

**EarthEnterprise™**

# **TOOL KIT**



**MARKETS**

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**TECHNOLOGY**

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**FINANCING**

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**NEW BUSINESS PRACTICES**

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October 1994

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# EarthEnterprise™ Tool Kit



## Foreword

Today, a large portion of new job formation and growth takes place in small companies. Having been formerly involved in business, I know that small companies can often respond quickly to new demands and markets, and are sources of much that is innovative. It is no surprise to me, then, that there is a strong interest in sustainable development on the part of many small and medium sized companies.

Because many people are uneasy about some of the un-sustainable activities in the world, there is widespread demand for more sustainable forms of development. These demands show up in consumer activity — people are changing their buying habits, and companies that can understand and take advantage of these changes will prosper.

People are also pressing their governments to change, and we are responding by finding strategic ways to work with business to both meet our obligations and maximize our opportunities, but within the context of sustainable development.

The EarthEnterprise™ initiative, and this Tool Kit, are examples of new tools and partnership arrangements for business. Through Manitoba's support of the International Institute for Sustainable Development, we are proud to work with entrepreneurs and innovators in breaking the path to the future — profitably and sustainably.

Honourable Gary Filmon  
Premier of Manitoba

# EarthEnterprise™ Tool Kit

## Preface

EarthEnterprise™ is a new initiative of the International Institute for Sustainable Development (IISD), linking the economic world where business holds sway with the new opportunities arising from environment and development concerns. Our project focuses on new and rapidly growing markets for products, services and technologies for sustainable development. Innovators and entrepreneurs seeking entry into these markets will discover half a trillion dollars worth of business globally by the turn of the century. Many, perhaps most, of the new ideas for green markets will come from small and medium size firms. Their needs to access investment funds, market information, and technology assistance prompted EarthEnterprise™ and our Tool Kit.

IISD's role is to be a catalyst for improving environment and economy relationships. By discovering and addressing requirements of the new breed of business innovators and investors, EarthEnterprise™ will accelerate the availability and acceptance of products and technologies supportive of sustainable development. EarthEnterprise™ is our trademark to symbolize the major commitment of human ingenuity and business acumen urgently required for successful investment in sustainable development.

This Tool Kit provides fundamental knowledge for smaller businesses competing in the environmental market place. It draws upon insights of successful business people, new research about the market place, technology development, financing mechanisms, and changing business practices. The enthusiasm of both the EarthEnterprise™ team and those with whom they network bodes well for the future. They and others like them are the vanguard, pursuing opportunities inherent in sustainable development.

IISD will continue to update and expand the Tool Kit. We look forward to receiving comments from readers on how it may be improved to meet their practical needs.

Arthur J. Hanson  
President and CEO  
International Institute for Sustainable Development

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## Acknowledgements

The EarthEnterprise™ project was undertaken by IISD staff and a group of consultants and collaborators. Overall direction came from Arthur J. Hanson, President and CEO of IISD. Lloyd McGinnis, the founding Chairman of IISD's Board of Directors, helped start the project and provided an initial framework.

- Stephan Barg, who is responsible for IISD's Business and Government Program, directed the project and participated in its conceptualization and development.
- Rob Kerr was responsible for managing all aspects of the project, from developing the concept to delivering the products and finding the customers. Without his persistent efforts, EarthEnterprise™ would not exist in its present form.
- Cynthia Pollock Shea joined IISD during the project and contributed her vast knowledge of the field, particularly of green procurement and new business practices. Her research and writing skills proved invaluable.
- Susan Miskiman managed the support services necessary for such a complex project, with the assistance and hard work of Thérèse Laberge.
- Other IISD staff members — Don Berg, Bonnie Bisnett, Frank Cosway, Monique Ferguson, Carole Quenelle, and Julie Wagemakers — provided substantial assistance at various stages of the work.
- Beatrice Olivastri, of the firm Olivastri and Associates (Moose Creek, Ontario), worked almost full time with IISD and assisted in managing the project from conception to delivery. Her good nature and creativity brought the project to life.
- Gary Lewis, of The Hartman Group (Newport Beach, California), contributed extensive knowledge of green consumer markets and strong experience with consumer-oriented entrepreneurial firms. He had primary responsibility for the consumer markets section.
- Brian Kelly had primary responsibility for the technology section, and developed the idea of the "technology tree" while working at Marbek Resource Consultants in Ottawa. Kelly is now Director of Environment and Sustainable Development at Ontario Hydro, where he is responsible for overseeing the implementation of sustainable energy development and use programs.
- Chris Henderson, of the Delphi Group (Ottawa, Vancouver and London, England), contributed business and fund management experience, as well as a wide range of contacts in the financial services industry. He had primary responsibility for the investment section.

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- Doug Miller, of Synergistics Consulting Limited (Toronto, Ontario), assisted with market surveys, meeting design, and the faxback system used in the EarthEnterprise™ Exchange.
- David Conklin, of the National Centre for Management Research and Development (London, Ontario), helped with the consultation process and developed material on new business practices.
- Jean-Dennis Barry, of the Canadian Chamber of Commerce (Ottawa, Ontario), and Alex Keen of Altech Environmental Consulting Ltd. (Toronto, Ontario), developed, managed, and reported on the Canadian focus-group research.

Throughout the process of researching, meeting, refining concepts, consulting with many others, and working very hard, these people became a strong team, dedicated to the goals of the project and to cooperatively fostering the success of sustainable enterprises. Each contributed to the overall project design, as well as to individual areas. All deserve thanks for their commitment and the quality of their work.

# Introduction

# EarthEnterprise™ Tool Kit



This EarthEnterprise™ Tool Kit is designed to help companies build new kinds of businesses — businesses that are successful because they meet today's growing demand for products and services that enhance sustainability. Developing, financing, and marketing those products and services is a real challenge in the current tough business climate. The ideas and approaches in this Tool Kit will help companies meet that challenge. In the following pages you will find ways to capitalize on such special aspects of sustainable businesses as:

- Consumer markets — how to track and tap them;
- Green procurement — selling to governments and big business;
- Technology — identifying the drivers and emerging demands, and assessing and developing the best opportunities;
- Financing — the basics, the special sources, and the business plan;
- New business practices — sustainable business is special, both inside and out.

The Tool Kit looks at each of these areas, explains the most important issues facing green or sustainable businesses, and provides tools for dealing with them. It also includes lists of specialized information sources for follow-up.

The tools presented are the kinds of knowledge — beginning with the need to find good ideas for sustainable products — that entrepreneurs require in order to solve problems in an increasingly important business sector. There are some tools for assessing consumer markets for such products, and other tools to help analyze the profit and sustainability potential of technologies.

The material in this Tool Kit is based on original research by the project team at the International Institute for Sustainable Development and a team of expert consultants. In a wide-ranging international consultative process, the opinions of dozens of entrepreneurs from the United States and Canada helped guide research and the selection of tools. Version 1.0 of the Tool Kit was issued at the first meeting of the EarthEnterprise™ Network in Winnipeg, in October 1993. This version, Version 2.0, incorporates the insightful comments contributed during that meeting, the results of additional research, and an updated list of contacts.

### The Tool Kit's Audience

While the principal audience for the Tool Kit is the North American entrepreneur in a small or medium sized green or sustainable enterprise, the publication will also be useful to companies of all sizes that are interested in greening their operations. In addition, the Tool Kit is designed to be used by investors seeking a better understanding of the opportunities offered by

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sustainable technologies and enterprises. Other users of the Kit include environmental technology innovators, inventors, policy makers, business advisors, educators and students.

### Sustainable Business

EarthEnterprise™ deals with the relatively new concept of sustainability. At some point in the future this term will be common-place, but today “sustainability” and the terminology related to it must be defined.

The concept of “sustainable development” was advanced considerably in *Our Common Future*, the final report of the World Commission on Environment and Development (“the Brundtland Commission”) in 1987. It is most often described as “development or progress that meets the needs of the present without compromising the ability of future generations to meet their own needs”.

IISD defines sustainable development for business as “adopting business strategies and activities that meet the needs of the enterprise and its stakeholders today while protecting, sustaining, and enhancing the human and natural resources that will be needed in the future”.

A sustainable business is one that operates according to this definition, in both its operations and products. The sustainable business has interdependent economic, environmental, and social objectives, and understands that long-term viability depends on integrating all three objectives in decision-making. Rather than regarding social and environmental objectives as costs, a sustainable enterprise seeks opportunities for profit in achieving these goals.

There are relatively few sustainable businesses today, but the number of companies that are trying to achieve this goal is growing quickly. One of the best known is Body Shop International, whose founder, Anita Roddick, has taken a new approach to the beauty and personal care business. The members of the EarthEnterprise™ network are providing the next round of success stories.

The “green” business, which is more common, focuses on operations and products that minimize damage to the environment. It produces such items as mercury-free batteries, energy efficient technologies, natural cleansers, and products made from recycled materials. A smart green company will tap the sensitivities of the consumer and industrial markets by emphasizing the environmental attributes of its operations and products. A green company may make the transition to sustainability as it develops the values of preserving and restoring long-term ecological integrity and promoting societal health and well-being.

In the Tool Kit, people who run either sustainable or green businesses are referred to as “eco-entrepreneurs”.

## The Project

The EarthEnterprise™ project was started because the International Institute for Sustainable Development is convinced that business can prosper by taking advantage of the trend to more sustainable products and services and by operating more sustainably. Providing useful information to sustainable and green businesses is one way IISD can achieve its own goal of fostering sustainable development.

The research for this project focused on business activities in which the goal of sustainability makes a difference. It did not focus on the myriad issues faced by any entrepreneurial company, green or otherwise. (Therefore, the Tool Kit does not duplicate sources of general advice relevant to all business enterprises, and readers seeking such advice should investigate other sources.)

We consulted widely so that our research would focus on the areas regarded as most important by eco-entrepreneurs.

- Interviews were conducted with leaders of carefully selected companies across North America. We found that in making their business decisions, especially about future actions, most entrepreneurs rely chiefly on qualitative information gained directly from customers, industry contacts, and an array of business and trade periodicals. They do not seem to value the detailed market research statistics that most large consumer market companies use extensively. Eco-entrepreneurs identified direct knowledge of what customers want as the highest priority. (What do consumers like and dislike about the company’s products and services? Why is “green” important to the customer’s purchasing decision, and how are tastes and needs changing?)
- The EarthEnterprise™ Exchange was established as an interactive newsletter for project participants. Each issue focused on our findings and sought feedback from readers. We used a faxback form with a carefully designed questionnaire, and got a high response rate, with useful advice and suggestions. Many readers expressed interest in finance and technology issues, and the opportunity to meet successful eco-entrepreneurs who might be mentors or role models.
- A working group on investment was established, consisting of experts and practitioners with substantial experience. Two messages arose repeatedly. When seeking a loan or an investment, green businesses are like any others; only strong business plans will be funded. However, for companies that

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have all the bases covered, a growing number of investment sources are particularly interested in green or sustainable businesses.

- Focus groups were held across Canada in conjunction with the Canadian Chamber of Commerce. Local chambers selected entrepreneurs and professional advisors who debated and tested our ideas. They agreed that public policy and regulations could frequently create or change a market overnight, but that changes are hard to predict and sometimes occur only as the result of organized lobbying. The development of a market for a product or service was judged to be just as important as the development of the product or service itself, and deserving of equal attention. Product development costs can be prohibitive, even when a market clearly exists. They can be deadly if the market doesn't respond.

We also heard repeatedly that the way a business operates internally is as important as its product line or marketing strategy. Any entrepreneur brave enough to start a business must firmly believe that his or her product, or service, is better than any currently on the market. What distinguishes many entrepreneurs profiting from the transition to a sustainable future is their commitment to a broader definition of success, one that extends beyond the bottom line.

The necessity to make a profit is a given. But, typically, the successful innovators who have joined the EarthEnterprise™ Network have a far longer list of goals. They want to protect, preserve, and restore the healthy functioning of complex ecosystems. They want to empower and instill trust in their customers, suppliers, and employees. They want to foster cultural diversity and promote local economies. In a myriad of ways, they want to make the world a better place.

Reconciling conflicting demands and pressures, while holding fast to the goal of "doing right" by a broad range of stakeholders, is daunting. Practicing a high standard of ethics while striving to meet the next payroll is a constant challenge. But a growing number of companies are succeeding financially without wavering from their commitment to a clearly articulated set of principles.

The proliferation of publications with names like *Business Ethics*, *Good Money*, and *The Green Business Letter* is testimony to that success. Organizations formed to serve this growing client base include Business for Social Responsibility, the Social Venture Network, and the Green Retailers Association.

Today's business leaders are looking to sustainably harvested resources and discarded materials for their inputs. They are assisting their employees to cope with the competing demands of work and family. They are educating their

customers, suppliers, and employees to make wise environmental choices. And they are pooling their efforts to stretch limited finances and technical skills. They are also clearly stating their objectives and publicly explaining how they arrived at key decisions.

The EarthEnterprise™ project has developed a variety of products, all designed for business people who want to improve their companies and make money by satisfying the demand for sustainable goods, services, and technologies.

- This Tool Kit contains strategic advice and specific, action-oriented suggestions to deal with real business problems. Extensive resource lists provide additional information sources.
- The EarthEnterprise™ Exchange, distributed to our network of North American entrepreneurs and innovators, facilitates the free exchange of ideas and support, and will help extend EarthEnterprise™'s reach.
- Our first large meeting, October 12-14, 1993, in Winnipeg, helped launch the Network, refine the Tool Kit, and plan for the future.
- Further meetings of the Network will attract new participants, disseminate practical knowledge and experience, and foster new business alliances.
- EarthEnterprise™ events outside North America may be planned with local partners elsewhere in the world.

Business is evolving rapidly to meet the changing demands of markets and of a variety of stakeholders. Companies able to move quickly will enjoy a real competitive advantage. The tools and outputs of the EarthEnterprise™ project are designed to be flexible, but, if we are to succeed, we need your feedback. Please call, fax, or e-mail to tell us what information you find most helpful, what additional material you would like to see incorporated and how you would like to become involved in the Network.

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# Avalanche Markets

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Over the last decade, subtle but momentous changes have occurred in the values and purchasing behaviour of consumers, corporations, and governments. This subtlety, which is cascading into momentous change, inspires the term “avalanche markets”. Like an avalanche, the adoption of environmental and social criteria in purchasing decisions will dramatically change the landscape.

In the past 20 years, the environment has become a priority concern for people, at home and at work. The concept of sustainable development makes it clear that environmental implications must be dealt with whenever economic decisions are made. Learning how to do this — not just to adopt “green washing” — takes time. After a few false starts, however, the avalanche is gathering speed in consumer buying, corporate and government procurement policies, and, indeed, in the emergence of the “green industry” sector.

These three markets — green consumers, green procurement, and green industries — are the focus of this section of the EarthEnterprise™ Tool Kit. To help entrepreneurs increase their ability to gain access to and serve avalanche markets, it highlights strategic business issues and offers tools for coping with them. Because “green” terminology is pervasive, we use it as the starting point. Benefiting fully from the power and potential of these markets, however, means moving beyond green add-ons and making a comprehensive commitment to sustainable development.

To be successful in the green consumer market, today’s entrepreneur needs to know what makes it tick: why it continued to grow in the midst of an economic recession. The main barrier to growth in this market is credibility: consumers are cynical about product claims and opportunistic pricing. As the dimensions of the avalanche market become obvious, green, pace-setting entrepreneurs will face competition from mainstream companies and competitive strategies will be key to survival.

As corporations, governments, and other institutions seek to reduce their impact on the planet, huge new markets are opening up. There are a number of ways for an entrepreneur to react: by identifying and responding to green procurement policies with existing products and services; by forming new alliances among suppliers and customers to jointly address new needs; and, for the proactive, by consulting with key policy decision makers and initiating business relationships that help create new markets. (See pages 26-35 for a description of some exciting opportunities in green procurement, as well as information about the tools and contacts for gaining access to them.)

As the commitment to sustainable development takes hold, many nations are developing and enforcing stricter environmental regulations. In turn, global markets have grown significantly as both industry and governments seek new

skills and products. These markets will mature from end-of-pipe, cleanup solutions, through abatement and prevention strategies, to sustainable technologies. On pages 35-40, we provide an up-to-date assessment of environmental industry markets as a tool for understanding where green industry clientele may be found. (The Business Opportunities in Sustainable Technology chapter shows where the power of this avalanche market will be strongest.)

### Green Consumers: Selling to the Masses

To benefit effectively from growth in the green market, entrepreneurs will need to educate and convince investors, financial institutions, and mainstream distribution channels of the importance of green consumerism. If these sectors view the green market as an overblown, passing fad, they will be reluctant to do business. In order to plan convincingly for long-term prospects in the market, entrepreneurs must get to know green consumers. To do this, entrepreneurs must look at the factors that influence the green consumers' purchasing decisions.

#### **TOOL** Understand Green Consumers, in Depth

##### Green Consumers:

- are very sincere in their intentions. Their commitment to greener lifestyles is growing slowly but very few are “backsliding”;
- almost always judge their environmental practices as inadequate;
- tend to overstate their green behaviour, including the number of green products they actually use. This reflects the fact that green is very much a “motherhood and apple pie” value. Not surprisingly, the gap between expectation and reality tends to make people feel guilty and sometimes defensive;
- want environmental protection to be easy, without having to make sacrifices. Purchasing more environmentally responsible products gives them a vital psychic lift, by helping them align beliefs and actions;
- do not expect companies to be perfect in order to be considered green. Rather, they look for companies that are taking substantive steps and have made a commitment to keep on improving — probably because consumers themselves do not feel environmentally perfect;
- are wary and tend to mistrust companies' environmental statements, unless they have been evaluated by some person or group considered trustworthy;
- are quite confused and lack knowledge about environmental issues. They do not usually trust themselves to evaluate scientific information about the

environment. At the same time, however, they are eager to learn more, and willing to be educated. In other words, consumer education is one of the most effective strategies entrepreneurs can use, becoming a consumer service in itself.

## TOOL ▶ A Road Map to Green Consumer Purchasing Behaviour

The most important rule in designing products is to minimize the sacrifices consumers must make in order to buy and use them. Improvements must be substantive, backed by solid logic and, where applicable, documented data. Different environmental attributes are preferred in different product categories; however, consumers generally feel that the more attributes the better. A good strategy is to offer one or more environmental improvements in each of several categories, such as water pollution, solid waste, and manufacturing processes.

When consumers are faced with a trade-off among product attributes, the environment almost always loses with all but a fraction of the most committed green consumers. Unfortunately, green purchasers will not always admit this; and many companies have failed with products that require consumers to make trade-offs.

To succeed, eco-entrepreneurs must provide the traditional values of price, quality, convenience and availability.

- **Price:** No matter what consumers say to the contrary, few will consciously pay extra for greener products. Research has shown, however, that very small price premiums (on the order of two percent) are below the threshold of “consciousness”. Higher premiums can only be charged if the consumer perceives additional product value (such as being “in vogue”). Otherwise, only extremely green, or wealthy consumers, can be expected to pay significant price premiums.
- **Quality:** Many people assume green products will be less effective than current non-green brands. Consumers are even less likely to sacrifice quality than they will price. Assurances of quality are absolutely essential, and must be communicated convincingly to consumers. Quality is judged on many features, including performance, look, feel, fit, comfort, and durability.
- **Convenience:** Only minimal inconvenience is tolerated by consumers of green products. Infrequent activities, such as refilling bottles of soap or detergent, are sometimes tolerated.
- **Availability:** Very few consumers will go out of their way to buy green products. In a 1990 Roper Poll, 58 percent of respondents cited poor product availability as a reason for not purchasing more green products.

**TOOL** Interpret the Demographics

Based on the following chart, here are the key demographic implications for business.

**Demographics of the Green Market in North America**

---

<b>United States</b>	Greens	Near Greens	Browns
Income Index	1.21	1.07	0.75
Median Age	41	43	40
Executive/Professionals (%)	24	17	11
College Graduates (%)	27	20	11
Female (%)	58	52	50
<b>Canada</b>	Greens	Near Greens	Browns
Income Index	1.19	1.18	0.7
Median Age	38	41	44
Executive/Professionals (%)	22	20	8
College Graduates (%)	28	12	12
Female (%)	57	49	43
<b>Mexico</b>	Greens	Near Greens	Browns
Income Index	N/A	N/A	N/A
Median Age	30	29	30
Executive/Professionals (%)	14	16	10
College Graduates (%)	15	10	11
Female (%)	56	53	42

Source: 1992 Roper Poll in the U.S., Canada, and Mexico.

---

- The best green customers are people with more money to spend. Therefore, the most promising products for greening are at the higher end of the market.
- The best outlets for selling green products are retail stores frequented by the upper middle class and the wealthy. In general, green consumers have the education and intellectual orientation to appreciate value; they will understand logical green appeals and evidence that supports environmental claims.

- The most responsive age group is young adults, many of whom are influenced by their children.
- Women are a key target for greener products and often make purchases for men.

### Background to statistical categories

1. Income Index: ratio of median group income to median national income. Green consumers in the U.S. and Canada earn above average incomes.
2. Median Age: The data for Canada suggests that younger adults are more likely to be green than older people. The data for the U.S. and Mexico are not very conclusive (although more detailed results from the Roper Poll and other surveys show that green sensibilities are strongest among U.S. adults aged 30-45). Note: Research also shows that children and teenagers are the most sensitive to green issues.
3. Executive/Professionals: percentage of consumers in high skill, white collar professions. Professionals and executives tend to be greener consumers.
4. College Graduates: The data generally show that the more educated the person, the more likely he or she is to be a green consumer.
5. Female: The data show that women tend to be more green than men.

Understanding the demographic basics about green consumers can help non-green entrepreneurs explore the environmental market and home in on likely prospects. Those already in the business can better tailor outreach and communications to consumers.

In the U. S., the age factor means a flourishing market as greener kids replace the less green elderly. Children and teens are generally much more concerned than adults about the environment and are more knowledgeable about green alternatives. Increasingly, they influence their parents' purchasing decisions towards green and, more important, millions of them will reach adulthood and gain purchasing power in the next few years.

At the opposite end of the age spectrum, Americans born before the end of World War II are the least green in consumer orientation. As they age, their share of consumer purchases will dwindle, and be replaced by consumers with a greener ethic.

In Canada, children share very strong green concerns that influence their parents. Older people also tend to be relatively active green purchasers. The Environmental Monitor reports that green purchasing, "...does not vary significantly among demographic and regional groups". The Roper Poll, on the

other hand, indicates that green Canadian consumers are slightly younger than their non-green counterparts.

There are not yet sufficient data from Mexico to draw conclusions on age trends and green consumer growth.

## TOOL Know the Market Size for Green Consumers

The Roper Organization's estimates for three types of green consumers in the United States, Canada, and Mexico:

---

	North America	U.S.	Canada	Mexico
			(percent)	
Trueblue Greens	21	20	38	19
Greenback Greens	5	5	3	4
Total	26	25	41	23
Sprouts/Near Greens	26	31	27	11
Total	52	56	68	34

(Note: The Mexican figures could well be exaggerated due to a spike in public environmental concern. The polling took place immediately after some of the country's worst and most publicized environmental disasters.)

## Definitions

- Trueblue Greens: Consumers who engage in a number of environmentally motivated activities, ranging from recycling to various green shopping choices. The Trueblues do not typically accept environmental price premiums.
- Greenback Greens: Those who claim willingness to pay price premiums for greener products, but who are generally too busy to pursue other ecological practices. (In the U.S., greenback is a slang term for dollar.)
- Sprouts: People who are very concerned about the environment and say they want to do more to protect it, but who haven't yet adopted many environmental practices. (Some pollsters call them "Near Greens".)

Note: Consumers almost always overstate their green buying intentions. In order to gauge production and marketing efforts realistically, be wary of people's tendency to overstate environmental behaviour.

## TOOL ► How To Target Deep-Green Markets

Deep-green markets are too small to attract major competition, which may be an important factor in planning long-term strategy. Recent estimates put the size of this market at about two percent of U.S. and Canadian consumers. These individuals gravitate towards political advocacy and will often pay higher prices or sacrifice product performance for environmental improvements.

If you decide to target this market,

- Your products must be significantly better environmentally than the competition's or you will be viewed as a hypocrite, as well as lose the sale.
- Provide clear, engaging, and comprehensive information on what sets your product apart environmentally. Deep-green consumers appreciate information on how they can make a difference ecologically.
- Monitor the competition to see if they are developing products almost as green as yours, but without the price/quality tradeoffs. Keep ahead of the green development curve by minimizing the sacrifices required to purchase or use your product.

## TOOL ► Know the Factors That Drive Green Market Growth

General economic expansion tends to correlate directly with increased environmental concern, action, and consumer spending. According to research by economics Professor Don Coursey of Washington University, these behaviours tend to grow at three times the rate of increase in Gross Domestic Product (GDP).

Traditional and green companies are also beginning to give consumers what they want: substantive environmental improvements that do not require price premiums or quality compromises. As a result, consumers will see more, new, green products and services. These will legitimize the market and expand choice, leading to more vigorous green consumerism.

Eco-entrepreneurs faced with green competition from established companies will either be pressured into well protected niches, or into the mainstream marketing arena, where sophisticated marketing strategies based on sound consumer research tend to carry the day.

## TOOL ► Build Credibility if You Want To Grow

Marketers alert to consumer concern and interest in the environment found a new advertising ploy in the late 1980's: the green claim. In 1993, approximately 13 percent of new products introduced in the United States made some type of environmental claim. But just like "cholesterol free" peanut butter, some claims

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were misleading and served to confuse rather than assist consumers. Canadian consumers say their distrust of green product claims, rather than the recession, inhibited their purchase of products touted as environmentally superior.

In July 1992, the U.S. Federal Trade Commission released voluntary manufacturer guidelines, covering such claims as 'degradable', 'compostable', 'recyclable', 'recycled content', 'source reduction', 'refillable', and 'ozone safe'. Charges of issuing false claims have been brought against companies that make coffee filters, disposable diapers, trash bags, and aerosols. Dozens of suspicious claims are being tracked.

The message is clear: to be successful, products and services must be credible to cynical and confused consumers. One way to gain credibility is to obtain certification by any of the following organizations, all of which are attempting to put an end to the confusion about genuine greenness.

### TOOL ▶ Utilize Industry Standards

#### Scientific Certification Systems (Formerly known as Green Cross)

Founded in 1984 to test pesticide residues in agricultural products, Scientific Certification Systems (SCS), based in Oakland, California, has expanded its program, and now certifies a diverse array of environmental and food safety claims. Under its Environmental Claims Certification Program, introduced in 1990, SCS has certified single-criteria claims such as "recycled content," "biodegradable", "water-efficient", and "no VOCs" for more than 1,100 products.

The Environmental Report Card developed by SCS provides detailed information about the performance and environmental burdens of a product, based on a lifecycle, cradle-to-grave study of the product and its packaging. Launched at Chicago's Hardware Show in August, 1993, "The report card is the environmental equivalent of a nutritional label" explained SCS President Dr. Stanley Rhodes. The burdens listed on the report card include: the natural resources depleted, the energy consumed, the pollution released into air or water, and the solid waste generated. Such assessments make it easier to compare the total environmental burden of one product relative to another.

Companies that have commissioned product report cards, which cost as much as \$30,000 each, include:

- North American Plastics: IronHold Recycle 1 trash bags;
- Webster Industries: RENEW trash bags;
- PlasticKote Inc.: PlastiKote enamel paints;



- Benckiser Consumer Products: EarthRite household cleaning products;
- Chemical Specialities Inc.: ACQ PRESERVE treated wood;
- Chemfree: Insectigone home and garden care products;
- The TreeFree Company: TreeFree recycled napkins, paper towels, and tissues;
- Western Wood Products Association: Western lumber;
- Wellman Fibre Industries: Fortrel EcoSpun recycled polyester fibre used in carpeting, apparel, bedding, and upholstery.

The SCS Forest Conservation Program, launched in 1991, uses an indexing system to rank forest management practices, based on their ability to sustain timber resources, maintain ecological viability, and promote sound socioeconomic development. Collins Pine Co., a family-owned business headquartered in Portland, Oregon, was the first to undergo evaluation and emerged with flying colours. “Collins’ conservation of mature timber in the working forest is essentially unique to industrial forestry,” said the 51-page study. “[Its] management practices demonstrated consistent appreciation for and cooperation with the natural forest processes, an essential component of any long term sustainable forestry program.” The Home Depot hardware chain sells sustainably harvested Collins pine.

Certification standards for low-flow shower heads were released in May 1993, and standards for volatile organic compounds in architectural paints and coatings are under development.

To raise consumer awareness of the environmental impact of their own daily activities, a Personal Environmental Report Card is now being developed. Commuting distances and transportation methods, home energy and water use, and recycling habits are included in the evaluation.

### Green Seal

Green Seal is a U.S. non-profit environmental labelling organization that awards a seal of approval to products found to cause significantly less harm to the environment than other similar products. Green Seal develops environmental standards for consumer products through a public review process involving manufacturers, environmentalists, consumers and government agencies. Products are Green Seal-certified only after rigorous testing and evaluation. Underwriters Laboratories, Inc. is the primary testing contractor for Green Seal. The Green Seal Certification Mark — the blue globe with the green check — assures consumers that products bearing the Seal meet stringent environmental standards.

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Green Seal standards consider each product's environmental impact, packaging, and performance. Products are generally evaluated over their life cycle: from manufacture, through use, to disposal or recycling.

By setting standards for environmentally preferable products, Green Seal seeks to reduce air and water pollution; cut the waste of energy and natural resources; slow ozone depletion and the risk of global warming; prevent toxic contamination; and protect fish and wildlife and their habitat.

Green Seal has developed standards and criteria for 52 product categories, including paints, household cleaners, paper products, water efficient fixtures, lighting, windows and window films, and major household appliances. To date, Green Seal has certified 112 products for 14 companies.

### Environmental Choice

Canada's government-sponsored Environmental Choice<sup>M</sup> Program started by evaluating single-criteria product claims, but has subsequently adopted a life cycle review process. Certified items carry the EcoLogo<sup>M</sup>, three doves intertwined to form the shape of a maple leaf. The logo helps consumers identify products that, in the course of their life cycle, improve energy efficiency, use recycled or recyclable materials, and minimize the use of hazardous substances. A 16-member national board provides advice on the development of environmental criteria and an independent technical agency assists in the verification and testing of products and services. Lists of certified brand name products and their manufacturers are available from the organization so that interested consumers can easily find certified products at retail establishments.

Product categories evaluated to date include re-refined motor oil; reusable utility bags; recycled fine paper; reduced-pollution water-based paints; recycled newsprint; thermal insulation; ethanol-blended gasoline; products made from recycled plastic; reusable cloth diapers; alkaline batteries; zinc-air batteries; composters for residential waste; water-conserving products; reduced-pollution solvent-based paints; laundry detergents; domestic water heaters; acoustical building materials; toner cartridges; dry cleaning services; compost; heat recovery ventilators; major household appliances; energy-efficient lamps; diaper services; automatic dishwasher detergents; sealants and caulking compounds; engine coolant concentrate; and adhesives.

See "Directories", page 117, for Product Certification and Labelling organizations.

## TOOL ► Be Ready to Compete When the Mainstream Arrives

Green retailing is headed for a shake-out. The result will be chaotic consolidation that will have a great impact on small green retailers and the manufacturers that sell exclusively through them.

There are four key reasons a shakeout is unavoidable

- Most green consumers prefer to buy environmental products in stores where they already shop.
- Mainstream retailers are beginning to feature environmental products (K MART), create special green sections (Loblaws), and even open entire green-oriented stores (Wal-Mart).
- Established manufacturers are gradually offering greener products, targeted through mainstream distribution.
- Consumer-focused green entrepreneurs (for example, Tom's of Maine) are supplying mainstream retailers, thus making green retailers less distinctive.

As these trends accelerate, and they will, the number of smaller enterprises in the market will shrink. Larger companies will buy them up, mergers and alliances will occur, and businesses will fail.

With the exception of companies that find sound merger partners, shake-out survivors will be those with a defined clientele whose special needs cannot be met as well by the bigger companies. The Body Shop, for example, has already developed a strong franchise operation, with loyal customers. Even as larger companies enter this market, few consumers are switching their allegiance.

Two competitive strategies are recommended for green retailers. First, discover a customer niche that depends on more than a green differentiation. Second, build a following among the deepest green consumers. Either strategy requires coherent, attractive merchandising concepts, superlative value-added services, and ongoing development of exclusive selections of the newest products. Establishing and retaining customer loyalty will be key.

For manufacturers that sell through green retailers, competitive strategies must be based on continual product innovation, exemplary retailer servicing, and a direct understanding of end consumers' evolving needs and tastes. Small and medium size green stores and chains, or other specialty outlets, may remain your distribution system of choice. However, if the cost efficiencies and financing for expanded production are available, mainstream retailers may be the best option to explore.

## TOOL Target Retailers That Want to Sell Green Products

Retailers out to satisfy their customers are starting to tell store buyers to go for the green, if the product is also high quality and available at a competitive price. The Natural Connection, published in North Brattleboro, Vermont, is a retailer's guide to manufacturers, wholesalers, and suppliers of environmentally friendly and recycled products. The company's annual directory lists suppliers of 1,400 green items, from automotive accessories to baby care items to furniture.

Kevin Connelly of The Natural Connection is also the facilitator for the Green Retailing Association, organized at a 1992 In Business conference. The association's first annual meeting was held at the Boston Eco-Expo/Green Business Conference in October 1993. Public relations, teleconferencing, advocacy, and technical assistance are provided to members by the Co-op America Business Network, based in Washington, D.C.

