CAPITAL LINKAGES STUDY FOR ISTC

FINANCING ISSUES FOR SMALL TO MEDIUM SIZED ENVIRONMENTAL COMPANIES

Environmental Technologies Development Corporation

March 31, 1993

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TABLE OF CONTENTS

5. SUMMARY AND RECOMMENDATIONS

6. APPENDICES

EXECUTIVE SUMMARY

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Over the past decade, issues relating to environmental protection and pollution control have moved higher and higher on the public agenda. Ozone depletion, acid rain, toxic chemical releases and the greenhouse effect are now familiar concerns. The public has demanded action and governments have responded with a host of laws and regulations designed to clean up the environment and promote conservation. A new industry, the environmental protection, waste management and pollution control industry (the environmental industry in this paper), has developed to respond to the challenge of helping with the clean up.

The environmental industry is still early stage, fragmented and immature. Although there are a few large companies in it (e.g., Laidlaw), most are relatively small. These small-to-medium sized environmental companies (SMECs) are typical of companies in other high technology, developing industries but face some unique problems.

One of the major problems found by the environmental industry is obtaining sufficient investment capital to finance growth. Industry, Science and Technology Canada has commissioned this Capital Linkages Study to commence an evaluation of the financing climate experienced by SMECs, their financing needs and the barriers they face in accessing financing.

The federal government's desire to enhance the viability of Canadian environmental companies has strong reasons behind it. In 1990 the world market for environmental goods and services was over US $250 billion and this is forecast to growth to over a half a trillion dollars by the turn of the century. Export opportunities are vast. Today the domestic revenues of the industry are in the ten billion dollar range. It is Canada's third largest employer, providing over 60,000 often high calibre jobs in 3500 companies, many of which export their products and services around the world. The environmental industry is a major force for economic development as it not only provides value-added opportunities but also acts as a significant factor in the "greening" of our economy.

Initially, the environmental industry focused on end-of pipe solutions to pollution problems. Lately, it has become increasingly obvious that these types of solutions will not be enough to meet the challenge. In future, much more emphasis will have to be placed on *pollution prevention*, a new paradigm involving product stewardship, a multi media approach, water and energy conservation, social change, sustainable development and individual and corporate responsibility.

Two paramount problems are said[1] to impede pollution prevention. These are statutory environmental liability and the sourcing of adequate financing for environmental companies, especially SMECs. This Study addresses the latter.

This Study describes the various sources of debt and equity financing which are available to SMECs and the financial instruments they use. Sources of funds include personal resources, governments, banks, personal investors, venture capital companies, large financial institutions (e.g., pension funds), and corporations. Accessing each category is described. It reviews SMECs level of funding with respect to their requirements ($0.5 - 2-1/2 billion per annum) and concludes that they face a significant capital gap, with the most serious lack being in the amount of venture capital funding available.

It finds that financial institutions feel that there is not a capital gap and instead believe that managerial and related limitations are the reason that SMECs are having difficulty obtaining financing. They feel that it is not because they are in the environmental industry or because they are small and early stage. They say they treat SMECs no differently than other companies but are decidedly conservative in their outlook, preferring secured financial instruments for later stage investments.

However, the facts seem to indicate that there is a gap, be it capital or expertise, for SMECs seeking moderate amounts of financing ($500K to a few million dollars). This part of the financial market, which should be the area served by venture capital companies, shows a significant gap that adversely affects the funding of small to medium sized environmental companies.

SMECs perceive a capital gap and want governments and their industry associations to address it. They are exposed to financing barriers ranging from perceived expertise gaps, environmental liability, their early stages of development, financial institutions operating procedures, alternative options for investment, government practices and a poor history for environmental industry investment. Government practices ranging from operating procedures to tax disincentives are perceived as the most serious barrier for environmental industry financing.

A number of recommendations are presented including a review of relevant ones from the National Biotechnology Advisory Committee, the National Advisory Board on Science & Technology and Ernst & Young on tax disincentives. This Study also makes recommendations on how to improve SMEC financing by promoting private investor investment, reviewing small business development programs, establishing new financing vehicles, significantly improving the venture capital pool available to SMECs, and setting up groups to address barriers and improve communications.

The Study concludes that, if sufficient capital can be made available to it, the Canadian environmental industry will be a major force for Canadian economic development.

INTRODUCTION

1.0 INTRODUCTION

1.1 THE SITUATION

Over the past twenty years, steadily increasing public concern over the impact and disposal of the products and byproducts of our industrial society has created opportunities in a new area, an industry involving firms that produce pollution control and abatement, energy and water conservation, and recycling equipment, and a range of goods and services for environmental protection, pollution prevention, waste management and the "greening " of society. This is the environmental industry. Initially the industry largely involved garbage disposal (waste management) companies. Now many new sectors have coalesced around companies offering new and advanced products and capabilities needed to cope with the environmental problems being confronted by industries, governments and the public.

Many believe[1] that the environmental industry will prove to be one of largest opportunities for enterprise and technical innovation that the industrial world has yet seen.*

This new industry, like all emerging industries, requires large amounts of capital to move effectively from its current fragmented and diverse situation. But it faces problems in obtaining financing; problems that other nascent industries have not faced. These problems impede the flow of both equity and debt capital and are ones that must, and are, being addressed. Some may be more perceptual than real (e.g, environmental liability), some are real (e.g., the industry's perceived largely high tech nature), and some are now being addressed (e.g., the relatively small knowledge base of the financial community of the industry.)

Small-to-medium sized environmental companies, those with annual revenues of less, usually much less, than $25 million in annual revenues, face particular problems in obtaining financing and this Study seeks to address the scope and degree of this SMEC financing problem.

1.2 THE CAPITAL LINKAGES STUDY

Industry, Science and Technology Canada (ISTC) has engaged Environmental Technologies Development Corporation (ETDC) to carry out a Capital Linkages study (the Study) relating to the financial situation of the Canadian Environmental Industry.

* *References are found in Appendix 6.1*

The purpose of this Study is to define the capital requirements of small-to-medium sized domestic environmental companies; to determine the attitudes to them of the suppliers of capital (both investors and lenders, referred to generically as the investment community herein); to find out how these companies might obtain better access to capital; and to determine under what conditions such capital may be made available by financial institutions. The Study is funded under ISTC's Environmental Industries Sector Initiative.

1.3 TERMS OF REFERENCE FOR THE STUDY

This Study addresses two major areas:

- *The financing climate experienced by Canadian environmental companies;*
- *Environmental companies' financing needs and barriers to financing.*

1.3.1 The Financing Climate Experienced by Canadian Environmental Companies

The first area addressed in this document is the context in which SMECs seek financing at present. This report:

a. Provides a preliminary overview of environmental financing available to Canadian firms, and describes the types of financing instruments employed. It also references lists of principal investors in Canada and internationally.

b. Provides case examples of a few indicative environmental companies (and their technologies) for which financing has been placed during the last two years.

c. Describes efforts that the financial community is undertaking to familiarize itself with the environmental industry and the financing requirements of environmental companies.

d. Describes the knowledge base of environmental companies with respect to investment offerings, applications for financing and the procedures which financial institutions set out in order to obtain financing.

1.3.2 Environmental Financing Needs and Barriers to Financing

The second area this document addresses is the needs of SMECs for financing and the barriers they face in trying to obtain such financing. This report:

a. Begins to measure the amount of financing required by the Canadian environmental industry, particularly SMECs, over the next five years.

b. Identifies some of the barriers faced by environmental companies, especially SMECs, in obtaining financing.

Because of the limited scope of the Study, consultations carried out with representatives of both the environmental industry and the investment communities were necessarily limited. Greater reliance is given to published material. No attempt was made to carry out a large number of interviews and, in most cases, no direct attribution is presented.

The Study reviews a number of literature recommendations on financing which are relevant to SMECs and presents a few additional ones suggested during discussions.

1.4 BENEFITS OF THE STUDY

It is hoped that this Study will be an important factor in addressing the financing needs of SMECs and in overcoming negative perceptions of unreasonably high risks of failure by the investment community when considering environmental companies' funding. If the problems relating to the financing of SMECs can be resolved, they can play a significant part in achieving the goals of the Green Plan. Indeed, Canadian SMECs will assist in the greening of all Canadian industries. *If Canada develops a thriving environmental industry substantial economic development benefits will result, including new, high quality employment, new business opportunities, sales of goods and services which reduce environmental impacts, increased levels of conservation and enhanced levels of value-added exports.*

THE CANADIAN ENVIRONMENTAL INDUSTRY

2. THE CANADIAN ENVIRONMENTAL INDUSTRY

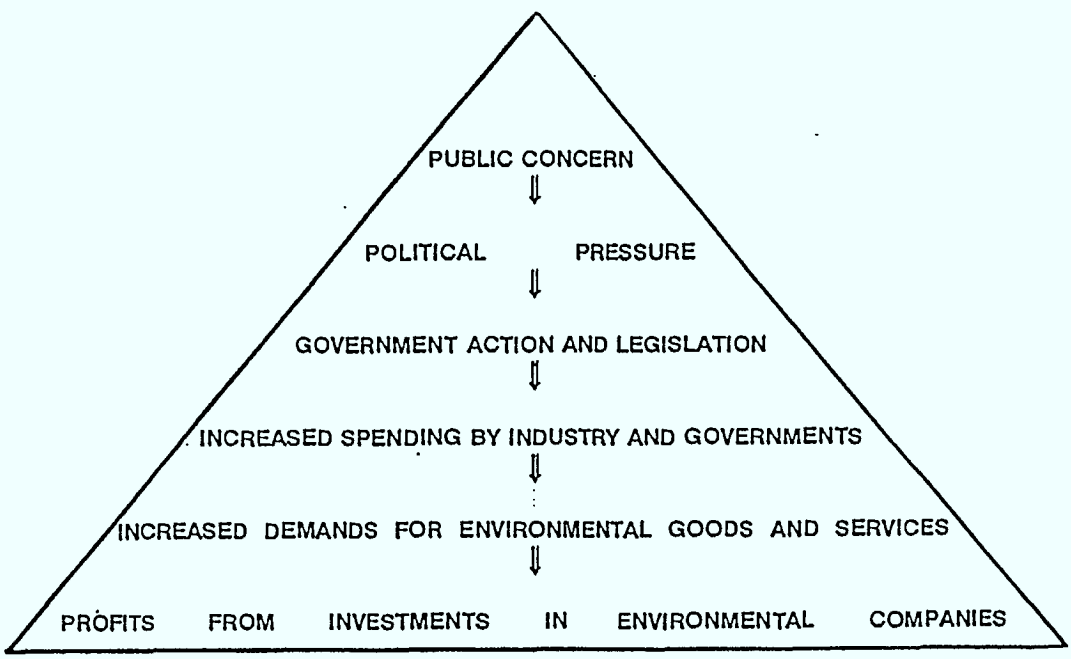
2.1 THE DRIVING FORCE

A current myth in some circles is that today's heightened concern about environmental matters is a temporary phenomenon, largely generated by the media and self-seeking politicians, and that it will sooner or later 'go away', like similar 'fads' in the past. It is unfortunate that this myth is held by some as a number of definitive studies have indicated that it is false. Concern for the environment is not something which will fade; it represents a fundamental shift in people's perceptions and its effects will continue to grow.

The basic driving force behind the environmental industry is public pressure resulting in legislation and regulations, directives and practices resulting from it. These result in spending, hence markets, revenues and profits. While other factors (e.g., education, technology, societal mores, etc.) are also important, they are secondary to the basic driving force.

FIGURE 1.1

THE DRIVING FORCE



2.2 CATEGORIZATION OF THE ENVIRONMENTAL INDUSTRY

2.2.1 Areas of the Environmental Industry

The environmental industry may be regarded as consisting[1,2] of the following broad areas:

- **SOLID WASTES HANDLING AND CONTROL**
- **AIR POLLUTION TECHNOLOGY AND CONTROL**
- **WATER AND WASTEWATER TREATMENT**
- **LAND MANAGEMENT AND CONSERVATION**
- **ENERGY ALTERNATIVES AND CONSERVATION**
- **"GREEN" PRODUCTS AND SERVICES**

Solid Wastes Handling and Control

The Solid Wastes Handling and Control area is currently receiving considerable attention. This market area involves the collection, handling, treatment and disposal of ordinary solid wastes (municipal, industrial and commercial), hazardous wastes and a variety of special wastes (e.g., nuclear, toxic, medical) as well as facilities, products and services involved with recycling, incineration and other solid waste treatment facilities.

Air Pollution Technology and Control Area

The Air Pollution Technology and Control area involves air pollution control equipment and instrumentation, scrubber technology and systems, pre-treatment technology, combustion modification techniques, continuous air monitoring and analysis systems, and indoor air quality systems. With new legislative initiatives such as recent amendments to the U.S. Clean Air Act, many feel particular growth will occur in this area over next few years.

Water and Wastewater Treatment Area

The field of Water and Wastewater treatment is a particularly broad area that society will have to pay particular attention to in future. The Potable and Industrial Water area of it involves water supply, water purification, groundwater monitoring, laboratory testing, and advanced technologies for water treatment.

The Wastewater Management Treatment involves the collection, treatment and disposal of industrial and municipal wastewaters, new and advanced wastewater treatment technologies and the remediation of contaminated water streams. With needed large scale infrastructure improvements and new technological developments, the next decade from now should see heightened attention to potable and industrial water systems, wastewater treatment facilities and water conservation.

Land Management and Conservation Area

The environmental aspects of Land Management will become increasingly important as we move into the 21st century. This area involves not only current activities in site remediation and geophysical techniques (e.g., mapping, subsurface imaging, etc.) but also activities relating to traditional nature conservation, soil conservation (e.g., the effects of desertification) and deforestation.

Energy Alternatives and Conservation Area

One environmental area which is often overlooked is the Energy, Conservation, Alternatives and Efficiency area. As much as 80% of air pollution problems, result from the conversion of energy "resources" to energy "services" so any process, technology or product that can affect energy use is an environmental one too. The energy alternatives area involves environmentally related aspects such as alternative energy sources (e.g., methanol fuel, solar power), energy conservation matters, and processes, products and equipment that improve energy efficiency. All lead to decreased energy use and reduced environmental impacts. (The area does not include traditional energy resources or services areas such as electrical generation, oil & gas exploration and development, or the like.)

Green Products and Services Area

A rapidly growing but little appreciated new area of the environmental industry is the supply of "Green" Products and Services, mostly to the consumers but also to governments and industry. Green products do not refer to environmental equipment but rather to consumer products which directly impact the public. These can range from non-disposable diapers to reusable containers to environmentally friendly health care products.

2.2.2. Environmental Business Categories

Environmental companies, like ones in other emerging industries, rely heavily on knowledge and innovation rather than on manufacturing muscle. They provide services, technologies, products and capabilities. While the areas of the environmental industry described above are useful in describing the industry itself, they are less valuable in describing just what environmental companies do. It is more useful to categorize companies into operating sectors which describe the type of business they carry out. These are:

- **WASTE MANAGEMENT**
- **ENVIRONMENTAL SERVICES**
- **ENVIRONMENTAL EQUIPMENT & PRODUCTS**
- **ENVIRONMENTAL TECHNOLOGIES AND PROCESSES**
- **REMEDIATION**
- **CONSULTING AND ENGINEERING**
- **ANALYTICAL SERVICES**
- **ENERGY AND ENVIRONMENT**
- **ENVIRONMENTAL HEALTH & SAFETY**
- **BUSINESS, FINANCIAL AND INFORMATION SERVICES**

Waste Management Sector

The Waste Management sector is the largest sector and involves the collection, handling, disposal and brokering of both hazardous and non-hazardous wastes, and often the operation of transfer stations and landfills. The sector is fiercely competitive and dominated by a few very large players (e.g., Laidlaw, Waste Management Inc.).

Environmental Services Sector

Closely related to the Waste Management sector is the Environmental Services sector. This rapidly growing sector encompasses such areas as the operation of treatment plants, recycling plants, composters, specialty materials handling facilities, incinerators and used oil recovery facilities. Also included are businesses doing remote inspection and sensing and those carrying out water, air pollution and bio-monitoring services for industry.

Environmental Equipment & Products Sector

The supply of equipment and products for the environmental industry is a large, highly fragmented sector. There are thousands of firms which supply everything from instruments to incinerators and solvents to sorbents. In many cases the type of equipment or product supplied finds markets in a variety of areas besides the environmental industry. Motors, pumps, filters, valves, blowers and control panels are just a few examples. In other cases, equipment or product is designed specifically for an environmental use. (Flue gas desulfurization equipment is an example.) Recycled products are a growing part of this sector.

Environmental Technologies and Processes Sector

This is the largest sector and is a catch-all area which comprises a wealth of processes, technologies, chemicals, micro-organisms and catalysts. Often it is associated with particular types of equipment. It is the least evolved of the market sectors but is becoming increasingly important as waste generators draw on new technologies to reduce pollution. Recycling, pollution prevention technologies and reduction come under this sector. There are literally thousands of firms in this intensely competitive sector.

Remediation Sector

The remediation market sector is less fragmented than others and involves fewer companies. It includes those that clean up waste sites; firms that do bioremediation; ones involved in decommissioning services; businesses that provide services for cleaning up oil, chemical and other spills; and companies involved in asbestos removal and disposal.

