by the foreign supplier whether the intent is protectionist or not.

With the lowering of tariff barriers, many charge that the proliferation of trade bans based on sanitary and phytosanitary standards represents the new face of protectionism.

A recent WTO dispute pitted the US and Canada against the EU, which had banned the import of beef raised with the use of growth hormones. The EU lost many of the points of the case, but was allowed to do further research to underpin its arguments, meaning prolonged loss of markets for North American producers.⁷

The ruling also tolerated the EU's applying a different level of protection in this instance than that used in other areas of public safety laws. It is widely accepted that this precedent will make it easier for countries to impose such bans in future—a trend that those in affected sectors (e.g., agriculture and fisheries) will want to watch carefully. A review of the WTO's SPS Agreement has been initiated as of 1998, and will certainly centre on such points of law.⁸

Non-Mandatory Standards

“Ten to twelve per cent of all Technical Barriers to Trade notifications (in the WTO) deal with environmental standards. This gives a strong signal as to where the market is going. If a business is to remain competitive, it will need to comply with these more rigorous standards. – “Scott Vaughan, Counselor for the WTO Committee on Trade and Environment.

With governments banned from the business of regulatory discrimination based on PPMs, others have taken up the mantle. Dozens of countries now have domestic eco-labeling systems, almost all of which rely on PPM criteria. And several standard-development bodies, including the ISO, have created standards for environmental management systems used in the production of goods and services. As voluntary standards, these are allowed under WTO trade rules.

Such schemes typically garner a small percentage of the total market for any particular good. But because they suspect that this might change, WTO members, the business community and others are anxious to get the systems right before that happens and precedents are set. The Canadian government, for example, argues that even private voluntary eco-labels are meant to be covered under a section of WTO law that tries to prevent protectionism in the formulation of labeling criteria: The Code of Good Practice. The Code, part of the Technical Barriers to Trade Agreement, demands such things as non-discrimination, openness in the formulation and implementation of standards, and consultation with affected foreign interests—all of which go a long way towards ensuring that criteria are not created in a way that unfairly disadvantages foreign producers. Canada has not made much progress to date with this argument; developing countries are suspicious of any attempt to “legitimize” PPM-based discrimination by bringing it under WTO rules. Environmentalists are equally opposed to private eco-labeling schemes being subjected to approval by an organization they distrust.

There are areas where, even now, non-mandatory standards are beginning to have competitiveness impacts. In some sectors, the ISO 14001 standard is going the way of its predecessor—the ISO 9000 series—which is for many a pre-condition of international trade.⁹ The Forest Stewardship Council’s certification of “sustainable” forest management is now a condition for sale to a number of large building supply retailers worldwide, thanks to the energetic promotion by its NGO originators. Alberta producers estimate that the market for sustainably produced forest products is roughly 3 per cent of the consumer market.¹⁰

Several governments, including the UK, have already embarked on a “greening” of their procurement policies.

A key area to watch is the linking of government procurement to conformity with such certifications. Government procurement is a significant portion of world demand, accounting typically for 10 to 15 per cent of a country’s GDP. For this reason, many WTO members have been keen to get agreement binding government procurement to basic GATT principles: non-discrimination among foreign suppliers and equal

treatment of foreign and domestic suppliers. The current state of their efforts is the signing of a relatively strong agreement: the Agreement on Government Procurement (GPA), part of the results of the Uruguay Round on multilateral trade negotiations. But the agreement is plurilateral, as opposed to multilateral. That is, unlike most WTO agreements, countries are not bound to sign it as a condition of membership. And even this agreement does not seem to prevent governments from discriminating on the basis of PPMs in certain cases (say, by buying only products carrying national eco-labels, or only from ISO 14001-certified firms).¹¹ Under such scenarios, the fine line between voluntary and mandatory standards becomes blurred. Several governments, including the UK, have already embarked on a “greening” of their procurement policies.

Opportunity: The Other Face of the Coin

Up to this point, the developments in the trade arena have been painted as largely negative—as potential threats to exporters, deriving from environmental concerns in their export markets. This is somewhat misleading, as every such threat is at the same time an opportunity. Firms can use VNRI to create new “green” market niches, or to maintain or enhance their market share in environmentally conscious markets.

Nortel's product take-back agreements enable it to improve its competitiveness and trade position.

VNRI, if properly implemented and marketed, can powerfully demonstrate a firm's commitment to going beyond compliance in its operations. And firms that do so should not feel threatened by, for example, the prospect of a WTO mechanism that allows nations to discriminate at the border on environmental grounds, provided that the mechanism does not provide scope for protectionism. On the contrary, such firms stand to benefit from green discrimination.

Similarly, the prospect of MEA-based trade measures to restrict environmentally undesirable goods are potentially beneficial for environmentally conscious producers. And the changes to be wrought as each country works through the implementation of its MEA commitments are likely to create new markets for cleaner alternatives to current goods and services.¹²

Green government procurement based on compliance with international standards such as ISO 14001 should give an edge to those firms that are in compliance. If green procurement extends to favour national-level eco-labels or other domestic criteria, foreign suppliers who participate in similar VNRI should be able to argue for recognition as achieving equivalent standards.

This last point brings out one of the key prerequisites to success in exploiting such opportunities: the schemes hatched at home need to be accepted abroad. Whether through negotiated Mutual Recognition Agreements (MRAs) with foreign governments, through marketing by participating firms, or by other mechanisms, it is imperative that the efforts of VNRI participants be recognized as significant by foreign governments, standard-development organizations, and the buying public abroad.

Regional Trade Agreements

Regional trade agreements are designed not to substitute for GATT law, but to go further in liberalizing commerce and investment regimes, with the GATT as their basis.

ments that it sees as potentially stimulating intra-bloc trade to such an extent that trade from outside is discouraged.¹³

The way in which a regional agreement is structured may allow environmental concerns to have more or less influence on trade flows. Under the NAFTA's environmental side-agreement, for example, there is a mechanism by which citizens may complain of non-enforcement of environmental laws. As of this writing seven such complaints have been processed, and six more are now pending, the majority of them against Canada. All of the complaints to date have been brought by citizens' groups against their own governments, though, and in such cases are not necessarily trade-related. Based on the record to date, and the procedural hurdles to be cleared, few resolutions are likely to go against any of the NAFTA governments.¹⁴ In the event that a case were resolved against Canada, however, it might result in stricter enforcement of environmental regulations in the sectors concerned, and potentially higher costs to producers who were not already in compliance.

The European Union tends to be a concern to foreign suppliers mainly because of its product-related legislation. For example, the German packaging laws cited above are national-level law, but the EU recently passed a directive which mandates high environmental standards in packaging for all its member states. As well, there are concerns about the EU eco-labeling standards, given the size of the European market and the relatively high levels of environmental awareness of the buying public.

In the western hemisphere, the process of trade integration is proceeding apace—as of the Second Summit of the Americas in Santiago in April 1998, the process of negotiation has been launched—with a target of 2005 for a completed agreement on a Free Trade Area of the Americas (FTAA). If and when completed, this would be the world's largest free trade area, involving 34 countries, 754 million people, and economies with a combined gross domestic product of US\$9 trillion. At this stage, though, it is unclear how environmental concerns will play out. The action plan produced by the Santiago Summit reflected scant political will to have the negotiations or the FTAA institutions address environmental issues.¹⁵ This is primarily due to strong opposition from the non-NAFTA governments who see such concerns as potential barriers to their exports. Two study groups have been established, on environment and labour, which will inform the ongoing negotiations, but it is too early to say if these will have any real impact.

After years of discussions, Asia Pacific Economic Cooperation (APEC) has begun in earnest to liberalize trade, with voluntary agreements to cut tariffs in eight sectors, including environmental goods and services. This is just the beginning of a process that is now gathering steam for the coming decades. There is also work underway on three areas of environmental concern, including clean production, the marine environment and sustainable cities.

The US and the EU look close to beginning negotiations on a transatlantic trade initiative (the Transatlantic Economic Partnership) which will probably cover such areas as: eliminating industrial tariffs; free trade in services; and liberalizing regimes in agriculture, government procurement, intellectual property and investment. The EU proposals to date place emphasis on maintaining high levels of environmental protection. Any concrete negotiations, much less agreements, are years away, but would undoubtedly have implications for the treatment of environmental concerns between these two economic giants.

In general, there is not much specific to the regional level that is of concern in the discussions of trade, environment and competitiveness. A development to watch for in the future is the possibility of agreements on mutual recognition, which are much easier to draft at the regional level than at the multilateral. The EU and the US, for example, are close to signing an agreement that would recognize each other's veterinary standards as equivalent.

This is not as insignificant as it may sound; both sides are maintaining their laws as they are, but are agreeing to give the nod to products approved in the other jurisdiction. There has long been a call for this type of agreement to cover differing national-level eco-labeling systems, sanitary and phytosanitary approval systems, and other forms of technical regulatory "hoops." Such agreements, if they come, will certainly be bilateral or regional. Under such an agreement, a firm certified as producing paper in an environmentally sensitive way in Canada would, for example, be granted a European eco-label without going through the European certification, and without necessarily meeting all the European criteria.

In fact, such agreements already exist. The Canadian eco-label Environmental Choice has mutual recognition agreements with the US and Taiwan, and is in negotiations with Spain. Where the criteria in question are PPM-based, the parties will use "equality of results" to determine equivalency. In other words, if producing a product results in the same final quality of air and water, for example, it does not matter how that result was achieved. A non-profit assembly of 20 national-level systems, the Global Eco-Labeling Network, also works toward mutual recognition on a case-by-case basis.

It could even be that certain types of VNRI's would be recognized as sufficient to grant the firms involved special regulatory status. For example, a firm participating in a voluntary greenhouse gas emissions reduction program might be exempted from a purchasing country's carbon-tax adjustment rules. Or foreign VNRI's might be recognized as qualifying for "green" government procurement schemes. Such agreements are a long way off, if they are ever negotiated. And it is unclear whether the negotiators should be industry associations, or traditional trade negotiators arguing on their behalf. But they represent a new twist to the approach of mutual recognition, which many see as the only way around the conundrum of differing PPM-based standards in eco-labels, certification systems, and MEA-induced domestic legislation.

Conclusion

This section analyzed the linkages between trade, environment and competitiveness, noting where existing rules allow scope for environmental concerns to affect the market share of exporting firms, and looking to the horizon for trends which might affect those linkages in the near future. The sections which follow explore the ways in which different types of VNRI might change these relationships, by increasing or maintaining a firm's competitive position in export markets while simultaneously working to foster environmentally sustainable development.

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1. A good discussion of this distinction and its implications is found in *Business Guide to the Uruguay Round*. ITC/UNCTAD/WTO, 1996.
 2. PPMs as we have defined them are sometimes referred to as “non-product-related PPMs,” to distinguish them from those PPMs which actually have an effect on the final product (e.g., use of recycled content). This is a fairly technical distinction, though, and will not be used here. However, in the context of the WTO this distinction is crucial since product-related PPMs can be consistent with both the GATT and the Agreement on Technical Barriers to Trade.
 3. This is the basic principle of non-discrimination, found in GATT Article III.
 4. Sir Leon Brittan, Vice President of the European Commission and EU trade chief, recently delivered a speech full of unconventional (from a trade perspective) positions on the issues of eco-labeling, PPMs, MEAs, and the precautionary principle in the context of trade and environment (“Solving the Trade and Environment Conundrum,” delivered to the Bellerive/GLOBE International Conference, Geneva, March 23, 1998). And Renato Ruggiero, Executive Director of the WTO, has in several recent speeches hinted at the need for a new, stronger, coordinated environmental umbrella organization to negotiate/collaborate with the WTO (see, for example, “The Coming Challenge: Global Sustainable Development for the 21st Century,” delivered to the WTO Symposium on Trade, Environment and Sustainable Development, Geneva, March 16-17, 1998).
 5. Of the approximately 185 MEAs in existence, only 20 incorporate trade measures.
 6. According to communications with Canada's Department of Fisheries and Oceans and with representatives of the farmed salmon industry.
 7. See WTO, “EC Measures Concerning Meat and Meat Products (Hormones),” Report of the Appellate Body, January 16, 1998. An arbitrator has given the EU until May 13, 1999 (15 months from the Panel ruling) to comply with the Panel's recommendations. If the EU comes into compliance on this date, there will have been a passage of almost three years from the establishment of the Panel to the implementation of its decision.
 8. See “U.S. Lays out Proposals for Review of WTO SPS Agreement,” *Inside U.S. Trade*, March 6, 1998, p. 13.
 9. See “Survey on the Trade Implications of International Standards for Quality and Environmental Management Systems,” United Nations Industrial Development Organization (UNIDO), September 1997.

10. According to a March 10, 1998 interview with the Alberta Forest Products Association.
11. Whether or not the Agreement on Government Procurement (GPA) would allow “green” government procurement is still an open question, and would have to be tested in a dispute. But a careful reading of the GPA leaves the impression that such schemes have a good chance of standing the test.
12. The structural changes inherent in compliance with, for example, the Kyoto Protocol, are massive. One leading environmentalist has called the Protocol the most important economic agreement since the completion of the Uruguay Round.
13. The Director-General of the WTO, Renato Ruggiero, recently remarked: “Their contribution to the promotion of liberalization cannot be called into question. And yet the logic of regionalism makes less economic sense in an era of globalization.” See “From Vision To Reality: The Multilateral Trading System At Fifty”, Address to the Brookings Institution Forum “The Global Trading System: a GATT 50th Anniversary Forum”, Washington, 4 March, 1998.
14. As of this writing, of the seven cases finalized, only one complaint resulted in success. Success in this case means that the North American Commission on Environmental Cooperation (NACEC) publishes a public record of the infraction(s) by the offending country, namely, Mexico.
15. The action plan makes only one trade-related reference to environment (a weak one at that), promising that the FTAA negotiations will be conducted in such a manner as to “build broad public understanding of and support for the FTAA, and to consider views on trade matters from different sectors of our civil societies, such as business, labor, consumer, environmental and academic groups.”

3. Issues Affecting Trade

Introduction

Environmental and social issues have become part of many purchasing decisions—both domestically and internationally. The purpose of this section is to explore a range of issues and their linkages with the trade competitiveness of companies, industries and, ultimately countries. While the environmental issues that affect exports may range from simple to difficult, the underlying causes and the resolutions to disputes are usually complex. Economics often plays a significant role.

Why Environmental Issues Affect Trade

Environmental issues are linked to trade for a number of reasons:

The Growing Awareness of Environment

In spite of varying levels of concern for the environment relative to other issues, people are more aware and better informed about the environment. Improved understanding and awareness of the environment has caused a growing number of people to begin to examine their purchasing decisions, both in their private lives and in their organizations. Initially the

“More and more visitors are realizing the importance of environment and they are making choices that they were not making earlier.” – Belinda Dusbaba, Supervisor, Environmental Affairs, Canadian Pacific Hotels.

concerns were with product attributes rather than the processes used to create the products; for example, the use of endangered species, energy-inefficient automobiles and ozone-depleting chemicals. Next were the process attributes, such as tuna caught in ways that caused the death of dolphins and paper from companies creating huge clearcuts. Different levels of environmental awareness and performance among countries have led to increased trade tensions and to the search for economic opportunities by those offering solutions.

Growth in Trade

Not only did environment become more important but so did trade. The increasing level of trade, both absolute and relative to the size of the economy has resulted in foreign products attracting the attention of consumers, activists and governments. As foreign products have become more visible, they have come to be examined for their role, both negative and positive, in environmental issues.

Interdependence

As environmental issues have evolved from local concerns, such as drinking water, to global concerns, such as the stratospheric ozone layer, society has become more aware of the planet's ecological interdependence. At the same time, nations have begun to be more cog-

nizant of their economic interdependence. The current recession in Asia is a good example. The growing awareness of interdependence among countries and regions is an element in many trade-environment clashes.

Global Standards

The globalization of products and brands often leads to the development of universal norms or standards. Where the norm or standard includes an environmental property, such as the recycled content of some writing papers, there is the opportunity for a competitive advantage to be won or lost.

Trade as a Lever

Environmental advocates are short on levers that have international strength. And within the existing multilateral environmental agreements, the mechanisms for compliance, enforcement and dispute settlement are extremely weak or non-existent. In their quest to change the environmental practices of companies in other countries, advocates have turned to trade as a lever. Particularly if the importing country is economically powerful, trade sanctions or the threat of trade sanctions make for a big stick in the environmental arsenal. For environmental advocates the downside risk of creating trade distortions is very much a secondary consideration, after environmental protection. The trade lever is also used to promote products that provide solutions; for example, the NGO support for refrigerators using hydrocarbons in place of ozone depleting substances.

Trade Protection

The significant and rapid liberalization of trade has caused domestic producers and protectionists to replace the fallen barriers with measures based on environmental and health concerns. Their aims are nominally to protect environment and human health, but allegedly also to protect jobs and profits. The forest products industries in Europe are examples.

Information Technology

Cheap, effective and readily available information and communication technologies make it easier for interest groups to network and to develop international actions against what they believe to be environmentally unsound products, processes and policies. Moreover, society increasingly lives in a “CNN world,” in which communication structures are flat, global and instantaneous. Companies, governments and interest groups are aware that technology can make environment an important trade issue. Imagine the repercussions of a “Bhopal” today.

Cheap, effective technologies allow interest groups to readily develop international actions against target companies.

Sustainable Development

With sustainable development on the official agenda of many countries and international organizations, such as the OECD, the solutions to environmental issues frequently involve

social and economic factors, including trade. For example, the efforts to save tropical rain forests inevitably involve discussions on alternative economic uses for the resource, job creation and the impacts of international trade.

Issues Affecting Trade

As the stresses on the environment increase and as trade accounts for a bigger piece of the growing global economy, more “trade and environment” issues will arise. For each issue there is the risk of loss and the opportunity for gain. The high-profile issues affecting exports centre around situations where an organization, whether an industry, a company or a government, is judged to be irresponsible to third parties.

Examples include the boycotts of French products because of nuclear testing in the South Pacific; reduced sales of Exxon products in Germany after the Exxon Valdez oil spill; and campaigns against the Canadian mining industry in the wake of accidents in the Philippines and Guyana. But there are many less well-known issues that affect trade.

As concepts such as the “interconnectedness of all things” and “life support systems” slowly gain acceptance, several things happen. First, the stakeholder group grows. Instead of the shores of Prince William Sound in Alaska and British Columbia’s Clayoquot Sound being the sole concern of their owners, residents and contracting parties, they become the concern of self-selected stakeholders literally around the world. Second, manufacturers are increasingly expected to assume responsibility over the life-cycles of their products. Third, owners become stewards, responsible to others, including later generations. Following are the kinds of issues that have affected trade, and might continue to do so.

International Environmental Issues

Major international issues that have captured the world’s attention include climate change, biodiversity, long-range transport of pollutants, depletion of the ozone layer and depletion of ocean resources. Some of these issues are addressed by international accords or treaties that have resulted in domestic legislation, such as the Montreal Protocol on ozone depleting substances (ODS). The Montreal Protocol led to the termination of CFC production in developed countries. It allowed the start-up of CFC production in developing countries to fill their own growing demand and, unfortunately, the demand for smuggled CFCs back into the developed countries. In addition, the protocol created opportunities for trade in non-ODS alternatives.

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal includes an amendment to ban the movement of hazardous waste recyclables from developed to developing countries. Although the ban is not yet legally in force due to insufficient ratification, Europe has unilaterally decided to ban the export of such products to developing countries. The grounds for Europe’s actions could be both environmental and economic. The metals industry supports Article 11 of the Convention which would allow mutually agreed trading arrangements as long as environmentally sound management practices are in place. At issue is an acceptable definition of “environmentally sound management.” Although the Basel Convention will not significantly affect exports of Canadian metals and minerals, it has ramifications that have already made imports of some materials difficult.

When it comes into effect, the agreement on Persistent Organic Pollutants (POPs) is likely to restrict trade in over a dozen widely used chemicals. The agreement on Prior Informed Consent (PIC) will also reduce and hamper trade in hazardous substances. However, both agreements will provide opportunities for suppliers of replacement products and services, for example, integrated pest management.

The Kyoto Protocol on climate change will lead to shifts in trade in favour of more energy-efficient products and processes and away from those related to fossil fuels. The widening performance gaps in energy efficiency between leading countries (e.g., Germany, Japan and Scandinavia) and others could have significant impact on market shares. Aiming for a 25 per cent reduction in CO₂ emissions by 2005 versus 1990 levels, the German parliament's climate commission estimates that greenhouse gas (GHG) reductions of 80-90 per cent from 1990 levels are achievable by 2050. Germany is calling for the use of trade sanctions, boycotts and other barriers against nations that do not obey international laws and who continue to pollute.¹ Over time, the protocol may limit trade by dampening the demand for the transport of goods because of energy consumption.

The Kyoto Protocol on climate change will lead to shifts in trade in favour of more energy-efficient products and processes and away from those related to fossil fuels.

The most effective VNRI addressing major international issues and trade concerns will have to incorporate international recognition. Examples include ISO 14001 and internationally recognized eco-labels.

Food Safety

Trade liberalization has resulted in significant increases in trade in agri-business products, which in turn have sparked the increased use, and perhaps abuse, of a number of trade restrictions, including strict standards, inspection and handling rules as well as labeling requirements.² Sanitary and phytosanitary standards are discussed in Chapter 2, Developments in Trade and Environment. Agriculture is a highly politicized industry with important associated issues such as employment, national security and community development; so while on the surface it is the issue of food safety that leads to the most serious agricultural trade problems, there may be other motives.