Wal-Mart, the largest retailer in the United States, and now a major player in Canada, provides a Green Guide and a green co-ordinator to each of its stores. Signs inform customers about the environmental attributes of products, and outside recycling bins are provided for packaging waste. A company-wide procurement guide is being developed. In June, 1993, the chain opened its first Eco-Mart in Lawrence, Kansas. Designed by innovative architects, the store employs the most environmentally advanced lighting and plumbing systems available, and incorporates environmentally superior building materials, including sustainably harvested timber.

Home Depot, the largest hardware chain of its type in the world, is working with Scientific Certification Systems to develop certification programs and environmental education information for its customers. Mark Eisen, Home Depot's manager of environmental marketing in Atlanta, actively seeks out green products and sponsors open buying days for new products at six offices throughout the United States.

Products must first have mass market appeal and meet price, quality, and value criteria, says Eisen. "Even the largest manufacturers are only starting to learn that performance is number one and greenness is number two."

## TOOL Concepts for a Competitive Strategy

- The "first mover" company in any particular product category can often select the environmental attributes it wants to offer and mold consumer expectations so that future competitors must play by the rules established.
- Companies can assume the mantle of being green leaders without greening completely. They need only be sincere and green in at least a few substantial ways. Companies can retain green market leadership by

introducing incremental improvements over time, a strategy called “greening as we go”.

- Companies can often create an effective presence in green markets by putting a number of green improvements into a new (or refurbished) product or product line. As improvements are perfected and their consumer appeal tested, the “spearhead” line’s green attributes can be cost-effectively incorporated into the company’s other product lines. Green consumers love this approach.
- Barriers to competitors’ market entry can be erected in the course of establishing a green product. This leadership position can be protected for months or years. Barriers prevent competitor imitation and allow the leader to reap above average returns. Barriers may include patents, distribution rights, and demanding product standards.
- Many companies find that an environmentally-improved product, positioned for green-conscious youth, can renew an aging brand. This is important, especially for companies that sell primarily to the aging baby boomer generation. The green improvements of a youth line can also be readily applied to adult product lines.
- Manufacturers of products traditionally sold to men can increase sales by marketing green improvements to women. Greener female consumers are increasingly buying items like automobiles and paints and actually purchase the bulk of men’s cologne and apparel.
- Green market success can be enhanced by tying a product’s environmental attributes and message to the life style affinities of target consumers. Millions of hikers, for example, care about protecting wild lands; boaters are concerned about clean lakes and streams; mothers worry about their children’s health. Thus, a water sport product manufactured in a way that reduces water pollution carries an innate appeal to many boaters, while green household cleaners that substitute safe ingredients for dangerous chemicals tend to appeal to mothers.

## TOOL ▶ Action Plan for a Competitive Strategy

### Environmental Management

- Manage greening strategically. First, develop a vision and a policy. Gain support of the greening process at the highest levels (i.e., CEO, division president, etc.), and ensure that support is demonstrated through action and money, as well as talk.
- Keep greening integrated. Greening touches all business functions and each function influences others. Build cooperation across departments, and

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involve people from all levels of the company. Formal “green teams” are increasingly popular.

- Develop a strategy that encompasses all of your company’s stakeholders.
- Demonstrate market leadership. Educate customers about the environment, and make sure that internal operations are managed proactively, not in reaction to regulations. Design products and processes that incorporate environmental responsibility, and carry out cost-benefit analyses using cradle-to-grave, or cradle-to-cradle, life-cycle costing.

### Product Strategies

- Explore all possible ways your product can be environmentally improved. Examine the relative environmental benefits of each alternative, as well as the cost and ease of implementation. Set priorities. Typically, several measures can be found that save money or are cost-neutral.
- Prepare a phased plan of environmental improvements to accomplish over time. Estimate the likely timing and content of competitors’ responses and be ready to offer additional improvements to maintain leadership. Incorporate specific estimates of the tasks and time required to effect each planned improvement.
- Ensure that your products meet or exceed the quality expectations and requirements of your customers. Durable, quality products generally enhance environmental performance.
- Thoroughly test your products under consumer-use conditions.

### Marketing and Communications

- Research environmental attitudes and purchasing criteria of your customers.
- Pursue alliances with other companies, environmental groups, universities, and research organizations.
- Combine public relations, imaging, and other marketing/communications efforts with traditional advertising.
- Err on the side of understatement when making environmental claims. Being conservative avoids backlash. Whenever possible, let others praise your efforts. Do not establish unrealistic expectations.
- Communicate through sources people trust.
- Treat environmentally-conscious consumers with respect. They tend to be well-educated, analytical, and cynical about corporate claims.

- Admit mistakes and past errors. Show how the company and its products are improving.
- Communicate simply — avoid environmental jargon.

## Public Relations

- Focus on public relations more than advertising.
- Develop community outreach programs involving your company and the areas it serves.
- Work with your corporate customers to “partner” environmental programs specific to their industries.
- Collect stories of employees’ green implementation efforts and try to publicize them, being concrete and educational in your approach.
- Educate the public and the media about the environmental issues related to your company or industry.
- Prepare responses to environmental questions likely to be asked by the media. Involve knowledgeable technical people – not just PR professionals.
- Anticipate bad press and prepare information and documentation to minimize its impact.

## Advertising

- Wherever possible, supply consumers with sufficient, but simple, information so they can evaluate advertising claims themselves. Remember that claims must be backed up with evidence. Simple graphs or illustrations can be helpful.
- While images of nature are useful, avoid ads that are purely soft and fuzzy image enhancers. Green consumers suspect empty images.
- Avoid ads that are overly cute. Consumers believe environmental responsibility should not be trivialized. Even 12-year olds think such ads are corny.
- Test ads with green consumers before airing them. This avoids backlash.
- Consider using advertising inserts to convey complex environmental information in print media. Include educational pieces written by neutral authorities or company experts, along with traditional visual and image ads.
- Highlight novel instructions or product usage modifications on the packaging and in advertising.
- To overcome concerns about effectiveness, offer strong inducements to try the product. Free samples are an especially persuasive strategy.

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- Leverage the influence of children to encourage parents to test green products.
- Gain environmental endorsements where possible, but be selective.

### Other Marketing Strategies

- Use labels to convey precise, detailed information about your product and/or packaging. Ensure compliance with government labelling guidelines.
- Use consumer hot lines to disseminate and gather information about environmental issues and customer concerns.
- Point of sale displays, brochures, and videos are effective for providing more in-depth information than can be offered on labels. They should be used to catch the eye and communicate the uniqueness of the company's green products.
- Educate consumers hungry for environmental information. Companies have used television programming, magazine articles, classroom curricula, and community classes or meetings as effective ways of reaching environmentally concerned consumers.

### Attitude

- Grasp the long term. Opinion leaders are going green. Our kids are growing up. The environment is an issue for the future as well as the present.
- Learn, act, and communicate patiently. Environmental responsibility is not learned or built overnight. Strategic alliances require cultivation. Credible communications do not always come "cheap and easy".
- Build in sustainability — that's where reality is leading. The fundamental reason to go green is because our survival depends on it. Pollution, waste, and toxins will not vanish magically. The earth is the only home we've got.
- Savour the joy of doing things right.

See "Directories", pages 118-122, for Marketing Resources and Sales Leads.

### Green Procurement: Purchasing for a Sustainable Future

Rising waste-disposal costs, stricter environmental legislation, demands for increased corporate accountability, and mounting liability concerns are reforming traditional business practices. In response, companies and governments are looking for environmental leverage points in the market place.



A growing number of businesses and government agencies are discovering that the power of their purse can accelerate the availability of greener, cleaner products. By specifying minimum recycled content, improved energy efficiency, or reduced toxicity in their tender specifications, demand from these buyers is beginning to dramatically increase the supply and quality of a broad range of environmentally superior products.

As discussed earlier, an expanding number of certification and labelling organizations are available to evaluate supplier claims. Many voluntary programs sponsored by the U.S. Environmental Protection Agency are also stimulating manufacturers to offer a variety of environmentally improved products. Green product directories, public and private sector purchasing guidelines, and a few of the more innovative trade associations also provide assistance in identifying and obtaining environmentally superior goods and services.

“We’re the people who spend money. We have the cheque-books and suppliers have to give us what we want, not the other way around,” said Mike Cleveland, purchasing manager with Keystone Cement Company, Bath, Pennsylvania, at a Buy Recycled Workshop in Allentown. His attitude is becoming the norm and suppliers had better listen. AT&T, General Motors, S.C. Johnson & Son, and Xerox are among the growing number of corporate giants asking suppliers to become more environmentally responsive.

### TOOL ▶ Respond to Customers’ Stated Intentions

From gentle nudges to new purchasing specifications to threats about taking business elsewhere, buyers are making their new purchasing intentions known. Suppliers that respond quickly and effectively can retain valued customers and even increase sales.

Ace Hardware Corporation tried the hard ball approach with suppliers in 1991. It sent a letter, questionnaire, and environmental policy statement that said, “The Paint Division will begin conducting audits of all our vendors during 1992 with special emphasis on safety and environmental issues. We reserve the right to immediately cancel any business awarded to a vendor found to be in noncompliance with any applicable federal, state, or local regulations, or who ...shows blatant disregard for the best interests of our environment...” A few non-responsive suppliers were dropped, but most were cooperative, though surprised.

When Xerox Corporation decided it wanted standardized packaging with bar codes at all its plants, it actively assisted suppliers in making the transition. A letter and information packet describing the program were coupled with a day long training session, complete with brochures and a 16-minute take-away

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video. In autumn 1993, the company's Environmental Leadership Program released a *Business Guide to Waste Reduction and Recycling*. Smart suppliers will read it thoroughly, act on the suggestions, and actively market products and services that will assist customers to adopt the recommended practices.

"No one can wield the power of the purse more effectively than a big company, and General Motors, the United States' largest manufacturer, has figured out that by leaning on its suppliers, it can save both cash and trash", Joel Makower wrote in *The E Factor*.

A program to eliminate packaging waste, begun by GM's Chevrolet-Pontiac-Canada Group, is going North America-wide. Since January 1, 1994, GM's midsize assembly plants take no more shrink wrap, pallets, foam peanuts, cardboard boxes or strapping tape — NO packaging waste. The initiative is a component of the company's WE CARE Program, which stands for Waste Elimination and Cost Awareness Rewards Everyone. Few suppliers are prepared to lose a customer as large as GM. They are more likely to change over their entire packaging and distribution system.

### TOOL ▶ Work Together as Partners

Improving the environmental behaviour of individuals, companies, and nations cannot be done in isolation by any one group. The complexity of ecosystems and markets requires that knowledge and efforts be pooled. Two companies stand out in their willingness to act on this awareness.

In February 1991, S.C. Johnson & Son, a consumer products manufacturer headquartered in Racine, Wisconsin, hosted an International Suppliers' Day Environmental Symposium for 57 of its top 70 suppliers worldwide. Titled "Partners Working for a Better World", the meeting discussed international environmental trends and relayed S.C. Johnson's environmental performance goals. Suppliers were asked to recommend strategies for improving the biodegradation and recycling of the company's products and packaging; for reducing waste at all stages of production, distribution, and use; and for limiting the emission of volatile organic compounds in aerosols.

S.C. Johnson has continued the dialogue by publishing a twice yearly *Partners* newsletter for its suppliers. The following commentary, written by Executive Vice President Barry P. Harris, appeared in the August 1992 issue.

*Our corporate environmental goals identify 1993 and 1995 as completion dates for a series of improvements to the environmental profiles of our products and processes. We want our partnership with our suppliers to bring forward varied packaging technology alternatives which reflect significant source reduction. We also want our partnerships to bring forward*

*formulation options reflecting reduced environmental impact and requiring less packaging overall. And we want to do it now. Clearly those suppliers who answer our call to action today can most benefit from our continued partnership tomorrow, for they will be the leaders of the new order of corporate environmental activism.*

Canadian Pacific Hotels and Resorts also works closely with its suppliers and staff to improve environmental performance. The company's booklet *The Green Partnership Guide: 12 Steps to Help Create an Environmentally Friendly Setting for Our Guests, Ourselves and Our Future* deals with all aspects of the chain's operations. Advice on improving efficiency, and reducing toxicity and waste, is provided for all staff. Individual sections cover the kitchen, housekeeping, repairs and renovations, stores and purchasing, laundry, grounds, rooms, and food service.

An extensive contacts section lists sources of recycled paper, organic food and wines, phosphate-free dish washing detergents, energy efficient lighting, water-saving fixtures, waste and recycling operations, and environmentally friendly cleaning products, paints, and wood finishes.

The message is clear: if you want to sell to C.P. Hotels, you must provide environmentally superior products.

## TOOL ▶ Forge New Alliances/Watch for Leaders of the Pack

Smaller companies and organizations, with less clout in the market place, are working jointly to influence suppliers. An Ontario initiative, called Governments Incorporating Procurement Policies to Eliminate Refuse (GIPPER), has brought together school boards, transit commissions, Canada's largest electric utility, and local, regional, and provincial government agencies to develop a proactive and comprehensive procurement policy. The current focus is on waste reduction. Guidelines have been developed for cleaning products, compost, construction and demolition materials, paint, paper, and packaging. Items for future consideration include plastics and rubber; petroleum, oils, and lubricants; and energy-efficient lighting products.

Entrepreneurs can benefit by tracking the development of these alliances or, better still, by playing a role in initiating them. Look for partners at your local, state or provincial agencies, school boards, trade associations or local business improvement committees.

Use your networks to get ideas from leaders of the pack. Initiatives that work in one setting may well transfer to another. Your investment of time can pay off handsomely. You may forge alliances to develop new products and services or work together to create and tap new distribution channels. And, remember to let your customers know about your leadership efforts.

## Paper Purchasers Unite

As every office worker knows, electronic information systems will not phase out paper any time soon. Indeed, paper products account for one-third of all municipal solid waste.

In an effort to cut costs and create a market for the paper collected by recycling programs, the Council of Great Lakes Governors spearheaded an unprecedented cooperative purchase of 30 million pounds of recycled copier paper in 1992. Illinois, Indiana, Michigan, Minnesota, Ohio, Pennsylvania, and Wisconsin joined in the bidding process. The region settled on four distributors offering Hammermill and Envirographics paper.

The savings: half a million dollars in taxpayers' money, three million pounds of waste paper diverted from disposal, 130,000 trees, and the energy equivalent of 771,000 gallons of gasoline. Two additional paper purchases have been made since and the Council now collectively purchases six additional products: retreaded tires, re-refined oil, high speed computer form paper, envelopes, other soft paper goods and plastic safety cones.

All 50 states now have buy recycled programs of one form or another, and 15 have agreed to pay as much as a 10 percent premium for recycled products. Several provinces have also launched buy recycled programs.

In August, 1993, a task force created to increase the use of environmentally preferable paper and paperboard products was formed by seven large U.S. organizations. Duke University, the Environmental Defense Fund, Johnson & Johnson, McDonald's, NationsBank Corp, the Prudential Insurance Company of America, and Time Inc. together purchase more than \$1 billion worth of paper products annually. They are major national consumers of business and writing papers, publications, and packaging.

They have agreed to assess their paper performance needs and purchasing specifications, and then to conduct a comprehensive study of the environmental effects of paper production, use, recycling, and disposal. Recycled and virgin papers and a variety of pulping and bleaching technologies will be evaluated on both a scientific and an economic basis. A purchasing model, applicable to a broad range of institutions, is scheduled for release in late 1994.

## Watch for Kick-Started Markets

Governments at many levels are trying to kick-start new markets for products made from recycled materials. Staying abreast of the legislation, regulations, and business assistance programs can spur ideas for developing new products and services. New market opportunities for existing products may also arise.

Many states and provinces have adopted procurement programs for recycled products. These programs help to provide market stability for secondary materials processors. In British Columbia, highway centre lines are more reflective at night because they are sprayed with pellets made of waste glass. Government office buildings use recycled paper made, in part, from waste collected on the premises. The province's Parliament buildings and office interiors are painted with recycled latex paint, 30 percent of which is acquired from household waste collection.

Oregon, which wants to achieve a goal of 50 percent recycling by 1995, has passed legislation specifying minimum recycled content standards for a range of materials, regardless who buys them. Glass must be made from 35 percent recycled content, phone directories and rigid plastic containers from 25 percent recycled content, and newspapers from 7.5 percent recycled content.

In New York State, the threat of legislation led to a voluntary agreement with area newspaper publishers, specifying 40 percent recycled content in newsprint by 1997.

California and New Jersey give generous tax credits to companies that invest in recycling equipment. In June 1992, California's Integrated Waste Management Board designated 12 Recycling Development Zones throughout the state, the first of 40 to be created over five years. Businesses in those zones get a tax credit to purchase recycling equipment if the final product will contain at least 50 percent recycled materials. Low-interest loans of up to \$1 million, manufacturing referrals, and marketing and technical assistance are also available. Additional local incentives and expedited permitting are often part of the package.

Applicants have proposed making insulation and egg cartons out of newsprint; asphalt from glass bottles; erosion controls, artificial reefs, and roadbeds from old tires; and plastic cones, lumber, and chemical feedstock from discarded plastics. Under California law, communities must recycle 25 percent of their solid waste by 1995, and 50 percent by the year 2000.

New Jersey offers 50 percent tax credits for the purchase of recycling equipment, as well as state sales tax exemptions of six percent. The state is particularly interested in companies that recycle non-traditional items like tires, construction and demolition debris, chlorofluorocarbons (CFCs), and batteries.

The Clean Washington Center, a market development initiative of the state's Department of Trade and Economic Development, has published a directory of 600 products made from recycled materials. The Center is pushing local Nordstrom and Sears department stores to carry these items. To eliminate price volatility for secondary materials, the Center was instrumental in getting scrap plastic and glass listed as trading commodities on the Chicago Board of Trade.

## TOOL Understand Federal Government Purchasing Programs

As the major operator of hospitals, schools, offices, prisons, and other institutions, local, state and federal governments in the United States make purchases that comprise about 18 percent of the gross national product and total almost a trillion dollars annually.

Between 1983 and 1989, the U.S. Environmental Protection Agency issued procurement guidelines for recycled paper, re-refined motor oil, insulation made from secondary materials, cement and concrete containing fly ash, and retreaded tires. In April 1994, EPA proposed to designate 21 additional items, including construction and landscaping products, fleet products, and office products.

A fall 1993 Executive Order on Federal Acquisition, Recycling, and Waste Reduction is likely to have a major impact on the federal government's purchase of printing, copying, writing, and computer paper. By December 31, 1994, the federal government must purchase paper with a minimum content of 20 percent post-consumer waste material. By the end of 1998, these papers must have 30 percent post-consumer content. Although the federal government purchases only a few percent of the nation's paper, the standard will likely become the industry norm by 1995.

The General Services Administration (GSA), the author of massive U.S. government purchasing catalogues, is now starting to identify and highlight such environmentally improved products as recycled paper and energy-efficient lighting systems. GSA publishes the *Environmental Products Guide 1994* referenced on page 125 in the directories.

## TOOL Tips To Green Your Own Suppliers

- Get top management's support. This will put teeth into any policy you try to impose on other companies.
- Put the policy in writing. Send it to the CEO, VP for sales or marketing, or other top executive who can implement the policy.
- Let money talk. Promote the program on the basis of cost savings, efficiency, and market advantage.
- Make a presentation. Show costs, benefits, and laws applying to both your and the supplier's operations. The more homework you've done, the better the case you can make.
- Request a response within a given amount of time. Allow the supplier to implement the plan over a generous period. But don't let them put you off for long.

- Educate your own employees about the need for and the mechanics of the programs. Offer training, support, technical assistance, and resource lists.
- Pool your resources. If your company is a small customer, work through your industry's trade association to team up with other companies and maximize buying power.
- Play up the competitive angle. Make it known that other suppliers have already made the change, and that other customers would buy the "greener" product. Let suppliers know that you are shopping the competition.
- Ask the supplier for help in coming up with solutions. Good ones will generate ideas and may have access to products you don't know about.
- Don't ask other companies to implement policies your company hasn't yet adopted. That could backfire; you may risk being called hypocritical.

Adapted and reprinted with permission from Joel Makower's, *The E Factor*, Tilden Press, 1519 Connecticut Ave. NW., Washington, D.C., 20036, 1993. Telephone: 202-332-1700.

## TOOL ▶ A Buyer's or Seller's Checklist for Green Procurement

If you are a supplier, be prepared to answer the following questions from your customers. When purchasing, ask these questions of your suppliers.

The first and overriding question, of course, is whether the product or service is truly necessary.

- Does the product use fewer polluting byproducts than competing products?  
Is the product durable and easily, safely, and economically serviced?  
Are any components of required maintenance environmentally damaging?  
Are all the features of the product necessary?  
Is the company producing the product in compliance with all environmental laws and regulations?
- Are you aware of any product alternatives that are more environmentally responsible?
- Is the product designed to reduce consumption?  
Is the product designed to minimize waste?  
Is the product reusable?  
Is the product technically and economically recyclable?  
Do facilities exist to recycle the product?  
Are recycling collection systems in place at the point of end use?  
Can the product be returned to the supplier at the end of its useful life?  
Is the product compostable?

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- Are recycled materials used in the product? If so, what percentage? What percentage of post-consumer materials are used?
- Is the product energy efficient?  
Can the product be recharged?  
Can the product run on renewable fuels?  
Does the product reduce water use?
- Does the product require special disposal?  
Is the product free of any banned substances? heavy metals?  
Is the product free of toxic or endangered materials?  
Does the product emit volatile organic compounds or other air pollutants?  
Does the product require special use instructions for health and safety?
- Can the packaging be eliminated?  
Is the packaging designed to be minimal?  
Is the product packaged in bulk?  
Is the packaging reusable or recyclable?  
Are recycled materials used to produce the packaging?  
Can the packaging be returned to the supplier?  
Is the packaging compostable?
- Has a lifecycle analysis of the environmental burdens associated with the product or packaging been conducted by a certified testing organization?
- Is the company producing the product equipped to bid and bill electronically?
- Does the company have an environmental policy statement?  
What is the company's history on environmental and safety issues?  
Can the company verify all environmental claims?  
What waste reduction programs does the company have in place? planned?  
Has the company conducted an environmental or waste audit?  
Is the company responsive to information requests from stakeholders?

The preceding questions can be applied when making a wide range of purchasing decisions. To make sure no area is overlooked, consider all aspects of your operation. These may include:

paper  
packaging  
office equipment and supplies  
photocopying  
photodeveloping

carpeting  
furniture and fixtures  
water use devices  
batteries  
vehicles/motor oil/tires/fuels



printing  
cleaning products and devices  
grounds maintenance  
janitorial services  
food service equipment and supplies  
food and beverages  
lighting  
paints

de-icing compounds  
heating and cooling equipment  
windows and doors  
ventilation systems  
employee transportation  
delivery and distribution systems  
transportation services  
hotel accommodations

See "Directories", pages 123-132, for Green Procurement Sales Leads.

## Green Industries: Markets for Environmental Technologies

This section of the Tool Kit briefly describes the global market potential for environmental technologies, where the full force of an avalanche is now breaking. The following pages provide an overview of the size, trends, and development within the more traditional environmental industries. The forces driving the next generation of environmental technologies are discussed in the following chapter: Business Opportunities in Sustainable Technology.

Typically involved in remediation, abatement, and pollution prevention, environmental industries supply knowledge- and technology-intensive products and services. In most countries, these industries are composed primarily of small and medium sized companies; in Canada, for example, most such firms employ fewer than 50 people.

As the commitment to sustainable development takes hold in national and global markets, this industry will grow rapidly. In Canada, the market for environmental products, services, and technology is about US \$10 billion a year and expected to grow to US \$17 billion by 1997. In the United States, this \$134 billion industry is expected to grow 6 percent annually to \$180 billion in 1997. In Mexico, the environmental services industry is a major new business area with projected rapid growth of 15 percent, to \$2 billion, in 1997.

With implementation of the North American Free Trade Agreement (NAFTA), Canada, the United States, and Mexico are hives of activity. Companies and governments are gearing up for opportunities in domestic and crossborder environmental cleanups and pollution prevention.

*The Environmental Business International Journal* estimates the global market for environmental industries at \$295 billion, with a 44 percent increase, to \$426 billion, projected by 1997.

## The Global Environmental Industry

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	1992 \$ US Billions	Average Annual Growth %	1997 \$ US Billions
United States	134	6	180
Canada	10	11	17
Mexico	1	15	2
Latin America	6	12	10
Western Europe	94	7	132
Eastern Europe/ex USSR	14	14	27
Japan	21	8	31
Australia/New Zealand	3	9	5
Southeast Asia	6	16	13
Rest of the World	6	8	9
<b>TOTAL</b>	<b>295</b>	<b>8</b>	<b>426</b>

Source: Environmental Business International Journal.  
4452 Park Blvd., Suite 306, San Diego, CA 92116-4039.  
Telephone: (619) 295-7685, Fax: (619) 295-5743.

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“There’s a general understanding that environmental regulations will develop in the future”, says Ted Owens, an industry leader who is Senior Vice President of International Operations for Groundwater Technologies, Inc. “If they’re not in place now, they will be” and business opportunities will flow along side.

*The Environmental Business International Journal* outlines the evolution of a national environmental industry as follows:

- Public pressure to address environmental problems begins to mount.
- The government declares its policy, to meet public demands.
- Legislation is passed to implement government policy.
- Regulatory agencies are formed and regulations are promulgated.
- The emphasis is on enforcement; generators of environmentally unsound products or practices begin to take compliance seriously, creating business for environmental companies.
- Generators start to take it upon themselves to actively manage and reduce their own environmental problems, staying ahead of regulations.

- Environmental responsibility is internalized into methods that replace waste- and pollution-generating processes. This reduces demand for traditional environmental products and services, but opens new markets in pollution-prevention technologies and processes.

The United States, Canada, Western Europe, and Japan are the furthest along on this evolutionary path and have the largest markets for both pollution control and pollution prevention technologies. Many countries in Asia, Latin America, and Central and Eastern Europe are just starting to tackle pollution problems and as a result will have the fastest growing markets for remediation and control technologies. If the appropriate regulatory, economic, and fiscal incentives are put into place, and sufficient investment capital is available, companies and industries within these regions may be able to accelerate the adoption of prevention strategies.

Neatly measuring the transition from pollution control to pollution prevention is often difficult. Remediation and abatement technologies are easy to classify within the environmental industry. New products, manufacturing technologies, and process designs, however, tend to be categorized within their relevant industry, and not as “environmental”. Compact fluorescent lamps and CFC-free, energy efficient refrigerators, for example, are classified as lighting and appliances, while flue gas desulphurization units (or scrubbers) are termed “environmental technologies”.

Unless environmental technologies are redefined, slower acting countries may be perceived as having the largest environmental markets. In countries where environmentally superior goods and technologies are sought in all sectors, the numbers may erroneously appear less impressive.

## TOOL Monitor and Participate in Voluntary Programs

As part of its ongoing effort to reduce air pollution and the emission of greenhouse gases, the U.S. Environmental Protection Agency has launched a series of voluntary programs with industry. The actions “are good ideas on economic grounds alone,” says the agency. “Energy efficiency is indeed ‘no regrets’.” Participating companies will keep abreast of the latest technology developments, be able to monitor the activities of competitors, and avoid being left behind in this rapidly changing field.

The first voluntary initiative, the Green Lights program, began in January 1991. By fall 1993, the owners of more than one billion square feet of commercial, industrial, and institutional space were improving the efficiency of their lighting systems. More than 1,000 upgrades are under way, with three billion square feet of space committed, far exceeding the combined total office space in the

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metropolitan areas of New York City, Los Angeles, Chicago, San Francisco, Washington, D.C., Philadelphia, and Dallas.

It is estimated that the resultant savings in annual electricity bills will be \$870 million. If the goal of committing 60 billion square feet of space by the year 2000 is reached, annual savings will total \$16 billion. A residential component was added in December 1992.

Another, utility-sponsored, initiative offered \$30 million to the first company to design and commercialize a CFC-free refrigerator with improved energy efficiency. Refrigerators consume 20 percent of all residential electricity. Whirlpool and Frigidaire, the winner and runner up, respectively, have both decided to market their entries.

A 1990 model refrigerator already uses about 40 percent less energy than its 1970 counterpart. The new Super Efficient Refrigerator Program will further boost performance.

Federal standards issued in Canada in 1991 required a 30 percent improvement in energy efficiency by 1994.

Participants in the Energy Star Computers program, launched in June 1992, make 40 percent of all personal computers and workstations sold in the United States. As of September 1992, the list of companies committed to introducing machines that automatically power down when not in use included:

Acer America	EMPaC International	NCR
Apple Computer	Hewlett Packard	Silicon Graphics
Compaq Computer	Hyundai Electronics America	Smith Corona
Digital Equipment	IBM	Zenith Data Systems

In February 1993, the manufacturers of 80 percent of the computer printers sold in the United States agreed to reduce energy consumption by 30 to 50 percent per printer, mostly as the result of powering down. Energy cost savings are estimated at \$450 million per year. Since October 1993, all Federal agencies in the United States have been required to buy computer products that meet the Energy Star guidelines.

Products targeted for future technical improvements include:

industrial motors	building shell improvements
building technologies	low flow shower heads
refrigerants	clothes washers and dryers
industrial electrolytics	advanced heat pumps
variable speed drive motors for ventilation	solar thermal water heaters
residential heating and cooling technologies	amorphous core transformers
commercial/residential cooking equipment	

“Energy efficiency is BIG business”, according to EPA. Sales in just four product categories — efficient lighting, personal computers, variable speed motor drives for ventilation, and refrigerators — “are expected to total \$53 billion by the end of the decade, comparable to the entire domestic paper producing industry”.

## TOOL Watch the Leaders in Pollution Prevention

Deciding it was time for the federal government to catch up with private sector pollution prevention efforts, President Clinton signed an Executive Order directing federal facilities to reduce their toxic emissions 50 percent by 1999, and to report any release of toxic pollutants to the public.

Similar legislation, covering 10,000 private manufacturers, took effect in 1986 and has dramatically reduced toxic emissions. Many companies were shocked into action when required to measure and tabulate their release of 317 toxic chemicals at individual production facilities, and to make the findings public.

A similar, but more recent program in Canada, the National Pollutant Release Inventory, applies to 178 chemicals. The first reporting deadline for firms that emit these chemicals was June 1, 1994. Environment Canada intends to make the information publicly available by December, 1994.

The effect of the U.S. legislation has been so pervasive that in 1991, one thousand U.S. companies agreed to participate in a voluntary Environmental Protection Agency program known as 33/50. The companies pledged to reduce emissions of 17 chemicals 33 percent by 1992, and 50 percent by 1995. Some are far exceeding their commitment.

One of the overachievers is Dow Chemical, once synonymous with napalm, Agent Orange, and a variety of health-threatening pesticides. Fortune magazine recently ranked the company as one of the 10 cleanest U.S. manufacturers. The company cut toxic releases by 32 percent between 1988 and 1991 — to a level that is among the lowest in the industry on a per dollar of sales basis. Far from ravaging Dow’s bottom line, the environmental control program is called Waste Reduction Always Pays.

As one of the first companies to put its senior environmental officer on the Board of Directors, Dow knows the value of issuing guidelines from the top. Smart suppliers of environmental technologies don’t wait for purchasing agents to inform them of changing company priorities.

## TOOL Work Together for Maximum Effectiveness

New trade associations and industry networks are springing up to keep members abreast of rapid changes in the environmental technologies market, and growing domestic and export opportunities. The Environmental Business

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Council of the United States, and a growing number of state and regional chapters, holds briefing and strategy sessions for members. Lobbying efforts are also intensifying. In Canada, seven provincial environmental industry associations, and a national office in Ottawa, are also working to coordinate and strengthen member company activities.

See "Directories", pages 133-135, for Environmental Industry Associations.

# Business Opportunities in Sustainable Technology

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Because of environmental and regulatory pressures and scientific advances, a broad range of innovative technologies is advancing rapidly. In order to spark ideas for developing and marketing new technologies, this section looks at many different market drivers.

To keep abreast of rapid changes and potential markets, entrepreneurs need to:

- Follow trends in regulations and standards, where markets can be created or destroyed overnight. Governments change regulations for a variety of reasons, among them lobbying and scientific evidence.
- Become familiar with international environmental agreements. While countries enter into agreements for the same fundamental reasons they make regulations, an international protocol or convention signifies both broad international accord on a problem, and government commitment to tackle it. The markets created from these agreements will be massive — cutting across many regions and industries. The technologies developed to comply with the agreements will focus on eco-efficiency, pollution prevention, and sustainability.
- Monitor rapid technological advances, such as those now taking place in electronics and photovoltaics. Technical advances, and reduced costs, make new activities, products or services possible, thereby opening new markets.
- Watch for economic and social trends that are “pulling” the development of sustainable technologies. These include higher, market-based prices for many resources, and a move by governments away from regulation toward the use of economic instruments and performance standards.

The following tools offer ways to organize or select from the vast range of technical developments constantly under way.

- Technology trees, developed as part of the EarthEnterprise™ Project, organize technologies into functional groups. (See pages 50-55). They show which technologies should be regarded as competitors, which might be especially promising, and which have the largest potential markets.
- Assessment criteria for technology opportunities help evaluate the appropriateness of a technology for a particular market and entrepreneur. Useful criteria include the state and timing of the technological development, its physical and financial scale, its potential market size, and barriers to entry.
- Characteristics of the technology that make it sustainable.