Environmental Consulting and Engineering Sector

This sector involves several hundred firms, usually ones which are relatively small and privately-held. Environmental consulting & engineering covers not only the design of pollution control facilities, but also consultation and interpretation on environmental laws; project engineering; site assessments; environmental audits; environmental risk analyses; compliance audits; assistance with obtaining environmental permits; and a host of other activities.

Analytical Services Sector

Over 1,000 environmental laboratory companies make up this fragmented sector which is concerned with the analysis of samples to determine the existence, extent and character of contaminants. Competition is strong and is growing as more companies vie to compete in an already crowded market.

Energy and Environment Sector

This sector encompasses a variety of companies offering energy efficiency, energy conservation and energy alternatives products and services which also reduce environmental impact and/or prevent pollution.

Environmental Health and Safety Sector

Environmental health and safety is a small but important part of the environmental market. It includes occupational health and safety; the control of dust, aerosols and other airborne contaminants; indoor air quality matters; industrial hygiene; security; safety supplies; safety audits; training; and a variety of related matters.

Business, Financial and Information Services Sector

This last sector is a grab bag of areas providing support services to the other environmental industry sectors and to the customers they serve. Included are market research companies; insurance companies; law firms; accounting companies; publications and information management firms; people carrying out trade shows and conferences; financial institutions; employment services and recruitment companies; management consultants; and many others. In some cases, the services provided are only a part of the services the organization in total provides. (E.g., part of a law firm may devote itself to environmental law.)

2.3 GLOBAL ENVIRONMENTAL MARKET

The world market for products, technologies, processes, and services for cleaning up the environment was estimated to be worth about US $255 billion in 1990 and is projected to grow to $580 billion by the year 2000[1]. The following table outlines the 1990 and projected turn of the century world market for the environmental industry excluding the rapidly burgeoning energy alternatives/efficiency/conservation area:

Table 2.1
GLOBAL ENVIRONMENTAL MARKET* BY TERRITORY
($US Billion)

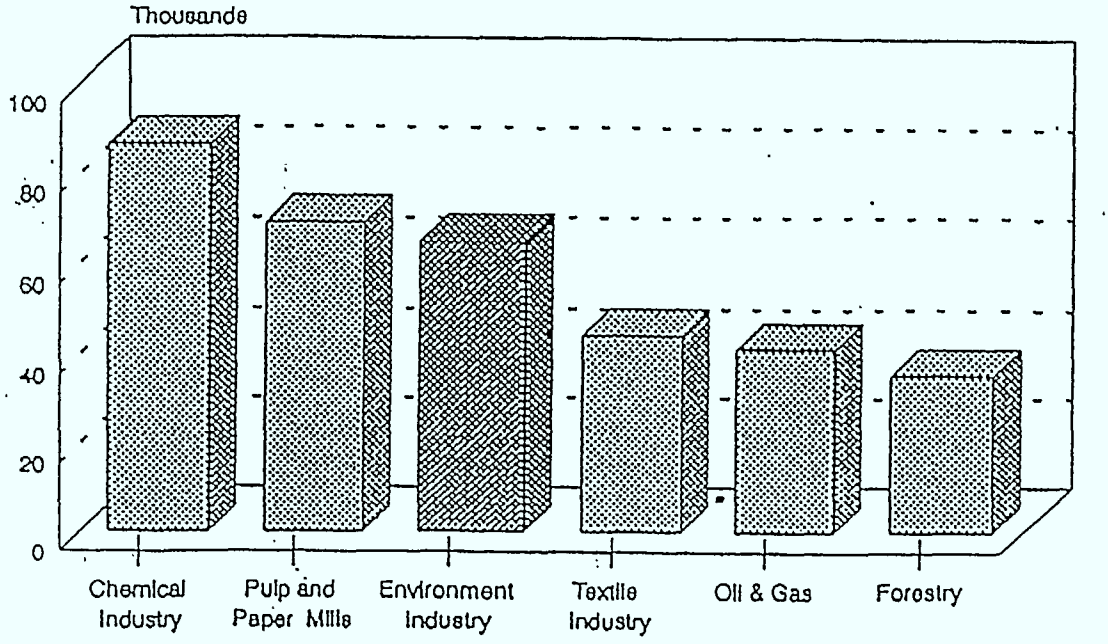
	YEAR 1990	YEAR 2000
NORTH AMERICA		
UNITED STATES	115	185
CANADA	7	14
MEXICO	3	18
Total N.A.	125	207
EUROPE		
UNITED KINGDOM	11	28
FRANCE	10	30
GERMANY	21	65
REST OF EEC	15	48
REST OF W. EUROPE	6	17
EASTERN EUROPE/CIS	15	25
Total Europe	78	213
ASIA/PACIFIC		
JAPAN	24	65
AUSTRALIA/N.Z.	2	4
TAIWAN	5	30
HONG KONG	--	3
S. KOREA	1	8
REST	14	28
Total Asia/Pacific	46	138
REST OF WORLD	6	12
TOTAL WORLD	255	580

*Excluding Energy Alternatives and Conservation.
Source: ETDC

2.4 CANADIAN ENVIRONMENTAL MARKET

As may be seen from Table 2.1, the Canadian environmental market, which was about US $6.5 billion (Can $8.1 billion) in 1990, is forecast[1] to more than double by the turn of the century. Currently, the Canadian environmental industry is highly fragmented and involves literally thousands of SMECs along with a few dozen larger players. It is estimated that the Canadian environmental industry currently involves about 3500 firms,[1] most of them with less than 50 employees. Already, as shown in Figure 2.2, the environmental industry employees over 60,000 people and is the third largest in the country[3].

Figure 2.2
EMPLOYMENT BY INDUSTRY SECTOR



Source: Ernst & Young

Currently the Canadian environmental industry is growing at an annual rate of 10-12%[4] and this is forecast[1] to continue at an average of 8% per year till the turn of the century. The estimated size of the domestic environmental industry for year 2000 is as follows:

Table 2.2
CANADIAN ENVIRONMENTAL MARKET
(Year 2000, Can $ billion)

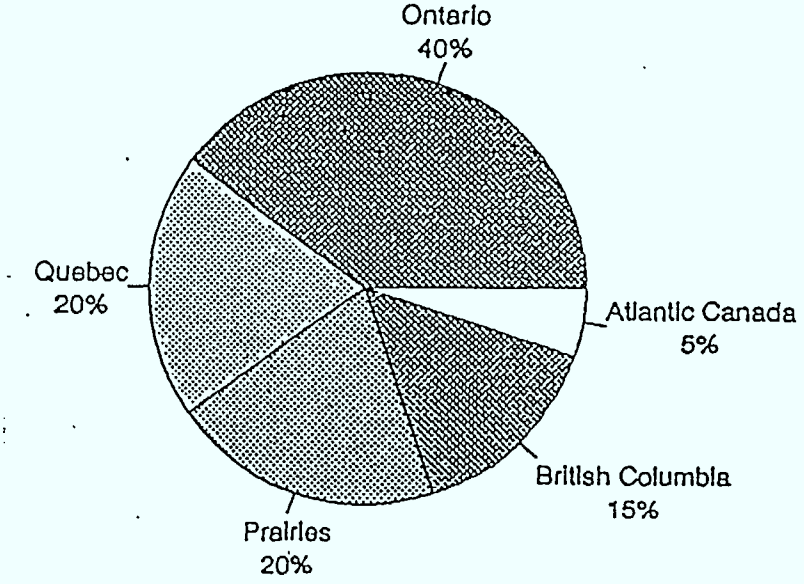
Solid Wastes Handling and Control	5
Air Pollution Technology & Control	4
Water and Wastewater Treatment	6
Energy Alternatives & Conservation	4
Other*	3
TOTAL	22

* Land Conservation Plus Green Products and Services. US$1.00 = Can $1.25

Source: ETDC

Figure 2.3 shows the distribution of industry revenues[3].

Figure 2.3
ENVIRONMENT INDUSTRY REVENUES BY REGION



Source: Ernst & Young

The following table presents recent data[4] on 1990 Canadian environmental products supply, exports and domestic demand only (i.e., excluding services).

Table 2.3
CANADIAN ENVIRONMENTAL PRODUCTS ACTIVITY

	Water & Wastewater	Solid Waste Handling	Air Pollution Control	Other*	Total
Canadian Demand (Can$K)	2610	1220	760	680	5270
Domestic Supply (Can$K)	1690	1000	290	370	3350
% Of Demand from Domestic Firms	65	82	338	54	63
Exports supplied by Domestic Firms (Can$K)	410	170	155	270	1005
% of Canadian production exported	20	15	35	42	23

Source: ETDC, Ernst and Young

* Noise pollution control, regulatory equipment, etc. Does not include energy alternatives and conservation.

When "services" (e.g., consulting & engineering, lab services, remediation, etc., - not shown above) are added, it is seen that the Canadian environmental industry is already a multi-billion dollar one, and one with considerable scope for expansion.

Excluding the energy and environmental sector, the current (mid 1993) Canadian environmental market is about Can $9.5 billion distributed as follows:

Table 2.4
CANADIAN REVENUES OF CANADIAN ENVIRONMENTAL COMPANIES

APPROX RANGE OF ANNUAL REVENUES ($MM)	PERCENTAGE OF TOTAL* (%)	NUMBER OF COMPANIES (#)	NOMINAL ANNUAL REVENUE EACH ($MM)	ESTIMATED TOTAL ANNUAL REVENUES ($B)
>1	66	2300	0.5	1.2
1-5	25	900	3.0	2.7
5-25	7	250	15.0	3.8
25+	2	70	25	1.8
			TOTAL	9.5

Source: ETDC *Data from ISTC

As shown in Table 2.3, in 1990 Canadian companies exported over $1 billion in environmental products and probably as much or more in services. Canada also imports significant amounts of environmental goods, and to a lesser extent, services.

Only companies in the first three categories of Table 2.4 can be described as small-to-medium sized, indicating annual SMEC revenues of almost $8 billion. When the energy and the environment sector is considered, (not included above) SMECs probably represent an industry sector with better than $10 billion in annual revenues.

2.5 THE CANADIAN ENVIRONMENT INDUSTRY ASSOCIATION

Since the Canadian environmental industry is essential in the "greening" of Canadian society, as well as for providing jobs, economic development and exports, it is important that it speak with a common voice. Various sectors of the industry (e.g., air, waste management, recycling, etc) are represented by a variety of excellent and active technical associations. However, these associations cannot speak for all sectors of the industry, which in many cases are largely technically-oriented, and often are regional in nature.

The Canadian environmental industry's umbrella association, the Canadian Environment Industry Association (CEIA), was formed to co-ordinate and focus representation from all sectors of the industry, to lobby governments, to provide a forum for marketing, financial, business, regulatory and legal matters, and to foster networking. CEIA does not attempt to compete with the sectoral associations but rather seeks to complement them and assist them with business, industrial strategy, and government liaison matters.

CEIA's constituent associations* are:

- CEIA-B.C.
- Environmental Services Association of Alberta
- Special Waste Services Association of Saskatchewan
- Manitoba Environment Industries Association
- CEIA-Ontario
- Association des Entrepreneurs de Services en Environnement du Quebec
- Environmental Service Corporation of Atlantic Canada
- Newfoundland Environment Industry Association

CEIA has a national board of directors and is setting up an Ottawa-based secretariat. CEIA's mission is to make Canada THE international centre of excellence where environmental problems are identified and solved.

As the Canadian environmental industry's umbrella association, CEIA is especially concerned with removing barriers to the development of domestic environmental companies. Accordingly many CEIA branches are involved in initiatives to assist Canadian environmental companies in obtaining financing.

* Contact information for CEIA is found in Appendix 6.2

THE FINANCING CLIMATE FOR CANADIAN ENVIRONMENTAL COMPANIES

3.0 THE FINANCING CLIMATE FOR CANADIAN ENVIRONMENTAL COMPANIES

3.1 METHODS OF FINANCING

3.1.1 Financing via Cash Flow

The easiest and safest way for a SMEC to finance growth is via internally-generated cash from its own operations. This does not lead to dilution or debt for the company. However, reliance on cash flow to finance growth or other company needs may be too slow, may not be practical in an early growth period, or may not be sufficient to allow companies to capitalize on attractive market opportunities. Thus a SMEC will have to consider other methods of financing.

3.1.2 Debt and Equity Financing

There are basically two methods of financing: debt and equity, although there are variations of each (e.g., convertible debentures, preference shares) which have aspects of both.

Fully secured debt (i.e., collateralized by hard assets which can be seized and sold to recover all of the monies lent) is the "cheapest" form of financing, costing prime (the prevailing bank interest rate) plus a few percent. This is followed by senior debt (usually secured but sometimes not) for which the "spread" (interest rate premium above prime) is usually higher. Subordinated debt, i.e, debt that can be "realized" (i.e., claimed by a lender in the event of default) follows. The next level can involve either a form of debt, a convertible debenture (a loan which the lender may convert to stock) or preferred shares (a type of equity on which dividends are paid before those of common stock). With these latter instruments, investors seek relatively high rates of return (35-50%) to compensate for the risk involved. The least secured and hence riskiest form of financing is by common stock equity alone. Investors who use this route expect to get very high rates of return. The spectrum of funding sources from fully secured debt to common stock equity is shown in Appendix 6.3.[5].

3.1.3 Debt Financing

The advantage of debt financing to many owners is that it involves no dilution of ownership. Its disadvantage is that it involves a further charge against the business - interest payments. In order to get debt financing, a SMEC needs collateral; something to pledge in return for the loan. This can be certain types of readily tradeable stocks, bonds, mortgages, property, equipment or the like. Such hard assets should not be confused with "softer" ones the

principals of a SMEC may also be required to pledge. (E.g., personal guarantees, receivables and inventory.) Lenders, especially banks, want both but the former alone will enable a SMEC to qualify for a loan.

Debt financing (loans from banks and other financial organizations) may not be adequate or suitable for all situations. Equity capital is usually necessary and may come from the principals or outside parties. Equity financing from any outside source which does not involve a public stock market is referred to as a private placement. Which option - debt or equity - a SMEC prefers will vary depending on the firm involved and its particular circumstances.

3.1.4 Equity Financing

Equity is the natural interest of the owners or shareholders in a company. There are various types of equity or "stock" in a company ranging from varieties of common shares (ones bearing no interest) to preference (or preferred) shares which pay dividends (distribution of excess profits) before common stock. There are also several quasi-equity instruments such as warrants and options (rights to purchase shares, usually at a predetermined share price) and loans which can (under certain predefined circumstances) be converted to shares.

Equity may be privately held or involve shares traded on a public exchange (e.g., the TSE) or over-the-counter (e.g., the ~~CANADIAN~~ CDN (Canadian Dealer Network) exchange and NASDAQ in the U.S.). Publicly-traded shares have the advantage of "liquefying" ownership (i.e., they usually can be readily converted to cash) and providing a definable valuation for a company.

For equity financing, the principals of a SMEC must surrender a part of the ownership of their company. However, interest payments are not involved (for common shares), or are lower and deferable (for the dividends of preferred shares).

3.2 SOURCES OF FINANCING

3.2.1 Types of Financing Sources

The environmental industry is a fractured one, with diverse segments consisting of thousands of private and public companies. Most are small and privately-held. These SMECs are typically privately-owned, offer specific services or technologies, and often operated by one or more owner-entrepreneurs (principals). In many cases they have reached their limits with available resources and require additional financial support to allow them to grow. However, like similarly-sized companies in other industries, SMECs face great difficulties in raising needed capital as often they lack the types of assets and securities needed.

There are a several financing sources an environmental company may consider[6]:

- **PERSONAL AND FAMILY RESOURCES**
- **BANKS**
- **GOVERNMENTS**
- **PRIVATE INVESTORS**
- **VENTURE CAPITAL COMPANIES**
- **INSTITUTIONAL INVESTORS AND INVESTMENT POOLS**
- **STOCK MARKET**
- **INDUSTRIAL INVESTORS**

3.2.2. Personal and Family Resources as Sources of Financing

The first place most early stage SMECs find financing is from the personal resources of the principals. This may be in the form of liquid assets or be raised from a bank or other financial institution in the form of a loan (e.g., a mortgage) secured by the personal property of the principals.

The next place that many companies turn to in order to raise capital is to people they know. Friends and relatives are often prepared to invest and, in some cases, they may be the only place that early stage companies can turn to after the resources of the principals have been used up. The hazards of using this source are obvious but nevertheless it is a source that few fail to consider.

3.2.3 Banks as a Source of Financing

The most obvious route for raising outside financing for a SMEC is to seek a bank loan. Bank loans are only an option when a SMEC has something to pledge, either personal or corporate. Banks are asset-based lenders and are not really interested in how good a service, product or technology an environmental company might have or, except peripherally, what promise it may have. Their analysis is purely financial and focuses on hard asset coverage. Additionally, a major concern by banks is environmental liability. Where facilities or operations are involved which could lead to such liabilities, even the hardest of assets may not result in a loan.

Most companies at every stage of growth require a bank operating line (i.e., an open, drawing account for a variable loan) to finance day-to-day expenditures. Requirements for a line are higher for manufacturing companies where raw materials must be purchased to produce products for sale. Most operating lines usually are secured by inventory (valued at anywhere from 20-60% of its value) and receivables (i.e., accounts payable to the company, usually valued at 50-80% of face value). For many SMECs, banks expect the principals to provide personal guarantees, and other security as well, to the level of the operating line's maximum amount.