The particular issues around food safety for the consuming public are genetic manipulation and the use of pesticides. Proponents of genetic manipulation point to its many advantages, such as lower pesticide use, less energy, lower equipment costs and better yields. Opponents of trade in genetically modified plants and organisms note the risks to wild species and human health, as well as the dangers of allowing a small number of corporations from developed

According to some study participants, the agri-food industry may be underestimating public concern about bio-technology and food safety.

countries to control the world's food production. With its protected soybean, corn and tomato products, Monsanto alone has generated significant concern and opposition, not only in Europe, but in North America and in developing countries. Currently there are many trade disputes involving food. According to some study participants, the agri-food industry may be underestimating public concern about bio-technology and food safety.

Amid the disputes there are trade opportunities for environmental initiatives. New Zealand offers an Alar-free apple juice in Canada. In Scandinavia a company is offering organically raised chickens featuring extensive documentation regarding the conditions under which the chickens were raised.

Accidents

Highly visible accidents provide ingredients for campaigns against companies and industries. Nuclear accidents, oil tanker wrecks and chemical company catastrophes have plagued their respective industries in international markets. Accidents attract the critical attention of regulators, labour, potential investors, insurers and customers looking for alternatives to such industries. Initiatives featuring prevention at the operations stage, such as Responsible Care[®], are one way to address the issue of accidents.

Emissions of Toxic and Hazardous Substances

Industries that acquire a reputation for excessive emissions of toxic or hazardous substances over a long period of time, such as the chemical and pulp and paper industries, eventually find their ability to export technology or to invest overseas restricted. They also find themselves the targets of campaigns conducted by interest groups. Large companies, especially those that appear unwilling to change their behaviour, attract the most attention. Oil and gas operations in Nigeria are an example.

Toxic substances, such as dioxins, PCBs and certain heavy metals, have become highly regulated in many countries. Chlorine is another case: a Greenpeace campaign forced the chemical industry to mount a vigorous defense of chlorine, which is used in many products. Even though industry says the overall anti-chlorine campaign is dead, the demand for chlorine-free paper remains healthy, especially in Europe.

Companies can successfully address poor environmental performance and be rewarded for their efforts. Recently, Canada's mining and forest products industries have shown early signs of being able to make improvements in their environmental performance after years of criticism both at home and abroad.

Resource Consumption

Resource consumption is a less obvious issue than accidents and ongoing emissions, but some markets, such as the EU, are becoming conscious of the amounts of material, water and energy consumed by industrial processes and products. Concerns about resource consumption also help drive recycling programs and the development of products with recycled content, such as various papers. The German packaging and waste law and the use of the Green Dot system create hurdles for exporters to that country. The requirement for

recycled content in US newspapers has created difficulties for Canadian exporters of newsprint who have inadequate supplies of used paper.

The growing level of interest in climate change, combined with concerns about resources and waste management, will make purchasing decisions increasingly favour products that are eco-efficient.³ Electrolux subscribes to this theory- the company's appliances indicate a strategy based on efficient use of resources over their life-cycle. Labeling programs, such as Energy Star in the US, allow manufacturers of products with superior energy efficiency to distinguish themselves from less efficient competitors.

Product Pollution

Products that give off more pollution during their operations risk losing business to cleaner competitors. Products such as low-VOC (volatile organic compounds) paints, improved two-stroke engines, automobiles and airplanes with improved emissions, and quiet machinery find growing opportunities in demanding markets.

Disposal

Products that present disposal problems risk becoming trade targets because of two issues: waste-handling and resource consumption. Problem products include those that are difficult or dangerous to dispose of, such as single-use batteries; products whose processes create dangerous waste, such as electricity from nuclear energy; and products that are difficult to use as a raw material in another production process, such as multi-material packaging. An example is Denmark's ban on the use of PVC plastic in house construction because of the formation of dioxins when incinerated. Denmark also sparked a trade dispute when it banned the sale of non-refillable beverage containers. The costs of landfill and concerns about incineration are making linear, rather than cyclical, processes increasingly unacceptable. This has also led to companies seeing opportunities, such as Xerox, which is designing products with components that can be reused in new machines; and Interface⁴, which is closing the loop on floor covering by taking back and recycling carpet.

To reduce the burden of disposal, Xerox designs products with components that can be reused in new machines.

Animal Rights

Industries that are seen to mistreat animals, particularly mammals, are susceptible to severe public criticism. The issue is often international: while the "mistreatment" takes place where it is acceptable, the market is in a society that finds it objectionable. Examples include tuna fishers killing dolphins, sealers bludgeoning pups on Canada's east coast and shrimp fishermen killing sea turtles. Veal farmers in Britain have seen their export shipments disrupted by their own citizens. Concern for animal rights has led some cosmetic companies to offer "cruelty free" products to concerned consumers. Based more on emotion and personal beliefs than on science, animal rights is an issue whose effects on trade are difficult to pre-

dict. To date, the most significant animal rights-related trade cases have taken place in Europe and the US, with the damage usually taking place elsewhere.

Human Rights

Although not an environmental issue, the unfair treatment of people, whether indigenous tribes, children or other subjugated peoples, can lead to animosity toward and sanctions against the perpetrators, supporters and beneficiaries of that treatment. Examples include the boycott against apartheid in South Africa and consumer movements against carpets made by child labourers and clothing made in Latin American sweatshops. Ethics scanning has become common and evaluations of corporate ethics often ask if the subject company trades with repressive regimes, such as China and Burma. The most effective initiatives to deal with human rights and protect trade competitiveness are internal policies based on internationally recognized charters of rights and freedoms, social audits and external reporting. Significant human rights cases may not occur in Canada, but Canadian companies can take steps to help ensure that their overseas operations and suppliers respect human rights, although the issues are admittedly very complex.

Corporate Power

The increasing concentration of power in large, often foreign, corporations is a growing concern to a number of interest groups. The issues include lack of local control, reduced opportunities, exploitation and corruption. Actions against increasing concentration of corporate power are evident in the environmental and social justice NGO campaigns against the Multilateral Agreement on Investment. Campaigns often involve international NGOs with powerful factions from the developing countries. Examples include NGO campaigns against the mining company RTZ and against Canadian gold mining companies in Costa Rica.

Issues for Canada

Canada is addressing essentially the same environmental issues as its major trading partners and, therefore, is developing policies somewhat similar to those countries. However, the goal-setting by European countries is more demanding and the pace of improvement more

rapid. On many environmental and economic matters Canada follows the US, potentially leaving Canada behind, or out of step with, Europe and Japan in resource consumption, energy efficiency, waste management and maybe food safety.

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Based on research for this report, it appears that Canada faces several issues which could present significant risks—or opportunities—depending on how they are approached. The issues are described briefly below.

Treatment of Aboriginals

Canada has a poor record on the treatment of aboriginals and does not meet the expectations of other countries.⁵ The case of the James Bay Cree versus Hydro Québec continues in the court of US public opinion, as the utility attempts to increase electricity exports to the northeastern US.

Greenhouse Gas Emissions

For a number of reasons, including size, a harsh climate, urban design, energy-intensive industries and wasteful consumption of energy, Canada is the second highest per capita GHG generator in the world. As Canada and its trading partners take steps to address climate change, issues will arise with regard to important energy-intensive products such as gas exports, steel, other metals, paper, motor vehicles and other manufactured goods.

Environmental Management

In spite of its important role in developing ISO 14000 standards, Canada and its companies are generally adopting a wait-and-see attitude, while Japanese, European and developing country companies get certified to ISO 14001. Instead of getting certified, many Canadian companies are comparing their environmental management systems to ISO 14001.

Wild Spaces and Declining Resources

The international community holds Canada responsible for the stewardship of a large land mass and its species. However, in spite of a growing parks system and programs by the forest industries, Canada is struggling to reconcile wild spaces, trees, fish and jobs.

Conclusions

The environmental issues noted above constitute one version of priorities. The Dutch, considered by some as leaders, have a similar list, noting acidification, dispersion of toxic substances, climate change and waste management as their principal environmental issues.

The financial payoffs at stake in trade result in environmental issues occasionally being used to disguise economic ones and environment being a pawn in trade disputes. The extent of these kinds of tactics is anecdotal. Evidence in this study suggests that the companies leading in the development of “eco-efficient” products generally acknowledge the legitimacy of environmental issues and the challenges of sustainable development.

While some companies are reacting defensively to trade-environment issues, others see the benefits of making environment an integral part of their strategy and are developing vastly superior products.

Environmental issues are moving up the supply chain as the front-line suppliers recognize that effective solutions require changes in materials and design. Reinforcing this development are consumers and institutional purchasers who want information on the entire life-cycle impact of products and services.

Societies are at different places on the continuum of environmental awareness and this can lead to conflicts in the development of solutions. Parts of Europe are taking some environmental issues more seriously than North America, particularly with regard to energy use,

Canfor suggests that, increasingly, purchasers, such as European magazine companies, are demanding forest products that have a small "environmental shadow".

climate change, disposal and toxic emissions. And it would appear that they are setting the pace for the development of solutions, including the effective use of voluntary and non-regulatory initiatives. It is common to find European companies in environmental leadership positions. However, there is no evidence to suggest that Canada does not have the capacity to effectively manage the risks and opportunities presented by environmental issues.

The pressures that humans place on the environment will intensify as population and affluence increase, probably in advance of the adoption of technologies that will decouple growth and emissions.

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1. According to a Deutsche Welle broadcast of German news on CBC Overnight, February 28, 1998.
 2. "Food trade battles restrictions." *The Globe and Mail Report on Business*, March 2, 1998, page B1.
 3. "Narrowly defined, eco-efficiency is about producing more with less resources and less pollution." *Signals of Change*. The World Business Council for Sustainable Development.
 4. Interface is a US-based multinational floor-covering manufacturer with operations in Canada. It is a member of the World Business Council for Sustainable Development.
 5. *Canada and the World: An International Perspective on Canada and Canadians*, Angus Reid and Margaret M. Burns, 1992.

4. Voluntary and Non-Regulatory Initiatives (VNRI)s

Introduction

Until recently, legislation and regulation have been the principal, and often only, policy tools used by Canada and its major trading partners to achieve environmental objectives by the private sector. As the challenges of the transition to sustainable development have become better understood and the limitations of regulations more apparent, the major stakeholders in environmental protection have begun to develop and experiment with other tools. These include economic instruments, such as taxes, subsidies and market-based mechanisms, and a broad range of voluntary and non-regulatory initiatives (VNRI)s.

This section briefly describes the major VNRI)s, their application and their effectiveness in achieving environmental objectives. The following section will explore the linkages between the VNRI)s and trade competitiveness.

Background

For years there has been criticism of the regulatory process from all stakeholders. Criticisms include: high cost, length of time to implement, adversarial approach, lack of effectiveness, static nature, and resulting inefficiencies. Now, with declining government resources, evidence of increasing environmental leadership in the business community and the willingness of some interest groups to experiment with non-regulatory means, society is exploring greater use of VNRI)s.

“...there is an unprecedented openness on the part of Canadians for industry-driven approaches to environmental protection. In particular, Canadians are open to the idea that there is a broad array of tools that can be effective at improving the environmental conduct of companies, beyond traditional government approaches of legislation and regulations.” – The Environmental Monitor, 1997

Business sees the advantages of flexibility and efficiency in some VNRI)s. A voluntary approach usually allows business the flexibility to determine how to achieve environmental objectives. Often, there is flexibility around timing, priorities and other requirements to be negotiated among the participants. Efficiency is an important benefit of VNRI)s because business has the opportunity to decide how to invest its resources.

Governments see advantages and disadvantages in VNRI)s. Some VNRI)s can be implemented faster than regulations. They may require less paperwork, monitoring, and reporting, especially by government. The effectiveness of VNRI)s versus regulations is less clear. A recent study by Environment Canada over the period 1983-1998 found that sole reliance on voluntary compliance was ineffective in achieving even marginally acceptable results.¹ A 1997 OECD report, while acknowledging the value of Australia's use of voluntary environmental pro-

Government's main problems with VNRI)s are the public's strong preference for regulations and lack of trust in the corporate sector.

grams, recommended greater use of economic instruments, the development of more effective regulations and improved public access to environmental information.² Government's main problems with VNRI are the public's strong preference for regulations and lack of trust in the corporate sector.

In spite of the shortcomings of regulations, environmental groups are leery of approaches in which the government plays a diminished role in favour of the corporate sector. Believing that environmental goals are weakened during negotiations with business organizations, environmental groups prefer legislation and put the onus on VNRI to prove that they are more effective than legislation.³ The setting of tough goals, reporting, accountability, transparency and verifiability are important to civil society.

The development of effective VNRI requires the input of various key stakeholders and an understanding of how VNRI work with other tools to achieve environmental, economic and social objectives.

For the purposes of this report, VNRI can be characterized as

- a set of commitments not required by legislation
- agreed to by one of more individuals or organizations
- designed to influence, shape, control or benchmark behaviour
- intended to be applied in a consistent manner or reach a consistent outcome⁴

The New Directions Group, comprised primarily of Canadian companies and environmental groups, states, among other things, that credible and effective VNRI should contain provisions for rewards and consequences related to performance.⁵

While it is beyond the scope of this report to describe the roles of the various parties in VNRI, a few brief comments may help. Roles in the development and implementation of VNRI depend on a number of factors, not the least of which is the type of VNRI. Those parties with a substantial stake in resolving the environmental issue of concern, normally companies and governments, often develop VNRI. In some cases, an NGO or a government may develop a VNRI as a "challenge" to industry. VNRI developers sometimes engage other stakeholders, such as community groups, NGOs and outside advisory panels, to enhance the VNRI's effectiveness and to help ensure that the VNRI contemplates an adequate range of values and views.

Implementation of VNRI is usually undertaken by those responsible for resolving the environmental issue, normally companies and their associations. Government's role in the implementation of VNRI is often that of a watchdog and a registrar. Civil society organizations (NGOs, etc.) frequently play the role of critic, but can play more direct roles, such as they do in some labeling schemes.

The Range of VNRI

VNRI range from completely voluntary initiatives such as environmental reporting to legally binding agreements between government and industry in which the voluntary

aspects are restricted to *how* an objective is achieved, not *whether*. The taxonomy of tools, shown in the table, indicates the range of VNRI, from voluntary challenges to structured agreements, and where they are situated on the spectrum (according to the degree of voluntarism) of approaches for environmental protection.

Environmental Protection Tools

Voluntary Challenges	Environmental Management Systems	Codes of Practice, Standards	Environmental Labels	Structured Agreements	Economic Instruments	Regulations
ARET ¹	ISO 14001	Responsible Care [®]	Eco-label	MOU ⁸	Tax Levy	Command & Control
VCR ²	BS 7750 ⁵	ECR ⁷	Self-declared	Envtl. Perf. Agreement	Emissions trading	Prescriptive
NAPP ³	EMAS ⁶	3M's 3P Program	Report card	Covenant		Goal-based
33/50 ⁴				Project XL ⁹		

Notes: This information is drawn from a variety of work, including that of the Business and the Environment Research Program of The Conference Board of Canada. The table does not include all tools; for example, unilateral voluntary actions; nor does it attempt to evaluate the various VNRI.

1. Accelerated Reduction/Elimination of Toxics
2. Voluntary Challenge and Registry
3. National Packaging Protocol
4. US project to reduce toxic emissions
5. British Standard
6. The European Eco-Management and Audit Scheme
7. The Canadian Electricity Association's Environmental Commitment and Responsibility Program
8. Memorandum of Understanding
9. US EPA initiative

The VNRI discussed in some detail in this section include:

- voluntary challenges
- environmental management systems
- codes of practice
- environmental labeling
- covenants and negotiated agreements

These VNRI have been selected either because of their prominent use in Canada or because of their importance to Canada's trading partners. Although treated individually in this section, often a mix of VNRI and other tools is used to achieve objectives. Also, there can be substantial overlap among VNRI. For example, a negotiated agreement may specify the use of a certified environmental management system.

Voluntary Challenges

A voluntary challenge is a task to perform in which the invitees are not obliged to participate. Although voluntary, there should be sufficient incentive built in to get participation

The threat of regulation and economic instruments is often in the background of voluntary challenges.

levels high enough to reach the environmental objectives. Goals may be set unilaterally or cooperatively. Although there are no overt penalties for non-participation, regulation and economic instruments, or merely the threat of them, are often in the background of voluntary challenges.

Canada has two high-profile initiatives that are completely voluntary and not directly connected to the regulatory framework. One is the Accelerated Reduction/Elimination of Toxics. The other is the Voluntary Challenge and Registry to address climate change.

Accelerated Reduction/Elimination of Toxics (ARET)

This is a multi-stakeholder initiative (although environmental and labour groups withdrew by 1994) designed to reduce the adverse effects of toxic substances on human health and the environment by accelerating the reduction or elimination of emissions of 117 substances.

Substance selection was based on scientific criteria and the final lists were based on recommendations from a multi-stakeholder committee. ARET's objectives are:

1. To reduce emissions of 30 persistent, bio-accumulative and toxic substances by 90 per cent by the year 2000 and virtual elimination over the long term.
2. To reduce the emissions of the remaining 87 less hazardous substances by 50 per cent by the year 2000 and over the long term to levels insufficient to cause harm.

Although there is no requirement for independent verification, participants must record commitments in an action plan and publicly report progress against targets.

The 300 facilities and 250 companies participating in ARET represent eight major industrial sectors and over 40 per cent of total industrial production in Canada. They have reduced their toxic emissions by about 18,000 tonnes, 49 per cent from base year levels (base years are established by the participants and range from 1988 to 1993). There is a commitment to reduce emissions by another 8,000 tonnes by the year 2000.

ARET is undergoing an assessment before the year 2000 in order to develop a "post-2000 ARET", which may well include a regulatory backdrop. ARET has been criticized on several counts: one is the issue of free riders (non-participants who get the benefits without paying their way); another is the lack of verification; and a third, that the base year is often too early and therefore too easy to show reductions. Over 250 facilities that emit toxic substances have not yet responded to the ARET challenge.⁶

Participation in ARET has reached a plateau and it is difficult to attract new participants. While there is official recognition of ARET, the program is not well known by the public, domestically or internationally.

Voluntary Challenge and Registry Program (VCR)

Developed in 1995, the Voluntary Challenge and Registry Program became the core element of Canada's action program on climate change. The original objective was to limit or reduce Canada's greenhouse gas (GHG) emissions to 1990 levels by 2000. It is a voluntary program which invites Canadian organizations to express their intentions to participate and to develop action plans to limit or reduce net GHG emissions. It provides some recognition to industry for early proactive action.

The action plans require goals and objectives from a 1990 baseline, current emissions, a measurement system, and a commitment to review and improve actions over time. Companies are required to produce progress reports.

The Voluntary Challenge and Registry has over 600 participants representing over 70 per cent of Canada's greenhouse gas emissions from business and industrial sources. Over 300 organizations have submitted action plans. Some companies, such as TransAlta and others, implemented their plans and went offshore to develop offset projects (projects that absorb CO₂) or less CO₂-intensive energy projects. Canada is likely to miss its national GHG objectives by about 13 per cent in 2000, but the deficiency cannot all be attributed to VCR since it was to be only one of a number of tools. Recently privatized, VCR Inc. is performing the registry function and will both encourage early GHG reductions and facilitate the availability of credit trading.

With Canada facing considerable challenges in meeting targets agreed to in the Kyoto Protocol, signed in December 1997, it is quite likely that the country will require a mix of tools, including the revised VCR, economic instruments, public education, regulations and technology acceleration.

Environmental Management Systems (EMS)

An Environmental Management System is a systematic means used by companies and other organizations to address their environmental issues. An EMS includes setting goals and priorities, assigning responsibilities, measuring and reporting results and externally verifying claims. They are voluntary in that the company has the choice whether to develop an EMS. In addition, the design and performance objectives are typically at the discretion of the company. EMSs are usually designed to be easily integrated into the general management systems of corporations. The intention is that environment be managed like other company functions, and not as an add-on. While there have been a number of tools developed to help companies systematically manage environmental issues, ISO 14001 has captured international attention and will be discussed here.

ISO 14001

Using the British Standards Institute's BS 7750 and the Eco-Management and Audit Scheme, ISO developed the 14000 set of standards and guidelines, which defines the core

management system (ISO 14001), auditing procedures and three sets of tools: life-cycle assessment, performance evaluation and labeling.

ISO 14000 requires continuous improvement but does not specify particular environmental performance. In the eyes of many environmentalists and regulators, the lack of externally imposed performance standards, besides compliance with domestic laws, limits the credibility of ISO 14001. Moreover, with no common measurements, it will be difficult to make comparisons among companies, especially if participation rates are low. Although not in the mandate of ISO 14001, the lack of recognition of social issues concerns the NGO community.

Philips Electronics plans to have all 300 manufacturing sites certified to ISO 14001 by the year 2000.

In spite of criticism, ISO 14001 is receiving a great deal of active interest, primarily in Europe, Japan, and other Asian countries. Globally to date, there are nearly 3500 registrations. European companies are encouraged to adopt ISO 14001 to enhance their image in this sophisticated and demanding market. In the Netherlands, an ISO 14001-certified EMS is

often a requirement of a negotiated agreement with the government. Japanese companies see ISO 14001 as an opportunity to enhance their trade competitiveness, and since many of the major Japanese exporters are ISO 9000 certified, the effort to adopt ISO 14001 is not so onerous.⁷ Concerned about environmentally based trade barriers, companies in major trading countries like Singapore, Korea and Thailand are pursuing ISO 14001 certification in order to pre-empt them. There are verbal accounts of some companies in Asia wanting ISO 14001 certification solely because they believe that access to certain markets will require it.