The question answered here is not “What are the winning technologies?”, but “What are the techniques or tools for identifying winning technologies?” The

following tools can be a source of ideas, an approach to filling out the details of a concept, and a framework for demonstrating the quality of the concept.

### The Demand Side: What Creates Markets for New Technology?

Markets are the key issue for technological entrepreneurs. How can the entrepreneur or the investor ensure that they are targeting real markets? How can they ensure that the product or service actually meets customers' needs? The following tools help answer these questions and minimize entrepreneurial risks.

#### **TOOL Understand Environmental Laws, Regulations, and Standards as Technology Drivers**

The entrepreneur must be equipped to efficiently identify and assess which national and state/provincial environmental laws, regulations, and standards will affect business opportunities. The field is extremely complex, but staying current and anticipating trends can help an entrepreneur capitalize on opportunities and stay ahead of the pack.

Whether applied in North America or elsewhere, to imported or exported products, these regulations are driving the development of environmental technologies. Most companies in the environmental sector attempt to anticipate and follow closely the introduction of new regulations and standards that may create or destroy technology markets.

Current laws, regulations and standards cover a wide range of subjects including:

- Discharge of pollutants to air, water, and land;
- Worker and industrial safety;
- Product content, including chemicals and recycled materials;
- Technical performance, including energy and water use;
- Labelling information on environmental, energy, safety and performance standards;
- Requirements for reusing/recycling products and packaging;
- Protection of endangered habitats and species.

#### **Key Insights About Environmental Laws, Regulations And Standards**

- The regulations will become more stringent.

- The highest standard among trading partners will likely become the relevant measure of performance.
- Enforcement will increase.
- So-called “voluntary” standards will increase in number and stringency.
- There will be more use of third-party certification.
- There will be a slow transition to market-based mechanisms, e.g., a carbon tax.
- The polluter pays principle will become more prevalent.
- The precautionary principle will be more widely adopted.
- A law passed in one country will have impacts beyond national boundaries.

The U. S. Clean Air Act is an example of legislation that is generating significant international business opportunities, primarily in abatement, but also in pollution prevention and sustainable technologies. New fuels, vehicles, appliances, paints, and electricity generating technologies are being developed around the world to comply with the Act.

The effects of voluntary and regulated standards related to appliance efficiency, paper bleaching, and packaging also ricochet around the world. Technology leaders in the most advanced market soon become technology leaders globally.

## TOOL Assess International Agreements as Sustainable Technology Drivers

The demand for sustainable technologies is being driven, in part, by the recognition of such global problems as atmospheric change, loss of biodiversity, toxic chemical accumulations, and resource degradation and depletion.

Scientists, environmental groups, governments, and international agencies are trying to deal with these issues in international forums. Although tedious to draft, the binding agreements that result catalyze enormous change. Domestic legislation and regulations follow as countries implement their international commitments.

Long, drawn-out negotiations and implementation schedules present a window of opportunity during which entrepreneurs can judge whether a profitable business venture will result. Recent international agreements on slowing ozone depletion, climate change, and biodiversity loss constitute a unique set of drivers for developing new products, technologies, and production processes. Financial rewards await the companies that develop timely solutions. The key is being aware of, and able to assess, the agreements for their business potential.

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Among the major international agreements driving technologies, now or in the future, are:

### *Montreal Protocol on Ozone Depleting Substances*

Adopted by 25 countries in 1987, the Protocol has been amended twice and ratified by 127 parties. It calls for the complete phase out of fully halogenated chemical emissions by the end of 1995. Emissions of halons, a chemical used in fire extinguishers, were banned in 1993. The Protocol is undoubtedly the most advanced international agreement and has been implemented by national legislation in dozens of signatory countries.

It has spawned a flurry of business activity in CFC recycling equipment and services, alternative refrigeration and air conditioning technologies, substitute chemicals, and new cleaning processes for electronic equipment. Halozone Recycling Inc. has capitalized on the Montreal Protocol with its "Blue Bottle" for capturing refrigerants used in household refrigeration, and in residential and automotive air conditioning. A case study on Halozone, describing how the Blue Bottle was developed, financed and marketed appears on pages 64-69.

### *Framework Convention on Climate Change*

There is growing concern that increasing emissions of greenhouse gases (GHGs), including carbon dioxide, will augment the natural greenhouse effect on the Earth's atmosphere, and trigger climate change. Among the probable consequences: flooding of low-lying areas, drought, and more severe weather patterns. Energy consumption is the principal human activity that produces GHGs.

The Climate Convention became law on March 21, 1994, after being ratified by 50 countries. Many industrial nations are beginning to make commitments to reduce GHG emissions to 1990 levels. Business opportunities are thus growing in all fields related to energy efficiency. Developing, introducing, and globally disseminating these technologies and practices will require new financing, communication, and management strategies. The sectors most likely to be influenced and some of the new technologies that may be required are shown on pages 52-54.

### *Convention on Biological Diversity*

In addition to helping feed and clothe us, biological resources provide shelter, fuel and medications. Millions of the Earth's species are still unidentified, and the usefulness of many others has never been assessed. The ecosystems that house these species are being eroded by human activity. This Convention aims to conserve biological diversity and to make sustainable and equitable use of its components. Nations that sign the Convention agree to rehabilitate and protect

ecosystems and to facilitate access to genetic materials for environmentally sound uses. Industrial countries will financially assist developing countries to implement the Convention. The pharmaceutical, agricultural, energy, and forestry sectors will be the most affected. The Convention became law on December 29, 1993, after being ratified by 30 countries.

Shaman Pharmaceuticals is one of several companies that is trying to protect biological diversity and to develop commercial drugs from rain forest plants. Using the knowledge of traditional medicine men in the tropics, the company tries to identify the active ingredient that might form the basis of a new drug. Shaman will devote a share of future revenues to protect the biological diversity of tropical forests and the cultural diversity and knowledge of their residents. Merck and Pharmacogenetics have also promised to share revenues from biologically derived drugs.

*Principles on Managing, Conserving, and Sustainably Developing All Types of Forests*

World-wide, forests are threatened by physical and chemical degradation and conversion to other uses. There is an urgent need to maintain or restore the world's ecological balance by conserving and planting forests in both industrial and developing countries. By June 1992, a series of principles for sustainable forest use had been developed and may form the basis of further negotiations leading to a binding agreement. Entrepreneurs may find opportunities arising from new management and harvesting methods, and from modified machinery that encourages more sustainable practices and more efficient use of forest products.

*Great Lakes Water Quality Agreement*

The Great Lakes Water Quality Agreement between Canada and the United States involves the governments of states and provinces bordering the Great Lakes. The Agreement's focus on technologies and practices that minimize emissions of toxic substances into the Great Lakes Basin is replicable in other watersheds. Over the past 20 years, the agreement has resulted in enormous investments in water pollution control and sewage treatment technologies and their installation. The emphasis is now shifting to water pollution prevention technologies.

International agreements are often difficult to understand and follow, especially for companies with few resources.

While voluminous specialized information sources, government reports, and tracking services exist, they are intended to serve negotiators, regulators and lawyers, rather than the entrepreneur seeking a good idea. The first hurdle for

the entrepreneur, therefore, is awareness. Be sure to follow newspaper reports of general progress made on international agreements. To get more detailed information, phone the government agencies responsible for negotiating or administering the agreement. For more specific questions, get in touch with the relevant industry association. Non-governmental organizations and specialized newsletters may also have valuable insights on market directions.

Entrepreneurs interested in exploiting the business opportunities created must be aware of the potentially long lead times between the negotiation of international agreements and their implementation. Moreover, in spite of global intentions, there are usually some countries that will not participate. Business must also be aware that international agreements are subject to slippage, acceleration, and re-negotiation. In spite of these shortcomings, the agreements are often signs of real social and market change.

### TOOL Exploit New Demand Pulls for Sustainable Technology

As environmental protection becomes a higher priority and as the concept of sustainable development becomes better understood and more broadly implemented, relative price changes are likely to pull technologies.

Commodity prices change in response to:

- Scarcity, (e.g. water, energy, minerals, or wood pulp);
- Removal of subsidies or price distortions by governments;
- Full-cost pricing, (e.g., time-of-use electricity rates).

When commodity prices increase (particularly when the increase is rapid, as it was for oil in the 70s), a range of technologies and techniques suddenly become more financially attractive. They are “pulled” by what may previously have been an indifferent market.

Many governments and utilities, particularly in North America, have recently initiated new approaches to assessing their costs, and have introduced programs to encourage the development and market penetration of new technologies. These initiatives have been of two major types:

- A wide range of programs to develop and promote new technologies that improve resource efficiency and environmental protection (e.g., energy efficient building standards, appliance rating systems, least cost capacity planning, and renewable energy demonstration projects);
- Subsidies, rebates, and financing instruments to promote technology penetration into new markets, primarily by reducing the initial cost of these products (e.g., energy efficient lighting and appliances, and variable speed drive motors).

Better information, financial incentives, and infrastructure are pulling energy saving technologies onto the market at an accelerated rate.

Higher disposal costs for municipal and hazardous waste, and the use of landfill bans, have also pulled new technologies and products onto the market. Reducing the volume and toxicity of waste, and developing products made from secondary materials, have become big business opportunities. The recycling of industrial solvents, construction and demolition debris, tires, and plastics are all growing markets.

## The Supply Side: Finding and Assessing New Technologies

The pace of technical change in environmental sectors is accelerating. Even recently developed abatement technologies can be rendered quickly obsolete by new pollution prevention and, increasingly, sustainable technologies. The eco-entrepreneur should be aware of the opportunities resulting from these changes.

### TOOL Technology Trees: Cherry Picking for Success

In this section, we present a method for identifying the many technological possibilities, based on a sound understanding of key influences and drivers. Opportunities are placed into a framework that clarifies the possibilities, and the competition, and provides a longer-term outlook for investors.

The following "trees" categorize technologies based on their ability to satisfy a particular market demand. An international agreement, such as the Climate Convention, is taken as the driver. A resulting demand is increased energy and eco-efficiency. Within the energy sector, various activities are affected. These include energy supply, conversion, transmission, and end-use.

End-use functions include lighting, heating, cooling, and transportation. Looking at just one category — lighting — there are many options ranging from fluorescent to incandescent to induction. Within the fluorescent family, there are tubes, compact lamps, and circlines. A specific compact fluorescent is the Philips SL model.

Although the following "technology trees" are far from comprehensive, the assessment technique is the same. By evaluating what is or will soon be in demand, the products or technologies currently on the market, and the options being pursued, entrepreneurs can assess which technology they should develop, commercialize, sell, or use.

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Figure 1

## The Technology Tree

Classification System	Explanation/Example
International Agreement	— One of the recently concluded international agreements and consequent national regulations as drivers of technology change e.g., Framework Convention on Climate Change
Sectors Affected	— Broad sectors of the economy affected by the agreements/regulations e.g., energy
Activity Affected	— Activity affected within the sector e.g., energy use (end-use)
Product/Process Affected	— Products/commodities/processes/services which will be affected or changed in order to meet sustainable development goals, regulations, targets e.g., efficient lighting
Family of Technology	— Groups of related technologies required for the new products/processes e.g., fluorescent lights
Technology	— Types of technology within each group; a distinct technology e.g., compact fluorescent
Specific Technology (Brand or Patent Level)	— A manufacturer's or patent holder's specific technology e.g., Philips SL



Figure 2

## Economic Sectors Affected by Selected International Agreements

International Agreement	Sectors Affected	Activity Affected
1. Framework Convention on Climate Change	1.1 Energy	1.1.1 Energy Supply 1.1.2 Energy Conversion and Transmission 1.1.3 Energy Use
	1.2 Agriculture	
	1.3 Chemicals	
	1.4 Forestry	
	1.5 Other	
2. Convention on Biological Diversity	2.1 Pharmaceutical	
	2.2 Agriculture	
	2.3 Forestry	
	2.4 Energy	
	2.5 Mining	
	2.6 Other	
3. Statement of Principles on Forests	3.1 Forestry	
	3.2 Agriculture	
	3.3 Pulp & Paper	
	3.4 Manufacturing	
	3.5 Energy	
	3.6 Other	
4. Montreal Protocol on Ozone Depleting Substances	4.1 Chemicals	4.1.1 Refrigeration, Air Conditioning
		4.1.2 Foam Production
		4.1.3 Industrial Solvents
		4.1.4 Aerosols
		4.1.5 Fire Protection
		4.1.6 Other
	4.2 Other	
5. Great Lakes Water Quality Agreement	5.1 Pulp and Paper	
	5.2 Iron and Steel	
	5.3 Municipalities	
	5.4 Chemicals	
	5.5 Petroleum Refining	
	5.6 Agriculture	
	5.7 Other	

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Figure 3

## Activities Affected by the Framework Convention on Climate Change

Sectors Affected	Activity Affected	Product/ Process Affected	Family of Technology	Technology	Specific Technology
1.1 Energy (CO <sub>2</sub> , CO, CH <sub>4</sub> , N <sub>2</sub> O)	1.1.1 Energy Supply				
	1.1.2 Energy Conversion & Transmission				
	1.1.3 Energy Use	Lighting	Fluorescent	Compact Fluorescent	Philips SL
		o	o	o	o
1.2 Agriculture (CO <sub>2</sub> , CO, CH <sub>4</sub> , N <sub>2</sub> O)	Livestock Production				
	Rice Production				
	Biomass Burning				
	Fertilization				
	Soil Cultivation				
	Deforestation				
	Other				
1.3 Chemicals (CFC/HCFC)	Refrigeration				
	Foam Production				
	Industrial Solvents				
	Aerosols				
	Fire Protection				
Other					
1.4 Forestry (CO <sub>2</sub> , CO, CH <sub>4</sub> , N <sub>2</sub> O, carbon fixing)	Waste Burning				
	Silviculture Practices				
	Reforestation				
	Other				
1.5 Other	Refuse Disposal				
	Cement				
	Other				

Figure 4

Framework Convention on Climate Change and Energy Technologies

Activity Affected	Product/Process Affected	Family of Technology	Technology
1.1.1 Energy Supply	Solar Heating	Water Heaters	Amorphous Silicon Polycrystalline Other
	Solar Thermal Electric	Power Towers	
	Solar Electric	Photovoltaic	
	Wind	Electric	Turbines
	Biomass	Combustion Gasification Alcohols	
	Nuclear	Fission Fusion	
	Natural Gas/Propane		
	Geothermal		
	Wave		
	Ocean Thermal Other		
1.1.2 Energy Conversion & Transmission	Thermal Electric Generation		
	Co-generation		
	Tri-generation		
	District Heating		
	Other		
1.1.3 Energy Use		Fluorescent	Tube Compact Circline
		Incandescent	•
	Lighting	HID	•
		Induction Ballasts	Radiowave Core & Coil Electronic Silver Aluminum
		Reflectors	
		Electric Drive	
		Heating	
		Cooling	
		Building Design	
		Internal Combustion Engine	
	Transportation Modes		
	Industrial Other		

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Figure 5

## Framework Convention on Climate Change and Agriculture

Activity Affected	Product/Process Affected	Family of Technology	Technology
Livestock Production (CH <sub>4</sub> )	(75%) Cattle Production	Selective Breeding Bioengineering Diet Supplements	
	(25%) Other Livestock		
Rice Production (CH <sub>4</sub> )	(100%) Rice Paddies	Biogas Digester Selective Breeding Bioengineering Water Management Methane Inhibitors	
	(0%) Dryland Rice		
Biomass Burning (CO <sub>2</sub> , CO, CH <sub>4</sub> , N <sub>2</sub> O)	Crop Residues	Composting Biogas Digesters Permaculture Techniques	
	Slash and Burn Shifting Cultivation Land Clearing (Deforestation)		
Nitrogen Fertilization (N <sub>2</sub> O)	Urea Ammonium Nitrite Ammonium Sulphate Ammonium Phosphate Nitrogen Solutions Organic Farming Practices	Selection of Fertilizers for Low N <sub>2</sub> O production  Planting Legumes	
Soil Cultivation (CO <sub>2</sub> , N <sub>2</sub> O)	Chemical-based Cultivation Tillage Practices Organic Farming Practices	Nil/Low Tillage Mulching Planting Legumes Organic Fertilizer	

Figure 6

Montreal Protocol on Ozone Depleting Substances and Alternative Chemicals/Processes

Sector Affected 4.1 Chemicals (CFCs, HFCs, HCFCs, Carbon Tetrachloride, Methyl Chloroform, Halons, Methyl Bromide)

Activity Affected	Product/Process Affected	Family of Technology	Technology	
Refrigeration, Air Conditioning (R11, R12, R113, R123)	Air Conditioners	HFCs	HFC 134a	
	Heat Pumps			
	Domestic Refrigerators/ Freezers	HCFCs	HCFC 22	
	Commercial Refrigerators/ Freezers			
	Industrial Refrigerators/ Freezers		Evaporative Cooling	Direct Indirect
			Absorption Cooling	Lithium, Bromide-Water Cycle Ammonia-Water Cycle Other
			Dessicant Cooling	Lithium Chloride Silica Gel Other
Other Refrigerants			Ammonia Helium Other	
Foam Production (R12)	Insulation Cushioning Packaging			
Industrial Solvents	Circuit Board Production, Cleaning			
Aerosols	Spray Cans Inhalers			
Fire Protection (Halons)	Stationary Transportable			
Other	Pesticides (Methyl Bromide)			

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Technologists, innovators, and researchers can use technology trees to:

- Identify the relationship of a technology they may be developing to the international agreements that will drive the new technologies (i.e., is there a place for their technology on one or more technology trees?);
- Gauge the importance of their technology to sustainable development goals (i.e., how prominent a role does the particular technology play in relation to the driver?);
- Identify competing technologies that occupy the same niche and compare cost and performance;
- Identify unmet needs for technical innovation, (i.e., empty branches).

Entrepreneurs in small and medium size businesses can use technology trees to:

- Identify promising technologies that leapfrog over existing control strategies to incorporate pollution prevention and sustainability;
- Obtain an initial idea of the markets for a particular technology (i.e., by examining the upstream products, processes, activities, and sectors affected);
- Identify technologies competing for a particular niche and select the one with the most technical, cost, and marketing advantages.

Investors and financiers can use technology trees to:

- Situate a proposed technology relative to market drivers and mandated goals;
- Identify competing technologies and evaluate any competitive advantage;
- Identify various potential markets for a technology.

Policy planners can use technology trees to:

- Survey possible technology responses and identify opportunities for accelerating market penetration;
- Orient government activities—including industrial strategy, science and fiscal policy, research and development, environmental regulation, technology transfer, and training—toward the technology/business opportunities that promote sustainable development;
- Identify technologies that merit government support.

## TOOL Understand the Four Generations of Environmental Technology

There are four generations of environmental technology, ranging from remediation to sustainable. Some technologies can be modified to achieve the next step along the evolutionary path. The generations illustrate the increasing sophistication of science and society in dealing with environmental problems. This tool can help entrepreneurs understand the risks and opportunities relevant to each generation.

### Remediation Technologies

Remediation technologies treat environmental problems after they have occurred and attempt to repair or remediate the damage. They include various soil clean up methods, treatment of surface or ground water, and a variety of technologies to restore damaged or degraded landscapes (e.g., replanting tailings areas). Remediation technologies are typically very expensive and prove the old adage that “an ounce of prevention is worth a pound of cure.”

### Abatement Technologies

Over the past 30 years many abatement or “end-of-the-pipe” technologies have been developed to capture or treat pollutants before they escape into the environment. These technologies employ physical, chemical, or biological mechanisms to reduce emissions. Such technologies range from municipal sewage treatment systems, to catalytic converters for cars, to heavy metal treatment for the plating industry, to electrostatic precipitators and flue gas desulfurization equipment for the smoke stacks of coal-fired power plants.

Generally, these technologies do not prevent or eliminate the pollutant; they merely capture or treat the waste stream before it enters the natural environment. Abatement technologies are usually capital and technology intensive, require significant amounts of energy and resources to operate, and produce a waste disposal problem of their own. Most regulatory and investment activity in the environmental field remains focused on abatement technologies.

Huge industries have developed to serve these markets and billions of dollars have been spent to purchase and install abatement technologies. Enormous vested interests have slowed the transition to the next generation of technologies.

## The Four Generations of Environmental Technology

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Generation	Point of Application	Characteristics	Examples
Remediation Technologies	<ul style="list-style-type: none"> <li>▶ Symptoms</li> <li>▶ Damaged Resources or Environments</li> </ul>	<ul style="list-style-type: none"> <li>▶ After the Fact</li> <li>▶ Costly</li> <li>▶ Range from Low Tech to High Tech</li> </ul>	<ul style="list-style-type: none"> <li>▶ Soil Remediation</li> <li>▶ Toxic Site Cleanups</li> <li>▶ Water Treatment</li> </ul>
Abatement Technologies	<ul style="list-style-type: none"> <li>▶ Pollutant Capture or Treatment at End-of-pipe</li> </ul>	<ul style="list-style-type: none"> <li>▶ Captures Or Treats Pollutants Before Release</li> <li>▶ Capital, Energy and Resource Intensive</li> <li>▶ Generates a Waste Stream</li> <li>▶ Fairly Costly</li> </ul>	<ul style="list-style-type: none"> <li>▶ Flue Gas Desulphurization</li> <li>▶ Sewage Treatment Plants</li> <li>▶ Catalytic Mufflers</li> </ul>
Pollution Prevention Technologies	<ul style="list-style-type: none"> <li>▶ Industrial Process Design</li> <li>▶ Product Design or Composition</li> </ul>	<ul style="list-style-type: none"> <li>▶ Changes Product or Process to Reduce or Prevent Pollution</li> <li>▶ More Cost Effective than Abatement</li> <li>▶ Reduced Waste Stream</li> </ul>	<ul style="list-style-type: none"> <li>▶ Chlorine-free Paper</li> <li>▶ Cyanide-free Electroplating</li> <li>▶ Lead-free Gasoline</li> <li>▶ Closed-loop Manufacturing</li> </ul>
Sustainable Technologies	<ul style="list-style-type: none"> <li>▶ Alternate Product or Service</li> </ul>	<ul style="list-style-type: none"> <li>▶ Multiple Benefits Environmental/Economic/Social</li> </ul>	<ul style="list-style-type: none"> <li>▶ Daylight-sensitive, Efficient Lighting</li> <li>▶ Renewable Energy</li> <li>▶ Bio-cosmetics and Drugs</li> <li>▶ Organic Agriculture</li> </ul>

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## Pollution Prevention Technologies

Pollution prevention technologies are attracting the interest of regulators, policy makers, and many parts of the private sector. Generally, there are two types of pollution prevention technologies:

- Improved or alternative industrial and agricultural processes that avoid the production of pollutants. These include paper making processes that eliminate chlorine bleaching, cleaning techniques that eliminate toxic solvents, reformulated manufacturing processes that eliminate the use of heavy metals and toxic chemicals, and agricultural practices that eliminate the use of chemical pesticides and fertilizers.



- Alternative products whose use and disposal prevents or reduces pollution. These include phosphate-free, biodegradable detergents, lead-free gasoline, mercury-free batteries, water-based paints and adhesives, and non-toxic cleansers.

Pollution prevention is being driven by environmental regulation (particularly the new focus on performance rather than prescription), and by the pressures of economics, consumer awareness, and the need to modernize industry. Industrial pollution is often caused by outdated and inefficient technologies that are material and energy intensive and produce unwanted by-products. Improving and replacing these technologies with more eco-efficient processes generally reduces input costs, streamlines production, eliminates or reduces waste streams, and saves money, at least over the long-term.

On the consumer side, green products help fulfill the growing demand for an environmentally friendly lifestyle. When first introduced, green products are frequently priced somewhat higher than their conventional equivalents, but market acceptance and economies of scale often eliminate the price differential. Rising waste disposal costs, especially for hazardous substances, and proposed fiscal reforms, to favour environmentally superior products and tax unwanted pollutants, will increase the economic appeal of green products.

## Sustainable Technologies

Because of the need to achieve a combination of environmental, economic, and social objectives, the transition to sustainable technologies is becoming imperative, not just for environmental sectors, but for all businesses. The characteristics of these technologies are important enough to warrant their own tool, below.

### Understand Sustainable Technologies

Sustainable technologies, and the products and services they provide, are good solutions because they produce a number of benefits simultaneously. They reduce the need for the environment/economy tradeoffs that characterize remediation and abatement approaches—principally by capturing the economic advantages of energy and resource efficiency.

Current examples of sustainable or near-sustainable technologies and products include:

- Daylight-sensitive, efficient lighting products, free of toxics and heavy metals;
- Wood and wood products grown, harvested, and manufactured sustainably;
- Non-bleached, recycled paper with high post-consumer fibre content;

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- Cosmetics and pharmaceuticals made from plant extracts;
- Renewable energy technologies that are cost-effective, cause minimal pollution, and offer sustained yield;
- Heating/cooling technologies that are efficient, low in emissions, based on renewable energy, and not reliant on CFCs;
- Organically produced agricultural products;
- Bicycles.

### Characteristics of Sustainable Technologies

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Low Environmental Impact	<ul style="list-style-type: none"><li>• Very low or benign emissions to the environment in production, use, disposal</li><li>• No toxic releases</li><li>• Benefits environment indirectly through its use and/or inherent efficiency</li></ul>
Resource Efficiency	<ul style="list-style-type: none"><li>• Efficient utilization of material resources, often using recycled material</li><li>• Based on renewable resources and energy (or minimal use of non-renewable resources)</li><li>• Efficient consumption of energy in production and use</li><li>• Durable, reusable and/or recyclable</li></ul>
Economic Advantages	<ul style="list-style-type: none"><li>• Economically cost effective compared to conventional product or service</li><li>• Incorporate externalities in market price</li><li>• Can be financed by the user through various financial saving streams</li><li>• Improve productivity or competitiveness of industry and commerce</li></ul>
Social Advantages	<ul style="list-style-type: none"><li>• Enhance or maintain living standards or quality of life</li><li>• Readily available and accessible by all classes and cultures</li><li>• Consistent with themes of decentralization, individual control and democracy</li></ul>

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Because the concept of sustainable technologies is in its early stages, the tool should be considered “Mark 1”: it gives new directions, not final answers. It should be used to spark new ideas and stretch the imaginations of those developing processes and products. The concept of “never-ending improvement” is relevant.

## TOOL Add Sustainable Attributes to Existing Technologies

There are many existing technologies, products, and services to which the attributes of sustainability can be added. A product can be made more sustainable by making it more resource efficient, or more renewable. The product might be made from recycled material, or at least made to be long-lived and recyclable. It might be possible to reduce the toxicity of materials or byproducts. There may be ways to improve economic benefits from the product, or make it self-financing through creative marketing schemes. There are a number of ways that products and technologies can be improved to become more sustainable and more responsive to regulatory drivers and market forces.

An example is DEJA Inc., which makes shoes out of recycled tires, milk jugs, fabrics and coffee filters. The shoes are assembled with water-based adhesives and coloured with non-toxic dyes. (See pages 108-109 for more information.)

## TOOL Convert Defense Technologies

As the military-industrial complex ponders its future in the post-Cold War period, it is discovering green applications for a number of military technologies. The entrepreneur should be aware of the value of “defense” technology: its high development costs have been borne by the military, through taxpayers. The additional cost of conversion to civilian environmental applications is often quite reasonable. The combination of high tech and low marginal cost can rapidly drive the technology into new markets. Entrepreneurs may want to explore opportunities with defense industry suppliers and related laboratories.

One technology to be successfully converted was developed by General Electric to detect diesel smoke from submarines up to 100 miles away. A group of GE engineers obtained the license from GE, and now use the technology in devices that monitor air pollution. In the early 1990s, their company, Environment One, had annual sales of \$12 million. Satellite technologies are increasingly being used to track deforestation, soil erosion, and land use patterns. Propulsion systems are being converted for electric vehicles and public transit networks.

## TOOL Watch for the Impact of Technology Leaps or Breakthroughs

Environmental technologies, like others, often reach a plateau in their development cycle, remaining stuck at a certain performance or cost level that constrains their ability to penetrate the market. The technical performance — energy efficiency, energy output, pollutant capture, etc. — may be low, rendering the technology uncompetitive in the market. Alternatively, production costs may be too high, despite good performance. But a breakthrough, whatever the cause, can suddenly make the technology

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competitive and profitable. Successful entrepreneurs position themselves to take advantage of these breakthroughs.

The most obvious example of this phenomenon is the electronics industry, where ongoing research and development has led to dramatic improvements in performance/cost ratios. Electronic thermostats, vehicle controls and wattage reducers are some of the new products that have been developed.

Entrepreneurs should be aware of intensive technical work being done in areas relevant to their interests.

An excellent example in the environmental field is the increasing efficiency (i.e., power output) and decreasing cost of photovoltaic cells. Once cost-effective only in satellites and solar calculators, photovoltaic cells are now competitive in many remote power situations and, with further development, may be competitive with grid power.

### TOOL Opportunity Assessment: A Checklist

Entrepreneurs weighing opportunities for investing in sustainable technologies will want to assess and screen a number of options. While it is not possible to offer criteria that are, at the same time, all-purpose and highly specific, the following set of qualitative criteria can be used by a broad range of eco-entrepreneurs.

See “Directories”, pages 136-149, for Technology Assistance Organizations.

Checklist for Assessing Technology Opportunities

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Group	Criterion	Questions/Issues
Importance	Relative Environmental and Resource Impact	<ul style="list-style-type: none"> <li>▶ What is the relative environmental or resource impact of this technology compared to current practice?</li> <li>▶ Is the saving or benefit large compared to the base technology?</li> </ul>
	Importance to Sustainable Development Goals	<ul style="list-style-type: none"> <li>▶ How critical is this technology to achieving targets?</li> <li>▶ Does it have significant competing technologies?</li> <li>▶ Is it a major player?</li> </ul>
State of Technology	Phase of Development	<ul style="list-style-type: none"> <li>▶ Which generation is the technology? (see the Tool “Understanding the Four Generations of Environmental Technology”)</li> <li>▶ How close is the technology to commercialization?</li> </ul>
	Timing of Development	<ul style="list-style-type: none"> <li>▶ Can it be brought to market in 1 year, 3 years, 5 years, 10 years or more?</li> <li>▶ What does this pace depend on; money, knowledge, other factors?</li> <li>▶ If the technology is already in a particular market, how long to transfer to a new one?</li> </ul>
Scale of Technology	Suitability to Small or Medium Sized Enterprises	<ul style="list-style-type: none"> <li>▶ Can this technology be developed by a small or medium sized business?</li> <li>▶ Is it capital intensive?</li> <li>▶ Is it knowledge intensive?</li> <li>▶ What is the scale of the production facility required?</li> </ul>
Market	Cost-effectiveness	<ul style="list-style-type: none"> <li>▶ Is the technology cost-effective relative to current products/processes?</li> <li>▶ If not, how close is it?</li> <li>▶ Does it rely on legislation, subsidy or other external factors to make it competitive?</li> </ul>
	Market Size	<ul style="list-style-type: none"> <li>▶ What is the likely size of target markets?</li> <li>▶ What market share can it capture? Based on what attributes?</li> <li>▶ Can it be marketed effectively overseas?</li> </ul>
	Market Barriers	<ul style="list-style-type: none"> <li>▶ What are the major barriers or requirements for achieving market penetration?</li> <li>▶ Are they likely to be overcome?</li> <li>▶ In whose control are they?</li> </ul>

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## Case Study: Halozone Technologies Inc.

Halozone Technologies Inc.  
4000 Nashua Drive  
Mississauga, ON L4V 1P8  
Tel: (905) 405-8200  
Fax: (905) 405-8333  
Contact: Dusanka Filipovic, Deputy Chairman

### *Product/Technology:*

- Recovery and Reclamation of Refrigerants
- On-Site Recovery and Reclamation of Halogenated Hydrocarbons
- Thermco Terminator

### *Applications*

- Recovery of refrigerant from small volume applications such as household refrigeration and residential and automotive air conditioners. In larger applications, the system is used in conjunction with existing equipment to recover residual refrigerants. Reclamation of refrigerants to ARI-700-93 specifications is performed at the Halozone Reclamation Facility.
- On-site recovery and reclamation of:
  - CFCs used as solvents and cleaning agents
  - methyl bromide when used as an agricultural produce fumigant
- Thermco Terminator is an internal secondary condenser applied to the liquid refrigerant lines of large scale refrigeration and air-conditioning systems. It improves the thermodynamic efficiency of large refrigeration systems, leading to reduced refrigerant use, improved energy efficiency, lower maintenance costs, and fewer leaks.

### *Status*

- Commercial scale production is now in place. The Halozone Reclamation Facility has received the necessary Certificate of Approval from the Ontario Ministry of Environment and Energy. A full line of products has been developed taking advantage of the Halozone Blue Bottle® technology.
- On-Site Units are being commercially demonstrated.
- The Terminator is in commercial production and is in service in four countries with over 5,000 units installed. One of the biggest customers in Canada is Loblaw Companies, Ltd., the grocery store chain. Some 50 stores have purchased 100 Terminators each to help slash air-conditioning and in-store refrigeration costs.

*Product/Technology Profile*

- The use of adsorption and zeolite filters in Halozone Recycling Incorporated's patent-protected (proprietary) Blue Bottle® technology is helping the refrigeration and air conditioning industry meet Montreal Protocol targets and local government regulations.