In addition to operating lines, many companies seek term loans from banks to finance debts, growth, new equipment and a host of other things. For early stage businesses meeting certain criteria, government guaranteed bank loans may be obtained.

The Federal Business Development Bank (FBDB)* offers a form of "quasi-equity' financing known as "Venture Financing". Required qualifications are not quite as stiff as those for bank financing. However, potential recipients must demonstrate at least two years of profitable operations and show positive shareholder's equity. Often the FBDB demands that the principals of a firm obtaining such a loan provide (or obtain) matching hard cash for the firm. Since the Venture Financing program makes less reliance on collateralization with hard equity, it costs more than normal bank financing, normally 15-20% (versus the prime plus or so for a bank loan).

No mention of SBCA

*Contact information for this and other organizations mentioned in this report is found in Appendix 6.2

3.2.4 Governments as Sources of Financing

The federal government, provincial governments, and a variety of related public bodies (e.g., the National Research Council) all provide financing assistance to start up and early stage companies. Indeed, government assistance and /or incentives may be biased towards earlier stage and socially desirable areas such as the environmental industry.

Government financing may take the form of R&D contracts and assistance, cash grants, subsidies (either capital or operating), reduced interest notes, relief incentives from taxes, loans and loan guarantees. In addition, many governments have venture capital operations (see Section 3.2.6).

Governments are usually loathe to take a leading role in financing and usually like to supplement or complement funding from other sources. The most common form of government financing assistance for a SMEC is a "grant" of up to 50% (usually much less) of the financing required,* and most require the balance of funding to come from outside sources. Certain government grant/loan programs may be "stacked" between the federal and provincial governments allowing (in rare instances) financing of up to 75% of the funds required.

Federal funding programs available to SMECs include:

- Strategic Technologies Program
- Development and Demonstration of Resource and Energy Conservation Technology Program (D-DRECT)
- Unsolicited Proposals Brokerage Service
- Environmental Innovation Program (EIP)
- Industrial Research Assistance Program (IRAP)
- Technology for Environmental Solutions Program - Commercialization
- Atlantic Opportunity Program
- Western Economic Diversification Program
- Many Others

Further information on some of these programs is found in Appendix 6.4[7]. Provincial programs vary from province to province and accessing these and the federal ones is addressed in Section 4.1.

* Many grant programs require repayment at a later date, being in essence, interest-free, long term loans.

Governments are able to draw on the public service for technical input in evaluating requests for financing but relevant marketing and managerial expertise may be lacking[6]. In addition, analyses may be carried out or vetted by junior staff with no business experience. Many SMECs also feel that governments are slow to react and that too much red tape is be involved.

Community Bond Program

A new government-sponsored financing initiative which may prove of great interest to SMECs has been piloted by Saskatchewan[8]. This is the *Community Bond Program*. This grassroots experiment in co-op capitalism allows companies to sell government-guaranteed bonds to local investors. The program is designed to encourage value-added enterprises in Saskatchewan. As few as six people can form a community bond corporation which must have appropriate community representation. Local investors invest in debt securities which pay better than bank interest rates and the principal is guaranteed by the provincial government.

So far 140 companies in Saskatchewan have taken advantage of the program. The rules require that the community bond must specify a maturity date (usually five but up to ten years) after which bondholders have the option of either taking their money out or converting it into shares in the company in which the investment occurred.

Other provinces are studying this concept. Manitoba's Department of Rural Development has now announced its *Grow Bonds* program, modelled after Saskatchewan. SMECs in these two provinces have access to these programs.

3.2.5 Private Investors as Sources of Financing.

Private investors are certain well-to-do individuals who are prepared to take the time and effort to evaluate third party opportunities in the hope of obtaining returns far above what would be possible with less risky investments[6]. Commonly they are referred to as "angels" and they are a little known but essential source of financing for small businesses like SMECs[9] Angels may operate alone or in syndication with others. For this latter case, they have access to a type of government-promoted mechanism known as the Small Business Development Corporation (SBDC).

Angels

Venture capital companies and other formal investment institutions usually prefer investments of $500,000 or more and are less geared to the financing needs of very small businesses. For smaller companies seeking more modest equity investments ($50,000 to $500,000) angels often fill the gap between personal and family resources and the financial institutions. Angels tend to invest locally in smaller enterprises. 88% invest in Canada, 39% within 10 miles of their office, 70% within 300 miles.[9,10] Angels are very much a personal marketplace and get their information from sources such as other private investors, friends, newspapers and magazines, municipal economic development departments and local chambers of commerce. They prefer syndication with others but often avoid SBDCs. (In Ontario for instance, only 3.9% of angels invested via SBDCs.)[10]

Angels reject 73% of proposals[10] at first glance, mostly due to immediate perceptions of a small company's value. They reject a further 16% of proposals following review of business plans, 6% after meeting the principals, and 3% during negotiations, giving a private investor "hit" rate of only slightly above 2%, about the same order as that of venture capital companies.

Angels are usually highly educated, prepared to make aggressive decisions and very "street smart". When they do invest it is because of perceived returns, a sense of excitement, a sense of affiliation and pure adventure, the thrill of the chase.[10] They want significant premiums for their investments (>50% pretax ROR). They want equity but often prefer to choose secured debt coupled with equity (common shares or warrants/options to obtain them) to get it.

Small Business Development Corporations

Various provinces provide companies with programs which facilitate private investor financing under some sort of a small business development corporation method. (Names vary from province to province. See Appendix 6.2.). SBDC programs are designed to encourage equity funding in early stage companies, including most types of environmental ones. They generally allow individual (and corporate) investors to take up to a certain percentage of the equity of private, Canadian-controlled companies, usually small ones paying the bulk of their salaries in the province.

Under such programs several investors can pool their resources into an arm's length SBDC which then invests in the subject company. The company seeking the financing still must locate the needed investors, although most SBDC programs also have matchmaking

services. By investing via an SBDC each of the private investors involved receives a tax-free cash grant (e.g., 25-30% of the funds invested for Ontario). Corporate investors usually receive a tax credit instead of a grant.

SBDCs allow investors to make private placements in a company with reduced risk and costs. A serious drawback in most SBDC programs is their relative inability to allow future financing tranches in the same company.

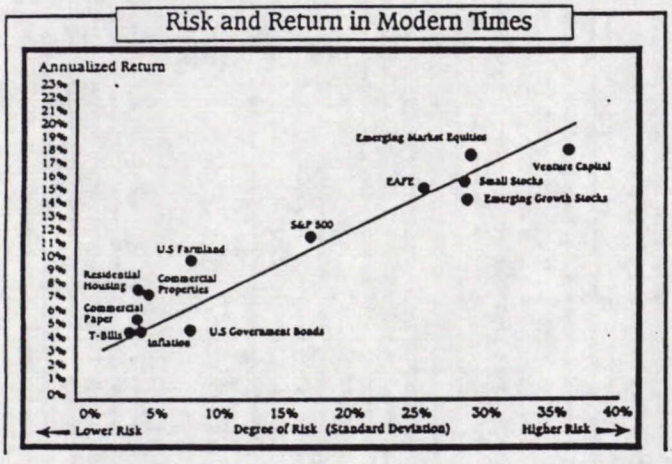
3.2.6 Venture Capital Companies as a Source of Financing

In cases where the above forms of financing are unfeasible and/or difficult to obtain, a frequently used option is to approach a venture capital company for funding. Venture capital companies (VCCs) make their money by making long term equity investments in companies they believe will grow dramatically in future.

Broadly speaking, venture capital is capital which is not secured by assets and which is invested in or loaned to a company by an outside investor.[11] It is often referred to as risk capital since it is not only unsecured, it also lacks liquidity (i.e., it cannot be readily converted to cash). Strictly speaking private investors, VCCs and institutional investors all fall under this definition. For the purposes of this document, venture capital will mean the funding (equity or quasi-equity) provided to early stage companies by VCCs.

A Toronto VCC, Working Ventures, has presented the following American relative assessment of risk versus returns for various forms of investment.

Figure 3.1



ASSET CLASS	LONG TERM RETURNS	DEGREE OF RISK
Venture Capital	18.0 %	36.2 %
Emerging Market Equities	17.5	29.9
Small Stock	15.6	28.7
EAFE	15.1	25.1
Emerging Growth Stocks	14.1	28.8
S&P 500	11.6	16.6
U.S Farmland	9.8	7.5
Residential Housing	7.7	4.0
Commercial Properties	7.5	4.9
Commercial Paper	5.2	3.8
Inflation	4.6	3.9
U.S Government Bonds	4.5	9.4
T-Bills	4.4	3.4

Source: Morgan Stanley Research

As may be seen in Figure 3.1, venture capital is a highly risky form of investment and, consequently one which seeks relatively high rates of return

There are a number of venture capital firms about and they have access to money which is unavailable to others; money from a variety of institutions such as pension funds, corporations, endowments and foundations, individuals/families, banks, private investors and insurance companies. In essence, VCCs are a distribution channel between large, mainly institutional, sources of capital and small businesses.[12] Some typical* Canadian venture capital companies are:

British Columbia:	**Ventures West, Discovery Enterprises**
Alberta:	**Alberta Opportunity Company**
Prairies:	**Vision Capital Fund**
Ontario:	**SB Capital, MDS Health Ventures, Innovation Ontario Corporation, Quorum**
Quebec:	**Altamira, Soccrent, Soquia, Novacap**
Atlantic Canada:	**Resourcecan**

SMECs should clearly understand that venture capital is an active form of financing and if they become involved with a VCC, its personnel will want to take a direct hands-on role in the business. In the case of most VCCs this will involve participation on the company's board of directors and key committees, and a direct interest in the company's affairs.

In the case of the Expert Investment Company kind of VCC (see below), the involvement will be even more intrusive. Unless a company is prepared to accept such active involvement it should not consider VCCs as a financing alternative.

VCCs get involved in financing at all stages but are most prominent in the development and growth stages of a company.

An advantage of venture capital financing is that it usually is for equity. This has a flip side though in that this involves ownership dilution and the venture capital firm's terms may be onerous, often involving surrendering large fractions of a company's equity plus agreeing to other stringent conditions.

The second table in Appendix 6.3 reviews some Canadian VCCs. Canadian Venture capital companies have an association, the Association of Canadian Venture Capital Companies (ACVCC). In the U.S. it is the National Venture Capital Association (NVCA). Statistics on American venture capital are assembled

by a U.S. company, Venture Economics. In Canada, Macdonald and Associates fills this role.

There are a number of institutions which categorize themselves as venture capital companies but who focus on fully secured instruments (e.g., debentures backed by some sort of collateral). Since venture capital by definition implies risk investment in equity, these companies are more properly defined as investment institutions.

The Canadian VC industry currently manages in excess of $3 billion in capital, distributed as follows:[13]

Table 3.1
VCC INVESTMENT PERCENTAGES

Private VCCs	50%
Subsidiaries of Corporations*	30%
Government VCCs	20%

* Both financial and non-financial

There are four special types of VCCs which deserve separate attention: Bank Venture Capital companies, Government Venture Capital companies, Labour-sponsored Venture Capital companies and Expert Investment Companies.

Bank Venture Capital Companies

Changes to the Bank Act in 1980 allowed Canadian Banks to get involved in venture capital in a limited way. As a result several set up venture capital divisions. These include:

- **CIBC Wood Gundy Capital**
- **Citibank Canada, Investment Capital Division**
- **Investissement Desjardins**
- **Royal Bank Capital Corporation**
- **Royal Trust Enterprise Capital**

Bank venture capital companies are decidedly conservative and prefer secured debt instruments to equity. They also rarely consider the financing of early stage companies, preferring growth or mezzanine stage ones.

Government Venture Capital Organizations

The Federal and several provincial governments have set up venture capital organizations (GVCCs). The federal one, FBDB's Venture Capital Division, has offices in Vancouver, Toronto and Montreal.

The government of Ontario has a venture capital agency (Innovation Ontario Corporation - IOC). So have the governments of Quebec (Soquia), Alberta (Alberta Opportunity Company) and B.C. (Discovery Enterprises Inc., a half private sector version).

GVCCs differ from private sector venture capital firms in that, where equity is involved, the amounts of dilution they expect in return for their participation may be more modest, although other conditions are usually just as onerous.

They are more likely to consider start-up and other early stage companies and are more sensitive to investment in socially beneficial areas (e.g., the environment).

IOC is typical. It has invested $51 million in 279 deals since being established in 1986, with a average investment in the $200-$300K range. Only 24 were repeat deals. IOC's level of investment in SMECs is still small (about 5%) but is growing. As a government agency it coordinates closely with other government grant and loan programs and provides a follow on capability for many companies accessing them. (In Ontario these are the Environmental Technology Program and the Enersearch program, both offering grants of up to 50%).

GVCCs are easier to access than many private VCCs and, since their motives are as much societal as profit-generating, have higher acceptance rates. IOC, for instance, accepted just over 13% of the proposals presented to it last year, although only three-quarters of these eventually proceeded.

Labour-Sponsored Venture Capital Companies

Labour-sponsored venture capital companies[14] (LSVCCs) are affiliated with recognized unions and raise their capital in relatively small tranches (usually a few thousand dollars at a time with RRSP money) from the public. Federal enabling legislation amending the Income Tax Act allows investors in such funds a 20% tax credit (up to $700/year at a $3,500 investment) and several provinces (B.C., Saskatchewan, Ontario, Quebec and PEI) have matched this with their own 20% tax credit. Since investment in these funds are RRSP eligible, investors can achieve significant tax savings (67-90% depending on income level).

LSVCCs have been set up in British Columbia (the Working Opportunity Fund), Ontario (Working Ventures Canadian Fund Inc.) and Quebec (Le Fond de solidarite des travailleurs du Quebec). Manitoba is also considering establishing one.

Labour-sponsored venture capital companies are of special interest to SMECs as they should be oriented towards more speculative investments in small to medium sized firms, especially ones with some "social" value. They also tap a unique capital market. Some are limited in investment eligibility to their province.

LSVCCs are investing 60 cents dollars. (Due to the tax credits*. Because of this "public assistance", it has been hoped that they will orient their investments more towards riskier early stage and high technology companies (i.e., SMECs) than do other VCCs. Some, however, are sceptical[12] that they will do so; feeling they will use 60 cent dollars to make $1.00 dollar investments.

Expert Investment Companies

While some venture capital companies are focused on particular industry areas, many are prepared to evaluate opportunities from a broad spectrum of areas including the environmental industry. Most of them are operated by people who advertise (especially to their sources of funds) their "managerial" skills and financial analysis capabilities. Unfortunately, few of them have the necessary technical and marketing credentials to properly evaluate environmental businesses. Also the promised managerial experience all too often comes from business areas which have little relevance to the entrepreneurial, fast-moving, high tech atmosphere of small companies such as SMECs.

Venture capital investment in the past has been dominated by what is known as the 2/6/2 "rule". This means that for every ten investments, venture capitalists expect to have two winners, six "walking wounded" (or "knife and forks" - a nice living, but that's all) and two disasters. In order to shift this "rule" towards more winners, a new concept has evolved, that of the Expert Investment Company (EIC). An EIC is a VCC which focuses on a particular industry area and combines traditional VCC skills with expert technical, economic and marketing skills in that area. Association with industrial sponsors is also involved. More information in EICs is found in Appendix 6.5

**Some, such as Working Ventures, are national in scope and have had their infrastructure costs subsidized by the federal government as well. These are investing even "cheaper" dollars.*

3.2.7 Institutional Investors & Investment Pools

A lot of the money available for investment financing comes from institutional investment pools such as:

- **PRIVATE PENSION FUNDS**
- **PUBLIC PENSION FUNDS**
- **MUTUAL FUNDS**
- **ENDOWMENTS**
- **TRUST FUNDS**
- **INSURANCE COMPANY FUNDS**
- **CORPORATIONS**
- **OTHER POOLS OF CAPITAL**

Private pension funds are those of publicly and privately held companies such as the Air Canada employees Pension Fund and the Ontario Hydro Pension Fund. Private pension funds are dwarfed by those of public bodies. The pension funds of the Ontario Municipal Employees Retirement System (OMERS) and Quebec's Caisse de Depot are examples. Mutual funds raise their money from a variety of investors and add value by prudent investment in a variety of areas. Banks, trust companies and various institutions manage trust funds for families, wealthy individuals, charitable organizations, philanthropic organizations and a variety of others. Insurance companies and other groups handling large amounts of cash re-invest in a variety of ways.

These pools are managed by professional money managers and their outlooks are decidedly conservative. Most of the funds in these pools are earmarked for low risk areas such as bonds and blue chip stocks. However, many have a "basket" of up to a few percent of the funds being managed that can be directed towards more speculative investments.

Unfortunately, they will only rarely deal with start-up or development stage companies. And they too, like the banks, are quite concerned about statutory environmental liability. Almost the only way monies from the pools find their way into small environmental companies is via venture capital companies (in whose funding they sometimes invest), through larger-level investments in "enabling" companies (see below), and occasionally via direct investment by a few of them in "small cap" growth stage, publicly-listed, medium-sized environmental companies.

A factor in obtaining funding from many institutional investors are investment counsellors. These agents provide the pools with expertise in specialized fields, deal with investments which are individually too small to merit much attention from investment managers, and

have access to specialized technical databases and communication sources. As middlemen they increase the cost of money and tend to be even more conservative than the investment managers they represent. Nevertheless many money managers rely on them (they are also convenient people to blame when investments go sour) and more and more they are becoming gatekeepers for some of the funds (including many large American VCCs).