In the US and Canada, the adoption of ISO 14001 is slower than anticipated by consultants, with many companies taking a wait-and-see attitude and evaluating 14001 based on costs and benefits. As of January 1998, only 16 companies on 33 sites in Canada had been certified by a third party. Other North American companies are comparing their systems to ISO 14001 to determine what remains to be done in the event that certification is deemed important. Based on interviews and informal discussions, it appears that an undetermined number of companies, primarily North American, have concluded that their EMSs are compliant with ISO 14001 and have self-declared.

Because ISO 14001 is new, its environmental effectiveness is unknown. While ISO 14001 will help companies manage their environmental performance, the lack of externally imposed performance standards and common measurement systems will necessitate other tools, including regulations, to ensure the achievement of society's objectives. Developing an ISO 14001-certifiable EMS requires know-how, time and money. In order for ISO 14001 to work well on a broad scale internationally, an enormous amount of capacity-building will be required, especially in small and medium size companies and in developing countries.⁸

Codes of Practice

Code of practice refers to the numerous universal and sectoral guidance documents and programs that are used by companies to manage environmental performance. They are also used to signal to the market that the companies involved are taking steps to go beyond regulation. They are not all equivalent but have enough similarities to be grouped for the purposes of this work. They include, for example, Responsible Care[®] and the International Chamber of Commerce Business Charter for Sustainable Development: Principles for Environmental Management. Codes frequently require a sign-off, and sometimes an audit, attesting to adherence. This section discusses Responsible Care[®].

Responsible Care[®]

Responsible Care[®] is a systematic program for the management of chemicals and chemical products. It includes a statement of policy, guiding principles, a national advisory panel, a chemical referral centre, a verification process, and six codes of practice with 152 individual elements. Developed to help ensure the survival of the Canadian chemical industry and to supplant potential legislation, Responsible Care[®] relies on and complements legislation. Although Responsible Care[®] is voluntary, it is a prerequisite for membership in the Canadian Chemical Producers' Association, and once admitted, a company risks expulsion for failure to comply. It does not specify performance targets but does require fulfillment of the obligations of the program and third-party evaluation.

According to the CCPA, the industry

- has reduced emissions of all substances except CO₂ by about 50 per cent since 1992
- projects emissions levels of all substances except CO₂ in 2001 to be 33 per cent of 1992
- experiences steadily reducing workplace injury rates
- has reduced the frequency and severity of transportation incidents⁹

The enhanced reputation of the Canadian chemical industry has encouraged some members of the environmental community to work with the industry to leverage Responsible Care[®] for environmental improvement.

Environmental Labeling

The principal objective of environmental labeling schemes is to allow the values of consumers to be used as a market force to leverage domestic environmental improvement.¹⁰

Being primarily national approaches, environmental labeling schemes generally develop criteria that address issues that are important to the country developing the scheme. Most common criteria include energy consumption during use, recyclability, the nature of the materials used in the product and emissions during use of the product. Most schemes try to assess the environmental effects of the processes used to produce the product.

The first environmental labeling scheme started in 1977 and there are now over 20, with more under consideration. The use and development of environmental labels is still new and evolving. The European Union Eco-Label Award Scheme, the Nordic Swan and the Swedish and French schemes generally contain production-related criteria. In most schemes the eco-label is supposed to cover 5 to 30 per cent of the market share. When the share becomes larger, the labeled product can become the *de facto* standard; for example, writing papers with recycled content and low-VOC paints. ISO has defined three types of environmental labels (see chart below). Type I is the most common. Type III is of growing interest and is discussed later in this section.

ISO Environmental Labeling Types

Type I: multiple criteria rolled into one indicator label; third-party certified.

Type II: informative, self-declarative claims.

Type III: "report card" type; multiple criteria; quantified product information; third-party certified.

Most schemes are focused on products, but there is a shift to services. Often it has been more the fear of losing share than the desire to gain share that has been the key driver to applying for an eco-label.¹¹

Public attitude and awareness vary widely depending on the country. Although hard data is lacking, it is believed that eco-labels raise public awareness of issues, encourage some action to address the issues and encourage manufacturers and service providers to make substantial improvements to the environmental performance of their products.¹² However, eco-labeled products represent only a very small portion of the total market.

Eco-labels are of particular concern to developing countries because of their dependence on exports, their general absence from the scheme development process and their attention to different issues than the developed importing countries.¹³ Trade issues are discussed in more depth in the next section.

Environmental Profile Program (EPP)

This program was developed by the Canadian Pulp and Paper Association to satisfy customer and consumer needs for more and better information about the environmental aspects of products and processes. Considered a Type III labeling program, the EPP is operated by TerraChoice Environmental Services

Inc. under a licensing arrangement with the CPPA. At the core of the program is the Environmental Profile Data Sheet (EPDS), a standardized reporting form, which allows each mill to present the unique environmental profile of its products while ensuring consistency among all mills. The information on the EPDS

Three of Canfor's mills are the first in Canada and the world to complete and distribute Environmental Profile Data Sheets for their products.

is audited by a third party. The EPP is available for all grades of market pulp, paper, newsprint and paperboard. As of May 1998, the first six mills had completed the EPDS process.

Covenants and Negotiated Agreements

Much has been written about covenants and negotiated agreements to achieve environmental objectives. Although not identical, there are strong similarities between the two instruments. Both involve clear performance targets, a high degree of transparency and a commitment from industry. The covenants include sanctions.

The Dutch covenant process is an interesting approach to environmental protection. Recognizing that continuing to add regulations was not likely to achieve required environmental objectives and that it was really industry's responsibility to cut its own emissions, the government of the Netherlands developed the covenant process as a policy instrument. The National Environmental Policy Plan 3 (NEPP 3), issued in late 1997, established quality objectives across a number of environmental initiatives with over 200 quantified targets. National emission objectives, based on the NEPP, form the background for industry objectives which are in turn used to establish individual company objectives. The covenants are contracts between the government and industry representatives and are legally binding under civil law. The Dutch refer to "the stick behind the door", since the only really voluntary attribute of covenants is how objectives are achieved. In order to minimize competitive distortions, at least domestically, covenants are applied to companies on a sectoral approach. Handed the job of bringing down emissions, industry is given clear time frames in which to achieve measurable performance objectives and to plan accordingly. All covenants are done according to a standardized code of conduct to improve fairness and efficiency. The covenants deal with the environmental effects of processes, not the environmental attributes of products or their recyclability. All relevant levels of government work together in the process, minimizing bureaucratic inefficiencies while helping ensure that the objectives of each level are achieved. Companies are required to develop environmental management systems which meet ISO 14001 standards and to submit environmental plans which must be updated at least every four years. Plans and annual reports are public documents.

The Dutch declare this tool to be a success. There are covenants with 20 per cent of Dutch industry covering 80 per cent of pollutants. Industry has performed well against tough targets; for example, the chemical industry has already achieved some emission targets for 2000. A recent study revealed that Dutch goals were generally more stringent than in other

European countries, particularly with respect to dust, heavy metals, acidification and VOCs.¹⁴ With the covenant process as a key policy tool, the Netherlands claims to have "succeeded in reducing its environmental burden while enjoying economic growth. An absolute decoupling has been achieved and pollution has been reduced. Environmental

The Netherlands claims to have succeeded in reducing its environmental burden while enjoying economic growth.

quality is improving steadily in the Netherlands, particularly at the local and regional levels. The pollutants responsible for climate change form an exception to this.”¹⁵

The Dutch covenant process includes many essential elements for effective performance: understanding of environmental conditions, emission levels, an overall plan with objectives, commitment, negotiation, consensus, company plans, monitoring, evaluation, reporting and avenues for penalties. From a Canadian perspective, Dutch covenants’ most important weaknesses are their absence of public consultation and third-party verification. Difficult environmental challenges include acidification, noise and the obligations arising out of the Kyoto agreement. There are concerns that the easy changes have been made, and that the next stage in achieving the NEPP targets will be the real test.

Negotiated Agreements in Canada

Some Canadian provinces have had conservation covenants with industry for years. The first voluntary pollution prevention agreement in Canada took the form of a Memorandum of Understanding (MOU) in 1992 between Canada, Ontario and the Motor Vehicle Manufacturers’ Association. The most recent is the Environmental Management Agreement (EMA) between Dofasco, the Ontario Ministry of the Environment and Environment Canada. The agreement was developed solely for environmental reasons. Signed in November 1997 and including targets on air, water and waste management, the goal of the EMA is to protect and enhance the environment better and more efficiently than could be done using regulations alone. The EMA has an 8-year time frame and specific performance objectives on a variety of emissions that are more ambitious than currently required. However, the EMA also allows Dofasco to use “reasonable efforts” regarding certain issues, such as NO_x, particulates, and contaminated sediments. Dofasco is not bound by law to meet the agreed objectives and it is unclear what actions would be taken in the event objectives are not met.¹⁶

Other VNRI

Single-Company Programs

The best known company environmental program is 3M’s 3P program on pollution prevention. 3P has yielded hundreds of millions of dollars in savings, a good environmental compliance record and international recognition. The 3M case is developed later in this report.

Project XL by the US EPA

The US Environmental Protection Agency initiated Project XL to improve efficiencies in the permitting process and to improve environmental performance. To qualify, XL projects must deliver better environmental performance than regulations, include stakeholder involvement and be transparent. Pollution prevention is built in as an incentive and annual reviews are required. By keeping emissions well below caps, the company can reduce reporting requirements. Also, XL projects involve much lower government input than normal permitting processes.

Weyerhaeuser's Flint River, Georgia plant was the first XL project. The XL project provides economic benefits to Weyerhaeuser of approximately US\$400,000 per year, primarily related to reduced monitoring and reporting. In addition, it will allow the company to avoid capital expenditures of about US\$10 million on air emissions equipment. Emissions to air and water will be significantly below those permitted under current and proposed regulations.¹⁷

Merck & Co. recently made a major plant improvement under Project XL terms. The EPA and Merck agreed on site-wide lifetime emission caps lower than regulations. In Merck's case the relatively fast approval is valuable since plant construction is on the critical path in the pharmaceutical industry. The advantages of XL encourage Merck to invest in the USA rather than offshore.

"We've been telling the EPA for 19 years that they do not know our business. EPA should set the goals and let us figure out how to do it." – Dorothy Bowers, VP Environmental and Safety Policy, Merck & Co.

Sector-Specific Environmental Initiatives

Sustainable Forest Management Standard

Driven by European consumers and environmental NGO stakeholders, forest products companies around the world are undertaking a range of initiatives. The Canadian industry, under the auspices of the Canadian Standards Association (CSA), developed national standards for sustainable forest management. The program calls for a voluntary system of registration based on Canadian criteria for sustainable forest management. No companies are yet certified.

Forest Stewardship Council

A competing scheme, the Forest Stewardship Council (FSC) is an international organization established in 1993 to support viable stewardship of the world's forests and to provide consumers with information about forest products and their sources. FSC evaluates, accredits and monitors certification bodies which use FSC principles and criteria to evaluate the economic, environmental and social performance of individual forest management. There are local initiatives established in 25 countries, including Brazil, Bolivia, Belgium, Papua New Guinea, Sweden, Switzerland and the United Kingdom. Products originating from FSC-endorsed forests are eligible to carry the internationally registered FSC trademark.

Considerations in the Selection and Development of VNRI

Companies, governments and civil society have a growing number of tools available to achieve environmental objectives. Since some of the tools are relatively new, the criteria to help select the appropriate tools are not yet well developed. It is common for a company to start at the voluntary end of the spectrum with initiatives such as environmental reporting and industry codes of practice. Environmental and social justice groups prefer the regulatory end and some are willing to contemplate non-regulatory tools that are characterized by clear performance measures, transparency, accountability and verifiability.¹⁸ Governments,

faced with diminishing resources and with persistent requests for improved efficiency and effectiveness in the delivery of environmental protection, are ready to experiment further with tools involving devolution of some activities to the private sector.

Although government and industry are the key architects and participants in VNRI, civil society has a strong interest in them. In Canada, the participation of civil society usually merits serious consideration, consultation and, when appropriate, active involvement.

It is beyond the scope of this report to describe how to design successful VNRI and to definitively assess their effectiveness. The work of The Conference Board of Canada and the New Directions Group as well as a number of other studies are available for those purposes.

Participants in VNRI should be aware of their legal implications, including the slight risk that the effects of the VNRI could involve reduced efficiency and anti-competitive practices.¹⁹

The principal criterion for environmental VNRI must be effectiveness in achieving agreed environmental objectives; however, their role in influencing trade competitiveness is also an important consideration.

Conclusions

Innovation on VNRI is very active. In accepting sustainable development as an important societal goal, environmental decision-makers are beginning to appreciate the complexity and difficulty of the challenges. There is a growing realization that traditional regulatory tools may not be the best approach to address many environmental and related issues.

Moreover, as environmental objectives become globalized, stakeholders, in their own self-interest, begin to search for more efficient means to achieve them. The typical drivers for participation in VNRI have been impending or anticipated regulations, cost savings and, in the longer term, increased market share.²⁰ An unintended but apparently significant benefit of VNRI has been improved mutual understanding and better relationships among the participants.

The importance of global markets and global environmental issues are causing companies to move toward globally recognized tools, such as ISO 14001. A similar evolution is occurring in the environmental labeling area with increased mutual recognition among countries.

Given the relatively early stage of development of VNRI and the quest for both effectiveness and efficiency, environmental decision-makers will likely develop a number of VNRI to be employed in conjunction with other tools, including regulations and economic instruments.

If VNRI “do not work,” civil society will demand a reversion to regulation.

Civil society is skeptical of governments backing away from their traditional role as environmental watchdog. Not trusting the business sector and generally unsympathetic to its concerns, many in the NGO community are harsh critics of VNRI. If VNRI “do not work,” civil society will demand a reversion to regulation.

The VNRI's discussed above, as well as a number of others, are analyzed further for their linkages to trade in the next section. The analysis there is largely grounded in the cases found later in this report.

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1. *Enforcement versus Voluntary Compliance: An Examination of the Strategic Enforcement Initiatives Implemented by the Pacific And Yukon Regional Office of Environment Canada, 1983 to 1998*. DOE FRAP 1998-3. Regional Program Report 98-02.
 2. *OECD Environmental Performance Reviews, Australia, Conclusions and Recommendations*, OECD, 1997.
 3. *Joint Environmental Policy-making in Comparative Perspective*. Arthur P. J. Mol, Volkmar Lauber, Martin Enevoldsen and Jolle Landman, 1997.
 4. *Voluntary Codes: A Guide for Their Development and Use*. Office of Consumer Affairs, Industry Canada, Ottawa, 1998.
 5. *Criteria and Principles for the Use of Voluntary or Non-Regulatory Initiatives to Achieve Environmental Policy Goals*. New Directions Group, 1997, page 2.
 6. *Environmental Leaders 2: Accelerated Reduction/Elimination of Toxics Progress Report*. Minister of Public Works and Government Services Canada, 1997, page 3.
 7. *Impact of ISO 14000 on Industry*. Presentation by Mike Small, VP Environment and Safety, Sony Electronics Inc. at GLOBE 98.
 8. *Global Green Standards: ISO 14000 and Sustainable Development*. IISD, 1996.
 9. "All substances" means all contaminants leaving the site into the environment in all media, including gases such as carbon monoxide and other products of combustion. CO₂ is reported separately. It excludes shipped products and clean water but includes contaminants in water leaving the site. "Transportation incidents" includes all accidents and spills.
 10. *Eco-Labeling and Trade: A Cooperative Approach*. John Polak and Kari Bergholm, 1997.
 11. *Eco-Labeling: Actual Effects of Selected Programmes*. OCDE/GD(97)105, OECD, Paris, page 6.
 12. Ibid.
 13. Ibid.
 14. "International Comparison of Environmental Controls on Industry," *ERM Environmental*, August 1996, pages 9 and 10.
 15. *National Environmental Policy Plan 3*, 1998. The Netherlands, page 9. Absolute decoupling occurs when the environmental pressure reduces or at least remains constant while economic activities are increasing; i.e., economic growth while the environmental pressure is falling.
 16. *The Gallon Environment Letter*, Vol. 2, No. 10, May 22, 1998. (email: cibe@web.net).
 17. Information on Weyerhaeuser comes from various EPA and Weyerhaeuser web pages, as well as a telephone interview on April 7, 1998 with Janet McRanie, Public Relations, Weyerhaeuser, Flint River, Georgia.

18. *Criteria and Principles for the Use of Voluntary or Non-Regulatory Initiatives to Achieve Environmental Policy Goals*. New Directions Group, 1997, page 2.
19. *The Legal Aspects of Voluntary Codes*. A paper by Kernaghan Webb and Andrew Morrison, 1996, page 17.
20. *Voluntary Environmental Initiatives in Canada*. A 1996 Status Report, The Conference Board of Canada, September 1996, page vi.

5. Linkages Between Trade Competitiveness and VNRI

The analysis in this section is intended to provide policy and decision-makers with a better understanding of the effects of several important VNRI on the trade competitiveness of Canadian companies. It is also intended to provide similar insights regarding competitiveness in attracting foreign investment capital and in winning opportunities to invest and operate abroad.

The project team developed case studies on a number of companies for which exports and foreign investments are important and which have implemented VNRI. The case studies are problematic. First, many VNRI are young, some with less than a year's experience. Second, in many cases where trade was not considered in the development of the VNRI, the companies are often unable to quantify the effects of VNRI on their trade competitiveness. Therefore the case studies, although instructive, would benefit from a few more years of experience.

While the analysis deals almost exclusively with VNRI, it recognizes the roles of other tools in the development of an optimal mix to achieve environmental and trade objectives.

The key VNRI discussed are:

- voluntary challenges
- environmental management systems, specifically ISO 14001
- codes of practice
- environmental labeling
- covenants and negotiated agreements

Other VNRI are examined in less detail.

Voluntary Challenges

The goals of most voluntary challenges—for example, the VCR, ARET and its US counterpart, the 33/50 Project—are to reduce pollutant emissions or resource consumption. The study uncovered no impacts on market size and little on market share.

One major incentive to participate in voluntary challenges is the opportunity to manage exposure to risks associated with emissions in a more flexible, efficient and timely manner than would be possible under traditional regulations. Other incentives include recognition in the market for proactive action and the opportunity to forestall or develop better regulations. The benefits of improved reputation and identity with customers and the public are demonstrated in the

It is likely that TransAlta's overall approach, not just its VCR actions, was significant in securing its NZ investment opportunities, and in positioning TransAlta advantageously in Australia.

TransAlta case: participants in national voluntary challenges can lever their participation in national voluntary challenges to win international investment opportunities.

Most of the voluntary challenges have been domestic, resulting in limited international recognition. However, the case study of Kraft Canada indicates that the National Packaging Protocol encouraged the company to focus on efficiency and effectiveness gains that helped establish a comparative advantage for some Canadian-made products serving the US market. The Kraft case illustrates the important opportunity for participants in voluntary challenges to develop “least cost” solutions, an important factor in trade competitiveness.

There are a number of ways that the linkages between voluntary challenges and trade competitiveness might evolve in the coming years. It is conceivable that a country could accord special regulatory status on a voluntary challenge and allow the VNRI participants exemption from the requirements of related legislation. An example, admittedly unlikely, could be a “green tax” on certain chemicals with exemption for US 33/50 Project participants. In such a case Canadian firms would have to be ready to agitate for equivalent status based on their own participation in a similar Canadian program, possibly ARET.

Although unlikely in current conditions, it is possible that in the future some multilateral environmental agreements might acknowledge rigorous, verifiable voluntary challenges, and allow signatories to exempt the VNRI participants from trade-related actions mandated against non-participants.

In spite of the effectiveness of voluntary challenges such as ARET and the interest in revising the VCR, it appears that the momentum to develop VNRI in the style of voluntary challenges is waning. The work by the New Directions Group indicates that civil society wants programs with more consultation in goal-setting and tougher measures regarding accountability and verifiability.¹

The issue of “free riders” diminishes the credibility and recognition of voluntary challenges. ARET participation has reached a plateau and effective action by VCR participants is currently limited to a small number of companies. On an overall basis, it is being addressed by a rethinking of the programs. Individually, companies that demonstrate performance under the plan lobby for tangible value, such as credits under future legislation for GHG reductions.

Environmental Management Systems (ISO 14001)

Inferior environmental management is not currently a significant barrier to trade, but a number of business sector sources in this research study indicated that it could become so over the next few years. Xerox, Sony and a number of large companies regard environmental management as important for international trade and are certifying their sites. However, it is too early to say how ISO 14001 will affect shares of international markets. ISO 14001’s impact will depend on it being adopted broadly as an international standard. That in turn will depend on society being aware of the standard and trusting it. There are unsubstantiated reports of many companies pursuing ISO 14001 solely for its trade competitiveness benefits, not for enhancing their environmental management systems. If this is the case, there will likely be great reluctance on the part of NGOs and governments to place much faith in the standard.

Some companies embarking on ISO 14001 see it as a cost of remaining competitive, not as an investment in reducing waste and lost materials. So, the marginal costs of adopting ISO 14001 may cause some market shrinkage, but there is no hard data to reach such conclusions at this time.

Given the high degree of interest in ISO 14001 from small trading nations, it is apparent that ISO 14001 certification is expected to have significant effects on the export prospects of individual companies. Singapore, Thailand and Malaysia are very concerned that ISO 14001 will be used as a trade barrier by developed countries. According to ISO 14001 consultants, much of their certification business is coming out of Asia's small trading nations. Currently, it appears that Europe and Japan will lead in the implementation of ISO 14001 and put others on the defensive in the battle for market share. Many companies are getting ISO-certified so that "they don't fall behind." Telecommunications equipment suppliers are benchmarking themselves against the industry leader, Siemens, who is setting the pace with over 70 certified operations. One of Xerox's reasons for getting certified is to maintain competitiveness, primarily against Japanese rivals like Canon. The Japanese auto-makers are moving ahead with ISO 14001 and pushing their suppliers to do the same, while the US Big Three, who are subscribing to 14001 themselves, have given little signal to their supply chains.