The key to the Blue Bottle technology is a synthetic zeolite (Halozite™) which selectively adsorbs halogenated hydrocarbons. Halozone's Blue Bottle system eliminates virtually all emissions of refrigerant in a wide variety of processes including routine purging of low pressure centrifugal chillers and during service and decommissioning of air conditioning and refrigeration equipment. Adsorption is a phenomenon where molecules concentrate on a solid surface without any chemical change. Adsorption takes place due to unsatisfied forces in a surface that attract and hold the molecules on the surface. The Halozite inside the Blue Bottle cylinder acts as a selective molecular sieve, and therefore only refrigerant is captured. No other compounds adhere to the Halozite. Refrigerant gases are captured at ambient temperatures, and the capture occurs under atmospheric pressure; that important feature eliminates the need for special, pressurized transportation vehicles and licensing.

Once a Blue Bottle cylinder has been charged with refrigerant, it is sent to Halozone's central reclamation facility outside of Toronto, where the captured refrigerant is reclaimed without chemical breakdown. These reclaimed refrigerants are returned to industry standard specifications (ARI-700-93) before being transferred to certified storage containers. The Halozite adsorbent is regenerated and the Blue Bottle cylinders are sent back out to the field for reuse.

By reclaiming CFCs, Halozone's technology allows users to operate their refrigeration and air conditioning equipment until the end of its useful life, thus deferring the expense of conversion to alternative chemicals or cooling processes.

- On-site applications are turn-key recovery systems that effectively capture, recover and reprocess dilute emissions in industrial settings. In some cases, the end product is returned directly to the industrial process without further purification. These industrial uses of halogenated hydrocarbons include CFCs used as solvents and cleaners, the fumigation gas — methyl bromide, and the fire retardant — halon.
- The Thermco Terminator technology can improve the efficiency of the condenser and evaporator in certain commercial refrigeration systems, permitting lower energy consumption by the compressor motor. Integrating the Terminator technology in a refrigeration system can lower

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the operating pressure and reduce the amount of refrigerant needed by up to 40 percent. The excess refrigerant can then be reclaimed and either sold or stored for future use.

### *Company Profile*

Halozone Technologies Inc. is a public company on the Toronto Stock Exchange traded under the symbol "HLZ." The Blue Bottle technology is licensed exclusively to Halozone by Praxair (formerly the Linde Division of Union Carbide Canada Inc.). Halozone's Deputy Chairman, Dusanka Filipovic, P.Eng., was the Linde Division's manager of new business development and is the co-inventor of the Blue Bottle technology, developed between 1986 and 1990. In 1991 Filipovic left Linde to found Halozone.

Halozone has three distinct marketing and sales divisions:

- The Refrigerant Division whose mandate is to capture, reclaim and sell refrigerants,
- The On-Site Division, whose products are on-site, turn-key recovery systems, and
- The Thermco Canada Division, offering technologies such as the Terminator. These technologies improve operating efficiencies where refrigeration costs are a significant percentage of total energy costs and the refrigeration units are under heavy load and in continuous use. This operating environment is commonly found in the food processing, retail and warehousing sectors.

### *Source of Technology*

- The Blue Bottle technology was developed by the Linde Division of Union Carbide (now Praxair Canada Inc.). Union Carbide does not manufacture or market CFC products, nor is it involved in the recycling sector. The company decided to license the technology in order to commercialize it rapidly. As co-inventor and a Union Carbide executive, Ms. Filipovic was the obvious choice as licensee. The main component, Halozite, is a patented modification of the adsorbent zeolite.
- Full scale, commercial, on-site recovery units have been designed and developed with the assistance of M&W, a U.S. engineering firm.
- In 1989, Thermco entered into a partnership with the patent holder and inventor, Jerry Nivens of Truth or Consequences, New Mexico. The inventor has remained involved with Thermco and is assisting in continued product development.



### *Development*

- The full scale, commercial reclamation facility in Mississauga, Ontario, became fully certified and operational in 1994. Additional Blue Bottle technology applications are being developed that are effective and easy to use by refrigeration and air conditioning service technicians and contractors.
- Development of on-site units continues to address different customer needs.
- Thermco has recently developed a new, patent-pending technology called the Fluid Thermal Loop. The technology allows inexpensive glycol to replace CFC-based gases in large refrigeration units. An innovative heat exchange process eliminates the need for traditional roof top condensers while providing free hot water and heating to customers.

### *Performance*

- U.S. Environmental Protection Agency tests have certified that the Blue Bottle technology exceeds standards for small volume applications. A scientific evaluation was conducted by ORTECH International Inc., following which Dusanka Filipovic won two engineering awards. The Halozone Reclamation Facility meets required ARI-700-93 specifications for reclaimed refrigerant.
- The first commercial demonstration of the methyl bromide on-site unit was conducted in cooperation with Stemilt Growers, a major U.S. fruit exporter that uses 10,000 to 20,000 pounds of methyl bromide each year, and the U.S. Department of Agriculture (USDA). The on-site unit removed 95 percent of the airborne methyl bromide fumigant with a recovery efficiency of close to 100 percent. Subsequent USDA and Stemilt analysis of the methyl bromide recondensed by the on-site system revealed virgin purity levels.
- The benefits of installing the Terminator technology include reduced energy costs of up to 22 percent, and reduced refrigerant use of up to 30 percent in existing units and up to 40 percent in new facilities designed to use the technology. Performance tests were conducted by H.H.Angus & Associates and the Canadian National Research Council.

### *Financing Strategy*

Halozone is financed by public and private capital investment and government grants. Equity funding of approximately \$13.5 million has been raised, and the Ontario Government, Ministry of Environment and Energy, is contributing \$900,000 in grants over three years. In addition, Halozone is receiving \$2.5

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million from Canada's Environmental Technologies Commercialization Program, part of the Green Plan. Halozone's strategy is to proceed with commercialization, sub-licensing, royalties and joint venture partnerships.

### *Marketing Strategy*

Marketing is local and global, and is largely fueled by refrigerant and methyl bromide regulations. In addition to the products, services and programs mentioned previously, Halozone will install scaled-up or scaled-down versions of its Toronto reclamation facility — along with accompanying products and services — in other geographic locations.

Thermco continues to pursue a "pay-back" strategy in selling its Terminator technology. The overall package is designed to either reduce long-term costs or generate revenue for the client, and to allow for self-financed conversion to CFC alternatives. This is made possible by Thermco's Refrigerant Banking System. Excess refrigerant, fully recovered with the Blue Bottle, may either be banked for later use by the client or continually sold and recycled in domestic and international markets with the client receiving dividend payments, almost as a shareholder. Client savings, or revenue streams, are expected to rise as CFC production is phased out internationally and the price of CFC refrigerants continues to increase.

Halozone Technologies Inc. has developed and commercialized a family of complementary products and services designed to recover, recycle, and reduce the use of ozone damaging chemicals. Sales packages, tailored to the needs of the specific end customer, may incorporate one or more of the technologies and services offered by the company. Total system recovery of liquid and gaseous CFCs, halons, and methyl bromide is available on-site to capture dilute emissions, or to provide an alternative to venting during system repairs, retrofits, and conversions. The reclamation facility brings recycled refrigerants up to industry standards and regenerates the capture equipment. The Terminator and other Thermco technologies reduce the use of CFC refrigerants, while simultaneously trimming energy and maintenance costs.

As CFC emission regulations continue to become more restrictive in Canada and internationally, Halozone's Blue Bottle technology, On-Site recovery units, and Thermco Division technologies are well positioned to assist numerous business sectors to comply with the Montreal Protocol.

### *Key Lessons Learned*

- A changing, but predictable, regulatory environment provides an opportunity to offer new technologies as they are required.

- Establishing a small company with proprietary, environmentally sound technology can lead to rapid technical and business development.
- Partial government financing at a crucial stage can help significantly and act as an endorsement of the product and company.
- When introducing new environmentally sound technologies into a mature industry, partners and third-party endorsements are useful in overcoming entrenched attitudes.
- Acquisition can be an effective means of expanding and complementing existing technology, products, and customer sets.

# EarthEnterprise™ Tool Kit

# Raising Money for Sustainable Enterprises

# EarthEnterprise™ Tool Kit

The EarthEnterprise™ Project's Sustainable Capital stream is designed to help entrepreneurs obtain investment and financing for their companies.

This section of the Tool Kit advises entrepreneurs on improving their capacity to seek capital. Second, it informs entrepreneurs about a number of key sources well disposed toward investing in green and sustainable enterprises. It assumes the reader has some experience in business finance and, if not, will seek basic resource materials and qualified financial advisors.

Businesses the world over are built on the pillars of human ingenuity, hard work, demand for products and services, and money.

The growth of sustainable enterprises in Canada, the United States, Mexico and elsewhere requires an infusion of finance and investment — debt and equity. However, because the concept of sustainable enterprise is relatively new and innovative, securing the necessary funding from conservative capital markets is frequently a challenge.

The relative unpredictability of environmental business sectors has led North American lenders and investors to focus on risk and liability avoidance. Although some investors have recently added positive environmental or social screens to their evaluations, these organizations and individuals are primarily in the secondary or stock markets, and are not particularly relevant for investing in small and medium sized enterprises (SMEs).

Environmentally sustainable enterprises must also improve their financial performance if sufficient new capital is to be attracted to the market.

Sustainability adds value in terms of the economic, environmental and social objectives of communities and nations. This thinking translates the concept of sustainability into language that the average businessperson comprehends and works with every day. The business that does not add value to a product or service will be forced to leave the market place, especially in today's increasingly competitive global economy. Taking a proactive view of the environment makes it possible to envision how productive activity not only protects or maintains the world's natural resources, but actually improves the quality and quantity of scarce resources for future generations.

The Business Council for Sustainable Development (BCSD) calls eco-efficiency a requirement of sustainable business. Eco-efficient activities bring lower costs and economic gain, which is attractive to capital markets. Companies becoming eco-efficient, as well as those supplying the technology, goods, and services that enable the transition, will benefit.

Some investors are beginning to recognize that non-sustainable practices affect performance. New York City Comptroller Elizabeth Holtzman, declared that:

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*As the emerging owner of corporate America, with a financial and future stake in corporate activity, pension funds have an obligation to speak up. Poor management decisions, sloppy stewardship of natural resources, inattention to the consequences of wasteful and hazardous production practices, can shrink the present return on our investments, and — a more sobering prospect — diminish our world.*

New York City public workers' pension funds are already invested in a few environmentally sensitive companies, including 47 small enterprises that have demonstrated their ability to operate sustainably.

Sustainable enterprises offer new opportunities through which investors and entrepreneurs can find common ground, at least after undergoing a transition process. For investors, the transition will involve developing a long-term investment orientation and strategy and an appreciation of opportunities in sustainable companies and markets. Entrepreneurs will have to develop commercially attractive, sustainable enterprise opportunities and offerings and know how to gain access to investors disposed to this type of market.

### The Unique Features of Sustainable Investment

Sustainable investment is a new concept, basically an innovative way of reconciling environmental preservation and social responsibility with economic activity and then adding value to all. It is not radical, but conserving; not unrealistic, but profoundly practical. Sustainable investment is a sophisticated way of shifting capital to companies (particularly SMEs) that are smart enough to position themselves to create and take advantage of opportunities arising from the new economic paradigm.

Sustainable investment is the same as traditional investment in that:

- It is placed in companies that do the fundamentals well. Growth projections are based on sound management and business principles. Business plans and investment offerings have all the t's crossed and all the i's dotted.

Sustainable investment is placed in SMEs that:

- Have identified and developed emerging markets for their products and services;
- Devise and market technologies (hard and soft) that meet pressing environmental, social and economic needs;
- Use every environmental efficiency that is economically viable.



Sustainable investment is different from traditional investment in that:

- Money will come first from investors who share an understanding of the new economic paradigm of sustainability.

As the sector shows the ability to generate competitive returns, more investors will be attracted to sustainable enterprises.

The challenge for sustainable entrepreneurs is to appreciate the distinct features of sustainable investment and understand what they mean to business planning and efforts to attract capital.

## TOOL ► Get the Fundamentals Right to Approach Capital Markets

Because of their limited internal resources and size, and as a result of the capital market's bias in favour of large companies and investments, SMEs, including those that are sustainable, are in a weak position when seeking financing and investment.

Sustainable entrepreneurs have to be prepared to change the way they plan and carry on business, and how they seek capital. They have to go to the investment "mountain", and not expect it to come to them.

### Checklist

- Ensure that the return/risk ratio (as judged by possible investors) is competitive with other potential investments. Sustainable entrepreneurs cannot expect concessional or "soft" consideration by lenders and investors. Thoroughly examine the target markets and ensure that there is adequate, genuine demand for the product. Technologies, goods and services do not create markets. Sustainable entrepreneurs need to be more adept than others at responding to and planning for market demand. At times, new or growing sustainable enterprises can shape or increase the size of a market, but it is folly to attempt to make a business fly in the absence of existing demand.
- Devote the time, money, and enthusiasm needed to educate potential investors and capital markets about the emerging opportunities for environmentally sustainable enterprises in North America and globally.
- Do a first-rate business plan and offering. The challenge of seeking capital for sustainable SMEs requires that business planning and investment offerings are virtually perfect in form, content and presentation. While the need is technical in part, it may also raise questions about the very products or services the company intends to produce, and the markets it has identified. In other words, if the sustainable entrepreneur cannot successfully present a first-class offering to capital markets, he or she may

need to question whether the intended product or service is a winner. Any professional skill brought to bear on the task can be considered money well spent.

- Target your sources of financing and investment. As an entrepreneur, you should know which sources of financing and investment are more disposed to venturing into environmentally and socially sustainable markets. Put them on the “A” list. Entrepreneurs are often at a loss to know where these sources are, and which ones are warmly disposed to the products and services their company produces, and/or the markets they are pursuing. This information is vitally important and difficult to obtain, and is presented in the “Directories” on pages 150-170.

### TOOL ► Jump Over Perception Barriers

If lenders, investors, and sustainable entrepreneurs are to do business together, they must have a shared perception about each others’ interests and practices.

*Most environmental companies seem to know little about the investment community. Some aren’t aware of the difference between debt and equity and, in the case of debt, fail to understand that banks and other lenders are risk averse and will not lend unless fully secured.*

*An Investor*

*Financial institutions are not the favorite organizations for the SME. Many companies have horror stories about unsympathetic and arbitrary loan managers, staff changes, credit lines slashed or pulled, loans called, and intentions misunderstood.*

*An Environmental Entrepreneur*

Investors seem to believe that sustainable or environmental entrepreneurs:

- Lack knowledge about the realities of capital markets;
- Use financing and investment rationales that emphasize societal or emotional appeals rather than straight business thinking;
- Do not understand the investor’s interests, especially with respect to protecting the investment.

On the other hand, entrepreneurs believe investors:

- Are completely uninterested in sharing risk or being partners in their enterprises;
- Lack appreciation for emerging markets;
- Don’t take the time to listen.

These perceptions by both sides, whether or not they are compatible with reality, are an obstacle to placing and obtaining capital.

Leaping perceptual barriers requires an appreciation of investor interests. This enables the entrepreneur to markedly improve any presentations made to capital markets and enhances the likelihood of success.

## TOOL Business Planning for Sustainable Enterprises

While much of the advice in this section is applicable to all businesses, the innovative nature of sustainable enterprises makes paying attention to the basics even more important.

An integrated financial strategy and product/service commercialization targets are required business planning. Among the “musts” are:

- A clear, tightly written statement of purpose;
- A well-defined sense of where the company should be in one, two and five years;
- Defining features of the business;
- A thorough description of the market, including necessary market research and analysis. This will also involve an evaluation of competitors in the same and related markets;
- Details of the production, distribution and sales systems;
- Development plans for a management team which fills all the roles needed to convert the business opportunity identified into a commercial success;
- Precise costing and pricing, including source costing, internal budgeting and pricing for the market place;
- Detailed cash flow and financial projections over a three- to five-year period;
- A description of planned financing vehicles and the structure of the investment offering.

The entrepreneur will also need to attract various advisors (board members and experts) and enter into a range of agreements with individuals and other organizations (e.g., suppliers, sales agents, brokers etc.) that round out the firm’s capacity to seek capital and achieve the enterprise’s business plan.

The sustainable enterprise that does not adhere to the tried and true rules of business planning will find it nearly impossible to obtain funds from capital markets.

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Some of the business planning aspects unique to sustainable enterprises are addressed in the following sections on Markets, Technology and Operations.

### Markets

Markets for sustainable enterprises (environmental and otherwise) are relatively new and, in many cases, nascent. Many are also global. To reassure the investor that markets for the products/services exist or can be developed successfully, entrepreneurs should:

- Be able to describe and document existing markets for their products/services and how these markets will grow in the future. Trend projections are very important.
- Explain how they will enter the global market place (perhaps through targeted markets) to create economies of scale. This may involve alliances and joint ventures with other firms.
- Incorporate into their business plans marketing activities that will nurture the market and help it grow.

### Technology

The environmental problems that confront the world, from climate change to toxic waste to ozone depletion, are sometimes directly addressed by technological solutions offered by sustainable enterprises. This fact must be communicated to investors. Capital markets are generally not well informed about the scale of environmental degradation and such drivers as global environmental agreements. (See the Business Opportunities in Sustainable Technology chapter.) The economic benefits of technologies such as wind turbines, which are rapidly becoming more competitive, are not well known to investors.

Sustainable entrepreneurs should:

- Clearly link their technologies and the market potential for their products or services to existing environmental problems and note these relationships in their business plans. The technology trees, on pages 50-55 can help;
- Quantify the environmental and cost savings their technologies can offer customers;
- Identify the ways their technologies reduce environmental liability and create a cleaner environmental profile for their customers.

The sustainable entrepreneur will find technology a powerful card to play when seeking investment. It has two potentially strong suits:

- When the technology's key selling feature is cost savings, the investor readily understands and appreciates the potential demand and return;

- When there is an opportunity to finance “first on the street” technology, the investor may appreciate getting first dibs.

## Operations

The sustainable enterprise respects the environment by minimizing energy and materials use and by reducing waste generation. These practices reduce the firm’s operating costs and liability exposure.

Sustainable entrepreneurs should emphasize these advantages in their business plans by:

- Highlighting the cost reductions, in budgets and cash flow, that are achieved by employing responsible environmental practices;
- Noting practices that will insulate the company against future cost increases (e.g., waste disposal levies or oil prices);
- Explaining that liability risks are reduced by responsible environmental practices.

The nub of the message is that sustainable entrepreneurs can place themselves in a stronger position to raise capital by ensuring that their business plans highlight and incorporate the emerging markets from which the business will profit, the technological solutions the company offers to environmental problems, and the sustainable manner in which the company operates.

## TOOL ▶ Tips on Preparing the Investment Offering

Much of the advice here applies to all SMEs seeking capital. It is included because of the importance of preparing a good investment “offering”.

The offering is the final piece the SME puts before investors. Many entrepreneurs do not appreciate the relative complexity of even a basic offering. A well thought out and structured offering reassures potential lenders and investors that the SME knows what it is doing and understands the interests of capital markets.

By far the largest proportion of SME offerings are private placements. In this field, investment bankers, small business fund managers, venture capitalists, socially responsible investors and high net worth individuals known as “angels”, are the most important. (The interests of other types of investors will be addressed later.)

There are certain essential elements in any investment offering. It must be consistent with the SME’s business planning, notably its financial (including cash flow and return) projections. The business plan is the foundation on which

the investment offering is built. Some companies choose to include it in their offerings.

The investment offering should be structured to keep open the possibility of participation by a wide range of investors and lenders. Cast the net wide to see what you can catch, but at the same time go fishing in specific ponds.

Investment offerings are often written principally for investors but should cater to both lending and investment sources. Covering both debt and equity sources builds an ideal financial base for pursuing business objectives. The offering should involve various instruments, including senior debt, subordinated debentures, preferred stock and common stock. (Refer to a business finance text or other resource book for information about these instruments.) Each has different properties, making it necessary to select carefully to ensure the instrument matches the financial and operating requirements of the enterprise. The offering should also be flexible, and the entrepreneur should be prepared to negotiate with potential lenders and investors.

The offering should be strong on fundamental economic issues such as: a reasonable rate of return, tax considerations, liquidity or exit provisions, controlling company interests and risk minimization.

### TOOL Identify Potential Investors and Types of Financing

The following list of North American investment and financing sources is by no means exhaustive. It includes a key group of investors and lenders interested in placing funds in environmental enterprises, who may also have an interest in sustainability. The suggestions are doors into the world of investors and lenders: a world that is often intimidating and threatening to the SME unfamiliar with capital markets.

In certain cases, the company identified is not the direct source of funds, but is a broker or intermediary active in the private placement market for environmental enterprises. The list of government sources has been kept to a minimum because there are other directories that describe them.

Financing comes in many different forms. SMEs must decide which type is desired and then approach the appropriate source. Financing instruments to consider include working capital, leasing, project financing, long and short term debt financing, and equity financing. The sources listed at the end of this section provide these types of financing.

As entrepreneurs are well aware, there are a number of different types of investors. They include commercial banks such as Bankers Trust, leasing companies like Bank of Boston, mutual and other funds such as the Crocus

Investment Fund, socially responsible investors like the Calvert Group, investment bankers such as ScotiaMcLeod, and export financiers like the Export Development Corporation. Venture capitalists, strategic investors that use their own corporate equity to invest in other companies, community loan funds and government investment agencies, such as the Federal Business Development Bank, are also sources to consider.

Each type of investor has different interests. Some focus on debt instruments and others on equity. Their requirements for guarantees or security vary, as do the rates of return they seek, their degree of involvement in the companies in which they invest, and how they realize their return.

It is preferable for an enterprise seeking capital to receive it from a number of different sources. This allows a match between debt and equity raised and business requirements, and generally increases the likelihood of meeting financing targets. While banks and other sources of debt financing will undoubtedly be important, certain sources of equity financing are absolutely crucial to successfully capitalizing a SME.

Venture capitalists are often criticized as being tough on SMEs, but their risk or venture orientation makes them desirable sources of investment. Venture capitalists look for growth-oriented companies and often provide sorely needed financial leadership to young firms.

High net-worth individuals (“angels”) are good sources, especially for early stage financing. In North America, angels are becoming more common, particularly as the older third of the population enjoys a higher level of affluence. SMEs should approach these individuals through accountants, lawyers, investment advisors, and other professionals. Angels tend to invest in their own communities or areas of expertise and can add greatly to a firm’s management capacity.

Investment bankers manage their own equity or the funds of others, and often have a strategic interest or area of specialty. They also bring enterprises to capital markets for additional investment.

General and mutual funds seldom invest in SMEs. They tend to stick to secondary markets — stocks and bonds. Some fund managers, however, do focus on small and/or sustainable businesses. Socially responsible investors also tend to stay in secondary capital markets but sometimes create specific funds for SMEs. These funds are usually included in an internal portfolio or directed by an independent manager.

Strategic investors are a largely unknown source of capital for SMEs. Certain larger (and some mid-sized) companies invest their equity in SMEs in order to

access new technology or research and development projects. Others do so to integrate their companies horizontally or vertically.

### TOOL Engage a Financial Advisor

As noted earlier, the SME should integrate the investment offering directly into overall strategic efforts and business planning. Most entrepreneurs do not do this, however, because their area of expertise is generally in research and development, marketing, or production, rather than in finance. Because the in-house (or board member) financial advisor is rare, the SME is wise to seek the assistance of an outside expert.

Financial advisors can lead the company's financial strategy and integrate the structuring of investment offerings into business planning. Financial advisors are both strategists and doers. They are part of the senior management and strategy team, and can present the business plan and offering to potential investors. The best place to find a financial advisor is through investment bankers and venture capitalists, who often provide advisory services.

See "Directories", pages 150-170, for Sources of Capital.



# ADOPTING NEW BUSINESS PRACTICES AND RELATIONSHIPS

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**B**usinesses committed to promoting and profiting from the transition to sustainable development often have a longer time horizon and a broader set of goals than traditional companies. Typically, they are unsatisfied with the status quo and want to operate in a socially responsible manner, as well as protect and enhance the integrity of complex ecosystems. They value the well-being of employees, societies, traditional cultures and future generations. They cannot afford to ignore short-term cash flow, but their own definition of success is more sophisticated and includes a range of long-term objectives.

Often, founders of these companies have a well-articulated set of goals and principles that guide the business and help to instill the same values and objectives in employees. By declaring their goals publicly they may inspire trust, create a model for their industries, and provide a benchmark by which actual achievement can be measured. Smaller companies, which are often at a disadvantage when recruiting employees, can attract creative and talented staff by offering workplaces that are more participatory, have greater sensitivity to work and family issues, share more of the wealth, offer more fun, and encourage more trust between management and employees.

This broader vision of success requires new business tools, practices and relationships. Changing the world does not happen in isolation and the number of organizations willing to help may come as a surprise. Being receptive to new ideas and suggestions opens the door to an array of opportunities that would otherwise pass you by.

North America is in the midst of profound social change. Looking out strictly for number one, shopping until you drop, and dominating the natural world are no longer viewed as worthy aspirations by many members of society. A large share of the workforce complains of burnout and lack of job satisfaction. Protecting the planet, promoting the health and well-being of employees and communities, and enjoying some good natured fun together enables companies to bring meaning and gratification back to the workplace. This section of the Tool Kit is designed to provide you with the means to prosper during the '90s — “the decency decade”. The current focus on environment, empowerment, education, enjoyment and ethics is not likely to be a passing fad. People are finally waking up to the need for workplaces that protect our environment, our social well-being, and our future.

## Internal Consistency

Ensuring that the values of sustainable development permeate throughout the company, from CEO to purchasing agent to distribution and marketing usually starts at the CEO's office. The best intentions are meaningless, however, if they reside in the head of only one individual in the company. Forming or changing

a company's culture and outlook requires contributions and efforts from everyone, working as a team.

### Prepare a Mission Statement

A mission statement is a clearly articulated declaration of the goals, principles and operating procedures of a company. It will vary from one company to the next, depending on the nature of the enterprise, and can be instrumental in charting a company's course. Best issued from a firmly committed CEO, the mission statement should be distributed to all employees and stressed repeatedly. If employees know that performance will be measured against the stated goals, and are given the resources to achieve them, the mission statement will be taken seriously.

The CERES Principles, issued by the Coalition for Environmentally Responsible Economies, are a good source of ideas for your mission statement. Drafted by a coalition of socially responsible companies, investment firms, and environmental groups, the principles offer guidance and a set of high standards against which companies can measure themselves.

The ten principles commit companies to protecting the earth, using energy and resources wisely and sustainably, minimizing waste, and selling safe products and services. Signatories back up their commitment by pledging to reduce risk, disclose hazards and compensate for damages. They also agree to provide high-level management support for environmental activities and to gather and disseminate information about their environmental performance, both internally and externally.

Although stringent, the principles have been adopted by 80 companies in industries ranging from finance to footwear. In February 1993, the Philadelphia-based Sun Company, the twelfth largest U.S. oil business, became the first Fortune 500 company to sign the principles. Four additional Fortune 500 companies had signed on as of September 1994. They are H.B. Fuller, General Motors, Arizona Public Service, and Polaroid. Many small firms have also decided to adhere to the principles.

Evaluating the mission statements and business practices adopted by the leading firms in your own or similar industries is another way to gain perspective on your objectives. Innovative companies are often happy to share their mission statements. Many of these firms hope that they will be able to persuade entire industries to embrace and adopt their goals.

## The CERES Principles (Formerly the Valdez Principles)

### *Introduction*

By adopting these Principles, we publicly affirm our belief that corporations have a responsibility for the environment, and must conduct all aspects of their business as responsible stewards of the environment by operating in a manner that protects the Earth. We believe that corporations must not compromise the ability of future generations to sustain themselves.

We will update our practices constantly in light of advances in technology and new understandings in health and environmental science. In collaboration with CERES, we will promote a dynamic process to ensure that the Principles are interpreted in a way that accommodates changing technologies and environmental realities. We intend to make consistent, measurable progress in implementing these Principles and to apply them to all aspects of our operations throughout the world.

### *Protection of the Biosphere*

We will reduce and make continual progress toward eliminating the release of any substance that may cause environmental damage to the air, water, or the earth or its inhabitants. We will safeguard all habitats affected by our operations and will protect open spaces and wilderness, while preserving biodiversity.

### *Sustainable Use of Natural Resources*

We will make sustainable use of renewable natural resources, such as water, soils and forests. We will conserve nonrenewable natural resources through efficient use and careful planning.

### *Reduction and Disposal of Wastes*

We will reduce and where possible eliminate waste through source reduction and recycling. All waste will be handled and disposed of through safe and responsible methods.

### *Energy Conservation*

We will conserve energy and improve the energy efficiency of our internal operations and of the goods and services we sell. We will make every effort to use environmentally safe and sustainable energy sources.

### *Risk Reduction*

We will strive to minimize the environmental, health and safety risks to our employees and the communities in which we operate through safe

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technologies, facilities and operating procedures, and by being prepared for emergencies.

### *Safe Products and Services*

We will reduce and where possible eliminate the use, manufacture or sale of products and services that cause environmental damage or health or safety hazards. We will inform our customers of the environmental impacts of our products or services and try to correct unsafe use.

### *Environmental Restoration*

We will promptly and responsibly correct conditions we have caused that endanger health, safety or the environment. To the extent feasible, we will redress injuries we have caused to persons or damage we have caused to the environment and will restore the environment.

### *Informing the Public*

We will inform in a timely manner everyone who may be affected by conditions caused by our company that might endanger health, safety or the environment. We will regularly seek advice and counsel through dialogue with persons in communities near our facilities. We will not take any action against employees for reporting dangerous incidents or conditions to management or to appropriate authorities.

### *Management Commitment*

We will implement these Principles and sustain a process that ensures that the Board of Directors and Chief Executive Officer are fully informed about pertinent environmental issues and are fully responsible for environmental policy. In selecting our Board of Directors, we will consider demonstrated environmental commitment as a factor.

### *Audits and Reports*

We will conduct an annual self-evaluation of our progress in implementing these Principles. We will support the timely creation of generally accepted environmental audit procedures. We will annually complete the CERES Report, which will be made available to the public.

### *Disclaimer*

*These Principles establish an environmental ethic with criteria by which investors and others can assess the environmental performance of companies. Companies that sign these Principles pledge to go voluntarily beyond the requirements of the law.*

*These Principles are not intended to create new legal liabilities, expand existing rights or obligations, waive legal defenses, or otherwise affect the legal position of any signatory company, and are not intended to be used against a signatory in any legal proceeding for any purpose.*

*This amended version of the CERES Principles was adopted by the CERES Board of Directors on April 28, 1992.*

## Companies That Have Adopted the Ceres Principles

Ally Capital Corporation	– Equipment Finance
Arizona Public Service Company	– Electric Utility
Atlantic Recycled Paper Company	– Recycled Paper Products
Aurora Press	– Publishing
Aveda Corporation	– Personal Care Products
B & B Publishing	– Publishing
The Beamery, Inc.	– Timber Frame Homes
Bellcomb Technologies, Inc.	– Structural Building Panels
Ben & Jerry's Homemade	– Ice Cream Products
Bestmann Green Systems, Inc.	– Bioengineering
The Body Shop International	– Personal Care Products
The Bullitt Foundation	– Philanthropy
C-A-P-D Consultants, Inc.	– Environmental Consulting
Calvert Group	– Financial Services
Calvert Social Investment Fund	– Social Investing
Clivus Multrum, Inc.	– Waste Processing
Community Capital Bank	– Banking
Consumers United Group	– Community Development
Co-op America	– Social Investing
Council on Economic Priorities	– Social Research
Coyote Found Candles, Inc.	– Candles
Crib Diaper Service	– Diaper Services
Cyclean, Inc.	– Asphalt Recycling
DEJA, Inc.	– Recycled Footwear
Domino's Pizza Distribution Corporation	– Food Distribution
Donat/Wald Company	– Marketing
Earth Action Network	– Publishing
Earth Care Paper Company	– Recycled Paper Products
Earth Communications, Inc.	– Telecommunications Services
Earthrise Trading Company	– Nutritional Products

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Eco-Invest Publishing, Ltd.	– Investment Publishing
Eco-Logical Marketing	– Marketing
Ecoprint	– Printing
Environmental Risk & Loss Control, Inc.	– Consulting
Esalen Institute	– Education
Falcon Partners Management, L.P.	– Investment
First Affirmative Financial Network	– Social Investing
Franklin Research & Development Corporation	– Social Investing
General Motors Corporation	– Automotive
Geo. W. King Company	– Printing, Advertising
Global Environmental Technologies	– Water Purification
Greenworld Products Corporation	– Lawn & Garden
Harrington Investments	– Social Investing
Harwood Products Company	– Lumber Products
H.B. Fuller Company	– Specialty Chemicals
The JG Press	– Publishing
Indian Foods Company	– Food Products
LecTec Corporation	– Medical Products
Louisville & Jefferson Metropolitan Sewer District	– Sanitation
Natural World, Inc.	– Personal Care & Home
Nature's Fresh Northwest	– Natural Foods Chain
New Heights Schools	– Education
Oil Mining Energy Corporation	– Residual Oil Recovery
Pacific Partners International Investments	– Investing
Paper Service, Ltd.	– Recycled Paper Products
Parson Capital Management	– Financial Services
Performance Computer Forms	– Recycled Paper Products
Phoenix Heat Treating, Inc.	– Heat Treating
Polaroid Corporation	– Imaging
Progressive Asset Management	– Social Investing
Real Goods Trading Corporation	– Mail Order Distribution
Recycled Paper Company	– Paper Distribution, Printing
Ringer Corporation	– Lawn & Garden
Service Litho-Print	– Printing
Seventh Generation	– Mail Order Distribution



Smith & Hawken	– Mail Order Distribution
Source Solutions Group	– Financial Services
Stonyfield Farm Yogurt	– Yogurt
Sullivan & Worcester	– Legal Services
The Summit Group	– Marketing
Sun Company, Inc.	– Petroleum
The Timberland Company	– Outdoor Clothing
Tom’s of Maine	– Personal Care
Town Creek Industries	– Electric Vehicle Research
Tree-Free EcoPaper	– Paper Products
United States Trust Company of Boston	– Banking & Investing
VanCity Savings Credit Union	– Banking
Walnut Acres	– Organic Farming
The WATER Foundation	– Radio Programming
County of Westchester, New York	– Municipal Government

For further information contact Judy Kuszewski, Coalition for Environmentally Responsible Economies (CERES), 711 Atlantic Ave., 5th Floor, Boston, MA, 02111. Telephone: (617) 451-0927, Fax: (617) 482-2028.