Atwick of Toronto is an example of an investment management company accessing a variety of insurance company money sources.

3.2.8 Public Stock Offerings

The stock market is a traditional way that publicly-listed companies use to raise funds. It is a source of equity capital and by offering one's stock to the public a company dilutes its ownership. However, such dilution is often to wide ranging parties and is usually for much less than a controlling interest.

A decision to go public is usually make after weighing the cost/benefits for acquiring additional funds to fuel growth, comparing the risks of often heavy debt financing with concerns about control. The stock market provides a ready, and usually orderly market for those who wish to buy or sell shares of a public company. By issuing shares from treasury in an initial public offering (IPO), a company can raise significant funds. Publicly-traded shares also offer a way (via options and warrants) to reward employees and stakeholders in a manner which also provides further financing. Canadian companies tend to go to the public market rather less than American ones; there being only a third as much relative IPO activity here.

It costs money to obtain a listing and these costs can be quite high where it is with a senior exchange. All exchanges have minimum requirements for being listed on them. With any kind of a listing comes a series of requirements (e.g., reporting, third party audits, etc.) which may be onerous and expensive. It is not for all. Most SMECs cannot qualify for listing on a senior exchange and may find less value in a junior exchange or an over-the-counter listing. Others cannot afford a listing or simply do not wish to involve themselves with the complexity it brings.

**A typical cross-section of example institutions is found in the attendance list for a March 1, 1993 CEIA/GIO financing seminar, as presented in Appendix 6.6.*

If a company can meet the listing requirements and has the strength and organization to deal with one, the stock market is a good way to raise funds. Recently several medium-sized Canadian environmental companies (e.g., ETI, Zenon) have raised equity on the stock market. A listing should not be attempted without the assistance of an experienced corporate lawyer and co-operation with a reputable stock broking firm who will prepare the initial public offering.

Another advantage of the public equity method of obtaining financing is that it provides a ready and usually orderly market for those members of the public who wish to invest in a SMEC. As a result of this liquidity factor, valuations of a SMEC based on the resultant publicly-traded stock is well defined (and frequently higher than that placed on privately or closely-held shares). This facilitates more investment via further public offerings.[15]

Statistics Canada reports that there are over 57,000 companies in Canada with revenues over $2 million per year and less than 2% of these (1132) have access to public sources of equity via listings on the TSE.[12] Presumably the small situation will apply to environmental companies with only a few percent (less than 100) having public listings on the TSE and other listed exchanges.

No mention of NASDAQ

3.2.9 Industrial Investors

For the past few years, there has been very little money available from financial institutions for the financing of SMECs. True, there has been money from certain government programs but almost without exception these require matching funds from another source. The problem for SMECs has been to find such a source.

Surprisingly there are such sources, ones that do have funds, often will invest and, not only that, ones are familiar with a SMEC's market and type of technology. (Getting up to speed with an environmental service or technology is a major factor for any company seeking financing.)

These sources are called industrial investors, sometimes known as "Technology Enablers".[6] They are a type of strategic partner. They are those companies, institutions or organizations which are, or will be, affected by a SMEC's service or technology, threatened by it, compete with it, be complemented by it, or benefit from it. They are a company's (prospective) competitors, customers, suppliers, distributors or associates. They have good economic, business and competitive reasons to be interested in certain SMECs. They could face financial losses, increase or decrease markets, and/or earn increased profits if they invest in such a company.

3.3 CRITICAL FACTORS FOR OBTAINING FINANCING

3.3.1 Stages of Environmental Company Growth

Technology-based industries like the environmental one are characterized by long lead times from basic research to industrial application, (relatively) short lead times in commercialization and accelerated obsolescence under global competitive pressure of new product and process introductions.[15]

Companies at different stages in their growth cycles will have differing financing needs, constraints and situations.[16-19] Before considering specific financing aspects, it is useful to review the ramifications of which stage a company is in. Following definitions first presented in a review of the financing of early stage biotech companies,[18] SMECs may be envisioned as developing through four generally recognized (by the investment community) stages:

- **START UP**
- **DEVELOPMENT**
- **GROWTH**
- **MEZZANINE**

Each of the above stages calls for different types of management, operations and financing. Each involves different risks and opportunities. It is tempting to identify the above stages with the revenues levels presented in Table 2.4 but this would be inaccurate. Many development and even some growth stage companies, have annual revenues of less than $1 million and some development stage ones quickly exceed revenues of $5 million per year.

3.3.2 Financing Start Up Environmental Companies

The start up (or concept or seed) stage involves the inception of environmental companies with new environmental services, technologies or capabilities. Activity is directed towards setting up a company to develop or provide a prototype or concept. Most of the company's efforts are focused on organizing to manufacture/provide a new product, or in the case of a new service company, towards defining the type of business to be carried out. Once the company is set up, R&D and/or market research may be high on its list of priorities. If it occurs at all, marketing is limited to exploring market size, defining competition and preparing for market entry. Any required patents, licenses or approvals will be sought at this stage.

Management is highly entrepreneurial and the principals exercise hands on control of all aspects of the business. The company generally has few staff other than the principals at this stage.

Companies at the start-up stage usually have expenditures but little or no income from sales or services. Seed funding generally comes from (personal funds and bank lending secured by personal assets), monies from family and friends, and government sources. Occasionally, VCCs get involved.

Traditional indicators of a successful company (e.g., revenue and profit records, market share, history) are absent in a start up environmental company so investors have to look to other factors to determine whether or not it is worthy of financing. Critical success factors that a start-up company must meet in order to be considered for "outside" (i.e., non personal or government) financing (e.g., by private placements, banks, venture capital companies, etc.) include :

- Pledgable "hard" assets from the principal(s), either associated or (usually) separate from the business;
- A demonstration that the principals have been able to access "entrepreneurial" financing (i.e., personal resources, government grants/loans/paid R&D projects, raising of funds from families, friends, associates, etc.);
- Strong experienced, entrepreneurial management of two or more individuals showing drive, confidence credibility, "vision" and really superior knowledge of their business area;
- A well developed concept for a proprietary product or service;
- A product or service for which independent validation of its potential viability can be obtained;
- A defined target market exhibiting strong potential for growth;
- The potential for a distinct technological (or capability) advantage over competitors;
- A regulatory (or societal) desire associated with the product or service which generates a distinct market "pull" for it;
- A clear plan for producing a working prototype (or demonstrating a capability) defined in a well written business plan;

- A predisposition toward alliances with larger companies.

3.3.3 Financing Development Stage Environmental Companies

The second stage of an environmental company occurs in the first few years of operations once the company has completed its initial R&D (or service definition), constructed a prototype (or fully defined a capability), and began field testing. Commercialization is underway. At this stage it has started selling its product or service on a preliminary basis (at least locally) although "incubation" and other fine tuning still may be necessary. Income may still be negative although profits are projected in the next year or two. Fixed overheads have begun to develop in the form of offices, permanent employees and infrastructure.

The principals still are in management control but now they are beginning to be joined by others (e.g., financial staff, sales staff, etc.) with responsibility for specific functions.

The company still shows none of the traditional success indicators and a lot of its financing comes from entrepreneurial sources although in this government funding may play a larger role. Entrepreneurial financing now may be supplemented by that from private investors, venture capitalists and industrial investors. Some degree of bank financing (for an operating line) has occurred. The critical success factors for obtaining further financing at this stage include:

- Strong entrepreneurial management now complemented by other needed management skills;
- Demonstrated uniqueness of product or service (e.g., patents issued or pending, approvals obtained, etc);
- A record of success in accessing entrepreneurial financing;
- A business plan describing the technology (or capability), its market, preliminary projections for growth, competitive analyses and other matters;
- A clear definition of target market size, marketing strategy and market entry strategy;
- Initial sales or contracts, with potential for growth;
- Demonstration of a sustainable, long term economic advantage for the company's products or service;

- Definition of manufacturing or service delivery capability;
- Operating prototypes and demonstration that incubation is complete or at least underway;
- Appropriate alliances/contracts/relationships with suppliers and customers as well as at least one strategic alliance with a major company;
- A recognition by the principals that new management skills will be required for continuing growth;
- An understanding by the principals that further infusions of capital will be necessary for growth and that management will have to "price" for this capital reasonably in order to obtain it.

3.3.4 Financing Growth Stage Environmental Companies

The growth stage of an environmental company may be either rapid or steadier and slower. Where rapid growth occurs, especially in the fast growing environmental industry, it may be rapid indeed with doublings and redoublings over relatively short time periods.

For companies in their growth stages, products and services are well defined and are being marketed in expanding markets and market areas. Product and/or services diversification is underway and acquisitions and diversification strategies are being considered. Traditional measures of success such as growing revenues, profits, financial ratios and evaluations operating capabilities can now be carried out. The company now is run by professional managers although the original entrepreneurs may still be involved, but usually not in a controlling mode. Bank lines are in place.

Management has re-oriented earlier thinking and puts more emphasis on costs, working capital needs and performance indicators. Entrepreneurial financing and private investors have ceased to be sources of funding, and internal funds, private placements by institutions, bank lending and public equity issues now will be depended on. Critical success factors for further financing at this stage include:

- Competent professional management with strengths in all business areas and an orderly defined succession plan;
- Growing revenues (and profits) along with an expanding market share;
- A demonstrated record of profitability;
- A slate of diversified patented and/or proprietary products or services that dominate a market area or niche;
- A competitive cost structure;
- A detailed business plan incorporating clear strategic, marketing, organization and financial aspects;
- Established strategic alliances with major companies and contracted, successful arrangements with suppliers and customers;
- A definable valuation of corporate worth.

3.3.5 Financing Mezzanine Stage Environmental Companies

The mezzanine stage of corporate development involves small to medium-sized environmental companies which have been in business for several years, selling well defined lines of products and or services. Some products/services are mature and the company is actively diversifying. Management is by professionals and the principals who started the company have either left the scene or evolved away from an entrepreneurial bent.

Mezzanine companies face the paradigm shift of going global and attaining/acquiring enough critical mass to compete. At the same time they often are under-capitalized and have to consider substantial cash demands for expansion. Critical success factors for financing at this stage include:

- A competent management with all of the needed strength and skills;
- A realization that competition is global and that to continue to thrive and grow, the company will have to seek to market and compete globally;
- A well thought out professional business plan addressing all relevant areas;
- Successful domestic strategic alliances and plans for new ones further afield;
- A growing market share at home and significant market potential outside the traditional market area;
- Good revenues and profits;
- A definable valuation for the company, with reasonable expectations for obtaining further financing.

3.3.6 Growth Stage and Financing Sources

The following table outlines the approximate availability of the various financing sources for SMECs at various stages of development.

Table 3.2
SOURCES OF FINANCING

SMEC STAGE	START-UP	DEVELOPMENT	GROWTH	MEZZANINE
Personal & Family Resources	●	○		
Banks	○	●	●	●
Governments	●	●	○	
Private Investors	●	●		
Venture Capital Companies	○	●	●	
Institutional Investors/Pools			○	●
Stock Market		○	●	●
Industrial Investors		○	●	●

KEY: ● MAJOR SOURCE ○ MINOR SOURCE

Other than bank operating line loans, financing for early phase SMEC (start ups, early development stages) comes from personal and family sources, governments and private investors (angels). Middle phase SMECs (later development, early growth phase) depend on VCCs and institutional investors. Later phase SMECs have access to the stock market, institutions and industrial investors as well as bank term loans.

3.4 PERCEPTIONS AND THE ENVIRONMENTAL INDUSTRY

3.4.1 Sources

Although this Study involved only a limited number of consultations, those that did occur, supplemented by literature sources, provided a view of the investment community's perceptions of the environmental industry and investment opportunities with environmental companies. Consultations occurred with a few venture capital companies, banks, and pension funds, the Canadian Bankers Association, the Pension Investment Association, the Association of Canadian Pension Management, and several government finance-related groups (FBDB, IOC, etc.)* The following perceptions include subjective comments from a variety of sources. Except in certain cases, specific sources are not, and will not, be identified.

3.4.2 The Investment Community's Perceptions of the Environmental Industry

The first perception of the financial community about the environmental industry is that most investment organizations don't know a lot about it. However, for what they do know, they perceive the industry as a growth one, one that offers opportunities. This perception reflects a positive perception of "the environment" in general.

Banks and senior investment institutions are very nervous about environmental liability. While most do not directly connect environmental companies with environmental liability, it colours their perceptions and makes "selling" an environment-related investment to their investment committees much harder. Venture capitalists are less liable to link environmental liability and environmental companies but are still very concerned about the issue.

Environmental liability concerns are especially a problem with the loan managers of local banks who, faced with environmental check lists and head office monitoring, often tend to reject anything that even raises a concern about liability. Too often the word "environmental" associated with a company does.

Some point out that environmental companies have financing advantages since they are perceived as socially desirable (allowing easier hearings by potential investors) and have access to special government support programs (e.g., federal and provincial environmental ministries' grants) that companies in other early stage, high tech industries (e.g., computers) do not enjoy.

**Contact information is found in Appendix 6.2*

Despite their positive perceptions of the environmental industry, most investment organizations are quick to point out that this does nothing to facilitate the financing of SMECs. Investment opportunities are judged solely on their merits and because a company is an environmental one gives it no advantage. Accordingly, so far as they are concerned, if SMECs face difficulty in obtaining financing it is not because they are small and early stage, nor because they are environmental, but because of other factors.

Private investors invest in companies for a variety of reasons. While there is no data on their perceptions of the environmental industry specifically, their reasons for accepting a deal generally are relevant to SMECs. Angels are looking for high potential products, financial reward, realistic business plans, growth industries, and experienced reliable management.[9] They are turned off by perceptions of unsatisfactory risk/return ratios, insufficient market potential and poor business plans. Their reasons for investing are as follows:[9]

Table 3.2
WHY ANGELS INVEST IN DEALS

Reasons for Investing	Rating*
Confidence in principals	6.2
Perception of potential opportunity	5.5
Understand the business	5.5
Expectation of large financial returns	5.4
Confidence in personal ability to manage risks	5.4
Valued participation with principals	5.1
Being part of creating something	4.8
Excitement associated with involvement	4.5
Previous experience with type of business	4.1
More fun than gambling	3.5
Perception of being lucky with such endeavours	3.0

*Rating on a ten point scale FOR investing

The Canadian venture capital industry receives a fair share of business plans from environmental companies seeking financing and as a result has a better perception of the environmental industry than do other members of the investment community. As shown by a recent publication in their association trade journal[20], Canadian VCCs are becoming aware that the environment has some unique factors. Three aspects of environmental decision

making were defined which, it was felt, were going to be crucial in the success or failure of their future venture capital investment activities:

1) There is a growing number and power of regulations and laws regarding environmental issues;

2) Intense consumer perceptions regarding the environmental impact of products and processes were going to affect [investment] risks and rewards;

3) Technological innovations that improve the environmental performance of a product or process will affect competitive risks and rewards.

The article bluntly stated its author's belief that any product or process that is eclipsed by a more environmentally "pure" one will fast become obsolete; a compelling reason for VCCs to become much more familiar with the area.

The environmental industry is still early stage and there is, as yet, little comprehensive data on why investment companies such as venture capital firms invest in them. However, Environmental Business Journal, an American environmental newsletter, has published[21] listings of why venture capital companies turn down investments. They claim these are indicative of environmental companies as well:

Table 3.4
WHY VENTURE CAPITAL COMPANIES TURN DOWN DEALS

Reasons for Not Investing	Rating*
Lack of Seasoned Management	8.9
Poor or Unrealistic Business Strategy	7.4
Regulatory Hurdles Clouding Development	7.0
Lack of Compelling Economics	6.8
Lack of Proprietary Technology	6.4
Little or No Track Record	6.1
Company Requires Too Much Capital Over Time	5.9
Low Profit Margins	5.9
Market Niche Too Small/No Product Diversity	5.8
Founders' Valuation Unreasonably High	5.4

* Rating on a ten point scale as reason for NOT investing.

The same publication presented reasons American venture capitalists gave for investing.

Table 3.5
WHY VENTURE CAPITAL FIRMS INVEST IN DEALS

Reasons for Investing	Rating*
Seasoned Management	8.6
Product has Compelling Economics	7.4
Proprietary Technology	7.1
Good Profit Margins	7.0
Proven Track Record	6.9
Attractive Valuation/High Potential for Return	6.8
Regulatory Advantages Pose Barrier to Competition	5.8
High Growth Market Niche	5.8
Broad Market Application for Product/Service	5.6

* Rating on a ten point scale as reasons FOR investing.

It is noted that venture capital's pre-occupation with management comes through in both tables above. While the above factors are not barriers to financing per se, they are indicative of the kinds of criteria a SMEC must meet in order to successfully obtain financing and a shortfall in any of these areas will be a barrier to financing.

As a first step in improving the investment community's knowledge of the environmental industry, a one-day workshop entitled "Investing in Ontario's Environment Industry" was held in Toronto on March 1, 1993. This event, sponsored by CEIA-Ontario and co-hosted by CEIA and the Ontario Ministry of Environment and Energy's Green Industry Office (GIO), assembled representatives from the financial community (i.e., banks, venture capital companies, investment pools, brokers, etc.) to hear presentations on the nature of Canada's environment industry, Ontario's proposed "Green Industrial Strategy", environmental industry opportunities and the financing situation with regard to Canadian environmental companies.