It seems that the battle for share using ISO 14001 may be more active in the manufactured goods and high-tech end, than in primary products. The latter, because of their heavy environmental impact, may need more credible tools to satisfy their stakeholders' demands for audited performance against specific criteria. The case of Canfor and the Environmental Profile Data Sheet in the forest products sector is an example.

Developing countries and small and medium-size companies are concerned that the difficulties and costs of certification will restrict their trade opportunities. Cost is often noted as a concern but it is difficult to obtain hard data. One source mentioned a figure in the range of \$40,000 for a medium size single-site operation and up to several hundred thousand dollars for larger operations.

Most large firms should be able to make the necessary changes to obtain certification. The principal challenge will be for small companies, especially those in countries that lack the infrastructure that facilitates ISO 14001 development. Small and medium size Canadian companies could also lose market access. Many Canadian companies that are not seeking certification are covering their bets by benchmarking their EMSs against ISO 14001. Examples include the chemical producers with Responsible Care[®], members of The Canadian Electricity Association and Procter & Gamble.

"A lot of companies are going for ISO 14001 to protect their export position, even going as far back up the supplier chain as the electrical producer." – Anonymous comment in a GLOBE 98 session, March 19, 1998.

The experience with ISO 9000 on quality management systems indicates that in an industrial marketing setting, such standards can be powerful determinants in market share. At the discretion of the purchaser, they become an essential condition to supply.

*“EMAS and ISO 14001 are becoming a license to supply.” – Jim Oatridge,
Director of Environmental and Corporate Controls, Severn Trent Plc.*

One of the principal issues surrounding ISO 14001 is the extent to which it becomes written into product and supplier specifications and perhaps into legislation and regulation. This can be done by the private sector without trouble from the WTO. Korea has linked ISO 14001 registration to its government procurement and purchasing policies. The UK is in the process of doing so and others are expected to follow.² Because ISO 14001 deals with PPMs, these government activities are likely to attract the attention of the WTO, but it is not clear whether such initiatives run afoul of the WTO Agreement on Government Procurement. In any case, a large number of WTO members have not signed the Agreement, and are not likely to in the medium term.

Canada is trying to encourage contact between ISO and WTO in order to address potential trade and environment linkages.³ The WTO's Agreement on Technical Barriers to Trade and its annex, the Code of Good Practice are two components of the WTO agreements that are relevant and neither should have trouble with ISO 14001 EMS.

Given the level of interest and energy in ISO 14001, there is the possibility that it, or an enhanced version, could *eventually* be written into general trade rules in the same way it is now becoming linked to government procurement, allowing trade discrimination based on certification.

ISO 14001's impacts on trade competitiveness will depend on the extent to which it becomes adopted as an international standard. Credibility and an enormous amount of capacity-building around the world are necessary for broad adoption.⁴

Codes of Practice

The work on codes of practice in this project focuses on Responsible Care[®], in addition to a case on the Canadian Electricity Association's recently introduced Environmental Commitment and Responsibility (ECR) Program. Unlike eco-labels and environmental management systems, codes of practice are usually developed to address fundamental issues in a business. They are not developed with trade competitiveness as a high priority. The Canadian chemical industry believes that Responsible Care[®] has negligible direct effect on trade competitiveness or investment, in spite of its acknowledged success and its presence in about 40 countries.⁵

However, there are important indirect effects on competitiveness, such as lower costs, getting a head start on ISO 14001 and the benefits of product stewardship.^{6,7} Experience with Responsible Care[®] provides members with a structure around which to build a formalized environmental management system, such as ISO 14001, which may become a condition for business in some markets. Responsible Care[®] has also proven a real advantage to companies that market their technology around the world. Lastly, the CCPA believes that the adherence of high standards around the world facilitates trade in chemicals.

The project tested the hypothesis that membership in Responsible Care[®] could be relevant in facilitating Canadian investment and operation overseas. Methanex discounted the rele-

vance of Responsible Care® regarding its investments in Chile and New Zealand.⁹ However, Bayer Rubber, CXY Chemicals and Sterling Pulp Chemicals have credited their efforts under Responsible Care® as one reason for receiving approvals, either from global headquarters or host communities to build new plants.¹⁰

Canadian leadership in Responsible Care® has enabled its companies to exercise more influence abroad than would have been the case without the program. This observation should be kept in mind if considering a code for, say, mining or forestry. Government-led trade initiatives mention Responsible Care® as a benefit of dealing with the Canadian chemical industry.

The International Council of Chemical Associations is discussing the development of international principles and the worldwide application of Responsible Care®. This activity could lead to an environmental standard adhered to by the better informed and better resourced companies, leaving the remainder disadvantaged in international trade. It is interesting to note that, as some VNRI's attract an increasing number of sectoral adherents, they lose their ability to confer an edge on the "front-runners," and become essentially a basic requirement to do business.

The case on the Canadian Electricity Association suggests that its Environmental Commitment and Responsibility Program should help participants market more effectively for domestic and international business through improved credibility and environmental management. Proving the success of the ECR on the trade front will take several years of experience.

"My expectation is that the [ECR] Program will present the opportunity to be used as a marketing tool or to gain trade advantage. I know that Hydro Québec has already referenced their participation in promotional materials aimed at securing business on the eastern seaboard." – John Kelly, Canadian Electricity Association.

Eco-Labeling

Two of the project's case studies, Xerox and Canfor, include eco-labeling being relevant to exports; however, the value of eco-labels generally in the market is far from clear. The OECD study released in 1997 revealed no hard evidence of changes in trade flows due to selected eco-labeling schemes. Data concerning the market impact of eco-labels is difficult to obtain because of competitive concerns and because of the other factors that affect market sizes and shares. Anecdotal evidence suggests that the acquisition of an eco-label results in increased sales. Supporting the anecdotal evidence are the continued acquisitions of eco-labels and the increased activity in the programs themselves. Evidence also suggests that

The environment, health and safety attributes built into the technology and included in the training, start-up, post-commissioning and auditing services offered are an important part of the marketing package of companies like Novacor.⁸

companies obtain eco-labels more as a defensive move to protect share than to gain share.¹¹ Companies acquiring eco-labels do so with more interest in the domestic market than in foreign markets, probably because the labeling schemes are largely national in scope.

Being first in an industry to acquire an eco-label can be an important factor in evaluating whether to proceed. One large communications equipment producer, interviewed as part of this study, will only proceed if it can be number one with an eco-label.

Market impact of eco-labels depends on the awareness of the consumer. In the US and Canada, where the “green consumer” market is thin, compared with northern Europe, business and government markets are much more important for eco-labeled products.

Transparency and accessibility are issues for producers considering eco-labels in a foreign market. This is especially true for producers located in developing countries because of their dependence on exports, their general absence from the scheme development process and their attention to different environmental priorities than the developed importing countries.^{12, 13} Even if there is no overt discrimination, practical issues of distance, language and culture can make eco-labeling schemes more difficult for foreigners to understand, access and satisfy than for local producers. The EU eco-label for paper, for example, has been criticized by Canada, the US and Brazil for lack of transparency, for discrimination, for reflecting domestic environmental conditions and preferences and for failure to take into account equivalent but different methods of identifying and measuring environmental effects.¹⁴ According to Anil Markandya, the EU has not convincingly demonstrated that its proposed eco-labeling measures will not be discriminatory.¹⁵ A recent OECD report stated that “eco-label schemes are increasingly based on life-cycle analysis and, more specifically, production related criteria.”¹⁶ The GATT does not allow governments to discriminate among imports on the basis of PPMs, and so far, there is no consensus in the WTO that this should be changed.¹⁷ Consumers and purchasers can discriminate, as can voluntary schemes.

Mutual recognition and equivalency among eco-labeling schemes, particularly those using international standards, should be effective concepts to minimize potential trade effects of eco-labels. Canada’s Environmental Choice Program is involved in the Global Eco-Labeling Network to advance such concepts but they are at early stages of development.

Although Canada’s Environmental Choice Program is said to have a high profile internationally, trade effects are largely theoretical at this point. Companies should not count on the Environmental Choice logo to boost exports from Canada in the near future.

Some pulp and paper customers in Europe have signaled that suppliers should submit EPDSs, a Type III eco-label, in order to retain or win business.

The Canfor case illustrates the value of the Environmental Profile Data Sheet (EPDS). Some pulp and paper customers in Europe have signaled that suppliers should submit EPDSs in order to retain or win business. To the extent that pulp and paper purchasers insist on the EPDS, it could have substantial implications for Canadian exports. Because of its leadership in the development of the EPDS, now available

world-wide, Canadian industry may derive some benefits in export markets. At this time it is not clear what performance standards will be required by purchasers.

The field of eco-labeling is young, active and evolving. In spite of unclear signals regarding impacts on market shares, industry and other stakeholders are actively pursuing eco-labels. ISO's work on Guiding Principles is also a testament to the potential growth in the importance of eco-labeling. It is likely that eco-labeling will have increasing significance for trade, as a result of the developments in mutual recognition, equivalence and global guidelines and principles.

Covenants

Even though covenants have been in use in the Netherlands for a number of years and trade is very important to the economy, there is little information available regarding their effects on trade competitiveness. Concerned with the relative stringency of environmental requirements imposed by its European trading partners, the Netherlands commissioned a study to compare terms and conditions on acidification, dispersion of toxic substances, waste management, land contamination and policy implementation and enforcement in seven other jurisdictions in Europe. The study concludes generally that Dutch requirements are more stringent, although not in all cases, but reaches no conclusions on competitiveness impacts on Dutch industry.¹⁸

A study of the Dutch chemical industry environmental agreement describes advantages related to more flexible and efficient environmental planning, lower costs for operating licenses, a better informed and understanding government and better relations between industry and government.¹⁹ Efforts are under way to lighten the burden of the covenant process through changes in reporting requirements. The study concludes that environmental improvements are being achieved at less cost to industry than under conventional regulations.

When asked whether the covenant process was making the Netherlands uncompetitive for trade and investment in Europe, Dutch government officials responded that a recent symposium ("Silent Revolution") of government and industry in the Netherlands concluded that both parties endorsed the covenant process.²⁰ Merck Pharmaceuticals' people in Europe also like the Dutch process, and note that it is not driving out investment.²¹

Other competitiveness benefits of the covenant process are more speculative. The requirements of a plan, a certified EMS, clear objectives and a progress report may stimulate more effective and efficient environmental management and the development of cleaner, more cost-efficient processes and products. Over time, the image of a clean, green Dutch industry may enhance trade competitiveness.

To help ensure that environmental objectives are achieved and that its policies do not hamper trade competitiveness, the Netherlands is very active at the EU and international levels promoting international environmental agreements and the use of effective tools such as the covenant process.

In summary, it appears that the Netherlands is managing to protect its trade competitiveness while setting a leadership pace using the covenant process. The limited, but so far positive, experience with negotiated agreements in Canada (a MOU on auto assembly and Dofasco's recent environmental management agreement) does not illustrate linkages between the VNRI and trade competitiveness.

Other VNRI and Trade

The project also developed case studies which illustrate the relevance to trade of a number of in-house initiatives, rather than sectoral or global initiatives. The 3M Canada case demonstrates how a subsidiary in a multinational company uses its pollution prevention

The 3M Canada case demonstrates how a subsidiary in a multinational company uses its pollution prevention program to enhance inter-company export competitiveness and its ability to attract investment capital.

program to enhance inter-company export competitiveness and its ability to attract investment capital. The CP Hotel case shows the importance of its in-house greening program to attract environmentally aware foreign clientele.

The Benzidine Dyes case points out the economic risks of moving ahead of other regions without timely and adequate protective trade measures. In the dyes case, in spite of eventual import bans on textiles using the targeted dyes, the European dye industry declined, leaving Asian suppliers to fill European needs. The

Electrolux case (not developed in this report) is still being played out as American manufacturers supply Germans with fridges containing HCFCs (ozone depleting substances) after Electrolux voluntarily abandoned the market on principle.

Conclusions

There are important linkages between VNRI and trade competitiveness. Participants in many VNRI anticipate enhanced market shares due to improved cost-competitiveness, in some cases, and to improved reputation in their markets. There is little proof of this but it does drive participation in many VNRI.

Voluntary challenges typically have marginal impacts on trade because of low international recognition and credibility. This is not surprising since these initiatives are usually of a national scope.

Just as improved environmental performance is important, so is the ability to display that performance with a range of recognized tools, such as eco-labels and management system standards. Canfor's Environmental Performance Data Sheet confirms its performance to customers.

Not surprisingly, international schemes, such as ISO 14001, are more relevant than domestic ones for international trade. Environmental protection is increasingly a global and regional endeavour.

For a number of environmental issues, nations have moved past denial and on to agreement on objectives and the search for solutions. Faced with common goals, governments and business realize that effectiveness is not sufficient. The solutions must also be efficient. Business is increasingly vocal about being able to develop and implement least-cost solutions, partly for reasons of trade competitiveness. One of the appeals of Project XL in the US is its cost-effectiveness. Concerned about value, companies balk at the cost of ISO 14001 and they question the value of a variety of eco-labels.

Some new VNRI's are being developed with trade in mind, perhaps more than environment. One appeal of ISO 14001 is its role in eliminating potential trade barriers related to environmental management. The EPDS is designed foremost to enhance international trade competitiveness.

There is increasing demand for more hard data, such as in the EPDS, to substantiate environmental performance for purchasers.

The cases on Canfor, Nortel, Philips and CP Hotels indicate that the European buyers are setting the pace for environmental performance. Likewise, the Europeans are in the forefront in the creation of new VNRI's, such as the EU eco-label and Dutch covenants.

There is increasing demand for more hard data, such as in the EPDS, to substantiate environmental performance for purchasers.

Government procurement accounts for as much as 10 to 15 per cent of GDP, making governments potentially powerful players in "greening" national economies. The linking of government procurement and VNRI's, such as ISO 14001, could present significant risks and opportunities to suppliers. Extending the practice to national or regional eco-labels, such as the new EU label, could have a significant impact on foreign suppliers.

Finally, the study shows that the companies that are leaders in their industries are often the ones most actively involved in VNRI's. This could indicate the prospect of more innovative development of VNRI's and other tools to enhance environmental and trade performance. It could also indicate a new competitive arena in which the leaders can distinguish themselves: proactive development of the most effective, efficient trade competitive tools.

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1. *Criteria and Principles for the Use of Voluntary or Non-Regulatory Initiatives to Achieve Environmental Policy Objectives*. New Directions Group, 1997.
 2. ISO 14000 Status and Future Impacts. Presentation at GLOBE 98 by Ahmad Husseini, Secretary, ISO TC 207 and Manager, Environmental Programs, Canadian Standards Association.
 3. Conversation with Richard Ballhorn, Department of Foreign Affairs and International Trade, Canada, January 1998.
 4. *Global Green Standards: ISO 14000 and Sustainable Development*. IISD, 1996.

5. According to interviews with Gordon Lloyd of the Canadian Chemical Producers' Association and Jeff Tyson of Methanex Corporation.
6. *DOES RESPONSIBLE CARE[®] PAY?...a primer on unexpected benefits of the initiative*. The Canadian Chemical Producers' Association, unpublished draft, received January 1998.
7. Conversation with Gordon Lloyd of the CCPA, January 1998.
8. *DOES RESPONSIBLE CARE[®] PAY?*
9. Discussions and correspondence with Jeff Tyson of Methanex.
10. *DOES RESPONSIBLE CARE[®] PAY?*
11. Eco-Labeling: Actual Effects of Selected Programmes, OECD, OCDE/GG(97)105, pages 5, 6.
12. Eco-Labeling: Actual Effects of Selected Programmes.
13. *Trade, environment and development aspects of establishing and operating eco-labeling programmes*. (TD/B/WG.6/5), Geneva: UNCTAD, 1996.
14. Eco-Labeling: Actual Effects of Selected Programmes, pages 40-41.
15. Zarrilli, Simonetta, Veena Jha and René Vossenaar (editors). *Eco-Labeling and International Trade*. United Nations Conference on Trade and Development. MacMillan Press Limited. 1997, page 16.
16. Eco-Labeling: Actual Effects of Selected Programmes.
17. *Global Green Standards: ISO 14000 and Sustainable Development*. IISD, 1996, page 26.
18. International Comparison of Environmental Controls on Industry, by Environmental Resources Management for the Dutch Ministry of the Environment, September 1996.
19. *The Netherlands: Declaration on the Implementation of Environmental Policy in the Chemical Industry*, Case Study 4. The European Environment Agency, 1997, page 74.
20. Conversation with Dr. Paul Hofhuis, Counselor for Environment (United States and Canada), Royal Netherlands Embassy, Washington March 19, 1998.
21. Conversation with Dorothy Bowers, Vice President, Environmental & Safety Policy, Merck & Co., March 19, 1998.

6. Conclusions and Recommendations

Conclusions

The research for this report addressed three objectives:

1. To identify trade implications of a range of non-regulatory initiatives as they have been applied to date and to assess the nature and significance of trade impacts.
2. To examine emerging environmental and related risks which may have impacts on the export performance of Canadian industry.
3. To identify opportunities for the strategic application of non-regulatory approaches to mitigate these risks and enhance the competitive positioning of Canadian industry.

Although the newness of many VNRI and the challenge in obtaining a great deal of information on the linkages between VNRI and trade competitiveness make some of the findings somewhat tentative, the research was able to draw the following conclusions:

1. *Trade Implications of VNRI*

The most significant trade implications of VNRI are related to efficiency, market share and new market opportunities.

Increased Efficiency

VNRI such as voluntary challenges, codes of practice and negotiated agreements allow companies to make cost-effective decisions regarding timing and methods used to achieve objectives thereby improving competitiveness. There are numerous examples, including Kraft Canada and the National Packaging Protocol, Responsible Care®, 3M's 3P Program, Weyerhaeuser's and Merck's XL Projects and the Dutch chemical industry's experience with covenants.¹

Market Share

When recognized by the market, eco-labels, standards, in-house programs and voluntary challenges can help companies protect and enhance market share. Canfor's range of proactive approaches, including its use of the Environmental Profile Data Sheet (EPDS), should enable it to preserve European business. ISO 14001 certification of Xerox's and Sony's world-wide operations is intended to ensure that environmental management is not a barrier to its trading prospects. TransAlta's performance under the VCR, as one component of an integrated approach to environment and sustainable development, gave it an edge in winning an investment opportunity in New Zealand.

The most significant trade implications of VNRI are related to efficiency, market share and new market opportunities.

As the Benzidine Dyes case shows, sometimes voluntary withdrawal of a product from the market for environmental reasons can cause a loss of market share when appropriate supporting import control measures are not taken.

New Market Opportunities

The implementation of an in-house environmental program or industry code of practice can lead to new market opportunities. CP Hotels' Green Partnership program inspired an eco-tourism initiative in cooperation with some of CPH's host communities. Body Shop International's ethics of fair trade and community development have led to a number of new product lines sourced out of developing countries. Interface's drive for eco-efficiency led the company to provide a floor-covering service in the form of leased carpet tiles as an alternative to selling carpets.

2. *Emerging Environmental and Related Risks and Opportunities*

In examining the emerging risks and opportunities to the export performance of Canadian industry, the research discovered important developments beyond what would normally be considered "environmental and related" risks. The research assessed the implications of a number of developments in the trade-environment-VNRI arena, including leadership, government procurement and others.

Environmental Awareness and Concern

Although the general public remains confused by complex environmental problems, there is a general rise in the level of awareness and understanding of environmental issues and of the linkages with economic and social issues, particularly in the EU and the US—two major markets for Canadian exports. Although concern for environmental issues fluctuates relative to other issues, it is believed by many that environmental health has become part of our core values. Building a corporate strategy around an assumption that environment will become a minor issue would be risky. On the contrary, many leading corporations have integrated superior environmental performance into company strategy and objectives.²

Leadership

Taking environmental issues more seriously than other regions and actively tackling its problems at the policy level and on the ground, Europe has taken a leadership role. The

EU has a comprehensive sustainable development implementation program and its members have taken advanced positions in the use of economic instruments. The European market is also setting the pace for the development of some solutions. Although the EU is alleged occasionally to use environmental issues as unfair trade barriers, it would be a mistake to dismiss European developments as rhetoric.

Although the EU is alleged occasionally to use environmental issues as unfair trade barriers, it would be a mistake to dismiss European developments as rhetoric.

Government Procurement

Given government's role as a lead user, there is the likelihood that governments will continue to develop procurement procedures specifying environmental performance criteria linked to VNRI's such as eco-labels and ISO 14001. One down-side scenario for foreign suppliers would be governments linking procurement to domestic eco-labels in the importing market without mutual recognition for labels in other countries. Another would be governments developing procurement procedures based on a single criteria or without reference to any proper process on environmental criteria.

Sanitary and Phytosanitary Standards (SPS)

The increasing use of SPS barriers is a concern to Canadian exporters of grains, meats, fish and other aquaculture products and wood products. Addressing SPS barriers can be difficult, expensive and time-consuming; Canada's current beef hormone dispute with the EU has dragged on for many years and is likely to continue into 1999.

The increasing use of SPS barriers is a concern to Canadian exporters of grains, meats, fish and other aquaculture products and wood products.