## TOOL Measure and Report on Your Progress and Performance

Internal and external communications and seminars can report on company progress in achieving social, financial and environmental goals. By developing benchmarks against which to measure progress, and reporting on successes and failures, companies reinforce their commitment to stated objectives and alert employees and other stakeholders to areas where additional effort is needed. Just as financial reports help employees focus on cutting costs and maximizing return on investment, environmental and social reports — and audits — also sharpen company focus.

A growing number of large corporations are starting to issue annual reports of environmental performance. By defining short and long-term goals and developing tools to measure progress, these companies gain a better understanding of how their operations affect the environment and where they can improve performance, often reducing costs.

The U.S. Emergency Planning and Community Right-to-Know Act, passed in 1986, has proved a valuable stimulus for measuring progress. The law requires 10,000 manufacturers to report their annual releases of 317 toxic chemicals to air, water, and land. The plant-specific data are accumulated in the publicly available Toxics Release Inventory. After compiling their first pollutant inventory, these companies had a baseline for establishing quantitative

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emissions reduction strategies. Many have already reduced emissions by more than 30 percent.

Though small and medium sized companies are not yet required to comply with the legislation, that day may not be far off. Once large companies have exhausted cost-effective emissions reduction and pollution prevention strategies, regulators will start to look more closely at the many small firms that generate emissions. This is already happening in California, where air emissions regulations now apply to bakeries, fast food restaurants, lawnmowers, and outdoor barbecues.

Corporate monitoring of ethical and social performance is still rare, but spreading. Ben and Jerry's Homemade Inc., The Body Shop, Patagonia, and Tom's of Maine report on the causes they promote and their community development efforts. A few companies now include ethics in employee training programs and provide mentors to give moral guidance to new employees. When staff members feel valued, empowered and fairly treated, they are more likely to treat colleagues, suppliers, and customers the same way.

### TOOL In-House Waste Reduction and Pollution Prevention Teams

Green teams, comprising personnel from different departments, can be effective in devising strategies to improve environmental performance. Top-level support, adequate budgets, and ready access to all employees are necessary to execute team strategies.

Start by setting easily achievable goals and get more ambitious as confidence and expertise are gained. Asking all employees to bring their own coffee mugs, and purchasing mugs for visitors, is an easy first step. Requiring all printing and copying to be done double-sided, providing refillable pens in the supply cabinet, and turning off unused lights and equipment are other starting points.

Establishing paper and packaging recycling programs, asking suppliers for green alternatives, and installing energy-efficient fluorescent light bulbs might come next.

After momentum and interest have been established, tackle the tougher issues. Talk to maintenance staff about biodegradable soaps and cleaning products and ask for bathroom tissue and paper towels made from recycled fibre. Approach your landlord about installing timed thermostats, water-efficient toilets and plumbing fixtures, and lighting systems responsive to outdoor light. Quantify the payback associated with these capital investments, so that everyone understands the financial benefits of environmental responsibility. Manufacturing firms can target their in-house production processes.

As staff becomes increasingly aware of the cost and environmental benefits and the ease of implementation, suggestions for improvements are likely to increase. At companies such as 3M and Pacific Gas & Electric, employees are recognized and rewarded for suggesting environmental improvements that save the company money.

### TOOL ► Materials that Inform Employees about Economic, Environmental, and Social Trends

Informed employees will be better equipped to promote company goals and respond effectively to major trends. Appealingly written books and articles, videotapes, and the occasional guest speaker or outside course can put the company's efforts into perspective.

Ted Turner, the American media mogul, distributes copies of the Worldwatch Institute's *State of the World* series to all new producers and reporters. Ben and Jerry's Homemade, Inc. purchases multiple copies of Co-op America's *National Green Pages* to encourage employees to purchase goods and services from other socially responsible companies. Many employees want to perform better: they just need a better understanding of current trends and workable solutions.

### TOOL ► Open and Direct Lines of Communication

Regularly scheduled staff meetings, electronic mail connecting all personnel, accessible managers, and, in larger companies, an in-house newsletter can keep the lines of communication open. Centrally located and universally accessible bulletin boards or suggestion boxes can stimulate discussion and ideas. Human resources staff who treat employees as individuals and assist them in coping with the competing demands of work and family promote candour and engender loyalty. When employees are given the rationale for major decisions, they are less likely to heed rumours and counter-productive speculation.

At Tom's of Maine, a company that makes natural health and beauty products, all meeting convenors tell participants if the group is in a "circle" or "hierarchical" mode — a circle if they are being asked to reach consensus, or hierarchical if they are being invited to make suggestions.

Robert Leaver, former president of New England Businesses for Social Responsibility, reports that workplace issues are more difficult to grapple with than community and environmental concerns for the organization's 300 member companies. Even the most caring managers are hard put to meet the needs of employees who want to work at home, work flex time, arrive with their dependents, contribute fully to decision making and be respected as unique individuals. Rather than giving up, companies in the organization strive to cooperatively develop innovative and workable solutions.

### Call Me Roger

Ecoprint founder Roger Telschow almost sold his environmentally responsible print shop in Silver Spring, Maryland, because of the frustrations he suffered as a hierarchical manager.

“For the first few years, while my staff grew to three employees, I heeded the advice of others in the business. I insisted that employees call me ‘Mr. Telschow’, and I never ate lunch with any of them. In an attempt to get things done right, I alternated between issuing ultimatums and asking too little of people in hopes that I’d win them over by being ‘nice.’ Neither method worked to my satisfaction or theirs.”

Then Telschow decided to do something revolutionary: be himself.

“I remember going into the shop and telling my employees that I needed their help. I said that I felt as if I had been trying to run the company single-handed. From now on I told them, I wanted them to manage their own jobs themselves, but I would help in any way I could. The bottom line, I said, is that to succeed, we’ve got to work together. And, I added, ‘Just call me Roger’. I began revealing the monthly profit-and-loss statement to the whole staff and explaining why we made or lost money.”

Today, Ecoprint’s customer satisfaction is above 95 per cent; 99 per cent of jobs are delivered on the day promised; employee absenteeism averages less than one day per year per staff member; employees outproduce the industry average by 57 per cent; and, over the past four years, sales volume has increased six times faster than the industry average. The company has never laid off an employee and has a policy that none will be laid off unless senior management first takes a 25 per cent pay cut.

A quarterly profit sharing bonus tied to company performance is now “reinvested” in employees. In good years, this has amounted to 22 percent of profits, the equivalent of six weeks added pay for workers. A \$5 cash reward, paid on the spot, goes to those who discover errors on work orders. Last year, it cost the company \$300 and saved an estimated \$5,000. Ecoprint also donates 10 per cent of pre-tax profits to organizations that protect and preserve the natural environment and is a signatory of the CERES Principles.

Ecoprint stocks unbleached and recycled paper, uses vegetable oil-based inks that reduce air pollutants by as much as 90 percent, and employs safe substitutes for pollution-causing solvents and roller washes. The company also recycles its waste paper, reclaims silver from photographic film, and offers an on-site recycling program for employees. By working with new suppliers, Ecoprint has reduced the copper, zinc, and barium contents of its ink from as high as 3,500 parts per million to as low as five parts per million.

Many of the changes at Ecoprint required new technologies and most called for new supplier relationships. All required Ecoprint employees to alter their work habits. The company's customers and employees couldn't be happier, and give Roger the credit.

This profile was adapted, with permission, from an article written by Roger Telschow for the January 1993 issue of *Nation's Business*, published by the U.S. Chamber of Commerce. For more information, contact Roger Telschow, President, Ecoprint, 9335 Fraser Ave., Silver Spring, MD, 20910. Telephone: (301) 585-7077, Fax: (301) 585-4899.

## External Credibility

Customer loyalty, public credibility, and investor confidence are gained by companies perceived to be doing things right. Perfection is an unachievable goal, but definable progress and effective communications are essential.

### Annual Sustainable Development Report

An annual report highlighting progress made toward reducing emissions, improving environmental performance, and enhancing workplace and societal well-being may be the best possible advertisement for your company. Read by corporate stakeholders, including customers, suppliers, employees, investors, regulators, members of the local community, and environmental groups, the reports can go a long way toward demonstrating your company's commitment to environmental protection and social responsibility.

A clearly articulated set of internal goals, a method for measuring achievement, and candour about current failings make companies look responsible and human. It takes a brave firm to adopt the warts-and-all approach in its reports, but the gains are usually worth it.

Ben and Jerry's Homemade Inc., the Vermont producer of exotically flavoured premium ice creams, is committed to promoting a variety of causes, including rainforest protection, world peace, and community economic development. The Ben & Jerry's Foundation established by the company channels 7.5 percent of pre-tax profits to charities around the world. Ice cream ingredients are purchased from companies that employ formerly homeless people, recovering alcoholics, and drug addicts, as well as from indigenous harvesting collectives in developing countries.

To make sure its programs are on track, Ben and Jerry's courageously asks an outsider to write its annual social audit, part of each year's annual report, and promises not to make changes. Paul Hawken, co-founder of the gardening company Smith and Hawken, wrote the 1992 review, in which he criticized the company for the environmental damage it causes by transporting ice-cream in

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refrigerated trucks across North America. Vermont, of course, benefits by keeping jobs and suppliers close to home.

In his "Declaration of Sustainability," in the September/October 1993 issue of the *Utne Reader*, Hawken calls Ben and Jerry's "America's premier socially responsible company. Are there flaws? Of course. Welcome to planet Earth. But the people at Ben and Jerry's are relaxed and unflinching in their willingness to look at, discuss, and deal with problems."

In a published interview, company co-founder Ben Cohen said, "When we first started out with our social mission, the lawyers, accountants, pundits, and business people all said it would be our undoing. Ironically, it's because of these values and actions that we are becoming so profitable." Economics professors Stephen Erfle and Michael Fratantuono at Pennsylvania's Dickinson College have studied the link between companies' social performance and profitability. They found a positive correlation between profits and the following five criteria: environmental performance, advancement of women, advancement of minorities, charitable giving, and community action.

In an era when companies are not trusted and everybody's a cynic, being open about your failures, as well as your achievements, can go a long way toward building trust and cultivating loyalty.

### TOOL ▶ A Commitment to Honest and Accessible Public Relations

"There is nothing more damaging than a spokesperson who does not know or care about the issues," wrote John Elkington and Peter Knight in their book, *The Green Business Guide*.

Successfully conveying information about your company to customers, journalists, the local community, and anybody who has an interest in what you do requires an up-front approach and clear, understandable language. People naturally fear or are skeptical of what they don't know. With knowledge comes familiarity, security, and often support.

In recent years, many consumer products companies have established toll-free telephone numbers to sell merchandise and respond to customer inquiries. When staffed by knowledgeable and courteous personnel, 800 numbers can provide information on how products are made and how to dispose of them safely. They can also convey a "corporate soul." By the same token, an 800 operator who is not helpful and is unable to answer or redirect questions will frustrate and annoy customers. This can be especially damaging when the caller is phoning about a real or perceived risk or hazard.

Companies that make or sell highly technical equipment and products face another challenge: scientists and technicians are often incapable of explaining

what they do in lay terms. If this is the case at your company, well-informed marketing or communications staff should do the public speaking and answer media calls.

If your company is new to the community, has just developed a great production process to solve an environmental problem, or is the victim of damaging rumours, an open house can help raise awareness, build support, and quell fears. Community groups often want to feel pride in local companies, but you have to give them something to feel proud about.

When Anita Roddick, founder of The Body Shop, opened new Canadian headquarters in October 1993, she invited many guests and explained why the building was the most environmentally sound structure in Toronto. Favourable press, of any type, can boost sales and engender customer loyalty.

Bad press is bad business. Avoid it with readily available, credible information on your successes, failures, and routine activities.

## TOOL A Commitment to Community Development Efforts

Although many companies still measure their contribution to the community by the size of the cheque they write to local charities, a growing number are engaged in more active community development work.

At Tom's of Maine, employees are paid for contributing as many as five hours a week to community projects. To assist Kennebunk establish a recycling program, Tom's purchased recycling bins for every household in town.

Employees at 900 Body Shops around the world are encouraged to devote one paid day a month to community education and development efforts. Body Shop stores routinely donate valuable display space to local environmental, community development, and get-out-the-vote drives. Anita Roddick knows that environmentally savvy and informed customers will want to be her clients.

Patagonia, an outdoor equipment and clothing supplier, gives 10 per cent of its profits to grassroots environmental groups. More than 350 organizations have benefitted from grants, ranging from a few hundred dollars to \$20,000. The company gives away more money than it spends on advertising. And it started giving the money away four years before mentioning it in the sales catalogue. Patagonia has also published a manual to teach environmental groups how to work with the media.

As more female entrepreneurs achieve market success, day care centres, educational facilities, and organizations assisting battered women are starting to receive more corporate donations.

## Leveraging Your Resources



### Work with Innovative Business Associations

A growing number of trade associations and business networks are issuing environmental performance guidelines for members, preparing educational materials on environmental and social issues, and holding seminars on timely subjects of interest. Following are some of the organizations likely to be of interest to eco-entrepreneurs.

#### **Business for Social Responsibility**

1030 15th Street, NW

Suite 1010

Washington, D.C.

20005 USA

Tel: (202) 842-5400

Fax: (202) 842-3135

Contact: Kathy Grimes, Vice President

Business for Social Responsibility (BSR), founded in 1992 in Washington, D.C., focuses on human resource issues, environmental performance, community relations, and resolving international problems. Its 850 members and affiliated companies pay from \$150 to \$5,000 a year to belong and to receive advice on improving their social, environmental, and financial performance. A book, *Beyond the Bottom Line: Putting Social Responsibility to Work for Your Business and the World*, and a booklet documenting *Environmental Practices of Member Companies* were published in Fall, 1994. Assessing member initiatives, implementation strategies, and effects on the company and community is an ongoing effort designed to enlighten and educate other BSR members, a broader business audience, and public policy makers. A series of national workshops on eco-efficiency will be launched by the BSR Education Fund in January 1995. As of September 1994, BSR chapters had been formed in 24 regions across the United States.

#### **Canadian Business for Social Responsibility**

Hope Unlimited Gift Store

2206 W 4th Avenue

Vancouver, BC V6K 1N8

Tel: (604) 732-4438

Fax: (604) 482-8283

Contact: Nancy Bradshaw



Canadian Business for Social Responsibility is a new organization for companies committed to socially responsible business policies and practices that actively contribute to improving the quality of life in their communities.

Any for-profit business whose chief executive officer agrees with the guiding principles of the organization may become a member. There will be one major evening speaker event every quarter. Members will have the opportunity to attend monthly workshops to exchange ideas on implementing social and environmental principles. Topics will include community involvement, environment, and employee remuneration. Members will have the opportunity to attend the annual BSR conference in the United States and receive its newsletter.

For those interested in forming a chapter in Halifax, please contact

**P'lovers**

5657 Spring Garden Road, Box 224  
Halifax, NS B3J 3R4  
Tel: (902) 422-6060  
Fax: (902) 425-2990  
Contact: Liz Crocker

**Co-op America Business Network**

1612 K Street, NW, #600  
Washington, D.C. 20006  
Tel: (202) 872-5307  
Toll-free: (800) 584-7336  
Fax: (202) 331-8166  
Internet: [cabn@envirolink.org](mailto:cabn@envirolink.org)  
Contact: Russ Gaskin

The Co-op America Business Network in Washington, D.C., has screened each of its 1,200 member companies to evaluate their adherence to the principles of sustainable development. Prospective members are asked to fill out a social responsibility profile that covers the company's relationship with the local community, customers, employees, and the environment. The Network is looking for demonstrated efforts that go beyond general standards but recognizes that no company is perfect. Only those companies regarded as socially responsible are approved for membership by the board of directors. Firms that do not satisfy minimum criteria are asked to stay involved and receive materials, but are not promoted by the Network and will not be included on its business-generating referral list.

The Network publishes the *National Green Pages*, which has 100 product categories and asks readers to refer to it any time they make a purchase worth

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more than \$50. Another Network service sources products for U.S. catalogues and home shopping channels from socially responsible, sustainable enterprises. The new Green Business Maps program helps members in major U.S. cities create cooperative advertising in the form of metropolitan area maps showing where green businesses are located.

Other discounted or low-cost services provided to member companies are: travel, long distance telephone, credit card processing, and group health and life insurance.

### **Council of Sustainable Industries of New Jersey and New York**

American Soil

P.O. Box 295

Ramsey, NJ

07446-0295

Tel/Fax: (201) 327-2312

Contact: Rob Young

The Council of Sustainable Industries of New Jersey and New York promotes co-operation among the “rising tide of private and community ecological entrepreneurs”. The 50-member Council provides referrals for those seeking sustainable goods and services, educates the public about companies making false environmental claims, and promotes quality standards and legislation that reflect the true social and environmental costs of goods and services.

### **Business Environmental Network Project**

Peninsula Conservation Center

3921 East Bay Shore Road

Palo Alto, CA 94303

Tel: (415) 962-9876

Fax: (415) 962-8234

Contact: Carol Kraus Lauffer

The Business Environmental Network Project, sponsored by the Peninsula Conservation Center, issues a bi-monthly newsletter, *Eco-Opportunities*, which describes what companies and individuals in the San Francisco Bay area and Silicon Valley are doing to improve their environmental performance. Serving 120 small and large companies, the Project holds regular events to discuss current environmental topics and company policies to address the problem. According to organizer Carol Kraus Lauffer, this is one of the few subjects about which high-tech companies concerned about confidentiality are willing to share information.

### **Social Venture Network**

1388 Sutter Street, Suite 1010

San Francisco, CA 94109

Tel: (415) 771-4308

Fax: (415) 771-0535

Contact: Jennifer Chapman, Deputy Director

The Social Venture Network, formed in 1987 and headquartered in San Francisco, is a membership organization composed primarily of entrepreneurs, investors, and investment professionals who believe that business is not only a means of financial success but a potentially powerful force in creating a more just, humane, and sustainable world. The organization strives to build a community of business leaders who have demonstrated concern for social issues and to strengthen the credibility of innovative business initiatives.

The 400-member organization sponsors national meetings twice a year. Members receive specialized mailings and regular newsletters, and information on resource people, services, projects, and businesses of interest to them. A data-base is maintained on each member's activities and interests.

Membership is by invitation only for individuals who have demonstrated entrepreneurial talent, substantial net worth coupled with active private investing, experience in corporate leadership or investment management, philanthropic or organizational leadership, or who can make a special contribution to the Network's efforts.

### **TOOL Tap the Expertise of Non-Profit Organizations**

Non-profit organizations have a wealth of expertise and contacts to share. Although some still engage in adversarial relationships with the business community, many others are open and willing to participate in collaborative efforts.

When Loblaw, the Canadian grocery giant, decided to launch its Green Line products in 1990, the company went to Friends of the Earth and Pollution Probe for advice. Both organizations suggested products for the line, evaluated the merits of a variety of items, and made recommendations on marketing strategies. The organizations' familiarity with a range of environmental issues, coupled with their ability to distinguish the truly superior environmental products from those making spurious claims, gave credibility to the entire launch effort.

Thermco, of Mississauga, Ontario (see pages 64-69), a manufacturer of energy efficient, reduced-CFC condensers for refrigeration and air conditioning

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systems, has also solicited advice from Friends of the Earth (FOE). The company benefits from FOE assessments of policy and industry trends, and receives valuable free advertising. Friends of the Earth gets the satisfaction of helping put its policies into practice in the market place and gains private sector credibility.

Bryan Thomlison, formerly Canadian marketing director of Church and Dwight, makers of Arm and Hammer baking soda, started working with environmental groups after receiving an unexpected phone call from an environmental leader. She told him the environmental community was promoting baking soda as an alternative cleanser, but the company was not taking advantage of new opportunities. Thomlison met with her and learned rapidly about impending regulations and the soon-to-be released agendas of a variety of environmental organizations. After taking the advice of his "ongoing focus group", Thomlison watched as baking soda sales, which had been flat for seven years, grew 30 per cent in 36 months. Arm and Hammer Super Washing Soda also increased its market share, from 25 to 40 percent.

The company moved Thomlison to the United States to replicate the Canadian success. He now boasts a computer data base of 1,200 regulators, legislators, environmental educators, and reporters. By listening to and cooperating with environmental organizations, Church and Dwight has reaped the rewards of the groups' advocacy and education efforts.

In 1989, when the U.S. Environmental Defense Fund (EDF) approached McDonald's with an offer to collaborate on reducing the company's waste, neither side knew exactly what to expect. After many meetings and site visits to get a sense of each other's operations, the two developed a sound working relationship that resulted in revamped McDonald's packaging, procurement, and waste management practices.

The 42 initiatives in the Waste Reduction Action Plan developed by EDF have the potential for cutting the waste at McDonald's 8,500 restaurants by more than 80 percent. The company not only accepted EDF's advice, it committed itself to implementing the initiatives over a two-year period. At the end of the first year, McDonald's had completed 19 of the initiatives and added 20 more. By cooperating with EDF, McDonald's overcame corporate inertia and discovered suppliers willing to cooperate in reducing waste. The company is saving money and has received a tremendous amount of favourable publicity.

In 1993, EDF formed a corporate task force to increase the use of environmentally preferable paper and paperboard products. Duke University, the Environmental Defense Fund, Johnson & Johnson, McDonald's, NationsBank Corp, the Prudential Insurance Company of America, and Time

Inc. collectively spend more than \$1 billion annually on business and writing papers, publications, and packaging. When the group issues its model purchasing guidelines in late 1994, suppliers of recycled and unbleached paper products are certain to respond; some are already re-evaluating their investment plans.

## TOOL Contract With the Best

The construction industry has long relied on primary and subcontractors to perform various components of a large job. Pooling resources can be useful to any company trying to create a stronger, more competitive whole.

When Wal-Mart built its new Eco-Store in Lawrence, Kansas, and the Audubon Society built its new headquarters in New York City, both called on experts from coast to coast. Innovative architects, lighting firms, and suppliers of sustainable building materials worked together to create the most energy efficient retail store and office building in the country. Off-the-shelf products and technologies, as well as new inventions, were used to develop healthy, appealing interior spaces that cost significantly less to heat, cool, and ventilate, and that reduce water use.

Until the 1980s, undertaking large projects, entering major new markets, or working globally was the exclusive privilege of big corporations and conglomerates. Today, thanks to the innovative use of virtual corporations, strategic alliances, and joint ventures, small and medium sized companies are beginning to compete and to win contracts outside of their traditional markets. Rapid advances in communications technologies, a global orientation within even the smallest business, and the greater efficiencies that can be offered by a team of small players, enable these firms to perform on the global stage.

Virtual corporations, with low overhead and geographically dispersed staff, can be cost competitive and provide a range of skills and geographical expertise. Many consulting firms, for example, now employ professional staff working on contract out of their homes. Fax machines, modems, and electronic mail enable staff to work independently. Customers may still visualize an office building, but the reality is far different.

By entering into strategic alliances, small and medium sized companies can build ongoing competitive capacity in the market place. Environmental engineering companies, marketing firms, and financial advisors, for example, can work together to provide a comprehensive set of skills, such as those offered by the Ontario Environmental Training Consortium. Joint ventures are also good vehicles for combining two or more companies to produce new products and services. Joint ventures between companies in different countries

provide the opportunity to enter global markets without incurring many of the costs.

### **TOOL Use Incubators to Help You Grow**

More than 500 business incubation facilities in Canada and the United States now offer a broad range of services to small start-up companies in fields ranging from high technology to micro-enterprise service. Access to office and manufacturing space, meeting rooms, administrative help, and business equipment can defer costly outlays when a company is getting on its feet or being run from a garage or dining room table. Business incubators accelerate the successful development of entrepreneurial companies. They provide hands-on assistance and a variety of business and technical support services for start-up and fledgling firms during their most vulnerable years.

Although still a relatively new and underutilized service, incubators can provide valuable referrals. They can often arrange for high technology companies to have the use of laboratory and testing equipment at universities and private corporations. Indeed, some incubators, such as the Advanced Technology Centre at the university research park in Edmonton, are designed specifically to assist high-tech start-ups.

For information on an incubator near you, contact:

#### **National Incubation Business Association**

One President St.

Athens, OH 45701

Tel: (614)593-4331

Fax: (614)593-1996

Contact: Terry Murphy  
Director of Member Services

#### **Advanced Technology Centre**

203, 9650 20th Avenue

Edmonton, AB T6N 1G1

Tel: (403) 462-2121

Fax: (403) 428-5376

Contact: Ron Holland, Director

#### **Directory of Business Incubators (U.S. and Canada)**

Published annually. \$19.95.

International Venture Capital Institute (IVCI)

P.O. Box 1333

Stamford, CT 06904

Tel: (203) 323-3143

Contact: Mr. C.A. Greathouse, President

## TOOL ► Have Fun, Stay Healthy, and Enjoy Your Work in an Increasingly Stressful World

Burn out is a common complaint, but some low cost, innovative changes in business practices can reduce the toll. At Ben and Jerry's Homemade Inc., the volunteer Joy Gang makes the working environment more fun. At Hasbro toys in Rhode Island, workers get Friday afternoons off in the summer. Other employers permit staff to dress down on Fridays, or all the time, and some host informal happy hours.

At Quad/Graphics, the Wisconsin-based printing firm, owner Larry Quadracci employs the services of his goat, Gruff. "Be a Gruff...Recycle Stuff" is his company's slogan for its recycling program and Gruff has his own electronic mail address for receiving and responding to questions and comments about recycling and the environment.

As more employees try to exercise away stress, a growing number of companies are establishing health clubs or offering discounted memberships at local facilities. Companies are installing showers and lockers for workers who bike or run to work. Calvert Social Venture Partners in Bethesda, MD, buys running shoes for employees who walk to work and Patagonia buys locks for those who commute by bicycle.

Creating a day care centre, providing sick child care, and offering flexible working hours and opportunities to work at home can ease the stress of employees with children.

Small companies, unable to provide amenities like day care and health clubs, can provide flexibility and the occasional entertaining or relaxing surprise. Twice a year, for example, the Ecoprint staff goes on an outing to experience the environment they work to protect.

See "Directories", pages 171-172, for publications on New Business Practices.

## Profiles

The combination of business acumen, vision, and perseverance is resulting in a growing number of innovative companies profiting from the transition toward sustainable development. As the following three profiles illustrate, one determined entrepreneur can begin to reorient an entire industry.

### CAERAN: A New Recipe for Success

After researching the cause of her infant son's skin irritations, Sharon De Cloet founded CAERAN, a manufacturer of environmentally responsible cleaning and personal care products.

Numerous phone calls to laundry detergent manufacturers had left De Cloet frustrated. All she wanted to know was, "what was in laundry soap and how could she avoid those allergy-causing ingredients?" Nobody would answer her question. Finally, De Cloet met a chemist who identified the ingredients causing her son's problem — fluorescent whitening agents, enzymes and artificial perfumes — and who made a recipe for her to use. As requests to share the recipe increased, De Cloet realized she was on to something.

Founded in 1989, CAERAN now manufactures 30 products and has a 150-person sales team across Canada. Starting with sales of \$18,000 in 1989, the company expects sales of \$500,000 in 1994. A single parent with two children, De Cloet works out of her home and gets up at 5 a.m. to get some office work done before getting her children off to school.

An outspoken environmental advocate, De Cloet lists each product ingredient on the label and provides a description of each ingredient in the company catalogue. Customers receive two mailings a year, including a newsletter that focuses on environmental issues and new products.

De Cloet is dedicated to helping entrepreneurs and volunteers her time to mentor other business owners. She offers two training, motivation and education workshops a year for her national sales staff and awards top performers. Recognizing the need for her own team of mentors, De Cloet organizes an annual soul searching and strategy meeting to plan the company's future and revise her business plan. Recipient of the Home Entrepreneur of the Year Award in 1992, De Cloet won the New Initiative Award for Entrepreneurial Canadian Women in 1993. CAERAN has been identified as one of Ontario's 50 hot new companies to watch by the *Ontario Business Journal*.

For further information contact Sharon De Cloet, President, CAERAN, 25 Penny Lane, Brantford, Ontario, Canada, N3R 5Y5. Telephone: (519) 751-0513, Fax: (519) 751-3976.



## O Wear: Wearing Your Commitment

A 25-year veteran of the wholesale apparel industry and a committed environmentalist, George L. Akers founded O Wear, America's first 100% certified organic cotton clothing company by serendipitous accident.

In 1989, Akers began manufacturing merchandise for environmental groups on a volunteer basis and it was then that he realized the clothes he was making were not as "clean" as the groups he was making them for would have liked. They were manufactured with the aid of fabric-stiffening washes, and the slogans the clothes bore were silkscreened with polluting inks. Worst of all, the cotton from which these clothes were made had been grown with harmful chemical pesticides and fertilizers.

On a trip to London that year, Akers happened into an environmental boutique and discovered "green cotton" T-shirts — a product of German environmental groups that used unbleached, undyed cotton.

Back home in Los Angeles, Akers began to take a harder look at his industry and found three primary areas of concern: chemical intensive cotton farming methods; toxic cloth production techniques; and toxic dyeing methods. He met with farmers in California's San Joaquin Valley and discovered the answer to his first problem: organic cotton. He found that small amounts of organic cotton already were being grown as cover crops at a few organic produce farms. But since there was no market for organic cotton, the farmers were selling it at conventional cotton prices and losing money. Akers contracted to buy as much organic cotton as they could grow, and at profitable prices.

At the same time, he began working with his subcontractors throughout the apparel manufacturing process to find new ways of spinning thread, knitting and weaving cloth, and piecing garments. For example, instead of using formaldehyde in the finishing stage and chemical washes for pre-shrinking, Akers' suppliers used only hot water and safe soaps.

With a new "clean" apparel production system in place, Akers founded Green Cotton Environment, a line of casual wear he sold at his retail store at Fred Segal for a Better Ecology in Santa Monica, CA. The store is now known as "Pure Evolution".

By 1991, Akers' business was growing rapidly. He had virtually cornered the existing organic cotton market and was creating farmers' co-ops across the country to encourage more farmers to grow their cotton organically. Then, in January, 1992, Akers' small company was acquired by VF Corporation, the nation's largest apparel manufacturer. The company was renamed "O Wear" (O for organic) and Akers became Executive Vice President of Operations.

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In this role Akers oversaw all organic cotton sourcing and apparel. He led O Wear's continuing effort to help conventional cotton farmers make the transition to growing organically, and today O Wear is one of the world's largest purchasers of organic cotton. For his efforts, Akers and O Wear received the first United Nations Fashion and the Environment Award from the United Nations Environment Programme in April, 1993.

Akers' commitment to environmental issues extends beyond his professional life. He serves on the Advisory Board and the Merchandising Committee of Heal the Bay, a Los Angeles-based organization dedicated to cleaning up Santa Monica's polluted coastal waters and beaches, and he was honored in 1993 by Heal the Bay with its "Superhealer Award." Additionally, he is a member of the Advisory Council of the California Organic Growers & Processors Association; member, Board of Directors, The Fashion Association; member, Advisory Committee, Earth Action Report; and member, Board of Advisors, Fashion Institute of Design & Merchandizing - L.A. In May, 1993 he received the First Annual Los Angeles Magazine "Environmental Pride Award for Innovation."

For more than 20 years prior to founding O Wear, Akers concentrated on the "start-up" of numerous clothing companies including Ragtime, Britannia, Texas Rose, Union Bay, Generra and others.

Currently Akers, who continues to retain his equity position in O Wear but has fulfilled his employment contracts with VF Corporation, has gone on to his next challenge: to expand organic farming by developing unique companies to market organic food, fiber and fashions.

For further information contact George Akers, 10430 Scenario Lane, Los Angeles, CA 90077. Telephone: (310) 474-3315, Fax: (310) 474-4556.

### **DEJA SHOE: Footwear With a Past**

In 1990, Julie Lewis, an Oregon recycling activist, turned her goal of creating a market for recycled materials into DEJA Inc., a shoe company that manufactures casual/outdoor footwear from 23 recycled materials. DEJA™ SHOE, The Environmental Footwear Company™, based in Portland, Oregon, produces shoes that are leather-free and made from recycled and sustainably harvested materials. Old milk jugs, wet suit trim, coffee filters and automobile tires are among the 23 pre- and post-consumer materials used to produce DEJA's growing product line. DEJA is also the first company to use TreeTap Vegetal Leather, a plant material obtained by rubber tappers in the Amazon rain forest, in its footwear. In spring 1995, DEJA will introduce footwear made of natural hemp fibre, grown in Hungary.