Appendix 6.6 presents the agenda and attendance list for the March 1 workshop. This attendance included representatives from only 4 out of 10 brokers invited, 13 out of 22 venture capital funds, 10 out of 25 pension funds, life insurance companies and other institutions, 5 out of 9 banks and 3 out of 8 government financial groups. These fractions are by themselves an indication of the investment community's perception of the environmental industry.

In summary the investment community does not perceive that there is a "capital gap". They believe the reasons SMECs experience difficulty in obtaining financing are the usual ones; poor (or lacking) business plans, unrealistic expectations, poor knowledge of financial matters ("many don't even know the difference between debt and equity"), and all too often, poor management.

3.4.3 SMECs' Perceptions of the Investment Community

Just as the investment community knows little about the environmental industry, conversely most environmental companies seem to know little about the investment community. As mentioned, some cannot even distinguish between debt and equity and, where the former is involved, fail to understand that banks an other lenders are risk averse and will not lend unless fully secured. The business plans they prepare are often poor and technically-focused, down playing or completely missing the factors that investors want most to know about (management, markets, economics, contracts, finances, etc.)

Despite years of efforts by banks, government agencies and associations to educate them, some early stage companies (including some SMECs) continue to have difficulty finding appropriate financing sources and approaching them in a manner which will give them some possibility of success.

Nevertheless, most SMECs do seem to find financial institutions to approach for financing. Banks, VCCs, companies like ETDC, brokers and government agencies are inundated by approaches and business plans. An active network of cross-referrals among these groups occurs and a SMEC which is turned down by one has the option of trying others.

Cost/benefit comes in here. The principals of early stage SMECs cannot devote too much time to seeking financing or they will neglect their business but face a Catch "22" situation in that they must have financing or they won't have businesses. Accordingly, they tend towards approaches that are also cost efficient with their time. This mitigates with many against approaches to government grant agencies where small amounts of capital ($50-500K) are involved, as the bureaucracy, delay and red tape faced are claimed to be more than is reasonable for the amounts of funding involved.

Banks especially are not liked. Many companies, and here SMECs are not unique, have horror stories about unsympathetic and arbitrary bank loan managers, staff changes, credit lines slashed or pulled, loans called and of intentions misunderstood. The banks may feel they are being prudent businessmen, just avoiding risk, but too many SMECs perceive that they are paying for the wild risk-taking of senior bankers in developing countries' loans, Olympia & York and the like.

SMECs perceive a capital gap, especially at the start up and development level. They feel that it should be the business of government and associations such as CEIA to address it.

3.4.4 Findings from The Ontario Investment Fund Initiative

The findings of a provincial financing initiative provide insight into perceptions. The government of Ontario is concerned about the availability of capital for financing knowledge-intensive small and medium-sized companies. To address this need it set up the Ontario Investment Fund (OIF) initiative. Initially it was envisaged as a government-oriented investment fund capitalized from public sector pension funds. It has now evolved into a proposal to establish an industry/government fund-of-funds to partially capitalize EICs. The purpose of the initiative is to develop and grow successful companies, especially in new and emerging sectors such as the environmental industry. It also aims to increase industry's knowledge content and skill base to enhance value-added potential and to increase the competitiveness of the Ontario economy while earning competitive returns for investors.

The OIF project team, beginning in early 1992, carried out more than 40 consultations and reviewed nearly 70 written submissions, many involving the investment community. While the OIF project team's consultations were general and not directed specifically towards the environmental industry,[40] most of their findings apply to it as well. Specific ones of relevance include:

1. There is currently a significant "capital gap" faced by companies in new and emerging sectors.

2. The capital gap reflects a more fundamental EXPERTISE gap, a gap in the skills required to invest in and grow successful companies in these new sectors.

3. Currently Canadian private equity/venture capital investment management sources are fragmented and lack critical mass. For example, in the U.S. in 1991 average investment per year was $4 million per company. In Canada it was $0.7 million.

4. There is a need to increase the number and depth of successful expert investment managers by going beyond the current pool. This includes a need to encourage greater corporate and community participation.

5. Government has a catalytic role to play but should remain at arm's length.

3.5 FINANCING EXAMPLES

While it would be impossible to list all of the Canadian SMECs which have tried to obtain financing recently, the following are a few select examples.

3.5.1 Zenon Environmental Inc

Zenon is a Burlington, Ontario environmental equipment (reverse osmosis/ultrafiltration) and analytical laboratory company. Early financing was from two industrial investors, France's Lyonaisse des Eaux and Imperial Oil who purchased minority equity positions in the company's lab services division and equipment divisions respectively. In 1992 Zenon went public on the TSE with an IPO of $12 million.

Critical success factors for Zenon's recent financing were a well managed company diversified into two divisions, good profit growth potential, and the selection of an experienced broker to place the bulk of its IPO with select institutions.

3.5.2 Link Pipe Inc

Link Pipe is a Toronto based SMEC which manufactures and sells equipment to repair short sections of sewer pipe. Its customers are municipal wastewater treatment departments of cities and towns throughout North America. Initially it sold collapsed PVC pipe sections with a gasket inside. Later it expanded its business line to include expandable stainless steel and plastic inserts.

The company is family-owned and initial seed funding was obtained from personal and family resources. When Link Pipe needed further funding a few years ago it sought government funding but did not proceed as an approach by a Japanese firm proved more effective. The industrial investor provided Link Pipe with $1.1 million in funding in the form of contracts and the purchase of some of the company's technology.

*3.5.3 Environmental Technologies International Inc. (ETI)**

Initially ETI was financed by private placements ($300K in 1988 to establish the company by purchasing its first two affiliates). A further private placement of $1.8 million in late 1989 was followed by various stock sales.

** A description of ETI is found in Appendix 6.5*

The Company went onto the TSE in late 1991 by a reverse take over of a small, already-listed oil & gas company with a further private placement of about $5 million in special warrants by institutions.

As a company with many of the attributes of an EIC, the following methods it used to finance the purchase and growth of its affiliates [2.22] provide examples of SMEC financing:

Table 3.6

ETI AFFILIATE	BUSINESS	HOW FINANCED
Spill Tech Industries Inc. Sault Ste Marie, Ontario	Oil spill cleanup media	By a local SBDC which holds 41%. ETI arranged this and holds 39%. It collateralizes Spill Tech's bank line.
CFC-Tek Inc. Etobicoke, Ontario	CFC recycling machines	Direct purchase of 75% interest from principals. ETI financed incubation and collateralizes bank line.
Kenox Corporation **Mississauga, Ontario**	Advanced wastewater treatment technology	85% interest purchased for ETI shares and cash from a directed investment in ETI by institutions.
Ergo Solar Pumps Inc. **Rexdale, Ontario**	Solar-powered water pumps	Direct purchase of 80% of shares. Incubation underway.

3.5.4 Halozone Recycling Inc.

Halozone is a development stage Ontario environmental technology firm. Its technology is the "Blue Bottle" method of recovering chlorofluorocarbons (CFCs) from refrigeration and air conditioning equipment. The technology was developed by Union Carbide but considered by them to be non-strategic. The President of Halozone, a former Union Carbide employee, took the Blue Bottle technology out of Union Carbide, which granted her the exclusive license to it in Canada and a non-exclusive license worldwide under attractive terms.

Halozone raised $2.0 million in a private placement from investors and almost $900,000 from the government of Ontario.

Critical success factors for Halozone's successful start-up financing were a strong committed management, excellent connections by management both in industry and government, the topicality of the issue (i.e, CFCs and ozone depletion) and the association of a major industrial partner, Union Carbide. (Halozone will pay royalties to Union Carbide for its technology.)

3.5.5 Superwood

Not all financings of environmental companies turn out to be success stories. An example is Superwood Inc.[23] This company was set up in 1989 to manufacture synthetic lumber made from recycled plastic using a licensed Dutch process. Its products were intended to compete with those manufactured from pressure-treated lumber such as picnic tables, fence posts and signposts. It was promoted to be an answer to recycling problems, allowing the reuse of dirty mixed plastics collected in municipal recycling programs.

Superwood's equipment and engineering were financed to the tune of almost $400,000 by several provincial programs and three federal ministries. The bulk of the company's financing came from an industrial investor, Tetra Pak Alfa Laval, which loaned the company $4.3 million.

Superwood set up facilities in Mississauga, Ontario and began projects in B.C., Quebec and the Maritimes. It tried to grow swiftly but projected sales never materialized. The company's industrial investor called its loan in 1991 after receiving none of the scheduled repayments and Superwood went into receivership. The company never recovered, although a successor organization, Eco Superwood B.C. Ltd, continues.

Controversy still swirls about Superwood's demise. The company's principal claims that weak consumer commitment to green products and lack of support by civil servants and politicians were the cause. Detractors claim that uneconomic products pricing, inattention to customer needs, poor marketing and over-ambitious expansion plans were the cause. Superwood is an example of an environmental company that successfully obtained financing from governments and an industrial investor yet was not successful because it could not generate sufficient cash flow to service the debt incurred by the financing.

FINANCING REQUIREMENTS AND BARRIERS TO FINANCING

4.0 FINANCING REQUIREMENTS AND BARRIERS TO FINANCING

4.1 ACCESSING FINANCING SOURCES

Many government departments, associations and firms provide information on how to find out about and access financing. Local branches of CEIA, FBDB, ISTC, provincial economic development ministries and municipal economic development offices (EDCs) all are excellent sources for information on all types of financing sources*.

Details on government assistance and incentive programs may be obtained from a number of sources[13]:

- **Canadian Business Financing Handbook[13]**
- **Canadian Government Program and Services[24]**
- **Canadian Industrial Incentives Legislation[25]**
- **The Canadian Reference Directory on Business Planning and Funding[16]**
- **Government Assistance for Canadian Business[26]**
- **Handbook of Grants and Subsidies[27]**
- **Industrial Assistance Programs in Canada[25]**
- **Sources of Successful Small Business Financing in Canada[28]**

One source states that successful accessing of government financing requires the following[7]:

- **Knowledge of Government Priorities**
- **Demonstrated Technical Competence**
- **Business Planning**
- **Willingness to Negotiate on Their Terms**
- **Patience**

The CBA[29] or a local bank branch can provide information on bank financing. Suggestions on accessing bank financing are found in the Canadian Business Financing handbook[13] and the Directory of Business Planning and Funding.[16]

*Information on contacting the organizations mentioned is found in Appendix 6.2.

4.2 AMOUNTS OF FINANCING AVAILABLE

The federal government's $80 million Technologies for Solutions program, which seeks to provide interest free loans of up to 50% (average 35%) of a company's costs to commercialize an environmental technology finally has begun to invest, placing about $3 million last year and planning to place a further $10 million this year. Other federal departments (Environment Canada, External Affairs, EMR) also have grant and loan programs as do most provinces. It was beyond the scope of this Study to attempt to determine the magnitude of all government financing potentially available but it would be no exaggeration to say it totals in the hundreds of millions of dollars, with a significant portion potentially available to SMECs.

In the United States, VCC investment rebounded in 1992 to double to $2.5 billion from relatively low 1991 levels, although smaller funds, first-time funds and ones dealing with start ups did not see as much improvement.[32] Of this amount only $112 million (4%) was for companies specifically designated as environmental.

There appears to be relatively little investment by U.S. VCCs in Canada and the only information found is for one major American VCC, Advent International[33], which participated in one Canadian investment (a SMEC, Ballard Industries of Vancouver where it invested $2 million for 10%). Advent estimates that 10% of its investments (~ $40 million) were in environmental companies (7 in the US 1 in Canada, 2 offshore). This may be a typical and the 4% number is probably a reasonable average.

Canadian VCCs have been making about $270 million in placements annually in about 250 deals with an average deal size of $1 million as follows:

Table 4.1
CANADIAN VENTURE CAPITAL DEAL FLOW

	1991				1990			
	Number	%	Amount ($MM)	%	Number	%	Amount ($MM)	%
Start-Ups	111	42	$73	27	58	22	$48	18
Turnarounds	21	8	29	11	14	5	20	7
Expansions	90	34	102	38	112	42	104	39
Acquisitions	14	5	25	9	N/A	N/A	N/A	N/A
BuyOuts	16	6	32	12	34	13	77	29
Other	8	3	4	1	30	11	18	7
Unspecified	4	2	3	1	0	0	0	0
Total	264	100	268	100	248	94	266	99

Source: ACVCC, Macdonald & Associates

Labour-sponsored venture capital funds have rapidly growing amounts of capital available for investment. Ontario's Working Ventures had $47 million in 1992 and may soon reach $150 million. Quebec's Solidarity Fund had a capitalization of $471 million in 1992. British Columbia's Working Opportunities Fund is now capitalized to about $20 million and expects this to double year by year. The latter recently completed its first placement, significantly with a SMEC, a local oil filter recycle company to which it provided about $400,000. Within a few years labour-sponsored VCCs alone should come to represent a pool of many hundreds of millions of dollars, all of it theoretically accessible by SMECs.

The amount of investment by personal investors (angels) is difficult to quantify but a recent study[10] showed that they represent a vast, virtually untouched pool which already invests between $1.5 and $3 billion annually, an amount equivalent to that invested by senior financial institutions. Their average investment is about $100,000. No data is available on how much angel investment is in environmental companies but about 12% of their investments are in high technology companies and 17% in natural resources ones. Presumably some of them are environmental.

It the same 4% figure as with American VCCs is used, this implies personal investor SMEC investment of $60-120 million per year . This would be mostly for start up and development stage investments.

The ultimate size of the angel investment pool is very large. Riding[10] estimates that angels have average assets of about $1.5 million and annual incomes of about $180,000. Statistics Canada data shows there are about 150,000 families in Canada with financial profiles similar to this. If only 10% of them considered personal investments in early stage companies, this would indicate a potential pool of *$15 billion annually!* If governments are serious about promoting the development of early stage companies, including SMECs, they could do no better than to encourage investment by angels.

In 1990 the asset mix of Canadian pension funds (public and private) was as follows:

Table 4.2
CANADIAN PENSION FUNDS ASSETS
(Dec 31/90)

ASSET	INVESTMENT ($billion)	PERCENT (%)
Cash and Short Term	16.6	9.9
Government and Guaranteed Bonds	76.7	45.6
Corporate Bonds	5.5	3.3
Insured Mortgages	5.9	3.5
Conventional Mortgages	2.5	1.5
Real Estate	7.0	4.2
Canadian Equities	39.8	23.7
U.S. Equities	7.9	4.7
International Equities	3.8	2.3
Other Assets	2.2	1.3
TOTAL	168.0	100.0

Source: PIAC

About 10% of this (about $2 billion) is available for investment annually. All of pension funds investment in venture capital companies is found in the category "Other Assets", which also includes many other types too. Nevertheless, this fraction ($2.2 billion in 1990) is quite

large and it should be borne in mind that pension funds are only part of the total institutional capital pool. Some of the category "Canadian Equities" involves shares in Canadian environmental companies but the bulk of this would likely consist of shares in the large waste management companies and only a fraction would involve publicly-traded SMECs.

The general conclusion is that there is lots of capital potentially around. The question, though, is whether or not enough of it is really available to meet SMEC requirements.

4.3 AMOUNTS OF FINANCING REQUIRED

Initially it had been hoped during this Study to obtain a definition of the amounts of financing required by SMECs during start ups, for R&D, for product/service commercialization, for business expansions and for mergers and acquisitions. Little data was found for any of these except, as shown in the following table, for U.S. mergers and acquisitions.[45]

Table 4.3
U.S. ENVIRONMENTAL ACQUISITION ACTIVITY -1991

AREA	NO OF DEALS	AVERAGE ACQUISITION PRICE ($MM)
Solid Waste	238	3
Hazardous Waste	30	37
Environmental Equipment	28	25
Remediation	6	12
Consulting & Engineering	71	15
Analytical Laboratories	19	18
Other	12	25

Source: The LEK Partnership/NETAC

Except for the hazardous waste area, the acquisition prices indicate that many of the environmental companies involved might be defined as SMECs. No comparable Canadian data is available but the usual ratioing might suggest up to 40 such mergers and acquisitions in Canada.

Start-ups are addressed below. Not enough data was available at this early stage to quantify the amount of R&D financing, commercialization or expansion financing required by Canadian SMECs as yet. To obtain such data will require extensive consultations in a program requiring much more time and resources than were available.

A rough estimate of SMEC financing requirements might be obtained from the data of Table 2.4 as follows:

Table 4.4
ESTIMATED FINANCING REQUIREMENTS FOR SMECs

ANNUAL REVENUES RANGE ($MM)	NUMBER OF COMPANIES (#)	AVERAGE FINANCING REQUIRED ANNUALLY ($K)	TOTAL FINANCING NEEDS ($MM)
>1	2300	50-200	115-460
1-5	900	200-1000	180-900K
5-25	250	1000-5000	250-1250
		TOTAL	545-2610

Accordingly Canadian SMECs may require anywhere from a half-a billion to 2-1/2 billion dollars in financing yearly.

How much they actually receive is also difficult to estimate at this stage. Federal government funding to SMECs is probably in the $50 range annually although a much more comprehensive survey will be required to confirm this. Provincial funding may be of the same magnitude. If angel funding is in the $60-120 MM range (as estimated earlier) and it is assumed that personal, government and angel financing each contributed one-third, then a pool of about $300 million for start up and development stage SMECs is suggested, consistent with the lower estimates of Table 4.4.