The Degree of VNRI Adoption

The strength and influence of VNRI's on international trade will depend on the degree to which they are broadly adopted. Although the development of VNRI's, rather than more regulations, is strongly endorsed by business, there is less enthusiasm from some parts of government and from civil society. These last two sectors, and the more demanding purchasers, insist that VNRI's make increased use of hard data and that they are characterized by increased accountability, transparency and verifiability. They also want responsibility for environmental performance moved up the supply chain from product attributes to management of the resources used in production. Another critical issue for the broad adoption of VNRI's is the need for capacity to implement them, particularly ISO 14001, in developing countries and small and medium-size companies. If ISO 14001 is broadly adopted, companies certified to the standard will have opportunities for increased market share, while those with uncertified EMSs risk loss of share.

Multilateral Environment Agreements and Protectionist Mechanisms

Although there is little incidence to date, there is the slight possibility that nations will use potentially protectionist mechanisms (e.g., border tax adjustments) against imports to fulfill the requirements of MEAs, such as the Framework Convention on Climate Change. This is a potential concern for some of Canada's energy-intensive export products such as electricity, pulp and paper, aluminum and other refined metals.

NGO Influence

Some elements in the NGO sector (e.g., World Wildlife Fund) have the resources and interest to set performance standards and influence markets with boycotts or by creating mechanisms to promote environmentally preferable alternatives. Examples of the latter include the Greenfreeze™ hydrocarbon-based refrigerator, the Forest Stewardship Council certification system and the very new Marine Stewardship Council established to promote sustainable and responsible fisheries and fishing practices worldwide.

Green Branding in the US Electricity Industry

As the US electricity industry is deregulated, there is a growing niche market for “green” energy since consumers are now being given the ability to choose their electricity suppliers, even over the integrated grid. This trend represents opportunities for some large hydro, small hydro and bio-mass generators in Canada, as well as risks for generators associated with social and environmental problems.

Process and Production Method (PPM)-Based Criteria

For at least the next five years it is unlikely that the WTO will allow the use of PPM-based criteria to determine standards used in government purchasing specifications. In the longer term, however, one could speculate that such a change will take place, if developing country members drop their opposition to the use of PPMs. Such a ruling would be designed to prevent the ready creation of protectionist trade barriers, but would surely bring out the creativity in those who are keen to erect them.

3. *VNRI Opportunities for Canada*

The research identified opportunities for Canadian industry, in general, to apply VNRI strategies to mitigate the risks and enhance competitive positioning with regard to environmental and related issues. Key opportunities are described below.

Canadian Strengths in VNRI Development

Several times during the research people commented that Canada is perhaps an ideal environment for VNRI. It is democratic and has an educated population, a free media, an active civil society, a sophisticated business community and a regulatory framework. However, opinions of Canada’s actual performance with VNRI vary from “leadership” to “nowhere near the leaders.” Canada should test the notion that it has what it takes to be at the forefront of innovative and effective approaches to environmental protection.

“Voluntary initiatives are on the rise in the Canadian business community. Indeed, Canada may be in a leadership role in the world in this area.” – The Conference Board of Canada. Voluntary Environmental Initiatives in Canada. A 1996 Status Report. September 1996.

Negotiated Agreements

Because of the high degree of success and satisfaction with negotiated agreements, particularly with the Dutch covenant process, there is an opportunity for further research and action in this area.

Mutual Recognition

Further development of mutual recognition of VNRI would enhance the trade competitiveness of Canada's "green" industries. Canada is fully engaged in such work on eco-labels. There could be opportunities to have certain VNRI granted special status in importing countries; however realizing such opportunities would likely be difficult and time-consuming.

"Green Canada" Reputation

Countries like Sweden and the Netherlands have developed a "green" reputation which probably helps them in export markets. If environmental performance is assumed to be an increasingly important purchasing criterion, "greening" Canada's image would enhance trade competitiveness. Doing so would require high-level policy decisions and comprehensive long-term strategic programs. The sustainable development strategies of the federal government are perhaps a small, but important, first step. A first step from the business community would be to ensure acceptance of its VNRI at home and abroad.

VNRI Development and Optimization

There are a number of opportunities to develop better VNRI. Common to much of the activity globally on VNRI and other environmental protection tools are two themes: One is the need for tools that have international relevance and effectiveness. The other is the need for efficient tools. Related to the international theme is the opportunity to facilitate the adoption of internationally recognized tools, for example ISO 14001, in Canada, particularly at the SME level.

Common to much of the activity globally on VNRI and other environmental protection tools are two themes: One is the need for tools that have international relevance and effectiveness. The other is the need for efficient tools.

Also, more demanding trading partners are insisting on increasingly explicit and quantitative tools from prospective suppliers. The Canadian Pulp and Paper Association's EPDS and life-cycle analysis are examples.

Different Levels of Risk and Opportunity

Environmental risks and opportunities vary among Canadian export industries. Certain members of the pulp and paper industry have undertaken a range of initiatives to protect markets. Leaders in the high-tech industries have also been proactive. There

is perhaps room for concern that some other important export industries do not acknowledge any significant issues, despite signs to the contrary.

Recommendations

From the discussion above, several recommendations become apparent:

1. *Industry Scan*

Some industries are subject to more risks and opportunities than others. It would be appropriate for government and industry stakeholders to ensure that adequate analysis is being done of certain Canadian industries to assess the emerging risks and opportunities related to trade and environment. Examples include food and aquaculture products on sanitary and phytosanitary grounds, electricity exports to the US and auto parts. Subsequent to the scan, analysis could be done to determine how VNRI and related tools could be used to enhance the trade competitiveness of the industries studied.

2. *VNRI Research and Development*

Environmental Management System Standards

In view of the high degree of interest in the ISO 14000 series of standards and guidelines, in particular the interest in the ISO 14001 Environmental Management System standard outside North America, it would be prudent to assess the extent to which

Canadian industry sectors are taking these tools seriously. Keeping in mind the reservations about ISO 14001's potential effectiveness in environmental protection, the assessment should determine where and why the tools are not being pursued. Further, the assessment should, in particular, examine the nature of existing and potential responses among small and medium size enterprises.

It would be prudent to assess the extent to which Canadian industry sectors are taking the ISO 14000 series seriously.

Efficiency

It is important that Canada objectively benchmarks itself against the leaders in the development and optimization of VNRI. Business associations and provincial and federal departments responsible for industrial competitiveness and environmental protection should be instrumental in supporting policy development research to ensure that Canada has efficient tools for environmental protection and trade competitiveness. In this work it would be appropriate to consider a range of tools, including economic instruments, regulations and VNRI.

Quantitative Tools

Canadian companies and their associations should develop more credible, quantitative and verifiable tools. Federal and provincial environment departments should assess broader use of negotiated agreements and covenants because of their reported effectiveness in the Netherlands and the US.

Summary

VNRIs have implications for market share, trade competitiveness and new market opportunities. Canada faces both risks and opportunities as environmental and related issues become increasingly linked to trade. There are a number of opportunities for Canada to gain a competitive edge by strategically fostering the development of VNRIs and working to implement appropriate supporting policies.

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1. The experiences of Merck and Weyerhaeuser are described briefly in the section on VNRIs. Case studies on these companies and on the Dutch chemical industry are not in this report.
 2. Electrolux of Sweden is an example.

Case Studies

The case studies have been prepared largely from company material and from interviews with company personnel. Information has not been verified with a third party.

Alcan

Background

Alcan is the parent of a worldwide group of companies involved in all aspects of the aluminum industry. Its activities include bauxite mining, alumina refining, power generation, aluminum smelting, manufacturing and recycling. Approximately 33,000 people are currently employed by Alcan and its subsidiaries, with thousands more employed in its related companies.

The Canadian primary aluminum industry has a total production capacity of 2.3 million tonnes of metal per year. Strongly export-oriented, the value of the aluminum industry's shipments abroad was estimated at \$4.5 billion in 1995. In 1997, net income for Alcan was US\$485 million and they achieved a 10 per cent increase in overall shipments of fabricated products, which translates into increased market share. Most of the primary aluminum produced in Canada is exported to Alcan's fabricating operations and to third-party customers in the United States, Europe, the Middle East and Asia. Alcan's exports are about 85 per cent of its total production capacity. Foreign markets include Japan, South Korea, Taiwan, the Netherlands, France, Germany and Austria.

Environmental Issues

Alcan is devoted mainly to aluminum production and fabrication. It involves many activities such as bauxite mining, alumina refining, aluminum smelting and aluminum rolling. These activities use natural resources in the form of raw materials and energy to produce finished and semi-finished products.

Aluminum is derived from bauxite, which is surface-mined around the globe in tropical and equatorial climate zones. Annually, the aluminum industry mines a total of about 1370 hectares; 11 per cent of this mining is located in areas with rain forests. Environmental issues related to bauxite mining are the future use of land associated with exhausted mine sites.

Bauxite is converted to alumina with the use of chemicals. The extraction process leaves behind an alkaline residue known as red mud. The leading environmental aspects in alumina refining are red mud disposal, energy consumption and airborne emissions.

After alumina refining comes primary aluminum production, which is an energy-intensive process. Alcan locates the majority of its primary aluminum production near hydropower. The key environmental aspects in power generation are water management and PCB disposal.

Primary aluminum production requires a great deal of energy to produce molten aluminum from alumina. This smelting process emits carbon dioxide and carbon monoxide. Other air emissions generated include dust, fluorides, sulphur oxides, nitrogen oxides, polycyclic aromatic hydrocarbons (PAHs) and perfluorocarbons (PFCs). Besides the management of air emissions, smelting involves environmental aspects such as water effluent and solid waste.

A final activity is aluminum rolling, where sheets (ingots) from the smelting process are reduced in thickness. Environmental aspects in rolling include minimizing waste and eliminating hazardous chemicals.

Voluntary and Non-Regulatory Initiatives (VNRIs)

Underlying Alcan's environmental commitment are two major voluntary components—a global Environmental Management System (EMS) and Product Stewardship. The company's commitment to continual environmental improvement has been accomplished through the interaction of employees, suppliers, customers, consumers and governments.

Alcan's EMS is a top-down approach, where the president and chief executive officer, along with five outside directors, comprise the Environment Committee of the Board of Directors. The Environment Committee reviews environmental policy and management programs, monitors the effectiveness of the systems in place, and evaluates management's plans and long-term objectives. To accomplish these objectives, each plant identifies and establishes its environmental priorities within the framework of the corporate EMS.

Product Stewardship is another important strategic voluntary initiative at Alcan. Product Stewardship will help address global environmental concerns because it encourages industry and other stakeholders to work with each other to solve problems associated with product systems. Its basic principle calls for organizations to assume responsibility for their products from design to disposal. This ensures that products, in every stage of their life-cycle, make the most of the inherent environmental value of aluminum.

Alcan's commitment to the environment has led to several environmental benefits including:

- Reduction in canstock thickness has yielded an increase of 20 per cent more cans per equivalent weight of aluminum.
- Aluminum's light weight is beneficial to the automotive sector because it helps it respond to increasingly stringent environmental regulations. Every 10 per cent reduction in the weight of a vehicle results in a 6 per cent increase in fuel efficiency.
- Alcan's well-established recycling network enables it to recycle about 32 per cent of its combined primary and secondary production capacities.
- Alcan's smelting losses are less than 2 per cent and they can recover over 98 per cent of the metal in used beverage containers.
- Alcan has also achieved significant energy, air emission, water effluent and solid waste reductions.

Effects of VNRI on Trade and Investment

The last decade has witnessed a dramatic increase in concern about the global environment. Alcan is aware of the tremendous activity and international discussions that are taking place on the environment. As a global company, its environmental commitment is due, in part, to this growing interest and the product choices consumers are making. Stakeholders' perceptions of what is an environmentally sound product could have potential impacts on Alcan's competitiveness and its exports.

Alcan exports about 85 per cent of its Canadian production. The company's direct competitors are other aluminum companies at home and abroad. However, significant competition comes from substitute products such as steel, plastics, glass and to a lesser extent paper.

Alcan believes the excellent qualities and environmental benefits of aluminum will sustain its appeal in the market. The company uses its expertise to help its customers take advantage of aluminum's unique properties. For instance, Alcan's aluminum vehicle technology was selected for General Motors EV1—the first electric passenger vehicle available to consumers and the first North American production vehicle to feature an all-aluminum structure.

The inherent environmental benefits of aluminum will provide opportunities for Alcan on a global scale and not just in North America. For example, Alcan is well positioned over the coming years to assist European automotive companies meet increasingly stringent environmental regulations. Within the next 15 years these companies will need to recycle about 90 to 95 per cent of their vehicle parts. One of aluminum's most advantageous traits is its recyclability. Added to this is Alcan's well established recycling network. Both of these factors will provide Alcan a competitive edge in the European market.

Another European industry, the packaging industry, must also meet stringent environmental requirements. Packaging is an important issue in Europe, where companies must meet quotas for recycling. Their purchasing decisions will be partly influenced by the need to meet their targets. Alcan's ability to communicate the environmental benefits of aluminum to these and other customers will expand demand.

Conclusions

Alcan's environmental programs and policies are an integral part of the business. The company considers these environmental initiatives as its license to operate.

"Unless we manage our resources prudently and in a way that is acceptable to the communities in which we operate, we won't operate for very long." – H. Porteous, Alcan.

It is the commitment to the environment and the relationships with communities in which they operate that are the driving forces for their policies. These initiatives were undertaken with the intent of becoming a leader in sustainable development.

Alcan's challenges for the years ahead include preserving and building upon the successes of the past through a consistently applied EMS and to capitalize on the environmental

strengths of aluminum through the practice and promotion of product stewardship. This may present opportunities to gain market share in a competitive market.

Sources

Hugh Porteous, Director, Research and Corporate Relations, Alcan Aluminium Ltd.

Fraser Thomson, Research Officer, Research and Corporate Relations, Alcan Aluminium Ltd.

Alcan Aluminium Limited, A Commitment to Continual Environmental Improvement, 1996.

Alcan Aluminium Limited, Environmental Report, April 1997.

Alcan Aluminium Limited, Annual Report, 1997.

Benzidine Dyes

Background

In use since the late nineteenth century, benzidine is an organic chemical used predominantly in the production of dyes. It has been used as an intermediate in the manufacture of benzidine-based dyes for the leather, textile and paper industries. There are approximately 45 to 50 benzidine dyes currently in commerce worldwide.

Health concerns about benzidine can be traced back as early as 1906 when a report was published on the correlation between benzidine exposure and bladder cancer in humans. As more evidence became available on the health affects of benzidine, European dye manufacturers, in the early 1970s, voluntarily stopped manufacturing benzidine dyes. However, at the time, neither the use of benzidine dyes nor the dyed goods themselves were considered to pose a health risk.

Environmental Issues

Benzidine is a toxic chemical that can result in harmful health effects from long-term exposure. The highest levels of benzidine were reported in workers at benzidine production plants, especially at plants with poor and unsanitary working conditions. Prior to 1940, reports suggested that benzidine induced bladder cancer in exposed workers. It was not until an epidemiological study of UK workers exposed to benzidine over the period from 1921-1950 that conclusive evidence of the carcinogenic nature of benzidine was provided. Other studies in Japan, France, US, Russia and Germany supported the conclusion that there is a high risk of bladder cancer in exposed workers.

Voluntary and Non-Regulatory Initiatives (VNRIs)

As the risks associated with the use of benzidine became more evident, regulations in the United Kingdom prohibited its use. Four years later, in 1971, Bayer, a major European manufacturer of benzidine, decided to cease manufacturing the chemical. This prompted many European dye manufacturers to voluntarily stop production of benzidine dyes. Other factors contributed to this voluntary action:

- Benzidine dyes can readily regenerate into benzidine through a chemical reduction, for instance, through a cleaning liquid that contains reducing agents.
- Exposure to benzidine dyes can result in exposure to benzidine because the dyes can be metabolized in the body to give benzidine.

This voluntary initiative reduced the occupational risks associated with the manufacture of benzidine and benzidine dyes. In addition, it probably reduced the occupational exposure to benzidine dyes in the leather, textile and paper industries because of the partial replacement of benzidine in dyes. Overall, the initiative resulted in approximately 90 per cent of European manufacturers voluntarily stopping the production of benzidine dyes.

Effects of VNRI on Trade and Investment

There were a few trade and investment related effects associated with the initiative. Principal among these was the fact that European companies using dyes for their products, such as leather, began importing benzidine dyes since the focus was on benzidine and not the dyes themselves.

As European manufacturers ceased production of benzidine dyes, manufacturers outside Europe met demand for this commodity. This cessation created a marketing opportunity for other manufacturers in the global market because replacement dyes matching the benzidine dyes in both price and technical properties are still not available. Consequently, European companies involved in this initiative incurred substantial costs producing alternative dyes. On the domestic front, companies had to compete with European producers still manufacturing the less expensive benzidine dyes, as well as benzidine dye imports. Moreover, this cost differential could have had potential impacts on export markets. In other words, companies could lose out in the export market due to the availability of cheaper dyes.

However, in 1994, the German Consumer Goods Ordinance banned benzidine dyes in the production of certain consumer goods. A similar action was adopted in the Netherlands a few years later. This trend will help level the playing field, at least in the domestic markets.

Another negative impact of this initiative was that the marketing opportunities were occurring in the less developed countries, unconstrained by national regulations to protect workers. Health risks were now transferred to these countries, plus the risk levels were magnified because of inferior levels of occupational protection.

Conclusions

This case illustrates how a voluntary initiative can have negative impacts if it is not considered in a broader context. For instance, in a global economy, unless there is international cooperation, the overall result can be the transfer of risk to other jurisdictions—most often less developed countries. Equally, VNRI can have negative impacts on the domestic industry if alternative sources of supply are available, if domestic demand is maintained, and import restrictions do not exist.

As well, a significant contributing factor to the unsatisfactory results of this initiative was the failure to convince other jurisdictions of the carcinogenic potential of benzidine dyes and to initiate appropriate steps internationally to control the associated risks in manufacture, processing and use.

Sources

Proceedings of the OECD Workshop on Non-regulatory Initiatives for Chemical Risk Management. Inter-Organization Programme for the Sound Management of Chemicals. OECD Environmental Health and Safety Publications Series on Risk Management No 7. "Voluntary Cessation of Manufacture of Benzidine Dyes." Woodward, R. and Clarke, E. Paris, 1997.

The Canadian Electricity Association

Background

The Canadian Electricity Association (CEA) is the industry association for the Canadian electric utility industry. The Association also includes many non utility companies with an interest in the electricity business.

The CEA includes twenty-eight corporate utility members. Together, these members account for 95 per cent of Canada's installed generating capacity. CEA members employ approximately 90,000 people and earn gross revenues of \$30 billion.

Association members are in the business of providing electricity to industrial, commercial and residential customers. They are involved in electricity generation and distribution and seek to provide customers with reliable supplies of electric power. Electricity generation activities are of many types including hydroelectric, coal-fired, and nuclear.

Environmental Issues

The business of electricity generation and distribution involves complex interactions with the natural and socio-economic environment. Among the environmental issues that have been associated with electricity are concerns related to greenhouse gas emissions, acid rain, air quality, fish and wildlife habitat loss, herbicide use, and PCBs.

For some time, this industry has been perceived as lacking credibility on environmental management. Public opinion polls have consistently shown the utility industry to be among the industry groupings most lacking credibility in this area.

Rapid changes in the factors influencing the electric utility industry are also giving rise to new environmental considerations. Deregulation, new technologies, increasing public/government scrutiny and growing competition are all contributing to increased pressure on the industry to improve its performance on managing environmental impacts. Deregulation and increasing competition create the opportunity for electric utilities to use environmental management practices as a factor for securing and gaining market share. Increasing scrutiny creates pressure for the industry to provide transparent practices and procedures that address stakeholder concerns.

Voluntary and Non-Regulatory Initiatives (VNRIs)

On November 24, 1997, the CEA launched a new voluntary initiative known as the Environmental Commitment and Responsibility (ECR) Program for the utility members. The Program is aimed at improving the environmental performance of member utilities and to effectively communicate the results, this with a view toward improving credibility and trust with constituents.

The ECR Program is based on four driving principles for environmental management. These include:

- to be more efficient in the use of resources;

- to reduce the adverse effects of the business;
- to be accountable to constituents; and,
- to ensure that utility employees understand the environmental implications of their actions and have the knowledge and skills to make the right decisions.

A number of specific measures and indicators are associated with each of these principles. These environmental elements are to be measured in assessing continual improvement on the environment. While no cross-industry environmental improvement targets have been established, it is believed that these will be forthcoming as member utilities become acculturated to measuring environmental performance against the above-noted measures and indicators.

The ECR Program places substantial importance on the role of Environmental Management Systems (EMS). Association utility members must each implement an EMS that is consistent with the ISO 14001 framework. These management systems must be audited by a certified auditor.

Members are required to file an Annual Progress Report signed by their Chief Executive Officer. This annual report includes the performance related to each indicator and documents a utility's implementation of the EMS.

A Public Advisory Panel provides for public involvement in the Program. This Panel comprises seven members from the general public and non-government agencies. It is charged with the responsibility of reviewing the industry's progress on the ECR initiative and goals and making recommendations for improvements.

The Program also includes an Independent Verification Process. Verification teams, made up of non-industry representatives, will visit randomly selected utilities and check the accuracy and consistency of documentation processes for the annual reports. An audit of the EMS is also conducted as part of the verification process.

The environmental effects of this initiative are yet to be demonstrated. CEA member utilities are in the process of compiling and submitting their first Annual Progress Reports.

The ECR Program is evidence that the electric utility industry is committed to managing performance on the environment more effectively. As the initiative moves companies toward measuring and reporting on environmental elements, performance against these elements will improve. The Public Advisory Panel and the Verification Process will also serve to increase the transparency of the industry's environmental management practices, thereby increasing accountability.