The non-toxic adhesives used by DEJA eliminate the use of smog-producing and health-damaging solvents. The company's leather-free footwear policy alleviates the health and environmental impacts associated with tanning. DEJA also gives 5 percent of its pre-tax profits to The Species Survival Commission, in support of its work to protect endangered plants.

The shoes are carried by a variety of retailers, including Bloomingdale's and Dayton Hudson, and can be purchased through Real Goods catalogue. They are distributed throughout Canada by Roblin Athletic, based in Winnipeg. Armed with the vision and zeal of company founder Julie Lewis and the footwear industry expertise of president and CEO Bruce MacGregor, formerly of Avia, DEJA was able to attract \$2.5 million of start-up venture capital from three companies in Boston, Chicago, and San Francisco. A second round of \$1.2 million was obtained from the same team. "From virtually a dead start, DEJA has achieved national recognition as a footwear industry leader in the manufacture of its environmentally friendly products," said Cheryl Krane of BancBoston, one of the investors.

DEJA stays on track with a mission statement and two pages of corporate policies. "As a company committed to sustainable development and environmental stewardship, DEJA SHOE will manufacture and market footwear made from recycled materials, as well as ecologically obtained plant materials, and develop new technologies, uses and markets for these materials," says the mission statement.

"The major principles upon which we have established our company include the sustainable use and conservation of renewable and non-renewable resources, protection of wildlife habitats, open spaces and wilderness, preservation of biodiversity, and environmental stewardship. Alleviation of poverty through economic sharing, both locally and globally, is an important prerequisite of sustainable development, and we are also committed to addressing this broader social issue. Our goal is to leave the Earth healthy and safe for future generations," says the corporate policy.

For additional information contact Mary E. Campbell, Communications Manager, DEJA SHOE, The Environmental Footwear Company, 7165 Southwest Fir Loop, Suite 200, Portland, OR 97223. Telephone: (503) 624-7443, Toll-free: (800) 331-3352, Fax: (503) 624-2620.

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# Conclusion

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Despite unparalleled technological advances in electronics, telecommunications, medicine, and other key industries, all of the earth's major ecosystems are in decline. Yet few leaders in the business and research communities have latched on to pollution prevention and societal well-being as major business opportunities.

Public concern generated by a local smoke stack or waste dump is only slowly leading to a broader awareness of the environmental and social costs of many of today's economic activities. Consumers, investors, and government agencies are just beginning to translate this awareness into new behaviour. Over time, our purchasing, investment, job training and economic development decisions are likely to change significantly.

The concept of sustainable development provides direction as we work to develop solutions to our economic, environmental, and social problems. Sustainable development illustrates the interdependence among economic viability, environmental health, and societal well-being. It calls for change in the way we use resources, develop technologies, make investments, and manage our businesses so that both future and present needs are met.

The role of business in the transition to more sustainable behaviour is to develop and market, at a profit, the products and services that will help solve many of these problems. Given the scope of change that is necessary, the opportunities are enormous. The Business Council for Sustainable Development estimates that we must reduce our energy and resource use at least 20-fold, primarily through efficiency advances, if we are to live within the Earth's carrying capacity. Product modifications alone will not be enough. Entirely new technologies, designs, concepts, and ways of working, living, and transporting goods and people will be required.

EarthEnterprise™ was created to provide support to the entrepreneurs and innovators who are developing and marketing these new products, services, and technologies. This support comes in the form of networks, meetings, and published information such as the Tool Kit and the EarthEnterprise Exchange newsletter.

Our research and the experiences of the many people who are part of the EarthEnterprise™ Network indicate that a small but growing share of the business community is ready to adopt sustainability as a goal. To successfully tap the growing markets and substantial opportunities available, eco-entrepreneurs must possess keen business acumen, a sound understanding of emerging trends, and new tools and skills.

The challenge of building businesses that profitably achieve environmental and social objectives is a new one. Some of the leaders have been mentioned in this

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book. Many others are working hard to get their small companies on the map. Charting the development of these firms is difficult. Most are private, do not fall nicely into standard industrial classifications, and cannot be measured adequately using existing growth indicators.

All eco-entrepreneurs require a good understanding of their markets. Competition will be ruthless, both from other start-ups and from large, established companies that decide to exploit the green niche. Although market expansion appears inevitable, it can be hastened by the regulations and procurement policies of governments and corporations. Tracking these kick-started markets can result in large paybacks, and a head start on the competition.

New markets arising from international environmental agreements, legislation, and revised resource pricing will require the development and use of new technologies. The remediation and abatement technologies that launched the environmental industry are often capital intensive. Small and medium sized enterprises, without vested interests in traditional technologies, can jump directly to more efficient, pollution prevention and sustainable technologies. Wind turbines, small-scale cogeneration units, and manufacturing technologies that incorporate recycled materials are examples.

Investors are often unaware of these emerging markets and technologies. They are interested in high and relatively safe returns on their investments. Telling them they can protect the planet will not convince them to part with their money. But eco-entrepreneurs with a sound business plan, lower than average projected costs, and reduced contingent liabilities can convince investors to back their enterprises. Enthusiasm, competence, and trust are essential.

Sustainable enterprises are interested in a financial, environmental, and social bottom line. They tend to make public commitments and then report on their progress. Their openness often leads to unusual and profitable partnerships with organizations that can extend the reach and influence of a small company.

In order to thrive, sustainable enterprises need bigger markets for their products, services and technologies. Increased public awareness, enlightened procurement policies, and strong enforcement of environmental regulations will increase demand. Over time, as all products and services are made to pay the full cost of the environmental and social burdens they cause, sustainable enterprises will have a considerable advantage in both consumer and financial markets. It is our hope that this Tool Kit will accelerate both the supply and demand for sustainable enterprises.



# Directories

# EarthEnterprise™ Tool Kit

## Product Certification and Labelling Organizations

### **Canadian Standards Association**

Environmental Programs Director  
178 Rexdale Blvd.

Rexdale (Toronto), ON M9W 1R3

Tel: (416) 747-4003

Fax: (416) 747-2476

Contact: John Wolfe

### **Environmental Choice<sup>M</sup> Program**

Environment Canada

107 Sparks Street, Suite 200

Ottawa, ON K1A 0H3

Tel: (613) 941-6770

Fax: (613) 952-9465

Contact: Alayne Martell  
Public Relations Officer

### **Industry Canada**

Merchandise Standards Division

Consumer Products Branch

Place du Portage, Phase I

50 Victoria Street

Hull, QC K1A 0C9

Tel: (819) 997-1177

Fax: (819) 953-2931

Contact: Jay Jackson

### **Federal Trade Commission**

Sixth St. and Pennsylvania Ave., NW

Washington, D.C. 20580

Tel: (202) 326-3158

Fax: (202) 326-3259

Contact: Michael Dershowitz

Under FTC guidelines, each manufacturer, wholesaler, distributor or retailer making an environmental claim is liable for substantiating it. The Commission has pursued dozens of environmental labelling claims and

has issued 27 "cease and desist orders". If they are violated, the FTC will impose \$10,000 fines.

### **Green Seal**

1730 Rhode Island Ave., NW

Suite 1050

Washington, D.C. 20036-3101

Tel: (202) 331-7337

Fax: (202) 331-7533

Contact: David Hauck,  
VP., Business  
Development

### **National Retail Hardware Association/Home Center Institute**

5822 W. 74th Street

Indianapolis, IN 46278

Tel: (317) 290-0338, ext. 235

Toll-free: (800) 772-4424

Fax: (317) 328-4354

Contact: Richard Lindsay,  
Director of  
Industry/Environmental  
Affairs

### **Scientific Certification Systems**

The Ordway Building

One Kaiser Plaza, Ste. 901

Oakland, CA 94612

Tel: (510) 832-1415

Toll-free: (800) ECO-FACTS

Fax: (510) 832-0359

Contacts: Linda Brown,  
Vice President of  
Communications  
Chet Chaffee,  
Vice President of  
Marketing

## Marketing Resources and Sales Leads

### Consumer Catalogues

#### **Real Goods Trading Co.**

966 Mazzoni St.

Ukiah, CA 95482

Tel: (707) 468-9292

Toll-free: (800) 762-7325

Fax: (707) 468-0301

Contact: John Schaeffer, President

The Real Goods catalogue features energy and water saving appliances, clothing, books, and toys. The company's *Solar Living Sourcebook* is the foremost resource guide to technical information on renewable energy systems and energy- and water-efficient technologies for the home.

#### **Seventh Generation**

49 Hercules Drive

Colchester, VT 05446

Tel: (802) 655-6777

Fax: (802) 655-2700

Contact: Jeffrey Hollander,  
President

#### **Co-op America**

1612 K Street, NW, #600

Washington, D.C. 20006

Tel: (202) 872-5307

Toll-free: (800) 584-7336

Fax: (202) 331-8166

Contact: Russ Gaskin

Co-op America's *National Green Pages* contains 100 product categories ranging from clothing to lighting to pest control and lists 1300 businesses.

#### **The Directory of Mail Order Catalogs**

1995.

Grey House Publishing

Pocket Knife Square

Lakesville, CT 06039

Tel: (203) 435-0868

Fax: (203) 435-0867

Contact: Leslie Mackenzie,  
Publisher & Editor

Lists 7,000 consumer-oriented mail-order catalogues representing over 40 industries.

#### **The Catalog of Catalogs III: The Complete Mail-order Directory**

1993.

\$19.95. Written by Edward L. Palder.

Available through

Woodbine House

6510 Bells Mill Road

Bethesda, MD 20817

Tel: (301) 468-8800

Toll-free: (800) 843-7323

Fax: (301) 468-5784

Updated directory of various catalogues, some of which may be good sales avenues for eco-entrepreneurs' products.

#### **Direct Marketing List Source**

Standard Rate and Data Service

3004 Glenview Road

Wilmette, IL 60091

Toll-free: (800) 851-7737

Fax: (708) 441-2252

Contact: Customer Service

Catalogue of over 50,000 consumer and business mailing lists for direct

mail marketing. Also lists brokers, compilers, and list managers.

## Sales to Retailers

### Home Depot

2727 Paces Ferry Road, NW  
Atlanta, GA 30339

Tel: (404) 433-8211

Fax: (404) 319-2381

Contact: Mark Eisen, Manager,  
Environmental Marketing

### The Natural Connection

(catalogue for retailers)

P.O. Box 8233

North Brattleboro, VT 05304

Tel/Fax: (802) 368-2711

Contact: Kevin Connelly

### Wal-Mart

702 South West 8th Street  
Bentonville, AR 72716

Tel: (501) 273-8228

Fax: (501) 273-1931

Contact: Steve Schwitters,  
Environmental Marketing  
Manager

### Sheldon's Major Stores & Chains

1994.

\$140.

Phelon, Sheldon & Marsar, Inc.  
15 Industrial Avenue  
Box 517

Fairview, NJ 07022-1685

Tel: (201) 941-8804

Toll-free: (800) 234-8804

Fax: (201) 941-5515

Contacts: Joseph R. Marsar Jr., CEO  
Kenneth W. Phelon Jr.,  
Editor

A family business since 1864.

Publishes directories of retail stores

and chains throughout the U.S., Canada, and Mexico. Information listed is store's name, complete address, telephone and fax numbers, year established, number of employees, sales volume, number of stores in a chain, headquarters, name of resident buying office, executives and their titles, all the lines of merchandise the stores sell and the names of the buyers for each of the lines.

The following are directories of interest to eco-entrepreneurs published by:

### CSG Information Services

3922 Coconut Palm Drive  
Tampa, FL 33619-8321

Tel: (813) 664-6835

Toll-free: (800) 285-6835

Fax: (813) 664-6888

Contact: Heidi Hawkins,  
Territory Manager

CSG has distributed exclusive information on leading retailers and wholesalers in the U.S. and Canada for over 65 years. Information provided in any format including electronic, mailing labels and hardcopy.

- Chain Store Guides (various);
- Supermarket, Grocery and Convenience Store Chains;
- Single-Unit Supermarket Operators;
- Discount Department Stores;
- Drug Store and HBC Chains;

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- General Merchandise, Variety and Specialty Stores;
- Department Stores;
- Women's & Children's Wear Specialty Stores;
- Men's & Boy's Wear Specialty Stores;
- Home Furnishings Retailers;
- Home Centre Operators & Hardware Chains;
- Hardlines Distributors;
- Value Added Resellers;
- Computer & Software Retailers;
- Automotive Aftermarket Suppliers;
- High Volume Independent Drug Stores.

### Environmental Guides, Directories, and Trade Shows

#### **The Green Supermarket Shopping Guide**

John Wasik and The New Consumer Institute, an international network and think-tank on green management and marketing.

P.O. Box 51

Wauconda, IL 60084

Tel: (708) 526-0522

Fax: (708) 526-1174

Includes information on green marketing, professional associations, and publications.

#### **EcoLinking: Everyone's Guide to Online Environmental Information**

1992.

352 pp. Written by Don Rittner.

Peachpit Press

2414 Sixth Street

Berkeley, CA 94710

Tel: (510) 548-4393

Fax: (510) 548-5991

Excellent general guide and introduction for online users seeking environmental information. Global networks, electronic bulletin boards, commercial online services and libraries that never close are covered in this easy to understand guide.

#### **Greater Los Angeles Green Pages: The Local Handbook for Planet Maintenance**

A project of Environment Now and the Green Media Group. It is an environmental primer and directory with 150 alphabetically listed categories and subcategories. All proceeds to be contributed to Los Angeles-based environmental organizations. To order:

The Green Pages

24955 Pacific Coast Highway

Suite C201

Malibu, CA 90265

Tel: (310) 456-2163

Fax: (310) 456-3989

### **Local Green Pages**

Many regions now publish a "Green Pages", essentially a Yellow Pages directory for environmentally oriented products, services, and companies. Entrepreneurs may consider becoming listed in the Green Pages, and can potentially use them to identify local companies and retailers with which to do business.

### **Natural Resources Canada**

Energy Efficiency Sector  
580 Booth Street, 15th Floor  
Ottawa, ON K1A 0E4  
Tel: (613) 995-2943  
Fax: (613) 943-1590  
Contact: Louise Gravelle

This federal ministry publishes an annual *EnerGuide* that rates the energy consumed by various appliances.

### **American Council for an Energy-Efficient Economy**

1001 Connecticut Ave, NW, # 801  
Washington, D.C. 20036  
Tel: (202) 429-8873  
Fax: (202) 429-2248  
Contacts: Howard Geller,  
Executive Director  
Glee Murray,  
Publications Director

Publishes the annual *Consumer Guide to Home Energy Savings*, and other books and reports on energy efficiency technologies and programs. Free publications catalogue.

### **Eco-Expo**

14260 Ventura Blvd., Suite 201  
Sherman Oaks, CA 91423  
Tel: (818) 906-2700  
Fax: (818) 906-0367  
Contact: Marc Merson, President.

North America's largest combined consumer and industry trade exhibition for green products and services. Also sponsors The Green Business Conference, which hosts discussion panels on green industries and issues.

### **Trade Shows Worldwide**

Published annually in November.  
\$179.

Gale Research Inc.  
835 Penobscot Building  
Detroit, MI 48226-4094  
Tel: (313) 961-2242  
Toll-free: (800) 347-GALE or  
(800) 877-4253  
Fax: (313) 961-6083  
Toll-free fax: (800) 414-5043

Covers over 5,200 trade shows and exhibitions, as well as production companies, governmental sponsors, and facilities. Includes geographical, chronological, and subject indexes, including environmentally-oriented shows.

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### Green Marketing/Entrepreneurship Publications

#### **In Business: The Magazine for Environmental Entrepreneurship**

Six issues/year.

The JG Press, Inc.

419 State Avenue

Emmaus, PA 18049

Tel: (215) 967-4135

Fax: (215) 967-1345

Contact: Jerome Goldstein, Editor.

Magazine specifically for eco-entrepreneurs. Covers marketing, sales, trends, industry updates and profiles. Subscription Price: US \$29; Canada \$31 (in US funds).

#### **The Environmental Entrepreneur: Where to Find the Profit in Saving the Earth** 1992.

241 pp. Written by John Thompson.

Longstreet Press Inc.

2140 Newmarket Parkway

Suite 118

Marietta, GA 30067

Tel: (404) 980-1488

Fax: (404) 859-9894



## Sales Leads for Green Procurement

### Sales to Government Agencies

#### **British Columbia Purchasing Commission**

Purchasing Services Branch  
4000 Seymour Place, 2nd Floor  
Victoria, BC V8X 4Y3

Tel: (604) 389-3386

Fax: (604) 389-3370

Contact: Mr. W.D. Collisson,  
Executive Director

#### **Administrative Services Branch Ontario Ministry of the Environment**

40 St. Clair Avenue West  
8th Floor

Toronto, ON M4V 1M2

Tel: (416) 314-4070

Fax: (416) 325-6362

Contact: Louis H.C. Leung, Senior  
Contract Consultant

#### **GIPPER**

Governments Incorporating  
Procurement Policies to Eliminate  
Refuse

Chair: Mr. L. Pagano, Director of  
Purchasing and Material Supply  
Division

Management Services Department  
City Hall, 100 Queen St., W.

18th Floor, West Tower

Toronto, ON M5H 2N2

Tel: (416) 392-9111  
switchboard

Tel: (416) 392-7311 direct line

Fax: (416) 392-0801

Vice-chair: Mr. G. Khan, Manager,  
Program Development  
and Review

Purchasing Services Branch  
Management Board Secretariat,  
Ontario

6th floor, Ferguson Block  
Queen's Park

Toronto, ON M7A 1N3

Tel: (416) 326-1234  
switchboard

Tel: (416) 327-3580 direct line

Fax: (416) 327-3573

The City of Toronto, Purchasing and  
Material Supply Division, has  
coordinated an information list of  
suppliers who claim they offer a  
wide range of goods and services  
that are environmentally sound, and  
which are available for sale  
throughout the country, as well as  
outside Canada. The directory is a  
joint effort initiated by ACCESS  
(Association of Canadian Cities on  
Environmentally Sound Strategies),  
supported by GIPPER, and  
distributed at cost by the City of  
Toronto, Purchasing and Material  
Supply Division.

#### **National Institute of Governmental Purchasing, Inc.**

11800 Sunrise Valley Dr., Suite 1050  
Reston, VA 22091

Tel: (703) 715-9400

Fax: (703) 715-9897

Contact: James Brinkman,  
Exec. Vice President

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Membership limited to government purchasing agencies and their employees. Operates in the U.S. and Canada.

### **National Association of State Purchasing Officials**

167 West Main St., #600  
Lexington, KY 40507

Tel: (606) 231-1963

Fax: (606) 231-1928

Contact: Jodie Spears,  
Program Manager

Publishes guidebooks on how to effectively market to state governments, as well as a handbook of purchasing preference practices of each state.

### **American City & County Municipal Index — The Purchasing Guide for City, Township, County Officials and Consulting Engineers**

Published annually in March.  
\$52.95.

Argus Business  
6151 Powers Ferry Rd., NW  
Atlanta, GA 30339

Tel: (404) 618-0396

Fax: (404) 618-0476

Contact: Lisa Sutherland,  
Listings Editor

While the majority of content consists of listings and advertisements of products and services for city governments, the guide also lists procurement officials, along with their addresses and phone numbers, in all U.S. cities with a population of 10,000 and above.

### **Environmental Protection Agency**

401 M St., SW

Washington, D.C. 20460

Tel: (202) 260-2090

directory assistance and  
personnel directory

Tel: (202) 260-7751 public

affairs information center

Recycled content procurement guidelines for government agencies and contractors; voluntary programs to improve the efficiency of lighting, appliances, computer equipment, heating and cooling technologies, and plumbing fixtures; and voluntary pollution prevention programs.

### **Executive Office of the President**

Office of Federal Procurement  
Policy

New Executive Office Bldg.

725 17th St. NW, Room 9013

Washington, D.C. 20503-5802

Tel: (202) 395-5802

Fax: (202) 395-5105

Contact: Linda Mesaros,  
Deputy Associate  
Administrator

Develops and promulgates policy and guidance for small and disadvantaged businesses on how to do business with the U.S. federal government.

**Council of Great Lakes  
Governors**

35 East Wacker Drive  
Suite 1850  
Chicago, IL 60601  
Tel: (312) 407-0177  
Fax: (312) 407-0038  
Contact: Sheila Leahy,  
Deputy Director

Cooperative purchasing of paper  
and other products among seven  
states.

**Government Purchasing  
Guides and Directories**

**Stock Item Supply Catalogue**

Public Works  
Government Services Canada  
1010 Somerset St.  
Ottawa, ON K1A 0T4  
Tel: (613) 952-8940  
Fax: (613) 952-6140  
Contact: Monica Henderson

This office product catalogue for  
federal purchasing agents uses the  
EcoLogo<sup>M</sup> symbol to designate  
environmentally certified items.

**Directory of Environmentally  
Sound Products**

1991.  
\$50.  
Management Services Department  
Purchasing & Material Supply  
Division  
City Hall, 100 Queen St., W.  
18th Floor, West Tower  
Toronto, ON M5H 2N2  
Tel: (416) 392-7311  
Fax: (416) 392-0801  
Contact: Anne Carino, Analyst

**Environmental Products Guide  
1994.**

General Services Administration  
Centralized Mailing List Service  
(7CAFL)  
P.O. Box 6477  
Fort Worth, TX 76115-9939  
Tel: (817) 334-5215  
Fax: (817) 334-5227

**Recycled Product Directory**

April 1993,  
**Directory of Recycled Content  
Building and Construction  
Products**  
January 1994,  
Clean Washington Center  
(A Division of the Department of  
Trade and Economic Development)  
2001 6th Avenue, Suite 2700  
Seattle, WA 98121

Tel: (206) 587-5520,  
publications  
(206) 464-7040,  
switchboard  
Fax: (206) 464-6902  
Contact: Tom Yurovchak

The *Recycled Product Directory*, for  
businesses and government  
agencies, features wholesalers and  
manufacturers who sell nearly 600  
recycled content products, ranging  
from office supplies to fuels. The  
*Directory of Recycled Content Building  
and Construction Products*, for  
architects and builders, features  
wholesalers and manufacturers who  
sell nearly 500 recycled content  
products, ranging from concrete to  
furnishings. For government  
agencies and businesses seeking to  
increase their purchases of recycled

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content products, the Center also has samples of procurement policies. These policies include sample language for inclusion in product specifications and contract bids, sample preferential purchasing policies, and other information.

### **Getting Started in Federal Contracting: A Guide through the Federal Procurement Maze**

1987.

\$21.95.

Panoptic Enterprises

P.O. Box 11220

Burke, VA 22009-1220

Tel/Fax: (703) 451-5953

Toll-free: (800) 594-4766

Lists hundreds of government procurement offices and other federal offices which purchase from businesses. Includes products and services purchased, as well as territories of each office.

### **Women Business Owners: Selling to the Federal Government**

1993.

Superintendent of Documents

U.S. Government Printing Office

Document Sales Service

Washington, D.C. 20402-9325

Tel: (202) 512-1800

Fax: (202) 512-2250

Contains information on marketing products and services to government, including invitations for bids, RFPs, unsolicited proposals, etc.

### **Government Prime Contracts Directory**

Published annually in February. \$15.

### **Government Contracts & Sub-Contracts Leads Directory**

Published annually in March.

\$89.50.

Government Data Publications, Inc.

1661 McDonald Avenue

Brooklyn, NY 11230

Tel: (718) 627-0819

Toll-free: (800) ASK-GOVT

Fax: (718) 998-5960

The *Government Prime Contracts Directory* covers contractors who have received contracts specifically requiring special treatment for small-businesses as sub-contractors. Includes index by zip code. The *Government Contracts & Subcontracts Leads Directory* lists companies that have received prime contracts during the previous 12 months.

### **Commerce Business Daily**

Published daily by the U.S.

Department of Commerce.

Superintendent of Documents

U.S. Government Printing Office

Document Sales Service

Washington, D.C. 20402-9325

Tel: (202) 512-1800

Fax: (202) 512-2250

## Sales to Corporate Purchasers

### **S.C. Johnson & Son, Inc.**

1525 Howe Street  
Racine, WI 53403

Tel: (414) 631-4728

Fax: (414) 631-2944

Contact: Cynthia Georgeson,  
Manager, Environmental  
Communications  
Worldwide

Publishes semi-annual *Partners* newsletter to inform suppliers about the company's environmental goals and objectives. Also published the global *Environmental Progress Report* and *North America: The Environment: Public Attitudes and Individual Behavior*.

### **Xerox Corporation**

Executive Offices  
3400 Hillview Avenue  
Palo Alto, CA 94303

Tel: (415) 813-7065

Fax: (415) 813-7811

Contact: Abhay K. Bhushan,  
Manager, Environmental  
Leadership Program

### **General Motors Corporation**

North American Operations  
Containerization  
Mail Code P191  
1 Pontiac Plaza

Pontiac, MI 48340—2952

Tel: (810) 857-5482

Fax: (810) 857-6397

Contact: Kenneth J. Horvath,  
Senior Project Engineer

G.M.'s WE CARE program has adopted a "zero-landfill" goal for all packaging received from suppliers.

## Environmental Business Guides and General Directories

### **World Environmental Directory**

1991.

Business Publishers, Inc.

951 Pershing Drive

Silver Spring, MD 20910

Tel: (301) 587-6300

Toll-free: (800) 346-3787  
(within the U.S.)

Toll-free: (800) 274-0122  
(within Canada)

Fax: (301) 585-9075

Contact: Bill Wade, Editor

Eco-entrepreneurs may want to become listed in this directory. Included are product manufacturers; professional services; federal and state/provincial government agencies; independent agencies/commissions; professional, trade and public interest organizations and educational institutions; as well as corporate environmental officials. Each listing includes name, address, phone and fax numbers, and key personnel. A second edition is anticipated for 1995.

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### **Directory of Business to Business Catalogs 1995**

Grey House Publishing, Inc.  
Pocket Knife Square  
Lakeville, CT 06039  
Tel: (203) 435-0868  
Toll-free: (800) 562-2139  
Fax: (203) 435-0867  
Contact: Leslie Mackenzie,  
Publisher & Editor

Lists 5,500 catalogues in 35 product areas, from art to security.

### **Dun & Bradstreet Million Dollar Directory**

Updated annually.  
Dun and Bradstreet, Inc.,  
Dun's Marketing Services  
3 Sylvan Way  
Parsippany, NJ 07054  
Tel.: (201) 455-0900  
Fax: (201) 605-6930

### **Standard & Poor's Register of Corporations**

Updated annually.  
Standard & Poor's Corporation  
25 Broadway  
New York, NY 10004  
Tel: (212) 208-8000  
Fax: (212) 208-0098

### **Thomas Register of American Manufacturers**

Updated annually. \$210/set.  
Thomas Publishing Co.  
5 Penn Plaza, 9th Floor  
New York, NY 10001  
Tel: (212) 290-7277  
Toll-free: (800) 638-7523, ext. 500  
Fax: (212) 290-7365

### **U.S. Industrial Directory**

\$179.  
2000 S. Clearwater Drive  
Oak Brook, IL 60521-8806  
Tel: (708) 574-7081  
Fax: (708) 574-7080

### **Computer Databases**

#### **11 Million Businesses' Phone Book**

\$49. Published on CD ROM.  
Available at computer and software stores.

American Business Information  
5711 South 86th Circle  
Omaha, NE 68127  
Tel: 402-593-4595  
Fax: 402-331-6681

Canadian Business Information  
495 King Street W., Suite 100  
Toronto, ON M5V 1K4  
Tel: 416-348-0255  
Fax: 416-348-0260

Covers virtually every business's name and phone number in the U.S. and Canada.

#### **BusinessLINE**

Donnelley Marketing Information Services  
3135 Kifer Road  
Santa Clara, CA 95051  
Tel: (408) 970-1847  
Toll-free: (800) 866-2255  
Fax: (408) 970-9999  
Contact: David Cabello,  
Demographic Specialist

**Canadian Corporations –  
CanCorp**

Micromedia Ltd.  
20 Victoria St.  
Toronto, ON M5C 2N8  
Tel: (416) 362-5211  
Fax: (416) 362-6161

CD-ROM provides online access to over 8,000 Canadian companies, including private companies and Crown corporations.

**Non-profit Organizations**

**Co-op America Business  
Network**

1612 K Street, NW, #600  
Washington, D.C. 20006  
Tel: (202) 872-5307  
Toll-free: (800) 584-7336  
Fax: (202) 331-8166  
Internet: cabn@envirolink.org  
Contact: Russ Gaskin,  
Assistant Director

Twelve hundred dues-paying business members whose companies have been screened for eligibility. Provides technical assistance and financial advice to members. Puts large and small member companies together for sourcing opportunities. Issued the *Financing Guide for Socially Responsible Businesses*. With Co-op America, it publishes the *National Green Pages*, which has 100 product categories; a catalogue featuring the products available from its smallest member companies; the Co-op America quarterly newsletter; and the *Socially Responsible Financial Planning Guide*. Provides advocacy,

technical support, and publicity for the Green Retailing Association.

**Environmental Defense Fund**

1875 Connecticut Ave., NW  
10th Floor  
Washington, D.C. 20009  
Tel: (202) 387-3500  
Fax: (202) 234-6049  
Contact: Richard Denison

or

257 Park Avenue, South  
New York, NY 10010  
Tel: (212) 505-2100  
Fax: (212) 505-2375  
Contact: John Ruston

Coordinating a national, private-sector task force to increase the use of environmentally preferable paper and paperboard products. Works closely with leaders from a variety of industries to cost effectively improve environmental performance.

**Harmony Foundation**

201A-45 Bastion Square  
Victoria, BC V8W 1J1  
Tel: (604) 380-3001  
Fax: (604) 380-0887  
Contacts: Michael Bloomfield,  
Executive Director  
Katherine Ratcliffe,  
Institute Coordinator

Publishes the *Workplace Guide* to help organizations improve environmental practices. Covers energy, hazardous materials, waste, water, transportation, purchasing, property management, education and training.

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### **Buy Recycled Business Alliance**

National Recycling Coalition  
1101 30th Street, NW, Suite 305  
Washington, D.C. 20007  
Tel: (202) 625-6406  
Fax: (202) 625-6409  
Contact: Phil Bailey

The Alliance is a group of over 800 companies committed to increasing their purchases of products made from recycled content. It provides information and guidance to companies interested in establishing or expanding their in-house Buy Recycled programs. Buy Recycled seminars are held throughout the United States and how-to materials are distributed free of charge. Member companies have increased their purchases of recycled content paper, plastic, packaging, and office supply products, and an increasing number are offering recycled content products to customers. There is no charge to join this organization.

### **Canadian Buy-Recycled Alliance**

35 Crescent Road  
Toronto, ON M4W 1T4  
Tel: (416) 925-1583  
Fax: (416) 925-2531  
Contact: Wendy Cook

Now in its formative stages, the Alliance will work to expand public and private sector markets for recycled-content products. Members will receive information on how to buy recycled and on the market availability of new recycled-content products. They will also

receive free or at-cost access to on-line product directories and training workshops. Membership fees will vary depending on the size of the organization and all members will be asked to commit to buying recycled whenever feasible.

## **Publications**

### **Winning Combinations: Entrepreneurial Partnerships Between Large and Small Companies**

1991.

\$24.95. Written by James Bokin and Jana Matthews.

John Wiley & Sons, Inc.

1 Wiley Drive

Somerset, NJ 08875

Tel: (908) 469-4400

Toll-free: (800) 225-5945

Fax: (908) 302-2300

or

John Wiley & Sons Canada, Ltd.

22 Worcester Road

Rexdale, ON M9W 1L1

Tel: (416) 675-3580

Fax: (416) 675-6599

Gives cases and guidelines for establishing successful ventures with larger companies.

### **The E Factor**

1993.

Written by Joel Makower.

Tilden Press

1519 Connecticut Ave, NW

Washington, D.C. 20036

Tel: (202) 332-1700

Toll-free: (800) 955-GREEN

Fax: (202) 332-3028



**Forty Ways to Make Government Purchasing Green**

1992.

Written by Eleanor J. Lewis and Eric Weltman.

Center For the Study of Responsive Law

P.O. Box 19367

Washington, D.C. 20036

Tel: (202) 387-8030

Fax: (202) 234-5176

**The Green Partnership Guide: 12 Steps to Help Create an Environmentally Friendly Setting for our Guests, Ourselves, and Our Future**

1992.

Written by Warner Troyer.

Canadian Pacific Hotels & Resorts

1 University Avenue, Suite 1400

Toronto, ON M5J 2P1

Tel: (416) 367-7111

Fax: (416) 863-6097

**Periodicals**

**Green Business Letter**

Published monthly by

Tilden Press

1519 Connecticut Ave, NW

Washington, D.C. 20036

Tel: (202) 332-1700

Toll-free: (800) 955-GREEN

Fax: (202) 332-3028

Contact: Joel Makower, Editor

Management strategies, how-to advice, new products and trends related to corporate environmentalism. Introductory subscription price: US \$127, Canada \$132 (in US funds).

**Business and the Environment**

Published monthly by

Cutter Information Corp.

37 Broadway

Arlington, MA 02174-5539

Tel: (617) 641-5125

Toll-free: (800) 964-5125

Fax: (617) 648-1950

Toll-free fax: (800) 888-1816.