There is no data available on the amounts of funding available to SMECs from banks and corporate investors; obtaining such would require a much more comprehensive study than this. The latter may not represent large amounts of money. Macdonald[34] states that structural disincentives mean that Canada corporations are not doing a lot of investing in high technology companies.

It is also clear that very little institutional money finds it way to SMECs except via VCCs. And the data which is available from them is disturbing. If it is assumed that the American situation for the percentage of VCC deals involving environmental companies is correct (e.g., 4% of total), then from the data of Table 4.1 it can be estimated that Canadian VCCs invested *only about $10 million* in SMECs in 1991. This is quite low compared to the estimates for angels and the like. If the amount of VCC investment in SMECs is really this

low, and it appears to be, it indicates a significant problem. As may be seen from Table 3.2, after the start up and early development stages of a SMEC, VCCs should be the major source of financing where requirements lie in the $500,000 to a few million dollars range. And they are not because there are not enough of them and the institutions do not appear to be funding them to the degree necessary.

There is support for this result. In a recent paper[34] Mary Macdonald of Macdonald and Associates argues significant amounts of [VCC] investment capital should be flowing into growth industries but is not and this limited access to capital makes it much more difficult for Canadian technology companies to achieve leadership internationally within their sectors.

All in all, the data that are available, backed up by preliminary discussions with SMECs, all supports the same conclusion: There is a capital gap. Indeed there is a capital "bottleneck" and it is at the VCC level. Canadian SMECs are not obtaining as much financing as they require and one of the main lacks is the paucity of funding available from VCCs.

4.4 BARRIERS TO FINANCING

4.4.1 Types of Barriers

The risk/return assessment procedures which members of the investment community use to evaluate investment opportunities, including those for SMECs, results in a number of often interrelated real and perceived barriers to financing. These include:

- **THE EXPERTISE GAP**
- **ENVIRONMENTAL LIABILITY**
- **STAGE OF DEVELOPMENT**
- **OPERATING PROCEDURES**
- **ALTERNATIVE OPTIONS**
- **GOVERNMENT PRACTICES**

4.4.2. The Expertise Gap

Macdonald and Associates,[34] in a study on the financing of Canadian Technology Companies for the National Biotechnology Advisory Committee, (NBAC) outlined a number of other factors which inhibited financing for Canadian technology companies. Two of the factors she identified are relevant to SMECs as well:

- There are insufficient numbers of technology-focused Venture Capital Companies in Canada...

- Canadian management teams are less experienced than their US counterparts...

Both factors reflect an "expertise gap". The first, reflects the situation with VCCs which have both the expertise to [more] successfully invest in the environmental industry and the confidence of the institutions which fund VCCs. The second reflects a smaller, more diverse Canadian environmental industry.

In the early 1980s there was a flurry of investments in "high tech" companies. Since most of the VCCs and institutions which invested then had little or no expertise in areas involved, a large proportion of these investments turned out badly.

As a result of this experience many investment organizations still do not feel comfortable considering investments in areas they perceive as high tech and too often this includes the environmental industry.

Related to the above negative perceptions are a lack of positive ones. Unlike the case in the US where the venture capital industry can point to a number of successful investments in SMECs, there are not yet enough Canadian examples to recommend the area.

This expertise gap has led to a capital gap (or bottleneck) at the VCC level of financing.

4.4.3 Environmental Liability

Statutory environmental liability is becoming a major factor in pollution control. Regulations are proliferating and scrutiny and enforcement are becoming ever more pervasive. Anyone responsible even peripherally for pollution now faces environmental liability. Various agencies have been empowered with the rights to punish polluters with stiff civil penalties, substantial fines and even criminal convictions. These are powerful disincentives. Additionally, the fact that the officers of industries, and even companies associated with them (e.g., lenders), can be held responsible for future site clean ups and remediation has been a strong incentive not to pollute in the first place.

There are several types of environmental liability:

- **LENDER**
- **CORPORATE**
- **DIRECTORS**
- **AGENCY**
- **PROFESSIONAL**
- **INSURANCE**

Lender liability is the cornerstone of all other types of liability and is claimed by some[1,5,29] to be a financing barrier for environmental companies. Lender liability is the exposure, real or perceived, that a lender (or investor) faces when it provides funding to a company. Should that company cause (or find) a major pollution incident, not only will it be held liable for the costs of clean up, any lender or investor holding an equity interest or a debt security may, under certain circumstances, also be held liable. Lender liability involves an open ended ability by the government to go after anyone, regardless of the degree of responsibility, involvement in the incident, or the time when the pollution occurred. The situation regarding lender liability is worse in the province of Ontario and in this, Ontario differs from some other provinces and much of the United States.

The Canadian Council of Ministries of the Environment[42] has provided an excellent overview of the liability question.

While environmental liability is important, there is one aspect of it that relates to environmental industries that is worth pointing out here. It is a poorly appreciated but fundamental point that there are two types of environmental companies; those whose operations might expose them to statutory environmental liability and those which are not exposed to such liability. For most of the environmental industry, new laws and regulations lead to increased markets and opportunities. However, for some types of industries (e.g., certain waste management companies), they can also open the potential of greater liabilities (e.g., from the impact of leaching from landfill sites).

However, some environmental industry companies (e.g., those producing environmental equipment, offering environmental technology or those providing analytical services) are not so much subject to legislation but rather benefit from it as their businesses are likely to increase as they assist their customers in meeting the regulations. These sectors are not regulated businesses as they do not produce regulated products or wastes but instead provide products and services required by their customers who must comply with regulations. Such companies offer products and services which are subject to normal contractual obligations and product warranties but are not subject to environmental liabilities.

It is beyond the scope of this document to address environmental liability in detail. As discussed elsewhere in the Study most senior investment organizations do not place a direct link between environmental companies and environmental liability but are very concerned about it and it slows/impedes consideration of environmental investments.[43] It appears that liability often will be a barrier to financing especially with junior personnel (e.g., local bank loan officers).

One type of environmental company which may face a direct financing barrier due to environmental liability is the environmental service company whose operations do expose it to it. Companies handling, transporting and disposing of hazardous, toxic and nuclear wastes are liable if a serious pollution incident results from either activities. Lenders and investors may be unwilling to expose themselves to potential liability above their investments if they get involved with such companies. In these special cases (involving only a minority of environmental companies) financing sources may be limited to personal assets, certain types of private placements and the stock market.

4.4.4 The Stage of Development Barrier to Financing

As indicated earlier, financial institutions believe that if SMECs are having problems obtaining financing it is not because they are environmental or because they are small and early stage but because of other problems. However where companies do not have long track records, organizations which are risk- adverse (e.g., banks, institutions) cannot carry out the financial analyses they need on which to base their decisions. An industry that has two-thirds of its members earning less than $1 million per year in the first few years of growth and having little history to point to will necessarily face this barrier to financing.

Financial institutions have rigorous lending practices, and when these are combined with a relative lack of knowledge about an area, an early stage of industry development and a history of poor investment performance with high tech investments, it is not surprising that fiduciary caution leads to a lack of "comfort", inhibiting investment decisions in favour of SMECs.

4.4.5 The Operating Procedures Barrier to Financing

Many investment institutions have their own procedural barriers which inhibit financing of SMECs. Where funds of hundreds of millions of dollars are under management, it is inevitable that segregated management will develop too, whereby funds are earmarked for particular areas (e.g., bonds, etc). Small areas of investment (i.e., small capital public companies and even VCC pools) tend to get overlooked in this schema. Direct financing of SMECs certainly. Why waste time and energy in a few small investments (as those with SMECs inevitably are) when "much larger fish are out there to fry."?

More seriously, a number of major public sector pension funds trustees have mandated their operating managements not to consider venture capital investments at all. While some argue that this was only prudent considering the miserable records they had with venture capital in the early 1980s (the expertise gap again), others argue that these funds only exist because of public "support" (i.e., the employment of the members in well paid public sector jobs) and their trustees have a duty to devote a tiny fraction of their monies to socially desirable activities
So seriously did the National Advisory Board on Science and Technology (NABST) view this problem that in a 1990 report it recommended[35] (See Section 5.1) that a tax penalty be applied against the assets of pension funds that did not invest at least one percent of their assets in eligible small firms. To date the federal government has taken no action on this or other NABST recommendations.

Other operating procedure aspects of investment organizations which mitigate against investment in SMECs (or VCCs which will invest in them) are the use of quarterly relative performance measures, capital asset pricing and over dependence on outside counsellors.[38]

It is difficult to expect the investment managers of institutions to provide "patient" money in long term relatively illiquid investments (such as SMECs) when their trustees are demanding regular updates such as quarterly performance reviews from them on the appreciation of the investment they manage. For most SMECs such measures are not relevant.

The continuing dependence of many institutions on the now discredited capital asset pricing model is another problem. Some feel[38] that this model misleads investors by presenting a distorted view of the capital market by giving false notions that "risk" is the only real concern. This leads to indexing and a reluctance to expose oneself to any unusual investments such as ones involving SMECs.

Another institutional phenomenon is a growing dependence on outside counsellors to help place money. Instead of providing money to a VCC and letting them proceed with investments, too many institutions are opting to invest themselves but only after vetting by agents. While these investment advisors do have some benefits, in many situations they complicate matters, are only willing to consider relatively large investments (i.e., above the SMEC level), add costs to the system, and tend to be even more conservative than the money managers they represent. The result is a further lessening of interest in "risky" areas such as early stage companies.

4.4.6 Alternative Options as Barriers to Financing

A NABST report entitled *Tackling Canada's Cost of Capital Issue*[36] determined that Canada has a higher cost of capital than other countries and that this inhibits investment and innovation in this country. This conclusion is generic, it applies to SMECs as well.

In the recent past, with government bonds yielding 15%, VCCs had to make 50% rates of return just to compete. As a result they could only consider investments which were relatively safe, yet (conversely) promised very high returns. Since few potential investments met these criteria, the result was less investment in all areas including SMECs. Some agile entrepreneurs responded to this situation by bypassing venture funds in favour of lower cost channels or direct suppliers of capital.[12] As a result all venture funds, and laterally the market for obtaining financing, suffered.

The problem is exacerbated by four factors[12]: the cost of capital to VCCs, the drawing down of funding commitments by VCCs in advance, VCC fee structures, and the low efficiency of VCC investments (i.e., the 2/6/2 "rule"). All of these aspects reduce the funding available to companies such as SMECs and form a real barrier.

With reduced interest rates lately, VCCs are able to seek lower RORs. This has tended to begin to reduce this barrier.

4.4.7 Government Practices as Barriers

At the same time that governments in Canada have recognized the strategic importance of the environmental industry in Canada from the standpoints of employment, exports, value-added opportunities, the greening of industry and potential tax revenues, it is ironic that reviews of the literature and consultations again and again have pointed to government practices as the major barrier to financing.

Indirectly, certain government practices reduce the viability of Canadian SMECs, making it harder for them to get financing. An often cited example is the practice of many government laboratories of competing with private sector environmental laboratories, for example, selling analytical services at prices much lower than the private sector can afford (because the government labs do not have to use full cost accounting.) Another practice is one for which government officials consider they are being prudent but in fact one which has an opposite effect; the setting of fees for environmental companies doing work for governments at unrealistically low levels, again depressing the market and reducing viability.

Many felt that governments' failure to vigorously and consistently enforce its regulations also has contributed to poor industry competitiveness, again affecting financing potential. Government failure to move vigorously to resolve the liability issue was another oft-cited example of how governments themselves were a barrier to financing.

Some felt that governments' practices of only financing up to 50% of needed funds when alternative sources for the other 50% were lacking, formed a barrier. They felt that loan guarantees for a higher proportion of the funds needed were preferable to grants.

Consistency was another government-related barrier cited. Some investors feel that governments' penchants for "changing the rules" on the degree or type of enforcement they might (or might not) make was an impediment to investment in government-regulated industries such as the environmental one.

Most often, excessive tax burdens and the lack of incentives for wealth-generating, value-added companies such as SMECs and investors in them, were cited as government practices which impeded the financing of environmental companies.[38] Despite the well known fact that small businesses such as SMECs are the chief sources of new jobs creation, growth and future tax revenues, almost everyone consulted was of the opinion that tax and other disincentives caused by government actions (or inactions) was one of the main reasons why it was difficult to finance SMECs. Anecdotal stories like one where a government bureaucrat was quoted as raging regarding the proposed Ontario Investment Fund that " it was not the purpose of the OIF to make venture capitalists rich" show a stunning level of incomprehension in government of what it takes to generate wealth in a society. A radical rethink of government policies is indicated.

4.4.9 Summary of Barriers

The barriers discussed above affect SMECs at different stages of development differently. The following table shows an estimation:

Table 4.5
PRIORITIZATION OF BARRIERS

BARRIER	STARTUP COMPANY	DEVELOPMENT COMPANY	GROWTH COMPANY	MEZZANINE COMPANY
THE EXPERTISE GAP	X	X		
ENVIRONMENTAL LIABILITY		X	X	X
STAGE OF DEVELOPMENT	X	X		
OPERATING PROCEDURES	X	X		
ALTERNATIVE OPTIONS		X	X	X
GOVERNMENT PRACTICES	X	X	X	X

SUMMARY AND RECOMMENDATIONS

5.0 SUMMARY AND RECOMMENDATIONS

5.1 SUMMARY

The conclusion of this Study is that there is plenty of potential investment capital around in Canada but nevertheless there is a significant capital gap experienced by small-to-medium sized Canadian environmental companies, especially as regards equity in the form of venture capital financing. This capital gap is caused by a number of factors including management and expertise limitations in both companies and investment organizations, negative perceptions by both the investment community and SMECs and several structural barriers of which the governmental one is the most important.

In addition to new recommendations to improve the financing climate for SMECs, there have been a number of other recommendations made which, also are relevant to SMEC financing.

5.2 NBAC RECOMMENDATIONS

The National Biotechnology Advisory Committee contracted Macdonald & Associates to evaluate the availability of venture capital for Canadian companies. The resulting report[34], although addressing high technology industries in Canada in general, made a number of recommendations. These are summarized here.

a)	***Seed several new private sector, technology-focused venture capital funds with government funds.***

Macdonald argued strongly that not enough capital was flowing into early stage companies in growth sectors and the amount needed to increase significantly. She suggested that the federal government contribute $150 million for investment in a number of technology-based venture capital funds. (This was an early articulation of the concept of Expert Investment Companies.) Macdonald stated that if such an initiative were launched with the full support of the major technology-oriented industry associations, it would probably attract some highly experienced Canadians from the technology sector itself.

b)	***Design an appropriate package of support to enhance the ability of Canadian technology companies to identify and recruit experienced and qualified managers to strengthen their management competency.***

This reflects the "expertise gap" mentioned elsewhere in this Study. Although the environmental industry has a high service component (as well as a technological one) and some of its companies are low tech, the recommendation is applicable for SMECs as well. CEIA and related organizations have expressed concerns[33] about the supply of manpower in the environmental industry. Macdonald suggests information banks on Canadians working in technology areas in the US, an outreach program, information sharing among recruitment firms, and tax holidays for immigrating executives as ways to implement this recommendation.

> *c) Establish a mentoring program to strengthen core management competencies and thereby enhance the potential to raise capital.*

Some of the EIC concepts such as Advisory Boards and industrial sponsors (see Appendix 6.5) developed from this.

> *d) Encourage broad implementation of the concept of an "Ombudsman's office."*

Here Macdonald was specifically referring to companies in the computer software industry. She wants small Canadian companies to have improved access to the decision makers who make purchasing decisions in major Canadian firms and government. Since the actions of government in purchasing, contracting and competing with Canadian SMECs is seen as a major barrier to their financing, Macdonald's recommendation has merits for the environmental industry as well.

> *e) Establish a task force with industry and government representatives to identify outstanding issues between government and industry and to resolve these issues to the mutual satisfaction of both parties.*

Macdonald refers to issues such as R&D tax credits, capital gains taxes and other policies. Since these same issues are perceived by SMECs as significant barriers to financing, the environmental industry should consider supporting this recommendation.

5.3 NABST RECOMMENDATIONS

The National Advisory Board on Science and Technology in a 1990 report[36] to the federal government concluded that Canada faces a serious problem because its companies have a

higher cost of capital than some key competitors. It felt that the higher cost of equity in Canada is particularly damaging and this is felt most keenly in the financing of the "softer" investments that are often critical to innovation. This Study has indicated that these problems apply to SMECs as well.

NABST recommended a number of approaches to address the problem of the high cost of capital, essentially involving three types of mechanisms:

- Initiatives aimed at reducing the cost of capital generally;
- Policies to lower the cost of innovation directly;
- Actions targeted to improve the cost of capital for smaller, innovation-oriented firms.

NABST recommended that an effective attack on the problem will need action on each of the above three areas.

NABST's *Committee on The Financing of Industrial Innovation* made[35] five specific recommendations in their report to the Prime Minister of Canada:

> *1. That capital gains tax rules be modified so that gains from eligible equities held longer than three years are not included within personal income for the purposes of taxation.*

This recommendation would encourage further angel investment. As indicated in Section 5.2, there is considerable scope to expand this investment pool.