Effects of VNRLs on Trade and Investment

A number of Canada's electric utilities engage in export activity. This activity includes the export of electricity as well as expertise such as consulting and engineering services. The principal market for electricity exports is the United States. Services are most often exported to developing countries.

A number of utilities export electricity to the United States, including TransAlta, Hydro Québec, Manitoba Hydro and BC Hydro. The amount of electricity exported varies each year due to variability in the markets, the availability of supply and regulatory constraints.

Canadian companies must first gain approval from the US in order to export to that country. For those companies already generating substantial revenues south of the border, there is the opportunity to earn more.

There is a clear trend toward deregulation of the electric utility business in North America. The North American Free Trade Agreement is among the transnational legislative/regulatory instruments that are serving to open up the electricity market to increasing free trade between countries. At the same time, provinces like Alberta are taking the lead among Canadian jurisdictions in working to remove regulatory barriers to domestic competition.

Many North American utilities and electricity distribution (and energy efficiency) companies are responding to deregulation by adopting more aggressive approaches to competing in North America. US companies have begun marketing their electricity and related services to major Canadian industrial customers. Canadian companies are increasingly looking south to identify new business development opportunities.

“BC Hydro is competing with US companies to provide electricity to the “greener” markets of Oregon and California—states in which consumers have a high degree of environmental awareness—and the ECR will certainly help position us.” –John Kelly, Program Manager, Environmental Commitment and Responsibility Program

The Canadian utility industry anticipates that implementation of the ECR Program will contribute to cost savings and increased efficiency in environmental management. ECR-related improvements in financial and environmental performance are considered important in helping the industry remain competitive, both domestically and internationally.

The CEA considers that the improvements in environmental performance resulting from the ECR will help its members differentiate their products from those of other utilities. It is the growing view that companies who generate and distribute power in an environmentally sound manner will be best positioned to retain and attract customers. This view is based, in part, on a trend toward customers asking increasingly about environmental performance. In providing a framework for documenting member performance on the environment, the ECR can help Canadian utilities to qualify for US export electricity contracts. Equally, where industrial and commercial customers of Canadian utilities export their products, the ECR could help them qualify as the supplier of choice. Indeed, there is already some anecdotal evidence that the ECR is providing an environmental benchmark against which North American utility performance can be measured and promoted. This is demonstrated, in part, by the growing interest among US utilities in the Program.

The ECR may also serve to generate new business opportunities and enhanced profitability through the development and sale of new technologies and environmental management approaches. Pressures to improve performance on the environment have frequently resulted in innovation.

Good environmental performance is also considered to lower the perceived risk involved in business activities having potential adverse effects on the environment. There is a growing body of evidence published on improved share values, reduced insurance assessments and other benefits resulting from improved environmental performance.

Conclusions

The ECR Program positions CEA utility members to improve their environmental performance and to communicate this information with their constituents. The need to improve performance on environment is motivated by imperatives to improve credibility, enhance efficiency and bolster competitiveness.

With deregulation of the electricity industry in North America, utilities and their customers, particularly primary industries and manufacturing, are seeking new ways to secure market share and improve competitive position. Increasingly, environmental performance is emerging as a factor in maintaining business and obtaining new contracts. The ECR Program provides the means to benchmark and report Canadian utility performance and promote good environmental management. In so doing, it provides the opportunity for Canadian companies to market more effectively for domestic and international business. Monitoring of this new initiative is required for the coming years in order to document the anticipated gains to be made from this VNRI as it relates to environmental performance and trade.

Sources

Mr. John Kelly, Program Manager, Environmental Commitment and Responsibility Program.

Environmental Commitment and Responsibility Program—Program Framework and Annexes, Report of the Implementation Working Group, September 16, 1997, Edition 2.

Canfor

Background

Canfor Corporation is a Canadian integrated forest products company based in Vancouver. It operates manufacturing facilities in BC and Alberta and operates a lumber remanufacturing plant in Washington. The company, together with its affiliates, employs approximately 5,600 people.

Canfor produces a wide range of forest products, based primarily on wood harvested from publicly owned forest lands, under a variety of tenure agreements. The company is a major producer and supplier of lumber and bleached kraft pulp. It also produces semi-bleached and unbleached kraft pulp, bleached and unbleached kraft paper, remanufactured lumber products, hardboard panelling and a range of specialized wood products, including baled fibre mat.

Most of the company's production is exported to foreign markets. The US market is the largest overall, with European and Japanese markets being particularly significant also, as demonstrated by the company's operation of marketing offices in these regions. In the case of pulp, approximately 40 per cent of production is typically exported to Europe, with the balance split between the US and Asia. The bulk of Canfor's lumber production is exported to the US with a small amount remaining in Canada.

Canfor has a very strong European connection. It was founded by two Austrian émigrés who migrated to Canada at the beginning of World War II. Their connections to many of the influential European families of the time translated into strong European business for Canfor throughout the company's history. They have also provided Canfor with substantial exposure to Europe's environmentally and technically sophisticated marketplace where many of today's forest-product-related environmental issues first appeared.

Canfor faces significant competition from a variety of Canadian and US companies. Western Canadian companies provide most of Canfor's competition for international markets for pulp. Among these companies are Fletcher Challenge, Weyerhaeuser, Avenor (soon to be Bowater), and Harmac Pacific. Canfor competes with companies across Canada for lumber exports to the US.

Environmental Issues

Canfor and the forest products industry face a variety of environmental issues. Among the issues that have presented themselves in recent years are concerns related to

- bleaching and the chlorine content of pulp
- effluents including organochlorines, dioxins and furans
- energy and water use
- waste management
- biodiversity

- air emissions, greenhouse gases (GHG) and climate change
- wood waste management at sawmills and dryland sorts
- land use and conservation

Most recently, and substantially on the international front, the Canadian forest products industry has been confronted by international environmental campaigns launched by non-government organizations such as Greenpeace. A particularly noteworthy example is the current campaign by Greenpeace and other environmental NGOs (ENGOs), advocating European boycotts of Canadian companies involved in the harvesting of old-growth forests situated along the mid-coast of BC (Canfor is not engaged in activity in this region, but in common with other companies operating along the coast, may receive some residual wood chips that originated in the area). In 1998, Greenpeace has been successful in getting some Western European companies to stop purchasing dissolving pulp from one Western Canadian company and lumber from others.

Many in the forest products industry are watching the Greenpeace issue closely. There is a widespread belief, borne out by statements from the ENGO community, that the attention, currently focused on one localized region, if successful, would spread to other areas of BC and Canada and would involve a greater number of companies.

Canfor believes that these types of issues call for increasingly effective communications. The company senses that the old-growth issue will be around for as long as companies are harvesting original forests that Greenpeace and other ENGOs would like to see preserved, no matter how well companies manage the forestry activity. At the same time, companies note an important role for communications and public participation to address concerns in this and other areas.

Voluntary and Non-Regulatory Initiatives (VNRIs)

Canfor has demonstrated a high degree of proactivity on, and commitment to, environmental management. During Canfor's early efforts to react to concerns raised by others regarding bleaching and harvesting practices, the company recognized the need to adopt a proactive approach to performance on the environment. Since that time, Canfor has worked to lead efforts to manage environmental aspects of its business rather than simply react to concerns as they emerge. The need to be proactive has been a much stronger motivator for the company than concern over possible regulatory "sticks."

Efforts within Canfor to develop and further good environmental stewardship have always been encouraged and have been able to obtain support within a corporate culture supportive of good environmental management practices, including those that the company feels are the right thing to do. Management has been very supportive of staff efforts to gain a better understanding of the company's interactions with the environment and how to manage them most effectively. At the same time, however, overall economic viability remains an essential aspect of any environmental program.

Canfor has an Environmental Policy as well as a Forest Stewardship Policy. Both indicate a commitment to, among others, openness; compliance or beyond compliance; target-based

performance measurement and continuous improvement; sustainability; ecosystem-oriented planning; stakeholder involvement and communications; reforestation; biodiversity protection; and self-audits, as well as to promoting environmental awareness.

The company has been involved in many VNRI's including the Voluntary Challenge and Registry (VCR) Program on greenhouse gases and ARET on toxics.

Among the initiatives of which the company is most proud are:

- leadership and participation in an industry-led Canadian Standards Association (CSA) process resulting in the development of a voluntary standard for sustainable forest management (CSA Z809-96)
- participation in an International Organization for Standardization (ISO) process to develop an international forest management standard
- registration of all of its pulp and paper operations to ISO 14001
- a Life-Cycle Assessment of its business activities
- use of the Canadian Pulp and Paper Association's Environmental Profile Data Sheet

According to Canfor, the CSA standard, which was published in late 1996, is of a type "the likes of which does not exist anywhere else in the world" (Bradley). The development of the standard included a "huge" multistakeholder involvement component—bigger than that of any other CSA process. The result is a comprehensive standard that industry considers challenging to achieve because its requirements far exceed simply demonstrating successful reforestation with minimal impact on the ecology. While many companies are working hard to close gaps revealed through third-party audits, Canfor is hoping to be one of the first companies, with its forest tenures in the Prince George area, to have its forest management practices registered under the standard.

Canfor has been active in pursuing environmental management system registration and now has two mills certified to ISO 14001 and is working on having the tenured forest areas registered to meet this standard.

In 1990 Canfor initiated a program of regular environmental auditing at all of its operations. (Initially this program followed an in-house set of procedures, but in 1997 these procedures were modified to reflect the ISO 14001 approach.) The environmental audit program was followed in 1992 with a program of forest practices performance audits, developed jointly with A.D. Little. In 1993 an energy review program was implemented as well.

The company has also demonstrated substantial initiative in developing Life-Cycle Assessment (LCA) processes and practices. LCA involves estimating the potential environmental impact of a product throughout its entire life-cycle—from harvesting through manufacturing and shipping. It includes identifying issues, weighting issues, and addressing the sensitivity of concerns to different weights. This process has helped Canfor determine the extent to which it is giving appropriate attention to specific weights and valuing production inputs appropriately. As part of this project, Canfor personnel led the development of an

entirely new methodology for quantifying the impacts of land use on ecosystems such as forests. As a result, Canfor considers that this exercise has given it a much clearer understanding of the significance of, and role played by, the forest in the paper production process.

As far as Canfor is aware, it is the only forest products company in Canada currently applying LCA. While other companies have conducted preliminary research into the nature of LCA, Canfor states that it is the only one currently applying it to significant aspects of its business.

Most recently, Canfor helped to convince the Pulp and Paper Research Institute of Canada (PAPRICAN), an industry research institute, that LCA is an area of expertise that it should possess, even if many of its members do not. Recognizing that LCA is figuring increasingly in the development of eco-labels and government policy, both in Canada and elsewhere, PAPRICAN has since assigned two staff to this subject area and has become quite knowledgeable in the field.

Canfor is also making use of a reporting form recently developed by The Canadian Pulp and Paper Association (CPPA) to track and communicate on environmental performance. This form, known as the Environmental Profile Data Sheet (EPDS), is a voluntary, standardized reporting form that provides product-specific environmental information that must be verified by an independent third party. The main objective of the EPDS is to satisfy customer and consumer needs for more and better information about environmental aspects of products. The CPPA initiated this program with a view to helping set the international standard for this type of environmental label. Three of Canfor's mills are the first in Canada and the world to complete and distribute Environmental Profile Data Sheets for their products.

Canfor, on the basis of annual capital environmental expenditures, such as \$13.2 million in 1997, has achieved many environmental performance successes over the last number of years. Among those reported in its most recent Environment Report are:

- reduction of GHGs to a level below the voluntary international target for the year 2000
- substantial gains in the efficiency of energy and water use
- improved utilization of sawmill wood residues in alternate products and as fossil fuel replacements
- major reductions in waste generation through the use of comprehensive recycling programs for waste oil, filters, solvents, anti-freeze, batteries and tires

Effects of VNRI on Trade and Investment

Canfor suggests that it is difficult to quantify the effects of its VNRI on competitiveness, trade and investment. Most notably, the company indicates that it is hard to find dollar values to attach to sustainability arguments and voluntary action.

Despite this, Canfor believes that there are strong business reasons for undertaking effective environmental practices through VNRI (as well as strong ethical reasons). It suggests that,

increasingly, purchasers are demanding forest products that have a small “environmental shadow” (e.g., European magazine companies). In undertaking significant voluntary action, Canfor finds that it is very easy to demonstrate a solid track record on the environment to secure business, much easier than if it were not undertaking these initiatives.

An example is provided by one of Canfor’s major European customers. This particular purchaser has a specific environmental policy that only allows it to buy from the top three or four of the world’s best environmental performing suppliers. Canfor’s proactive approach to the environment has enabled it to capture this purchaser’s business and expand it over the years. This client has even gone so far as to involve Canfor in the development of its own VNRI to address emerging forest products issues in Asia—again in an effort to “gain some of the high ground.” This is due, in large measure, to the value the client places on the environmental messages which Canfor has shared with it thus far.

Canfor suggests that a proactive approach to environment can help cement business relationships with customers. A willingness to consider doing things in an environmentally proactive way that challenges conventional wisdom often weighs more heavily in the minds of clients than the actual doing of them (e.g., dialogue with environmental groups rather than conflict with them). VNRI help Canfor “get the piece of business that it wants, rather than the piece that is left over after others have taken away the choice piece” (Bradley).

Canfor believes that stakeholder concerns about “where did this tree come from” will continue to grow, particularly in Europe, in the years to come. The company suggests that the forest products sector is entering “a whole new dimension” involving a higher level of connection with the environment, a dimension where the consumer is demanding fewer adverse environmental impacts and major suppliers/purchasers are seeking to avoid “environmental embarrassment.”

Growing concern and interest in this area is creating strong international and domestic trade markets for forest product certification. Consumers, purchasers and suppliers and other stakeholders are all increasingly demanding assurances of responsible forest stewardship. These demands are found in examples such as the purchaser comment “does your company have Forest Stewardship Council Certification, because my other supplier does.”

Canfor’s voluntary actions have enabled it to gain a better understanding of how all aspects of its business activity interact with the environment and to value the environment more appropriately. This understanding is translating increasingly into business in European and North American markets. Where previously only commercial and technical arguments could be used to gain competitive advantage and secure contracts, now environmental arguments can be used as well.

Voluntary activity has also helped Canfor gain one of the best reputations on environment of any forest products company. Many European interests regard Canfor as having the highest profile on environmental management of any North American company. Some of Canfor’s Canadian competitors have even publicly stated that it is the company to watch on the environment.

Conclusions

Canfor is on the leading edge of environmental management in the forest products sector. It is recognized both domestically and internationally as a company that takes a proactive approach to environmental protection. In addition to being a key player in the development of a CSA standard, Canfor indicates that it is the only company in this sector currently undertaking Life Cycle Assessment. Some of Canfor's clients are so impressed with its action on environment that they have asked Canfor to help them develop their own VNRI's.

Canfor indicates that there are strong business reasons for undertaking VNRI's. Demonstrating a willingness to approach the environment in new ways has helped Canfor secure and expand its business, particularly in Europe, where concern for forests has given rise to international environmental issues.

According to Canfor, the growing stakeholder demand for forest stewardship certification is a clear sign of the increasing importance of good environmental management as an important business consideration. As the market continues to demand more indications of good environmental practices, environmental arguments will gain a stronger role in developing competitive advantage.

Canfor is a good example of a company in the forest products sector that is recognizing a growing relationship between VNRI's and trade competitiveness. As the market demands more accountability from this sector, companies can leverage environment for international business.

Sources

Mike Bradley, Director, Technology, Pulp and Paper Marketing, Canfor Corporation.

Canfor Corporation, 1997 Annual Environmental Report.

Canadian Pacific Hotels

Background

Canadian Pacific Hotels (CPH) is Canada's largest hotel company. The corporation owns and/or manages 26 Canadian hotels with 10,000 rooms and 10,000 employees. Properties include both heritage buildings and contemporary hotels situated throughout Canada.

CP Hotels ranks among the premier hotel chains in Canada. The company has a number of resort and five star facilities that compete with such multinationals as The Four Seasons, Hilton, Westin, Sheraton, and Hyatt for both domestic and international tourist travel.

The corporation has been experiencing record sales over the last few years. In 1997, the most recent year for which data has been published, total revenues amounted to \$565 million.

CPH involvement in trade takes the form of attracting foreign tourists to stay at its hotels. CPH works with Canadian destinations to promote tourism to foreign tour operators and visitors to Canada.

CPH makes an interesting case study in the present context for a number of reasons:

- Tourism is a service sector industry that is among Canada's most important economic activities.
- There is a strong linkage between the hotel product and specific Canadian destinations and their natural and cultural environments.
- CPH is a large corporation that limits its operations to Canada only.

Environmental Issues

CP Hotels is faced with many environmental challenges. Among these are environmental management considerations common across the hotel industry, energy and water conservation, waste management and the elimination of toxic chemicals from the workplace.

Also, CPH must address land use planning considerations related to conservation and enhancement of the natural resource base, particularly with respect to properties located outside urban areas. Hotel developments associated with national parks (Banff Springs Hotel) and mountain resorts (Chateau Mont Tremblant) are but two examples of facilities involving land-related environmental management considerations.

Voluntary and Non-Regulatory Initiatives (VNRIs)

In 1991, CPH canvassed its employees to determine the extent to which they considered "the environment" to be an important consideration for the management of CP Hotels' operations. In undertaking this survey, CPH was motivated by the desire to demonstrate corporate concern for the environment to its own employees. CPH was also looking to its staff to provide some guidance to the corporation for future direction on environmental management. (At the time, CPH's secondary research uncovered little industry-specific information on this subject.)

The survey revealed that employees were overwhelmingly in favour of CPH taking a proactive approach to environmental management. Each CPH employee responded favourably to the survey, with many making suggestions for environmental initiatives that might be undertaken.

CP Hotel management followed up this initial survey with extensive canvassing of staff regarding their ideas. Staff Environmental Committees were established at each hotel property. These committees were charged with providing input to a “greening” strategy for the corporation in a “bottom-up, staff-led approach to program development.”

CPH’s “Green Partnership” program was launched in 1993 on the basis of this input. Phase I of the initiative focused on what could be done at the property level of the business operations to improve environmental performance. Phase II, launched in 1997, builds on the learnings and best practices of Phase I and extends corporate environmental practice to business development and marketing.

Phase I developed a set of 16 environmental performance goals, known as the “Green Action Plan”, to be attained by all of the chain’s hotels. These goals included significant targets for waste reduction (50 per cent), recycling, and green purchasing practices.

Phase II was developed primarily on the basis of Phase I but also included research into the sustainable development activities of other hotels and tourism operations. By the time CPH began exploring considerations for Phase II, other hotels and organizations, such as Intercontinental Hotels, Disney World Florida and Green Globe—an international organization that promotes sustainable development in the tourism sector—had developed learnings in this area of interest to CPH. This is a reflection of recent growth in awareness among tourism operators of the actual and potential socio-economic and natural and environmental impacts of their businesses.

Phase II includes an impressive array of activities. These include:

- staff surveys and updating of performance goals
- establishment of an incentive program for employees
- exploring opportunities for waste reduction through industrial composting
- offering a green conference package option
- sourcing eco-tourism activities that are region-specific
- establishing advanced golf course management systems
- community involvement programming including donating all surplus foods to local shelters
- championing the cause of the St. Lawrence Beluga whale
- establishing an Environmental Management System consistent with international standards

Phase II highlights the potential role of composting in CP Hotels programming. CP Hotels believes it is the first hotel company in the world that is seeking to compost organic waste—a huge environmental consideration for this industry—at all of its facilities.

The Green Partnership program has proven quite successful at addressing environmental management considerations. Phase I has enabled CPH to significantly reduce waste, conserve water and energy, and work toward eliminating toxic chemicals from the workplace. Phase II shows great promise for building on these achievements and strengthening organizational capacity to deliver on the corporation's environmental management strategy. Reference to the significance of CPH's achievements can be found in the company receiving the International Hotel Association's "Green Hotelier of the Year" award. Another example of the company's success is demonstrated by the fact that many other hotels and tourism-related businesses have sought out CPH for its expertise in this area. As more hotels adopt environmental management programs, and as institutional structures for green hotel management emerge, CPH is continuously recognized as a leader in this field.

Program budgets are generally small and hotel-specific environmental committees do not have budgets of their own. Most program elements must demonstrate an economic "pay-back" in order to receive management support.

Effects of VNRI on Trade and Investment

CP Hotels says that competitiveness and trade were secondary to demonstrating corporate concern for the environment as the rationale for undertaking the Green Partnership program. Many competitiveness and trade advantages have accrued from the initiative, however, and CPH considers this to be an added benefit of their environmental activity.

"Environmental management is growing astronomically in its importance as part of the overall business strategy—because it's about efficiency over the long term." – Belinda Dusbaba, CP Hotels.

CPH has been quick to share information on its environment programs with other "competing" hotel operators. In CPH's view, "all hotel operators share the ultimate goal of being better stewards of the environment and the need to share this information outweighs any potential competitiveness advantages."

International visitors are looking for a "unique Canadian experience" and to many that implies the outdoors and nature. CPH works closely with the communities in which they are situated in an effort to become part of the overall experience that foreign tourists are seeking and to help market specific destinations. CPH's new eco-tourism initiative, in which it partners with local eco-tourism operators that meet international principles and criteria for environmentally sensitive tourism, is an example of such links to the community.