Contact: Kathleen M. Victory,  
Editor

Subscription price US \$497, outside North America, \$597 per year.

**EcoOpportunities**

Published bi-monthly by the

Environmental Business Network

Project of the Peninsula

Conservation Center

3921 East Bay Shore Road

Palo Alto, CA 94303

Tel: (415) 962-9876

Fax: (415) 962-8234

Contact: Carol Lauffer, Editor

Membership price \$89 (US) for companies with less than 100 employees.

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### **Environment Reporter**

Published weekly, and

### **International Environment Reporter**

Published bi-weekly, by the  
Bureau of National Affairs, Inc.

Circulation Department

9435 Key West Avenue

Rockville, MD 20850

Tel: (202) 452-4200

Toll-free: (800) 372-1033

Fax: (800) 253-0332  
(within the USA)

Fax: (301) 294-6650  
(outside the USA)

Call for subscription prices.

### **Environmental Digest BiWeekly and Recycling Canada Monthly**

Published by

Sydenham Publishing

344 23rd Street West

Owen Sound, ON N4K 4G7

Tel: (519) 371-6289

Fax: (519) 371-3676

Contact: Stella Coultas, Editor

Subscription price: C\$235 for 25  
issues of *Environmental Digest Bi-  
Weekly* plus GST & PST; \$110 for 12  
issues of *Recycling Canada Monthly*.

## Environmental Industry Associations

### United States

Environmental Business Council of  
the United States, Inc.  
31 Thorpe Road, Suite 202  
P.O. Box 833  
Needham, MA 02194-0006  
Tel: (617) 449-5600  
Fax: (617) 449-1132  
Contacts: Donald Connors,  
President  
Martin Cohn,  
Communications  
Director

Composed of a broad range of environmental technology and consulting firms throughout the United States, the Council sponsors a variety of educational and information-exchange meetings. It is working for improved market access and trade opportunities for environmental technologies. Referrals are provided to the rapidly growing number of Environmental Business Councils across the United States.

### New England

Environmental Business Council of  
New England, Inc.  
150 Federal Street  
22nd Floor  
Boston, MA 02110-1726  
Tel: (617) 737-0060  
Fax: (617) 951-8736  
Contact: Diana Coates,  
Executive Director

### California

California Environmental Business  
Council  
1855 Diamond Street, Suite 5-306  
San Diego, CA 92109  
Tel: (619) 581-0713  
Fax: (619) 581-1280  
Contact: Brian A. Runkel,  
Executive Director

### Canada

Canadian Environment Industry  
Association  
6 Antares Drive  
Phase 11, Suite 204  
Nepean, ON K2E 8A9  
Tel: (613) 723-3525  
Fax: (613) 723-0060  
Contact: G. Steve Hart, President

### Alberta

Environmental Services Association  
of Alberta  
250-10508 82nd Ave  
Edmonton, AB T6E 2A4  
Tel: (403) 439-6363  
Toll-free: (800) 661-WASTE  
Fax: (403) 439-4249  
Contacts: L.B. (Sandy) Sutton,  
Executive Director  
Ken Armstrong,  
President

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## **British Columbia**

CEIA - BC  
333 Dunsmuir Street  
Vancouver, BC V5H 4M2  
Tel: (604) 590-7444  
Fax: (604) 590-5347  
Contact: Bill Dinsmore, President

## **Manitoba**

Manitoba Environmental Industries  
Association Inc.  
501 D, Weston Street  
P.O. Box 192, Station L  
Winnipeg, MB R3H 0Z5  
Tel: (204) 775-6157  
Fax: (204) 775-9381  
Contacts: Shirley Seidel,  
Executive Director  
Michael Van Walleghem,  
President

## **Newfoundland**

Newfoundland Environmental  
Industry Association  
Box 43, Atlantic Place  
Suite 602, 215 Water Street  
St John's, NF A1C 6C9  
Tel: (709) 722-3786  
Fax: (709) 722-3879  
Contacts: Elizabeth Atkinson,  
Executive Director  
David Robbins, President

## **Ontario**

Canadian Environment Industry  
Association, Ontario Chapter  
63 Polson St., 2nd Floor  
Toronto, ON M5A 1A4  
Tel: (416) 778-6590  
Fax: (416) 778-5702  
Contact: Gary T. Gallon, President

## **Quebec**

L'AESEQ (Association of  
Environmental Contractors of  
Quebec)  
1400, rue Sauvé ouest  
Suite 232  
Montreal, QC H4N 1C5  
Tel: (514) 745-3580  
Fax: (514) 745-3582  
Contacts: Jean-Guy Laberge,  
Directeur Général  
Hans Gruenwald,  
President

## **Saskatchewan**

SATMA/SWSAS (Saskatchewan  
Advanced Technology Management  
Association Inc./Special Waste  
Services Association of  
Saskatchewan)  
Sentar Consultants  
300-333 25th Street E.  
Saskatoon, SK S7K 0L4  
Tel: (306) 665-7655  
Fax: (306) 665-3312  
Contact: Don Somers,  
Executive Director

## Mexico

Two helpful directories:

*Listas de empresas que ofrecen servicios ambientales en México* (A List of Businesses Offering Environmental Services) and *Directorio Verde* (A Directory of Green Non-governmental Organizations) are available from

Dr. Edgar Gonzalez Gaudiano  
Director of Environmental  
Education  
Dirección General de Investigación  
y Desarrollo Tecnológico  
Instituto Nacional de Ecología  
Río Elba No. 20—7 Piso  
Col. Cuauhtémoc  
06500 México, D.F.  
Fax: (52) (5) 553-9753

## Trade Shows

### **The GLOBE Series**

The GLOBE Foundation of Canada  
Suite 504 - 999 Canada Place  
Vancouver, BC V6C 3E1  
Tel: (604) 775-1994  
Fax: (604) 666-8123  
Contact: John D. Wiebe, President

A biennial international conference and trade show focusing on business opportunities and the environment.

## Technology Assistance Organizations – Canada

### Federal Research Organizations

#### **Biotechnology Research Institute**

National Research Council

6100 Royalmount Avenue

Montreal, QC H4P 2R2

Tel: (514) 496-6182

Fax: (514) 496-1575

Contact: Dr. Charles Greer,  
Group Leader,  
Environmental Section

#### Areas of Specialty

- biochemical, genetic and protein engineering

#### **Canada Centre for Mineral and Energy Technology (CANMET)**

Natural Resources Canada

555 Booth Street

Ottawa, ON K1A 0G1

Tel: (613) 995-4267

Fax: (613) 995-3192

Contact: Keith Belinko, Director,  
Corporate Planning and  
Communications Policy,  
Planning and Services  
Branch

#### Areas of Specialty

- Energy Research Laboratories: synthetic fuels, carbonization research, combustion technology, conservation and efficiency, energy systems
- Mineral Sciences Laboratories: chemistry and processing of ore
- Metals Technology Laboratory: materials, corrosion, steel
- Western Research Centre: tar

sands, coal and petroleum processing and products

- Energy Research Diversification Laboratory: alternative energy and hybrid systems, natural gas technologies, heat management technologies
- Mining Research Laboratories: safety, instrumentation, explosives
- Energy Efficiency Division: energy efficient systems
- Alternate Energy Division: alternate transportation fuels, renewable energy

#### **Environmental Technology Centre**

Environment Canada

3439 River Road

Gloucester, ON K1A 0H3

Tel: (613) 991-5633

Fax: (613) 998-1365

Contact: D.E.Thorton, Director

#### Areas of Specialty

- technical, and research and development, support to pollution assessment and control programs, including federal regulatory initiatives
- measurement of air pollutants in ambient air and emissions from mobile and stationary sources
- analysis of organic and inorganic compounds in diverse sample matrices
- forecasting and coordinating the chemical and biological test

methodology needs for Environment Canada's Environmental Protection Service

- evaluation, development and demonstration of technologies for the cleanup of leaking hazardous waste sites
- emergency response to oil and chemical spills

**Institute for Environmental Research and Technology**

National Research Council of Canada

Building M-12, Montreal Road  
Ottawa, ON K1A 0R6

Tel: (613) 990-6618

Fax: (613) 957-8231

Contact: Terry Kimmel, Head,  
Business Development

Areas of Specialty

- airborne emissions reduction
- recycling solid and liquid wastes
- improved thermal energy efficiency
- accurate chemical measurements for environmental contaminants

**Wastewater Technology Centre**

Operated by Rockcliffe Research Management Inc.

867 Lakeshore Road

P.O. Box 5068

Burlington, ON L7R 4L7

Tel: (905) 336-4855

Fax: (905) 336-4765

Contact: John Neate, Chief  
Operating Officer

Areas of Specialty

- municipal and industrial waste water treatment and disposal technology
- waste water process technology
- waste minimization
- pollution control systems
- site remediation

**Provincial and Territorial Research Organizations**

The regional research organizations specialize in services to small and medium sized businesses through consulting, applied research, development and testing laboratories, and technology transfer assistance in a variety of specialty areas. They also work closely with the National Research Council's Industrial Research Assistance Program (discussed below).

**Alberta Research Council**

P.O. Box 8330

Edmonton, AB T6H 5X2

Tel: (403) 450-5111

Fax: (403) 450-1490

Contact: Dr. John Kramer,  
Manager, Joint Research  
Venture Program

Areas of Specialty

- advanced computing and engineering
- biotechnology
- environmental technology
- forestry products

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- energy technology
- pulp and paper products

### **BC Research Inc.**

3650 Westbrook Mall  
Vancouver, BC V6S 2L2  
Tel: (604) 224-4331  
Fax: (604) 224-0540  
Contact: James Dodds,  
Vice President,  
Operations

#### Areas of Specialty

- systems engineering
- product development
- ocean engineering
- remediation and control of air emissions, wastewater and solid waste
- occupational health, food, nutrition and ergonomics
- forest biotechnology

### **Centre de recherche industrielle du Québec**

8475 rue Christophe-Colomb  
Montréal, QC H2M 2N9  
Tel: (514) 383-1550  
Fax: (514) 383-3260  
Contact: Gilles Lessard,  
Vice President,  
Marketing and Sales

#### Areas of Specialty

- biofiltration
- biotechnology
- combustion
- wastewater treatment
- air pollution
- soil remediation
- physical and chemical processes

### **Manitoba Economic Innovation and Technology Council**

1329 Niakwa Road East  
Winnipeg, MB R2J 3T4  
Tel: (204) 945-6000  
Fax: (204) 945-1784  
Contact: Trevor Cornell, P. Eng.,  
Manager, Technical  
Operations

#### Areas of Specialty

- agri-food
- environmental and analytical chemistry services
- air quality
- waste and wastewater
- electronics and mechanical product design
- vibration and noise engineering

### **Northern Research Institute**

Yukon College  
P.O. Box 2799  
Whitehorse, YT Y1A 5K4  
Tel: (403) 668-8735  
Fax: (403) 668-8890  
Contacts: Juergen Korn, Industrial  
Technology Advisor  
Gerald Isaac, First  
Nations Liaison Officer  
Ted Lambert, Manager,  
Client Services

#### Areas of Specialty

- Yukon and Northern Studies
- organic analysis
- water quality
- electronics
- northern building construction
- northern heating systems
- alternative energy
- contaminants



**Nova Scotia Research Foundation Corporation**

101 Research Drive  
Woodside Industrial Park  
P.O. Box 790

Dartmouth, NS B2Y 3Z7

Tel: (902) 424-8670

Fax: (902) 424-4679

Contact: Dr. J. W. (Bill) Thorpe,  
Director, Laboratory and  
Testing Services

Areas of Specialty

- analytical and environmental chemistry
- biology and microbiology
- materials testing and corrosion analysis
- bio-resource machinery for forestry and fishery
- agriculture
- fisheries
- wastewater treatment technologies

**ORTECH International**

2395 Speakman Drive  
Mississauga, ON L5K 1B3

Tel: (905) 822-4111

Fax: (905) 823-1446

Contact: Bill Fossen,  
Technology Advisor

Areas of Specialty

- engineering transportation
- environmental management
- materials technologies
- product engineering
- materials
- environment
- process engineering
- energy conservation

- alternative energy/fuel
- pharmaceutical/bio-technology

**Research and Productivity Council**

921 College Hill Rd.

Fredericton, NB E3B 6Z9

Tel: (506) 452-8994

Fax: (506) 452-1395

Contact: Charles Wiesner,  
Section Manager,  
Biotechnical Dept.

Areas of Specialty

- fisheries and aquaculture
- environmental chemistry
- bioremediation
- biological pest management
- pesticide technology
- process and environmental technology
- engineering materials and services
- electronics

**Saskatchewan Research Council**

15 Innovation Blvd.

Saskatoon, SK S7N 2X8

Tel: (306) 933-5499

Fax: (306) 933-7896

Contacts: Tim Hutch, President  
Tony Rawa,  
Vice President,  
Technology Transfer

Areas of Specialty

- energy conservation (esp. buildings)
- alternative energy/fuel
- air quality
- biotechnology
- environmental engineering

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- toxicology
- water quality

### **Science Institute of the Northwest Territories**

P.O. Box 1617

Yellowknife, NT X1A 2P2

Tel: (403) 873-7592

Fax: (403) 873-0227

Contact: Dr. Joe Ahmad, Manager,  
Technology Development

#### Areas of Specialty

- renewable energy
- general mechanical engineering
- environmental technology

### **Additional Sources of Technology Assistance**

Three **Canadian Environmental Technology Advancement Centres (CETACs)** have been established in partnership with the federal government (Environment Canada and Industry Canada), provincial governments, environmental industry associations, and the private sector. These not-for-profit corporations, operating at arm's length from the government and linked to form a national network are: **Enviro-Accès**, serving Quebec and the Maritime provinces; **Ontario Centre for Environmental Technology Advancement (OCETA)**, serving Ontario; and **Canadian Environmental Technology**

**Advancement Corporation (CETAC)**  
– WEST, serving Western Canada.

#### Areas of Specialty

- assessing innovative technology and providing technical assistance
- matching entrepreneurs with ideas to groups that can help turn those ideas into products and services
- business counselling
- regulatory and market analysis
- locating foreign sources of technology and promoting Canadian technology
- bringing technology developers together with venture capital and financing groups

### **Enviro-Accès Inc.**

855 rue Pepin, Suite 310

Sherbrooke, QC J1L 2P8

Tel: (819) 823-2230

Fax: (819) 823-6632

Contact: Manon Laporte, Chief  
Executive Officer

### **Ontario Centre for Environmental Technology Advancement (OCETA) Inc.**

63 Polson Street, 2nd Floor

Toronto, ON M5A 1A4

Tel: (416) 778-5264

Fax: (416) 778-5624

Contact: S. Edward Mallett,  
President and C.E.O.

**CETAC – WEST**

Suite 420  
715 Fifth Avenue SW  
Calgary, AB T2P 2X6  
Tel: (403) 777-9595  
Fax: (403) 777-9599  
Contact: Joe Lukacs,  
President and C.E.O.

**Canadian Industrial Innovation Centre**

156 Columbia St. West  
Waterloo, ON N2L 3L3  
Tel: (519) 885-5870  
Fax: (519) 885-5729  
Contact: Gary Svoboda,  
Marketing Manager

Areas of Specialty

- market research and analysis
- invention assessment
- early stage product development and design
- computer modelling
- seminars
- books, tapes and software
- technology transfer databases

**Environmental Technology Commercialization Program**

Environmental Affairs Branch  
Industry Canada  
235 Queen Street, 07E  
Ottawa, ON K1A 0H5  
Tel: (613) 954-3242  
Fax: (613) 954-3430  
Contact: Program Manager

Areas of Specialty

- The ETCP provides leverage funding over a six year period to facilitate the development and commercialization of

environmental technologies. Projects must lead to and/or be related to first-time pilot or full-scale demonstrations. The program does not fund basic research. Technologies supported include those that promote cleaner processes, waste reduction and recycling, air pollution control, and water conservation.

**The Industrial Research Assistance Program**

National Research Council Canada  
Montreal Rd., Building M55  
Ottawa, ON K1A 0R6  
Tel: (613) 993-3996  
Fax: (613) 954-2524  
Contact: Steve Palmer, Industrial Technology Advisor

Areas of Specialty

- 270 IRAP advisors across the country provide technical and financial assistance to small and medium sized firms for R&D in manufacturing, resource, construction, and service industries
- technical assistance may be gained through external consultants, universities, colleges, government department laboratories, and provincial research organizations

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### **Newfoundland and Labrador Alliance of Technical Industries**

Box 41

Atlantic Place

215 Water St., Suite 602

St. John's, NF A1C 6C9

Tel: (709) 722-3069

Fax: (709) 722-3879

Contact: Andrew Collins,  
Executive Director

#### Areas of Specialty

- consists of several companies who may do contract technical work
- numerous areas of expertise
- the alliance will connect the individual (company) with the appropriate associate industrial company

### **Networks of Centres of Excellence**

Each individual network focuses on a specific field of interest. Each network contains several "centres" of excellence, which tend to be individuals in universities, government, and private research.

### **Insect Biotech Canada**

Queen's University

Kingston, ON K7L 3N6

Tel: (613) 545-6557

Fax: (613) 545-6806

Contact: Dr. B. Hutchinson,  
Executive Director

#### Areas of Specialty

- biotechnology for insect pest management
- biotechnology/biological control re: insects

- physiology studies

### **Ocean Production Enhancement Network**

Dalhousie University

Biology Department

Halifax, NS B3H 4J1

Tel: (902) 494-6741

Fax: (902) 494-5118

Contact: Denise Cassidy,  
Executive Director

#### Areas of Specialty

- fisheries research
- ocean modelling dynamics
- fisheries management

### **The Nova Scotia Centre for Environmentally Sustainable Economic Development (CESED)**

P.O. Box 1000

Halifax, NS B3J 2X4

Tel: (902) 420-7936

Fax: (902) 429-4866

Contacts: Mary Patterson, Manager, Products  
Michael Bowie, Manager, Development and Assessment  
Lauren Munro-Cape, Manager, Finance and Administration

The Centre facilitates multi-sectoral partnerships between the research, private, and public sectors to address specific issues in sustainable development. Through the development of commercially viable products with export capabilities, CESED assists in the development of innovative technology and stimulation of the

local economy. The Centre provides financial assistance to some projects to a maximum of 50%, which is repayable through royalty agreements upon commercialization of the product.

Areas of Specialty

- proposal development
- partnership building
- project financing through relevant government agencies

**Technology Development  
Directorate**

Environment Canada  
425 St. Joseph Boulevard, 4th Floor  
Hull, QC K1A 0H3  
Tel: (819) 953-5669  
Fax: (819) 953-9029  
Contact: Glenn Allard,  
Director General

Areas of Specialty

The Technology Development Directorate (TDD) delivers programs for the development, transfer and commercialization of environmental technologies. Research and development is conducted at the Environmental Technology Centre in Ottawa and the Wastewater Technology Centre in Burlington, Ontario. Several financial incentive programs support the development of a wide range of environmental technologies. The Directorate provides comprehensive information and networking on clean air technologies. TDD also delivers technology transfer and commercialization services to

departmental research institutes and programs, and to the private sector through Canadian Environmental Technology Advancement Centres (CETACs). Technology outreach is provided through technical conferences and training initiatives and through Environmental Protection Service publications.

## Technology Assistance Organizations – United States

### United States National Labs

#### **Argonne National Laboratory**

Environmental Sciences

9700 S. Cass Ave

Building 900

Argonne, IL 60439

Tel: (708) 252-3759

Fax: (708) 252-5217

Contact: Dr. Terry Surles,  
General Manager

#### Areas of Specialty

- energy systems analysis
- environmental assessment
- environmental research
- information systems
- resource management
- restoration and reclamation
- waste management

#### **Battelle Pacific Northwest Laboratories**

P. O. Box 999

Richland, WA 99352

Tel: (509) 375-2139

Fax: (509) 375-2718

Contact: L. Donald Williams,  
Director, Technology  
Transfer

#### Areas of Specialty

- applied physics
- earth and environmental sciences
- life sciences
- materials and chemical sciences
- molecular science research
- reactor technology

- technology planning and analysis
- waste technology

#### **Brookhaven National Laboratory**

Building 902-C

Upton, NY 11973

Tel: (516) 282-7338

Fax: (516) 282-3729

Contact: Dr. Margaret Bogosian,  
Deputy Manager, Office  
of Technology Transfer

#### Areas of Specialty

- high-energy physics
- basic energy sciences
- biological research
- environmental research
- mechanical engineering
- electrical engineering
- fuels and combustion
- environmental remediation

#### **Lawrence Berkeley National Laboratory**

University of California

Building 90-1070

Berkeley, CA 94720

Tel: (510) 486-6467

Fax: (510) 486-6457

Contact: Cheryl Fragiadakis,  
Technology Transfer  
Department

#### Areas of Specialty

- biotechnology
- advanced materials
- transportation
- computing

- environment
- energy

**Lawrence Livermore National Laboratory**

P.O. Box 808  
7000 East Avenue  
Mail Stop L-795  
Livermore, CA 94550  
Tel: (510) 423-5660  
Fax: (510) 423-8988  
Contact: Pam Burke, Technology Transfer Initiatives Program

Areas of Specialty

- lasers, optics, electro-optics
- engineered materials
- atmospheric and geosciences
- electronic systems
- biosciences
- computation and microtechnology
- materials
- manufacturing processes and systems
- sensors
- non-destructive evaluation

**Los Alamos National Lab**

Industrial Partnership Office  
MS M899  
Los Alamos, NM 87545  
Tel: (505) 665-2133  
Fax: (505) 665-3125  
Contact: Irene Gabel, Technical Assistance Facilitator

Areas of Specialty

- analysis and assessment
- bioscience and biotechnology
- complex experimentation and

measurement

- earth and environmental systems
- nuclear and advanced materials
- nuclear science, plasmas and beams
- nuclear weapons science and technology
- theory, modeling and high-performance computing

**Oak Ridge National Laboratory**

Martin Marietta Energy Systems  
P.O. Box 2008  
Oak Ridge, TN 37831-6255  
Tel: (615) 574-0292  
Toll-free: (800) 356-4872  
Fax: (615) 574-1011  
Contact: Joe Culver, Public Affairs Manager, Office of Technology Transfer

Areas of Specialty

- environmental science
- soil treatment
- waste disposal
- physical science
- center of manufacturing support
- information data systems
- bioprocessing, biomaterials
- biotechnology
- computational sciences
- environmental impact analysis
- advanced materials

**Sandia National Laboratories**

Technology Transfer and Commercialization Program  
P.O. Box 5800  
Albuquerque, NM 87185-1380  
Tel: (505) 271-7813

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Fax: (505) 271-7856  
Contact: Warren Siemens,  
Technology Transfer

### Areas of Specialty

- energy: combustion, geo-technologies, coal and fuels, solar, batteries and fuel cells
- materials: organic chemistry, metallurgy
- engineering sciences: fluids, thermal sciences and solids
- solid state research
- computer science and information systems
- microelectronics
- manufacturing technology
- environmental remediation technologies
- information networking

### Additional Sources of Technology Assistance

#### **California Environmental Technology Center**

9500 Gilman Drive, 0241  
La Jolla, CA 92093-0241  
Tel: (619) 534-8400  
Fax: (619) 534-8270  
Internet: cetc@ucsd.edu  
Contact: Ed Furtek, Director

### Areas of Specialty

- coordinates environmental technology research at California's public and private universities
- assesses public and private markets for environmental technologies

- prioritizes publicly funded research and development of environmental technologies
- assesses legal, regulatory, and financial barriers to innovation
- verifies the performance of newly developed technologies
- develops and implements technology transfer and commercialization services for industry
- provides access to business planning, venture capital, and other funding sources

#### **Center for Sustainable Technology (CST)**

Georgia Institute of Technology  
Mason Building  
Atlanta, GA 30332-0355  
Tel: (404) 894-2201  
Fax: (404) 894-2278  
Contact: Jorge A. Vanegas,  
Associate Director

### Areas of Specialty

- testing and evaluation of sustainable technologies
- applied research in sustainable technologies
- technology transfer
- continuous education and training
- bio-engineering
- chemical engineering
- electrical engineering
- civil and environmental engineering
- industrial and systems engineering



- materials science and engineering
- mechanical engineering

**Federal Laboratory Consortium  
for Technology Transfer**

P.O. Box 545

Sequim, WA 98382

Tel: (206) 683-1005

Fax: (206) 683-6654

Contact: George Linstead, FLC  
Administrator

Areas of Specialty

- primary purpose is to disseminate government-developed technologies to potential users
- technical assistance by drawing on federal laboratories, state and federal technology application centres, Battelle, and university centres for a wide range of technical expertise
- consists of six regional technology management and commercialization centers

**Inventors Workshop  
International**

7332 Mason Avenue

Canoga Park, CA 91306-2822

Tel: (818) 340-4268

Fax: (818) 884-8312

Contact: Alan Arthur Tratner,  
President

Areas of Specialty

In addition to educational and mutual support functions, the Inventors Workshop has significant referral contacts and an international network of resources.

It sponsors a special chapter for eco-inventors and eco-entrepreneurs, a new environmental technologies exhibit at Eco-Expo, and an eco-inventors contest for youth. In addition, the Workshop offers a patent saver plan for intellectual property protection.

**National Environmental  
Technology Applications Center**

University of Pittsburgh

Applied Research Center

615 William Pitt Way

Pittsburgh, PA 15238

Tel: (412) 826-5511

Fax: (412) 826-5552

Contact: Robb Lenhart, Director,  
Business Services

Areas of Specialty

- environmental technology
- bioremediation
- pollution prevention
- waste minimization
- air quality
- water quality and treatment
- hazardous waste
- energy conservation
- commercialization assistance
- education and training
- marketing research and assessments
- regulatory evaluations
- medical waste management
- information databases

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### **National Technology Transfer Center**

316 Washington Ave.

Wheeling, WV 26003

Tel: (304) 243-2510

Toll free: (800) 678-6882

Fax: (304) 243-2539

Contact: Jim Reed, Director of  
Marketing

#### Areas of Specialty

- free access to and commercialization of federally-funded technologies
- personal referrals to federal laboratories and federally-funded university research
- electronic bulletin board announcing technology transfer opportunities
- training on technology transfer issues
- strategic partnering conferences

## Publications Listing Research and Development Assistance Organizations

### **Canadian Environmental Directory**

1993/1994.

The Canadian Almanac & Directory Publishing Company Ltd.

55 St. Clair Ave. West, Suite 225

Toronto, ON M5W 2J8

Tel: (416) 972-6645

Fax: (416) 972-6648

### **Canadian Sources of Environmental Information**

1990.

Environment Canada

Les Terrasses de la Chaudière

10 Wellington Street

Ottawa, ON K1A 0H3

Tel: (819) 997-2800

Toll-free: (800) 668-6767

Fax: (819) 953-2225

### **Directory of Pollution Prevention Funding Organizations**

1994.

Results from a survey of organizations that fund research and other activities in pollution prevention and waste reduction in the United States and Canada.

Conducted by Battelle Seattle Research Center. Published by Pacific Northwest Pollution Prevention Research Center (PPRC)

1326 Fifth Ave., Suite 650

Seattle, WA 98101

Tel: (206) 223-1157

Fax: (206) 223-1165

### **Gale Environmental Sourcebook**

Gale Research Inc.

835 Penobscot Building

Detroit, MI 48226-4094

Tel: (313) 961-2242

Toll-free: (800) 347-GALE or

(800) 877-4253

Fax: (313) 961-6083

Toll-free fax: (800) 414-5043

### **Industry, Technology, and the Environment: Competitive Challenges and Business Opportunities**

1994.

U.S. Congress

Office of Technology Assessment

Washington, D.C. 20510

Tel: (202) 224-8996

Fax: (202) 228-6098

### **Technology for a Sustainable Future**

1994.

U.S. National Science and Technology Council

Environmental Technology Strategy Staff

Office of Science and Technology

Policy

Room 403

Old Executive Office Building

Washington, D.C. 20500

Tel: (202) 456-7116

Fax: (202) 456-6021

## Sources of Capital for Sustainable Enterprises – Canada

Disclaimer: The information in this Directory was supplied by the companies and organizations listed. IISD does not accept responsibility for any losses or damages resulting from the use of this information.

### **Alberta Opportunity Company**

5110 - 49 Avenue

P.O. Box 4040

Ponoka, AB T4J 1R5

Tel: (403) 783-7011

Toll-Free: (800) 661-3811

Fax: (800) 783-7079

Contact: John Ablett,  
Branch Manager

#### *Investment Operations*

The Alberta Opportunity Company is a crown corporation which serves as an alternate source of financing for small business across Alberta. It provides start-up and expansion financing ranging from a few thousand dollars up to a cap of \$1 million. In addition to term loan financing, the company provides a range of business consulting services.

#### *Investment Interests*

The company finances many types of business enterprises. The only areas it explicitly avoids are agriculture and residential housing.

### **Atwick Financial Group**

1 University Avenue

Suite 302

Toronto, ON M5J 2P1

Tel: (416) 359-2840

Fax: (416) 359-2842

Contacts: Bryan Long,  
Managing Director  
William Simmons,  
Managing Director

#### *Investment Operations*

The company provides capital through medium- and long-term debt including project financing, financing for lease portfolios, and direct equity investments. The company seeks investment in enterprises that are oriented to increasing book value and wish to capitalize on growth opportunities. The company utilizes a range of lending instruments in the \$1 – \$5 million range.

#### *Investment Interests*

The company has an interest in capital-intensive industries such as power generation and natural resources, particularly the oil and gas sector. For the sustainable entrepreneur seeking debt financing through leasing and other instruments that increase working capital for day-to-day and growth demands, this company offers an interesting fit.

**Canadian Western Bank**

10303 Jasper Avenue  
 Suite 2300  
 Edmonton, AB T5J 3X4  
 Tel: (403) 423-8844  
 Fax: (403) 423-8897  
 Contact: Graham Gilbert,  
 Vice President,  
 Marketing

*Investment Operations*

The company is a Western Canadian regional bank with a full-service banking operation. It serves local businesses well. The bank offers commercial lending, retail lending, and corporate financing services.

*Investment Interests*

The company has an interest in attracting SMEs as customers. It offers good service to retail operations. For the sustainable entrepreneur in Western Canada, the company can play a useful role in capitalizing the growing green consumer market.

**Crocus Investment Fund**

275 Broadway, Suite 303  
 Winnipeg, MB R3C 4M6  
 Tel: (204) 925-2400  
 Fax: (204) 942-2785  
 Contact: Marty Donkervoort,  
 Vice President

*Investment Operations*

This labour-sponsored fund was incorporated in 1992 to respond to the need for investment capital by small and medium sized companies

in Manitoba. It has lending and equity financing capability. It is particularly interested in enterprises that promote community economic development.

*Investment Interests*

Worker-owned enterprises are the company's prime target market. The company is interested in businesses that preserve the local environment while helping communities strengthen their economic base. For the sustainable entrepreneur, who wants to capitalize on Manitoba markets, the company will be of particular interest. With assets in excess of \$10 million, the Fund is actively seeking investment opportunities.

**EnviroCapital Management Inc.**

2540 boul. Daniel Johnson, #910  
 Laval, QC H7T 2S3  
 Tel: (514) 687-2040  
 Fax: (514) 687-9283  
 Contacts: Normand Balthazard,  
 President  
 Raymond Brouzes,  
 Vice President,  
 Scientific Affairs

*Investment Operations*

In partnership with Fonds de solidarité des travailleurs du Québec (FTQ) and Banque de Vizille in France, the company provides venture capital, strategic advice, and ongoing supervision for companies at the start-up or development stages. Technical and management support, extensive international

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networks, and strategic alliances with other venture capital funds in North America and Europe make this company a solid source of leads, information, and capital.

### *Investment Interests*

The company invests in 8-10 environmental technology companies with a preference for enterprises located in Quebec. Strategically targeted fields include recovery and treatment of gaseous and liquid emissions; waste management, recovery, and recycling; research and development; clean technologies; and technology transfer. For the entrepreneur interested in a close working relationship with a firm that is well positioned internationally, this company will be of particular interest.

### **Federal Business Development Bank**

(Venture Capital Division)  
700 - 601 West Hastings Street  
Vancouver, BC V6B 5G9  
Tel: (604) 666-7815  
Fax: (604) 666-7650  
Contacts: David Bennett, Assistant  
Vice President  
Tony Charnish,  
Investment Manager

### *Investment Operations*

The company is a major source of venture capital in Canada. It operates nation-wide. The company takes minority interest positions in private enterprises. It prefers

instruments which include various types of share ownership or debentures.

### *Investment Interests*

The company will invest directly in Canadian enterprises in all sectors, though it avoids speculative investments. The company has an interest in significant, innovative leading edge technologies which hold the potential to create a Canadian competitive advantage. For the sustainable entrepreneur, the company can offer the weight of a major investor who is willing to invest large, i.e., \$5 million, to small, i.e., \$500,000 amounts.

### **Fonds de solidarité des travailleurs du Québec (FTQ)**

1550 rue Metcalfe  
Suite 1100  
Montreal, QC H3A 1X6  
Tel: (514) 383-8383  
Fax: (514) 383-2506  
Contact: Denis Dionne,  
Vice President

### *Investment Operations*

The company has a large pool of capital, and carries larger investments, i.e., \$2 – \$3 million and up, in its portfolio. It will offer enterprises various types of financing at all stages of development.