> *2. That a tax penalty be applied against the assets of pension funds that do not invest at least one percent of their assets in eligible small enterprises.*

NABST went on to state that should a fund fail to invest the one percent in eligible firms, a penalty of ten percent should be assessed on the amount not so invested. Eligible enterprises would include companies that perform substantial amounts of R&D and VCCs which specialize in the financing of technology-intensive firms.

> *3. That a national (investment) fund of up to $1 billion be established.*

It was envisioned that his fund would be capitalized by government and/or the penalty tax for pension funds (#2 above). It would be administered at arm's length from government and share up to 50% of industrial innovation costs for specific projects proposed by established firms. It also suggested that the fund contribution would be repayable at premium rates from revenues on eventual sales of the products developed and marketed.

> *4. That a matching investment fund be established, on a pilot basis, to provide repayable government contributions directly to new and/or small innovation ventures.*

NABST's committee suggested this fund should match up to 75 percent of equity funds raised by individual investors. Government would finance the creation of the fund and monies it dispersed would be "bonded" as to use (i.e., for innovation). It also suggested that provided the bond was in place and certain minimum criteria were met, funds should be made available without government review.

> *5. That a new financial institution [bank] be established to provide debt and equity investment to technology-intensive firms.*

It was suggested that government(s) contribute some part of the initial capitalization of this bank. This financial institution would endeavour to earn market rates of return on its investments.

All of the above NABST recommendations apply to SMECs, and if implemented, might ease their financing problems.

5.3 ERNST AND YOUNG RECOMMENDATIONS ON TAX DISINCENTIVES

In a paper[38] entitled *Tax Disincentives for Canadian Information Technology Companies Seeking Investment Capital*, Ernst and Young argued that the Canadian Income Tax Act does not adequately provide tax incentives to small businesses. The paper's points apply to

SMECs as well as information technology companies. In it the author maintains that incentives to "Canadian-controlled private corporations" (CCPCs) are not adequate. It recommends to the federal government that:

> ***(a) Companies be deemed to retain their CCPC status for a specified period of time (3 years) after they become controlled by non-residents or public companies or have their shares listed on a Canadian stock exchange.***

> ***(b) CCPC's current $200,000 limit for eligibility for a 35% refundable R&D tax credit be eliminated or increased.***

> ***(c) The Income Tax Act's definition of a Qualified Small Business Corporation for the purposes of the $500,000 capital gains exemption should allow shares of foreign subsidiaries and cash raised through new investment be treated as assets used in the active business.***

> ***(d) For CCPCs, a share exchange with a non-Canadian corporation be allowed as a tax-deferred transaction.***

The paper argues that if these changes were affected, the viability of small Canadian businesses (including SMECs) would be greatly improved.

5.5 OTHER RECOMMENDATIONS

During the course of this Study a number of recommendations were suggested and/or became apparent which should reduce funding barriers and positively affect the financing of SMECs. Some are related to the ones discussed above.

a) Implement a package of programs to promote the investment in SMECs by angels.

Riding in his assessments of angel investment,[9,10] made a similar recommendation (albeit generic in scope). He went on to suggest that the federal government further reduce the capital gains bite by indexing gains to inflation, establishing more tax holidays for small businesses, and allowing taxpayers to deduct business investment losses from personal income.

b) Provinces should review their SBDC programs to see why they are not being utilized more extensively by SMECs.

Riding found[10] that nationally only 2.3% of angels used SBDCs. Something is clearly wrong when this is the case. Claims that SBDC administration is inefficient, slow, costly and beset by red tape must be taken seriously by governments.

c) Provinces should consider establishing Community Bond Programs.

There is a fear by some that community bond programs will be subject to political abuse and this has made officials in a number of other provinces (besides Saskatchewan and Manitoba) hesitate about establishing them. This should not be so. Adequate checks and balances are easy to establish.

d) The federal government and the provinces should increase the funding levels of their government VCCs and direct them to give more consideration to investment in SMECs.

Government VCCs serve a useful purpose, especially by giving better consideration to early stage companies such as SMECs. This should be encouraged. Government VCCs also should also be encouraged to syndicate with environmentally-oriented EICs and other VCCs, accepting their assessments with little further evaluation.

e) The federal government and the banks should consult to come up with a program to encourage bank VCCs.

While some bank VCCs have been active, many feel that they have not been a success as venture capitalists. Despite claims of "Chinese walls" and "risk-taking orientations", it has been claimed[6] these groups are indistinguishable from their banks' loan departments. Not only do they usually avoid pure equity investments, but they also tend not to get involved in early stage companies, thereby ruling out most SMECs. The very concept of venture capital seems to have escaped bank "venture capital" divisions and their orientation is mostly risk adverse, focusing on historical financial and fully secured non-equity investments.

Recent further changes to the Bank Act have significantly broadened banks' potential equity investment capabilities. The powers granted were far beyond what was asked for by the banks and they are "amazed and bewildered" as to what to do with them.

The government should provide leadership in encouraging the banks to expand their venture capital activities with arm's length groups practising true venture capital investment, often in early stage companies.

f) The federal and provincial governments should encourage the establishment of more labour-sponsored VCCs and EICs.

These growing pools tap new sources of funds which can have a significant affect on financing Canadian companies. Governments should direct labour-sponsored VCCs funds to give greater attention to the environmental industry and to early stage opportunities and to make their investments of "60 cent dollars" with the realization they are being subsidized to promote socially desirable investments such as SMECs.

g). The trustees of public sector pension funds should direct their managements to (re) consider venture capital activities, especially in areas such as the environmental industry.

As mentioned, the trustees of some pension funds such as OMERS have directed their fund managers to refrain from VCC investments completely. While it is understandable that earlier negative experiences with venture capital coloured their perceptions (EICs should help), these trustees (often mayors of municipalities and government appointees) should

recognize that they have social responsibilities as well and if their pension funds do not address wealth-generating activities (such as SMEC investment) in the long term they will only hurt themselves. The second NABST recommendation (Section 5.3 above) reflects a frustration which can only negatively affect public sector pension funds unless they proact.

h) Governments and CEIA chapters should set up joint committees to come up with recommendations on how to reduce governmental barriers to SMEC financing.

As indicated in text, again and again government practices of all sorts (e.g., procurement, taxation, hiring consultants, etc.) were identified as barriers to the environmental industry. Governments should set up joint industry-government committees to review these barriers and suggest methods to alleviate them. (Ontario's GMOP program is an excellent start but does not go far enough.) These same groups, expanded to include members of the investment community, could also propose ways to improve information and communications both of environmental companies towards the investment community and vice versa.

i) Further studies should be carried out to better define SMEC financing requirements.

As indicated several places in text, this Study could not be comprehensive enough to provide enough details of SMEC funding requirements. Further studies should be carried out involving extensive consultations with investment organizations, SMECS and others. Further workshops like the CEIA/GIO GMOP one of March 1 should be carried out nationally and results widely publicized at a major Canadian environmental conferences.

The International Institute for Sustainable Development, in planning for a major initiative by them to enhance business opportunities, our environment and sustainable development, sums it up nicely:[44]

"*Access to adequate capital is a critical factor for entrepreneurial success.*"

It is also a critical factor for Canadian success.

APPENDICES

APPENDIX 6.1

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6.1 REFERENCES

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APPENDIX 6.2

CONTACT INFORMATION

6.2. CONTACT INFORMATION

6.2.1 CEIA

Canadian Environment Industry Association (CEIA) branches across Canada are as follows:

a) British Columbia

CEIA-B.C.
4411 West 2nd Avenue
Vancouver, B.C. V6R 1K6
Tel: (604) 660-3986

b) Alberta

Environmental Services Assoc. of Alberta
335 10909 Jasper Avenue
Edmonton, Alberta T5J 3L9
Tel: (403) 261-6737

c) Saskatchewan

Special Waste, Services Association of Saskatchewan
608 McLeod Street
Regina, Saskatchewan S4N 4Y1
Tel: (306) 359-0233

d) Manitoba

Manitoba Environment Industries Association
P.O. Box 23058
1315 Pembina Highway
Winnipeg, Manitoba R3T 5S3
Tel: (204) 786-2834

e) Ontario

CEIA-Ontario
401 Richmond Street West,#139
Toronto, Ontario M5V 1X3
Tel: (416) 348-9744

f) Quebec

Association des Entrepreneurs de Services en Environment du Quebec
232 1400 rue Sauve Ouest
Montreal, Quebec H4N 1C5
Tel: (514) 458-7014

g) Atlantic Canada

Newfoundland Environment Industry Association
P.O. Box 9204, Station "B"
St. John's, Newfoundland A2A 2X9
Tel: (709) 576-2126

h) CEIA National will be setting up an office in Ottawa shortly and currently may be accessed via CEIA's Alberta branch.

6.2.2 Financial Institutions Contacts

Financial associations mentioned in this report may be contacted as follows:

i) The Canadian Bankers Association
Suite 600, The Exchange Tower
P.O. Box 348
2 First Canadian Place
Toronto, Ontario M5X 1E1
Tel: (416) 362-6092

j) The Association of Canadian Venture Capital Companies
1881 Yonge Street, Suite 600
Toronto, Ontario M4S 1Y6
Tel: (416) 487-0519

a) The Federal Business Development Bank has offices across the country and Venture Capital Division offices in Vancouver, Toronto and Montreal. Information on the nearest office may be obtained by calling toll-free 1-800-361-3126.

b) Industry Science and Technology Canada has offices across Canada. Telephone numbers for it, for provincial economic development ministries and for municipal EDCs are found in the Blue pages of telephone directories.

c) The Pension Investment Association of Canada (PIAC)
59 Shaw Street,
Toronto, Ontario M6J 2W3
Tel: (416) 367-8960

d) Association of Canadian Pension Fund Management (ACPFM)
1075 Bay Street, Suite 703
Toronto, Ontario M5B 2B1
Tel: (416) 964-1260

e) Investment Funds Institute of Canada
80 Bond Street, Main Floor
Toronto, Ontario M5B 1X8
Tel: (416) 363-2158

f) Venture Economics
1180 Raymond Blvd
Newark, N.J. 07102
Tel: (201) 622-4500

g) National Venture Capital Association
1655 North Fort Myer Drive
Ste 700,
Arlington, Va U.S.A. 22209
Tel: (703) 351-5269

h) Macdonald & Associates
65 St. Clair Avenue East, 9th Floor
Toronto, Ontario M4T 3Y3
Tel: (416) 964-1265

i) International Institute for Sustainable Development (IISD)
161 Portage Avenue E., 6th Floor
Winnipeg, Manitoba R3B OY4
Tel: (204) 958-7704

j) The Canadian Council of Ministers of the Environment
326 Broadway, Suite 400
Winnipeg, Manitoba R3C 0S5
Tel: (204) 948-2090

6.2.3 Provincial Contacts for SBDCs and Equivalents

British Columbia:	Venture Capital Program Equity Programs Branch Ministry of Regional Development Parliament Buildings Victoria, B.C. V8V 1X4 Tel: (604) 387-2030
Alberta:	Small Business Equity Corporation Sterling Place, 7th Floor 9940 106 Street Edmonton, Alberta T5K 2PL6 Tel: (403) 422-5025
Saskatchewan:	Saskatchewan Economic Development & Tourism Venture Capital Program 6th Floor, 1919 Saskatchewan Drive Regina, Saskatchewan S4P 3V7 Tel: (306) 787-2252
Manitoba:	Venture Capital Program 501-155 Carleton Street Winnipeg, Manitoba R3C 3H8 Tel: (204) 945-2019
Ontario:	Small Business Development Program Ministry of Revenue 33 King Street West Oshawa, Ontario L1H 8H9 Tel: (416) 434-7232
Quebec:	Société de developpement industriel du Quebec 770 Sherbrooke West, 9th Floor Montreal, Quebec H3A 1G1 Tel: (514) 873-4374

New Brunswick:	Provincial Holdings Ltd P.O. Box 6000 Fredericton, N.B. E3B 5H1 Tel: (506) 453-2474
Nova Scotia:	Business Capital Corporation 1690 Hollis Street Halifax, NS B3J 2V2 Tel: (902) 424-6800
Prince Edward Island:	PEI Development Agency West Royalty Industrial Park Charlottetown, PEI CIA 1BO Tel: (902) 365-5800
Yukon:	Venture Capital Program Department of Economic Development Yukon Territorial Government Box 2703 Whitehorse, Yukon, Y1A 2C6 Tel: (403) 667-5466
Northwest Territories:	Venture Capital Program Box 1320 Yellowknife , NWT, X1A 2L9 Tel: (403) 873-7383

APPENDIX 6.3
PRIVATE SECTOR FUNDING SOURCES

TABLE 6.3.1.

HIERARCHY OF FINANCING SOURCES

Type of Financing	Principal Source	Form of Fiancing	Target Rate of Return
Asset Based Financing	Asset based lenders, e.g., banks, industrial and commercial credit companies	Secured floating rate financing, availability based on % of current and fixed assets	1 to 4% spread over prime plus administration fee, sometimes includes equity kicker in form of warrants, cheap common stock or % of cash flow
Senior Bank Debt	Banks	Secured or unsecured usually (i) look to assets as downside protection and cash flow as source of repayment, and (ii) require greater underlying equity base than asset based lenders	Commitment fee plus 1 to 2-1/2% spread over prime, rarely take equity kicker
Fixed Rate Senior and Subordinated Debt Sold as a "Strip" to Same Purchasers	Insurance companies, pension fund, "mezzanine" buyout funds	Unsecured fixed rate debt coupled with equity participation in the form of partial convertibility, warrants or cheap common stock	20-35% from rate plus equity
Preferred Stock or Subordinated Debt	Venture capitalists principally venture subsidiaries of bank holding companies, mezzanine buyout funds and some insurance companies	Fixed rate preferred stock or subordinated debt which is usually redeemable and coupled with equity participation in form of partial convertibility, warrants or cheap common stock	35-50% from rate plus equity
Common Stock	Leveraged buyout specialists and funds, venture capitalists, ESOPs	Common stock with no current return	>50% entirely from equity

TABLE 6.3.2.

VENTURE CAPITAL ROUNDUP

NAME	CAPITAL UNDER MANAGEMENT	INVESTMENT PREFERENCES	TYPE OF FINANCING	MINIMUM INVESTMENT	PREFERRED INVESTMENT	NEW DEALS IN 1992 *
Alberta Opportunity Co., Edmonton	$30 million	Leading-edge technology companies in Alberta	Startups, early stage	$50,000	$50,000 to $1 million	8 to 10
Altamira Capital Corp., Dorval, Que.	$160 million	Canadian companies specializing in manufacturing, communications, computer-related products, electronic components, industrial products, medical health-related	Startups, expansion	$500,000	$1 million to $5 million	none
CAI Capital Corp., Montreal	$180 million	Will consider Canadian companies in any sector	Expansion, buyouts	$10 million	$10 million to $50 million	1
Discovery Enterprises Inc., Vancouver	$35 million	B.C. firms specializing in health-related industries, biotechnology, communications	Startups, early stage	None	$400,000+	3
Federal Business Development Bank, Montreal	$81 million	Will consider any sectors except real estate, mining and resources	Startups, early stage	None	$1.2 million to $5 million	10
Fonds de Solidarité de la FTQ, Montreal	$566 million	Will consider Quebec companies in any industry	All	None	***	31
Helix Investments Ltd., Toronto	$100 million	High technology, manufacturing, pharmaceuticals, services	All	None	$250,000 to $2.5 million	2
Quorum Funding Corp., Toronto	$130 million	Information technology, niche manufacturing, consumer products, environmental technology, financial services	Expansion	$1.5 million	$2 million to $5 million	3
SB Capital Corp.,** Toronto	$36 million	Will consider all sectors in Canada or U.S., except resources and hospitality	Expansion	$100,000+	Up to $5 million	0
Vencap Equities Alberta Ltd., Edmonton	$285 million	Alberta companies in data communications and computer-related products	All	None	$3 million+	2
VenGrowth Capital Funds, Toronto	$70 million	Will consider biotechnology, medical/health-related products in Canada & northeast U.S.	Expansion, buyouts	$750,000	$750,000 to $2 million	2
Ventures West Management Inc., Vancouver	$80 million + $50 million from "investor immigrants"	Data communications, consumer services, industrial products and equipment in central and western Canada	Early stage	$500,000 to $4 million	$2.5 million	7 to 8
Vision Capital Fund, Winnipeg	$20 million	Manitoba companies in technology-related sectors	All	$100,000	$250,000 to $1 million	4
Resourcecan Ltd. St. John's	$6 million	Canadian companies in electronics, resources, industrial products & services	All	$200,000	$250,000 to $500,000	n/a

* As of September, 1992 **Not soliciting new clients *** Required by law to restrict investments in each industry sector to 5% of total assets