CP Hotel's contributions to environmental stewardship appear to be generating competitiveness and trade benefits including helping it attract customers from overseas. There is increasing evidence that "environmental management" is figuring in consumer decisions about which hotel to stay at. CPH has received many guest comment cards indicating that customers are happy to see that the chain has the Green Partnership program. CPH has also

received queries from international groups who indicated that they would only stay at a CP Hotel if it had a strong environmental policy. Staff indicate that, particularly with large group meetings, environmental considerations “are happening” as part of the consumer’s decision making process. Some months ago, a Japanese tour group requested that Toronto’s Royal York Hotel send them a copy of the facility’s environmental program. Most recently, the CPH’s Waterfront Centre Hotel in Vancouver was selected for the international meeting of the Asia Pacific Economic Cooperation, which included high profile delegates from around the Asia-Pacific region, in large measure because of CPH’s environmental program. CPH anticipates that their environmentally friendly golf course management program may play a role in securing international tournaments in the future.

Conclusions

Canadian Pacific Hotels is among the leaders in the tourism sector in applying good environmental management practices. Phase I of the Green Partnership program represents a staff-driven bottom up approach to putting the corporation’s environmental house in order. Phase II builds on Phase I and involves the sharing of experiences that are appreciated both inside and outside the company.

CPH’s efforts have been about good environmental stewardship first and efficient business practice second. As the initiative proceeds, the business rewards of good performance on the environment are becoming increasingly apparent in reduced costs and marketing opportunities.

This case demonstrates that there is a growing relationship between corporate voluntary action on environment and trade competitiveness. As hotels take more initiative on environment and “green” considerations weigh more heavily in the decision-making of foreign tourists, environment becomes a bigger lever for international business development.

Sources

Belinda Dusbaba, Supervisor - Environmental Affairs, CP Hotels.

CP Hotels, Annual Report, 1996.

CP Hotels, Green Partnership - Phase I.

CP Hotels, Green Partnership - Phase II.

Kraft Canada

Background

Kraft Canada is part of Philip Morris Companies. Philip Morris is headquartered in the US and manufactures and distributes products in 180 countries around the world. The conglomerate's major business segments are tobacco, food and beer.

Kraft Canada is part of Kraft Foods North America and Kraft Foods International. Together, these three company groupings form the second largest international packaged-food company in the world.

Kraft competes with a variety of multinational food companies. Among these are: Nestlé, McCains, Nabisco, Quaker Oats, Pillsbury, Proctor & Gamble (coffee), and International Multifoods.

The Kraft and General Foods founding companies were established in Canada at the beginning of the century. They merged in 1989 to create Kraft General Foods Canada. The company changed its name to Kraft Canada Inc. in 1995. The company is headquartered in Toronto and has eight offices and 12 manufacturing locations across Canada. Kraft has some 4000 employees, had 1997 sales of \$2.1 billion and assets of \$1.1 billion.

Kraft Canada manufactures a wide range of food products. These include: cheese, chocolate, coffee and condiments, among others.

Kraft Canada exports a substantial portion of its production to markets in the US. Trade flows between Canadian operations and US markets are currently estimated to be as high as 25 per cent in some cases. These flows are increasing and are expected to continue to do so in the coming years.

Environmental Issues

Kraft Canada addresses a wide variety of environmental issues. Principal among these is the management of wastewater discharges, air emissions and solid waste. As a company that manufactures products primarily made from processed agricultural and dairy materials, Kraft has few concerns regarding hazardous substances.

Kraft Canada's management of environmental considerations is governed by a set of nine principles that apply to all Philip Morris companies consistent with a corporate policy of minimizing environmental impacts. These include attention to: compliance and "above compliance", voluntary action, waste and environmental impact minimization, packaging waste and environmental impact minimization, research and development for innovation, employee education, stakeholder involvement, contributing to policy development, informing consumers, appropriate practices and procedures, and monitoring and evaluation.

As with all Philip Morris companies, Kraft has an operations manual that guides environmental managers on compliance and above-compliance performance. This manual addresses such items as: environmental management systems, waste management, emergency plan-

ning, training and education, regulated materials management, packaging and labeling requirements, resource conservation, and supplier procedures and standards.

Kraft tracks its performance on the environment through regular assessments and audits and periodically reviews and updates its environmental objectives. Third-party audits have been among the instruments employed to evaluate facility compliance and performance improvement.

Voluntary and Non-Regulatory Initiatives (VNRIs)

Kraft Canada's participation in the Canadian National Packaging Protocol (NAPP) is a good example of company participation in an industry-led voluntary environmental initiative. While Kraft Canada is involved in a variety of VNRI initiatives, this case study focuses on Kraft Canada and the NAPP.

The National Packaging Protocol is a VNRI aimed at reducing the adverse environmental effects of product packaging. The NAPP was established in the late 1980s by the Canadian Council of Ministers of the Environment (CCME) National Packaging Task Force, a voluntary group comprised of representatives from governments, industry, consumer groups, and non-governmental environmental organizations. The initiative, which comprises six packaging policies for Canada, includes as a principal target a 50 per cent reduction in packaging sent for disposal by the year 2000.

On January 30, 1998, the CCME announced that the NAPP target for reducing packaging waste by 50 per cent has been achieved four years ahead of schedule. Current data reveal that the weight of disposed packaging fell from 5.41 million tonnes in 1988 to 2.64 million tonnes in 1996, representing a 56 per cent reduction on a per capita basis. The most significant gains were obtained on the manufacturing, shipping and distribution side—which represented 60 per cent of packaging used in 1988, compared to 40 per cent for consumer packaging.

Kraft has been among the many food industry companies that have contributed to achieving the NAPP waste minimization targets. Kraft has made changes to both distribution and consumer package and product design to minimize adverse environmental impacts. It has contributed to innovation such as using less, lighter or recycled materials and designing for recyclability, while maintaining the quality, functionality and safety of the product.

According to Kraft Canada, the NAPP facilitated changes in its waste generation and waste management practices that were already underway at Kraft by the late 1970s and early 1980s. It contributed to a quickening in the pace of change of equipment, packaging, and waste management to increase the diversion of solid waste from landfill. The Protocol also provided a common direction for companies in the food-manufacturing sector to move toward in addressing packaging waste.

Effects of VNRIs on Trade and Investment

Kraft Canada's initiatives on addressing the environmental effects of packaging have been motivated by three factors. First, Kraft has sought to reduce costs by eliminating waste and

inefficiency. Second, Kraft has worked to respond to consumer demand for increasing convenience through improved packaging. Third, the company wishes to maintain a “good corporate citizen approach” to environmental management.

According to Kraft Canada, managing packaging waste effectively is a requirement for cutting costs and remaining competitive in the food manufacturing industry. Being more cost-effective, responding to consumer needs and concerns, and maintaining a positive corporate image are goals shared, to a greater or lesser degree, by all of Kraft’s competitors. If Kraft were to manage its packaging waste ineffectively, it could put itself at a comparative disadvantage relative to other companies.

There is also anecdotal evidence that Kraft Canada’s voluntary action has helped it secure and expand its share of Kraft North America’s food industry business. Kraft’s efforts on packaging have been strongly focused on efficiency and effectiveness gains that have helped establish comparative advantage for some products in serving the US market. Some products manufactured in Canada are provided to the entire North American market.

Kraft Canada is continuing to expand its operations to serve a North American market. New investments in production capacity are currently being made in various regions in the country. The role of managing packaging and its impacts may have had a role to play in helping Kraft Canada stay competitive within Kraft North America.

Conclusions

Kraft Canada’s participation in the National Packaging Protocol has facilitated its efforts to divert waste from landfill. The Protocol has provided direction for efforts at reducing packaging waste that are common to all industries involved in packaging.

Kraft’s efforts to reduce packaging waste has contributed to cost efficiencies, addressing consumer demands for convenience and environmentally-friendly packaging, as well as the promotion of a “good corporate citizen approach” to business. This, in turn, has enabled the company to remain competitive in an industry in which competitors are all moving in a similar direction.

There is anecdotal evidence that Kraft Canada’s efforts on packaging and its participation in the Protocol have helped it position itself as competitive within Kraft North America.

Sources

Gottfried Hasse, Kraft Canada.

Philip Morris Companies Inc., Environmental Performance Report.

Pitch-In Canada web site: <http://www.pitch-in.ca>

Nortel (Northern Telecom)

Background

Nortel works with customers worldwide to design, build, and integrate digital networks—for information, entertainment, education, and business. Nortel has operations in more than 100 countries, including 40 research and manufacturing facilities as well as various affiliated joint ventures and other collaborations. In 1997, Nortel had revenues of \$15.45 billion (US) and approximately 73,000 employees worldwide. The company was founded in 1895 and has headquarters in Brampton, Canada.

Environmental Issues

The main environmental priorities for Nortel are to decrease its resource use and waste generation, increase its product life-cycle management activities, and share environmental solutions with its customers and other stakeholders. These priorities are intimately linked to Nortel's goals of process efficiency, innovation, and customer relationships.

Voluntary and Non-Regulatory Initiatives (VNRIs)

Nortel's environmental initiatives are now largely driven by customer considerations. The company strives to make customers more sustainable and successful, and to build customer relationships. Packaging reduction is one "solution for customers." Nortel has conducted pilot programs to reduce and remove packaging waste from customers' work sites. Product recovery is another example. Nortel staff works with customers to craft a customized product recovery program to decrease environmental impact.

One area of focus for Nortel is "Design for Environment" (DFE). This involves finding ways to minimize the use of raw materials, to increase the use of recyclable materials, to substitute less toxic substances and to make products more energy efficient by addressing these concerns in the design stage of product development. Examples of these projects include:

- *Modular Assembly.* Using a modular approach allows customers who purchase Nortel's PowerTouch telephone to upgrade their equipment with the newest features without having to buy a new unit. Extending the life of the product minimizes product obsolescence, thereby reducing the use of raw materials and the flow of materials to waste management.
- *Lead-Free/Chromate-Free Technology.* Breaking with 40-year old industry standards, Nortel has successfully tested and applied lead-free and chromate-free technology to some of its products. Nortel worked closely with suppliers to make the world's first lead-free telephone. Standard chromate coating of metal parts is being replaced with a new process, substituting materials that improve product performance, reduce costs and are better for the environment.
- *Green Phone.* Nortel is working on a concept phone with Environment Canada which includes environmental features such as lead-free technology, less toxic flame retardants, fewer parts, a reduction in the materials mix for ease of recycling and thin wall plastics to reduce material use.

Nortel's competition, especially Siemens of Germany, is also driving some of the focus on DFE. Siemens has several green products in the marketplace and is a recognized leader in the field.

Nortel has also set environmental targets for the year 2000 as follows (base year is 1993):

- Reduce pollutant releases by 50 per cent.
- Reduce solid waste sent for disposal by 50 per cent.
- Reduce paper purchases by 30 per cent.
- Improve overall energy efficiency by 10 per cent.

Progress towards these targets is driven by initiatives such as Nortel's "shared savings" relationship with its chemical supplier at one Ottawa facility. This long-term, fixed-fee contract for chemical services (rather than for chemicals) includes incentives to reduce chemical use. Also, intensive audits are performed every 24 months at each manufacturing and R&D location (many locations are now ISO 14001 certified). Nortel has also devised an Environmental Performance Index which consolidates 25 performance parameters into one overall score.

Effects of VNRI on Trade and Investment

Producer responsibility has become an important consideration for Nortel's commercial customers such as telephone service operators. Many of these customers are now required to be responsible for their products throughout their life-cycles, and want their suppliers to help them with this responsibility. Several major customers in Europe, and increasingly in North America, now ask whether Nortel has an environmental management system (EMS) in place and require that questionnaires be filled out, or documentation of the system be provided. This information is a prerequisite just to be admitted to the bidding process for contracts with one Swedish customer.

Customers from around the world have various environmental concerns. While Nortel's European customers have the most comprehensive list of concerns, customers in North America have focused on hazardous material content in products, and customers in Japan are most interested in ISO 14001 registration.

For Nortel, environmental considerations are often an integral component of contracts with customers, but are generally viewed as "differentiators" rather than the sole reasons for winning contracts. One such example is the product take-back agreement which is part of Nortel's master contract with Bell Canada. Under this agreement, Nortel takes back all equipment it has supplied to Bell Canada when this equipment is no longer needed. Nortel also takes back all equipment bought from other suppliers (i.e. from Nortel's competitors). Initiatives such as this help Nortel's customers and therefore help Nortel build stronger relationships with these customers. The product take-back initiative is also structured to give a return to Nortel. Nortel's material recycling unit acts as the broker, and returns some of the recycling/re-use revenues to the relevant business units as an incentive.

A further example of improved customer relationships is Nortel's product take-back agreement with BT (British Telecom). Under this agreement, Nortel takes equipment back and extends equipment life. Nortel de-installs equipment and re-uses or recycles it. As a result of this relationship, Nortel's environmental manager was invited to help BT with its 5-year strategic plan.

Overall, the product take-back agreements, as well as other company environmental initiatives, enable Nortel to improve its competitiveness and trade position through:

- obtaining access to bid situations;
- building better customer relationships;
- making customers more successful and sustainable;
- working more efficiently within Nortel's own manufacturing process.

An example of efficiencies gained within Nortel is the company's elimination of ozone-depleting CFC-113 solvent. The company devised a completely new manufacturing process which eliminated the need for cleaning. For a \$1 million investment, the company gained \$4 million in savings over a three-year period. Other cost savings are a result of packaging innovations and energy efficiency initiatives.

As well, Nortel and other companies face public and investor pressure for environmental performance. Nortel is now included in several "Green Funds" and thus benefits from both the positive profile which this brings, as well as increased access to capital.

Conclusions

Nortel's environmental initiatives appear to be well-integrated into overall company strategy. The company has realized cost efficiencies through its environmental initiatives. Also, the strategic European marketplace is driving certain developments such as producer responsibility and Nortel is anticipating these developments. Although Nortel's environmental initiatives are not the sole reason for winning particular contracts, they appear to be strong "differentiators" and provide a vehicle for improved customer relationships.

Sources

Virginia Snyder, Vice President, Environment and Sustainability, Nortel.

Mark Brownlie, Manager, Environment and Sustainability, Nortel.

Philips Electronics N.V.

Background

Philips is a multinational company headquartered in the Netherlands, and has activities in approximately 60 countries. The company was founded in 1891 and its main sectors of activity are: lighting components, consumer electronics, professional electronics, software and services, and semiconductors. Philips administers 60,000 patent rights and its annual expenditure on research and development is approximately 7 per cent of sales. Philips employs 265,100 people worldwide and has revenues of 66 billion guilders.

This case study highlights competitiveness and trade impacts of Philips' overall environmental policy and action plan.

Environmental Issues

As a major multinational electronics and consumer products firm, key environmental issues for Philips include: wastewater reduction, energy efficiency, packaging reduction, supplier issues (reducing the environmental impact of products purchased from suppliers) and eco-design. This last issue involves consideration of the total environmental impact of materials used, product end-life, and minimization of the environmental impact of all stages of the product life-cycle.

Voluntary and Non-Regulatory Initiatives (VNRIs)

Philips' current environmental policy was finalized in 1991. In 1994, a company action plan, "The Environmental Opportunity", was undertaken. The goal of this action plan was to change the environment from a necessity into an opportunity for the company. The policy and action plan are based on four basic principles:

- Sustainable development
- Prevention is better than cure
- The total effect on the environment counts
- Open contact with the authorities

The Environmental Opportunity action plan contains goals for the major environmental issues which Philips faces. These include:

- Certify all manufacturing sites (300 sites) for ISO 14001 by the year 2000
- Improve energy efficiency level in manufacturing by 25 per cent by the year 2000 (base year 1994)
- Decrease packaging weight on all products by 15 per cent company wide by the year 2000 (compared to predecessor)
- Eco-design: redesign products from an environmental point of view and start communicating these improvements

- Supplier requirements: institute systematic approach within each division to register environmental information on purchased materials

Some of these initiatives and goals are influenced by the Dutch Covenants (a cooperative approach to environmental performance undertaken by the Netherlands government and industry). Also, the expectation of increasingly stringent regulations and market requirements have both been drivers for Philips' VNRI and for its overall environmental approach. Its belief is that only companies that have sustainable philosophies will survive into the next century. The company policy is to take the long-term view and translate long-term goals into short-term goals.

Results of the VNRI

As of December 1997, approximately 100 sites have become ISO 14001 certified. Energy efficiency has been improved by 16 per cent. Results are still being gathered for packaging reduction, but four major divisions have achieved weight reductions of 8-12 per cent. Supplier requirements are voluntary but are having an effect due to overseas suppliers' desire to maintain market access. Eco-design has led to the development of 15 green products that have been redesigned from an environmental point of view.

A new action program has been agreed upon for the next four years. Targets for water and waste reduction are a further 25 per cent and 35 per cent respectively. The eco-design part, which at present, is a qualitative target has been changed to a more aggressive and quantitative target for all divisions to make it a competitive edge. Five major 'ecologic' themes are identified for product improvement:

- Product weight
- Energy consumption during use
- Recyclability
- Elimination or reduction of hazardous materials
- Packaging of the product

Benefits are expected to be achieved in the areas of material usage (leading to more environmentally sound and less expensive products), and unique selling points and market share improvements.

Effects of VNRI on Trade and Investment

Philips' environmental initiatives have had an effect on exports and trade in several areas.

Competitiveness

Philips' current environmental initiatives on water, waste and energy reduction are estimated to save the company 600 million guilders per year. This is compared to a company turnover of 66 billion guilders per year (worldwide). The new environmental program is expected to add a further 200 million guilders in annual cost savings.

Both environmental performance and the integration of environment into business strategy are foci for companies in the industry. Philips believes that in the future, educated consumers will require sustainable products and that this will become a marketing issue. Philips and its competitors manufacture durable goods and must therefore anticipate market trends. Thus there is a great deal of benchmarking occurring relative to product predecessors. Philips has had significant recognition for its program, and as a result there has been extensive interest—particularly from Japanese and Korean companies.

Although Philips' environmental policy has brought the company benefits, challenges exist. One such challenge is the issue of producer responsibility for the end-of-life situation of its products. This approach is being implemented in certain European countries (e.g., Germany, Austria, Sweden and the Netherlands). Producers in these countries must deal with the logistics of taking old products back from consumers or retailers and disassembling the products. In addition, an additional fee must be charged to the consumer to cover these costs. This leads to a level playing field issue where a "grey market" or "parallel imports" occur of similar products with no disposal fee (this is possible because there are no checks at borders within Europe).

Suppliers

Philips' international suppliers are concerned because Europe is on the forefront of environmental management systems. Philips' environmental requirements are perceived positively by suppliers, but these suppliers are concerned about market access. Suppliers from the Asia-Pacific region, in particular, are concerned that not having ISO 14001 could become a trade barrier and impede access to the European market.

Market Share

Some specific Philips products have enjoyed increased market share due to their particular environmental attributes. For example, Philips new low-mercury fluorescent lamp, the ALTO™, has gained market share specifically on environmental grounds. This lamp was instrumental in the company being chosen as the 1996 Green Lights Manufacturer Ally of the Year by the US EPA. The ALTO™ is the first fluorescent lamp in the United States to pass the Environmental Protection Agency's test for non-hazardous waste. Philips has increased market share based on this unique selling point and benefit to customers, and from the fact that the EPA recognized these benefits and made buyers aware of them.

In addition to specific product market share, Philips has received awards and international recognition for its environmental practices. The company has won numerous awards including the European Environmental Award for Environmental Management, the above-mentioned US EPA's Green Lights Award, and the 1998 WEC Gold Medal for International Corporate Environmental Achievement from the World Environment Center based in New York. Philips has also received recognition from the United Nations Development Program for the five major areas of improvement mentioned earlier, for its training program for employees in developing countries, and for its offering of this program to UN-affiliated governments and universities in developing countries. The company has also found that its involvement in the Covenants system has a positive image effect in other

countries. The effects of these awards and recognition are harder to quantify than specific product-related characteristics; however, the company believes that the overall effect is significant.

A further example of this “recognition” and branding factor is Philips’ activities in Poland. Philips has established sites in that country by taking over former Polish-owned factories. The company has started an environmental improvement program which has given Philips major recognition all over the country in terms of its brand position.

Source

Henk de Bruin, Director, Corporate Environmental and Energy Office, Philips N.V.

Suncor

Background

Suncor Energy Inc. is a growing integrated Canadian energy company with assets of \$2.8 billion, production of approximately 120,000 barrels of oil-equivalent per day, and refined product sales of 85,000 barrels per day. The company has over 2,400 employees and has been active in Canada for over 75 years.

In Fort McMurray, Alberta, Suncor's Oil Sands business mines and upgrades oil sands and markets refinery feedstocks and transportation fuels. In 1996, average Oil Sands production was 77,600 barrels per day. Production is expected to increase to 210,000 barrels by 2002. The Sunoco division produces and retails gasoline and other refined products.

Environmental Issues

Addressing company-wide emissions of greenhouse gases (GHG) is Suncor's principal environmental issue. Suncor's oil sands operations account for about 70 per cent of the company's overall GHG emissions. Local and regional air quality, along with reclamation, are other important environmental issues for Suncor.

Voluntary and Non-Regulatory Initiatives (VNRIs)

Suncor's voluntary efforts related to climate change and its emphasis on sustainable development, EHS management systems and performance extend far beyond mandated requirements. This is driven by:

- a stated vision of the company which is to be a sustainable energy company. This vision and related strategies have created a drive to explore all aspects of sustainable development and what it means for its business over the near and long term. There is an explicit recognition that the company will be successful to the extent that it meets or exceeds the economic, environmental and social expectations of its various stakeholders including customers, shareholders, communities, interest groups and the general public.
- a desire to manage risks to its business proactively through prudent investments in VNRIs. The management plan to address the risk of climate change is an example of this driver. Early voluntary action on climate change will enable Suncor to achieve least cost solutions over the longer term, to learn new competencies and to influence public policy through action.