### *Investment Interests*

The company has a geographical preference for Quebec enterprises. It has an interest in enterprises in

the informatics, energy, and instrumentation areas. For the sustainable entrepreneur, this company will be of interest when seeking a substantial amount of equity financing.

**Golden Capital Securities**

1177 West Hastings Street  
Suite 168  
Vancouver, BC V6E 2K3  
Tel: (604) 688-1898  
Fax: (604) 682-8874  
Contacts: Peter Lee, Partner,  
Corporate Finance  
Danny Siu,  
Vice President

*Investment Operations*

The company specializes in assisting enterprises that need capital to grow. It operates as a financial advisor and broker, with a full-service brokerage house on the Vancouver Stock Exchange. The company prides itself on its service to small businesses and has a rapid decision-making operation.

*Investment Interests*

The company can provide valuable assistance to enterprises planning expansion or diversification. It has useful investor contacts internationally, notably in the Asia-Pacific region. For the sustainable entrepreneur, the company can provide personal financial advisory services and access to capital from a number of sources.

**Gundy & Associates Ltd.**

49 Wellington St. East  
Suite 301  
Toronto, ON M5E 1C9  
Tel: (416) 368-2464  
Fax: (416) 368-0875  
Contacts: Michael Gundy,  
President  
Emile Van Nispen,  
Vice President and  
Director

*Investment Operations*

The company focuses primarily on project financing in Canada and overseas. The principals have substantial experience in raising funds and endeavour to participate early in the project development cycle. The company is particularly skilled in business planning and investment structuring for the private and publicly-traded markets.

*Investment Interests*

The company has a track record in assisting environmental companies. It seeks to marry the raising of funds with value-added advisory services. For the sustainable entrepreneur with products/services in engineering and technology, the company will be of particular interest.

**Kingswood Capital Corporation**

701 West Georgia Street  
Suite 502

Vancouver, BC V7Y 1A1

Tel: (604) 687-1520

Fax: (604) 687-6539

Contacts: Joseph Segal, President  
Gary Segal,  
Vice President

*Investment Operations*

The company manages mergers and acquisitions and ownership changes. It makes investments during periods of transition. It utilizes a number of different debt and equity instruments including convertible or participating debt. It will invest in most parts of Canada but prefers firms in British Columbia.

*Investment Interests*

The company is more interested in expansions and turnarounds than in startups. It has a significant interest in environmental technologies and product and service enterprises. The company will be of interest to environmental enterprises requiring investments of modest level, i.e., \$200,000, and up.

**Penfund Partners Inc.**

1 University Avenue  
Suite 601

Toronto, ON M5J 2P1

Tel: (416) 865-0300

Fax: (416) 364-6912

Contacts: Ian Collier, Executive  
Vice President  
Barry Gekiere, Executive  
Vice President  
Graham McBride,  
Vice President

*Investment Operations*

The company is interested in later stage investments, especially for expansions and commercialization. It will participate in consortia and also lead certain deals.

*Investment Interests*

The company is active in a wide range of fields. It prefers investments in the \$1 – \$4 million range. For the sustainable entrepreneur in the consumer, industrial products and equipment, and import/export sectors, the company will be of interest.

**Quorum Funding Corporation**

1505 - 150 King Street West

P.O. Box 5, Sun Life Tower

Toronto, ON M5H 1J9

Tel: (416) 971-6998

Fax: (416) 971-5955

Contact: Ron Patterson,  
Vice President,  
Investments

*Investment Operations*

The company has a significant pool of capital and a core group of



investments. It is a good company with which to establish a long-term relationship.

*Investment Interests*

The company is open to investments in a wide variety of fields and has a national scope in Canada. For the sustainable entrepreneur, the ability of the company to consider investments in sectors from information technology to financial services technology to environmental services is a real asset.

**Royal Bank Capital Corporation**

Royal Bank Plaza  
200 Bay St., 13th Floor  
South Tower  
Toronto, ON M5J 2J5  
Tel: (416) 974-2591  
Fax: (416) 974-8411  
Contact: Jacques Sayegh, President

*Investment Operations*

The company invests in emerging growth firms with sales of \$5 million or more. A typical investment will cover a period of three to five years; range from \$1 – \$10 million; and provide for company expansion, product development, and acquisition. In return, the investor receives an ownership interest ranging from 10 to 49 percent. The company has offices in Montreal, Toronto, and Vancouver.

*Investment Interests*

The company has a primary pool of \$150 million to invest in the

expansion of knowledge-based and export-oriented enterprises. Businesses specializing in environmental technology, biotechnology, recycling processes, and pollution control are of special interest. For the sustainable entrepreneur in a knowledge-based firm who is ready to expand, this company will be of special interest.

**SB Capital International, Inc.**

2 Bloor Street East  
Suite 3304  
Toronto, ON M4W 1A7  
Tel: (416) 967-5439  
Fax: (416) 928-1472  
Contacts: Mitch Kostuch  
Nicholas Parker

*Investment Operations*

The company has been structured to pursue international investment opportunities, particularly in emerging economies which are going through the liberalization process. The company looks for investments in high-growth companies at all stages of development. The company adds significant value to its investments through participation in meeting the strategic objectives of the enterprise.

*Investment Interests*

The company has an interest in investing in companies located in or exporting to the rapidly growing economies of India and Eastern Europe. A major focus of the company is environmental

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technologies, especially those which are front-of-the-pipe and have strong commercial drivers.

### **Technocap Inc.**

119 Prince Rupert

Pointe Claire, QC H9R 1M1

Tel: (514) 642-2458

Fax: (514) 879-3410

Contact: Richard Prytula, Manager

### *Investment Operations*

Technocap is a recently established venture capital company with \$50 million of available capital. Its founding shareholders are the Caisse de dépôt et placement du Québec, Investissement Desjardins, the pension funds of Bombardier and de Havilland, the Fonds de solidarité des travailleurs du Québec, Hydro-Québec, the Société Innovatech du Grand Montréal, and Technocap's manager, Richard Prytula. The amount of investments will range from \$250,000 to \$2.5 million. Investments will target companies at the start-up stage as well as those that want to expand. While Technocap is Montreal-based, it does not have a geographic restriction.

### *Investment Interests*

Technocap focuses on businesses engaged in technology sectors, particularly information technology and telecommunications, computer systems and software, electronics and instrumentation, energy, environment, and health. Technocap will invest primarily in small and medium sized businesses seeking

an active partner in their development. Technocap focuses on companies that will benefit from its expertise and business networks. Technocap can provide added value by contributing to the development of a company's commercial and financial strategies. For the sustainable entrepreneur engaged in environmental research, Technocap holds good potential. To date, Technocap has invested in four companies.

Given its newness, Technocap does not have a track record.

### **Trilwood Investments Ltd.**

161 Bay Street

Suite 4320

Toronto, ON M5J 2S1

Tel: (416) 869-3945

Fax: (416) 869-1778

Contacts: John Puddington,  
President  
Doug Moore,  
Vice President

### *Investment Operations*

Trilwood is a privately-owned investment company. It places equity investments in enterprises with a clear strategic direction and strong management team. It is open to investing in companies at the growth stage. It leans towards larger investments, i.e., \$3 – \$7 million. The company invests in companies in both Canada and the United States.

*Investment Interests*

The company has a number of sectoral preferences including consumer industries, energy and natural resources, and import and export. For sustainable entrepreneurs, this company will be of interest for relatively large scale expansions in Canada and abroad.

**Vancouver City Savings Credit Union (VanCity)**

P.O. Box 2120  
Station Terminal  
Vancouver, BC V6B 5R8  
Tel: (604) 877-7621  
Fax: (604) 877-8226  
Contact: Karen Currie,  
Vice President,  
Human Resources and  
Environment

*Investment Operations*

Canada's largest credit union has established an array of innovative means to assist local for-profit and not-for-profit organizations in their efforts to promote positive social and environmental change. Initiatives include donations, sponsorships, awards, scholarships and loans.

*Investment Interests*

The EnviroFund aids projects providing long-term and proactive solutions to environmental concerns in the Vancouver/Fraser Valley region. The Corporate Sponsorship and donations programs support community projects with grants. The Community Investment

Deposit Fund invests in housing, job creation and environmental projects. VanCity Enterprises develops affordable housing and the VanCity Community Foundation offers grants and technical assistance to community economic development endeavours.

**Ventures West Management Inc.**

250-375 Water Street  
Vancouver, BC V6B 5C6  
Tel: (604) 688-9495  
Fax: (604) 687-2145  
Contacts: Michael Brown,  
President, Vancouver  
Mark Leonard, Senior  
Vice President, Toronto

*Investment Operations*

The company is a long-standing manager of a number of investment and venture funds. Ventures West provides capital to early stage technology companies located in Canada and the United States. Ventures West has over 100 years of experience, together with direct hands-on operating experience. It has general business, marketing and technical experience which adds significant value to the development of investee companies.

*Investment Interests*

The company emphasizes early stage investment in enterprises which hold potential for substantial growth. It is active in a number of key sectors including alternative energy and environmental technologies. For the sustainable

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entrepreneur with an innovative technology and significant growth potential, this company is attractive.

### **Women's World Finance**

P.O. Box 1142, 54 Prince Street  
Sydney, NS B1P 6J7

Tel: (902) 562-1772

Fax: (902) 562-4273

Contact: Adele MacDonald,  
Executive Director

### *Investment Operations*

The company is part of the international system of Women's World Banking which provides technical support and financial assistance to women to establish new private enterprises. The company makes small loans (less than \$10,000) to enterprises led and owned by women. The one Canadian chapter currently operates only on Cape Breton Island in Nova Scotia.

### *Investment Interests*

The company is highly innovative and offers an investment source for women without a track record in business or a credit history. For the female entrepreneur looking for a relatively small amount of start-up capital, branches of the Women's World Banking System are good sources to approach.

## Sources of Capital for Sustainable Enterprises – United States

Disclaimer: The information in this Directory was supplied by the companies and organizations listed. IISD does not accept responsibility for any losses or damages resulting from the use of this information.

### **AVI Management Partners**

One First Street  
Suite 12  
Los Altos, CA 94022  
Tel: (415) 949-9862  
Fax: (415) 949-8510  
Contacts: Peter Wolken,  
General Partner  
Barry Weinman,  
General Partner  
Brian Grossi,  
General Partner

#### *Investment Operations*

The company is a private venture firm investing its own capital. It participates at the early stages of the development of an enterprise. It has a preference for investments on the West Coast of the United States.

#### *Investment Interests*

The company is active in a number of sectors, notably the informatics area. For the sustainable entrepreneur, this company will be of interest if the enterprise involves information technologies.

### **Calvert Group**

4550 Montgomery Avenue  
Suite 1000N  
Bethesda, MD 20814  
Tel: (301) 951-4820  
Toll-free: (800) 368-2748  
Fax: (301) 654-2960

Contact: Wayne Silby, President,  
Calvert Social Investment  
Fund

#### *Investment Operations*

The Calvert Group manages \$4.6 billion in mutual funds including the Calvert Social Investment Fund, the World Values Global Equity Fund, and the Strategic Growth Fund. It specializes in two of the fastest growing investment arenas — socially-screened and tax-free investments. A small percentage of the money is placed in private equity investments in small socially and environmentally responsible companies.

#### *Investment Interests*

The group has invested in two Washington, D.C., firms — Energia Global and the Clean Air Cab Company. Energia Global supplies and sells energy-efficient technologies in Latin America and the Clean Air Cab Company manages the first natural-gas-powered cab company in the United States.

For more complete information on any Calvert Fund, including all charges and expenses, call for a free prospectus. Read it carefully before investing or sending money.

## **Calvert Social Venture Partners**

7201 Wisconsin Ave, Suite 310  
Bethesda, MD 20814  
Tel: (301) 718-4272  
Fax: (301) 656-4421  
Contact: John May, President

This \$10 million fund invests in companies that make an active contribution to healthcare or the environment. Its portfolio includes a tire-recycling company; a company that is developing an infrared technology for sorting and controlling quality on food-production lines; and a drug-discovery company that uses the knowledge of medicine men to discover and develop natural pharmaceuticals.

## **Chemical Venture Partners**

270 Park Avenue, 5th Floor  
New York, NY 10017  
Tel: (212) 270-3220  
Fax: (212) 270-2327  
Contacts: Jeffrey Walker, Senior  
Managing Partner  
Jack Baron, Principal  
David Ferguson, Partner

### *Investment Operations*

The company is an international private equity firm, with \$2 billion of committed capital in over 150 companies. CVP's sole limited partner is the Chemical Banking Corporation, a \$140 billion worldwide banking entity. The firm invests in the U.S.A., Europe, Southeast Asia and Latin America through offices in New York, Los Angeles, London and Singapore.

### *Investment Interests*

The company is widely active in new venture capital, management buyout, recapitalization, growth equity and mezzanine transactions. It actively invests in healthcare insurance, specialty retailing, apparel, automotive, energy, media, environmental and consumer products. For the sustainable entrepreneur, CVP will be of interest if major investments are sought, including related banking advice.

## **Edison Venture Fund**

997 Lenox Drive #3  
Lawrenceville, NJ 08648  
Tel: (609) 896-1900  
Fax: (609) 896-0066  
Contact: Rick Defieux,  
General Partner

### *Investment Operations*

The company has a strong geographic interest in the East Coast of the United States. It makes medium scale investments: \$1 – \$2 million and up. It is actively seeking new investments in companies with significant turnover.

### *Investment Interests*

The company invests in a number of sectors, including energy conservation, pollution and waste management systems, and environmental services. For the established entrepreneur seeking substantial capital to expand, the company holds potential.

**Fowler, Anthony & Co.**

20 Walnut Street  
 Wellesley, MA 02181  
 Tel: (617) 237-4201  
 Contact: John Quagliaroli,  
 President

*Investment Operations*

The company operates as an investment banking firm placing its own capital and that of its clients. It also engages in financial services, particularly in arranging private placements. It caters to smaller companies and makes investments in the \$100,000 – \$5 million range. The company prefers New England ventures, but is also interested in enterprises in the rest of the United States, Canada, the United Kingdom, France, and Italy.

*Investment Interests*

The company is active in numerous economic sectors. It has an interest in alternative energy, energy conservation, technology-related products and equipment, environmental services, and natural gas.

**HFG Expansion Fund**

P.O. Box 81367  
 Wellesley, MA 02181  
 Tel: (617) 431-2322  
 Fax: (617) 431-7103  
 Contact: Artemis Joukowsky,  
 Chairman

This \$12 million venture fund makes investments in companies focused on environmental and economic concerns, specifically

those in recycling, energy, and natural foods. Its portfolio includes a company that recycles municipal solid waste, diverting 85 percent from landfills; a company that produces and markets an all-natural, nutritious sweetener called Sucanat; an energy-service company that structures energy-saving projects for commercial, municipal and government clients; and a fish farming company that grows 1.5 million pounds of fish per year on a one acre site while recirculating 99.9% of the water. The Fund is seeking a final \$2.1 million so it can continue to fund the growth of the four companies described above. The Fund is fully invested at this time.

**Hambrecht & Quist Venture Partners**

One Bush St.  
 San Francisco, CA 94104  
 Tel: (415) 986-5500  
 Fax: (415) 576-3621  
 Contact: Nancy Pfund,  
 Managing Partner

*Investment Operations*

This venture capital and investment banking firm manages over \$500 million in venture capital funds, including a \$17 million Environmental Technology Fund. Capital is available for both start-up and developmental phase companies.

*Investment Interests*

Monies are invested in companies pursuing a variety of

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environmentally significant products, technologies, and services. This includes underlying technologies such as analytical instrumentation, process control, separations, selected specialty chemicals, and energy conservation products and services. The company prefers to invest in pollution prevention and consumer-related environmental products rather than clean-up, site remediation, and traditional environmental engineering.

### **M & F Associates**

45 Rockefeller Plaza  
Suite 601  
New York, NY 10111  
Tel: (212) 332-2929  
Fax: (212) 332-2920  
Contact: Jon Murphy

#### *Investment Operations*

This company utilizes internal and external capital to assist management buy-outs and the retirement of debt financing. The focus is on growth enterprises with investments in the \$3 million range. It has no geographical preference.

#### *Investment Interests*

The company prefers enterprises in consumer-related and industrial growth markets. This includes environmental industries such as pollution control and waste management systems. For the sustainable entrepreneur experiencing good growth and requiring financing to retire debt

and consolidate investment, this company holds good potential.

### **Nazem & Co.**

600 Madison Avenue  
14th Floor  
New York, NY 10022  
Tel: (212) 644-6433  
Fax: (212) 751-2731  
Contacts: Fred Nazem, Managing  
General Partner  
Emile Geisenheimer,  
General Partner

#### *Investment Operations*

The company is open to smaller investments, i.e., \$500,000, but prefers medium sized, i.e., \$1 million and up. The company receives unsolicited offerings which should include projections of annual sales, profits, and losses for a two year period. Profits are expected within two years. It has no geographical preference.

#### *Investment Interests*

The company is particularly active in computer-related equipment, energy and natural resources, and industrial products. For technology-based enterprises, the company holds promise.

### **NEPA Venture Fund**

125 Goodman Drive  
Bethlehem, PA 18015  
Tel: (215) 865-6550  
Fax: (215) 865-6427  
Contacts: Glen Bressner  
Marc Benson



*Investment Operations*

The company invests in enterprises at all stages of development and has a particular interest in seed and start-up stage ventures. Investments are preferred in the \$250,000 – \$1.5 million range. There is a geographical preference for enterprises in the Northeastern United States.

*Investment Interests*

The company has strong interest in a broad range of technology-based ventures.

**Northwest Ohio Venture Fund**

300 Madison Avenue  
Suite 1525  
Toledo, OH 43604  
Tel: (419) 244-9112  
Fax: (419) 244-9554  
Contacts: Barry Walsh,  
Managing Partner  
Curtis Crocker,  
Investment Manager

*Investment Operations*

The company places investments in the \$500,000 – \$1 million range. It focuses on enterprises in the Midwestern United States. It will enter at all stages of company development, from seed through R&D financing.

*Investment Interests*

The company has a strong interest in the environmental sector. It is open to investments in alternative energy, energy conservation, and technology-related products and

equipment. It is also active in electronic components and instrumentation.

**PNC Equity Management Corp.**

Fifth Avenue and Wood Street  
PNC Building  
19th Floor  
Pittsburgh, PA 15222  
Tel: (412) 762-8892  
Fax: (412) 762-6233  
Contact: David Hillman, Executive  
Vice President

*Investment Operations*

The company is a venture capital subsidiary of a commercial bank. It will place investments ranging from \$2 million for growth capital to \$8 million for management buy-outs. The company is actively seeking new investments and has a geographical preference for the Eastern and Midwestern United States.

*Investment Interests*

The company has a distinct non-technology focus, including consumer products, manufacturing, and distribution companies. Its affiliation with the PNC Bank Corp. offers additional financing relationships. For the seasoned entrepreneur who has a "later stage" enterprise and requires a range of investment and financial services, this company has good potential.

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### **Patricof and Co. Ventures, Inc.**

445 Park Avenue

New York, NY 10022

Tel: (212) 753-6300

Fax: (212) 319-6155

Contacts: John Baker,  
Senior Vice-President,  
General Partner  
George Jenkins,  
Vice-President,  
General Partner

#### *Investment Operations*

The company manages funds for a group of investors who are major corporations in the health, industrial and environmental fields. It also has a relationship with a corporate financing company. The company invests in enterprises at all stages of development with a preferred range of investment of \$3 – \$10 million. Its management team is spread out in many locations including New York, Palo Alto, London, Munich, and Paris. It has no geographical preference.

#### *Investment Interests*

The company has a wide range of interests in many sectors, including computer-related, industrial products, and agriculture. It is particularly interested in energy conservation and alternative energy enterprises. For the sustainable entrepreneur seeking a significant amount of capital for international operations and with a large annual turnover, this company should be considered.

### **Poly Ventures**

Polytechnic University

Route 110

Farmingdale, NY 11735

Tel: (516) 249-4710

Fax: (516) 249-4713

Contacts: Shelley Harrison,  
General Partner  
Robert M. Brill,  
General Partner  
Susanne Harrison,  
General Partner

#### *Investment Operations*

The company invests in small to medium sized enterprises and in start-up companies involving new technologies. Its preferred range of investment is \$500,000 – \$1 million. The relationship with Polytechnic University leads to cross-fertilization of ideas and commercial opportunities. The company has a geographical preference for the Northeastern United States.

#### *Investment Interests*

The company is interested in new, innovative technologies that will show promise fairly rapidly thus facilitating an exit through public stock offering (IPO) or merger/acquisition.

**Prime Capital Management**

1177 Summer Street  
Stamford, CT 06905  
Tel: (203) 964-0642  
Fax: (203) 964-0862  
Contact: Dean Fenton, General  
Partner, President

*Investment Operations*

The company focuses on smaller enterprises and makes investments in the \$250,000 – \$750,000 range. It invests its own capital and has a geographical preference for the Northeastern United States, especially Connecticut.

*Investment Interests*

The company is active in a number of sectors, including communications, insurance, distribution, and energy. It avoids investing in hydrocarbon energy companies.

**Technology Funding**

2000 Alameda de las Pulgas  
San Mateo, CA 94403  
Tel: (415) 345-2200  
Fax: (415) 341-1400  
Contacts: Dag Syrrist, Manager,  
Environmental  
Operations  
Thomas Toy, Partner

*Investment Operations*

The company is a private venture capital group investing capital raised from public and institutional investors. It will function either as a deal originator or an investor in deals created by others. Minimum

investment: \$250,000. Preferred investment: \$500,000 – \$2 million. The company has a geographical preference for the United States.

*Investment Interests*

The company is active in many sectors, including environmental technologies, communications, computer-related technologies, industrial products and equipment, and medical and health-related products and services. The company is currently seeking new investments.

**Ventana Environmental**

18881 Von Karman Avenue  
Suite 350  
Irvine, CA 92715  
Tel: (619) 291-2757  
Fax: (619) 295-0189  
Contacts: Mark J. Schulz,  
Managing Director  
Susan M. Ferrin,  
Communications  
Director

*Investment Operations*

Ventana's North America Environmental Fund is the first private equity fund formed to promote the commercial development of the environmental industry between the U.S., Mexico, and Canada. The Fund provides equity investments in established, expansion-driven environmental companies based in Mexico, and is actively seeking joint ventures, strategic alliances, and technology transfer agreements between

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environmental companies in the U.S., Mexico, and Canada. This \$30 million fund seeks investments in the \$1 – \$3 million range.

### *Investment Interests*

Targeting high growth environmental opportunities, the Fund focuses primarily on air pollution control, alternative energy, hazardous waste management, medical waste, resource recovery and recycling, waste-to-energy, and water treatment projects.

### **Ventex Management**

1000 Louisiana Street  
Suite 1095

Houston, TX 77002

Tel: (713) 659-7870

Fax: (713) 659-7855

Contacts: Richard Smith, President  
David Miller,  
Vice President

### *Investment Operations*

The company is a small business investment partnership that acts both as an investor and an intermediary for enterprises. It looks for medium scale investments, i.e., \$2 million, and has a geographical preference for the Southwestern United States.

### *Investment Interests*

The company is active in a wide range of fields, including environmental industries. It is interested in alternative energy, energy conservation, and technology-related products and

equipment. For the sustainable entrepreneur with a pollution prevention or energy minimization angle, this is a good company to approach.

### **Women's World Banking**

8 West 40th Street

10th Floor

New York, NY 10018

Tel: (212) 768-8513

Fax: (212) 768-8519

Contact: Nicola Armacost,  
Communications  
Coordinator

### *Investment Operations*

The company provides technical support and financial assistance to women in 40 countries around the world to establish new private enterprises. The company makes small loans (less than \$10,000) to enterprises led and owned by women. There are currently five non-profit affiliates operating in the United States.

### *Investment Interests*

The company is highly innovative and offers an investment source for women without a track record in business or a credit history. For the female entrepreneur looking for a relatively small amount of start-up capital, branches of the Women's World Banking System are good sources to approach.

## Additional Sources of Financing and Investment – Canada

Disclaimer: The information in this Directory was supplied by the companies and organizations listed. IISD does not accept responsibility for any losses or damages resulting from the use of this information.

Several programs launched or expanded under the Canadian Government's Green Plan help fund the development and demonstration of new environmental and energy technologies. For general information on programs available, call the Inquiries Department at Environment Canada. Telephone: (800) 668-6767.

Specific programs of interest to eco-entrepreneurs follow.

### **D⇒RECT Program**

Technology Development Directorate  
Environmental Protection Service  
Environment Canada  
Hull, QC K1A 0H3  
Tel: (819) 953-7827  
Fax: (819) 953-4705  
Contact: Al Gullon, Manager

The D⇒RECT Program has been operating for 15 years with a mandate to expedite the scale-up of innovative waste reduction and recycling technologies that also save energy. Administered by Environment Canada and jointly funded with Natural Resources Canada, the program pays a maximum of 50 percent of project costs, up to \$200,000 annually.

### **Environmental Innovation Program**

8th Floor, Place Vincent Massey  
351 St. Joseph Blvd.  
Hull, QC K1A 0H3  
Tel: (819) 953-4069  
Fax: (819) 994-1691  
Contact: Amanda Brady, Manager

The Environmental Innovation Program provides financial assistance for the development of new environmental products and services. Canadian industries, native groups, universities, non-government organizations, and individuals with innovative research and development proposals in the environmental sciences area may apply. Proposals may be submitted at anytime to Environment Canada. Projects must be unique, fit within the Green Plan, be sponsored by at least one other federal government department or agency, and receive funding from additional sources, preferably private. Funding ranges from \$5,000 to \$200,000 per project.

## **St. Lawrence Centre Technology Development Demonstration Program**

685 Cathcart Street, 8th floor  
Montreal, QC H3B 1M6

Tel: (514) 283-3557

Fax: (514) 496-2901

Contact: Gerald Girouard,  
Technology Section

The St. Lawrence Centre Technology Development Demonstration Program provides up to 50 percent of the cost for development and demonstration of new technologies that treat hazardous wastes and contaminated soils or that restore contaminated sediment. Corporations or partnerships operating in Canada are eligible and may submit applications at any time.

## **Royal Bank of Canada**

11th fl., South Tower

Royal Bank Plaza

Toronto, ON M5J 2J5

Tel: (416) 974-6212

Fax: (416) 974-3733

Contact: Ralph McDonald,  
Product Manager

The Royal Bank of Canada offers one-stop shopping for entrepreneurs seeking governmental financial assistance. Canada's largest bank has hooked up with an on-line data base developed by Dalhousie University in Halifax, which contains details on 750 programs that disburse a total of \$20 billion a year. The programs

are offered by 139 federal and provincial government departments and agencies. The information is updated daily. Key business banking centres across Canada will offer the service.

## **Additional Sources of Information on Raising Capital**

### **Your Guide to Raising Venture Capital for Your Own Business in Canada**

1993.

Written by Iain Williamson.

Productive Publications

P.O. Box 7200

Station A

Toronto, ON M5W 1X8

Tel: (416) 483-0634

## Additional Sources of Financing and Investment – United States

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### **Investors' Circle**

2400 East Main Street  
Suite 103  
St. Charles, IL 60174  
Tel: (708) 876-1101  
Fax: (708) 876-0187  
Contact: Susan Davis, President

### *Investment Operations*

The not-for-profit membership network includes America's leading private investors in sustainable development. Its members enjoy the benefits of an extensive members' directory, a monthly mailing of social venture deal flow, and a twice-yearly Social Venture Capital Fair showcasing 15-20 socially responsible companies seeking investment. Deals range from \$100,000 to the tens of millions.

### *Investment Interests*

Any socially responsible company interested in raising private capital may submit a two-page executive summary for the monthly mailing to the Circle's 140 members. The cost is \$300. These companies are then considered for presentations at the Social Venture Capital Fair. Companies at all stages, from seed to IPO, are considered. All niches of socially responsible investing are included, from energy efficiency to

poverty alleviation and from organic food to environmental technologies.

### **Technology Capital Network at MIT**

201 Vassar Street, Building W59  
Cambridge, MA 02139  
Tel: (617) 253-7163  
Fax: (617) 258-7264  
Contact: Neil Rodberg,  
Director of Operations

The Technology Capital Network is a non-profit program that introduces start-up and growth companies to potential investors through a confidential, computerized matching service. The majority of participating investors are high net worth individuals, who are "accredited investors" with a special interest in early stage firms. Collectively, they represent \$40 million available for investment. Professional venture capital funds and corporations seeking entrepreneurial partners also participate.

Entrepreneurs interested in being listed in the database must submit an application, a two-page summary of their business plan, and a one-page summary of their financial plan. Investors submit an application describing their investment criteria. The network

## EarthEnterprise™ Tool Kit

alerts investors of opportunities that fit their criteria. Investors are responsible for initiating introductions. Membership fees are \$300 per year for entrepreneurs and private investors in Canada, Mexico and the United States. Corporations and venture capital firms pay \$600 per year.

### **Additional Sources of Information on Raising Capital**

**Directory of Venture Capital Networking Organizations (Clubs) and Allied Resources** — lists over 450 organizations.

**Directory of Seed and Early Stage Venture Capital Funds** — lists 224 venture capitalists. Both published annually.

International Venture Capital Institute (IVCI)  
P.O. Box 1333  
Stamford, CT 06904  
Tel: (203) 323-3143  
Contact: Mr. C.A. Greathouse,  
President

**VenCap Data Quest™**  
Electronic Database Directories  
AI Research Corporation  
2003 St. Julien Court  
Mountain View, CA 94043-5411  
Tel: (415) 852-9140  
Fax: (415) 852-9522



## Publications on New Business Practices

**Beyond the Bottom Line: Putting Social Responsibility to Work for Your Business and the World**  
1994.

Written by Joel Makower and Business for Social Responsibility. Published by Simon & Schuster. Available from:  
Business for Social Responsibility  
1030 15th Street, NW  
Washington, DC 20005  
Tel: (202) 842-5400  
Fax: (202) 842-3135

**The Ecology of Commerce**  
1993.

Written by Paul Hawken.  
HarperCollins Publishers, Inc.  
10 East 53rd Street  
New York, NY 10022  
Tel: (212) 207-7000  
Fax: (717) 941-1599  
Toll-free fax: (800) 822-4090

**The Soul of a Business: Managing for Profit and the Common Good**  
1993.

Written by Tom Chappell.  
Bantam Doubleday Dell  
1540 Broadway  
New York, NY 10036  
Tel: (212) 354-6500

**The Republic of Tea: Letters to a Young Zentrepreneur**  
1993.

Written by Bill Rosenzweig, Mel Ziegler, and Patricia Ziegler.  
Bantam Doubleday Dell  
1540 Broadway  
New York NY 10036  
Tel: (212) 354-6500

**Business Strategy for Sustainable Development: Leadership and Accountability for the '90s**  
1992.

Written by the International Institute for Sustainable Development and Deloitte Touche.

**Coming Clean: Corporate Environmental Reporting — Opening Up for Sustainable Development**  
1993.

Written by Deloitte Touche Tohmatsu International, the International Institute for Sustainable Development, and SustainAbility.  
International Institute for Sustainable Development  
161 Portage Avenue East, 6th Floor  
Winnipeg, MB R3B 0Y4  
Tel: (204) 958-7700  
Fax: (204) 958-7710  
Contact: Stephan Barg,  
Business and  
Government Program

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### **Company Environmental Reporting - A Measure of the Progress of Business & Industry Toward Sustainable Development** 1994.

Technical Report No. 24  
United Nations Environment  
Programme  
Industry and Environment  
39-43, Quai André Citroën  
75739 Paris Cedex 15  
France  
Tel: (33) (1) 4437-1450  
Fax: (33) (1) 4437-1474  
Contact: Jacqueline Aloisi de  
Larderel, Director

### **KPMG International Survey of Environmental Reporting** 1993.

KPMG Environmental Services, Inc.  
P.O. Box 31  
Commerce Court Postal Station  
Toronto, ON M5L 1B2  
Tel: (416) 777-3778  
Fax: (416) 777-3077  
Contact: Richard M. Harris

### **Business Ethics**

Bi-monthly magazine published by  
Mavis Publications, Inc.  
52 South 10th Street, Suite 110  
Minneapolis, MN 55403-2001  
Tel: (612) 962-4700,  
Fax: (612) 962-4810.  
Contact: Craig Cox  
\$29.00 per year for phone orders.

### **In Business: The Magazine for Environmental Entrepreneuring**

Six issues/year.  
The JG Press, Inc.  
419 State Avenue  
Emmaus, PA 18049  
Tel: (215) 967-4135  
Fax: (215) 967-1345  
Contact: Jerome Goldstein, Editor.

Magazine specifically for eco-entrepreneurs. Covers marketing, sales, trends, industry updates and profiles. Subscription Price: US \$29; Canada \$31 (in US funds).



There's a new bottom line ahead for business. Besides measuring financial success, it includes environmental and social performance. Restoring environmental health and societal well-being is an enormous challenge, presenting virtually limitless opportunities. Innovative entrepreneurs with keen business acumen and a desire to make the world a better place will be the ones to profit.

The EarthEnterprise™ Tool Kit provides the insights and practical tools that small and medium sized enterprises need to succeed in a sustainable economy. Entrepreneurs will learn how to track and tap new markets and how to evaluate the potential of new technologies. They will discover the financing sources predisposed to investing in environmentally and socially responsible firms. And they will see, through examples, how new management practices can extend the reach and influence of small companies.

If you're tired of business as usual, read this.



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