SOURCE: Reference 41

APPENDIX 6.4
FEDERAL GOVERNMENT FUNDING PROGRAMS

FEDERAL FUNDING PROGRAMS

PROGRAM	ANNUAL BUDGET (MILLIONS)	FUNDING LIMIT	CRITERIA	OWNERSHIP OF TECHNOLOGY
EIP	$20.0 OVER 5 YRS	UP TO 75% OF PROJECT COST	• RESEARCH AND DEVELOPMENT OF TECHNOLOGIES THAT MEET ENVIRONMENT CANADA GREEN PLAN OBJECTIVES • HIGH PRIORITY PLACED ON ORIGINALITY OF PROPOSAL	• AS FOR D-DRECT
TECHNOLOGY FOR ENVIRONMENTAL SOLUTIONS - COMMERCIALIZATION	$80.0 OVER 5 YRS	UP TO 50% OF PROJECT COST TO $5 MILLION MAXIMUM	• PILOT-SCALE AND DEMONSTRATION PROJECTS • LONG-TERM COMMERCIALIZATION POTENTIAL NECESSARY • TECHNOLOGY MUST BE WHOLLY NEW	• AS FOR D-DRECT
UNSOLICITED PROPOSALS BROKERAGE SERVICE	NOT SPECIFIED	UP TO 100%; MAXIMUM PROJECT FUNDING IN ORDER OF $500,000 NORMAL	• FUNDING PROVIDED TO FINANCE INNOVATIVE SCIENCE AND TECHNOLOGY PROPOSALS • SUPPORT OF A PROPOSAL REQUIRED BY A FEDERAL GOVERNMENT DEPARTMENT • OTHER FUNDING PARTNERS WILL ENHANCE PROBABILITY OF SUCCESS OF PROPOSAL • PROPOSALS MUST BE UNIQUE	• REPORTING TO SPONSORING AGENCY REQUIRED; REPORT WILL BE PUBLIC • CONFIDENTIALITY PROVISIONS CAN BE NEGOTIATED FOR INTELLECTUAL PROPERTY

FEDERAL FUNDING PROGRAMS

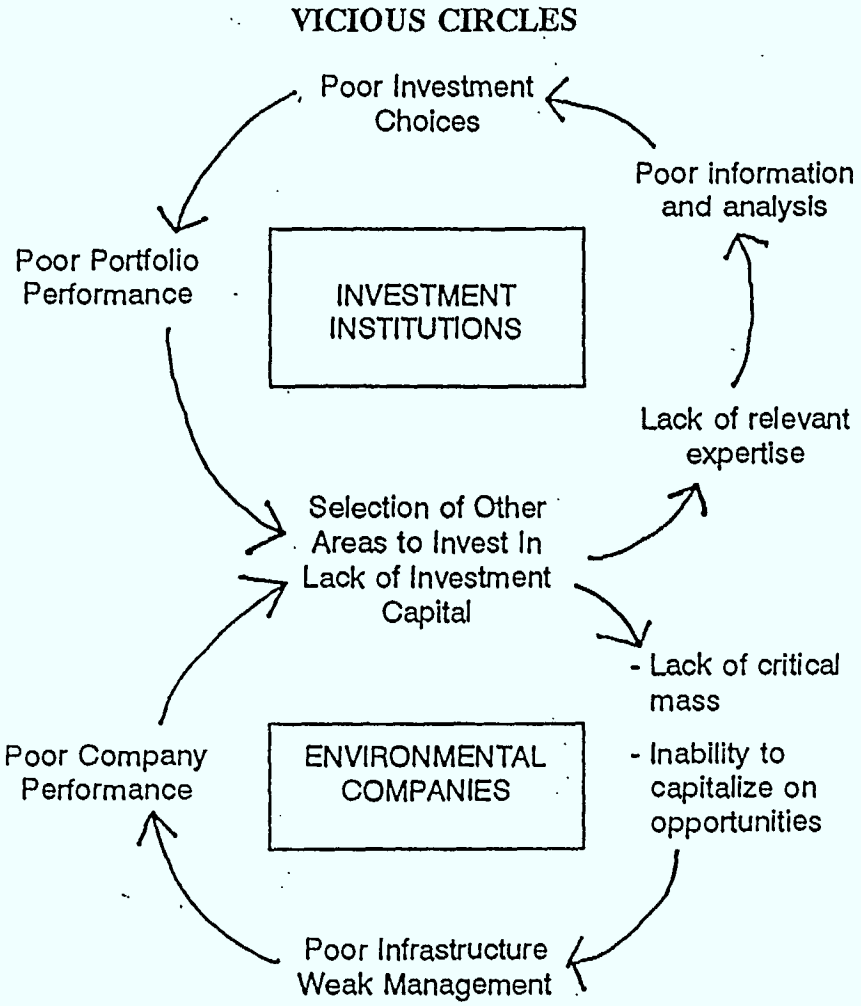
PROGRAM	ANNUAL BUDGET (MILLIONS)	FUNDING LIMIT	CRITERIA	OWNERSHIP OF TECHNOLOGY
D-DRECT	$1.0	UP TO 50% OF PROJECT COST	• DEMONSTRATION OF TECHNOLOGY NEW TO CANADA • PROJECT MUST SHOW COMBINATION OF ENERGY SAVINGS AND RESOURCE CONSERVATION • PROJECT MUST SHOW LONG-TERM BUSINESS POTENTIAL	• PRIVATELY-RETAINED • PUBLIC PROJECT REPORT REQUIRED • SOME CONFIDENTIALITY PROVISIONS POSSIBLE
IRAP	ONTARIO BUDGET: $12.5	UP TO 50% OF PROJECT COST TO $350,000 UPPER LIMIT	• PROGRAM AVAILABLE TO MEDIUM/SMALL BUSINESS ONLY • RESEARCH AND DEVELOPMENT PROGRAM • BUSINESS PLAN MUST SHOW ATTRACTIVE COMMERCIALIZATION POTENTIAL	• PRIVATELY RETAINED • PROJECT REPORT REQUIRED • REPORT REMAINS CONFIDENTIAL • OFF-SHORE COMMERCIALIZATION MUST BE NEGOTIATED

Source: Refernce[7]

APPENDIX 6.5
EXPERT INVESTMENT COMPANIES

6.5 EXPERT INVESTMENT COMPANIES

Historically, the record of venture capital companies (and other financial institutions) in selecting the winning companies in high technology areas has not been good. Although the people involved in assessing such investment opportunities have always had good financial and managerial skills, they have not had the backgrounds necessary to evaluate the technical, market and economic parameters needed to make prudent investment decisions. Because of this they have had to cope with poor information and analyses and these have led to poor choices for investments. The result, as shown in the following figure, has been a vicious circle as poor investment choices have led to poorly performing portfolios, unrealized expectations and growing perceptions that high technology investments involve unacceptably high levels of risk. This, of course, leads to a reluctance to invest in such areas, opportunities missed and industry areas starved of the capital they need.



Two Canadian companies have pioneered new concepts to address the problems of venture capital investment and improve on the 2/6/2 "rule". These are an environmental management company, Environmental Technologies International Inc (ETI), and a VCC, MDS Health Ventures Inc. (MDS).

ETI is a TSE listed Canadian company which operates via a number of Canadian and U.S. affiliates. It raises its funds through various routes but now generally by offerings of its own stock. ETI has aspects of a venture capital company, an operating company, and a holding company and a bank. It is none of these. ETI's business is acquiring, growing and managing other (smaller) environmental companies.

ETI[22] usually looks for majority control of a company (80% equity ownership is the norm) and targets environmental technology and environmental equipment companies with proprietary, high barrier products and processes. ETDC (which evaluates opportunities for ETI) looks for early stage environmental technologies and products that have significant growth potential and seeks to identify them long before others can. It feels it can do this because of broad technical expertise in its areas and comprehensive knowledge of the environmental industry as this relates to economic, marketing and business matters; skills which venture capitalists do not possess. Unlike financial institutions, ETI is not overly concerned with the financial history of a potential investment (which is usually lacking or irrelevant for early stage companies anyway) or its management (which is important but which ETI can provide itself or replace due to its industry contacts). ETI invests for the long haul with the intention of growing its affiliates so exit strategies are not a major factor for it.

MDS[37] is another company with an unconventional approach to investment. It is the venture capital arm of the MDS Health Group and seeks to find and invest in health care companies which operate in areas which are relevant, but peripheral, to the business of its parent; ones which promise major changes the way things are done in health care. Unlike ETI, MDS is a private company owned 32.5% by MDS Health Ventures and the remainder by a group of eight institutional investors including the Alberta Government Treasury and the pension funds of TELUS Corporation, the Manitoba Teachers Federation and Ontario Hydro (whic' is also a major investor in ETI).

Like any VCC, MDS' first and overriding aim is to obtain a good return on its inves ..e' However, because outside (of MDS Health Group) investors control a majority c ..T seeks investments that are good ones on their own, not necessarily ones of immed ..e to the MDS Health Group. Nevertheless, the parent company stands behin' ..T to lend the considerable weight of its experience to the companies in whic' .

So far MDS has invested in five publicly-traded companies; ones in which it sought minority interests and ones where it syndicated with more traditional venture capital companies. Like ETI, MDS focuses on a specific area (health care in its case). Indeed MDS has become the essential backer for any new health venture company in Canada and other investors are said[37] not to be prepared to consider investment unless MDS is involved.

ETI and MDS were models for a new VCC concept, the Expert Investment Company (EIC). This concept, which has been taken up and adopted by the Ontario Investment Fund (See Section 3.4.3), involves the establishment of VCCs which combine in one company both traditional venture capital skills and focused technical, economic and marketing expertise on a particular industry area (or areas). Like MDS, most EICs will raise their pool funds from the usual sources (i.e., pension funds, etc.) and these will be supplemented by direct investment from an industrial sponsor (or sponsors). In Ontario, OIF will also provide matching funds to some EIC pools.

EIC's will operate differently than other VCCs in that they will be able to provide much more hands on assistance to the companies they invest in.

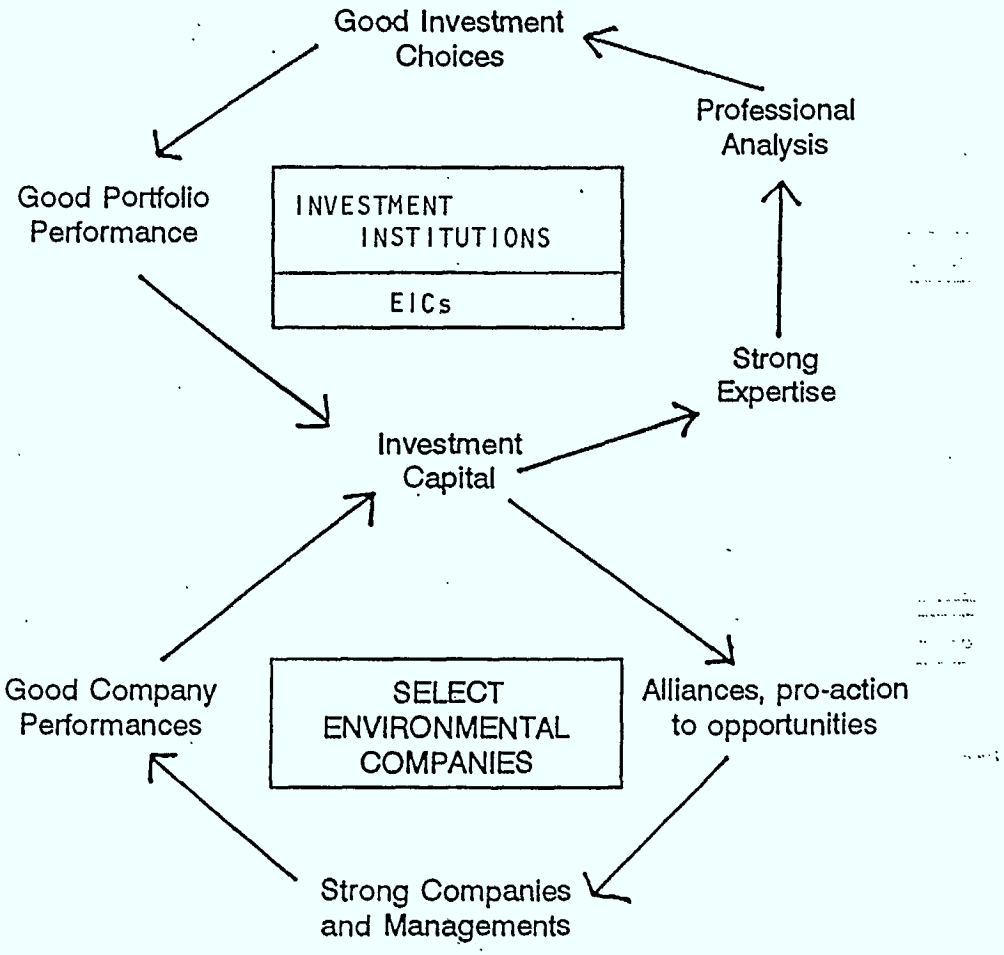
MDS is an EIC, and ETI has many of the aspects of one. Both are staffed full time by people expert in their areas an possessing broad industry, marketing and business and financial experience. Certain venture capitalists have proposed setting up alliances/joint ventures with firms in specific industry areas. These alliances do not qualify as EICs since seconded technical staff from an allied industry area company do not provide the broad comprehensive business skills that an EIC must have. For alliances there is a real danger that focus will become too narrow, the company ending up as the business development arm of its affiliate. True EICs should not have this problem

The following table compares traditional venture capital companies with EICs.

TYPES OF VENTURE CAPITAL COMPANIES			
	Traditional Venture Capital Fund	**VC/ Industry Alliance**	**Expert Investment Company**
Financial Analysis Skills	●	●	●
Contacts/Knowledge of Financial Community	●	●	●
Technical Analysis Skills	○	●	●
Marketing/Market Research Skills	○	•	●
Contacts/Knowledge of Relevant Industries	■	•	●
Ability to Carry Out Economic Analyses	○	•	●
Focus on Relevant Industry	○	•	●
Boards of Directors Involvement	●	●	●
Hands on Involvement with Management	•	•	●
Ability to Quantize High Tech Industry Risks	○	•	●
Ability to Provide/Arrange Further Financing	•	●	●
Integral Exit Strategies	○	●	●
Knowledgeable Advisory Board	○	○	●
Syndication Role	○	○	●
KEY: ○ POOR • MODERATE ● EXCELLENT			

The advantages of EICs are that they will have superior income potential to traditional VCCs; breaking the 2/6/2 "rule" by moving more investments into the winners' circle. While it is still too early to judge the final score for either ETI or MDS, already it has been suggested[37] that the latter is "batting .900".

Certainly EICs will be far better able to select potential winners and their orientation will allow them to much better assist those companies they do invest in. They will break the vicious circles of small to medium sized, early stage investment.



Several groups across Canada are in the process of setting up new EICs, many of them for the environmental area.

APPENDIX 6.6
GMOP WORKSHOP

Investing in Ontario's Environment Industry

DATE: Monday, March 1, 1993	VENUE: FOUR SEASONS HOTEL (Toronto)

Host: Ontario Chapter of the Canadian Environment Industry Association
Joint Sponsor: Ontario Ministry of Energy - Green Industry Office

MORNING PROGRAM

8:30-9:00	Registration (with coffee and muffins)	
9:00-9:10	Introduction and Welcome by Conference Organizers James Higgins - Director, Ontario Chapter of CEIA Manfred Bienefeld - Ministry of Energy	
9:10-9:30	SESSION I	George Davies (Deputy Minister of Energy): "Ontario's Green Industry Strategy: Building Foundations for the Future"
9:30-10:15	SESSION II	James Higgins (Director, CEIA Ontario) "Unlocking the Potential of Ontario's Environmental Industries Sector: The Need for Intelligent Long Term Financing" and John Coburn (President, CEIA Ontario): "An introduction to CEIA"
10:15-11:00	SESSION III	Mary Macdonald (Macdonald and Associates) and Felix Chee (Ontario Investment Fund) "Institutional Structures for managing risk in Start-up and Mezzanine Finance: The role of Expert Funds in attracting Institutional Investors"
11:00-11:45	SESSION IV	John Godfrey (Director, Can. Inst. for Advanced Research) "Facilitating finance through more effective links between industry, finance and the public sector" Jeremy Taylor (Royal Bank) "The Scope and Wisdom of Bank Participation"
11:45-12:15	SESSION V	Chris Henderson (Delphi Group) and Nick Parker (SB Capital International) "Financing the Export of Environmental Goods and Services from Ontario"

KEYNOTE ADDRESSES AND LUNCH

12:15 - 1:00	KEYNOTE ADDRESS FINANCE	Jeffrey Leonard (President, Global Environment Fund: Washington D.C.) "Successful Investing in the Environment: The Lessons of Experience"
1:00 - 1:45	LUNCH	
1:45 - 2:30	KEYNOTE ADDRESS ENVIRONMENT	Maurice Strong (Chairman, Ontario Hydro) "Financing Sustainable Development: Turning Constraints into Opportunities"

AFTERNOON PROGRAM

2:30 - 3:00	SESSION VI	Donald Cameron (Hooey, Remus) "Lender liability: Tar baby or force for environmental improvement"
3:00 - 3:30	SESSION VII	Ted Cowan (The Biosphere Foundation) and Ed Weinstein (Brendan Woods) "The role of non-profit organizations and public loan guarantees in mobilising environmental finance"
3:30 - 4:00	SESSION VIII	Roger Swan (Clean Environment Mutual Funds Ltd) "The role of the institutional investor in environmental finance"
4:00 - 4:30	Plenary Discussion:	"Other approaches to Financing Environmental Investment"
4:30	END	

INVESTING IN ONTARIO'S ENVIRONMENT INDUSTRY
FINANCIAL SEMINAR
MARCH 1, 1993

Four Seasons Hotel — 21 Avenue Road, Toronto, Ont.

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