Suncor has undertaken a broad range of initiatives, some closely related to regulatory requirements, to improve environmental performance, primarily regarding air quality and GHG emissions.

Suncor's participation in Canada's Voluntary Challenge and Registry Program is the principal VNRI for the purposes of this case. Suncor's goal is to achieve stabilization of greenhouse gas emissions at 1990 levels by the year 2000 despite production increases of 64 per cent over the same time period. As of the end of 1997 the company is on track to achieve

its goal, with current emissions being approximately 12 per cent above 1990 levels. Emissions per unit of production are 31 per cent below 1990 emission levels.

Suncor has recently undertaken activities in alternate and renewable energy, specifically with the funding of wind-power facilities in Alberta. It announced its involvement in a major rain forest conservation project in Belize in partnership with the US Nature Conservancy to provide carbon sequestration offsets. The Belize project has been approved by the US Initiative on Joint Implementation and by the Belize government as a carbon sequestration project. In early 1998 the company negotiated a significant emissions trading deal with a US electricity generator, Niagara Mohawk Power Corporation.

Effects of VNRI on Trade and Investment

Suncor is in the early stages of “going international” with its growth plans. A first investment is in an oil shale project in Australia. The project is a joint venture involving a \$275 million demonstration plant to produce 4,500 barrels per day (bpd) of crude oil, followed, if successful, by an expansion to 85,000 bpd within 10 years. The successful development of oil shale depends on both Suncor’s technical expertise and its initiatives on climate change and environmental performance generally.

While most of its current production of natural gas and synthetic crude is destined for domestic markets, some non-upgraded crude is currently exported to the USA. However, all of the output from the significant Oil Sands expansion is to be exported to the USA, where it is intended to primarily displace Venezuelan crude imports. The growing importance of climate change is causing energy suppliers to benchmark their products against others. Suncor and other oil sands operators have sponsored independent assessments that demonstrate that synthetic crude has lower emissions per unit of production than the Venezuelan crudes being displaced. This type of product “life-cycle” comparison is an indication of the role of environmental attributes in the competitive positioning of Canadian exports as issues such as climate change begin to assume importance to customers and shareholders.

Conclusions

Suncor’s core competency is the profitable extraction of oil from sand and shale. Faced with the perception that these kinds of operations are energy-intensive and inconsistent with combating GHG emissions, Suncor is proactively addressing climate change using a range of voluntary and non-regulatory initiatives. Intending to expand its sales on international markets and to exploit its oil sands technology offshore, Suncor’s use of VNRI, in particular its participation in the VCR, helps distinguish Suncor from its competitors. At this stage the effects of these initiatives are not known.

Sources

Gordon Lambert, Corporate Director of EH&S, Suncor.

Suncor web-site: <http://www.suncor.com/>

3M Canada

Background

3M is a global company with 1997 sales of US\$15.1 billion. It has operations in 61 countries and employs more than 74,000 people worldwide, who manufacture and market about 50,000 products serving industrial, commercial and consumer markets. About half of the company's total sales come from 3M subsidiaries outside the US.

Established in 1951 and with its head office and original manufacturing site in London, Ontario, 3M Canada has six other plants in Ontario and one in Manitoba. 3M Canada employs nearly 2,000 Canadians, had 1997 sales of \$787.8 million and assets of \$479 million.

3M Canada manufactures a wide range of products, including aggregate materials, coated and non-woven abrasives, adhesives, fluorochemicals, microscopic glass bubble filler-extenders, health care products, micro-encapsulated products, pressure-sensitive tapes, respiratory protection products, sealants and coatings, and stain repellents. Innovation and product development are important to 3M's success.

3M Canada exports up to 80 per cent of its production to the US and other 3M subsidiaries in about 30 other countries, primarily Europe, South and Central America, and the Far East. It also imports a significant volume of product from 3M companies to sell in Canada.

Environmental Issues

Air emissions, particularly volatile organic solvents (VOCs), have been 3M Canada's major challenge and their reduction has received top priority in its environmental planning. VOCs are a challenge because the coating technologies used to make many of its products have traditionally involved petroleum-based solvents, similar in composition to paint thinner, which are needed to dissolve and apply these coatings. During the drying process, these solvents evaporate and, unless controlled, become air emissions.

In addition to air emissions, 3M, like many other companies, faces the challenge of reducing a wide variety of wastes from its processes, including energy and solid wastes.

3M Canada addresses the environmental requirements of several key stakeholder groups. First, the parent company and other 3M subsidiaries throughout the world are 3M Canada's largest export customers. Meeting the environmental goals established by 3M globally is an important factor in the willingness of the parent to continue buying 3M Canada's products and investing in new manufacturing capacity in Canada. Second, there is growing evidence that customers, particularly those in Europe, will be expecting suppliers to have an Environmental Management System or ISO 14001 certification in place in the future as a condition of doing business. Third, both Canada and the USA have pushed for reductions in VOC emissions to air domestically through various initiatives, including regulation.

Voluntary and Non-Regulatory Initiatives (VNRI's)

Over 20 years ago 3M established its internationally-recognized Pollution Prevention Pays (3P) Program which has been a core component of its environmental strategy. It encourages prevention of pollution at the source, eliminating potential environmental problems and avoiding the expense of cleaning up pollution or treating it after the fact. Employees worldwide have developed more than 4,400 pollution prevention projects, eliminating about 711,000 tonnes of air, water and solid waste pollutants while saving more than US\$790 million.

For 3M globally, the 3P Program and its objectives are voluntary. For 3M Canada, participation and progress in the 3P Program are important performance measures. The 3P Program has delivered some impressive results over the years at 3M Canada:

- Reduced total air emissions by 76 per cent between 1990 and 1997, aiming toward a 90 per cent reduction this decade, often by reformulating products and making manufacturing changes to eliminate the use of solvent altogether.
- Reduced wastes released to air, land and water by 43 per cent between 1990 and 1997.
- Reduced waste generation by 53 per cent, as a per cent of product produced between 1990 and 1997.
- Cut energy consumption per tonne of product produced by 14 per cent between 1995 and 1997.

In the last decade 3M Canada has had no environmental-related charges or fines and has had few, if any, since its founding.

Effects of VNRI's on Trade and Investment

3M Canada competes with other 3M operations to become the source of supply for 3M US and 3M subsidiaries around the world. 3M Canada also has hundreds of other competitors manufacturing and/or selling similar products in Canada, the US and in other countries.

All 3M operations are committed to the same environmental goals, and most major non-3M competitors have similar programs with which they have had varying degrees of success. 3M Canada believes it is important to equal or exceed the environmental performance of other 3M subsidiaries and outside competitors in order to win export orders and investment dollars.

Based on its programs and record, 3M Canada has been able to satisfactorily respond to a number of supplier questionnaires and tender documents asking for information on its environmental plans and progress.

In addition to making the company more competitive from an economic viewpoint (primarily through waste reduction), the VNRI places the company in a better position to carry out its policy of always operating within current (and future) regulations in Canada and in over 60 other countries.

In concert with a doubling of export sales over the last 10 years, 3M Canada has been able to attract considerable investment capital from the parent company to upgrade and expand existing plants and to locate new plants in Canada.

Conclusions

3M Canada's 3P Program is an integral part of the company's ethic and way of doing business. Besides saving money and enabling 3M to meet environmental objectives and to exceed regulatory requirements, the program enables it to win significant inter-company exports and investment capital which are critical to the ongoing health of the business.

3M shows no signs of dropping the 3P Program. Claiming a commitment to the concept of sustainability—producing more with fewer resources and less environmental impact—3M will continue to initiate new voluntary environmental programs and set even more aggressive goals as it moves into the twenty-first century.

3M Canada should be looked at in the context of 3M globally. Environmental targets stemming from the 3P Program are voluntary for 3M globally. For each internal 3M unit, including 3M Canada, participation in the 3P Program and progress toward overall company environmental targets are important performance measurements.

There is no doubt that 3P is an effective program to achieve environmental objectives efficiently. It also encourages innovation and continual improvement. Its impact on trade and investment competitiveness in an inter-company setting are positive.

Sources

Doug Ferguson, 3M Canada.

3M Canada 1996 and 1997 Environmental Reports.

TransAlta Corporation

Background

Headquartered in Calgary, TransAlta is an energy company operating in Canada, New Zealand, Australia, Argentina and the USA. A major supplier of electricity in Alberta, the company has interests in gas and electricity distribution, independent generation, energy services and energy marketing. TransAlta corporation employs over 2,000 people and has assets of \$4.6 billion, revenues of \$1.6 billion and earnings of about \$185 million.

Environmental Issues

With the bulk of its Alberta-based electricity production based on coal-fired generation, TransAlta's most significant environmental issue is its greenhouse gas (GHG) emissions from its Canadian operations. Due to business growth, GHG emissions from its Canadian operations were anticipated to rise by up to 13 per cent over 1990 levels by the year 2000. Other environmental issues include emissions to air of SO₂, NO_x, particulates and heavy metals, and impacts on water levels and flow rates and water quality.

Voluntary and Non-Regulatory Initiatives (VNRIs)

TransAlta has a comprehensive sustainable development program which is integrated into the operations of the business. It developed an environment, health and safety management system framework consistent with ISO 14001. Every two years, the company issues a sustainable development progress report. It is a founding member of GEMCO, a consortium established to identify opportunities to develop GHG offsets. In 1997, TransAlta initiated long-term programs of stakeholder consultations and communications regarding its plant and system environmental policies and plans.

The subject of this case is the company's initiatives to return its net contribution of greenhouse gases to the atmosphere to 1990 levels in the year 2000. The company participates in the Voluntary Challenge and Registry Program (VCR) with measures to address internal efficiencies, customer efficiencies, renewable energy purchases, displacement with cogeneration and both domestic and international offsets.

According to the company's August 1997 VCR Program second report, through a variety of actions, including both efficiency projects, offset and cogeneration, TransAlta Corporation was able to reduce its net GHG emissions (measured in CO₂ equivalent) by 600,000 tonnes below the 1990 levels. This reduction of 2.3 per cent was accomplished even though TransAlta increased its generation of electricity by 11 per cent.

By 2000, TransAlta expects that it will reduce its net contribution of GHG emissions to the atmosphere by 2.3 million tonnes compared with 1990, a reduction of 8 per cent.

Effects of VNRIs on Trade and Investment

TransAlta has several activities outside Canada. One element of its climate change action plan is its involvement in a project in an Indian dairy operation which uses a dietary

supplement to enhance milk production and to reduce methane emissions, a powerful GHG, by about 450,000 tonnes of CO₂ equivalent emissions per year.

TransAlta's stand on sustainable development has contributed to its success in securing investments in generation and distribution facilities in New Zealand. TransAlta and its partner won approval to build a \$125 million 114 megawatt high-efficiency gas cogeneration facility to supply steam to a paper plant and electricity to the Auckland region. It has replaced less efficient generation and, being located closer to the market, will result in lower transmission losses. TransAlta also built a \$390 million combined-cycle gas turbine plant to produce 350 megawatts of electric power. Both investments are intended to provide an economic return and a credit for GHG offsets. In Australia, TransAlta has also benefited from its voluntary actions in its positioning for business expansion.

The value of TransAlta's ISO-based environment, health and safety management system and its knowledge of market-based approaches to emissions management acquired through its voluntary actions are recognized by the customers of its power generation facilities.

Conclusions

TransAlta took Canada's VCR program seriously. It developed and implemented a plan to reduce net GHG emissions voluntarily. Its participation in the VCR is just one component of an integrated approach to environment and sustainable development. And it is likely that TransAlta's overall approach, not just its VCR actions, was significant in securing its NZ investment opportunities, and in positioning TransAlta advantageously in Australia.

Sources

TransAlta Corporation 1995 Sustainable Development Progress Report.

TransAlta's Action Plan, Voluntary Challenge and Registry Program, September 1995.

Second Progress Report: TransAlta's Action Plan, Voluntary Challenge and Registry Program, August 1997.

Xerox Corporation

Background

Headquartered in the US and employing 87,000 worldwide, Xerox has revenues of US\$17 billion and net income of \$1.2 billion. Its products and services are designed to help customers master the flow of information from paper to electronic form and back again. The Xerox customer is anyone who uses documents—large and small companies, public agencies and universities and businesses run from home. Some of its off-shore operations are not wholly-owned. Xerox serves a highly competitive global market of about US\$200 billion growing at 10 per cent per year.

Xerox is the first major US corporation to regain market share after losing it to Japanese competitors.

Xerox's strategy features quality improvement, the transition to digital technology and exploiting the use of colour.

Environmental Issues

Xerox's principal environmental issues involve the life-cycle of its products, especially reducing the use of material in production and the consumption of energy during product use. Emissions from operations are also an issue for Xerox.

Being a US-based multinational, Xerox must also be sensitive to North-South equity issues.

Voluntary and Non-Regulatory Initiatives (VNRIs)

Xerox employs a range of generic and in-house initiatives to address its environmental issues. Economics plays an important role since much of its environmental work focuses on waste reduction.

ISO 14001

Xerox goes beyond compliance with environmental regulations partly in an effort to distinguish itself and its products from its competitors and partly in order to reap the economic rewards of reduced waste. To achieve its goal of waste-free products in waste-free factories, Xerox is registering its environmental management systems under ISO 14001 at all of its manufacturing operations. The British Standards Institute will undertake third-party audits twice yearly at all plants.

Design for Environment

To enhance productivity, most copiers, printers and multifunction devices are now designed to be remanufactured at the end of their initial life-cycles. Xerox uses only recyclable and recycled thermoplastics and metals. The company has adopted snap-together designs to facilitate assembly and disassembly, for the cleaning, testing and reuse of parts. The replaceable toner and copy cartridges on certain Xerox copiers can be returned by customers free of charge to be reused, remanufactured or recycled.

Eco-Labeling

In Canada, 19 Xerox products were recognized in 1996 by the Environmental Choice Program (ECP) for meeting stringent environmental standards, including the use of reprocessed materials, reduced energy consumption, minimal ozone and noise emissions, and recyclability.

Waste-Free Program

Xerox's Waste-Free initiatives include a range of activities to reduce waste in Xerox's operations. For example, current efforts to reduce total water consumption and wastewater generation in Xerox manufacturing facilities include reusing process rinse water with counter-current flow rinse tanks. Xerox is also switching from the "once through" cooling process, which relies on a continuous supply of fresh water to cool compressors, to a closed loop cooling system.

Air Emissions Control Program

This US initiative is targeting a 90 per cent decrease in all chemical emissions. The new "Flow Coating Process," introduced and implemented by Xerox in 1996 in US and European manufacturing facilities, minimizes waste and pollution by increasing the efficiency of an elastomer roll coating process and substantially reducing the amount of volatile organic compounds (VOCs) needed for cleaning parts. When benchmarked against the standard manufacturing method using an electrostatic spray, the new process was found to be 30 per cent to 50 per cent more efficient with overall decreases of 82 per cent in solvents, 50 per cent in solid wastes, 35 per cent in manufacturing costs, and total elimination of vapor degreasing solvents. Extensive field tests project considerable cost savings with longer life expectancies conserving 100,000 kilograms of solvents and 6,000 kilograms of elastomer.

Xerox's other voluntary initiatives include corporate environmental reporting to the public, a range of partnership activities with various stakeholders, the development of copy and print papers containing 20 per cent post-customer waste and reusable packing for finished products. The adoption of digital technologies, although not a voluntary initiative per se, is yielding economic and environmental benefits. For example, the development of three new printing paradigms—print-on-demand, distributed printing and print-for-one—provides significant efficiencies in material, space, energy and time.

Xerox has realized significant reductions in energy usage, materials usage and emissions throughout its operations. Some examples and summary statistics are given below. In 1996, Xerox's worldwide Waste-Free activities resulted in reusing or recycling 81 per cent of all non-hazardous waste generated, such as paper, cardboard, glass and plastic, compared to 78 per cent in 1995. The amount of solid waste sent to landfill by worldwide manufacturing and supplies facilities has also decreased despite approximately 50 per cent more facilities reporting and increasing production.

Since 1993, Rank Xerox's remanufacturing and waste minimization programs have resulted in an 80 per cent wastestream recycling rate, 67 per cent less waste going to landfill, and substantial savings due to reductions in raw material purchases.

Xerox operations have received numerous important awards in Europe and North America for superior environmental performance.

Effects of VNRI on Trade and Investment

With dispersed manufacturing and assembly operations, the ability to interchange parts and export final products is critical to success. For example, Xerox Canada exports over 90 per cent of its document handlers and its toner cartridges, primarily to affiliates for assembly and sale, but also to re-sellers. The US accounts for about half of Xerox Corporation's revenues.

The primary drivers for Xerox in undertaking its environmental initiatives were: economic, social responsibility and competitive advantage to protect market share, especially against Japanese rivals.

Xerox encounters market obstacles to environmental leadership; for example, varying criteria for eco-labels and standards around the world. The company believes that the requirements of some eco-labels present potential trade barriers. In addition, some government procurement policies and practices discriminate against products containing reprocessed and recycled parts content.

Xerox claims to have saved hundreds of millions dollars while reducing pollution, waste and energy consumption, thereby enhancing trade competitiveness.

Conclusions

Xerox is a global company in a globalized industry with tough competition. Success depends on R&D leadership, quality and efficient operations. Because of the global nature of the business and the significance of the free flow of interchangeable components, it is important that certain programs, like environment and quality assurance, be common across the corporation. The implementation of ISO 14001 and Waste-Free initiatives are appropriate to a company like Xerox because of their universal applicability.

In addition to economic payoffs, environmental leadership provides Xerox with a competitive edge in some market segments. This edge will become more important over time if customers give higher priority to the environmental performance of their suppliers.

Although some VNRI enable a company to distinguish itself from competitors, initiatives such as ISO 14001 provide only temporary relief, since with some effort and expense, they can be replicated.

Xerox is a case in establishing leadership, and keeping it. VNRI allow the exercise of leadership; whereas regulations do not. And VNRI can be global; whereas regulations are restricted to government jurisdictions.

Having set measurable goals in key areas, Xerox intends to continue to develop its environmental initiatives globally.

Sources

Tom Armstrong, former Manager, Environment, Health & Safety, Xerox Canada Ltd.

Patricia Calkins, Environment, Health and Safety, Xerox Corporation.

Xerox 1996 Environmental and Annual Reports.

Xerox web site: <http://www.xerox.ca/>

Selected Bibliography

- ARET Secretariat. *Environmental Leaders 2: Accelerated Reduction/Elimination of Toxics (ARET) Progress Report, Voluntary Action on Toxic Substances*. 1997.
- The Conference Board of Canada. *The Optimal Policy Mix: Phase 1, An Initial Framework for Discussion*. Draft, March 31, 1997. (Prepared for the Innovators in Environmental Action Forum by the Business and the Environment Research Program).
- European Commission, Directorate General III.01. *Industry Study on Voluntary Agreements Concluded Between Industry and Public Authorities in the Field of the Environment*, Final Report January, 1997.
- European Environment Agency. *The Netherlands: Declaration on the Implementation of Environmental Policy in the Chemical Industry*, Case Study 4, 1997.
- The High-Level Advisory Group on the Environment, OECD. *Guiding the Transition to Sustainable Development: A Critical Role for the OECD*. Report to the Secretary-General of the OECD. November 25, 1997.
- Hunter, David, Julia Sommer and Scott Vaughan. *Concepts and Principles of International Law: An Introduction*. United Nations Environment Programme, 1994.
- Ingram, Verina. *An Environment for Consensus? Building Consensual Commitment through Communication; Negotiated Agreements in Environmental Policy*. Thesis, Centre for Environmental Technology, Imperial College of Science, Technology and Medicine, University of London, September, 1996.
- International Institute for Sustainable Development (IISD). *Global Green Standards: ISO 14000 and Sustainable Development*. Winnipeg, 1996.
- Mattews, Emily. (Compiled by) *Environmental Policy in Action No. 1: Working with Industry ERM-GB*, Commissioned by Ministry of Housing, Spatial Planning and the Environment, Department for Information and International Relations, The Netherlands.
- Moons, C.M. *The Significance of ISO 14000 for Government's Policies Towards Sustainable Industrial Development; Experiences with the Dutch Approach*. Speech in Beijing, November 6, 1996.
- New Directions Group. *Criteria and Principles for the Use of Voluntary or Non-Regulatory Initiatives to Achieve Environmental Policy Objectives*. 1997.
- OCDE/GD(97)105. *Eco-Labeling: Actual Effects of Selected Programmes*. OECD, Paris.
- Office of Consumer Affairs, Industry Canada, *Voluntary Codes: A Guide for Their Development and Use*. Ottawa: Industry Canada, 1998.
- Ostry, Sylvia. *The Post-Cold War Trading System: Who's On First?*. The University of Chicago Press, 1997.
- Routledge, U. *Deregulation in the European Union, Environmental Perspectives*. Collier, 1997.

UNCTAD Trade and Development Board Expert Meeting. Meeting Notes. *Trade and Investment, Impacts of Environmental Management Standards, Particularly the ISO 14000 series, on Developing Countries*. UNCTAD, Geneva. 29-31 October 1997.

van Dunne, J. M. *Environmental Contracts and Covenants, New Instruments for a Realistic Environmental Policy*. Lelystad, Vernoede, Netherlands.

Zarrilli, Simonetta, Veena Jha and René Vossenaar (editors). *Eco-Labeling and International Trade*. United Nations Conference on Trade and Development. MacMillan Press Limited, 1997.



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